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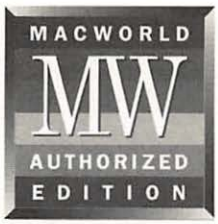

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Introduction

WHO THIS BOOK IS FOR

There's no question that you'll get some good out of this book no matter how much of a Mac expert you are. Heck, even if you throw away the book, the accompanying 550 MB of spectacular software will make you mighty glad you picked it up.

But we may as well admit that this book completely skips over the basics of using a Macintosh. If you don't already know how to point and click, open windows, insert a disk, use a menu, and open a control panel, you should take a moment to play with the animated program called either Mouse Practice or Macintosh Basics that came with your Mac. Read a manual. Read *Macs For Dummies*, a really good beginner's book from IDG Books (written by one of your present authors). Do whatever you have to do.

As a matter of fact, here are the terms we're going to be tossing around without any definition:

⌘-key, menu, backup copy, click, control panel, cursor, Delete key, desktop, double-click, File menu, floppy disk, folder, font, hard drive, icon, K (kilobyte), keyboard, launch a program, MB (megabyte), menu, menu command, monitor, mouse, numeric keypad, Option key, point, quit a program, Return key, spacebar, scroll bar, System 7, title bar (of a window), Trash.

WHY WE WROTE THIS BOOK

DP: Everybody who's ever worked with a Mac already knows that you discard a file by moving its icon to the Trash can, that you select text by dragging across it, and that you end the day by choosing Shut Down from the Special menu. The world doesn't need another book to define scroll bar.

JS: So when we started writing this book, we worked from one simple, overarching concept: Under no circumstances would we define scroll bar.

DP: Instead, we decided to tell secrets: secrets about how a Mac really works, secrets that software programmers buried in programs but forgot to tell the manual writer, secrets that answer some of the most frequently asked (and seldom answered) questions about Macintosh computing, secrets such as how to recover a file after you've dragged it to the Trash — and emptied the Trash.

JS: Or what would happen if you didn't choose Shut Down and just switched the Mac off. What are you supposed to do when you try to select text, but the mouse seems jerky, sticky, and out of control? And what about those times when your Mac appears to be going just plain berserk — when turning the machine off doesn't even turn it off?

DP: All those elusive, mystical ⌘-Option-Shift-Tab-Question Mark key sequences that are whispered at little-known user groups...

JS: The little animated surprises that lurk inside commercial programs...

DP: The trick to connecting two Macs together with a piece of phone wire, or getting your PowerBook safely through the X-ray machine, or making your icons invisible to prying eyes...

JS: ...at last, it's all been collected into one substantial paperback written by a couple of former college roommates.

DP: Is there anything else you think we should mention?

JS: Do the words free software mean anything to you?

DP: Good point. We've included an incredible stash of great programs on a CD-ROM at the end of the book.

JS: We were both sick of reading books that tell you about some great software and then send you to your local user group or store to find it. So we decided from the outset that this book would be different. If we mention something you need, we included it with the book.

DP: And not only shareware. We've also included commercial software, from actual software companies such as Adobe, Claris,

On the other hand, this book doesn't go to the very technical ends of the Mac universe, either. It doesn't talk about programming in C language or using DAL or hooking up to a mainframe. And we wouldn't tell you what you can accomplish by going inside your Mac with a soldering gun — even if we knew.

This book is for everybody in the middle — everybody who's no longer impressed by the way the Trash can bulges when something's in it, but wouldn't mind knowing how to change a file's icon or unlock the hidden 5MB of storage space on every hard drive.

SECRETS OF THIS BOOK

The biggest secret to getting the most out of this book is understanding its structure. Each topic is divided into halves. The first part is a general discussion, like a miniarticle. It's followed by the Secrets: undocumented, often never-before-published hints and tips for pushing your Mac to its max.

PART BY PART

Here's how the primary book sections are broken down:

PART I: SYSTEM SOFTWARE REVEALED unearths insider information about the free software you got with your Mac — namely, the System software that fills that black System CD-ROM or that mound of white System disks. But we won't mention only the Finder (and aliases and labels and Trash and the Desktop file), but also the important Installer, your control panels, your Apple menu, and all those Apple Extras. And, best of all, this part identifies all the System-folder clutter you can throw out.

PART II: SECRETS OF THE MACHINE takes you into the actual mechanics of the Mac. You won't go so far in that you'll need a degree in electrical engineering; you'll just learn enough of the inner workings to be useful. This part, for example, actually gives a decent explanation of how to use virtual memory. It includes a Disk Chapter, a Memory Chapter, and special coverage of the Power Macs, Performas, and PowerBook laptops. Chapters 12 and 13 even contain detailed Mac-by-Mac model descriptions so that you'll know what you bought, how it can be upgraded, and how much technology has marched on since you bought your machine.

PART III: APPLICATION SECRETS covers the programs you probably use in day-to-day work: major players such as ClarisWorks, Word, Excel, and FileMaker, as well as software like ResEdit that can help make the Mac more yours. This part is a whole book-within-a-book, with enough expert insight to make you say "Wow" at least once per page.

PART IV: ATTACHMENTS is about everything you attach to your computer — printers (and, therefore, fonts), modems (and, therefore, the Internet and America Online), scanners, CD-ROM players, NuBus and PCI cards, and networks. At the end of this part is a troubleshooting chapter that, among other things, contains our Rule of Three: a troubleshooting trick that solves about 99 percent of typical mysterious Mac crashes and odd behaviors.

PART V: THE SECRETS SOFTWARE VAULT describes the dozens of fantastic programs that come with this book. They come, by the way, on a CD-ROM. If you don't have a CD-ROM drive, the publisher will send you floppy disks, free, containing the best of this software. Call IDG Books at 800-434-3422.

Dantz Development, Abbott Systems, Now Software, MicroFrontier, Affinity, and Nova Development. And we've even thrown in a couple of programs written especially for this book — totally exclusive software. All this adds up to a book that delves into the inner workings of the machine, the hardware behind the hardware, the raw code, the...

JS: Wait a minute, this isn't going to be one of those horribly dry, technical, IBM-style books that probes the depths of programming and discusses things like — like DIP switches, is it?

DP: DIP switches won't even be mentioned.

JS: So then why is there a "DIP Switch" entry in the index?

DP: Because you just said DIP Switches. Once you say it, it goes in the index. Now it's part of the book.

JS: Just because I said it.

DP: Yes! That's how indexes work. So, anyway, we think this book will show you how to get the most from your Mac and increase the...

JS: So if I say "DOS," suddenly DOS is in the index?

DP: Right, so quit saying stuff like that. I'm trying to finish this obligatory introductory section...

JS: What about AUTOEXEC.BAT? And COM1? And RS-422 port?

DP: Stop it! Stop it!

JS: Just checking.

DP: Shall we begin?

JS: Let's.

SIDEBARS

Along the way, we intend to spice things up with special minitopics:

MACINTOSH SECRET

A *Macintosh Secret* has, we suppose, much in common with a regular Hint or Trick or Tip. But to qualify for its own special sidebar, a Macintosh Secret must have particular juiciness, a surprising element, or special pertinence to the discussion at hand.

TRUE FACT

True Facts, however, may not end happily. These are fun tidbits from the world of high-powered Silicon Valley politics: tales of Apple intrigue or Adobe warfare, and other trivia.

CASE HISTORY

Case Histories are true stories from real life, reflecting the genuine agony of trying to solve a computer problem as deadlines loom. Of course, we've selected only stories with happy endings.

DIALOGUE

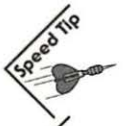
As you can imagine, writing a tightly integrated book like this is difficult for one person. We found that it may even be tougher for two; sometimes we (JS and DP) simply couldn't agree. In those instances, you'll get both sides of the story in the form of a *Dialogue* between your coauthors. You'll hear the conservative, careful view (usually Joe's) versus the devil-may-care, it's-under-warranty-anyway stance (usually David's).

ANSWER MAN

Each *Answer Man* contains an actual question asked by an actual imaginary Macintosh user, and our actual attempt to answer it.

FINDING THE GOOD PARTS

Finally, you'll find icons in the margin of this book. Here's what they're about:



SPEED TIP icons are for people in such a hurry that they don't even have the time to scan our Secrets for efficiency tips; these symbols mark our time-saving tips.



EXCLUSIVE icons point to something that we're particularly proud of because we discovered it ourselves.



ON THE CD icons let you know that, whatever the current discussion is about, you don't have to go out and buy some program to make it work. The software you need is on a CD-ROM, right at the back of this book.



STRANGE BUT TRUE icons indicate an oddity we bet you didn't know. Even though the Mac is the world's most self-explanatory computer, there's a lot of weirdness going on behind that platinum-colored plastic.



WORTH LEARNING icons mark a technique most people don't bother with. But we, as seasoned veterans, have found a tip marked by this icon particularly worth making part of your work routine.



CONTEST WINNER icons alert you to Secrets submitted by readers — the best 50, in fact. These lucky 50 readers each received a free copy of this book, just as you'll receive a copy of the Fifth Edition if we choose your Secret to publish (see the contest details below).

WHAT'S NEW IN SECRETS 4.0

As you know, computer years are like dog years — seven of them for one of our years. This edition hit the shelves only ten months after the previous one appeared, because it had to; so many aspects of Macintosh life had changed that a major overhaul was already appropriate.

You'll find changes on almost every page. You'll find new discussions of the upcoming onslaught of System versions (what's left of Copland); Jaz disks; OpenDoc and Cyberdog; SCSI Fast and SCSI Wide; America Online 3.0; Internet Relay Chat; the Rescued Items folder; new Power Mac, Performa, and PowerBook models; speech recognition; System 7.5.5 and System 7.6; and many other major developments. And we had to double-check every single Secret to make sure it still works.

You might wonder what we cut to make way for all of this good new stuff. The answer is: just about every remaining shred of System 6 information. If your Mac still runs this operating system that exited the scene in 1991, we're indeed sorry. (Anyway, the lost material isn't really gone; you'll find it neatly stuffed onto the CD-ROM that accompanies this book!)

Finally, we overhauled the software that comes with this book. We've added even more commercial programs: Claris Emailer, CanOpener, Square One, KeyQuencer, Movie Cleaner Lite, and QuickTalk are among the new ones. Second-edition favorites like the invaluable Color It, Tempo EZ, and Color Coordinator are still here — software you could purchase on your own for literally hundreds

of dollars. And we've included many times more hand-picked shareware and freeware programs; you'll never have to go scampering to America Online to find some useful utility we describe in the text. You'll even find a special folder brought to you by Apple's advanced-technology evangelists: speech, video conferencing, Internet phone, Cyberdog, and other software. And, finally, if you look carefully on the CD, you'll get to meet your cheerful authors in person, starring in our own pathetic little QuickTime movie.

See Chapter 34 for the complete list and descriptions of the CD goodies.

YOU ASKED FOR IT

We get copies of every single feedback postcard (from the back of this book). If you fill yours out and mail it in, we read it.

By far the most frequent suggestions we receive are:

- *"Give us an electronic, searchable edition!"* You got it. The book in your hands is also on the accompanying CD in an electronic, searchable format. Now you can take *Mac SECRETS* with you on your PowerBook, too.
- *"Keep the book updated!"* That's the purpose of our free online updates (see "Free Electronic Updates," below) — and our new, expanded Web page (*http://www.idgbooks.com/idgbooksonline/macsecrets*).
- *"Clean up the design!"* Here again, the readers have spoken, and we obeyed. IDG has completely redesigned the book's layout, making it, we think, much easier to read and scan. The column width is easier to take in in one eyeball pass, the fonts look much sharper, and — perhaps most important of all — we can fit much more information on a page. As a result, we've been able to include coverage of many more topics without increasing the book's thickness or cost.
- *"Give us a title we can remember!"* We feel your pain. The old title, *Macworld Mac & Power Mac SECRETS*, was designed to hint that the book was equally useful to owners of both regular Macs and the new Power Macs. Today, of course, every Mac made is a Power Mac — that is, built around the PowerPC processor. Therefore, it's safe for the book to return to its original first-edition title — the short, friendly, *Macworld Mac SECRETS*.
- *"The book is too big! Sell it as separate volumes."* The publisher really did consider this suggestion — for about 11 seconds. We were told that this kind of packaging would jack up the cost of the book and prevent bookstore browsers from checking the book out (because it would have to be wrapped in plastic). Bummer.

- *"Give me an upgrader's discount like software companies do — I've bought every edition!"* This, too, seemed like an excellent suggestion. But here, too, the publisher politely declines, saying that its costs to produce and ship the book aren't any lower just because you've bought previous editions. If this were software, and we could just zap you a new copy at no physical expense, it'd be a different story.

NO CD-ROM DRIVE?

As you've probably noticed, the programs included with this book, as with the previous edition, come on a CD-ROM instead of floppy disks. Naturally, this extra storage space means that we could include much more software than we could before.

We worried that some of our readers don't have CD-ROM drives. IDG Books assured us, however, that (1) according to the reader-feedback cards we've received, 80 percent of Mac SECRETS readers have CD-ROM drives; (2) to anyone who doesn't have a CD-ROM drive, IDG Books will send free floppy disks containing the best of the software; and (3) including floppies with this edition would have required a $5 book-price increase!

And speaking of the feedback card at the back of this book: As we've said, we read 'em all. Point out our mistakes, please, and send us the secrets you uncover, and tell us how we could improve the next edition. We're secure people; we're prepared to suffer the slings and arrows of reader feedback if it'll produce a better book the next time around.

FREE ELECTRONIC UPDATES

This may be the fourth edition, but you have to check the copyright page (that 10 9 8 7 . . . business) to see which printing you have. Every few months — each time the publisher prints up a new batch — we update the material in this book.

So we had a wacky thought: Instead of just sending the updates to our editor, why not post them on the Internet and America Online, where everyone can get at them? That's exactly what we've done. Each update document comes complete with page numbers, so you can make your copy match the latest printings! Here's how to find these free electronic updates:

- **Internet:** Visit this book's Web page at *http://www.idgbooks.com/idgbooksonline/macsecrets*. This Web site lets you download our updates — and much more: contest results, updated shareware programs, and more.

- **America Online:** After you sign on with your modem, use keyword MACWORLD. Click the PRODUCT SHOWCASE icon, then open the BOOKS folder.

GET YOUR NEXT SECRETS EDITION FREE, OR WIN $500

It's the second annual *Mac SECRETS* Mac secret contest!

This year's contest

Send us the coolest undocumented features, buried treasures, power-user shortcuts, authoritative corrections, ResEdit hacks, and secret About boxes. If you send us one that hasn't been published elsewhere, and we use it in the next edition of this book, we'll send you the Fifth Edition of *Macworld Mac SECRETS* at no charge when it's published in 1998. We'll award 50 free books this way (and, of course, we'll credit you in the book).

Furthermore, we'll once again award $500 to the absolute coolest, most amazing, undocumented Secret we receive.

Send your entries by e-mail to *Pogue@aol.com* or *Schorr@earthlink.net*, or, if you must, by U.S. mail to:

Mac SECRETS Contest
IDG Books Worldwide, Inc.
919 E. Hillsdale Blvd., Suite 400
Foster City, CA 94404

Last year's contest

No joke: Fully 60 percent of the entries in the Secrets contest for the edition in your hands were secrets that already appeared in the previous edition! Another 20 percent were duplicated, alas — we've awarded the free books to the first submission we received.

Of the rest, some were too trivial, too technical, or based on software that is too old or too uncommon to appeal to our wide audience. And 50, of course, were winners.

Truthfully, we didn't receive any secrets that were so amazing they merited the big $500 grand prize. Therefore, we've awarded $100 each to the readers who sent in the five best: Evan Klinger (QuickTime secret photos), Nohl Lyons (manually deleting the invisible Desktop files), David Henry Sholkoff (Netscape Navigator shortcuts), Ronald A. Leroux (several dozen control panel tricks), and Amitai Schlair (more than 150 suggestions, corrections, and improvements!). Spend it wisely, gentlemen!

WHERE TO GET APPLE SOFTWARE

As you read this book, you'll encounter frequent references to Apple updates, system patches, supplementary software, and so on. By far the simplest way to get this free software is to download it (see Chapter 28 to find out how to get connected to the Internet or an online service). Remember that every online service offers 10 or 15 free hours before you have to pay anything — that's certainly long enough to download some goodies.

- **On America Online:** Use keyword: AppleComputer.
- **On the Internet:** Download stuff from Apple's software sites at *ftp.support.apple.com* or *ftp.info.apple.com.*

Part I:

System Software Revealed

Chapter 1: Your First Software: The Finder

Chapter 2: Finder Command Secrets

Chapter 3: Desk Accessory World

Chapter 4: Conrol Panels and Extensions

Chapter 5: Enablers, Installers, and Apple Extras

Chapter 6: The System Software Museum

Chapter 1

Your First Software: The Finder

IN THIS CHAPTER:

- Icons: Moving, renaming, and making them invisible
- Window and list-view shortcuts, and undocumented features
- The Desktop File: What it is, how to see it, and how to slim it down
- The inside story on copying and deleting files
- Aliases: What they are and how to use them
- Details on drag-and-drop, and Macintosh Drag and Drop

FINDER: THE UNKNOWN PROGRAM

Do you remember the first program you ever ran on the Macintosh? We do. It was the Finder. The Finder is the program that displays your familiar startup world: the Trash can, icons, folders, and the Desktop.

Most people don't immediately think of the Finder as a *program*. After all, you don't double-click an icon to launch it, as you would with, say, ClarisWorks. And there's no Quit command in the Finder, as in other programs. The Finder is just always *there*, waiting as your home base, whenever you exit your other programs.

Nonetheless, the Finder *is* a program. Yes, it runs automatically when you turn on the Mac, but you *can* quit the Finder — and launch it again. It even

TRUE FACT

INTERFACE? WHAT INTERFACE?

Ever wonder what the three dots (the ellipsis...) mean when you see them in a menu item?



Here's what Apple's own interface bible, *Macintosh Human Interface Guidelines* (Addison-Wesley, 1992), has to say:

> "The ellipsis character (...) after a menu item means that the command needs more information from the user before the operation executes. The ellipsis character *doesn't* simply mean that a dialog box or window will appear. For example, in the Finder File menu, the Get Info command doesn't have an ellipsis character and shouldn't. When you select a Finder object and choose Get Info, a window appears displaying information about the object. The window appearing simply completes the command."

Oh, yeah? Then how come the About This Macintosh command in the menu has an ellipsis? All it does is bring up an info window, too!

Ah, well. Maybe they licensed that command from Microsoft.

Figure 1-1
The Finder on the Application menu (at the right side of the menu bar).



shows up in the Application menu, along with any other programs you're running (see Figure 1-1).

The Finder is pure utility software: You don't actually do *work* there (in the sense of earning a living). Its functions all relate to managing your stuff: organizing, renaming, discarding, copying, and opening your documents, disks, and programs.

A FEW WORDS ABOUT ICONS

Before the Finder can perform any of its tasks, you must indicate which files you want to move (or rename, or discard, or whatever) by selecting their icons. Selecting something by highlighting its icon is the cornerstone of the entire Macintosh way of life. It's the Macintosh *interface.*

Selecting icons

In the days before System 7, there was only one way to highlight an icon: by using the mouse. Today, you have a wealth of efficient keyboard shortcuts for selecting specific items. (When we say "System 7," by the way, we mean "7-point-anything." And when we say "System 7.5," we mean "System 7.5-point-anything-or-7.6-point-anything.")

Here's an example of a typical System 7.5 maneuver that demonstrates the power of ignoring your mouse. Suppose that yesterday you were working on a document called *Valentine's Party Invite*, but you don't remember which folder you put it in. You press ⌘-F (the shortcut for choosing Find from the File menu). The Find dialog box appears. You type ***valen*** and press the Return key.

In a moment, you're shown a list of every file on your hard drive whose name contains those letters. By pressing the up-arrow or down-arrow keys, you highlight the precise file you were looking for. Now that your file is selected, you press ⌘-O to open the file for editing. During this entire process, you never once had to move your hands from the keyboard to use the mouse.

Similarly, in a messy folder full of icons, you can highlight a specific file icon without even being able to spot it — just type the first few letters of the file's name. That's especially handy when you want, for example, to change your text-highlighting color. With the Control Panels folder open, just type **CO** to highlight the Color icon, and then press ⌘-O to open the panel.

Figure 1-2 shows some other keys you can press to select icons within a single window.

To select a group of icons, press Shift and click each one in succession. To exclude a highlighted icon from a group, Shift-click it again. Of course, you can also select groups of icons by drag-enclosing them (see Figure 1-3). You can even select more than one icon in a window without using the mouse (read about Easy Access in Chapter 3).

After you've drag-selected icons as shown in Figure 1-3, by the way, don't forget that you can select additional groups of icons (or *de*select some of the ones you already highlighted) within the same window by Shift-dragging or Shift-clicking them. And for more far-flung selections, use the Find command (see Chapter 2).

Figure 1-2
The arrow keys highlight adjacent icons. The Tab key finds the next icon in alphabetical order. You can press Shift-Tab to highlight the previous icon in the alphabet. If you type a letter, you'll jump to the icon whose name begins with that letter (or the next letter alphabetically).

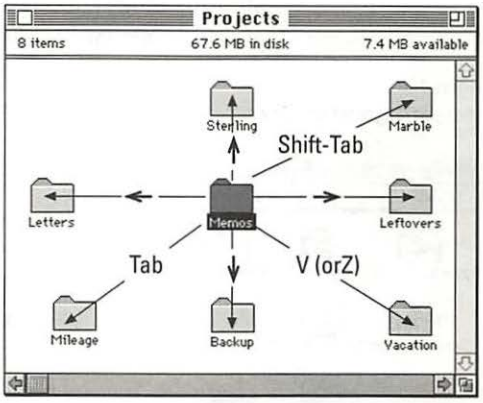
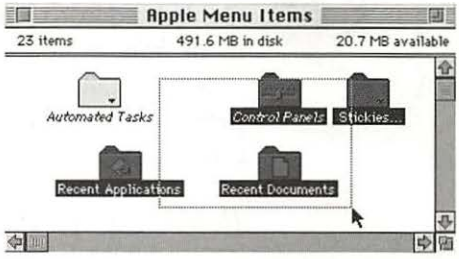


Figure 1-3
In System 7, as you drag in a diagonal line, any icon even touched by the dotted-line selection rectangle gets selected. (This procedure works in list views, too.)



After icons are selected, you can move all of them as a unit by dragging any *one* of them.

So who cares about avoiding the mouse? Efficiency fans, primarily. Every time you have to stop your work at the keyboard while one hand reaches for the mouse, you stop your flow of thinking (and typing). As you become more familiar with your Mac, you'll use the mouse less and get your work done more quickly.

But in System 7, you can do much more with icons than just select them, as our first batch of Macintosh Secrets clearly explains.

ICON SECRETS

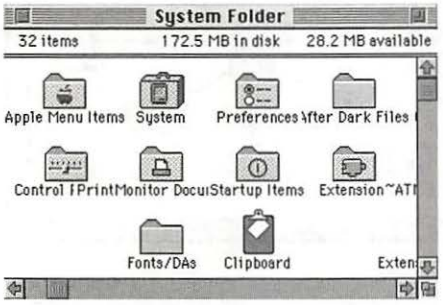
Make icons jump neatly into position. . .or not

Using the Views control panel (see Chapter 2), you can specify that you want all your Finder icons to fall into points on an invisible grid so that they're always in a neat line (see Figure 1-4).

Here's the tip: If you press the ⌘ key while you drag an icon, you can set the icon down anywhere, even if it's not in a grid-defined position. (Technically, the Mac only cares whether or not the ⌘ key is being pressed when you *release* the mouse. You don't really have to press the key all the time you're dragging.)

If the grid option *isn't* turned on in the Views control panel, the ⌘ key has the opposite effect. It makes the one icon you dragged jump into grid position. If, like most people, you don't have the Finder grid permanently turned on, keep the ⌘ key in mind when you want to put a couple of icons exactly side-by-side. When you set each icon down while the ⌘ key is pressed, they'll jump into perfect horizontal alignment.

Figure 1-4
The Finder aligns the icons in a grid.



Change windows but keep your icons highlighted



You probably think that when you select a bunch of icons, any click in another window deselects them all. Even clicking in a window's title bar deselects all highlighted icons. Does that mean that you can never bring another window to the front without losing your selection?

No, you can do it — if you know where to click. Click the *scroll bar* or the *info strip* (where it says Name, Size, and so on) of the other window. Your icons in the first window stay selected.

Replace an icon

Replacing an icon isn't really much of a secret anymore, but it's worth repeating in case you missed it. In System 7, you can create your own icons for any file, folder, or disk. Imagine etching your initials onto a folder, reducing the size of the icons for unimportant files, and making your hard drive icon look like Neil Diamond.

Here's how to do it. First, highlight the icon you want to replace. From the File menu, choose Get Info. The Get Info box appears for the icon you selected. Click the icon in the upper-left corner (see Figure 1-5).

Choose Copy from the Edit menu to copy this original icon to the Clipboard.

To customize the icon, launch a painting program — Color It, included on the *SECRETS* CD-ROM, is a great choice.

Choose Paste from the Edit menu so that the original icon appears where you can edit it (see Figure 1-6).

Now, using the painting tools, create a replacement icon. Doctor the original, or just use the original as a size guideline and create something completely new. Try not to paint an icon larger than the size of a real icon, which is 32 pixels (screen dots) square. (If you create an image that's too large, it'll be squished unartistically into a 32-by-32 space when it's pasted as an icon.)

When you're finished, copy the new icon. Go back to the original icon's Get Info box, click the icon, and paste the replacement. (If it's too big, the Mac shrinks it to fit the square box, sometimes with lousy results.) That's it! You replaced the original icon.

If you're using color and you discover that the color leaks out of your new icon, go back into the painting program. Enclose any *light-colored* part of the icon with a dark outline. (Or just enclose the entire icon in a solid- outline square.) Repaste this modified icon into the Get Info box.

If you're not artistically inclined, instead of doing your own artwork, you could simply copy one of the professionally drawn icons we've included on the *SECRETS* CD-ROM. Copy the icon out of *its* Get Info box, then paste into the Get Info box of your target file.

P.S. — The Mac won't let you change certain icons using the Get Info method: any open document icon; the special ones used for the System, Control Panels, Apple Menu Items, Extensions, and Startup Items folders; and the Trash. You, however, as the savvy owner of this book, can change these icons, using ResEdit. Check Chapter 21 for details.

P.P.S. — Some programs, such as ClarisWorks, restore a document's original icon every time you save it. Rats.

Figure 1-5
The first steps to replacing an icon: First, select the icon (left); then choose Get Info and click the icon in the dialog box that appears; then copy it.

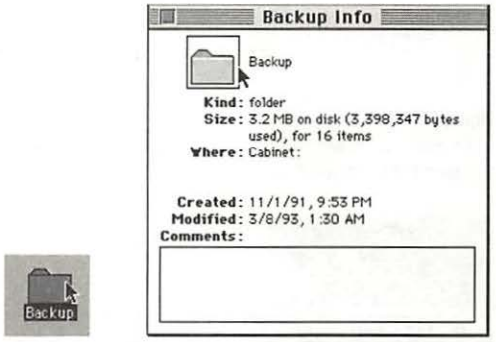
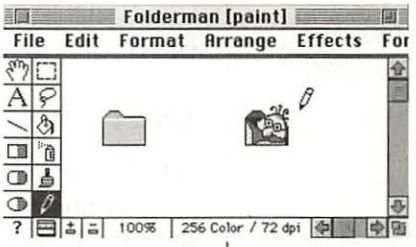


Figure 1-6
Paste the original icon into a painting program (left side of the window). Doctor it up (right). Copy it again and paste it back into the Get Info window of your file, disk, or folder.





Another icon-replacement Secret

If you're going to do a lot of icon-replacing — and we hope you do — try this little-known Secret. Open the Get Info box for the file whose icon you want to

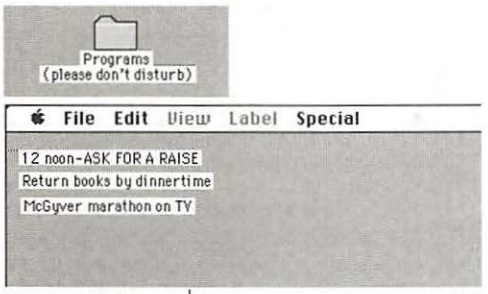
change. Instead of actually clicking the existing icon, you can just press Tab. If you follow this idea to its logical conclusion, you now see how it's possible to copy an icon onto a different file without ever touching the mouse: select an icon (by typing letters), Get Info on it (⌘-I), select its icon (by tabbing), copy the icon (⌘-C), close the Get Info window (⌘-W), select another icon (by typing letters), Get Info, tab, and paste (⌘-V) the icon into its new location.

Electronic Post-it notes

Use the method described in the previous tip to replace a folder's icon with a *plain white square* you copied from a graphics program. A floating piece of text appears (the file's name) with no icon attached.

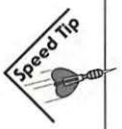
You can use this idea for all kinds of interesting effects. For example, you can use it to give a Desktop folder a two-name title (see Figure 1-7, top). Or, handier still, you can duplicate this doctored folder endlessly. Just make sure that you give each copy a new folder name, such as *Meet Jennifer at noon today.* Then leave these notes strewn about your Desktop as little reminders (see Figure 1-7, bottom) — a quicker, cheaper version of System 7.5's Stickies program.

Figure 1-7
Using empty folders with invisible icons, you can make pieces of text seem to float on your Desktop.



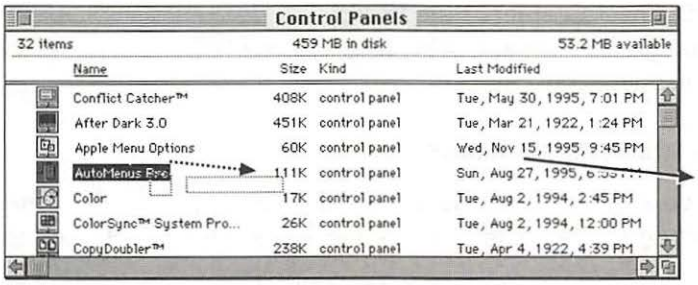
Select icons in a list view

Selecting a group of icons in a list view is easy. Drag the cursor in any direction, starting anywhere. Each item in the list turns black as you move the cursor, and you have 'em.



Here's the oft-ignored secret: To select an icon in a list view, you don't have to click on its name or icon. You can click on *any* component of the listed file info — the date, version number, size, whatever. Likewise, you can drag-select over any portion of the listed information to grab a *group* of icons (see Figure 1-8).

Figure 1-8
In System 7 and later, you can drag a icon by any portion of its "row" in a list view.



Make any file completely invisible



You can make any file — folder, document, or application — *completely* disappear from your Desktop. (This procedure isn't the same as making just its *icon* disappear, which you can do using the Secret described earlier.)

There's a good reason most people don't hide their icons regularly: It takes special tools. Fortunately, we've provided you with the ideal tool: Drop•Info, included with this book. Drag the file or folder you want to make invisible onto the Drop•Info icon. Click Invisible, and then Change. The deed is done.

To reverse the procedure, launch Drop•Info. Choose Get Info from the File menu. All files, invisible or not, show up in the dialog box. Double-click the one you want to make appear, turn off the Invisible check box, and click Change.

The nice thing about an invisible document is that you can still open it from within a program. You can open an invisible Word file by using Word's Open command, for example; the invisible document shows up in the Open File list box just fine.

Quick-and-easy invisible folders in 16-color mode



If your Mac can be set to 16-color mode (use the Monitors/Monitors & Sound control panel or Color Coordinator, included with this book), here's a strange and interesting way to make folders disappear. (Unfortunately, the main video jack on many four-digit Mac models *can't* be set lower than 256 colors, as described in Chapter 13.)

Use the Labels control panel to make one of the label colors *almost* white. (See Chapter 4 for instructions on using Labels.) That is, make Hue = 1, Saturation = 0, and Brightness = 65535.

To make their names disappear, too, replace the names with spaces or Option-spaces. What's especially eerie about this trick is that, in list views, the *triangle* even disappears (see Figure 1-9). (You *can* do this trick in 256-color mode, but the icons will only be invisible in list views. In icon views, they reappear.)

This method of making folders invisible leaves them operational for you, the master who knows of their existence. Contrast this with the Drop•Info method (described in the previous Secret), which makes a file or folder invisible even to the Finder, so that it can't be double-clicked or selected. They're two different methods of gaining a little security when other people may use your Mac.

Figure 1-9
What the heck's going on here? In 16-color mode, not only the icons but even the triangles disappear at your command. If you replace a folder's name with spaces, even the folder's name disappears.



The icon that won't open



Ask some unsuspecting coworker to double-click an icon to open it. No matter how hard he or she tries, the icon won't open! It just blinks dumbly.

The secret: Unbeknownst to the victim, you're pressing the Shift key during all of this. The Mac thinks that the double-click is a select-and-deselect (two separate Shift-clicks), so it doesn't bother opening the file. This technique may be a good way to bring some humility to an arrogant Mac guru.

To launch or not to launch a program or document icon

You can use one of several ways to open a program or document icon that's staring you in the face in the Finder: Double-click it, select it, and press ⌘-O, and so on.

There's only one way, however, to *stop* a document or program from opening after you launch it: Press ⌘-period. *Fast.* And *repeatedly.* If you press this keystroke *just* after launching a document or program, you go right back to the Finder as though you never opened a thing.

Renaming icons

In System 6 — maybe you're too young to remember — renaming file icons was too easy. When a file, folder, or disk was highlighted, anything you typed replaced the icon's name. All it took was a finger, a stack of papers, or a cable pressing continuously on a key while an icon was highlighted, and you wound up with an icon named *QQQQQQQ.*

Apple engineers came up, therefore, with a new method of renaming icons under System 7, in which it's almost impossible to rename a file accidentally.

- ***If the icon is already selected,*** press Enter or Return to make the "renaming rectangle" appear around the existing file name. Type the new name. (Figure 1-10 shows an icon before and after the renaming rectangle appears.)
- ***If the icon isn't selected,*** click the file name itself. After a moment — the moment of inactivity called the *rename delay* — the rectangle appears, signaling you that it's okay to type the new name.



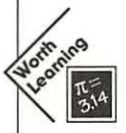
Figure 1-10
Under System 7, you can only rename a file when its "renaming rectangle" is visible, as shown on the right. You don't have to delete the old name first; just start typing.

ICON RENAMING SECRETS

Surviving the rename delay

First, here's *why* the rename delay exists. Everyone knows that you double-click an icon to launch it. But you may not realize that you can even double-click the file's *name* to open the icon. And *that's* why there's a pause between your first click and the moment the renaming rectangle appears. The Mac is waiting to make sure that you're not going to click *again*. In other words, it makes sure that you really meant to click just once (to edit the file's name) and not twice (to launch the file).

We suggest that you don't bother waiting out the rename delay. If you've clicked an icon's name, you can make the renaming rectangle appear instantly just by moving the mouse — even a little twitch — or by pressing Return. Then you can begin typing the new name.



The Mac's wacky alphabet scheme

The Mac alphabetizes things a little bit oddly, in that spaces and symbols come before letter A. And 10, believe it or not, comes before 3 (see Figure 1-11).

To make a file appear first in an alphabetical list (in a list-view window, for example), type a space at the front of the name. To make the number 3 come before the number 10, therefore, put a space before the 3.

Incidentally, one symbol the Mac absolutely does not let you use when you name an icon is the colon (:). When you're in the Finder, if you type a colon as part of a file name, the Mac substitutes a hyphen (-) without even so much as a by-your-leave.

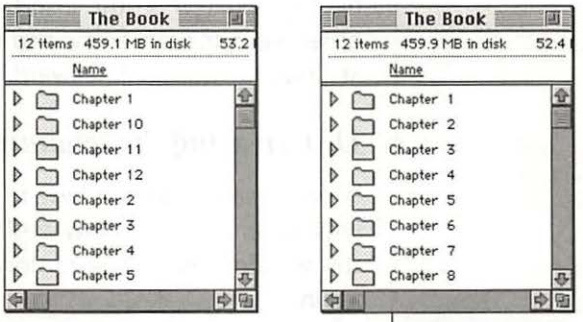
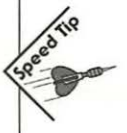


Figure 1-11
The Mac, apparently, can't count. As you can see at left, it believes that the number 10 comes before 2 (left). Use this Secret to solve the problem (right).

Renaming is just like word processing

The Edit menu's Cut, Copy, and Paste commands (and their keyboard equivalents) work while you're editing a file name. That's useful when you're naming a bunch of files, for example, in a row "Koyaanisqatsi 1," "Koyaanisqatsi 2," "Koyaanisqatsi 3," and so on. Just copy *Koyaanisqatsi* to the Clipboard. Then, each time a file's name is highlighted for renaming, press ⌘-V to paste the word, and type the rest of the file name (the digit, in this case).



Other typical Mac word-processing techniques work, too. You double-click a word to select it (instead of dragging through it), and highlighted text gets instantly replaced by anything you type (so that you don't have to delete the old file name before typing a new one).

If you begin typing a new name and suddenly realize that you're renaming the wrong icon, just press ⌘-Z, the Finder's Undo command. The icon's original name will reappear. Alternate method: if, while typing in the new name for a file, you change your mind, press Delete until the entire name is gone. Then press Return — the original name will reappear.

The power-user's arrow keys

Suppose you've just clicked an icon name. The renaming rectangle is ready; the file name is highlighted.

Now, suppose you just wanted to add a word to the *end* of that file's name. Instead of using your mouse and a microscope, painstakingly trying to plant the cursor at the end of the rectangle, just press the right-arrow or down-arrow key. You'll deposit the insertion-point cursor at the very end of the file name. (The *left*-arrow or *up*-arrow key pops the cursor at the *beginning* of the file name).

The down-arrow and up-arrow keys are particularly useful because they make your insertion point leap to the end (or beginning) of the name, even if it's in the *middle* of the existing file name — the name doesn't have to be highlighted. (When the insertion point's in the middle of the name, on the other hand, the left-arrow and right-arrow keys simply move it one character at a time, forward or backward.)

Deactivating the renaming rectangle

We've already told you how to activate a selected icon's renaming rectangle: Press Enter or Return. Now we'll tell you how to *deactivate* it, so that your icon is still selected, but you're no longer in renaming mode: Press Return or Enter again.

And why would you want to do this? To select *another* icon without using the mouse. (If you tried to select another icon from the keyboard with the renaming rectangle active, you'd just end up renaming the currently selected icon.)

We should point out that there *is* one way to select another icon without first deactivating the renaming rectangle: Press Tab. This key always moves you to the next icon in alphabetical order, even if the current icon's name is selected for renaming.

A really amazing re-alphabetizing Secret



Over and over again, in this book and others, you'll be told to put spaces in front of your icons' names if you want them to rise to the top of an alphabetical list. For example, a file called Zebra will come *before* one called Aardvark, as long as you put a space in front of the Z. You can put that trick to particularly good use in your Apple Menu Items folder, so that you can put your menu names in any order.

Trouble is, you can *see* those spaces. Your icons' names look stranger and stranger the more spaces you put in front of the actual names. Here's a much better way.

Open the Note Pad. Press Return, thus creating a blank line. Select the blank line and copy it. Now click the name of the icon — the one you'd like to appear first alphabetically — in readiness for renaming it. Press the left-arrow key to move the cursor to the beginning of the file's name.

Now paste that invisible Return character you copied. The existing name seems to disappear; just press Enter, and it returns.

Incredibly, your renamed file now appears first in any alphabetical file list, but it doesn't *look* any different!

Furthermore, a file with *two* blank Returns at the beginning of its name comes before one with only *one* Return; a file with three appears even before that . . . and so on. April Fool's Day stunt: Use the blank-Return technique to make all the files in your System Folder appear in *reverse* alphabetical order. Amaze your friends!

Techie Note: This trick befuddles programs that refer to linked files. For example, a Quark or PageMaker document won't print with graphics files whose names you've doctored this way.

The longest file name

Everyone knows that the longest Mac file name is 31 letters. But what's the longest file name measured *horizontally?* It's 31 of the infinity symbol, which you produce by pressing Option-5 on the keyboard. It looks like this: ∞∞∞. That's a *very* long file name. Keep that in mind the next time you're trying to create special visual effects on your Desktop . . . or making bar bets.

CASE HISTORY

THE SAGA OF THE DEADLIEST FILE NAME

In previous editions of this book, we pointed out with perverse pleasure the five-letter file name that would *trash your hard drive.* And that name was: *.Sony*.

We pointed out that the Mac's operating system believes files beginning with periods to be *drivers,* those invisible programs that run your disk drives, serial ports, and other jacks. If a file name begins with a period, the Mac can potentially get confused and treat that file as a device driver instead of a plain old data file. As it turns out, *.Sony* is the name of the driver that controls your *floppy drive!* If you gave a file that name, we said, the Mac may try to address it as though it's a floppy drive — and hard drive corruption would result.

Well, chaos poured down on us. The nasty e-mails began. "Your irresponsible journalism," went one, "has cost our school system thousands of dollars in consultant fees. Because you published the *.Sony* secret, our junior-high students have named files on every hard drive that way, and our entire System 7 network crashes constantly. Next time, think before you publish."

Another: "I want you to know that your book has caused tragedy and destruction in my neighborhood. Somebody apparently uploaded a file to my BBS named *.Sony*. And before I had a chance to stop it, 352 people downloaded it. Because of your ill-advised publishing of that fact, hundreds of people in my area are now experiencing system problems. I hope you're satisfied."

But just as we were starting to feel worried, we got one final message that made it all seem worthwhile. Manny Vera of Sony Corporation had spotted our secret. And according to Sony engineers, we had been 100 percent accurate in our report — except for one little detail. Apple and Sony had *patched* that particular booby-trap in System 7!

In other words, the system problems experienced by those unhappy e-mail writers had nothing to do with the *.Sony* secret. As System 7 users, they were probably having garden-variety extension conflicts.

We learned from that episode why this country has more lawyers per capita than any other in the world.

THE TRUTH ABOUT FINDER WINDOWS

Ah, windows. No aspect of any computer has been the subject of so much attention — and so much litigation. Xerox, the developer of the concept of movable, overlapping panes to display computer information, sued Apple for ripping off the idea. And then Microsoft created Windows, and Apple sued Microsoft.

But heck, that'd be like Kleenex suing Puffs. You just can't keep a great idea down, and now windows have cropped up on every computer from NeXT to the Apple II.

Window-manipulation skill is particularly necessary in the Finder, when the mere act of opening your Extensions folder requires you to open *three* windows (hard drive, System Folder, Extensions). If you're not careful, your screen will clutter up with so many windows you can't get any work done.

Window management is becoming so important, in fact, that Apple included WindowShade in System 7.5, in which a double-click on a window's title bar "collapses" the window (see Chapter 4). But even WindowShade is only a stepping stone to the solution proposed for the oft-postponed Copland system software: a new little square in each window's title bar. When you click it, the window not only collapses — it jumps down to the bottom edge of your screen, forming a little out-of-the-way tab (thus forming a row of tabs as you collapse more windows). Click that tab to restore the window.

WINDOW SECRETS

Drag a window without bringing it forward

When two Finder windows overlap, you can bring the rear window forward (make it active) by clicking any visible part of it. But you knew that.

If you want to move a rear window *without* bringing it to the front, press the ⌘ key as you drag it. The window will stay to the rear.

The definitive window-manipulation keyboard guide

To close a window, press ⌘-W.

To close *all* open windows, press Option-⌘-W (or Option-click a window's close box). (Even the wording of the Close Window command in the File menu changes when you press Option. Check it out.)

To enlarge a window just enough to see all the icons in it (System 7 only), click the Zoom box (see Figure 1-12).

To enlarge a window to fill your monitor: *Option*-click the Zoom box. (The Zoom box *always* worked this way in System 6, even without the Option key.)

In the first edition of this book, we wondered why anyone would actually want to do this. Why on Earth would you choose to fill your monitor with empty white space?

Well, reader Randy Slafsky came up with a reason: If the boss happens to walk by when you've got something up on your screen that you shouldn't — like a game or the résumé you're submitting to the rival company — you can quickly cover the

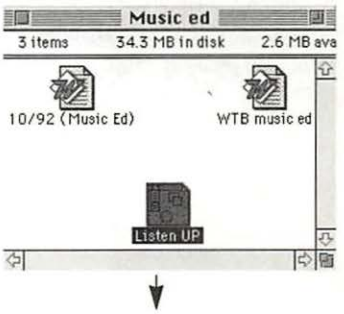


Figure 1-12
When you click the Zoom box, the window gets just big enough to show all the icons in it.

CASE HISTORY

TRASH, WINDOWS, AND THE FUTURE OF COPLAND

One of your cheerful authors recently responded to the panicked phone call of a new Mac user. This client was so angry, he was about to throw his computer through the wall. The problem, he said, was that he couldn't throw anything away. He would move one file after another to the Trash, but they simply wouldn't go away.

A house call revealed the not-so-surprising-after-all solution: The client had been attempting to throw files and folders away by dragging their *windows* onto the Trash! He would grab a window by its title bar, position it over the Trash icon, and wind up with nothing more than 30 windows smashed into the lower-right corner of his monitor.

Actually, why *shouldn't* you be able to throw things away that way? That same question has occurred to Apple. That's why rumor has it that in System 8—known as "Copland"—if it's ever actually finished—you'll be able to move, trash, copy, or otherwise manipulate files by grabbing a new special handle in their *windows'* title bar.

entire screen with one mouse click. That's right: The Option key could, conceivably, save your job.

By the way, once the boss walks away, you reshrink the window by clicking the Zoom box again.

The golden Option-key window trick: folders

There are several ways to open a folder. You can double-click, of course, or you can use any of the keyboard shortcuts outlined here. No matter how you open a folder, however, remember that the Option key is your anti-window-clutter power tool — any time you press Option as you open a window, the *previous* window closes itself.

This even works if you're just switching to a window that's already open — by double-clicking an open-folder icon. In fact, in System 7.5.3 or later, it even works if you're double-clicking something from the list of stuff found with a Find File search; Option-click, and the Find File program quits itself.

The golden Option-key window trick: programs

Our automatic window-closing Option-key trick also works when you're opening a *program*. Open its icon with the Option key down, and the window it's in closes automatically.

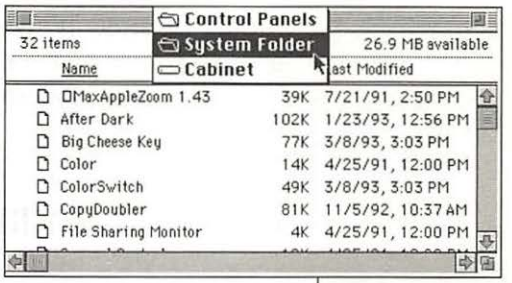
You can open a highlighted icon in any one of the following four ways:

- Press ⌘-O
- Press ⌘-down arrow
- Choose Open from the File menu
- Double-click the icon

The Option-key trick works in conjunction with any of those methods.

Backtrack to an outer window

Figure 1-13
The hidden folder-backtracking menu.



Suppose you double-click the System Folder to open its window. Then you double-click the Control Panels folder to open *it*. You can jump back to the System Folder window (or any enclosing window) by pressing the ⌘ key as you click the current window's title. If you keep the mouse button pressed, a pop-up menu appears, from which you can choose the name of any folder you had to open in reaching your current location (see Figure 1-13).

Useful combo trick: Use this keyboard trick *with* the golden Option-key trick described earlier — in other words, press *both* Option and ⌘ as you choose a window name from the title bar pop-up menu. The result: You backtrack to an outer window *and* close the window you were in.

What disk is this folder on?

You find yourself viewing the contents of a window called System Folder. But you have two hard disks, each with a System Folder. Which System Folder are you perusing?

The quick way to find out is to ⌘-click the title of the window (and hold the button down), exactly as described in the previous Secret. In this case, of course, you're not trying to backtrack through windows; you just want to know which disk contains the folder you're looking at. The disk name always appears at the bottom of the pop-up menu.

Of course, if the mystery folder is on the *Desktop*, you're completely out of luck. No secret pop-up menu will pop up if you ⌘-click the title bar, because whatever's on the Desktop isn't considered to be inside *any* other folder. In this case, you have only one hope of determining what disk this folder belongs to: Get Info on it.



Close — and backtrack — windows from the keyboard

If you burrow into several consecutive nested folders, you can, of course, return to an outer folder using the hidden title-bar pop-up menu as described in the previous Secret. But you can do the same thing from the keyboard by pressing ⌘-up-arrow to return, one nested folder at a time, to the outer window.

Or, once again, combine this trick with the golden Option-key trick described previously; that is, press Option-⌘-up arrow to close the window you're in *and* jump to the previous window.

Jump to the Desktop level from the keyboard

If a folder or disk window is open, you can select the Desktop level by pressing ⌘-Shift-Up arrow. (Why would you want to select the Desktop level? To select or open an icon on the Desktop, such as a disk icon you want to eject, without having to use the mouse.)

LIST VIEW SECRETS

Viewing your icons as an outline

You view the contents of a folder in any of several organizational arrangements, as shown in Figure 1-14. If you want to switch from one view to another, use the commands in the View menu.

Figure 1-14
In addition to the normal Icon view, using the View menu you can show a window's contents by small icon (left) or sorted in a list view (right).

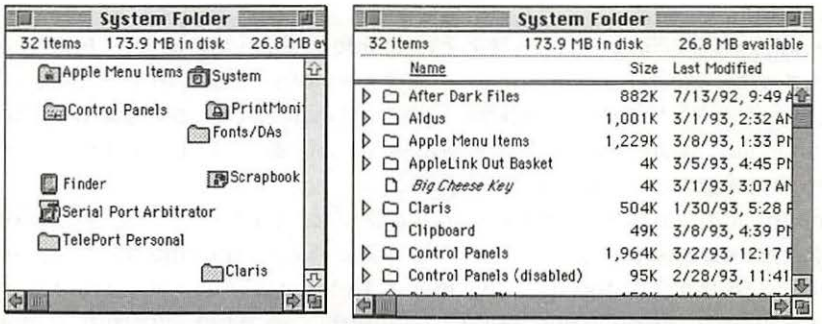
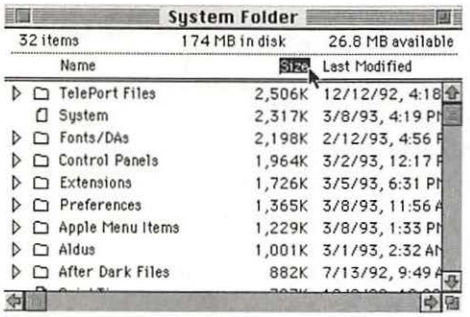


Figure 1-15
A quicker way to re-sort files in a window. Click Size, for example, to see largest files listed first.



The bottom commands in the View menu — everything except "by Icon" and "by Small Icon" — display your icons as a sorted list.

You change how the list is sorted — by file name, file size, and so on — by choosing the appropriate View menu command. But it's quicker to click the appropriate *column heading* in the window (see Figure 1-15).

There's still no way, in Finder windows, to sort the list the opposite way (to list *smallest* files first, for example). Copland, anyone?

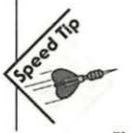
How small can you go?

When you examine your files in a list view, you're probably used to seeing their names, kinds, modification dates, and so on. Of course, the more columns of information you see, the wider your windows are, and the more trouble it is to see two full windows side by side.

That's why we make it a point to hide columns of info we never use. We especially like hiding the Labels column. Indeed, most people never use labels at all — and yet that column appears, by default, on every new Mac. To ditch this unnecessary column (and any others you don't want), visit your Views control panel. There you'll discover check boxes that control what columns of information appear in your list views. Click to deselect a check box — and turn off the corresponding list-view information.

Of course, once you hide a column, you can no longer sort your files by that criterion; "by Label" disappears from the View menu, for example, when you turn off Labels in the Views control panel.

Manipulating nested list-view folders with the keyboard



You probably already know what happens when you click the little triangle next to a folder name: It turns sideways, and the contents of its folder are listed in an indented format, like an outline (see Figure 1-16).

It's more efficient to manipulate list-view folders by typing on the keyboard, however. Here's how:

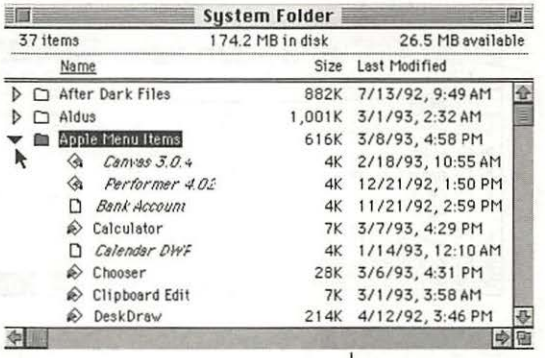


Figure 1-16
Click the triangle to see the contents of a folder without having to open the folder. You can also select the folder and press ⌘-right arrow.

- Type a few letters of a file name to select it.
- Press the up-arrow or down-arrow keys to select icons higher and lower in the list.
- Press Tab to highlight the next file alphabetically. (Shift-Tab takes you to the previous file alphabetically.)
- After a folder is highlighted, press ⌘-right arrow to expand it (to see what's inside). Press ⌘-left arrow to collapse it again.
- Press ⌘-Option-right arrow to expand a selected folder and all folders nested inside it. Press ⌘-Option-left arrow to collapse a selected folder and all folders within it.
- Although this isn't exactly a mouse-free technique, you can also collapse or expand a folder and its subfolders by Option-clicking the triangle.

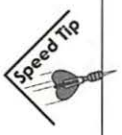
- Press the Page-Up or Page-Down keys (if you have an extended keyboard) to scroll the list of files up or down by a windowful. Press Home to jump to the top, or End to jump to the bottom.
- If you're looking for a file at the end of the alphabet, it's annoying that typing its first letter makes the file appear at the bottom of the window, so that you can't see what comes after it alphabetically. The solution is to press the End key and then type the first letter.

Use Shift for faster folder-opening



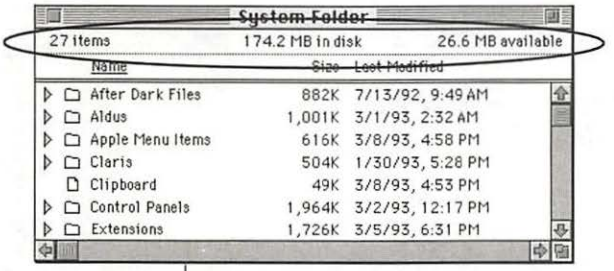
If you get used to the ⌘-Option-right-arrow shortcut in the previous Secret — which expands all folders and nested folders — then you may need to know this antidote.

There's no problem expanding all the folders in a list view. The problem occurs later, after you've closed the main window, and subsequently try to reopen it. The Finder must mentally reconstruct the entire visual "outline" of nested folders before opening the window; and you are forced to sit there and wait until the display is ready.



Here's the trick: Press Shift *just after* double-clicking the folder. Magically enough, the window will open — fast — with all its folders collapsed again. Alternatively, you can press Shift while choosing Open from the File menu (or while pressing ⌘-O).

Figure 1-17
Whether or not this strip of disk information appears is up to you.



Showing free disk space in list views

When you look at your files in a list view, do you see an extra strip of disk-space information (see Figure 1-17)?

If it doesn't appear, and you'd like it to, open your Control Panels folder and double-click Views. Turn on the "Show disk info in header" check box. (Or, if you *do* see this strip but want to hide it, turn off that check box.)

The default window view scheme

What determines the list-view criteria for a new folder that's never been opened? How will its window appear? By icon? By name?

Answer: It will take on the View-menu setting of the window in which it was created. If you create a new folder in your main hard drive window, which is viewed by small icon, the new folder's window will also appear by small icon. It follows, then, that any folder you create on the Desktop — where files are always displayed by full-sized icon — will also open in icon view.

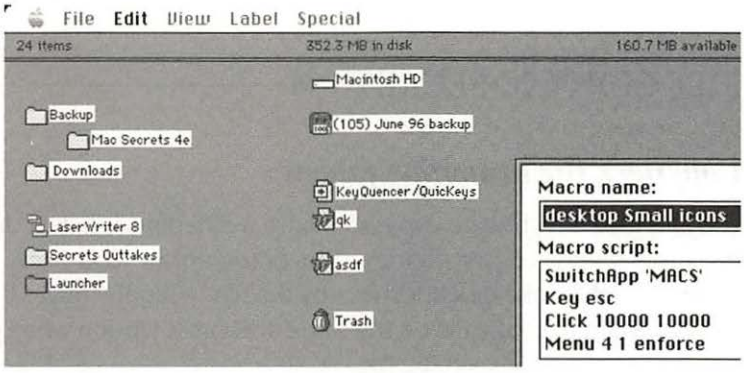


Small icons on the Desktop — possible!



The previous Secret, and common sense, tell us that it isn't possible to view the icons on your Desktop in anything other than full-size icon view. Actually, that's not quite true. Using KeyQuencer, included with this book, you can indeed change your Desktop to another view — an arrangement certainly not condoned by Apple, but fascinating nonetheless (see Figure 1-18). See Chapter 34 for instructions on using KeyQuencer.

Figure 1-18
Small icons on the Desktop? Impossible! Unless, of course, you create the KeyQuencer macro shown here.



COPYING FILES

Has it ever struck you as odd that there's no command for copying a file? After all, making a copy of a file is one of the Finder's primary duties, and, yet, the method for copying a file to another disk by dragging it is something you just have to *know*. By scanning the menus, you'd never discover the secret.

Apple has improved copying speeds with each successive version of System 7 — especially in System 7.5. But in the original System 7.0 release, copying a file took about four times longer than it did in System 6.

One reason for this delay is related to System 7's multitasking nature. *Multitasking* means that several computer operations can be going on simultaneously, right? Yet, before System 7, whenever you were copying a big file

(or a bunch of files), you were condemned to staring at a bar graph on the screen until the copying was finished. In System 7, on the other hand, you can start a bunch of files copying and then jump back into your word processor and continue working *while* the Finder continues copying your files from one disk to another.

This remarkable feat is one reason System 7 requires so much more memory than System 6. Because the Finder is now a first-class citizen among other programs, it needs enough RAM to go about its business even in the background.

Nonetheless, almost no one we know actually uses this background-copying feature. To make it work, you must launch the word processor (or other program) you want to use *before* you begin copying. (You can't launch a program while files are being copied.) After copying has begun, use the Application menu in the upper-right of your menu bar, or click in the application's window, to switch to your other program.

FILE COPYING SECRETS

Copying a file to another folder

You already know how to copy a file onto a different disk: Just drag its icon to the other disk's icon or window. But dragging an icon from one place to another on the *same* disk doesn't copy the file — it only moves the file.

If you want to *copy* a file on the same disk, press Option while you drag.

Changing the "copying files" message

While the Finder is copying files, you see a dialog box that says "Items remaining to copy: 2." If you're feeling particularly grumpy one day, you can change this message to say something different ("All I ever do is copy," for example). You can do this with ResEdit, as described in Chapter 21.

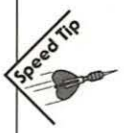
Moving the "copying files" message

The little window that says "Files remaining to copy" has a title bar, just like any other window. That means that you can *move* the window anywhere on screen, even while copying is in progress — just drag the title bar.

Multiple copyings at once

Don't underestimate the advantages of a commercial copying utility such as Speed Doubler (Connectix) or CopyDoubler (Symantec). Yes, they make copying files take less time. But their less-publicized function is equally useful: These programs let you copy *multiple* sets of files simultaneously. For example, you drag a file to your backup disk. While that copying is going on, you can drag *another* file and set *that* copying job in motion... and so on. You never have to wait for one file to be copied before copying the next.

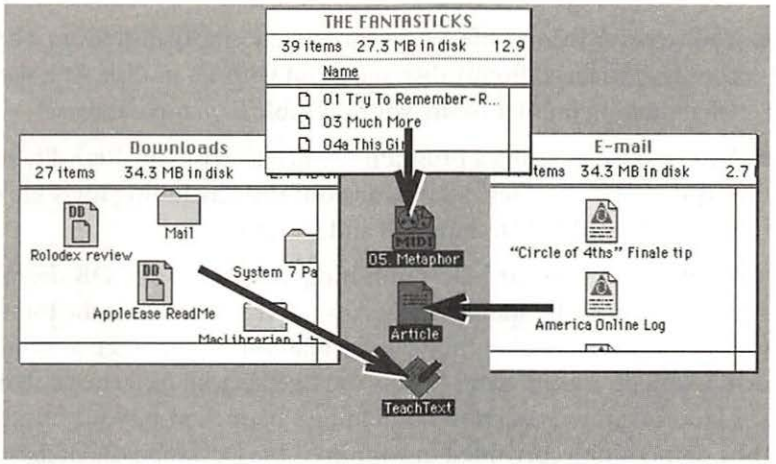
Opening, trashing, or copying icons from different windows simultaneously



If you think about it, you can't really select icons from different windows at once. As soon as you click an icon in one window, you deselect any highlighted icons in other windows.

There's a simple solution: Drag the icons to the Desktop first, even if the icons come from different disks (see Figure 1-19). From there, you can select all at once. After they are selected, you can drag them to the Trash, open them all (by pressing ⌘-O), or make a backup by dragging them all to a different disk.

Figure 1-19
You can manipulate many icons at once, even if they come from different disks; just deposit them on the Desktop first.



When you're finished, you don't have to drag the icons painstakingly back to their original folder locations. Just select all the icons, then choose Put Away (⌘-Y) from the File menu.

YOUR FIRST DATABASE: THE DESKTOP FILE

A *database*, of course, is an organized collection of repetitive information: a phone book, for example, or a set of flash cards. Commercial database programs include FileMaker or 4th Dimension — but your Mac comes with a free database called the Desktop.

Normally, the Desktop file is invisible. And normally, you, the user, aren't meant to interact with it; the Desktop database is supposed to be used exclusively by the computer itself. You'll find an invisible Desktop file on every single disk: floppy or hard, removable or fixed.

What's in the Desktop file

The Desktop file stores information about the icons in your Finder universe: what their icon pictures look like; which file icons were created by which programs; what comments you typed into their Get Info boxes (the window that appears when you select an icon and choose Get Info from the File menu); what shape and position your windows are in; and how icons are displayed in each window (by name, by icon, and so on). Each time you insert a disk, the computer takes a moment to study the icons on it and record their vital statistics in your invisible Desktop database.

The presence of the Desktop database accounts for a number of mystifying events that may occur in your computing career:

- You've never in your life seen a completely empty disk. Even a brand-new, freshly-initialized floppy disk starts out with 1K in disk. At last you know what's taking up that room: your invisible Desktop database.
- You view a disk using a program — such as DiskTop, ResEdit, or even Word — that can "see" all files on your disk, including invisible files. And you see files called Desktop DB and Desktop DF.

Contrary to popular Mac-publishing industry myth, DB *doesn't* stand for Database. It actually stands for Desktop BNDL. (BNDL is the four-letter code for *bundle*, which is what they call the relationship between a certain program or document and its icon. If you start getting blank generic icons on your Desktop one day, you know something's happened to your bundles — and, thus, something's corrupted in your invisible Desktop DB database.)

DF stands for Desktop Files. *This* is the database that records what files you have and where they are (in whatever folders).

Hereafter, though, we'll refer to this pair of files collectively as the Desktop file.

- When you put a floppy disk into your disk drive, its icon never pops up onto the screen immediately. It always takes a few seconds because the Finder is consulting the new disk's Desktop file to find out what the disk's icons should look like.
- Every Mac book, manual, and magazine urges you never to turn off the Mac simply by flipping off the power switch. Instead, you're exhorted to use the Shut Down command in the Special or menu, which always makes you wait several seconds before the screen goes dark. Now you know the reason: The Mac must take a moment to update its database, reflecting any changes you made to the status of your files.

Curing a troubled Desktop file

Each time you insert a floppy disk or introduce new files onto your hard drive, your Desktop file stores the pictures of any icons it's never seen before. File icons aren't insignificant in terms of disk space. A typical Mac program has not one, but *nine* different icons. They come in three sizes — corresponding to Icon, Small Icon, and list views in the Finder — and in three degrees of colorfulness, depending on your monitor setting.

As all these icons are memorized (along with the Get Info comments you add to them and other information), the Desktop file grows. Over the months, it takes up more and more space on your hard drive, and the potential for corruption (getting its information mixed up) increases. After a while, several unpleasant symptoms may interfere with your work:

- The icons for certain files may appear as generic, featureless pictures (see Figure 1-20). In this case, your Desktop database has lost track of which icon pictures belong with which icons.
- Windows take longer to open, files take longer to launch, and your system definitely seems slower than it used to be. At this point, your Desktop file has to wade through so much superfluous information that you're actually having to wait for it.
- When you start up the computer, the Finder seems to take a long time to appear. Once again, the Desktop file is having to struggle to produce the information needed to display your windows and icons correctly.

ANSWER MAN

Desktop Manager? Desktop File? Desktop DB? Huh?

Q: ***I've read Mac magazines for years, and I've never understood all this. What's the Desktop Manager? What's the Desktop file? What's going on?***

A: In part, your confusion stems from the fact that System 6 used one mechanism for tracking files and icons, and System 7 uses another. In System 6, it was a single file called the Desktop File. In System 7, as we've said, there are *two* files, Desktop DB and Desktop DF. They're managed by a program called the ***Desktop Manager.***

Desktop Manager is a much better file-tracking system than the old Desktop File. It handles many more files, for one thing. It's more stable, for another. And, most important of all, Desktop Manager allows the files it manages to be shared with other Macs over a network.



Figure 1-20
When the Desktop file gets confused, a file that once had a pretty picture icon (left, before) may turn into a generic icon (right, after).

In these instances, the solution to an overgrown Desktop file is simple: Force the Mac to reinspect the current status of icons and windows and create a new, slimmer Desktop file that's free of obsolete information. This process is called *rebuilding the Desktop.* Here's the best-known method:

Restart the Mac. (For added safety, Apple suggests doing so with the Shift key down, although we have yet to see any evidence that turning your extensions off makes any difference.)

As it's starting up, press the ⌘ and Option keys down until you're finally asked if you want to rebuild the Desktop on the disk in question. If you have more than one disk — for example, a hard drive and a floppy in the disk drive — you'll be asked separately about each one.

DESKTOP FILE SECRETS

Better rebuilding I: Use TechTool

When you rebuild the Desktop, you do great things for your Mac's overall health. There's only one circumstance under which rebuilding (using the ⌘-Option keystroke) doesn't work wonders: when the file itself is corrupted. Since ⌘-Option simply updates your existing Desktop database, your rebuilt file will maintain whatever corruption already existed.



Better idea: Completely *delete* the Desktop file instead of just patching over it. That's a particular skill of TechTool, an important utility included with this book; see Chapter 34. The next time the Mac starts up, it will generate a clean, virginal Desktop file, corruption-free.

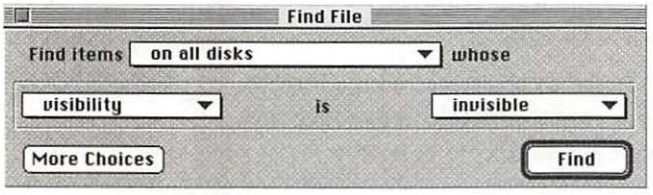
Better rebuilding II: Use Find File



If you want to completely trash your outgoing Desktop file, as described in the previous Secret, but you're in too much of a hurry to grab your *Secrets* CD for TechTool, try this trick suggested by free book winner Nohl Lyons.

Launch your Find File program (from the menu, for example). While pressing Option, choose Visibility from the lower-left pop-up menu. (See Chapter 4 for details on Find File's secret search options.) From the right pop-up menu, choose Invisible, as shown in Figure 1-21.

Figure 1-21
You can nuke your own Desktop files by searching for them, even though they're invisible.



In the resulting list of found files, you'll get an enlightening surprise: look at all the files that lurk, invisible, on your hard drive! Among them are

your friends, the Desktop DB and DF files. Drag them directly to the Trash, acknowledging the peculiar error message that appears ("You must restart your Macintosh and immediately empty the Trash" — and look at your weird button selections: OK and No!).

When your Mac restarts, a new, virgin, smaller, svelter Desktop file will be created.

The Macintosh Easy Open myth

In 1995, everyone from Apple to your favorite Mac magazines began some revisionist doctoring of the "rebuild the Desktop" procedure. The official method is now this:

- Restart the Mac with the spacebar down, so that Extensions Manager's window appears. (See Chapter 4 for details on Extensions Manager.)
- Turn off all your extensions except Macintosh Easy Open.
- Close Extensions Manager's window. As the restart proceeds, press ⌘ and Option until you're asked if you want the Desktop file rebuilt. Click OK.
- Restart the Mac with the spacebar down. Turn all your extensions back on.

The reason for these shenanigans: if Macintosh Easy Open is turned off — *ever* — during a startup (whether with the Shift key or any other method), it will force *another* Desktop rebuild the *next* time you start up. (For the rationale, see Chapter 4.)

But by leaving *only* Macintosh Easy Open on, you supposedly gain the safety of having extensions off, yet avoid the inconvenience of another rebuild.

Our feeling: Macintosh Easy Open is perfectly useful for people who frequently open text or graphics files whose parent programs they can't identify. If you don't find it playing a role in your daily computing activities, however, consider the benefits of turning it off for good: your Mac loads faster, you have more RAM available to your machine, and — best of all — you never have to mess with this ridiculous rebuild-the-Desktop procedure.

MACINTOSH SECRET

A MORE RELAXING WAY TO REBUILD THE DESKTOP

We always thought the most relaxing way to rebuild the Desktop file was to hit ⌘ and Option, click OK, then go away for vacation. But free book winner Yinche Tanada rebuilds his Desktop to the strains of Carly Simon. He writes:

I always have been a "rebuild the Desktop file" fan. But I get bored waiting for it to get done. Here's how I conquer my boredom.

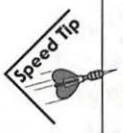
First, I open Apple CD Audio Player desk accessory. Next I switch to the Finder and "force quit" the Finder by pressing the ⌘-Option-Esc keys. As the Finder is quitting, I press ⌘-Option to rebuild the Desktop. I click OK.

Finally, I click the Apple CD Audio Player window, click Play, and sit back to enjoy the music. Voila: it's a pleasure to rebuild the Desktop.



Rebuild without restarting

It's common knowledge, as described previously, that you have to restart the Mac to rebuild the Desktop file.



Not so. For this time-saving System 7 stunt, quit any programs you're running — except the Finder. Then press ⌘-Option-Esc. Your Mac will ask you if you're sure you want to *force quit* the Finder.

Yes, you're sure. Click Force Quit and then immediately press the rebuild-the-Desktop keys, ⌘ and Option. The Finder relaunches itself and, because you're pressing those magic keys, it asks if you want to rebuild the Desktop. You do.

Similarly, if you use At Ease (see Chapter 15), you can't rebuild your Desktop normally as the Mac is starting up. Instead, choose Go To Finder from the File menu; *now* press ⌘-Option as usual.

De-bloat a floppy

The invisible Desktop file on a high-density floppy disk is generally between 1K and 7K. If you encounter a seemingly empty floppy disk whose window header says *13K in disk,* your first (and correct) guess should be that its Desktop file is bloated.



But rebuilding the Desktop in System 7 doesn't restore a floppy disk to its native "1K in disk" status. Because of an obscure bug in the Finder, you must use this goofy tip: Create a new folder on the disk. *Then* rebuild the Desktop and throw away the folder. Somehow, having one folder or file on the disk when the Desktop is rebuilt seems to unlock the excess kilobytage.

De-bloat a removable

To de-bloat a floppy disk (or *any* removable media — Zip, SyQuest, whatever) you don't have to restart the computer. Just hold down ⌘ and Option *as you insert the disk.* You'll get the "Rebuild?" dialog box right away.

Keeping your comments before System 7.5.3

As the Mac informs you every time you rebuild the Desktop (in a System before 7.5.3), doing so has one unfortunate side effect: It deletes any notes you've typed into the Comments box for each of your files. (You get to this box by highlighting a file and choosing Get Info from the File menu.) This silly bug survived through countless system-software revisions, making the Comments box a useless feature everyone ignored, waiting for Apple to fix the bug in System 7.5.3.

If you're still using an earlier system, there is a fix: Super Comments, a free software extension. It cleverly preserves your comments, even when you rebuild the Desktop. It's included with this book.



Generic icons even after rebuilding

If your purpose in rebuilding the Desktop is to restore the color icons to documents that are appearing with generic blank ones, you'll probably be surprised when, time after time, they still show up blank.

Remember, though, that one of the Desktop file's functions is to associate documents with the applications that created them. If the parent application — which is, by the way, where those icons are stored to begin with — is no longer on your hard drive, rebuilding the Desktop does exactly what it's supposed to do. It successfully *strips away* icon images for programs that are no longer around, resulting in faster, more streamlined Finder behavior. Reinstall the parent program, rebuild the Desktop, and the document icons will reappear.

SECRETS OF THE TRASH

As everyone knows, you delete a file by dragging its icon to the Trash can. The Trash icon bulges to show that something's inside. As long as the bulge is there, you can retrieve the file by double-clicking the Trash and dragging the icon out of the Trash window.

Behind the scenes, though, the Trash resembles a regular folder more than it does a trash chute. Any file you drag into the Trash can stays there *forever*, or until you choose Empty Trash from the Special menu. (Your cheerful authors have met more than one beginner whose hard drive had mysteriously filled up, even though they had been diligently discarding old files. They had no clue that every file they'd *ever* dragged to the Trash was still sitting there, taking up hard-drive space, waiting for the Empty Trash command.)

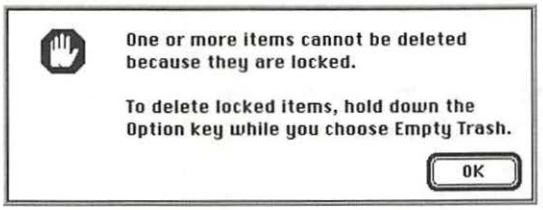
And no wonder: The System 7 Trash can *is* a folder — an invisible one. If you need convincing, look at the contents of your hard drive over a network (while seated at a different Mac). You'll see a folder on your disk called Trash. *Every* disk that's ever been used in System 7 has a Trash folder, invisible or not.

Here are several clever tips for customizing the behavior of the Trash.

TRASH SECRETS

How to empty the Trash when files are locked

Figure 1-22
What you see when you try to empty the Trash if some of its comments are locked.



Have you ever seen the message in Figure 1-22?

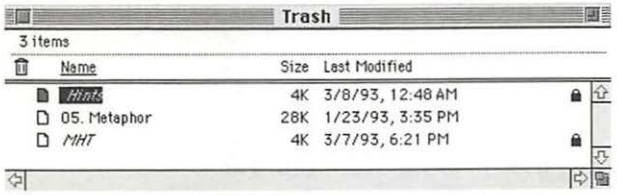
The solution is spelled out for you in the message: Press the Option key as you choose Empty Trash from the Special menu. The Trash, locked files and all, will be emptied.



The point is that the next time there's something locked in the Trash, save time by pressing Option the first time, without encountering any error message at all.

How to find out which files are locked

Figure 1-23
Find out which files aren't letting the Trash empty by looking for their padlock icons at the far right side.



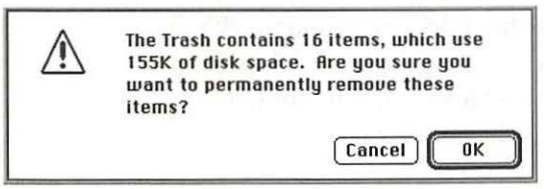
When you get a "locked files" message emptying the Trash, you may not always want to blast your locked files into oblivion by pressing Option. Sometimes you may want to see what it is you're about to delete.

To do so, double-click the Trash can to open it. Make the window very wide; eventually, you'll see the tiny padlock icon on the far right (see Figure 1-23).

To unlock the file, click one of the locked icons, choose Get Info from the File menu, and then click the Locked check box.

How to eliminate the confirmation message

Figure 1-24
To shut up the Trash, turn off the *Warn before emptying* check box in the Trash icon's Get Info box.



Whenever you choose Empty Trash from the Special menu, the Mac asks you to confirm your action, as shown in Figure 1-24.

If you prefer not to be bothered with this message each time you empty the Trash, select the Trash can and choose Get Info from the File menu. Click "Warn before emptying" so that it's no longer selected. That's all there is to it.

If you *usually* like the confirmation message, but you want to shut it up *just this time,* press your Option key while you choose Empty Trash from the Special menu.

Rename, or redraw, the Trash

You may have noticed that the Mac won't let you rename the Trash can. Nor will it let you paste in a new icon, as you can for any other file or folder — at least not in the usual way.

This Secret is only a referral to Chapter 21 (ResEdit). There you'll find the secret solution to renaming or replacing the Trash icon.

Awesome tip: Recovering trashed items

Most Mac people know they can recover an item from the Mac's Trash can with a file recovery program such as Norton Utilities. But did you know that it's possible to drag files into the Trash, *empty* the Trash, and then recover the trashed files, *without* using any third-party utility?

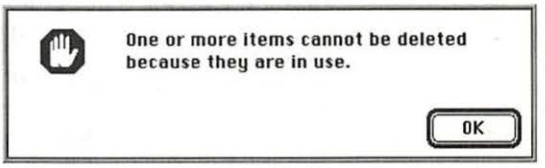
Here's the secret: As soon as you empty the Trash — and realize that you just dumped something you shouldn't have — turn your Mac off. Don't perform any other commands. Don't use the Shut Down command. Don't restart. If you're using a PowerBook, don't put it to sleep. Just turn off the power. Pull the plug if you have to.

Then start up again. When your Desktop appears, you'll find that your most recently trashed items have miraculously returned from the dead; they're back in the Trash can, as if they were never deleted.

ANSWER MAN

That stubborn Trash thing

Q: *I'm trying to empty the Trash, but I get a message that says "One or more items cannot be deleted because they are in use." What's going on?*



A: It's telling the truth. You're no doubt running more than one program, and you're trying to throw away a file that's open by one of the programs you're running. Close the document. If it's Word version 3, 4, or 5, you may even have to quit the program. Then you can empty the Trash with no problem.

Oh, by the way: holding the Option key while choosing Empty Trash often succeeds in "letting go" of the stubborn, "untrashable" item.



ANSWER MAN

Why the floppy's still not empty

Q: *Hey, what's the deal? I've got a completely empty floppy disk. I'm trying to copy a 100K file onto it from my hard drive, and the darned thing tells me there's not enough room! What gives?*

A: Your floppy disk is full. So, how come it says 0 items? Because the items on the disk are in the Trash, which is an invisible folder on the disk.

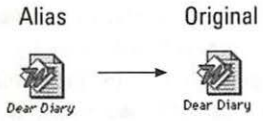
All you have to do is choose Empty Trash from the Special menu, and everything in the Trash — regardless of what disks they came from — will be erased. Your floppy will now be truly empty.

ALL ABOUT ALIASES

Authors of Mac books and manuals have described aliases as remote controls, beepers, signposts, stand-ins — the metaphors are almost endless.

The point is that although aliases may appear to be *duplicates* of existing files, they're not. They're just look-alike icons that provide a shortcut back to the original file they represent. If you make an alias of a folder, for example, double-clicking the alias opens the original folder — not a copy of it.

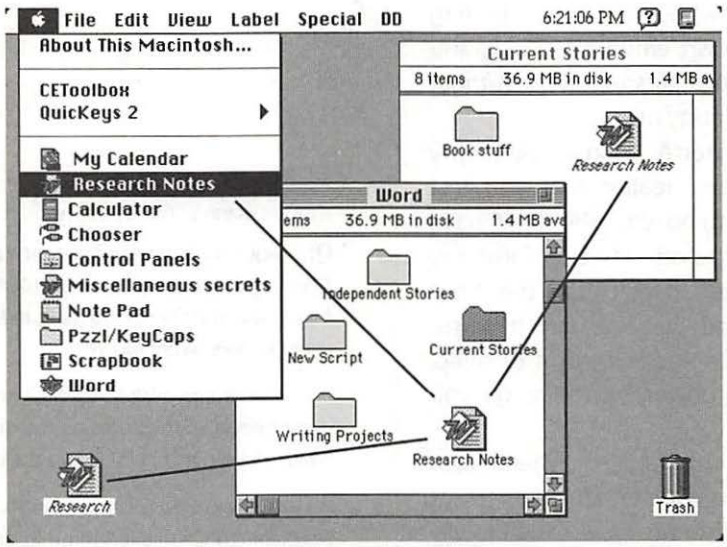
Figure 1-25
No matter where it is located or how it is renamed, an alias always points the Finder back to the file from which it was created.



That's why aliases are frequently referred to as *pointers*. When you double-click an alias, the alias simply tells the Finder which file, folder, or disk you want to open and points the way back to the original item, wherever it may be (see Figure 1-25).

In other words, you can stash a file in several places at once without having to make multiple copies of the file. You can keep a document or application neatly tucked away in one folder and place aliases of it in as many different locations as you like (see Figure 1-26).

Figure 1-26
A Word file with multiple aliases placed in three convenient spots: the Desktop, the menu, and a folder for current projects.



Making an alias

Here's how you make an alias: Select a disk, file, or folder in the Finder, and then choose Make Alias from the File menu. You see what looks like an exact copy of the original item appear, overlapping slightly with the selected icon (see Figure 1-27).

Figure 1-27
An alias is born.

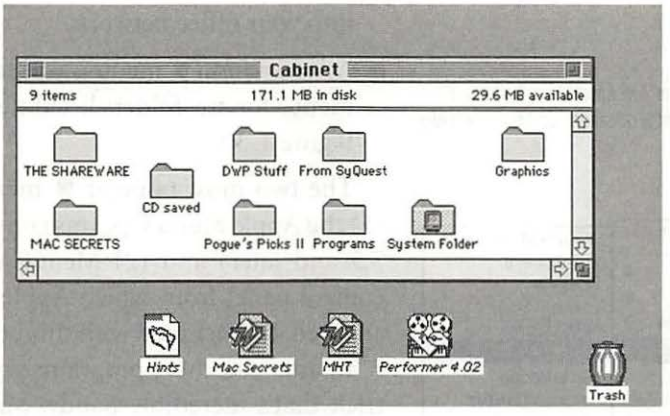


The alias looks identical to the original icon in every way — except that its name appears in italics and has the word "alias" appended to it. After you create the alias, you can rename it just like any other icon and drag it wherever you'd like, even to another disk drive.

Here are some of the best ways to use aliases to streamline your work:

- An all-time favorite: Add aliases of frequently used applications and documents to the menu. To do this, put the aliases in the Apple Menu Items folder (located within the System Folder). Because the menu is always available, you have continuous access to the files you use the most.
- Place aliases of files and folders you open frequently right on the Desktop (see Figure 1-28).

Figure 1-28
It's perfectly OK to leave stuff out on your Desktop. Put aliases of frequently-used files and folders there.

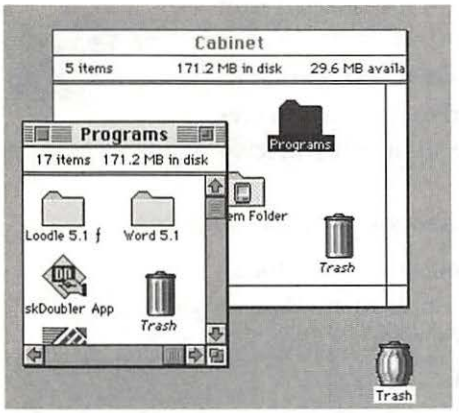


- Make aliases of the *control panels* you use the most and put them in the menu, on the Desktop, or in other convenient spots.

Normally, when you want to make a control panel adjustment, you start by choosing Control Panels from the menu. That opens the Control Panels folder; then you have to double-click the control panel you want. Making an alias of a specific control panel bypasses two steps.

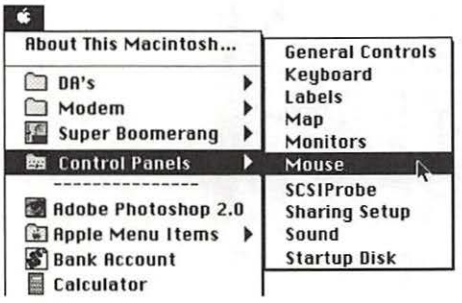
(It could have been worse. The Control Panels folder listed in your menu is *itself* an alias. If it weren't there, you'd *really* have to do some digging to get to a control panel.)

Figure 1-29
How many Trash cans? Multiple Trash cans are especially handy on big monitors. (Only the real thing bulges when it has contents, though.)



- Put aliases of the Trash in as many folders as you'd like (see Figure 1-29). Whenever you have to trash a file, you can just drop it in the nearest Trash can.
- Aliases can greatly simplify setting up file sharing for users connected to a network. Here's how. When you're on a network and you've brought another Mac's hard disk onto your Desktop (see Chapter 32), make an alias of any shared program, document, or folder. When you're off-line and you'd like to reconnect, just double-click the alias. Your Mac automatically looks for the original item, locates it on the other Mac on the network, and pops it onto the screen. (If a password is required, you'll be asked for it first.)
- Get this: the previous Secret works even if you're thousands of miles away. That's right: if you made an alias of your office servers while you're connected to them using Apple Remote Access (ARA), then double-clicking that alias (presumably on your PowerBook) will automatically dial and tap into your office network.
- A *hierarchical* menu is one that displays submenus for any folders listed there, as shown in Figure 1-30.

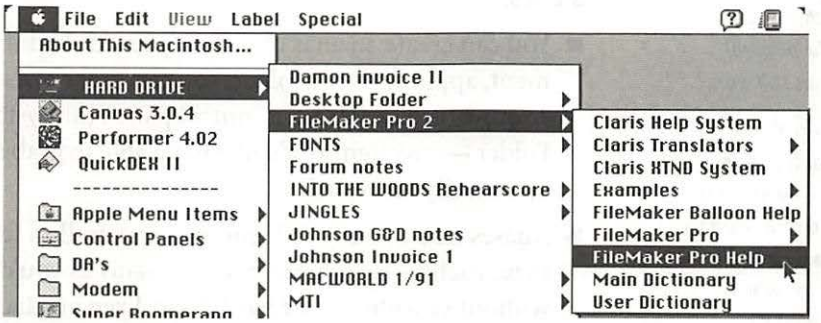
Figure 1-30
An menu "hierarchical-ifier" like Apple Menu Options or Now Utilities gives you instant access to the contents of a folder listed in your menu.



The two most popular -menu hierarchifiers are (1) the Apple Menu Options control panel (in System 7.5 and later) and (2) MenuChoice, the shareware control panel from which Apple Menu Options was adapted. It's included with this book.

In any case, these programs give you a special alias trick that's incredibly handy. Make an alias of your *hard disk* icon and put it into the Apple Menu Items folder. By sliding from submenu to submenu of your menu, you can choose and open any file or folder on your entire hard drive (see Figure 1-31).

Figure 1-31
Submenu redux. Using MenuChoice or System 7.5, you can access any folder or file on your hard disk without ever having to double-click an icon.



Finding the original file

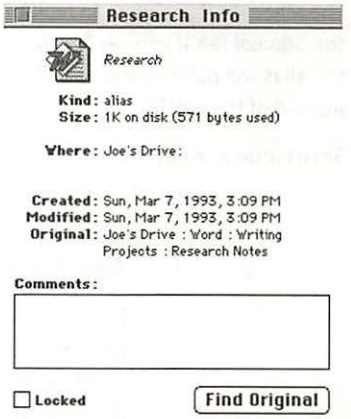
Of course, at some point, you may actually need to find an *original* file and not its alias. If you want to copy a file to a floppy disk, for example, you can't just drag the alias to the floppy — you need the actual file.

If you forget where the original file is located, you can easily find it.

- *System 7.5 and later:* If you installed System 7.5 using the Easy Install method, you'll see something in your menu called Useful Scripts. Among them is Find Original, which (of course) finds the original for a highlighted alias. See Chapter 22 for more on AppleScript, the technology behind the Useful Scripts.
- *System 7.5.3 and later:* Simply highlight an alias and press ⌘-R. Of course, this only works if you've turned on the secret Finder features Apple turned off at the last minute. To do so, install the Secret Finder Features extension, included with this book. (See Chapter 34 for details.)
- *Systems before 7.5:* Select the alias and choose Get Info from the File menu. Just above the Comments box, you see a boldface heading that says Original, followed by a hierarchical list pointing the way back to the original file. If the listing is *Macintosh HD: Word: Writing Projects: Research Notes,* for example, it means that the original file from which the alias was made is called Research Notes, and it's in the Writing Projects folder, within the Word folder, on the drive named Macintosh HD (see Figure 1-32).

  To access the original file, click the Find Original button at the lower-right corner of the Get Info box. The Finder opens the appropriate window and highlights the original item.

Figure 1-32
The Get Info box for an alias shows you where the original file is located and contains a Find Original button to take you there.



ANSWER MAN

Breaking the alias chain

Q: *I made several aliases of one document, but then unthinkingly changed the name of the original document. Will my aliases still work?*

A: Remarkably, yes. An alias can always find the original file from which it was created — even when the original is renamed or moved to another folder. Unbeknownst to you, the Mac's system software assigns every file a unique ID number. Even duplicate copies of the same file get different ID numbers.

When an alias is created, it's programmed to open a file with a prescribed ID number. The name of the file doesn't matter. In fact, if you create a new document and give it exactly the same name as the original file from which you made an alias, the alias will ignore the new document and still find the original.

Here's where things get interesting. Suppose that you drag the new, identically named file into the same folder as the one the alias refers to. The Mac asks if you want to replace the original file. If you say OK, then the alias will point to the new file instead of the old!

Smart little computer, isn't it?

More alias notes

Some other points to keep in mind when working with aliases:

- You can create an alias of virtually any disk, document, application, or folder. You can make aliases of your whole hard drive, a control panel, the System Folder — any item you'd like to be able to grab and open easily and quickly.
- Aliases take up very little room — generally a few kilobytes each — so you can make as many as you'd like without crowding your hard drive. Even an alias representing a document several megabytes in size will take up no more than a few kilobytes. (The larger the hard drive, the larger the alias; for the rationale, see Chapter 8.)
- A single item can have as many aliases as you'd like. So, if having 15 aliases of a single item is going to save you a lot of opening and closing of folders and windows, go ahead and make them. Avoid making aliases *of* aliases, though. You can certainly do it, but you increase the risk that, by accidentally throwing one of them away, you'll "break the chain" that points from alias to alias all the way back to the genuine file.

ALIAS SECRETS

Instant alias, without the "alias" suffix

Install Secret Finder Features, included with this book. From now on, you can make an alias of something just by Control-dragging it — and you don't even have to delete that stupid " alias" suffix, because it won't be there. See Chapter 34 for details.

El cheapo disk archiving

Here's how you can have all your floppy-disk, Zip, Jaz, and SyQuest files stored on your hard disk — and yet not.

Make sure that your disks and cartridges all have distinct names and label them. Make aliases of all their contents and copy the aliases to your hard drive.

(You should probably keep the aliases all in one folder.) Next time you need one of these files, double-click its alias on the hard drive. The Mac shrewdly calls for the appropriate disk or cartridge by name.

De-bloat your System Folder — and sacrifice nothing

As you've probably discovered, today's System Folder is becoming overwhelmingly bloated. It doesn't help much that software companies such as Claris, Adobe, and Microsoft create their own folders in your System Folder (for storage of their support files).

Fortunately, many of these non-Apple folders don't actually have to be there. For example, the After Dark Files folder and the Claris folders can be safely moved out of your System Folder — even onto another disk. The secret: After you've moved them, make an alias of the folders in their new location. Trash the originals from your System Folder. Finally, drag the aliases back into the correct System Folder locations, making sure that they have exactly the same names as before. (The After Dark Files alias must be in the Control Panels folder.) Everything will work as before — except that your After Dark and Claris folders are now safely stored outside of the System Folder, insulated from reinstallations and making backups easier.

Your basic Startup Items trick

Make an alias of anything — a sound file, a program, a document, a control panel — and put it into the Startup Items folder inside your System Folder. Next time (and every time) you turn on the Mac, the original of that file or program behaves exactly as though you just double-clicked it. (Ditto, of course, for the Shutdown Items folder.)

Take programs away from their dictionaries

Microsoft Word 5 and similar programs don't spell-check unless the program is in the *same folder* with its spelling dictionary file. That's too bad, because it means that you can't leave the Word icon out on your Desktop for easy clicking. That's where aliases come in: Make an alias of the Word icon and put *that* out on the Desktop. The original icon is still in the Word folder where it likes to be.

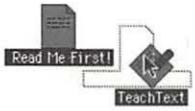
DRAG-AND-DROPPING ICONS

Mac users had actually been using the feature called *drag-and-drop* long before Apple coined the term — and well before the feature was so enhanced (in System 7.5) that it got capitalized (as we'll see later in the chapter). From Day 1,

you used drag-and-drop to place a file into a folder: You dragged the file icon on top of a folder icon (which then turned black to signal you that you'd got it), and then released the mouse button to drop its icon into the folder.

With System 7, however, Apple did more than give this technique a cute alliterative name; it also expanded the icon-on-icon principle to make it much more versatile. The most often mentioned use of System 7's drag-and-drop feature is that you can drop a *document* icon onto an *application* icon to launch the former with the latter, no double-clicking required (see Figure 1-33).

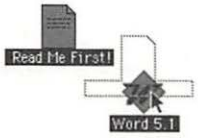
Figure 1-33
Launching a document with drag-and-drop albeit pointlessly



Your cheerful authors normally applaud features wherever they may occur. However, on this occasion, we must point out that, frankly, if a document icon is handy enough that you can drag it over to an application icon, why not simply double-click the document icon to begin with? Is this the Emperor's new feature?

Fortunately, there's something much more useful you can do with icon D-and-D — the *second* most mentioned technique. In this variation, you drag a document icon onto the icon of a program that *didn't create it.* The classic example is dragging a Read Me text file onto the ClarisWorks program icon; in so doing, you open the document in ClarisWorks. It opens, just as though you had launched ClarisWorks and then used its Open command to open the Read Me document (see Figure 1-34).

Figure 1-34
Drag-and-drop's more useful use: Open a text or MacWrite document with your favorite word processor by dropping the icon of the former onto that of the latter.



We can think of only a few other cases when this kind of document-opening is useful: opening a text file with Word; opening a PICT graphic file with a specific graphics program; opening a MIDI file with a specific sequencer (playback) program; or opening *anything* with ResEdit (see Chapter 21) or CanOpener (see Chapter 22).

In all of these drag-and-drop moments, note that you get immediate visual feedback as to whether your dropping action is going to accomplish anything: The program's icon gets highlighted. You can't, for example, open a Word document with Photoshop. If you try to drop the Word document's icon on the Photoshop icon, the latter won't turn black, so you know your attempt is a failure.

Finally, soothe your psyche on this fact: When a drag-and-drop is in progress, the document's icon always snaps back to its original window location. Even if you drag an icon out of its window in order to drop it on a distant program icon, you haven't really disturbed the document's position.

DRAG-AND-DROP SECRETS

A text file onto Word (or ClarisWorks, or WordPerfect...)

Drag a text file, an old-style MacWrite file, or a SimpleText file (see Figure 1-35) on top of your favorite word processor icon to open it.

Even a saved e-mail (or any other kind of log, from an online service, for example, or your fax/modem's call log) is generally a text file. As such, it's generally openable by dropping its icon onto your word processor's icon.



Figure 1-35
Text files come in all different sizes and shapes.

A "Picture 1" file onto Photoshop

The easiest way to create a PICT graphics file is to take a picture of your own screen, using System 7's built-in camera feature. Just get your screen the way you like it and then press ⌘-Shift-3. (More on this in Chapter 2.) You hear a nice camera-shutter sound, and then there's a new file on your disk called Picture 1. You can drag these Picture files on top of any graphics program — SimpleText, Photoshop, whatever — to view them.

Multiple files

You can also drag a whole bunch of selected files onto an appropriate icon. Even if some of them aren't appropriate, the ones that *are* will open properly. (For example, select three text files and one music file. Drag them on top of ClarisWorks' icon. Only the text files will open.) Interestingly, they'll open in the order in which you Shift-clicked their icons to select them!

A font suitcase onto another font suitcase

In System 7.1 and later, you can combine font files — whose icons resemble little suitcases — by dropping one on top of another. The result: a single font suitcase that contains the contents of both original suitcases.

Dropping icons onto pseudo-applications

Fortunately, dropping documents onto program icons also works in the growing number of program-launching programs, such as the Launcher, Square One (included with this book), and so on. Drag your document's icon directly up onto a tile on one of these launch pads — it behaves exactly as though it had been dropped on the application's actual icon.



Macintosh Drag and Drop

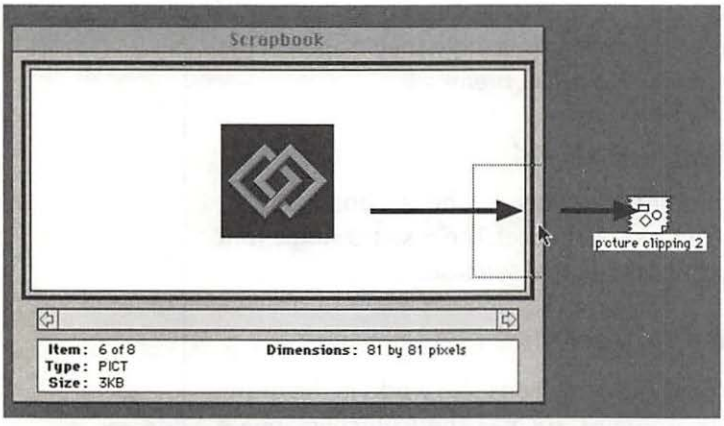
Drag and Drop — the official, Apple-capitalized version — takes drag-and-drop to a new level of utility.

This feature, which debuted in System 7.5, lets you *drag* selected data — usually graphics or blobs of text — from one place to another instead of copying and pasting. You can drag it from one spot to another within the same document. You can drag it from one *window* to another within the same program. You can even drag material from one program's window into another *program.* All of this happens seamlessly, quickly, and intuitively. And it all feels like a perfectly natural extension of the Mac interface.

There's only one drawback to Macintosh Drag and Drop: Every program must be updated to take advantage of this feature. Fortunately, the number of commercial programs that do Drag and Drop is rapidly expanding: for example, WordPerfect, Claris Emailer, ClarisWorks 4.0v4, InfoGenie, America Online 3.0, FileMaker Pro 3 (incoming only), and all kinds of Web-related programs.

Many Apple-supplied programs offer Drag and Drop, too. System 7.5's Scrapbook, Stickies, SimpleText, the Note Pad, the Finder, Desktop Patterns, and the Jigsaw Puzzle (incoming only) are all D&D-savvy. Here are some handy examples:

Figure 1-36
System 7.5 takes dragging and dropping to a new level — you can slide text or graphics right out of the Scrapbook and onto the Desktop, or vice versa.



- Slide something — a picture from Desktop Patterns, text from the Note Pad, or a sound from the Scrapbook — onto the Desktop. It becomes an icon called *text clipping, sound clipping,* or *picture clipping* (see Figure 1-36). Clippings (picture, sound, or text) are double-clickable on the Desktop — they open to show (or play) their contents.
- Drag a block of text off the Note Pad and into a SimpleText document.
- Drag a picture out of the Scrapbook and into Desktop Patterns to create a new Desktop backdrop.

- Drag text around within ClarisWorks — or between two ClarisWorks windows — as a quick, simple way to reorder a list (or the paragraphs of a memo).

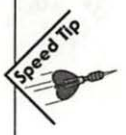
By the way, what Microsoft Word 6 does — letting you drag text between windows within Word — is *not* Macintosh Drag and Drop. Neither is the interaction between Now Up-to-Date and Now Contact, where you can drag a name from one Now program to the other. If you can't drag stuff from a program into *any other* Drag-and-Drop-savvy program, it isn't real D&D. Quick test: If you drag text onto the Desktop, does it turn into a clipping file? If not, it doesn't count.

MACINTOSH DRAG-AND-DROP SECRETS

Quick e-mail reader

Get into the habit of saving your important e-mails as text files. (For example, when you save an America Online e-mail, you're offered a choice of two formats — text and Read Mail.) Then, whenever you want to review one, don't bother launching America Online or a word processor. Just whip up to your menu, open the Note Pad, and drag the e-mail's icon into the window. It appears there in full, ready for reading.

Quick graphics viewer



Much as in the previous Secret, you can use Apple's seemingly trivial Jigsaw Puzzle to accomplish some very handy tasks. Specifically, you can drag any PICT file right off the Desktop and into its window to get a quick glimpse of its contents — without waiting 35 minutes for Photoshop to load. (You may have to give the program more memory first. Highlight the Jigsaw Puzzle's icon in the Apple Menu Items folder [in your System Folder], choose Get Info from the File menu, and add about 100 to the lower text box in the Info window.)

Actually, the Scrapbook probably makes a better graphics viewer, since its window is resizable. We just love showing people, however, how the homely little Jigsaw Puzzle can actually be useful.

Making the non-savvy program D&D savvy



As we've noted, not every program has been rewritten to support Drag-and-Drop, much to the disappointment of its fans.

We can help. We've included on the CD with this book the ingenious DragClick extension that magically makes *every* program Drag-and-Drop-

aware. Suddenly Word 5, America Online 2.7, QuickDex, and any other text-based program will behave correctly when you drag text into another Drag-and-Drop program or to the Desktop. See Chapter 34 for instructions.

Duplicating text with the Option key

In any real D&D-savvy program, such as the Note Pad or SimpleText, you can duplicate a piece of highlighted text exactly as you would a graphic object in, say, Photoshop: Press the Option key while dragging it. The duplicate appears wherever you release the mouse.

Your advance notice of D&D success

One of Apple's most thoughtful interface touches is the highlighting that appears when you drag and drop something: The material you're moving displays an outline, and the destination window displays a purple "you mean *here?*" border. Use this fact to your advantage — it should help you recognize immediately that you're dealing with genuine D&D-savvy programs.

The collected works of clipping files

If you make assorted text clippings as you go about your daily routine, at some point you'll probably want to turn your folderful of individual clippings into a single document. To do so, select all the clipping files in the Finder and drag them en masse into a Drag-and-Drop-aware word-processing document.



In fact, you can even determine the *order* in which the clippings will appear in the new document. Here's the secret: Select the individual clipping files one by one (by Shift-clicking), in the exact order you want them to appear. When you drag the files to the document, they'll be-imported in the same order in which you clicked them.

Clippings with style



Text clippings can contain two different kinds of text: plain or styled. When you drag text that's been formatted with specific attributes — font, size, and so on — to the Finder to create a new clipping, the attributes are preserved within the clipping. Unstyled text (such as text from the Note Pad) is displayed in a default clipping font.

It may appear that you can't change this font; after all, there's no Font menu in a clipping file. But you can change the default font used to display text clipping using the Views control panel. Turns out the default text clipping font is the same font you have chosen in the Views control panel for all text in Finder views.

TRUE FACT

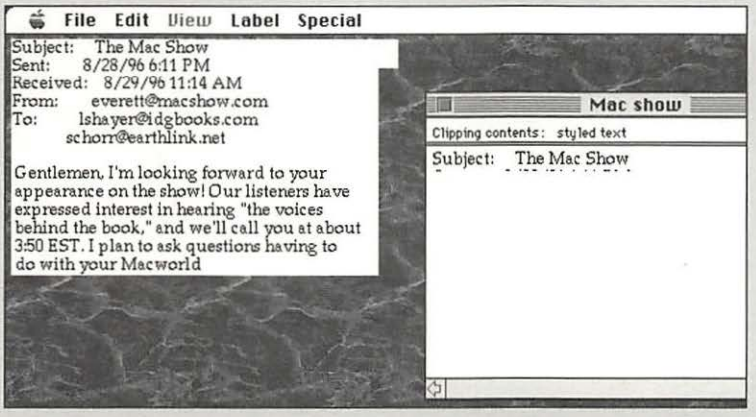
APPLE'S BEST BUG EVER

We're sure every operating system has its share of tiny little obscure bugs. But this one, introduced (we guess) in System 7.5 and still hanging around in System 7.5.5, is our favorite. How come? Because it's dramatic, horrifying, and utterly harmless.

Here's how to see it for yourself:

1. Choose Note Pad from your (or open any other Macintosh Drag-and-Drop-savvy program). Type something up. Highlight some text and drag it to the Desktop, so that it turns into a text clipping.
2. Double-click your text clipping to open it. Move any program's window (such as the Note Pad) in front of the open clipping window.
3. Double-click the clipping file's icon *again* (yes, even though its window is already open).

To your surprise and amazement, whatever portion of that clipping's window had been covered by another window (even a Finder window) will be completely blank — and the missing section of the display will suddenly appear in a separate white box in the upper-left corner of the monitor — no scroll bars, no menu bar, and no way to eliminate it (even if you move another window in front, then move it away)!



Aren't computers fun?

Chapter 2

Finder Command Secrets

IN THIS CHAPTER:

- Highlights of the File, Edit, View, Label, and Special menus
- Three hidden Finder commands
- Buried menu treasures
- Getting more mileage out of the Find command
- Four ways to clean up icons

The Finder has more than 40 commands. (And *this* is the most user-friendly computer?)

We're going to assume that you can manage without a book to tell you about commands like New Folder, Open, Close Window, Get Info, and Duplicate. And we'll get deep into the About This Macintosh command in Chapter 9.

However, you'll find some goodies locked away behind some of the other commands.

THE APPLE MENU

The menu, strictly speaking, isn't just a Finder menu. But you create and manage the menu's contents exclusively in the Finder. The menu is used for launching files and programs, just as the Finder (and its first command, About This Macintosh — or About This Computer, as it says in System 7.6 and later) provides a wealth of fundamental information that seems right at home in the Finder.

In the ancient days of System 6, the menu was good for exactly one thing: listing desk accessories (see Chapter 3). But System 7's menu is a powerhouse. It can list disks, files, folders, the Trash, the System Folder, a control panel — anything with an icon in the Finder.

So, what happened to good old desk accessories (DAs)? They barely exist anymore; although they may appear under the menu, most have become standard application programs. Indeed, if you drop an existing DA suitcase on top of the System Folder (which is how you install a DA into the menu), it instantly *becomes* an application. The Mac automatically strips away the familiar suitcase-shaped shell — one of the few times it ever deletes an icon you named without asking you first — and plants the nugget program into your Apple Menu Items folder within the System Folder. (Now it appears in your menu.)

APPLE MENU SECRETS

Quick access to the menu (conventional method)

As you probably know, anything you place in the Apple Menu Items folder (in the System Folder) is instantly listed in your menu, whether it's a file, a folder, a program, or the alias of a disk. Trouble is, the Apple Menu Items folder isn't very convenient, nested as it is inside the System Folder.

If you frequently add or remove things from your menu, make an alias of the Apple Menu Items folder. Leave the folder out on your Desktop.

To add something to your menu, just drop it on top of this folder alias. To remove something, double-click the folder alias and drag the item out of the window.



Quick access to the menu (discreet method)

The previous Secret works wonderfully, but it also leaves a big clunky folder out on your Desktop. Here's a less-obtrusive technique for creating a neat little drop-slot on the Desktop that shovels items directly into the menu.

Follow the steps in the previous trick. Instead of leaving the image of the folder alias out on your Desktop, make the icon itself invisible (see the "Electronic Post-it notes" Secret in Chapter 1). You can also replace the name of the folder alias with a few blank spaces.

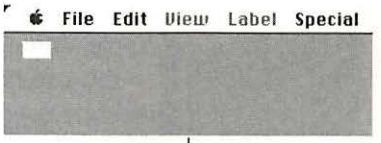
The result is an iconless folder with no name — all you see on the Desktop is a white rectangular slot. Click the rectangle and drag it just under your menu (see Figure 2-1).

Then, whenever you want to add an item to the menu, all you have to do is drag it over and pop it in the slot (the white rectangle). Anything you slip

into it instantly disappears from the Desktop and reappears as an item in the menu.

When you want to remove or rename something in the menu, double-click the little slot itself. The Apple Menu Items folder opens.

Figure 2-1
Nuke the icon of the Apple Menu Items folder alias and change its name to blanks. Now you've got a drop-slot for your menu.

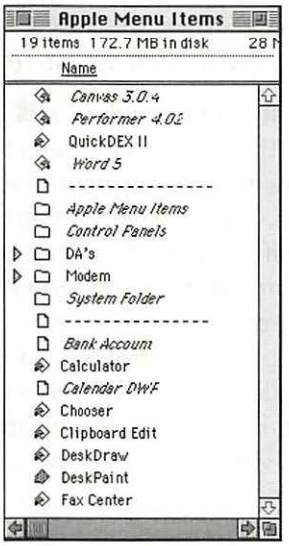


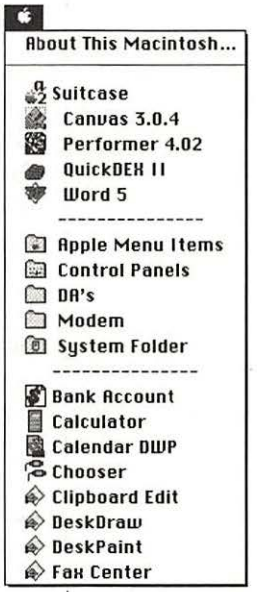
Rearranging the menu

The Mac normally alphabetizes the items listed in your menu. To force these items into a different order, you can buy an Apple-menu managing program, such as Now Utilities.

But if you're a do-it-yourselfer, try this. Open your Apple Menu Items folder. Bearing in mind that a space comes alphabetically before any letter, rename the items in the folder. You can make Zither come before Armadillo, for example, if you type a space before the *Z*. Figure 2-2 shows an Apple Menu Items folder that's been realphabetized by using spaces. Of course, for better cosmetic results, you can also use a pasted return character, as described in Chapter 1's "Icon-renaming Secrets."

Figure 2-2
A judicious use of spaces and nameless folders in your Apple Menu Items folder (left) customizes the order and look of the menu (right).





As a final flourish, you can create separator lines to group your menu items (programs and documents, for example). To do so, make a new empty folder. Change its name to a bunch of underlines or dashes — preceded, of course, by the correct number of spaces (or pasted Returns) so that the folder will fall, alphabetically, in the right place among the other items. Finally, use the Electronic Post-it notes tip in Chapter 1 to make the separator folder's icon invisible.

We much prefer using spaces to force the rearrangement of the items in our menus. We grudgingly include the following information as well, because it's advice often given.

Instead of spaces, you can also use peculiar symbols such as , ◆, and • in front of the names of your menu items. (You create these symbols by pressing Option-Shift-K, Option-Shift-V, and Option-8, respectively.) Or, you can type hyphens. The symbols come alphabetically *after* the regular alphabet, while spaces, hyphens, and periods come *before*.

Kill the Recent Servers

If you're using System 7.5 or later, you may have noticed the addition of three weird commands in your menu: Recent Applications, Recent Documents, and Recent Servers. The control panel responsible for creating these items Apple Menu Options (see Chapter 4 for details).

You can make *all* of these folders go away by turning off the "Remember recently used items" check box in that control panel. But you can also turn them off *selectively* — to get rid of only Recent Servers, for example. Simply open the Apple Menu Options control panel and type 0 (zero) into the text box that corresponds to the item you want to disappear (Recent Servers, or whatever).

Things to stick there

Here are a couple items you might not think to stick into your menu. First, you can put an alias of your hard drive there, and have instant access, via the submenus, to anything on your Mac (up to five nested folders deep).

Second, stick an alias of the Apple Menu Items folder itself *in* the Apple Menu Items folder! Sounds kind of nutty and recursive, but it makes making changes to your menu much more convenient.

Visit scenic Silicon Valley

The first item in Finder 7's menu normally says About This Macintosh or About This Computer. When you choose this command, you see a useful mini-window that reveals your Mac's model number, memory usage, and System version. (See Chapter 9 to find out how to interpret this information.)

But if you press Option as you choose the first command in the menu, the wording changes to say About the Finder, and you see a rustic moonlit picture of a valley — presumably the "silicon" one in which Apple's headquarters sits. If you believe the old-timers, this same scene is what choosing About the Finder *always* displayed on the very first versions of the Finder.

And if you press ⌘ *and* Option as you choose About the Finder, you get both a scenic moonlit scene *and* a cursor with an attitude. (Wait patiently to get scrolling credits, too.)

THE FILE MENU

Did you ever wonder about the parts of speech used in menus? Originally, they were all supposed to be verbs. *File* is a verb here! So is Edit, Label, and View. (The theory breaks down when you get to Special, of course.)

Print

The Finder actually has *two* Print commands. The one at the top of the File menu is available only if you select one or more document icons. It prints those documents by launching whichever program created them, printing, and then quitting that program. (You can even select document icons created by different programs. The Finder launches each, as necessary, to do its printing.)

The other Print command, at the bottom of the menu, is Print Window. It prints a picture of whichever window is open. If no window is open, or if you select the Desktop by clicking it, the command changes to say Print Desktop, which prints the Finder icons on the Desktop, using as many pieces of paper as are required to print the entire screen.

The Print Window command is especially handy when you're testing or troubleshooting a printer; it lets you print *something* without having to launch an application.

It also comes in handy, weirdly enough, when you're trying to check the Mac's *sound* (the volume, an external speaker, and so on). Why? Because Print Window makes a fast dialog box appear — and clicking outside any dialog box makes the Mac beep!

Get Info

You click an icon; you choose Get Info from the File menu; you read all about it. We've found two items worth reporting here.

First, the *Where:* line in the Get Info box gives you some insight into how the Mac tracks your files — by listing a string of smaller and smaller locations. It may say Hard Drive:System Folder:Control Panels:, for example. At last you know why the colon (:) is the only character you're not allowed to use when you name a file. Can you imagine how confused the Mac would get?

Second, it may interest you to know why there are *two* different sizes given for the file or folder you select. It says something like "25K on disk (19,112 bytes used)." Well, as anybody knows, 25 is not 19 (see Figure 2-3 for another example).

The explanation for this oddity is in Chapter 8.

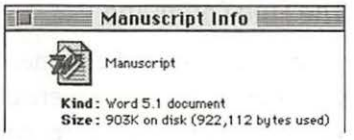


Figure 2-3
When is 903 not 903? When it's 922. Which, believe it or not, is smaller than 903.

Sharing

We've got an entire chapter devoted to this little gem — Chapter 32.

Make Alias

We have quite a bit to say on this topic, too, but it's in Chapter 1.

Put Away

We *love* this command. We use it on everything! Disks, files, trash — the Put Away command works housekeeping magic.

The best part of Put Away is that its keyboard shortcut, ⌘-Y, is the only way to eject a floppy disk without touching the mouse. (We all know how dumb the Eject Disk command in the Special menu is — sure, it pops the disk out, but the Mac immediately starts demanding that you reinsert it, because the disk's *ghost* icon remains on the screen. Eject Disk simply ejects the disk; Put Away actually *unmounts* it, to use the technical terminology.)

Also remember that Put Away refiles any icon that's sitting out on your Desktop into the original folder from whence it came, no matter how deeply buried. Put Away is, therefore, a great trick to use after you've put a bunch of icons on the Desktop that live on *different* disks (for copying or trashing all at once, for example). Put Away makes them leap back into their original disk and folder locations.

Put Away is also great to use on icons that you tried to copy by dragging to another disk icon — and just missed, leaving the icon sitting there on the Desktop right next to the disk icon (or the Trash icon). It's also great if you *succeeded* in dragging an icon to the Trash, something you'd now like to recover. Open the Trash window, select the icons you put there, and choose Put Away. They hurl themselves back into their original folders.

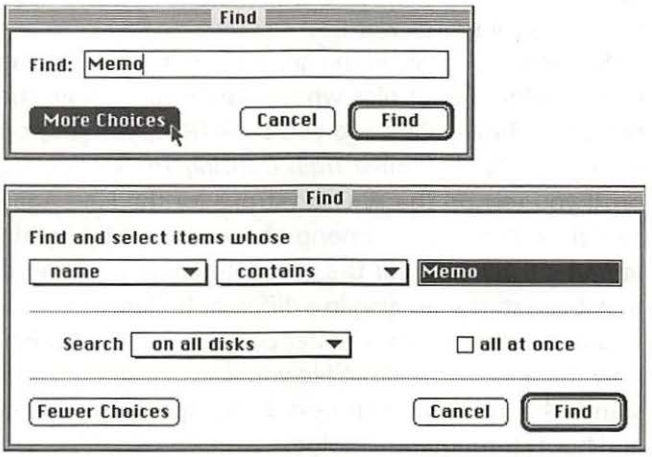
In fact, the only downside to Put Away is that it doesn't know what to do with icons it thinks were *created* on the Desktop. (These icons could be files that you saved onto the Desktop from within a program, for example.) In fact, the Put Away command gives you a message saying that they were "created on the Desktop."

The Find Command

Despite its name, the Finder hasn't always been very good at finding things. In System 6, you got a mere desk accessory in the menu that could only *tell* you (not show you) where your missing file was. In System 7, there was a Find command in the File menu. And in System 7.5 and later, the Find command launches a Find File *program.*

If you have System 7.5 or later, see the "Find File" section in Chapter 3 for an amazing array of searching secrets. If you have some flavor of System 7 or 7.1, though, read on (and see Figure 2.4).

Figure 2-4
When you choose Find from the File menu, the Find dialog box appears (top). Click More Choices to view some useful hidden options (bottom).

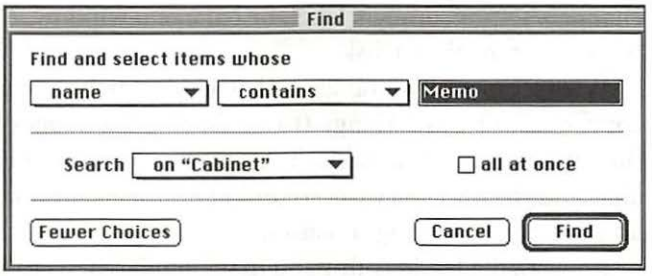


SYSTEM 7.0-7.1 FIND COMMAND SECRETS

Search only on one disk (faster)

The System 7 Find command is not blazingly fast, particularly if you have a couple of hard disks attached to your Mac. To cut down your search time, click the More Choices button to expand the dialog box. Then use the third pop-up menu to restrict your search to the hard disk you suspect your missing file is on. Figure 2-5 shows how to set things up for this approach.

Figure 2-5
If "Cabinet" is the name of a hard disk (or a SyQuest cartridge, for example), this is how you set up the Find dialog box to search only on one disk.



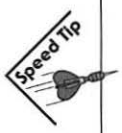
Save time in a folderful

We don't know about you, but when we use the Find command, we rarely turn up what we're looking for on the first try. You're looking for a file called Trolley

Cars, so you type *TROL* into the Find box — and the Mac proudly presents you with the Con*trol* Panels folder.

That's why there's a Find Again command, whose keyboard equivalent is ⌘-G. Find Again automatically presents you with the next icon whose name matches your search word.

Sometimes, however, you get into a nightmarish situation where the Finder finds a folder *full* of files whose names all contain the search words. If you search for Trolley Cars and you type *TROL*, you may open a folder crammed with graphics files called *Trolls Dancing, Trolls in Repose, Trolls Trolling,* and so on. If you rely on the ⌘-G keystroke (or the Find Again command), you can spend endless hours among those icons, highlighting one after another, impatiently waiting for the Finder to come to the end of the Trolls icons so that it can start searching in a different folder.



So, here's the trick: The instant you realize that the Finder has opened a window that doesn't hold the file you want, close the window. The Finder understands the message; your next ⌘-G skips the remaining files in that window and hunts through other folders.

In fact, your cheerful authors got into the habit of leaving one finger permanently on the ⌘ key. The other fingers handle the F, W, and G commands — F to start searching, and W and G alternately to close "nope, not here" windows and continue the search.

THE EDIT MENU

What is there to edit in the Finder, you ask? Plenty, as it turns out.

Undo

Interestingly, Undo almost never does anything useful in the Finder. It doesn't work after you move an icon, empty the Trash, rename an icon, change a setting, apply a label, or enlarge a window. And it *certainly* doesn't work after you eject a disk.

What's especially strange is that Undo rarely works even when you cut, copy, clear, or paste things (to or from the Scrapbook, for example), even though (a) the command isn't dimmed, as it's supposed to be when unavailable, and (b) it *should* work to undo Edit menu commands. Well, no one ever accused Apple of being consistent.

Anyway, the Undo command in the Finder exists today for just one reason: to help you when you're editing a file's name. The Undo command can take back the last text editing that you did.

Cut, Copy, Paste, Clear

It may not occur to you to use the Cut, Copy, Paste, and Clear commands in the Finder, where there's no text or graphics, really, to work with. But these commands do work in a surprising number of different Finder contexts.

- Click an icon. The Copy command grabs the icon's name and puts it on the Clipboard. If you press Return so that the icon's renaming rectangle appears, the other Edit commands work, too.
- Select a group of icons. The Copy command, believe it or not, grabs all the icons' names (up to 255 characters). Here's a handy trick: Open a word processor and paste. You've just made yourself a list of a folder's contents. (OK, you've made a list of the first 255 letters of the names of the files. To get the complete list, see our Find File Secrets in Chapter 3.)
- In the Get Info box for an icon, click the icon. The Cut, Copy, Paste, and Clear commands now apply to the icon graphic.
- Open the Scrapbook. The Edit commands work to transfer pictures, sounds, QuickTime movie clips, or text in or out.
- Open the Puzzle or Jigsaw Puzzle desk accessory. The Edit commands copy and paste graphics into the puzzle itself (see Chapter 3). The same thing works with the Map control panel.
- Open the Sound control panel. You can select a sound's name and copy the sound, clear it, or cut it. If a sound is already on the Clipboard, you can paste it in.

Show Clipboard

Show Clipboard opens a window that displays whatever text, sound, or graphics you most recently copied from any program. For example, if you Show Clipboard after copying a *sound* (from the Scrapbook or the Sound control panel), you see a solitary button that says Play Sound, which does what you'd think.

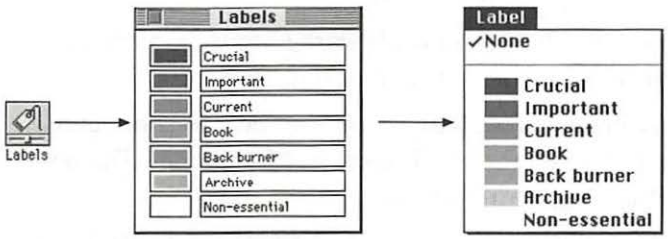
The Clipboard isn't terribly bright about QuickTime movie clips, however. It shows only the first image of the movie, you can't play it like a movie, and it's identified as a "picture." Still, if there *is* a movie on the Clipboard, it's genuinely a movie, and you can paste it anywhere fine movies are pasted — into a Word document, Scrapbook, Movie Player (see Chapter 23), or whatever.

THE LABEL MENU

With System 7's Label feature, you classify your folders, files, and disks by tagging any icon with text labels of up to 31 characters each (*Hot, Momentous, Nugatory,* or whatever). Text labels don't show up in Icon and Small Icon views, but you see them in list views. On color Macs, labels are color-coded; labeling a file assigns its icon a corresponding color.

Seven label categories already are set for you when you install your system software — the classic Essential, Hot, In Progress, and so on. You redefine these categories using the Labels control panel (see Figure 2-6) and then use these classifications to find and sort your files.

Figure 2-6
Open the Labels control panel to define your seven labels, which will then appear in the Finder's Label menu.



To apply a label, select its icon (or a whole group of them), and then choose one of the labels from the Labels menu.

Finding and sorting by label

After you've applied labels to your icons, you can use the labels to sort file lists and search for items:

- ***To sort a list of files by label:*** If you're in any list view, just click the *word* Label at the top of the window; the files rearrange themselves by label. The Mac prioritizes the labels according to the order in which they appear in the Label menu. (And if you don't *see* the word Label at the top of the window, open your Views control panel and turn the Labels column back on.)
- ***To search for a file by label:*** Choose Find from the File menu. Choose "label" from the first pop-up menu. (If you have an operating system older than 7.5, click the More Choices button.) When you search by label, the field to the far right becomes a pop-up menu that lets you choose from among the seven label categories (see Figure 2-7).

Figure 2-7
You can search for files by labels using the Find command.



More on labels

A few more Label points:

- Even though you can't see text labels when you're viewing a window's contents by icon, you can still apply them to the files and folders.
- If your monitor is black-and-white, and you're in Icon view, you may think that there's no way to know what label you've given a certain icon (because you can see neither color nor its text label). Actually, it's easy. Select the icon and pull down the Label menu — a check mark appears next to the icon's label.
- Ever wonder what the Label menu would show if you highlighted two icons that have different labels?

  Would there be two check marks in the Label menu? Would there be no check marks?

  Turns out that if the selected icons have different labels, you get little *hyphens* in the Label menu (next to all the appropriate items).
- To view files by label, you must have the Show Labels check box in the Views control panel selected (see Chapter 4). If you don't, View by Label won't appear as an option in the Finder's View menu (and it won't appear as a column heading at the top of Finder windows), even if you've applied labels to the icons.
- When you make an alias of a labeled item, the alias inherits the original's label. However, you can remove or change the label of one without affecting the other.

Are labels useless?

Frankly, we don't actually use labels much, and we surmise that there are plenty of others like us. If the Label menu seems like a useless appendage hanging over your Desktop, we have a few suggestions:

MACINTOSH SECRET
LOCK IN YOUR LABELS

After you set up your label categories, you may not want anyone changing them. Just picture the consequences of someone redefining your "Hot Items" as "Insignificant Twaddle," and vice versa.

There's an easy way to prevent this from happening: *Throw away* the Labels control panel. Once you've defined your labels, the control panel itself is completely dispensable (it's used only to *change* them). With the control panel gone, you can still apply labels; you just can't redefine them.

To do *that,* reinstall the control panel from a backup disk.

- Use Labels as an aid to backing up your work. Make a label called *Backup*. As you go through your workweek, apply this label to each new document you create or each file you modify. At the end of the week, use your Find File command to round up all the files with the label, and back them en masse.



Figure 2-8
By changing the slots in the Labels control panel, you can also change what your Label menu says. (If you need to create a blank line in your message, type a space into one of the control panel slots.)

- Use the Label menu as a message center. Open the Labels control panel and edit what the little labels say. Make all the labels white so that they become invisible and then replace the label names with a pithy message. You can type an epigram of up to 217 characters (spread over 7 lines, of course). The result looks like Figure 2-8.
- Use the Label menu in conjunction with the world's best troublehooting trick, the *clean reinstall* (described in Chapter 33). Immediately after installing a fresh System folder, assign a certain label to everything in your Apple Menu Items, Control Panels, Extensions, and Preferences folders (in your System folder). Thereafter, a quick glance into those folders will immediately tell you which junk originally came with the system, and which has been deposited there, for example, by little shareware doodads you downloaded from the Net. (The latter, of course, will have no label at all.)

  This procedure has two benefits. First, it makes cleaning up easy — at a glance, you can see all the leftover detritus that should be removed from your System folder. Second, when you do *another* clean reinstall later, you can spot at a glance all the stuff you've added (control panels, extensions, and so on) that you *do* want to retain.

  If you adopt this Secret, consider this final spin: open your Labels control panel and *change* the label you're giving your freshly-installed components. Make the new name "Clean install 3/97," or something equally informative, so you'll know when those components got added.

  For added purity, change the *color* of this label to white, so you don't tint Apple's beautifully designed icons in the process.
- Dennis Cohen, our technical reviewer, reports that one of his coworkers uses Labels as part of a clever backup and workflow strategy. This fellow drags folders of documents in progress onto an AppleScript applet's icon (see Chapter 22) that changes the label of anything modified that day to red (after backing it up). Another applet later transmits all the "red" documents to the next person in the company who needs to deal with them.

- Best idea of all! Install Label Secrets Pro, the handy control panel written exclusively for this book. Drop it into your System Folder. Every day, when you turn on the Mac, the Label menu shows you a new Macintosh Secret. It's like a word-a-day calendar — but much more useful! (See Figure 2-9, and see Chapter 34 for instructions on how to use Label Secrets Pro.)

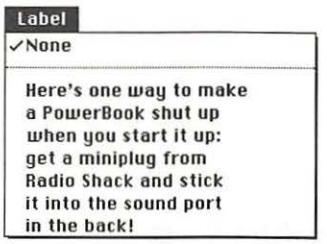


Figure 2-9
Open the Labels control panel to define your seven labels, which will then appear in the Finder's Label menu.

THE SPECIAL MENU

Here it is: the only non-verb Finder menu title. Special, in this case, really means *miscellaneous.*

Eject Disk

Don't use this command. It ejects a floppy disk or removable cartridge but *leaves* its image on the screen. Therefore, the Mac believes the disk is still around. At the least provocation — your clicking the ghosted icon, for example — the computer asks you to give the disk back. This, need we add, is a royal pain if you've already put the disk back in its box on a shelf somewhere.

Instead, use the File menu's Put Away command (⌘-Y) to eject disks.

There are two exceptions to this advice. First, if you insert a *locked* floppy disk and you need to copy stuff onto it (thus requiring it to be unlocked), *then* you should use Eject Disk. When the disk pops out, unlock it and stick it right back in. This routine is faster than using Put Away and reinserting the disk.

The second exception: You *have* to use the Eject Disk command when you're copying files from one floppy to another, but only have one disk drive.

MACINTOSH SECRET
FINDER UNLIMITED?

The Finder has a few built-in limits. But must be a *serious* mega-user to reach *these* numbers:

- Maximum number of open files on your Macintosh at once: 346
- Maximum number of menu Items: 50
- Maximum number of applications running: No built-in limit (except your Mac's memory)
- Maximum number of volumes (disks) available at once on the Desktop: 32
- Maximum memory you can allocate to a program: 99,999K
- Maximum number of colors in an icon: 256, even on a Mac with 24-bit color
- Maximum number of files on a disk: 65,536
- Maximum number of nested folders: 64
- Maximum number of items in a folder by list view: Up to 32,000, depending on the computer and RAM. (But, according to Apple: "Attempting to view large amounts of data in one window, something in the range of 500-1,500 files, will create very slow opening times and drop-out viewing problems. The specific number depends on RAM and CPU.")

Erase Disk

We have a couple of little-known morsels concerning this command; see Chapter 8.

Clean Up

The Clean Up command, in the Special menu, has about a thousand variants. Here's the complete list.

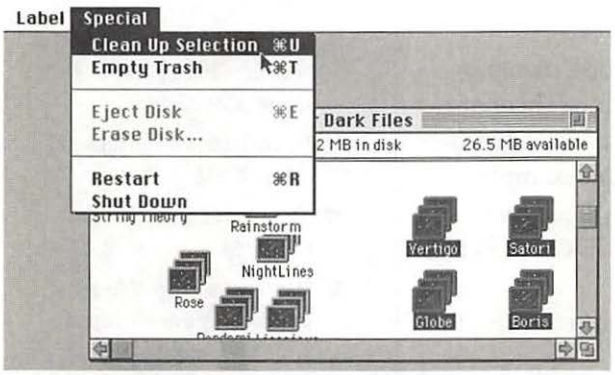
CLEAN UP SECRETS

Clean up only selected icons

When you view icons in a window, the command says Clean Up Window. It adjusts the position of every icon so that they are aligned to the nearest spot on an invisible grid.

If you press Shift, however, the command says Clean Up Selection. It makes only the highlighted icons snap to the invisible grid (see Figure 2-10).

Figure 2-10
The Clean Up command is a many-splendored thing. Press Shift to make it affect only the highlighted icons.



Sort and neaten simultaneously

This is a *really* useful Secret. If you press Option, the command says Clean Up by Name (or Size or Date and so on). The sorting method is determined by the sort method you used the last time the window was displayed in a *list view.* The command makes icons snap to a grid, just as the normal Clean Up command does. However, instead of moving each icon to the *nearest* grid position (and leaving gaps), this command places them neatly, one after another, in sequential rows at the upper-left corner of the window. If you're viewing by Small Icon view, your files fall neatly into *columns.*

Here's an example. Suppose that you want the icons in a window arranged in size order, largest files first. Choose "by Size" from the View menu, and then choose "by Icon" from the same menu. Hold down Option and choose from the Special menu — the deed is done.

Hint: Because this special version of Clean Up puts icons side by side in rows so that they precisely fill up the window they're in, be sure to adjust the window *before* using this command so that it's the shape you want.

Clean up icons on the Desktop

Oft-neglected factoid: You can also clean up your *Desktop* icons. First, select the Desktop, either by clicking there or by pressing ⌘-Shift-up arrow. Then, while pressing Option, choose Clean Up All from the Special menu. The Finder instantly arranges all those loose Desktop icons along the right side of your screen.

THE GUIDE MENU

The Guide menu (formerly known as the Help menu), of course, is the little question-mark icon near the top right of the screen. (People must say, "It's a question mark!" "It's a light bulb!" "It's a question mark *and* a light bulb!")

The Guide menu either has *three* functions or *none*, depending on which program you're using: Balloon Help, Macintosh Guide, and generic Help for that program.

CASE HISTORY

HOW MANY BALLOONS?

One of your cheerful authors was once contracted to write Balloon Help for a program. He'd like to share with you one of the reasons some programmers opt not to write Balloon Help for their programs. Take a look at the figure at right:

This is BalloonWriter: a very, very buggy program, at one time distributed by Apple for programmers to write Balloon Help.

As you can see, you can't just write one balloon for each menu command or dialog box item. As shown in the figure, you actually have to write up to *four* balloons for each item! The text is supposed to change, depending on whether a menu command (for example) is checked, dimmed, or both. As you can imagine, this means that some poor slob has to compose up to *four* balloons for every knob, slider, and button in a program. It's *work*.



Balloon Help

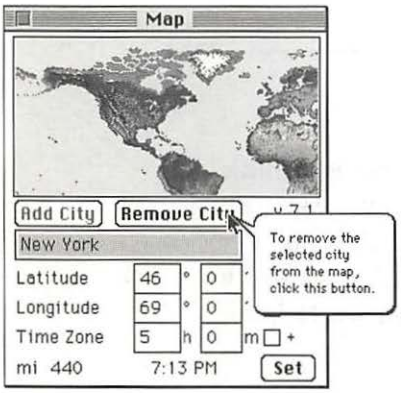
You probably already know how Balloon Help works; if not, Figure 2-11 should explain all.

We've heard conflicting reactions to Balloon Help. Some people think it's the dumbest thing alive. Others think it's genuinely helpful. Your cheerful authors kind of like it, having been seriously helped out by using it in a couple of user-hostile programs.

In any case, whether or not balloons will appear when *you* try Balloon Help depends entirely on what program you're using — and whether or not its software company bothered to *write* all the little pop-up messages. You *always* get balloons that identify standard Macintosh elements (such as scroll bars, zoom boxes, icons, and so on). Apple did that much for you. (Likewise, Apple created balloons for most of the system software: the desk accessories, control panels, SimpleText, the Finder, and so on.)

Anyway, you can certainly live a rich and rewarding life even if you leave Balloon Help off all the time.

Figure 2-11
Choose Show Balloons from the Guide menu. Balloons appear wherever you point. You can find some pretty hilarious secret messages if you poke around your System folder long enough with Balloon Help on. For the complete list of Balloon-Help Easter eggs, see David Pogue's *The Great Macintosh Easter Egg Hunt* (Berkley Books, published 3/97). For now, however, try pointing to the QuickTime extension; CloseView control panel; the QuarkXPress icon; MacsBug; and the Speech Setup control panel's version number.



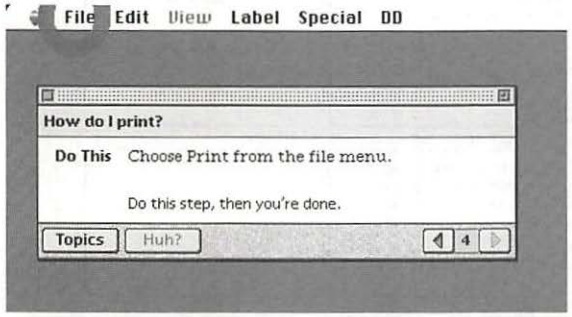
Apple Guide

If programmers thought writing Balloon Help was tedious, they couldn't have imagined what Apple had in store next: Apple Guide (also called Macintosh Guide), which made its debut in System 7.5.

Imagine choosing from an index of tasks that you may want to accomplish: changing the Desktop pattern, let's say. Now imagine that the computer *shows* you how to do what you've requested, step by step, using a ghostly red magic-marker pen to circle where you should click next.

That's Apple Guide. It requires enormous support files to lie in your System Folder. But for the beginner who's lucky enough to find the desired task in the list — and who's smart enough to *think* of choosing Apple Guide from the menu when stumped — it's made in Heaven (see Figure 2-12).

Figure 2-12
Apple Guide is like an intelligent manual. First, you choose Macintosh Guide from the new, enhanced Guide menu. You choose from a list of "How do I...?" questions. Next, you read the step-by-step instructions in the Help window that appears. The bright red, fat magic-markerish, ghost-drawn pen (called the Coach) draws your eye to the interface element being described.



Once again, though, the trouble with Apple Guide is its limited acceptance by the world of software companies. Almost none have bothered to *write* the screens and draw the graphics that would drive Apple Guide for their programs. (Quicken, WordPerfect, and BBEdit are some exceptions.) Even most Apple and Claris programs don't have Guide files, although sometimes you'll see a program's regularly scheduled Help feature listed in the Guide menu.

It's worth knowing, however, that if you work in a technical office, you can write your *own* Apple Guides for your employees — to accompany a custom database, say, or particular routing tasks in your office. (Contact APDA, 800-282-2732, for details on programming your own Guides.)

TRUE FACT

COPLAND AND APPLE GUIDE'S FUTURE

If you've ever used Apple Guide, you may have wondered: If the computer is smart enough to walk me through all the steps necessary to achieve my goal, why doesn't it just *do* them for me?

That idea occurred to Apple, too. That's why this kind of "active assistance," as Apple calls it, is one of the features under discussion for Mac OS 8, the 1997/98 operating-system-in-progress. If Apple sticks to plan, the Macintosh will be able to take over tasks *for* you. For example, if you answer some questions about a task you want to automate, the Mac will automatically create an AppleScript that handles its future execution. Each "interview" will ask you three things: What would you like done? When should it happen (what times or events should trigger it)? And, how would you like to be notified?

For example, in your interview, you could specify that you wanted all documents created today backed up onto a specified backup drive. The "agent" feature of Copland would then create an AppleScript that strings those steps together.

See Chapter 6 for more on Mac OS 8.

THE KEYBOARD/INTERNATIONAL MENU

We doubt that you've been wondering about this menu, because you probably have never even seen it. In fact, you have to go to a considerable amount of trouble to make it show up. When it does appear, it's at the right side of your menu bar between the Guide and Application menu icons (see Figure 2-13).

The idea is that this menu lists several different keyboard script systems or keyboard layouts. A script system is a set of files that describes how a particular language should work on the Mac: Does the typing appear right-to-left? What do the letters look like? And so on.

If you have more than one script system installed, you'll see them listed in the International menu that then appears. By choosing a command from this menu, you switch your entire keyboard to a different language system. The feature (in System 7.1 and later) that permits the conversion of the Mac into foreign language systems is called WorldScript. (Unfortunately, you must buy each foreign-language kit, which can be

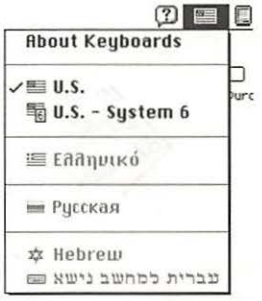


Figure 2-13
The menu no one knows.

difficult to find, as well as a word processor that's WorldScript-ready, such as Nisus or ClarisWorks.)

The much more practical use of this menu, though, is to switch among keyboard *layouts*. As you'll learn in Chapter 21, by using ResEdit, it's quite simple to change what letters get typed when you press your keys. That's of great consequence if you decide to try the famous Dvorak keyboard layout (included with this book) — an arrangement of keys that's far more logically and efficiently designed (for fast, efficient, error-free typing) than the standard "QWERTY" layout. Use our trick in Chapter 21 to make the Keyboard menu appear on your Mac; drop the Dvorak layout onto your System Folder to install it; and use the Keyboard menu to switch between the old and new layouts whenever you wish.

HIDDEN SYSTEM COMMANDS

Your Mac has more than menu commands. A good number of other useful ones don't appear in any menu; they're activated purely by keystrokes. Technically speaking, these aren't really Finder commands at all; they'll work no matter what program you're using.

HIDDEN SYSTEM SOFTWARE COMMAND SECRETS



Take a picture of the screen

"Press ⌘-Shift-4. The Mac will print a copy of whichever window is active on your screen. If the Caps Lock key is also down, you'll print out the *entire* screen (not just the window)." How many times have you read that old saw? Guess what: It's not true. Hasn't worked since the dying days of System 6.

But you *can* capture and print the screen. First, press ⌘-Shift-3; you'll hear a satisfying camera-click sound. The Mac creates a graphic file, a PICT file on your hard disk, called Picture 1. If you take additional screen shots, they'll be named Picture 2, Picture 3, and so on.



To edit this graphic, you need a painting program, such as Color It! (included with this book). If you just want to see it, double-click the Picture 1 icon to open the image with SimpleText. (See Chapter 17 for more on SimpleText.)

Once in SimpleText, you can print the graphic or even drag-select a region of it to copy, cropping out stuff you don't want. Paste what you've copied into a word processor and print *that*.

Of course, there's a screen-capture method that's *much* simpler than all of this. You, as a *SECRETS* owner, possess a wonderful screen-capture program called Flash-It! (on the disc with this book). In Chapter 34, you'll find out how easy it is to capture or print any portion of any screen at any time.



How to eject a disk by using only the keyboard

- ⌘-Shift-1 ejects a disk from the Mac's built-in disk drive.
- ⌘-Shift-2 ejects a disk from the external disk drive (or the second drive if you have a Mac with two built-in floppies).
- ⌘-Shift-0 ejects a disk from a *third* disk drive if there is one. (Some Macs have two built-in drives plus an external.)

Keep in mind that all these commands eject the disk *without* removing its image from the screen, so you run the risk of getting the "Please insert the disk:" message over and over again. (You can try pressing ⌘-period several times. As we'll discuss in Chapter 8, this *sometimes* makes the message go away.)

Those are extremely useful keystrokes to know when you can't eject a disk in the usual way — for example, when you're installing a program and it's asking for Disk 2 but hasn't ejected Disk 1!

Chapter 3

Desk-Accessory World

IN THIS CHAPTER:

- Secrets of the standard desk accessories
- The profoundly useful additions in System 7.5
- Which System Folder junk you can throw away
- DAs and drag-and-drop

You thought that the System 7's standard 4MB System Folder was bad? Get a load of System 7.6, for which a full installation scarfs down more than *85MB* of your hard drive. (Sympathize with Windows 95 users, who sacrifice up to 70MB to their "system folder.")

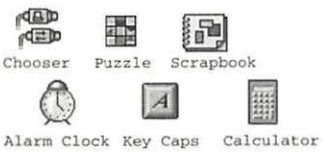
Obviously, that huge swath of your primary drive is creaking with files and features that most people never use. In this chapter and the next, you'll find out what *every single piece of System Folder junk* is for. In the process, you'll find out which stuff is safe to trash, saving yourself memory and disk space. You'll also learn a few surprising features of the desk accessories and control panels that you've always taken for granted.

As for this chapter: As of System 7.5, desk accessories are essentially dead. In their place is a new generation of bigger, more powerful programs — yes, actually applications — that mimic desk accessories by showing up in your menu. As you'll see, these programs are twice as useful as the desk accessories they replaced.

DESK ACCESSORIES

Figure 3-1 shows the suite of six desk accessories that came with every Mac for ten years. Now, they're beginning to disappear — System 7.5's menu, for example, is conspicuously free of the Alarm Clock and the Puzzle.

Figure 3-1
A few of Apple's aging desk accessories.

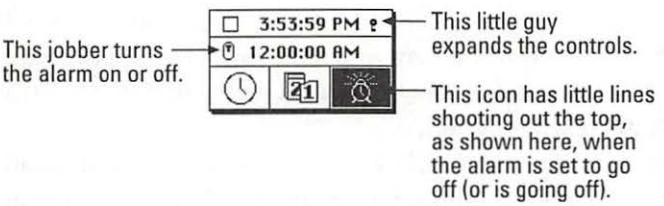


Alarm Clock

These days, you're supposed to use the Date & Time control panel to set your Mac's clock; the Alarm Clock no longer appears in the menu of System 7.5 and later.

If you're running an earlier system version, here's how you change the time or date. Click the tiny flag to the right of the time. The editing controls open (see Figure 3-2). Click the *picture* of the clock to change the time. Click the "21" in the middle to change the date. (It's actually *not* a 21; it's supposed to be a desk calendar with page 1 being ripped out.) To set (or turn off) an alarm, click the alarm clock icon at bottom right. You can enter numbers from the keyboard, or click the up and down arrows that appear whenever numeric text is selected.

Figure 3-2
The Alarm Clock control panel, where you can set the time, date, or one alarm.



You can set only one alarm. When the alarm time arrives, your error-beep sound plays once, and a tiny alarm-clock icon flashes where your menu icon usually is.

ALARM CLOCK SECRETS

Time and date stamping

Choose the Copy command while the clock is open. It won't look like anything happened, but if you paste what you copied into another application, the exact time and date will be stamped into your document.

Turning off the Alarm

OK, so maybe this isn't much of a Secret to *you*. But we've met more than one Mac-savvy user whose menu is still blinking after several *years*, who has no clue that this isn't the usual state of affairs, and who never suspects that this might be the Alarm Clock waiting to be turned off.

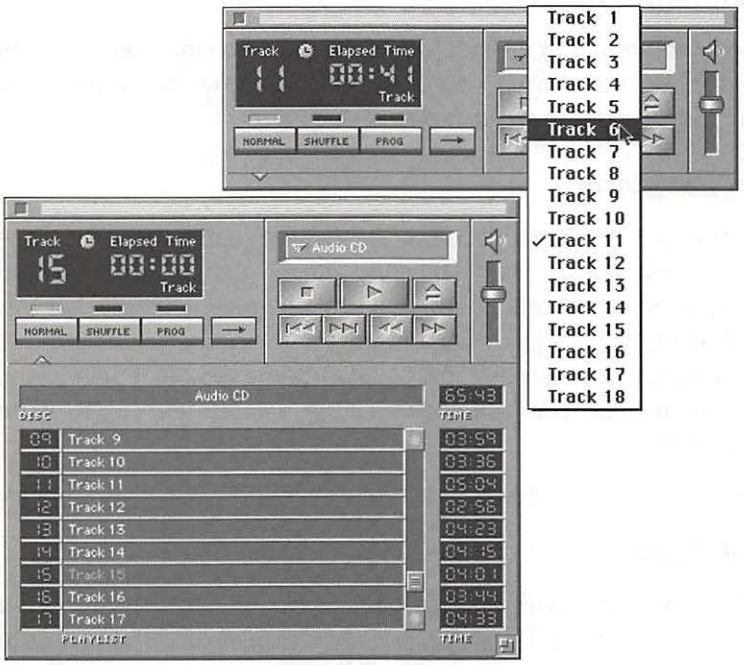
To turn off the alarm, open the Alarm Clock, click the little flag next to the time, click the alarm-clock icon, and click the little "T" nub next to the alarm time (see Figure 3-2).

AppleCD Audio Player

One of the nice aspects of owning a CD-ROM player has always been that it can double as a *music* CD player. You can crunch numbers to the strains of Carly Simon, for example. AppleCD Audio Player is the "front panel" of your virtual CD player. (It won't even open if you don't, in fact, have a CD-ROM player connected.)

Of course, if you have QuickTime 2.5 or later, you don't technically need this program to play audio CDs. If your QuickTime Settings control panel is so configured, music CDs begin playing automatically when you insert them. But if you'd like your CD to play back in anything but a plain start-to-finish arrangement, you'll discover that the controls for the AppleCD Audio Player are a lot like those on a standard audio CD player. You have some basic programming and repeat functions, the ability to scan through the tracks of a disc, and even *shuffle play* (which means that the player plays songs in its own random order). When you expand the window, you can see a listing of each track on the disc, along with its playing time. A pop-up menu allows you to jump directly to any track by selecting its number (see Figure 3-3).

Figure 3-3
AppleCD Audio Player desk accessory, which you use to play your favorite audio CDs on your CD-ROM player.



APPLECD AUDIO PLAYER SECRETS

Use your keyboard, pal

This program is filled with keyboard shortcuts. You can start and stop the music by pressing the spacebar or the Enter key. (Press Delete or Esc to stop the music.)

Press the up-arrow and down-arrow keys to control the volume slider; press the right- and left-arrow keys to "click" the Previous and Next Track buttons. You can "click" the Eject Disc button by pressing ⌘-E.

Instant Desktop access to your songs

The AppleCD Audio Player isn't your only interface to your music discs. You can also double-click songs as icons — that is, when you insert an audio CD, its contents show up in the Finder as individual icons. (If not, reinstall your

Foreign File Access and Audio CD Access extensions.) Double-click a track's icon to open it in AppleCD Audio Player, ready to play.

Name those tunes

You're not condemned to listen to your CD's songs in the same old unimaginative sequence every time. Audio Player actually allows you to rearrange the tracks, repeat songs, or leave the irritating songs out of your listening order.

To do so, click the tiny triangle to expand the panel, as shown in Figure 3-3. If the songs aren't already named, click the NORMAL button, click the first track name, and begin typing the song titles. (Free book winner Kirk Hinton notes that you can press Return [or Tab] after each title to move down to the next blank, or Shift-Return [or Shift-Tab] to move upward.) While you're at it, click the words *Audio CD* and type the name of the disc, too.

After you do all this, the Player automatically remembers the album and song titles the next time you insert the disc. (They're saved into a secret file called CD Remote Programs in your Preferences folder, as free book winner Mark Klinski discovered.)

Finally, click the PROG button. Now you can drag any title on the left side to any slot on the right side. You also can drag titles up or down on the right side. Feel free to drag the same song twice — or leave songs out of the playlist on the right side completely.

Tweak to your satisfaction

When the Audio Player is open, don't disregard the Options menu that appears. This menu lets you change the color scheme of the Player panel. (We've come up with some *very* cool combinations.)

Please note, too, the resize box in the lower-right corner. There's no reason not to drag this box and make room to display your CD's entire track list.

Of time and music

Note that when you're creating a playlist, as described in the previous Secret, the TIME display automatically adds up the lengths of the songs you've selected. Use it as your guide to figuring out how many songs will fit onto one side of a cassette tape, for example.

Speaking of that little time readout: Click it to toggle the display between showing the elapsed time or the time remaining (on each track or on the entire CD).

Apple System Profiler

This handy little program was available as an independent download, but became a standard part of the OS with System 7.6. This little program simply analyzes your Mac's System folder and hardware, producing a neat little printable report. (You can use the Select menu to choose from five different info screens: a general hardware overview; disk [Volume] info; SCSI-chain [Device] descriptions — the first time Apple has duplicated the shareware gem SCSIProbe's important functions; control panels; extensions; and the System folder itself.)

We predict that the hapless technicians at 800-SOS-APPL are quietly rejoicing, now that they have an easy way to find out, over the phone, just what kind of a mess they're dealing with when novices call for help.

Automated Tasks

As with the Control Panels item described later in this chapter, Automated Tasks isn't a program at all. It's merely an alias, dropped by Apple into your menu for convenience (in System 7.5 and later). Inside this folder are several handy *AppleScripts* — mini-programs, each of which performs one simple time-saving step when opened. (When you've hung around the Mac long enough, you may be tempted to write your own AppleScripts; see Chapter 22.)

Here, for example, are the basic AppleScripts that come with System 7.5.3 and later:

- **Add Alias to Apple Menu** puts an alias of the selected icon into the Apple Menu Items folder, and, therefore, into your menu. *Savings:* fussing with your Apple Menu Items folder and taking the word *alias* off the alias.
- **Find Original from Alias** locates, on your hard drive, the original file whose icon generated an alias you have first selected. *Savings:* opening the Get Info box, clicking the Find Original button.
- **Share a Folder** checks to see if a folder named Drop Folder at is the top level of the startup disk. If there is no Drop Folder, the script creates one. It then turns File Sharing on and gives Guests permission to access the Drop Folder over the network (see Chapter 32). *Savings:* futzing around with several control panels.
- **Start File Sharing** turns file sharing on; **Stop File Sharing** turns it off. *Savings:* a trip to the Sharing Setup control panel.
- **Turn Sound On** sets your Mac's volume level to 5 (out of 7). **Turn Sound Off** Steps the volume to 0 (the menu bar will blink instead). *Savings:* a trip to the Sound/Monitors & Sound control panel.

If you examine your Apple Extras folder, you'll discover (in the AppleScripts folder) another set of AppleScripts called More Automated Tasks. They perform the following more advanced functions:

- **Alert When Folder Changes** tells you when somebody has dropped a new file into a particular folder (via File Sharing over a network). To make this script work, first drag a folder onto this AppleScript's *icon* (in the More Automated Tasks folder). The script runs in the background while you work on your Mac. If anybody drops anything into your special folder, a message will let you know.
- **Change Monitor to 256** switches your monitor to its 256-color mode (but only until the next time you turn on the Mac). **Change Monitor to B&W** changes the setting to black-and-white, if your monitor can be set that way.
- **Hide/Show Folder Sizes** turns on or off the "Calculate folders sizes" checkbox in the Views control panel. As you'll learn in Chapter 4, this option can be extremely useful when trying to figure out what's taking up so much space on your hard drive — but it slows down the Mac like crazy. This shortcut, which savings you a tedious trip to the Views control panel, makes the on/off business much less painful.
- **Synchronize Folders** compares the contents of two folders and makes their contents match. For example, if a file called Document 1 is in folder A, and Document 2 is in folder B, the script copies each document into the other folder so that both folders contain both files. If two files have the same name, the more recently updated one winds up in both folders. (Are you paying attention, PowerBook road warriors?)

Battery

For 100-series PowerBooks (and pre-280 Duos) only: this is a fuel gauge for keeping track of how much juice your battery has left (see Figure 3-4).

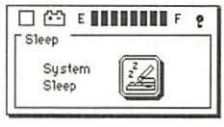


Figure 3-4
The Battery desk accessory in its expanded condition. To collapse it to a little floating bar, click the tiny lever in the upper-right corner.

The Battery DA serves one other useful function: If you click the tiny lever at the right edge, a new panel expands. This lower panel contains a big button that you can click to make the PowerBook go to sleep on cue. For most 100-series PowerBooks, this button was the only way to make the laptop go to sleep without switching back to the Finder and choosing Sleep from the Special menu. (In the PowerBook chapter to come, you'll find a couple of even more efficient ways to put your laptop to sleep.)

Figure 3-5
The arrow indicates one of the hidden pixel handles.

Beginning with the PowerBook 500 series and Duo 280, Apple replaced the Battery DA — an aesthetic clunker — with the much more graceful Control Strip, described in Chapter 4.



Calculator

With the four-function Calculator (Figure 3-5), you can add, subtract, multiply, and divide numbers of up to 13 digits. You can enter numbers by typing them on the keyboard — notice that your numeric keypad precisely matches the on-screen arrangement of number buttons — or by clicking the Calculator buttons.

CALCULATOR SECRETS

The all-at-once calculation trick

The Cut, Copy, and Paste commands all work with the Calculator. You can paste numbers from a word processor or spreadsheet. After you calculate the answer, you can copy and paste it back into the document. You also can paste an entire equation (such as 123-44*16/2=) into the Calculator. (In computerese, * means *times,* and / means *divided by.*) The on-screen keys flash madly, as though they're being punched by a ghost, and the Calculator instantly computes the answer.



By the way, notice the difference between the Calculator's math and your spreadsheet's. The Calculator solves what you paste in *written* order: in other words, 123-44*16/2 gives you 632. A spreadsheet, on the other hand, does multiplication and division *first* (as sub-equations); in that case, the answer to 123-44*16/2 would be -229. That's worth noting before you calculate the next Space Shuttle's trajectory on this thing.

How to correct errors in long calculations

The Calculator's worst feature is that, unlike most real calculators, it has no CE button to clear only the last entry. If you inadvertently enter a wrong number, you have no choice but to click the Clear button, which erases the entire equation, and then begin the entire calculation anew. For this reason, whenever you have a lengthy string of numbers to crunch, we recommend *always* typing your equation in the Note Pad desk accessory first and then pasting the equation into the Calculator.

Secret scientific-notation keystroke



Press the E key when using the Calculator, and your calculations appear in scientific notation! Now the Calculator can work with bigger numbers. Actually, it now gets stranger. How'd you like to see your old trusty calculator start displaying *words* instead of numbers? It will. Type E, then 9999, and then press the equal sign. The answer, of course, is "infinity."

And you know what E9999/E9999 is, don't you? Right. "Not a number."

The Calculator's secret grip strips



The Calculator has a pair of secret handles. Because they're at the bottom of the Calculator, they're ideal for dragging the Calculator back into the window if it's accidentally moved off the top of the monitor.

These dual grip strips are the black portions of the lower corners (see Figure 3-5). These black pixels are the only spots on the Calculator that are draggable (other than the title bar). Amaze your friends by showing them that you've dragged the Calculator clear up off the screen!

Technically, of course, *any* Macintosh window of this type — black title bar, rounded edges — offers these secret handles. But how many examples of this ancient window type to you see these days?

(If you enjoy being on the cutting edge, by the way, don't miss our awesome keyless-calculator trick, featured in Chapter 21.)

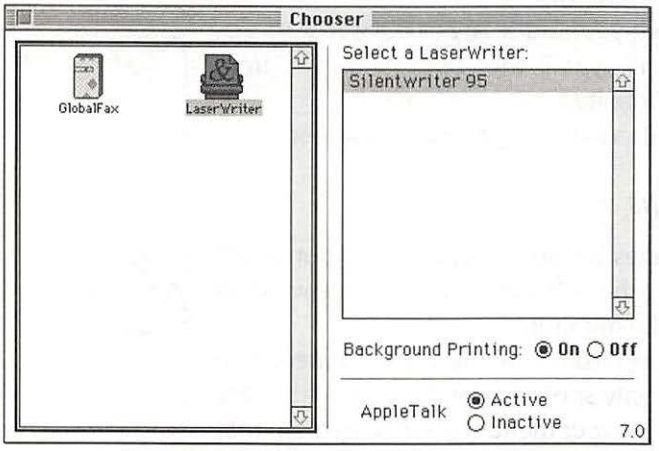
Chooser

The Chooser is the most significant desk accessory. It's a necessity if you plan to print anything, fax anything, or connect your Mac to a network of any kind.

The Chooser is the Mac's Ellis Island; it acknowledges, administers, and translates for the arrival of any Mac attachment whose cable goes into the Mac's modem or printer ports. (Printers, networks, and fax/modems are the primary examples.) For the Mac to communicate with any such external device, the Chooser must be able to locate a piece of software in your Extensions folder called a *driver* (a translator between the Mac and this outside device). You use the Chooser to tell the Mac which driver to use for a given task.

If your network has more than one printer and your usual one is tied up, you can use the Chooser to select an alternate. You also can use the Chooser to turn AppleTalk on and off (part of any PowerBook owner's daily routine,

Figure 3-6
The Chooser is the control center for any equipment plugged into the serial ports (modem and printer jacks).



because AppleTalk gulps down battery power), although using System 7.5.3-and-later's Control Strip is far more convenient.

What's especially nice about the Chooser is that you don't have to close it or restart the computer to make its changes take effect. When you first attach a new printer, open the Chooser and click the appropriate driver. The instant you plug the cable into your new printer, the printer's name appears in the list on the right side of the Chooser (see Figure 3-6). For more information on this fascinating window of opportunity, see Chapter 25.

CASE HISTORY

REVENGE OF THE SECRETS AUTHORS

As we discovered after writing the first couple editions of this book, "best-sellerdom" has its drawbacks. Imagine our sense of anguish, for example, each time we see one of our exclusive Secrets pop up in another publication — without acknowledging this book as the source. We've seen many a trick from this book published in, say, *MacUser* or even *Macworld*, as a $25 reader-submission winner.

Of course, there's always that nagging doubt: Maybe, just maybe, someone else stumbled onto the same secret independently. We needed a way to earmark one of our Secrets before releasing it into the world, much the way a scientist might tag a bird's leg to track its migration.

So we did. We tagged our "Calculator's secret grip strips" trick: for a couple of editions, we deliberately published it incorrectly. Well, not incorrectly, but incompletely. In fact, it isn't a *one-pixel* handle (as we wrote then) at all; you can grab *anywhere* along either of the bottom two corners to move the Calculator — anywhere on the rounded black area. And anyone who genuinely discovered this trick would know that.

Sure enough, our delightful undocumented "one-pixel" Calculator trick has proven popular in just about every Mac magazine, book, and newsletter. It has been reprinted, exactly as it was in previous Secrets editions, always without acknowledgment, and always without the complete story.

Fie on them, we say. Go dig up your own tricks!

CHOOSER SECRETS

Type-select, and go home sooner

You can operate the Chooser entirely mouselessly, if you so desire. The Tab key highlights the different areas in turn — the zone list (if you have one, at lower-left); the list of attached printers or networked Macs (right side); and the panel full of icons (upper-left).

Furthermore, you can type to highlight names *within* each of these areas, too; type the letter *L* to highlight the LaserWriter among the printer icons, for example. If your Mac is a network, and you're bringing someone else's Mac onto your Desktop, you can hit ⌘-G or ⌘-R, respectively, to "click" the Guest or Registered User buttons.

Why the Chooser never remembers your settings

Many a novice — and not-so-novice — grumbles about the inconvenience of having to open the Chooser and make a printer selection before *each* print job. When asked why they bother, they demonstrate: When they open up the Chooser, their printer of choice — LaserWriter or StyleWriter, for example — is no longer highlighted.

True enough: The Chooser *never* opens up with an icon already highlighted, no matter how hard you clicked one of its icons the last time. That's because the Chooser administers more than just printers — networks and fax/modems, too, for example — and, thus, it always opens as a blank slate, requiring you to click the kind of icon you intend to work with. That doesn't mean, however, that it has *forgotten* the selections you made during your last trip to the Chooser. Indeed, unless your Mac's battery is dying or its PRAM needs clearing (see Chapter 33), the Chooser always *will* remember whatever you clicked last.

Control Panels

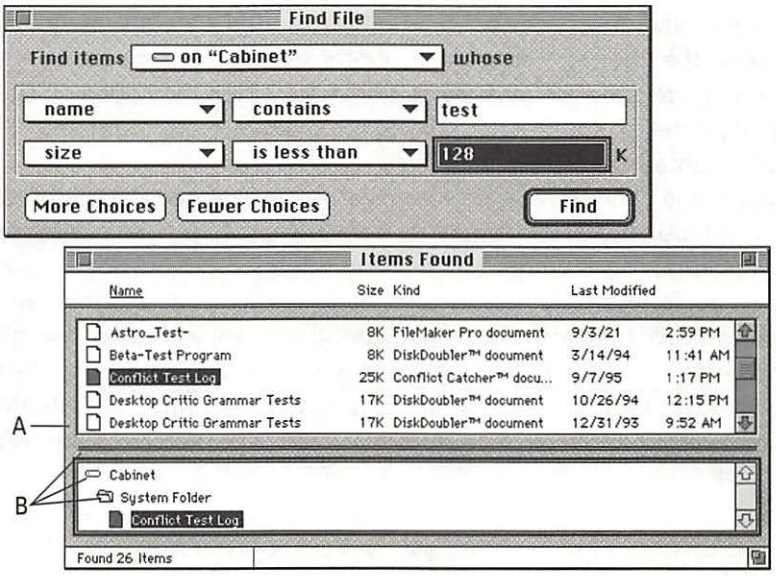
Why isn't this System 7 desk accessory called Control *Panel*, as it was in System 6? Because it *isn't* a desk accessory. The Control Panels listed in System 7's menu actually is an alias of the Control Panels *folder* that lives in the System Folder. Apple puts it there purely as a convenience. See Chapter 4 for details.

Find File

As you're about to find out, this amazing program has more Secrets per square inch than anything else on your Mac. We came *this close* to renaming this book *Macworld Find File SECRETS.*

When you choose the Find File command, found in both the File and menus of System 7.5 and later, you launch a full-fledged program. After it searches your Mac, it lists the files, folders, or disks you're looking for in a new window, called Items Found. If you click a file's name in the *top* half of that window, you can see where it's filed (in the bottom half; see Figure 3-7).

Figure 3-7
At top: The expanded Find File dialog box after the More Choices button has been clicked, exposing the second set of search criteria. At bottom: The Items Found window, showing all the files that match your search request. Notice that you can drag the central beam up or down (A) to change the relative sizes of the two panes. You can also double-click any listed folder icon (B) to open its real Finder counterpart.



This Items Found window shows a list view of "live" icons. From here, you can *double-click* any listed file to launch it directly, or drag it to move/trash it, and so on.

By choosing Open Enclosing Folder from the File menu (or by double-clicking the item's folder in the bottom window), you also can make this Find File open the selected icon's *window*, wherever it may be, and highlight the icon — exactly as the previous System 7 Find File command did. Having had the advantage of surveying the complete list of matching files first, however, you're less likely to waste your time jumping to the wrong file.

Why did Apple list the Find File command in both the and File menus? For convenience: If you're working in a program — ClarisWorks, say — and you need to find a lost document, it's too much trouble to switch back to the Finder just to invoke the Find command. With the words Find File always available in the menu, you can do quick searches no matter what program you're using.

Of course, having Find File in the menu is important for another reason, too. If you start your Mac with the Shift key down — in the middle of a frantic troubleshooting session, for example — you'll discover that you've turned off the all-important Find File extension. Without it, neither ⌘-F nor choosing Find from the File menu works to trigger the familiar Find program. Instead, all you get is the old, one-file-at-a-time, pre-System 7.5 Find dialog box. In such a case, your only access to the more powerful Find program is through the menu.

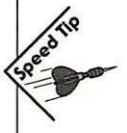
In any case, as we said, the Find File program is absolutely crawling with juicy hidden secrets and features. Here they are.

FIND FILE (7.5) SECRETS

Bring back the old Find File again

If you really hate the new Find File, you're not condemned to use it. You can, if you want, use the old, less-complicated Find File from the System 7 versions of old. To do so, just press Shift as you choose Find File from the File menu (or while you type ⌘-F).

That option isn't utterly stupid, by the way. Suppose, for example, that you know that there's only *one* file with the name you seek, and it's on your main hard drive. In that event, it's far faster to use ⌘-Shift-F — and jump instantly to that file — than to use Find File and sit, drumming your fingernails, while the Mac takes the time to search your entire drive.



When old Find File comes back, unwanted

There are two circumstances under which the old Find File interface appears when you *don't* want it. First, as noted earlier, you'll get the old box if you've turned off extensions (or lost the Find File Extension).

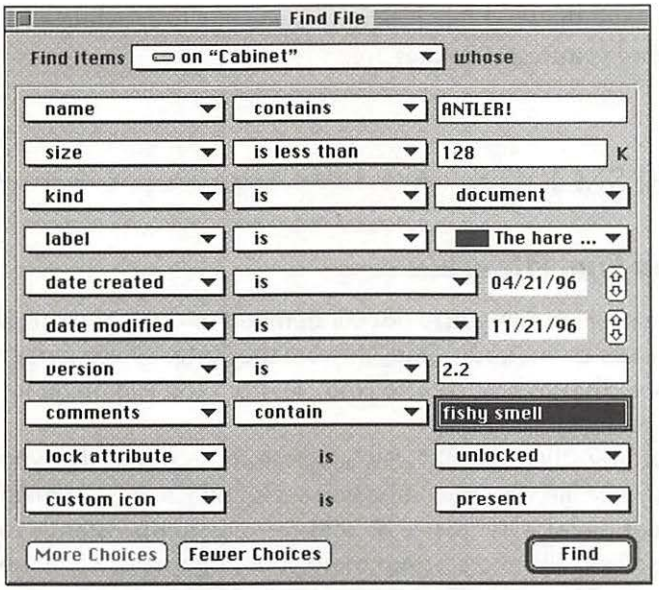
The other time you'll get the old Find command is when there isn't enough memory to launch the new Find File program. The Mac doesn't waste your time with an error message. Instead, it shows you the old Find dialog box,

figuring that *some* search mechanism is better than nothing. If you want the newer Find File program, quit a running program or two before trying again.

More, more, and more choices

Find File introduces a unique twist to Apple's standard interface behavior: the More Choices button. Generally, clicking this button expands a dialog box to show a few more choices. With the new Find File, however, you can *continue* to click this button over and over again, expanding the dialog box more and more, until you see *12* search criteria, if your screen is big enough (see Figure 3-8). (You can also press ⌘-M to expand, and ⌘-R to collapse, the window.)

Figure 3-8
If you can't describe the file you're looking for with *12* descriptive phrases, you probably don't know what you're looking for.



With this knowledge, it doesn't take a rocket scientist to figure out how you'd search for all Excel files you created between August and September of last year, even if you can't remember the name of the file you're looking for.

Which brings us to another important Find File attribute: For the first time, those criterion pop-up menus allow you to type four-letter Type and Creator codes, as described in Chapter 16. For the techno-savvy, that's a handy way to search for specific files (say, a Word file).

Fewer, fewer, and fewer choices

OK, you've expanded the criteria box to show several file attributes, as described in the previous Secret. But now you decide to *eliminate* one of the file characteristics you've set up. You want to search only by name and date, not name, file size, *and* date. How do you *back out* of this multiple-criteria setup — without having to click Fewer Choices and redo all your pop-up menu selections?

With this undocumented feature. *Option-drag* the unwanted panel of the Find File window *to the Trash!* The entire panel goes along for the ride, as shown in Figure 3-9, and the dialog box collapses by one panel's height. Strange and wonderful.

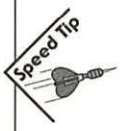
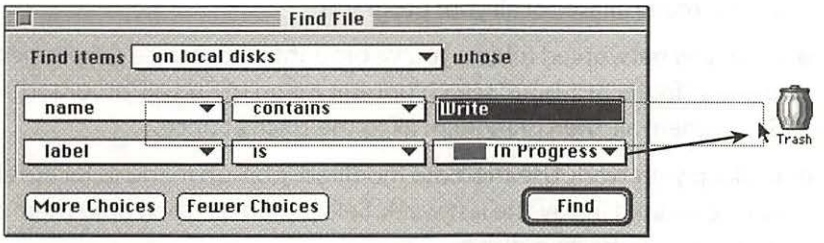


Figure 3-9
Not only can you Option-drag criteria off the Find File screen, but you can also Option-drag them onto the Desktop. There they become Clipping files (although we can't figure out how that's useful!).



Moreover, suppose you've just completed a 10-criteria search, and now you want to collapse your expanded Find File window just to its top row. In that case, Shift-click the Fewer Choices button (or, alternatively, Shift-Option-drag any row to the Trash). Either way, you'll be back with a one-criterion-only search window. (This feature debuted with System 7.5.3. Free book to Don Rider.)



Four awesome drag-and-drops

Once the Items Found window appears, you can do several useful things with the icons it displays. These tricks require the Finder Scripting Extension — choose either Easy Install or AppleScript when installing System 7.5 or later.

- To **move a found item,** drag it from the Items Found window to its new home.
- To **copy a file to a different folder or disk,** drag it out of the window to the destination.
- To make a **copy within the same folder,** *Option*-drag it.

- To **make an alias** of an icon in the Items Found window, ⌘-drag it out of the window.

Multiple selections for extra power

When you're viewing the list of files that match your search specifications, you can, as mentioned, drag one directly from the Items Found window into any other location — another folder, for example, or a different disk, or the Trash.

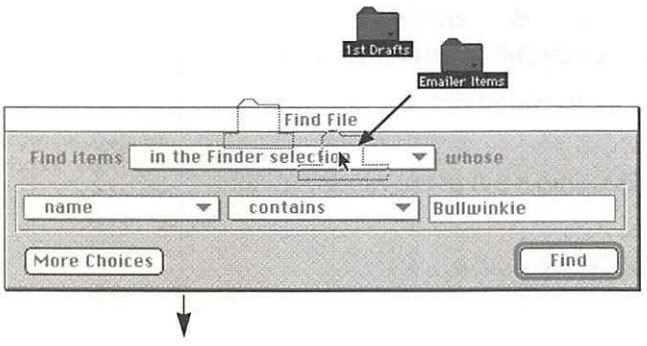
You can also *Shift*-click to select multiple found files, even if they're not consecutive in the list — or press ⌘-A to select all of them. That may seem a trivial trick. But time has shown it to be especially powerful. Here are some all-in-one search possibilities:

- Create a folder containing aliases of all your programs for quick launching. Use the "kind" pop-up menu choice to search for all your applications. Press ⌘-A, then ⌘-drag the highlighted icons into an empty folder. Instantly, you've made aliases of all your programs.
- Ditch any networked folders you've brought on board — simultaneously. Use the "folder attribute" search pop-up menu to find all "mounted" folders. Select them all, then drag them all to the Trash at once.
- Back up your work. Use the "date modified" pop-up menu to locate all files you've created in, say, the last week. Select them all, then drag them *en masse* to your backup disk.

The best Drag and Drop ever

From Chapter 1, you know about the slick System 7.5 replacement for Copy and Paste known as Drag and Drop. Check out *this* undocumented variation on the theme, though: You can actually drag icons *from the Desktop* into the Find File window's blanks — or even onto its pop-up menus — to specify what, or where, you're seeking. See Figure 3-10 for a great example.

Figure 3-10
To search only inside of two particular folders, highlight them, then drag the whole bunch onto the "Find items" pop-up menu. It changes instantly to say "in the Finder selection," meaning the folders you highlighted.



Get into the habit, therefore, of using Find File *not* for finding a file — but instead for finding *information* about a file. To find out when a document was modified, for example, change the criterion pop-up menu to say "modified," and drop your file onto the blank. Instantly, you're shown that file's modification date.

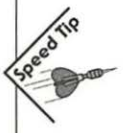
For added fun, keep clicking the More Choices button until you're seeing all kinds of criteria. Now drag an icon from your Desktop onto any *one* of the blanks. Instantly, they *all* fill themselves in with info about the icon you dragged and dropped — its size, date, type, and so on.



Yes, we realize that the Get Info command also gives you file info. However, dragging a file onto a Find File blank has two advantages: (1) It provides *more* information (such as type and creator codes) than Get Info, and (2) it's certainly more fun.

Another way to say where

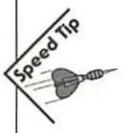
If you have several disks on your Desktop — for example, your hard drive plus a Zip disk — press ⌘-1, 2, 3, and so on; they make each disk's name, in turn, appear in the "find where" pop-up menu.



On the other hand, if there's a removable disk you don't want searched, such as a CD-ROM disc, Shift-click the Find button. The program will search only hard drives.

Both of these tricks work only in System 7.5.3 or later.

Searching multiple CD-ROMs or Zip disks



Here's an easy way to search multiple removable disks, such as CDs, Zip or Jaz disks, SyQuest cartridges, or even floppies. After Find File has finished searching the first disk, Option-click the disk's name (in the "Find items on" pop-up menu at the top of the window) — and rip it clear out of the window and into the Trash.

The Mac ejects the disk. When you insert the next disk, its name will appear in the "Find items" pop-up menu, ready for your next search.

The four secret searches — even inside files

You may think that Apple has given you plenty to search for with its 12 file characteristics, from the file's name to whether or not the file is locked. There will come a time in your life, however, when you remember *nothing* about a file except what it was *about*. And you will wish there was some way to search for text *inside* your word processor files.

Now there is. Open the Find File window. Press Option as you pull down the left-hand pop-up menu to reveal a set of four secret search options! Chief among these, of course, is "contents" — this option does indeed mean that the Mac will *read your files,* seeking the particular bit of text or numbers that you remember having typed.

The "contents" search is incredibly slow — but, when you're desperate, incredibly useful. Three facts make the search more tolerable: First, your search can crank away in the background as you work in another program. Second,

you can speed up the search considerably if you *Option*-click the Find button; this makes the program search only for actual English words and skip any computer-code gibberish it encounters.

Finally, fortunately, when you search by content, Find File doesn't examine *every* file on your hard drive. It ignores 20 types of files, including applications and system software, so that strings of programming code and text from dialog boxes, menus, and help files don't show up in the results of your searches.



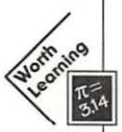
The other three secret search attributes are less useful, but still good to know. *Name/icon lock* refers to files whose names and icons, obviously, have been locked by the system software. Less obviously, this refers to system icons: the Trash, the special System Folder icons (Control Panels, Extensions, and so on), At Ease and its support files, and so on. *Custom icon* lets you find icons on which you've used our "Replace an icon" Secret in Chapter 1. And *visibility* lets you search for invisible icons. Try this one right now; you'll be shocked at how many secret files lurk, unseen, on your hard drive!

Hold it right there

The really annoying thing about the old Find File was that if you canceled a search part way through, you lost any good work that Find File *had* done. The new Find File, however, displays a continuous readout of how many matching files the program has found. You can press ⌘-period (or click the Stop button) at any time. You'll be asked whether you want to see what Find File has found *so far* — a time-saving way to find out how well you set up your search.

If you see that Find File is turning up 18,000 matching files, for example, there's a good chance that you accidentally searched for file names containing the letter *A* instead of *Aardvark*, which you *meant* to type. You can safely cancel the search, confirm the problem at a glance, and try again.

Hold it right there — better yet



If you stop a search in progress by clicking the Stop button or pressing ⌘-period, a dialog box appears asking if you want to display the items that Find File has found so far. *Option*-clicking the Stop button, however, bypasses that dialog box and takes you directly to the Items Found window.

Three instant database reports

Once your Find File has found files, it can produce any of three different typed-up lists of its findings. All three produce a complete listing, unlike the time-honored highlight-files-in-a-Finder-window-and-Copy method, which can paste only the first 256 characters you copy.

For a straight-ahead list, use ⌘-A to select all the found files that appear in the Items Found window; then copy and paste the selection into a word processor document or even a Stickies note.

For a more detailed list, select the icons in the Items Found window and *drag* them into a Stickies note, or into any Drag-and-Drop word processor (ClarisWorks, SimpleText, WordPerfect, and so on). You'll get a tab-delimited report listing each file's name, size, kind and modification date and time.

Finally, if you *Option*-drag, you get an even more detailed list — one that reveals *everything* about the file you dragged, including its secret Type and Creator codes, its label name, creation and modification dates, and so on.

Take note: this is the one and only way to produce a complete list of the files in a particular folder! Confine your search to that folder (see the "The best Drag and Drop ever" Secret, earlier in this chapter), and set the criterion to something all-inclusive (such as "date created is before 1999"); then hit ⌘-A to select all found items before dragging them into your word processor.



Multiple, simultaneous file hunting

Find File, as a stand-alone program that can run in the background, offers the fascinating possibility of *simultaneous* searches. Open your System Folder, open your Apple Menu Items folder, and duplicate the Find File program (actually, as many times as you want).



To run simultaneous searches, first set up and activate one search, launch another copy of Find File and proceed with the second search, and so on. When the searches are complete, each copy of Find File will display the results in a separate Items Found window.

As a matter of fact, we know how to perform simultaneous searches *without* duplicating the Find File application. Use the regular Find File program (⌘-F) to start some complex and lengthy search. Then, while it cranks away, use the ⌘-Shift-F keystroke, which activates the *old* Find command, the one that's still embedded within the Mac's system software! You'll have both Find mechanisms cranking away simultaneously.



A more revealing search

Generally, Find File just blasts away while searching, completely ignoring you until it's finished. If you ⌘-click the Find button to initiate the search, however, a new information strip magically appears at the bottom of the window. This secret status bar identifies the disk the program is currently searching, and even flashes the names of files it's finding as they whip by.



This latter piece of info is especially useful — it gives you a hint as to how on-track your search setup was. Suppose, for example, you're searching for a

file containing the word *cache* in its name. If you ⌘-click Find, you might suddenly discover that the search is wasting its time riffling through 500,000 Netscape Navigator cache files, and you could abort the search in order to set up the criteria more carefully.

Reverse sorting

You can sort files in the Items Found window by name, size, kind, or date by clicking the category header, just as in Finder windows. But *Option*-clicking any of these headers sorts the items in reverse order.

Too many files?

If your searching efforts turn up hundreds of files, you'll probably get a message midway through a search saying that Find File doesn't have enough memory to find any more items. In that case, try increasing the program's memory allocation from its default 280K to 1MB or 2MB. (To do this, select the Find File icon in the Apple Menu Items folder, choose Get Info from the File menu, and type the new memory allocation into the Preferred size field.) Now Find File will be able to find, sort, and display hundreds of more items in each search.

Find File's secret message

Open a copy of Find File with ResEdit (see Chapter 21). Double-click the DATA resource icon. Inside, you'll find just one resource, ID #0. Open it and scroll through the hexadecimal code to find the programmer's secret message in the right-hand column: "I liked vacuum tubes better."

(After programming all of these awesome Find File tricks and hidden features, he had a *right* to be a little nostalgic!)

Option-key secrets

Turns out the creators of Find File are just as much in love with the Option key as the creators of the Mac itself. Consider these clever uses of that adorable little key:

- Generally, after finding something with Find File, the first thing you want to do launch it. Therefore, wouldn't it be nice if Find File would quit itself, freeing memory and cleaning up your screen, whenever you launch something from its Items Found window? It will do exactly that if you press Option as you double-click. (Find File will also quit itself if you press Option while choosing Get Info, Open Enclosing Item, or Sharing from its File menu.)

- The Option key also determines where the Find File window itself will appear on your monitor, oddly enough. If you're pressing Option when you invoke the program, the Find File window will appear dead center on your screen. Likewise, if you're pressing Option at the moment you click the Find button, the *Items Found* window will open right in the middle of your screen.
- Exactly as with regular Finder windows, the Option key is the key to closing windows. That is, Option-click any window's close box to make the entire Find File program quit itself.

More Find File tricks, courtesy of Apple

This chapter is undoubtedly the best source of useful Find File secrets and shortcuts. Beginning with System 7.5.3, however, Apple programmers have made an attempt to publicize some of these undocumented goodies. Whenever the Find File program is on your screen, your Guide menu (the question-mark menu) contains a command called Find File Shortcuts. It opens a window filled with shortcuts and secret features, including a few more we didn't find practical enough to describe in this chapter.

Jigsaw Puzzle



This desk accessory, which debuted in System 7.5, replaced the aging and silly Puzzle that preceded it (described in the Mac Secrets Outtakes folder on your "Secrets" CD-ROM). At first glance, it's equally silly — until you learn about its Secrets.

Once you open the program, begin by choosing Start New Puzzle from the Options menu. You're offered a choice of puzzle-piece sizes.

After making your choice, drag the jigsaw pieces with the mouse; as you place hunks in the proper positions, they latch onto the adjacent pieces. (They latch even when they're not in the right place, but adjacent to the right *pieces*.) You can move these increasingly larger hunks around by dragging until you complete the entire picture. The sound you hear as a reward is a little xylophone riff — but you can, of course, substitute any sound you wish, using our ResEdit secrets in Chapter 21.

JIGSAW PUZZLE SECRETS

A FREE!! graphics viewer

Pasting isn't the only way to get new graphics into the Jigsaw Puzzle; you can also choose Open from the File menu to import any PICT graphics file on your disk. Therefore, you can use the Jigsaw Puzzle as an especially handy, menu-based graphics viewer (when you need a quick glance at a screen shot you took, for example).

Keep in mind, too, that the Jigsaw Puzzle works with Drag and Drop (see Chapter 1). In other words, you can *drag* any graphic (from the Scrapbook, the Desktop, or any other Drag-and-Drop-savvy program) directly into the Puzzle "frame" to en-puzzle it without even copying and pasting. When you want to check out some graphics file someone sent you — a QuickCam portrait, say, or a downloaded scan — the lowly Jigsaw Puzzle makes a much quicker, easier viewer than a lumbering behemoth such as, for example, Photoshop.

Make your own puzzle

Of course, you're not condemned to piecing together the world map (or whatever image appears in your Jigsaw Puzzle) forever. Any image you paste — or Drag-and-Drop — into the picture window becomes the new puzzle to solve.

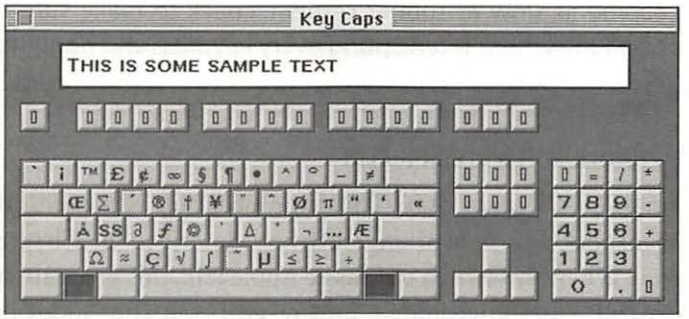
If you paste a very large image, you may have to allot more memory to the Jigsaw Puzzle program first, as described in Chapter 9.

Key Caps

The Key Caps window looks like a minikeyboard. By holding down various modifier keys (such as ⌘, Option, Shift, or Control) while Key Caps is open, you see which keys produce which characters. This feature is useful for figuring out which keys to press to produce special symbols or non-English characters, such as © or ¢ in certain fonts. You can type a sample sentence to see what you're getting, too (see Figure 3-11).

Incidentally, you're not limited to viewing the Chicago font. Whenever Key Caps is open, you see a new menu on-screen: the Key Caps menu, which lists all the fonts in your System. Choose options from this menu to change fonts. (You *are* limited to viewing characters in 12-point size, however.)

Figure 3-11
The Key Caps window reveals which keys produce which characters in every font available. In this example, the Option key is being held down, and the resulting display shows where the fancy symbols live.



KEY CAPS SECRETS

Copy & paste: the keyless keyboard

The fact that you can type a sample sentence in the Key Caps window can be a life-saver when something goes wrong with your keyboard. If the E key breaks when you're within a few pages of finishing your doctoral dissertation, for example, you *can* type an E in a crippled sort of way. Open Key Caps, *click* the E key on-screen, and then *copy* the E you typed from the Key Caps text display to your word processing document wherever you need an E.

In fact, Key Caps works in a crisis when you have *no* keyboard attached to a Mac (take it from consultants like us: it happens). You can actually rename a file or a folder using nothing but the mouse, Key Caps, and the Copy and Paste commands. (Unfortunately, you'll be limited to typing letters and using the menus — you can't use any ⌘-key combinations without an actual keyboard, as you'll quickly discover.)

Dead keys, diacritical markings

When you press Option while the Key Caps window is open, you see little dark outlines around certain keys, as shown in Figure 3-11. These rectangles identify the *dead keys* — keys that, when pressed once, type *nothing* on-screen. However, when you type *another* key — a normal letter, for example — it appears with the dead key's displayed marking *over* it. So, to produce the ñ in *niño,* you press Option-N and *then* type an N.

Avoid painfully slow typing

Key Caps does its duty (displaying any symbol you type) even if it's not the front window. If you ever discover that typing in your word processor has become as slow as rubber cement, check to make sure that Key Caps isn't open somewhere, intercepting every keypress and bogging down the works.

Network Software Selector

For pre-PCI Macs only. This little program is the on/off switch for Open Transport, the networking software described in Chapter 32. Strange but true: When you switch to Classic AppleTalk, this program makes the MacTCP control panel inivisible — and re-visifies it (but hides the TCP/IP control panel) when you turn Open Transport on!

Note Pad (old and new)

You type short notes and memos into the Note Pad (see Figure 3-12). There actually are two different Note Pads: the old and the new.



Figure 3-12
The new Note Pad: An eight-page repository for brief notes and memos.

The old version, which came with every Mac until System 7.5, is pretty limited. This Note Pad has only eight tiny pages, each capable of storing only 257 characters, and you can't store graphics or retain text formatting. The new Note Pad's pages can hold 32K of information apiece, they have scroll bars, they can be resized, you can search them with a Find command (check the menu!), and you can choose whatever font and size you want (check the Preferences command!). We also like the little page-turning sound, and the fact that the new Note Pad offers Macintosh Drag-and-Drop, described in Chapter 1.

Incidentally: Don't be fooled by the new Note Pad's eight-page default allotment. Use the New Note command in the File menu to create as many additional pages as you want.

NOTE PAD SECRETS

Multiple Note Pads (old Note Pad)

Like the Scrapbook, the Note Pad saves its contents in a separate file called the Note Pad File in the System Folder. If you drag the Note Pad File *out* of the System Folder (or give it a new name), the Note Pad starts a clean, new Note Pad File the next time you open it.

Using this method, you can keep multiple Note Pad files. Just remember that only the file in the System Folder named *Note Pad File* is accessible from the Note Pad. To switch from one to another, give the ingoing and outgoing files the proper names and put them in the proper places.

Multiple Note Pads (new Note Pad)



System 7.5-and-later's Note Pad is actually an application, not a desk accessory. That little quirk gives the new Note Pad a particularly slick feature: multiple files. Each can have its own type style, name, and contents, and each can reside anywhere you want on your hard drive.

Just open your System Folder and duplicate the Note Pad file as many times as you want. Rename them as you see fit. (One possibility: Keep them all in a Note-Pad Files folder in your Apple Menu Items folder, for quick access, as shown in Figure 3-13.)

From now on, when you double-click any Note Pad file (or choose one by name from your menu) the Note Pad program launches and opens the file on your screen.

What's especially impressive is that, if one Note Pad file is open, double-clicking the next one doesn't give you an error message. Instead, the new file opens in place of the first one — yes, you can "hot swap" Note Pads.

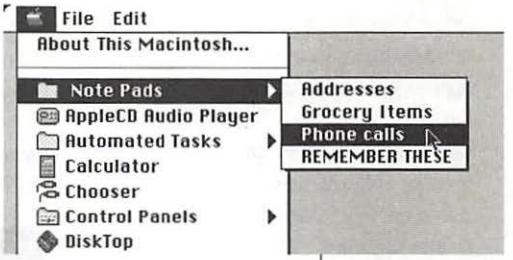


Figure 3-13
The multiple-Note Pad trick in action (requires System 7.5 or later).

Retrieving the entire (old) Note Pad File



Suppose you need to retrieve and copy all eight pages of notes that you stored in the Note Pad. Most people would do this by painstakingly copying and pasting the eight tiny pages, one at a time, into another document.

But there's a much easier way: Open the Note Pad File (not the Note Pad itself) with a word processor such as Microsoft Word. In Word's Open dialog box, choose All Files from the List Files of Type pop-up menu. Then choose the Note Pad File in the System Folder. All pages of text stored in the file will be opened in one document.

TRUE FACT

APPLE'S INTERFACE VIOLATION

In general, Apple Computer is a leading advocate of superior interface design. Classic example: When, in a dialog box, several buttons await your choosing, the button most likely to get your click is usually outlined with a thick black border — your clue that pressing Return or Enter suffices to "click" it. For example, whenever you risk deleting data, the Cancel button is generally outlined so that, in your haste, you don't slap the Enter key and inadvertently wipe out important work.

However, Singapore reader (and free book winner) Martin Lim discovered a frightening lapse in Apple's usually careful design — and it's in the Note Pad. Choose Delete Note from the File menu, and a confirmation dialog box appears — with the *Delete* button outlined! This dangerous setup is all the more surprising because, as the dialog box itself warns, there's no Undo for deleting a page of your Note Pad.

By the way, you can't perform this maneuver in reverse; you can't create a large note in Word and save it back into a Note Pad File. (Word can't save the file in the special format read by Note Pad.) Furthermore, those killjoys at Apple have ensured that this trick doesn't work in the new (System 7.5) Note Pad.

Quick jumping to a page (new Note Pad)

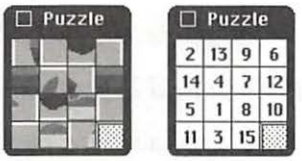
Click the page number at the bottom of a new Note Pad (System 7.5 or later) page. You get a handy dialog box that (a) tells you the total number of pages, and (b) lets you jump directly to a specified page.

Puzzle

The original, pre-System 7.5 Puzzle probably is the least-touched of the standard desk accessories. It's the maddening old children's game in which you manipulate 15 squares to unscramble a picture or sequence of numbers. In the electronic edition, you click a tile to shift it to the adjoining empty spot.

The scrambled picture in this case is the Apple logo. But if you prefer to unscramble numbers, choose Clear from the Edit menu. The puzzle tiles change to the numbers 1 through 15 (see Figure 3-14).

Figure 3-14
Choose the Clear command to toggle between different puzzles.



If you successfully complete the puzzle, you get a tiny reward for your efforts: a hilariously deadpan male voice intones, "Ta-da." (You can replace this sound, if you want, using ResEdit; see Chapter 21.) If you complete the Apple logo puzzle, the lines between the tiles suddenly disappear, and the picture becomes a solid

image. If you complete the *numbers* puzzle, a tiny Apple logo fills the vacant spot in the puzzle.

After 10 years of service, however, the cherished Puzzle was retired. In its place, Apple has included, beginning with System 7.5, a glitzier but less challenging puzzle (see "Jigsaw Puzzle").

Still, we have several enjoyable Puzzle Secrets. You'll find them in the Mac Secrets Outtakes folder on the CD-ROM that came with this book.



Recent Applications, Documents, Servers

The presence of these three items in your menu — Recent Applications, Recent Documents, and Recent Servers — is a telltale sign that you're using the Apple Menu Options control panel. These items, introduced with System 7.5, mark the debut of *submenus* to official Apple System software. You can get rid of these commands, if you want; see "Apple Menu Options," in Chapter 4.

Scrapbook

The Scrapbook is a more-or-less-permanent holding tank for graphics, passages of text, sounds, QuickTime movie clips, or — more recently — QuickDraw 3-D models that you'd like to keep on hand for future use. Items stored in the Scrapbook are retained in a special Scrapbook File in the System Folder.

You probably already know how to copy and paste items to and from the Scrapbook, but here are a few lesser-known Scrapbook tidbits.

SCRAPBOOK SECRETS

Store sounds from the Sound control panel

If you recorded a sound using the Sound control panel, here's how you can easily move it to the Scrapbook. In the Sound control panel, select the name of the sound and choose either Copy or Cut from the Edit menu. Open the Scrapbook and choose Paste. A speaker icon and a Play Sound button appear in the Scrapbook window (see Figure 3-15). (The sound's original name is lost in the transfer.)

If you have System 7.5 or later, you can also drag and drop sound icons between your Desktop and the Scrapbook window.

The text formatting really is still there



Text from a word processor that creates "styled text" (text that retains its font, size, and style when copied) — such as ClarisWorks or Word 6 — displays correctly when pasted into the Scrapbook. Text from programs that don't support styled text copying (such as Word 5) appears in a plain 12-point Geneva font when pasted into the Scrapbook. But don't let that fool you; the Scrapbook stores the text's formatting, too, but hides it. When you paste the text back into another document in the same program, all the formatting — including font, size, and style — is restored.

Multiple Scrapbooks

As with the Note Pad, described earlier, the latest Scrapbook is actually an application, not a desk accessory. The Scrapbook, too, therefore lets you easily work with multiple Scrapbook files — one each for your various projects, for example, each with its own name, contents, and folder location.



Just open your System Folder and duplicate the Scrapbook File file as many times as you want. Rename and relocate them as you wish. From now on, whichever one you double-click (or choose by name from your menu, if you put them there) will launch the Scrapbook program and appear on your screen.

As with the Note Pad, you don't even have to close one Scrapbook file before opening the next; the Mac "hot swaps" the files on-the-fly.

Because Scrapbook files are, in fact, documents created by the Scrapbook program, you can freely distribute them to other Macs that use System 7.5 or later. They'll easily open with a double-click, serving as handy multimedia envelopes for transporting groups of graphics, sounds, or text chunks intact to other people.

The new, improved Scrapbook Pro

The Scrapbook introduced with System 7.5 has a number of useful features. It's the first resizable Scrapbook; you can make the window as large as you like. It also has an information strip (see Figure 3-15) that contains data about each Scrapbook-page item: file size, duration, dimensions, file type, and so on. This new Scrapbook is Drag and Drop-savvy: You can drag any Scrapbook page (if the file type is appropriate) to the Desktop (where it becomes a Text, Picture, or Sound clipping file), to the Note Pad or the Jigsaw Puzzle, to a Simple Text document, and so on. Pure genius.



However, there is such a thing as a *better* Scrapbook. It's ScrapIt Pro, included with this book. See Chapter 34 for details.

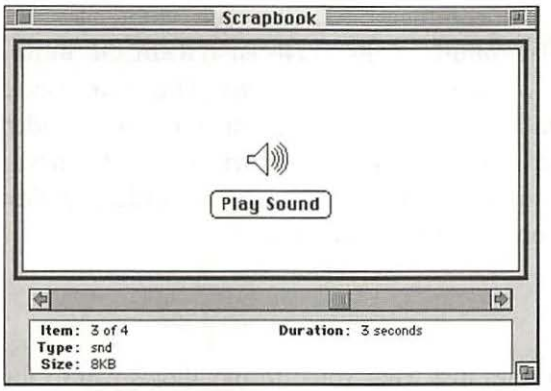


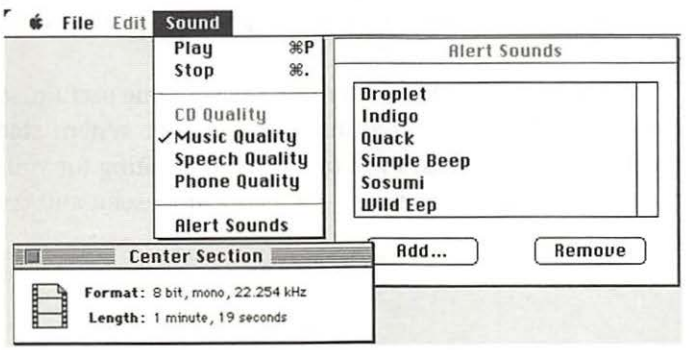
Figure 3-15
When you paste a recorded sound into the Scrapbook, a Play Sound button appears. (The newer, System 7.5-flavor Scrapbook is shown here. The older Scrapbook lacks the information bar at the bottom.)

SimpleSound

When Apple redesigned the Monitors control panel and the Sound control panel, merging them into — what else? — the Monitors & Sound control panel (described in Chapter 4), they evidently forgot about one little feature in the process: recording new sounds. There's no Record button in the Monitors & Sound control panel, as there was in the Sound control panel.

Therefore, on any Mac with the Monitors & Sound control panel (that is, recent Macs running System 7.5.3 or later), this strange little number is nestled in the menu. When opened, it does nothing more than to provide access to the lost feature: the Add button that lets you record another alert beep. (See Figure 3-16.) See "Sound" in Chapter 4 for instructions.

Figure 3-16
SimpleSound restores the add and remove features to your collection of error beeps, yes (right). But it's so much more! You can use the File menu's commands to open sounds and QuickTime movies, like the one shown here (bottom), and use the Play and Stop commands to listen to the sounds therein.



Using this miniprogram's Open command, you can open sound files and even QuickTime movies; the Play command lets you listen to them. Of course, since this is SimpleSound, you won't get to watch the QuickTime movie as it plays — just listen to its soundtrack. (If such things interest you, consider putting an alias of SimpleSound into your QuickTime movies folder. Whenever you want to hear a movie, find out its length, or learn what its recording-quality level was, just drag-and-drop it onto SimpleSound's alias.)

Stickies

This ingenious little program does just what you'd think: allows you to jot notes to yourself and stick them on your monitor, as Mac fans have done with *real* Post-it Notes™ for years (see Figure 3-17).

Figure 3-17
Each Sticky can have its own size, color, and type style (use the Note and Color menus).



Each little note has a miniature title bar (so you can move the note around), a zoom box in the upper-right corner (so you can make the note snap to its original size), and a resize box in the lower-right corner (so you can resize the note). To make a new note, just choose New Note from the File menu.

We want to call to your attention the supreme usefulness of the Preferences command. Among its options is "Launch at system startup." That simply means that your Stickies will be on-screen waiting for you when you turn on the computer each morning — a terrifically useful and convenient reminder system.

STICKIES SECRETS

The cleverest hidden credits in the menu

Type *Antler!* into a new Sticky note and press Return. (Capitalization counts.)

Who said graphics can't appear in Stickies?

(On a less frivolous note: This hidden credit reminds us that some of System 7.5 was not, in fact, written by Apple. Poke around Apple Menu Options, Date & Time, Jigsaw Puzzle, Desktop Patterns, Find File, and other included programs, and you'll discover that all this software has been licensed from independent programmers. And why not? It's good stuff!)



The miracle of Stickies Stationery

If you're like us, it didn't take you long to grow weary of having to select a color, size, and font style for each new Sticky you make. Here's the brilliant, time-saving solution.

Create a blank Sticky. Use the Color and Note menus to format it the way you like. Drag the lower-right corner to change the note's size and shape. If you want a default title (such as *Today's To-do's*), type that, followed by a Return or two.



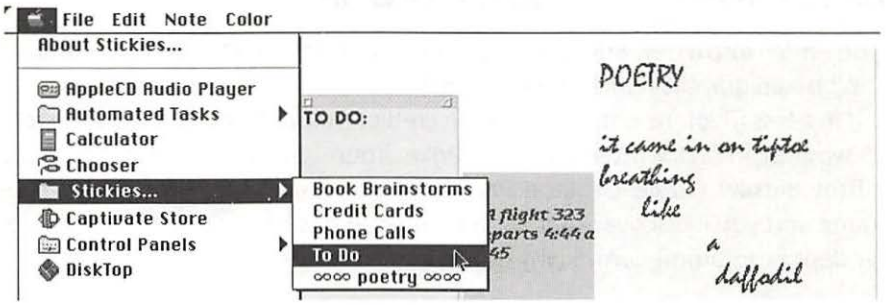
Now, choose Close from the File menu. Stickies asks if you want to save this note before closing it. (If it doesn't ask, it's because you turned off "Confirm window-closing" in the Preferences dialog box. Choose Preferences from the Note menu and turn it back on.)

Click Save. In the next dialog box, type a name for this *kind* of Sticky (such as "Phone Message" or "To-Do's"), click the *Stationery* box, click the Desktop button, and click Save. When you quit Stickies, you'll see a new icon on your Desktop you've never seen before: It's Stickies Stationery!

From now on, whenever you double-click this icon, you'll launch Stickies (if it isn't already running) and open a new, blank note identical to the one you originally created.

This is only half the setup, however. Using this technique, create a *folderful* of pre-formatted Stickies. Drag the folder into your Apple Menu Items folder (in the System Folder). From now on, your menu provides quick access to your entire arsenal of different, preformatted Sticky types, as shown in Figure 3-18.

Figure 3-18
Don't waste any more time choosing colors and fonts for individual Stickies! Get your favorite combos ready to roll, and pop them into the menu.



All the note that always fits

Under normal circumstances, a Sticky opens to a default size and shape. If your typing extends beyond the bottom of the Sticky, the note automatically grows vertically to accommodate all your typing. But if your typing fills up *less* than the predefined note size, you're stuck with all that wasteful empty space at the bottom of your typing.

If this aesthetically unpleasant gulf bothers you as much as it does us, try this. Create a piece of Stickies stationery, as described in the previous Secret — but save it in its *collapsed* state (by Option-clicking the tiny "collapse" triangle in the upper-right corner before saving the stationery). Whenever you open this Stickies stationery, a new note window will appear in its collapsed condition. However, as you begin typing, it will automatically open and grow, always remaining at the perfect size to accommodate your text.

Change the colors!



You're not locked forever into the original Stickies color scheme of pale pastels. Using Stickies Color Editor (included with this book), you can quickly and easily change the default color choices to any more interesting rainbow you desire.

And while we're talking Sticky colors: See Chapter 21 for instructions on adding ⌘-key shortcuts to your Color menu.

Stickies: The tiniest word processor

Stickies? A word processor? OK, it's not WordPerfect, but Stickies does have a surprising number of hidden word processor-like features for quick-and-dirty text-editing. For example:

- You can import any plain text file directly into a Sticky using the Import Text command — or drag a text document onto the Stickies icon. In either case, the text file will open in a new note window, in the font and style you've defined as your default note style. This is a handy way to read e-mail messages you've saved from America Online or the Internet.
- You can drag and drop selected text within and between notes. Dragging text moves it, while Option-dragging *copies* the selected text to the new location. (Simple Text, on the other hand, doesn't let you *move* text from window to window; it *always* copies it.)
- You can press ⌘-L or ⌘-R to go to beginning or end of a line of text in a note. (Left and Right, get it?)
- Sticky notes have no scroll bars, but there are plenty of ways to navigate through lengthy notes. The arrow keys work, of course. The Home and End keys on extended keyboards scroll to the beginning and end of a note. More useful, though, is ⌘-down arrow, which both scrolls to the end of a note *and* plants your cursor there.
- Option-clicking a note's zoom box collapses it to a single line. But if you're using System 7.5's WindowShade feature (see Chapter 4), you don't have to mess with the zoom box; you can collapse a note by double-clicking anywhere on its top strip.
- When resizing a note, you can constrain the resizing to one direction by holding down the Shift key as you drag. (This feature works only in System 7.5.1 or later.)
- When you close an unsaved note, the Mac asks if you want to save it. You can close the note without saving by pressing ⌘-D.
- A note can hold a maximum of 8,000 characters, which is about four pages' worth of text.

• Shut Down

This little this System 7.5-and-later command simply shuts down the Mac. Since it's in the menu, you don't have to return to the Finder to quit for the day. (Its name has the bullet [•] so that it appears at the very bottom of the menu, below all other letters of the alphabet.)

SHUT DOWN SECRETS

No Shut Down Items

In the original System 7.5, the • Shut Down command *isn't* exactly the same as choosing Shut Down from the Special menu. The sole difference: The • Shut Down in your menu *doesn't* run whatever you've put into your Shut Down Items folder (in the System Folder). (This quirk was fixed in System 7.5.1 and later.)

The cruelest practical joke of them all



Technically, • Shut Down is an actual program. Open your Apple Menu Items folder, inside the System Folder, and see for yourself. You can double-click it to shut down your Mac.

This quirk, of course, opens a realm of cruel April-Fools possibilities. One favorite: Place an alias of • Shut Down into your victim's *Startup Items folder* (inside the System folder)! The unlucky object of your attention will turn on the Mac, sit through the extension-loading process, wait for the Desktop to appear — and then watch in horror as the Mac instantly shuts itself off again.

Short of using another start-up disk, there's only one way to escape this evil cycle: press the Shift key through the startup process. (Shift prevents any Startup Items from running.) Then remove the accursed alias from the Startup Items folder.

About the only prank more sinister is the one we recently saw perpetrated on an unsuspecting coworker. On April Fool's Day, a merry prankster put a copy of the • Shut Down program on the victim's Desktop, renamed *Macintosh HD* and adorned with a new, pasted-in icon — the icon of the *real* hard drive. (The actual hard drive's icon was renamed and moved into a crowded area of the Desktop where it couldn't be spotted.) Sure enough, each time the unlucky victim tried to open his "hard drive," his Mac responded by shutting down.

We would have loved to hear the gentlefolk at 800-SOS-APPL troubleshoot *that* one.

Chapter 4

Control Panels and Extensions

IN THIS CHAPTER:

- Secrets of the standard extensions
- Secrets of the standard control panels
- Which System Folder junk you can throw away
- Special PowerBook control panels

This chapter, perhaps more than any other, is an exercise in futility. Apple may churn out Macintosh models faster than anyone can track, but that's nothing compared to the control panels and extensions they write! All we can hope to accomplish is to review what's in the typical System Folder at the time of this writing.

Even that, however, is enlightening. The modern-day System Folder is a mishmash of added-on features, bug fixes, and system updates. Patches patch patches; new extensions swallow functions previously performed by others. Some control panels are actually extensions — that is, they contain program code that runs when you turn on the Mac — that have a front end for humans. And some extensions (or at least some icons in the Extensions *folder*) aren't actually extensions at all. It's about time someone tried to make sense of it all.

Incidentally, even though we *became* exhausted preparing this list, we have a sinking feeling that the *list* isn't exhaustive. We're sure there's probably some patch or extension floating around that we haven't snagged, tagged, and cataloged — the Power Mac 8500's Extensions folder alone contains 125 icons! If

so, we hope you'll let us know by e-mail; we'll continue to expand the chapter in subsequent printings of the book. We'll also post the new information on our Web page:

http://www.idgbooks.com/idgbooksonline/macsecrets

THE CONTROL PANELS

In System 6, the Control Panel was a single window with several buttons, each controlling one Mac function. By the time of System 7.5.3, however, more than 40 control panels came nestled in the Control Panels folder, each panel a tiny double-clickable program unto itself.

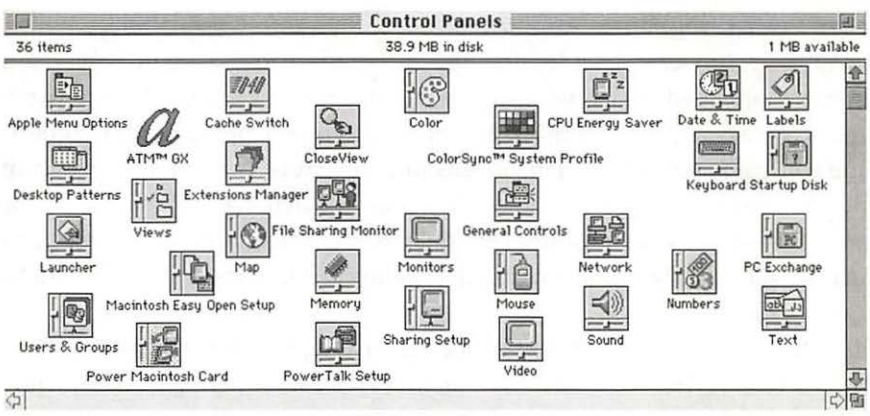
The overall look of the Finder and Desktop, the feel of the mouse, the sound your Mac makes when it wants your attention — all these elements are managed by the control panels included with your System software.

Usually, you access these little self-contained programs by choosing Control Panels (actually an alias of the Control Panels folder) from the menu. The Control Panels window opens (or the submenu pops to the right) so that you can get at the specific control panel you need (see Figure 4-1).

What's a control panel, anyway?

These days, there's no easy answer to the question: "What exactly *is* a control panel?" Apple has begun depositing full-blown application programs into our

Figure 4-1
Meet the control panels – some of them, anyway.



Control Panels folders — Desktop Patterns, QuickTime Settings, Monitors & Sound, and Energy Saver, for example — that don't have the control panel *file format* at all.

Even among traditional control panels, the definition is a little blurry. It turns out there are two different *kinds* of control panels: those that need to be in your System Folder when the Mac starts up and those that don't.

Those that do are said to contain *init code;* they're essentially *extensions* with a few settings that you can change. Apple Menu Options, AppleTalk (Open Transport), File Sharing, Network, Macintosh Easy Open, PC Exchange, Sharing Setup, and fax software are some examples — like extensions, they're useless unless they were in your System Folder when the Mac started up.

Many other control panels, however, work properly even if they weren't installed in the System folder at startup. They behave like little miniprograms: You launch one when you want to *change* your preferences. The preferences are stored in your Mac's PRAM (a tiny piece of memory permanently sustained by your Mac's built-in lithium battery), not in the control panel itself. After you pick a Desktop pattern, choose a color for highlighted text, pick an alert sound, or whatever, you won't need those control panels again until you want to *change* that setting.

Therefore, if disk space or security is at a premium for you, back up those control panels and then throw away the ones in your System Folder. If you need to change any of your preferences later, just insert the backup disk and open the appropriate control panel — there's no need to install it, copy it to your hard drive, or restart the machine.

Perhaps more practically, the existence of these non-init control panels means that even if they had been turned off using Conflict Catcher, Extensions Manager, or a similar program, you can still launch them whenever you want. That is, such control panels work regardless of whether they're in the actual Control Panels folder, the Control Panels (Disabled) folder, or whatever.

Here's a guide to all the little goodies that you'll find crammed into the Control Panels folder — and those that you can ditch to save space.

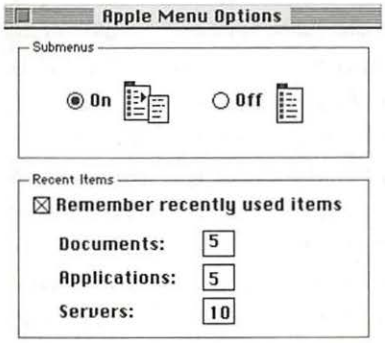
Apple CD Speed Switch

This little panel used to come with Apple's dual-speed CD-ROM drives. It turned the double-speed feature on or (for old, incompatible CDs) off. If you have the AppleCD Audio Player in your menu, you don't need this control panel.

Apple Menu Options

Apple Menu Options adds two extremely useful functions to the menu. First, it adds a submenu to any *folder* listed in the menu (such as Control Panels), listing that folder's contents (see Figure 4-2). Choose a submenu item to open it.

Figure 4-2
You now are the master of your own menu's submenus.



Second, the Recent Items control adds three new folders to the menu: Recent Applications, Recent Documents, and Recent Servers (that is, networked disks). The control panel keeps track of the last few items you worked on and lists them in these submenus. It does so by putting an *alias* of each item you open into the Recent Documents folder (or other appropriate Recent folder). We mention this fact so that when you fear that the boss might be walking by your desk soon, you can open your System Folder, open the Apple Menu Options folder, open your Recent Applications folder, and throw away the *Super Mario Tetris Plus! Pro* alias. No one will suspect what you've really been doing...recently.

APPLE MENU OPTIONS SECRETS

Turn off those recent items



So you're not *on* a network. Are you forced to put up with a pointless Recent Servers command in your menu?

No. Open the Apple Menu Options control panel. Change the number of Recent Servers to zero; that item will no longer appear in your menu. Do the same for Recent Documents and Recent Applications, if you wish.

Add your own submenus

When you first install it, Apple Menu Options makes a submenu spring out of four menu commands: Control Panels, plus those three Recent items. It's worth knowing, though, that *any* folder you put into the Apple Menu Items folder (inside your System Folder) will automatically sprout submenus. And any folders inside *those* folders will sprout submenus, too...and so on, up to five nested folders deep.

In other words, your menu can become a powerful navigation tool indeed. Stick an alias of your hard drive into your Apple Menu Items folder, for example, and suddenly you can open any item in any folder on your drive. If you're on a network, make aliases of the hard drives you frequently log onto; put them into a Frequently Used Servers folder in your Apple Menu Items folder. From then on, mounting one of those disks is only an -menu choice away.

The downside of Apple Menu Options



Apple Menu Options offers some wonderful convenience, but it can slow down your system. Pay particular attention when you're using programs that themselves open documents: Photoshop, PageMaker, and QuarkXpress, for example, open filters and plug-ins when you launch them. Meanwhile, there's good old Apple Menu Options, dutifully making aliases of every single "document" (filter, plug-in, and so on) that gets opened on your Mac. Result: massive slowdown when launching those programs.

If you discover this phenomenon dragging down your Mac, turn off the document-tracking feature in the Apple Menu Options control panel.

AppleTalk

This is the Open Transport-era replacement for the old Network control panel. You use its simple pop-up menu to choose the networking method you prefer: LocalTalk, Ethernet, and so on. See "Open Transport (and related files)" later in this chapter.

AppleVision Setup

This application (not control panel) offers settings, obviously, for the AppleVision monitor series. It's unnecessary on a Mac that uses the Monitors & Sound control panel (described later in the chapter); all the AppleVision's features have been incorporated.

At Ease Setup

This control panel, which comes with Performas (but can be purchased for all Macs), allows you to control which jumbo icons appear on the At Ease screen. See Chapter 15 for details. It comes with **At Ease Startup** (which makes the Mac boot with At Ease instead of the Finder) and a bug fix, **At Ease 7.5 Layer Patch**.

CASE HISTORY

WHERE TO FIND IT

An actual transcript from a tech-support rep at a prominent modem-software company.

CALLER: I just installed the Faxcilitate fax software, but I can't seem to find the manual.

ME: It's on the Microphone LT disk.

CALLER: Oh, well, that disk is locked away and I can't find it right now. (*Pause . . . shuffle*) It doesn't seem to be on the America Online disk.

ME: No, ma'am, it's on the Microphone LT disk.

CALLER: I can't find the manual anywhere.

ME: Yes, ma'am, it is not a printed manual. It is a file on the Microphone LT floppy disk.

CALLER: (*to someone in the office*) Can you get me the key to . . . it's what? (*Long pause.*) OH! It's on the Microphone LT disk!

ME: Yes, ma'am.

CALLER: Thank you so much. You've been so very helpful.

ME: You're welcome.

ATM GX

ATM GX is Adobe Type Manager (see Chapter 24); it's installed only when you install QuickDraw GX (see Chapter 25). ATM gives you smooth type on-screen for PostScript fonts.

Auto Power On/Off

The name says it all: This control panel allows you to specify times at which you want your Mac to turn itself on or off. It works only with Mac models that shut down completely when you choose the Shut Down command — in other words, not the LCIII, 6100 series, and so on. Interestingly, this control panel doesn't come with Performas that come with Megaphone, the answering-machine software. Apple worried — no kidding — that Auto Power On/Off would turn off the Mac, and you'd miss phone messages!

See "Energy Saver 2.0 (and related files)," later in this chapter.

AutoRemounter

Suppose you're using your PowerBook. Using your office's network (see Chapter 32), you bring the hard drive of some other Mac (or two) to your PowerBook Desktop so that you can transfer files. AutoRemounter's job is to bring the other Macs' icons *back* to your PowerBook's screen after it's been off or asleep.

AutoRemounter has another handy side effect: It lets you put the PowerBook to sleep without encountering that annoying "You're about to lose network services" alert message.

If you're not on a network, though, we recommend trashing this control panel.

Backlight

For older PowerBooks, this control panel automatically dims the screen lighting after a period of inactivity (to save battery juice).

Brightness

If you have a Classic, use this control panel to dim your screen; otherwise, this control panel doesn't even open. Get rid of it.

Button Disabler

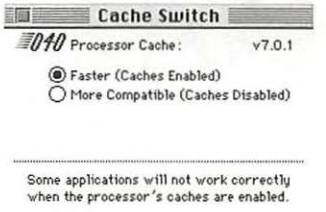
This is for LC or Performa 500-something models only, and for System 7.5 (and later) only. This doodad disables the volume and brightness buttons on the front panels of those 500-series models (presumably to prevent tampering in school situations). If you have any other model, trash it.

Cache Switch

The Cache Switch is used exclusively on Macs whose brain is the Motorola 68040 chip, such as the Quadra and Centris models. If you have any other model, throw out this control panel.

Cache Switch offers an On/Off switch (see Figure 4-3) for your processor chip's caches — one for data and one for program instructions — which are a speed enhancement on the '040 Macs. If you click Off, you avoid using those internal caches, thus slowing your computer to about half its usual processing speed but permitting compatibility with a few old game programs that aren't compatible with the '040 chip.

Figure 4-3
Cripple your '040 Mac on purpose.

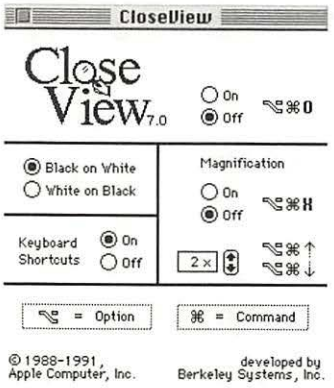


CloseView

CloseView is designed to help the visually impaired. It magnifies a portion of the screen, making the screen image 2 to 16 times larger. Most people wind up tossing this one.

After you install CloseView (using the Custom Install option of your Installer — it may also be in your Apple Extras folder, if you have one), you can switch it on and off by pressing ⌘-Option-O (before System 7.5.3) or ⌘-Option-K (System 7.5.3 and later). (See Figure 4-4.)

Figure 4-4
Zoom in close and invert screen colors with the CloseView control panel.



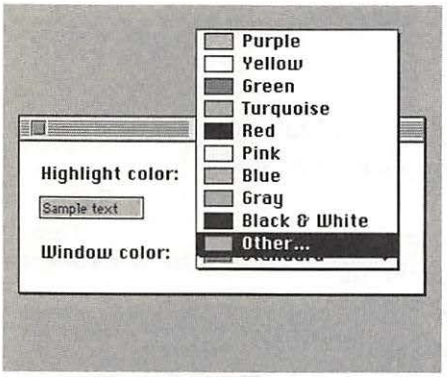
To increase or decrease the degree of magnification, hold down ⌘ and Option, and press the up-arrow or down-arrow key (before System 7.5.3), or the plus and minus keys (System 7.5.3 and later). The enlarged screen view follows the insertion point — an arrangement that takes some getting used to. In addition to providing screen magnification, CloseView lets you reverse your monitor's display black-for-white. Some people find this inverted-video setup easier on the eyes for long-term Mac work. (On color monitors, *all* the colors are inverted.)

Color

With this control panel, you can change the color of text highlighting and the tint of windows in the Finder.

The first pop-up menu gives you a choice of ten highlight colors. If none of those colors pleases you, choose Other from the menu to open the standard Macintosh Color Picker. Click a new color and then click OK (see Figure 4-5). You can set the highlight to almost any color, but dark, heavily saturated colors are bad choices; they make it too hard to see the highlighted characters.

Figure 4-5
Choose Other from the pop-up menu to mix your own highlight color.



We've discovered some interesting quirks. If you choose pure white (the spot at the center of the color wheel), you'll end up with solid *black* highlighting! Furthermore, *highlighted* text will invert to white, exactly as though you were using a black-and-white Mac. Apple obviously hopes to protect you from yourself; if you truly chose white as the highlight color, you'd never be able to tell whether something was highlighted!

You can see how awful white highlighting is in only one place: the Color Picker itself. For kicks, set the highlight color to pure white. Then try to drag through the numbers at the left side of the Color Picker. Weird — it looks as though nothing's being highlighted.

If you choose a color that is very close to white, but not white itself, the results are even stranger. You'll see black highlighting on *black* text, obliterating whatever you select. To view this effect (shown in Figure 4-6), change the numbers in the top three Color Picker text boxes to 3357, 4145, and 65535.

Figure 4-6
What happens when you get zany in choosing your highlight color for text.

Mr. Smith was about as angry as anybody I'd ever seen. He stared at the smoldering remains of his house, then at the still-burning match in my hand. And, as best as I can remember, his exact words were: "You [redacted] !!!"

For Finder windows, you must choose one of the nine color options provided in the second pop-up menu. The standard window color is light purple; the eight other options include regular black-and-white, in which windows lose their 3-D appearance. Unlike the highlight color, there's no Other option for windows.

The color you select appears in the outline of window title bars, scroll arrows, and scroll sliders.

COLOR CONTROL PANEL SECRETS

Roll credits!

Click the words *Sample Text*, and the text is replaced with the words *by Dean Yu*. Click again, and you see the name of Dean's collaborator, Vincent Lo.

But that's only the start. Keep clicking. At click #16 (keep your mouse button pressed), a surprising new name appears: Don Louv, the mysterious third programmer.

And if you click 26 more times, at click #42, a startling new expression appears in the little sample-text box: *doodle doodle dee.*

But the fun still isn't over! This is a full five-minute Easter egg. If you click *42* more times, at click #84, you get the final surprise of the evening: the words *wubba wubba wubba* appear. Do you suppose the programmers were getting just a *little* slap-happy?



ColorSync System Profile

As you'll find out in Chapter 25, ColorSync is Apple's solution to the age-old problem of printed colors that don't match the colors on-screen. Each piece of color equipment — scanner, monitor, printer — is supposed to have its own ColorSync Profile file that identifies its peculiar color quirks. Unfortunately, profiles for non-Apple equipment may be hard to find. (The profile documents, by the way, get stored inside the ColorSync Profiles folder, which lives within the Preferences folder in the System Folder.)

You use this control panel's pop-up menu to select the kind of monitor you're using — Apple 16-inch, Performa Color Display, and so on — so that the behind-the-scenes software will know how to keep colors consistent on other color units.

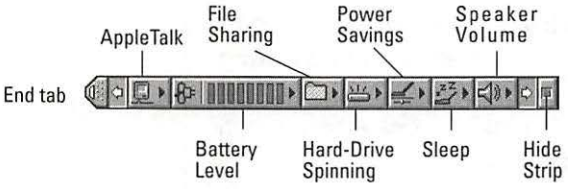
The important thing to remember is that ColorSync is absolutely useless unless you have *exactly* the right profiles installed for your specific monitor

and printer. If you have a Radius 20-inch monitor, don't use the profile for the Apple 20-inch monitor. In fact, if you use the wrong profile, your color matching might even get *worse* with ColorSync. For anyone who doesn't regularly scan and print in color, we suspect that the best place for ColorSync, the ColorSync extension (which this control panel requires), and related files is in the Trash.

Control Strip

The Control Strip was originally designed only for PowerBooks, but it was such a hit that it's now part of System 7.5.3 and later. (Note, however, that you must use your Installer's Custom Install option to get it; the Control Strip doesn't get installed by default.)

Figure 4-7
The awesomely handy PowerBook Control Strip.



It's a rack of control tiles, as shown in Figure 4-7, that float in a handy strip above whatever other windows are open. Each tile actually is a tiny pop-up menu. Hold the mouse button down steadily on a tile, and then slide up or down to the command you want.

The original tiles provided for PowerBooks include the following:

- AppleTalk on/off switch (much quicker than opening the Chooser)
- Battery/recharging gauge (the pop-up menu allows you to hide the power graph)
- File Sharing on/off switch (and indicator), for when you're working on a network
- A power-conserving Spin Down Internal Hard Disk command (and a spinning/not spinning indicator)
- A tile for adjusting the overall power conservation/speed balance of your laptop's screen, disk, and system sleep functions
- A tile with an instant-sleep command (easier than switching back to the Finder to use the Sleep command)
- A handy sound-level slider (easier than opening the Sound control panel)
- A Video Mirroring control, which appears only when your PowerBook is hooked up to an external monitor or projector. Interestingly, as free book winner Ronald Leroux discovered, this module also works on a desktop Mac with an external monitor attached.



See Chapter 14 to get an idea of why these controls are important.

On a desktop Mac, on the other hand, you get additional tiles — one that changes the monitor's magnification level (for *multisync* monitors, described in Chapter 11), one that changes the monitor's color setting, and so on.

CONTROL STRIP SECRETS

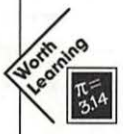
Move it, baby

The Control Strip is much more flexible than it looks. For example, you can shrink it to any length by tugging its little end tab. If you simply *click* the tab, in fact, the Strip collapses so that *only* the tab appears, at the very edge of your screen — waiting for another click to expand again.

Furthermore, if you press Option, you can drag the entire strip up or down the side of your screen — or sideways, to the opposite edge. You can't drag the Strip to the middle of the screen, however — it must hug the right or left side.

Permanently rearrange, add, or remove tiles

The Option key has another handy effect on the Control Strip: If you drag one of the little tiles while pressing Option, you can slide the tile horizontally to a new position. (Combine this feature with the drag-to-stretch feature in the preceding Secret, and you can customize the Strip to show only the tiles that you find useful.)



One of the great aspects of the Control Strip, however, is its modular construction. Open your System Folder; inside, open your Control Strip Modules folder. Simply remove any modules whose tiles you don't want to include in your Strip. By the same token, you can add new modules as they're written by shareware (or commercial-ware) authors simply by adding them to this folder.

Some of our favorites are Control Strip Terminator (lets you quickly quit all your programs, or just the background ones, or even the Finder) and Bunch-O-Apps (serves as a quick launching list for your favorite programs). You'll find them on the CD that comes with this book.



Roll credits!

So far, we haven't mentioned the control panel *itself* — only the Strip that it creates. The actual icon inside your Control Panels folder is pretty tame; it has only two buttons (for showing and hiding the entire strip).

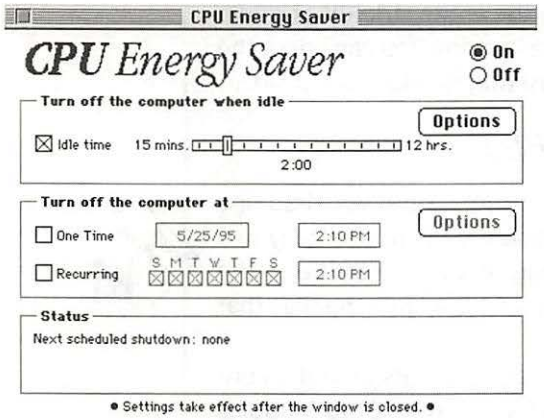
If you Option-click the version number, however, you'll discover that the author of this glorious tool is Steve Christensen, who wrote the classic SuperClock! control panel (which *also* was adopted by Apple and made part of System 7.5).

CPU Energy Saver

This control panel is one of the five control panels that have represented Apple's effort to conserve electricity — and to qualify its Macs for the Environmental Protection Agency's Energy Star seal of approval. See "Energy Saver 2.0 (and related files)," later in this chapter, for the complete rundown.

CPU Energy Saver offers controls for turning the Mac off automatically — 15 minutes after the last time you actually work, for example, or every night at midnight (see Figure 4-8). It doesn't, alas, let you turn the Mac *on* automatically.

Figure 4-8
The CPU Energy Saver is perfect for late-night downloading sessions. Set the Mac to shut off automatically in two hours (when you're waiting for a 90-minute file to be transferred). Then go to bed.

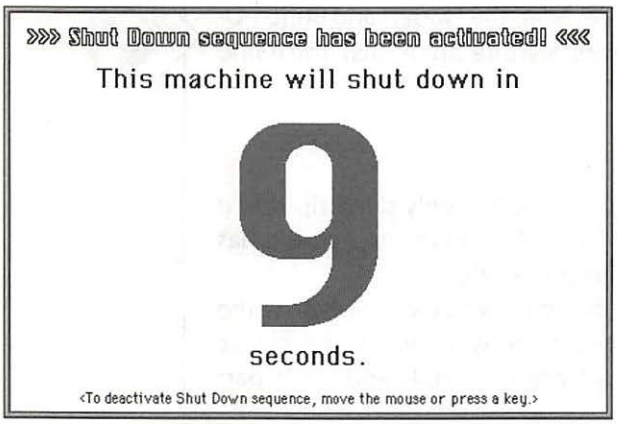


You get this control panel with System 7.5 or later. Like Auto Power On/Off, it works with any Mac that turns off completely when you choose Shut Down. However, this control panel gets installed by the System installer only on Macs that are incompatible with both Auto Power On/Off and Energy Saver 2.0 (again, see "Energy Saver 2.0 [and related files]"). If the monitor's power cord is plugged into the Mac, the monitor shuts off, too.

The Options button gives you access to this panel's additional intelligence — you can instruct it not to shut down while the modem or printer ports are being used, for example.

In any case, when the Mac's time comes, you'll think that the world is ending. With a sound like an air-raid siren, and with an enormous bright-red full-screen countdown, the Mac gives you 30 seconds of shrill notice before it actually turns off (see Figure 4-9).

Figure 4-9
When the Mac gears up to go to sleep, it can wake either the dead or your neighbors.



Date & Time

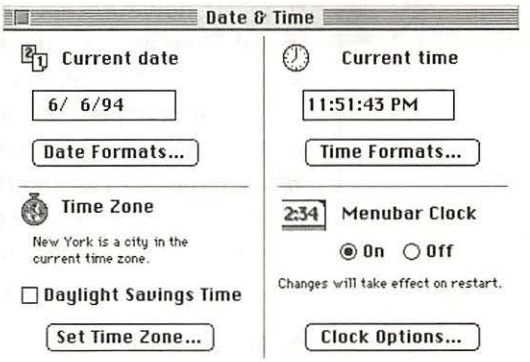
This control panel comes with System 7.1 and later (see Figure 4-10). With it, you can change the way times and dates are displayed anywhere the Mac displays them (in Finder-window list views, for example). The usual value is the default one — American — but in keeping with the internationalization of System 7.1,

you can make dates appear in European format (day of month first) or in any zany order you can think up.

If you click a number in the date or time display, you can change the Mac's clock or calendar by typing numbers or clicking the up-arrow or down-arrow buttons.

If you're an American Mac user using System 7.1 or earlier, we suggest that you chuck this control panel; clutter is clutter. But if you're using System 7.5 or later, hang on to Date & Time. This control panel is the only remaining means of setting your Mac's clock. It also allows you to control the handy menu-bar clock that for years was known in the shareware world as SuperClock. Finally, it's required by AOL 3.0's e-mail time-stamping feature.

Figure 4-10
The new, improved Date & Time control panel. (The System 7.1 version includes only the controls pictured here.) Hint: click the time display in your menu bar to see the date.



DATE & TIME SECRETS

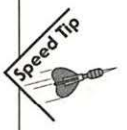
Move it, pal

Considering the increasing number of today's programs that put their own little iconic menus in your menu bar, it would be nice if you could hide the Date & Time's clock display without having to open the control panel. You can. Just Option-click the clock to make it disappear — and Option-click again to make it return.



Insta-sleep for PowerBooks

Another holdover from this control panel's original incarnation as the freeware SuperClock program: If you Control-click the battery icon (which appears automatically when you're using a PowerBook), you put your PowerBook to sleep.



Set your clock, or live in peril

Don't underestimate the importance of keeping your clock set correctly — you should even use the Daylight Savings Time checkbox religiously. It's not particularly important that your Mac *shows* the correct time. But it *is* important that your Mac *stamps your files* with the correct times. Many Mac users — even experts — have suffered grief because their files were incorrectly time-stamped. See "Map," later in this chapter, for the rationale.

Show the seconds, detect a crash



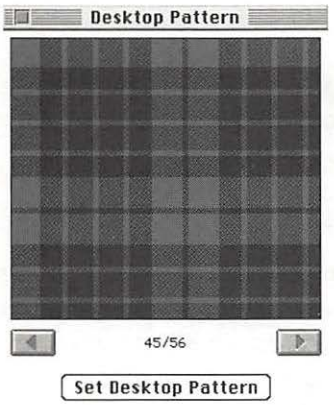
In the interests of conserving screen space, you may be tempted to turn off the display of seconds in your menu-bar clock. Free book winner Lisa Sydney suggests, however, that leaving the seconds ticking away up there can be very useful. Their incremental advancement, or lack thereof, tells you at a glance whether the Mac has locked up or is just taking a long time to do something. "At our newspaper," she writes, "we have a lot of impatient artists who force quit out of their programs because they think the machine has crashed — when actually it's just trying to access a file across the network and is running a little slow. But when the clock is showing seconds, they can actually see that the Mac is doing something."

Desktop Patterns

Focus groups strike again.

For years, the Mac's General Controls panel included a tiny painting square, in which you could draw your own Desktop background patterns (see "General Controls [pre-System 7.5]"). Apple's studies indicated that too many people had trouble figuring out how to work that mini-pattern editor. Thus, on the early Performa Macs, the background patterns weren't editable; the Performa General Controls panel merely offered a pop-up menu of ready-made, but attractive, Desktop patterns.

Figure 4-11
The Desktop Pattern control panel isn't really a control panel — it's actually an application residing in the Control Panels folder. You can move from pattern to pattern by clicking the arrow buttons, or by pressing the arrow keys on your keyboard.



Beginning with System 7.5, Apple has mainstreamed this principle; today's General Controls panel doesn't have *any* controls for adjusting the background pattern. Instead, you get Desktop Patterns, which allows you to scroll through 64 ready-to-use patterns (see Figure 4-11). When you see the one you like, double-click it, or click the Set Desktop Pattern button. If you absolutely despise a pattern, you can get rid of it by choosing Cut or Clear from the Edit menu.

On one hand, you can't edit these patterns directly (unless you use ResEdit; see Chapter 21). On the other hand, these patterns are bigger and nicer-looking than anything Apple has provided before.

DESKTOP PATTERNS SECRETS

Make your own patterns

No, you can't edit the Desktop Patterns directly in the control panel. But you can do much better: You can whip up your own in a graphics program like Color It, included with this book (see Chapter 34). Simply copy your custom pattern and then paste it into the Desktop Patterns window.



If you're not artistically inclined, you can still try the following trick right now. Desktop Patterns works with Macintosh Drag & Drop. In other words, you can open your Scrapbook or your Jigsaw Puzzle and drag a graphic directly into the Desktop Patterns window, where it appears like magic.

Because this program works with Drag-and-Drop, we discovered something terrific: You can turn Desktop patterns into picture clippings files on your Desktop! Apple, for example, includes a folder full of attractive photographic picture clippings on the System 7.5.3 (System Update 2.0) CD-ROM. And we've included an even better collection on the CD-ROM with this book. Simply drag one into the Desktop Patterns "control panel" window to install it there.



The classic interior-decoration trick

If you press the Option key, the button in the Desktop Patterns window changes to say "Set Utilities Pattern." If you click this special button, you won't notice anything different at first (except a strange alert message, which you must OK). But now open some of your menu programs, such as the Calculator, Find File, Jigsaw Puzzle, Key Caps, and Scrapbook. Sure enough, you've changed their window interiors to match the pattern you chose!

The Secret of Desktop Patterns Prefs

Inquiring minds want to know: So where *are* all those patterns stored? You can poke around the Desktop Patterns program with ResEdit all you want, but you won't find 'em.

Cooperative authors answer: in the Desktop Patterns Prefs file, in the Preferences folder (in the System Folder). It contains all 64 of the default patterns.

This revelation has several repercussions. First, if you take that Prefs file out of the Preferences folder, the Mac will generate a new one the next time you run Desktop Patterns. By selectively placing Desktop Patterns Prefs files back into the Preferences folder, you can easily swap among several different sets of patterns you've created. (Each Prefs file can hold 226 patterns.)

There's another good reason you may want to remember this Secret, too. Believe it or not, when you delete a pattern from Desktop Patterns, it isn't *actually*

deleted; it's only hidden. It remains in your Prefs file, inaccessible but taking up disk space! After a lot of cuts and pastes, therefore, your Prefs file can get enormous. By removing it — and forcing Desktop Patterns to generate a fresh default Prefs file — you start over with a relatively compact default set of patterns.



The astounding full-height Desktop pattern Secret

The question is: exactly how big is one tile of a Desktop pattern? And 100 out of 100 people will answer: "128 pixels square."

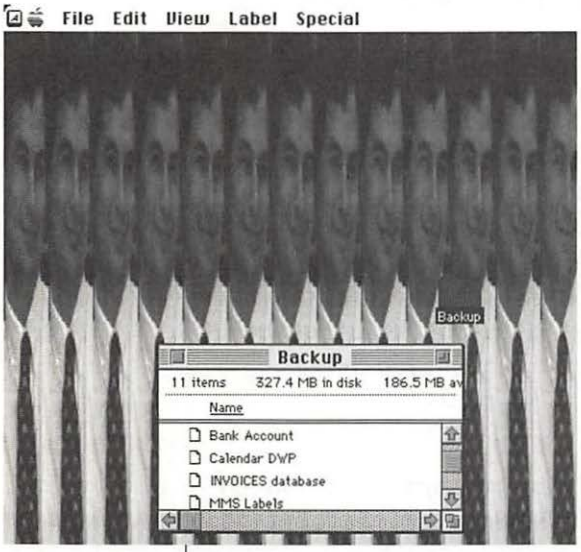
That may *usually* be the answer. But an anonymous Secrets-contest winner discovered something astounding: *one* Desktop pattern provided by Apple is much taller — tall enough, in fact, to stretch from the top to the bottom of a standard 14-inch monitor. Here's how you can make use of it.

Open Desktop Patterns. Scroll to pattern #62 — it looks like a soft purple solid color. If you apply it to your Desktop, you'll discover that it's actually shaded, blending softly from the top of the screen to the bottom. Choose Copy from the Edit menu.

Now launch a graphics program, such as Color It or Photoshop. Paste the Desktop pattern into a window exactly 32 pixels wide and 512 tall (the original pattern's dimensions). Now you can dress up this special pattern slice in any way you want: paint over it, paste in your own photo, and so on. (For some reason, you can't start by simply creating a new document; you must begin by pasting in the original Apple pattern.)

Once you've finished, copy and paste the doctored 32 x 512 image back into Desktop Patterns. Apply it to your Desktop — and be amazed (see Figure 4-12).

Figure 4-12
A full-height Desktop pattern? Impossible! Amaze your friends.



DOS Compatibility Software Update

This control panel, as the name implies, is for Macs equipped with the DOS Compatibility Card (not including PCI Macs, which don't require this control panel).

Easy Access

Easy Access is designed to make using the keyboard easier for people who type with one hand or find it difficult to use a mouse — or, as you'll read later, for graphic artists who might appreciate the fine precision control Easy Access provides. (If you don't find Easy Access in your Control Panels folder, and you'd like to, use the Custom Install option of the Installer — or look in the Apple Extras folder, if you have one.)

Mouse Keys — Turning on Mouse Keys allows you to use the numeric keypad, instead of the mouse, to control the pointer. The 5 key becomes the mouse button; the number keys surrounding it move the pointer up, down, diagonally, and so on. You can change the speed of the pointer (Maximum Speed) and the length of the delay before the pointer starts moving (Initial Delay). (See Figure 4-13.)

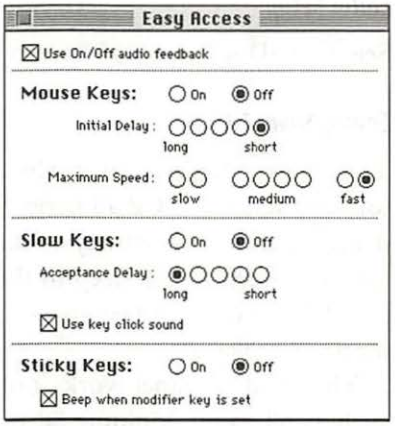


Figure 4-13
You can make your keyboard slow, sticky, or mouselike with Easy Access.

Free book winner Matthew Cohen notes that you can press ⌘-Shift-Clear (the Clear key is on your number pad) to invoke Mouse Keys mode. At this point, he uses the arrow keys to move the cursor — but especially enjoys the 0 key, which is a mouse-button lock feature, a real help in precise graphic tasks. He says he's also used Easy Access to good effect when a client's mouse wasn't working and a deadline was approaching.

Sticky Keys — With Sticky Keys, you type keyboard shortcuts by pressing the key combinations *successively* rather than *simultaneously*. For example, the keyboard shortcut for turning on the Mouse Keys feature is ⌘-Shift-Clear. Normally, you have to press those three keys at the same time for the shortcut to work. But with Sticky Keys on, you press the keys one at a time, in a sequence. First press the ⌘ key, then the Shift key, and finally the Clear key (see Figure 4-14).



You can turn on Sticky Keys from the keyboard by pressing the Shift key five times in a row. The five keystrokes can be separated by several seconds, or even several minutes, as long as the mouse doesn't move between key presses. You hear a neat

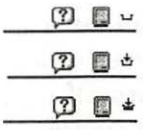


Figure 4-14
When Sticky Keys is on, a little indicator appears at the far right side of the menu (topmost figure). When you press a modifier key (Shift, Option, or ⌘) once, a little arrow appears (middle). That's a signal that Sticky Keys is waiting for a nonmodifier key (such as a letter) to complete the keystroke. If you press a modifier key *twice*, you lock it down. As you type letter keys now, the Mac acts as though the modifier key is being held down continuously (bottom).

little starting-up chirp as confirmation that Sticky Keys is on. (If we had a dollar for every reader who's written us in confusion, wondering what that little chirping sound is . . .)

To turn Sticky Keys off, press the Shift key five times again, or press any two modifier keys simultaneously.

Slow Keys — Slow Keys delays the acceptance of each keystroke. At its highest setting, the Mac won't acknowledge a keystroke unless you hold the key down for at least a second and a half. This feature helps screen out inadvertent keystrokes.

Editor Setup

See "OpenDoc Libraries," later in this chapter.

Energy Saver 1.0

There have actually been *two* Energy Saver control panels. This one, a monitor-only version of CPU Energy Saver, shuts off certain Mac monitors after a defined period of inactivity — the ultimate screen saver. (To wake up a monitor that's been put to sleep in this way, click the mouse or press a key. After about 20 seconds of beeping — there's no way to adjust the volume — the monitor "wakes up.")

This control panel works only with "Energy Star-compliant" monitors, such as all Apple Multiple Scan and AppleVision monitors. It does indeed *black out* all other kinds of monitors, but Apple hastens to admit that you don't save any electricity that way. But we say, "Who cares?" Automatically blacking out a monitor when not in use is still an excellent idea, because the phosphors coating the glass will last far longer.

No, if Apple wants to make apologies, it should apologize instead for its confusing naming scheme. Why should this control panel be called Energy Saver if it powers off only the monitor? Why should the 2.0 version (described next) be a completely different control panel with completely different functions?

Energy Saver 2.0 (and related files)

If you've read this much of the chapter, you are probably by now totally confused about all these energy-saving control panels. Each seems to be only a partial solution to the turn-off-the-Mac-when-it's-idle problem; each seems to work only with certain models.

In an effort to clear up the confusion, Apple finally combined all of its earlier energy-saving efforts — Auto Power On/Off, CPU Energy Saver, and

Energy Saver 1.0 (which shuts off monitors only) — into a single new application in the Control Panels folder: Energy Saver 2.0. As promised, it controls the automatic on/off management of both the Mac and the monitors. It works only on "PCI Power Macs" (the 5400, 6400, 7200, 7500, 7600, 8500, and 9500 series, for example).

This new "control panel" lets you specify intervals before the monitor, the hard drive, and the computer itself go to sleep. (If sleep mode for *desktop* Macs is a new concept for you, welcome to the second-generation Power Mac line!) And, since it incorporates the functions of Auto Power On/Off, you can click the Scheduled Startup & Shutdown button to see the timing controls for powering your Mac on and off unattended.

The rule then, is simple: If you have a PCI Power Mac, use Energy Saver 2.0. See Table 4-1 to find out which energy-saving doodad to use with older Macs.

Table 4-1
When to Use Which Energy-Saving Control Panels

	Energy Saver	Auto Power On/Off	Screen	CPU Energy Saver
128K, 512K, Plus, SE, SE/30	-	-	-	-
Classic I or II, Performa 200	-	-	-	-
Color Classic I or II	-	•	•	OK
II, IIx, Iifx, IIcx, IIci	•	-	-	•
IIsi, IIvi, IIvx	•	-	-	OK
LC, LC II	-	-	-	-
LC III, LC 475	•	-	-	-
LC 520 - 580	-	•	•	OK
LC 630	•	-	•	OK
Quadra 605, Performa 400 - 430	-	-	-	-
Centris/Quadra 610, 660AV	•	-	-	-
Quadra 630	•	-	•	OK
Centris/Quadra 650, 800	•	-	-	•
Quadra 700	-	-	-	•
Quadra 840AV, 950	•	-	•	OK

	Energy Saver	Auto Power On/Off	Screen	CPU Energy Saver
Quadra 900	-	-	•	OK
Performa 250, 275, 520 - 580	-	•	•	OK
Performa 450 - 476	•	-	-	-
Performa 600, 630-, 640-series	•	-	•	OK
Performa 5200-series	-	•	•	OK
Performa 6100-series	•	-	-	-
Performa 6200-series	•	-	OK	-
Performa 6300-series	•	-	OK	•
5200/75 LC	-	•	•	OK
6100/60, 6100/66	•	-	-	-
6200/75	•	-	•	-
7100	•	-	•	OK
7200 Series	•*	-	-*	-
7500, 7600	•*	-	-*	-
8100/80	•	-	•	OK
8100/100, 8100/110	•	-	•	-*
8500, 9500 Series	•*	-	-**	-

• = preferred
OK = compatible
* These computers included the Connectix Desktop Utility (CDU) software, which offers automatic power-off features of its own.
** Use Energy Saver 2.0.x included with System 7.5.2.

We have only one "secret" for Energy Saver: Because it's designed to control the Mac even when it's turned off, it stores its settings in *PRAM* (the special little piece of battery-sustained memory that keeps such settings as the current time alive). Therefore, throwing away the Energy Saver program or its accompanying Energy Saver extension won't change your Mac's automatic on/off behavior. If it's set to shut off every night at midnight, it will continue to do so. To make a change, you must use the Energy Saver program's controls — not just throw it away.

Express Modem

This control panel is confusing, because you may need it even if you *don't* have an Express Modem (Apple's internal PowerBook modem). In fact, it's more likely that you will use this control panel because you have a GeoPort Telecom Adapter on your Power Mac or AV Mac; the same software is used for both. (See Chapter 27 to read about the GeoPort.)

In any case, this control panel allows you to choose *Express* Modem or *External* Modem. These controls were originally provided for the PowerBook so that you could choose between its built-in modem and (if you had one attached) an external modem.

But when you're using a GeoPort, a paradox arises: Is the modem an *Express* Modem, because it uses the Express Modem software, or is it *External*, because the Telecom Adapter dangles off the back of the Mac? Guess carefully — if you choose the wrong setting, your GeoPort modem won't work.

Answer: Use the Express Modem setting.

One more word of advice: Your PowerBook-modem and GeoPort experiences will be much happier if you strictly keep abreast of new versions of this control panel. Apple updates it once a year or so, and the versions get dramatically more reliable each time.

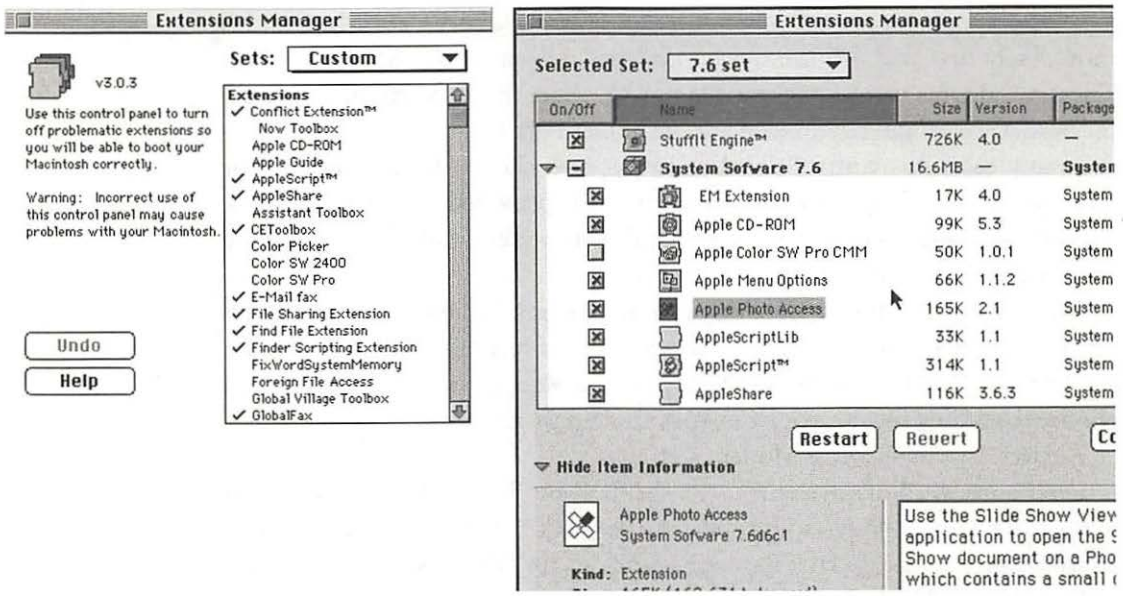
Extensions Manager

When Apple added 60 control panels and extensions to System 7.5, someone decided that it might be nice to provide you, the humble user, with some means of controlling them all. After all, if you're settling in for a nice afternoon of word processing, you might not need the 24 PowerTalk extensions, the 37 Open Transport extensions, and the 53 QuickDraw GX extensions.

Extensions Manager is very simple. When you turn on your Mac, hold down the space bar. After a moment, you'll see a list of your control panels and extensions, and you can click to turn off the ones that you won't be needing (see Figure 4-15). For every item that you turn off, you'll have fewer conflicts, more memory, and a faster start-up sequence. Behind the scenes, Extensions Manager works by *moving* files from, for example, the Extensions folder into a folder called Extensions (Disabled), where the Mac ignores them. (Knowing this is a troubleshooting advantage; you can restore an extension by moving it back into the Extensions folder, even if Extensions Manager isn't around.)

Of course, Extensions Manager doesn't have nearly the troubleshooting smarts of Conflict Catcher or Now Startup Manager, which is included with this book (see Chapter 34). Nor does Extensions Manager turn off *all* extensions when you select the All Off setting. If you really want an extension-free Mac, press the Shift key during startup.

Figure 4-15
Extensions Manager, circa System 7.5 (the smaller one) and System 7.6.



But the 4.0 version, which debuted with System 7.6, nonetheless offers a well-organized mountain of information about your extensions and control panels. For the first time, an information panel opens to explain the function of each item (well, *attempt* to explain); adjustable columns show information about the size, version, and original installation source of each item; and what Apple programmers affectionately call "flippy triangles" let you collapse or expand various startup-file categories. These features, plus the new, semi-3-D interface look, make this latest incarnation of Extensions Manager a vastly more useful tool. We look forward to the day Apple's descriptions of the 30 million startup-file crumbs in your System folder are clear and complete enough to make this chapter unnecessary.

File Sharing Monitor

As its name denotes, this control panel provides an overview of your file-sharing activity at any given moment. It displays a list of all your shared files, folders, and disks and allows you to keep track of which network users are currently connected to your Mac. For details, see Chapter 32.

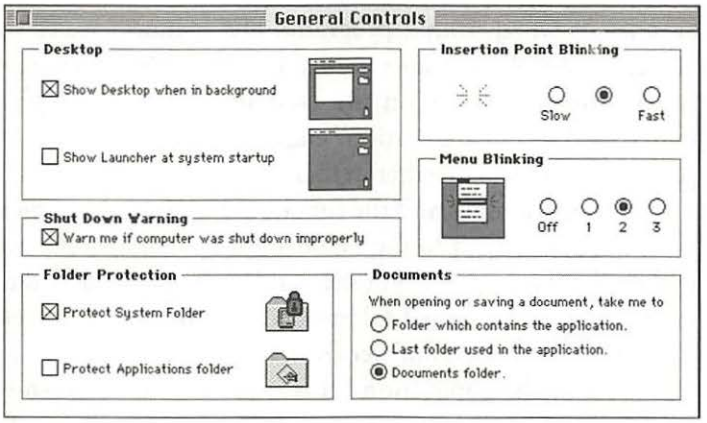
For now, note only that you can't even open this control panel unless (a) AppleTalk is active — see your Chooser — and (b) file sharing is active (see

your Sharing Setup control panel). For more information, see "AppleShare (and related files)" later in this chapter.

General Controls (7.5 and later)

The Performas, of all things, sharply affected the course of Apple's mainstream System software, as this completely redesigned control panel clearly shows (see Figure 4-16).

Figure 4-16
Only the Insertion Point Blinking and Menu Blinking controls remain in the new, Performa-descended General Controls panel.



When you turn off "Show Desktop when in background," for example, every time you launch a program, the world of Finder icons and windows disappears. You're now protected from inadvertently switching to the Finder when you accidentally click outside your document window. (Turn this feature on for beginners!)

You also have a one-click method of launching your favorite programs and documents: This control panel now offers auto-opening of the Launcher, once more adopted from the successful ease-of-use formula of the Performas. (See "Launcher" later in this chapter.)

More in the protect-them-from-themselves category: The Protect System Folder checkbox prevents little hands (or mischievous ones) from dragging icons out of the System Folder's root level. If you use the Launcher, click the Protect Applications Folder checkbox to prevent your programs from being trashed while you're off at the movies. (If, in systems before System 7.5.3, you did try to move a System Folder or Applications Folder item, you were told that you "don't have enough access privileges." Fortunately, the new error

message correctly directs you to this control panel option instead.) One warning: The Protect System Folder checkbox can interfere with certain software installations. It's probably better to have this turned off when installing new programs, which sometimes involves moving items into and out of the System Folder.

And while we're discussing warnings, you may prefer to do without: After a few repetitions of the "This Macintosh was not shut down properly" message when you turn on the Mac following a system crash, you may want to turn off the "Warn me if..." option in this control panel, too.

Finally, the era of "*Where* did I file that darned document?" cries ends with the Documents-folder option, yet again modeled on the Performa's features. This setting specifies what folder's contents you see whenever you choose Save As or Open from a program's File menu. Novices will appreciate the "Documents folder" choice, which makes all new documents fall into a central Documents folder on the Desktop. Most people will enjoy the "Last folder used in the application" choice, which is good for keeping all related project documents together in their appointed folders.

Both the grammar and the function of the third option were lousy before System 7.5.3. It used to say, "Folder which contains the application," and it meant that any new files got saved into whatever folder the program's in, no matter how many nested folders deep, no matter how useless this function. This option was mercifully corrected in System 7.5.3 — it now says "Folder that is set by the application." It refers to the times when you launch a program by double-clicking a *document.* In that case, all *new* documents will get dumped into the same folder that contained that original document.

By the way: Notice anything missing? The Desktop-pattern tools of the older General Controls panel are gone (see "Desktop Patterns," earlier in this chapter). So are the clock-setting controls, which, with the System 7.5 death of the Alarm Clock, now are available only in the Date & Time control panel.

General Controls (pre-System 7.5)

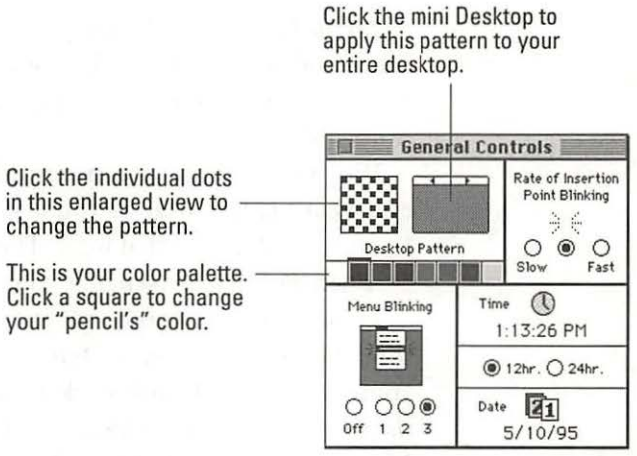
The pre-System 7.5 General Controls panel governs several of the most basic elements in the Macintosh work environment: The current date and time, menu and insertion-point blinking, and the pattern and color that appear on the Mac Desktop.

Setting the date and time — You probably already know how to set the date and time; click a number to edit it by typing, or click the up- and down-arrows that appear whenever numeric text is selected.

Changing the Desktop pattern — Changing the Desktop pattern also is pretty basic, but it's such a quintessentially Macintosh activity that we'd be

remiss to ignore the essentials. Click the little triangles (or click just outside them) at the top of the mini Desktop to cycle through the dozen or so Desktop patterns that come stored in the Mac. Click the mini Desktop (*below* the little triangles) to apply the selected pattern to your actual Desktop, as shown in Figure 4-17.

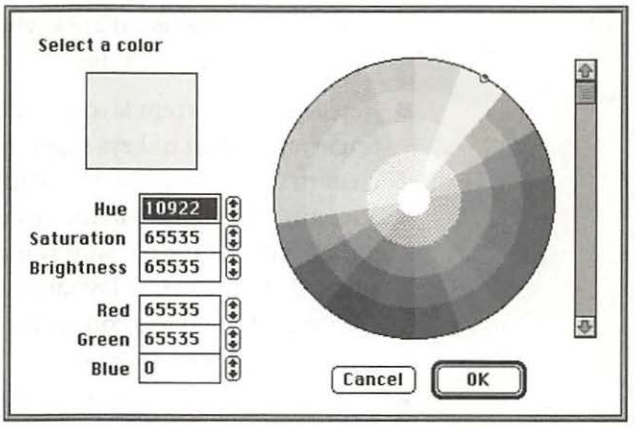
Figure 4-17
Getting down to basics with the General Controls.



The real fun comes from creating your own Desktop patterns. To do so, change the colors of the individual dots in the upper-left square, which is an enlargement of an 8-by 8-*pixel* (screen dot) area on the Desktop. Each tiny square represents one pixel. Below the mini-Desktop is a palette of eight colors. To edit the enlarged pattern, click a palette color and then click the tiny dots in the enlarged view to change their colors. When you finish the new pattern, click the mini-Desktop to apply the pattern to the entire screen.

To change a color in your palette of eight, double-click its tile to open the Macintosh Color Picker (see Figure 4-18). Using the color wheel, you can change each color and adjust its hue, saturation, and brightness.

Figure 4-18
The Color Picker. If the colors appear too dark, drag the brightness slider — the scroll bar at right — all the way to the top. Otherwise, just click any color you see to select it. See the square near the top left? Click the bottom half to restore the original color.



The point to remember when you create new Desktop patterns is that *single-clicking* the mini-Desktop applies the selected pattern to your Finder background, but *double-clicking* saves the new pattern permanently. If you don't save your current Desktop pattern, it disappears the next time you change patterns.

Insertion point blinking rate — Elsewhere in the control panel, you can change the rate at which the insertion point blinks (the *insertion point* is the I-beam cursor that appears whenever

you're editing text). The Slow setting produces 30 blinks per minute; the Fast setting goes at a hyperactive 100 bpm. The middle setting is roughly 50 times per minute.

Menu blinking — When you release the mouse button after choosing a command from a menu, the command blinks: black-white-black. You may never even have noticed it. The menu-blinking setting specifies how many times it should blink.

Why should a menu command blink at all? About the only reason we've ever heard is that it gives you a split second to confirm what you just did. Frankly, we don't get that logic. The menu blinks *after* you let go of the menu — when it's too late to change your mind!

Furthermore, suppose that it takes one second for a command to blink three times. If you use, say, ten menu commands an hour, that means that if you work a typical work week, in ten years you'll have wasted *two and a half days* — full 24-hour periods — doing nothing but sitting in front of your Mac waiting for menus to blink.

We can think of many other things that we'd rather do with a free weekend. The best choice for this setting is Off.

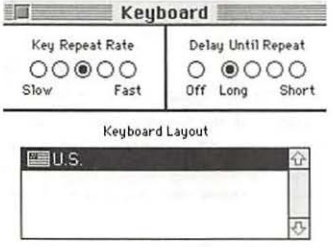


Figure 4-19
The Keyboard control panel awaits your command.

Keyboard

The Keyboard control panel (see Figure 4-19) lets you switch from one keyboard layout to another. A *keyboard layout* is a little file placed in your System file that defines what key the Mac understands when you press each key on your keyboard.

What good are keyboard layouts? Here are a few tricks you can pull off with them:

- Replace your current layout (called U.S.) with the famous Dvorak layout (an arrangement of keys scientifically designed to be easier and more efficient to use). Using Dvorak requires that you to spend a couple of weeks adjusting, which isn't made any easier by the fact that your keyboard keys are still labeled the old way. But many people who have made the switch swear that the Dvorak layout (included with this book) is faster, more comfortable, and less conducive to typos. (See Chapter 34 for more on switching keyboard layouts.)
- Replace only two symbols of the keyboard: <<< and >. They're what come out if you type a period or comma while the Shift key is down, and that usually leads people to type things like

  P>O> Box 234 by accident. If you replace the <<< and > symbols with another comma and period, you won't have that trouble anymore.

- For PowerBook users only, equip your keyboard with a numeric keypad. That is, create a keyboard layout in which pressing a certain key — Ctrl, say — turns the letter keys on the right half of your keyboard into a numeric keypad: K is 5, L is 6, and so on.
- Switch between the System 6 and System 7 keyboard layouts. Believe it or not, Apple switched the locations of a few obscure symbols.
- For non-American Mac users, if you buy System 7.1's WorldScript software, you can use the Keyboard control panel to switch between an American key set and yours.

OK, we admit it: 95 percent of Americans will never use any layout except the one that came with the Mac. Open your System folder, double-click the System suitcase, and trash any keyboard layouts you don't intend to use (German, Norwegian, and so on).

CASE HISTORY

HOW TO LOSE A MANUSCRIPT

We once saw a certain international best-selling novelist — a beginning Mac user — fill ten pages of his word processing document with spaces when he inadvertently leaned a book on his spacebar. If the Delay Until Repeat setting in the Keyboard control panel had been Off, this accident would have produced only a single space on-screen.

Key Repeat Rate — The Keyboard control panel also controls two minor functions involving repeating keys. The Key Repeat Rate setting controls the rate at which characters repeat when you hold down a key. At the slowest setting, characters repeat once every two seconds — an utterly pointless choice. It's much faster to just press the key repeatedly.

Delay Until Repeat — The Delay Until Repeat setting controls how long you have to hold a key down *before* it starts repeating the character. At the slowest setting, the delay is less than one second; at the fastest setting, repeats begin almost instantly. You can disable repeating keys by choosing Off in the control panel — an excellent choice for beginners who are used to nonrepeating typewriters.

Honestly, though, after you make these settings, you probably won't ever need to adjust them. Feel free to throw this control panel away.

Labels

As described in Chapter 1, System 7's Label feature enables you to apply text and/or color labels to your files and folders. You use the Labels control panel to set up the label categories and pick the color associated with each label (see Figure 4-20).

When you open the Labels control panel, the top label name is selected. To replace the label text, just



Figure 4-20
Name your labels in the Labels control panel.

start typing. Press the Tab key to cycle through the seven label fields. Label names can be up to 31 letters and spaces long.

To change label colors, click the rectangular color tile next to a label name. Clicking a tile opens the Macintosh Color Picker, where you click a new color or type new values in the text boxes for Hue, Brightness, Saturation, and so on.

We have only one Label control panel Secret. It takes a little more work than most, but it's weird. Select and delete all seven label names in the control panel so that all the fields are blank; then restart your Mac and check out the Labels menu. Read vertically, the labels spell out the names *alan* and *jef*— the two programmers.

Of course, there's a much more creative use of your Labels menu awaiting you with this book — Label Secrets Pro. See Chapter 34 for details.

Launcher

Apple actually has blessed us with *three* Launchers. The original Launcher control panel gave the Performa its user-friendly features, such as the Documents folder and automatic Finder-hiding. Then there's the Launcher introduced with System 7.5 (and with some pre-7.5 PowerBooks and Performa models).

Finally, when Apple introduced System 7.5.1 (see Chapter 6), it overhauled the Launcher yet again, this time endowing it with a host of user-friendly conveniences. This new, Drag-and-Drop-ready Launcher serves as an in-your-face repository for software Apple doesn't want you to miss. For example, when you buy a new Performa or PowerBook, the Launcher comes configured with click-ready icons that explain Apple's help services, PowerBook battery-saving tips, and so on. And when you install Apple's terrific Internet Connection Kit, your Launcher ends up loaded with icons for all the major Internet programs (such as Netscape Navigator).

Here's how it works. In the System Folder is a folder called Launcher Items. Anything you put in this folder — or anything you drag onto the Launcher window — instantly appears in the Launcher window as a jumbo icon (see Figure 4-21). (In many ways, this process resembles adding items to the menu.) One click in the Launcher window (focus groups found that double-clicking was too hard to remember) suffices to open that icon. Here, for example, are some ideas for stuff to stick onto your Launcher:

- Drag frequently accessed folders to the Launcher to create one-click shortcuts to all the folders you open the most. This is especially useful if you tend to root around in deeply-buried folders on a number of different file servers; you'll have access to all of them from one central location.
- Make a Launcher "page" called Control Panels, adding buttons to the Launcher for all the control panels you use the most.

- Create Stickies stationery documents (see "Stickies" in Chapter 3) and drag them to the Launcher to generate ready-to-use Post-It notes.
- If you use AppleScripts to automate tasks on your Mac, drag the applets to the Launcher as a command center for all your automated tasks.
- Create category buttons for projects you're working on, and then group all related documents and applications under the appropriate categories.

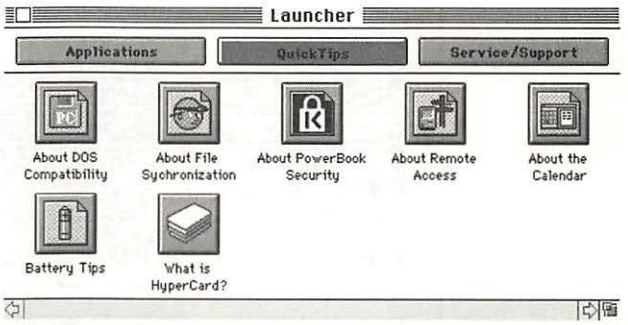


Figure 4-21
The Launcher window of a 1994-era PowerBook.

- Install a copy of the • Shut Down desk accessory for easy end-of-day access.

The modern-day Launcher window offers separate "pages," each listing a different array of jumbo icons. For example, on a new Macintosh, these buttons might say Applications, Quick Tips, and Service/Support; appropriate icons appear, depending on which button you most recently clicked (see Figure 4-21 again).

The Launcher has one confusing aspect: When you double-click the Launcher *control panel*, the Launcher *window* appears — not a set of controls and checkboxes, as would with any normal control panel. Even so, we find the Launcher well worth trying out.

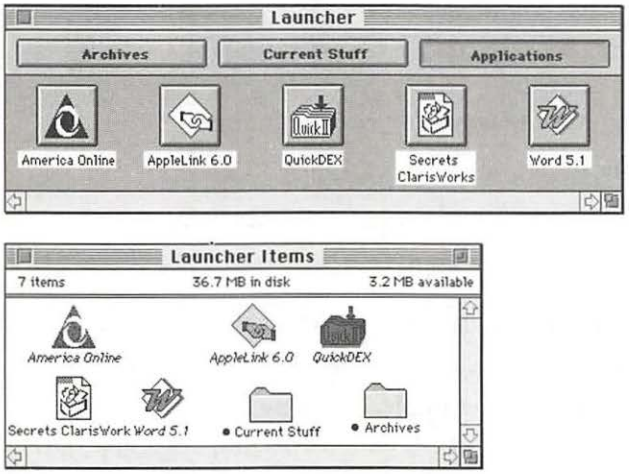
LAUNCHER CONTROL PANEL SECRETS

Make your own topic buttons

If you poke around a little, you'll find out how Apple makes those big topic buttons appear at the top of the Launcher window. In your System Folder, in the Launcher Items folder, are *sub*folders. The name of each subfolder is preceded by a bullet (•). Turns out that any folder name bulleted this way shows up in the Launcher window itself as a big button name — and the folder's contents "page" appears when you click the folder's name. Figure 4-22 should make this relationship clear.

Add as many topic buttons (bulleted folders) as you want; the Launcher window will display up to eight of them — the ones that come alphabetically first. (You create the bullet symbol by pressing Option-8.) You can even resize or reshape the Launcher window, and the topic buttons, like Silly Putty, will

Figure 4-22
To change the names of the big Launcher topic buttons (top), change the names of the bulleted folders in the Launcher Items folder (bottom). You can make other bulleted folder buttons, too; each will appear in the Launcher window as a topic button.



stretch and reconfigure — becoming stacked vertically, for example — to accommodate your nutty design impulses.

Especially cool: drag an icon, not into the Launcher window, but directly onto one of its topic buttons to install that icon onto the corresponding Launcher "page."

Easy-install, easy-remove icons

One of the virtues of System 7.5.1 and later: the new Launcher. This new version lets you happily forget all that jazz about the Launcher Items folder. To install a Launcher button onto this Launcher, you simply drag an icon onto the Launcher window. That's it — it jumps alphabetically into place.

Removing a button is equally simple: Just Option-drag it to the Trash. Or, if you'd like an alias of it, Option-drag it to your Desktop or into another window.

Better still, why not combine this trick with the previous one? That's right: Option-drag an already installed Launcher icon to a different topic button. Presto — you've just reassigned that Launcher icon to a different page!

Change the icon-button size

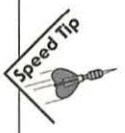
Apple's System 7.5.1 Launcher includes another delicious feature: the ability to change the size of the icons in the Launcher window. Press the ⌘ key and hold down the mouse button inside the Launcher window. You get a pop-up menu

listing three icon-button sizes; just select the one you want. The smallest size is particularly useful and makes the Launcher look a lot less kid-oriented.

Quick access to Launcher Items

As you customize your Launcher setup, you may find it an increasing hassle to burrow your way into the System Folder, into the Launcher Items folder, and from there into your individual topic folders.

Fortunately, there's a speedy shortcut: *Option-click* any topic button. (As you press Option, your cursor turns into a tiny folder to let you know that you're doing the right thing.) You'll be teleported directly into that topic folder within Launcher Items.



Change the Applications topic button

You may have discovered that there's no bulleted folder for the first topic button, called Applications. Any icon that's *loose* in the Launcher Items folder appears on the Applications screen of Launcher-window icons.

You can eliminate the Applications topic button, and its corresponding color-coded page, easily enough: Just put *all* icons into bulleted folders of your own (in the Launcher Items folder). If there are no loose icons, the Applications button won't appear.

Most books and articles tell you, however, that you can't *change* the name of the Applications button. You can, however, if you use ResEdit. To do so, launch ResEdit. Open the Launcher control panel inside your System Folder. Double-click the icon called STR#.



In the list of numbers, double-click -4033. Scroll down until you see the item called Applications. Change this word to whatever you wish your programs folder to be called.

Interior-decorate the Launcher

You're not stuck with nine-point Geneva type and boring background patterns in your Launcher escapades. See Chapter 21 for instructions on changing these elements using ResEdit.



Roll credits

Hold down ⌘ and Option-click over the gray area of the Launcher window (the thin margins around the folder buttons) to see the secret About box.

A better Launcher

Despite the improvements in today's Launcher control panel, it's still a wannabe compared with the flexibility of Square One, included with this book. See Chapter 34.

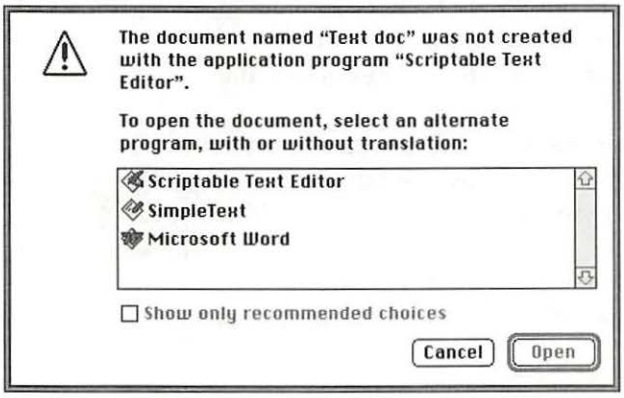


Macintosh Easy Open Setup

If there's one thing that frustrates novices and old Mac salts alike, it's seeing that infernal "Application not found" message when you double-click an icon. Apple has made various attempts to rectify the situation: allowing you to drag a file onto its program's icon, displaying messages that offer to open text and PICT files in SimpleText, and so on. All these solutions have one flaw in common, however: They all assume that you *know* what kinds of programs can read the mysterious icon you're trying to open.

That's why Apple came up with Macintosh Easy Open. (It comes with System 7.5 and later.) With this control panel installed, when you double-click an icon, you don't get an error message — you get a dialog box that lists the programs you own that *can* open the mystery file (see Figure 4-23).

Figure 4-23
Macintosh Easy Open intervenes when the "Application not found" box otherwise would appear.



Alas, Macintosh Easy Open has its drawbacks. One problem is that Easy Open requires, at all times, an up-to-date index of every program you own (so that its list of alternative programs will be accurate). That requirement leads to a lot of extra Desktop-rebuilding, as explained in the "Desktop under permanent construction" sidebar. Another, related, problem is the hassle of rebuilding the Desktop when you *want* to; see "The Macintosh Easy Open myth" secret in Chapter 1. As noted there, we think these inconveniences outweigh Easy Open's rare usefulness.

MacLink Plus Setup

MacLink Plus, a useful utility included with System 7.5, is designed primarily to open DOS or Windows files when you double-click them, translating them into a Macintosh format. You use this control panel to configure MacLink Plus's translators.

MacTCP

This control panel is the pre-Open Transport component that configures your Mac for connections to the Internet (via so-called PPP and SLIP services) and other networks (such as TCP/IP-based Ethernet systems, if you know what *they* are). If you're not on a network and don't use the Internet, or AOL 3, throw this out. See Chapter 28 for more on the Internet. Throw it out also if you're using Open Transport (see Chapter 32), whose TCP/IP control panel

replaces this one — or, as we'll remark in Chapter 32, may simply make this control panel invisible!

MacTCP DNR

Talk about weird. According to the Finder, this little item is indeed a "control panel" — and yet it isn't in the Control Panels folder (it's loose in the System folder) and can't be opened!

Anyway, DNR stands for "domain name resolver." Clearly, this phony control panel contains information required by certain Internet (TCP/IP) programs. In theory, this file should be obsolete in this era of Open Transport. It's still around only to accommodate Internet programs that aren't compatible with Open Transport. If you aren't using Open Transport, and you have an Internet account (America Online not included), don't even bother trying to throw this file away; the next time you sign on, the MacTCP control panel will create it anew.

Map

If you need to know the exact time in Ulan Bator (the capital of Mongolia), or if you're called upon to calculate the mileage from there to your office, the Map control panel is indispensable. Generations of Mac fans have disparaged the Map — but it's probably far more important than you suspect, as we'll discuss shortly.

Click any spot on the world map, and the Map displays the current time at that locale, along with its precise longitude and latitude (see Figure 4-24). You can scroll around the world by dragging the pointer to the edges of the map window.

The Find feature can locate specific cities, islands, and other points on the Map; just type the name of the city you want to locate and then click the Find button (or press Return). The Map already knows about most major cities, as well as Mount Everest and the Middle of Nowhere (a spot in the South Atlantic Ocean — try it by typing *MID* and pressing Return).

If you're not sure that a city is listed or don't know how to spell it, type just the first letter or letters and then click Find. The Map jumps to the nearest match.

ANSWER MAN

Desktop under permanent construction

Q: ***What the heck is going on? My Mac sometimes rebuilds its own Desktop, unbidden. I'm not pressing any keys; I'm not doing anything — except waiting and waiting for it to finish. What's going on?***

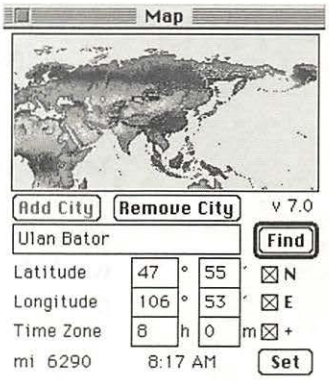
A: Calm down. You've got Macintosh Easy Open, right?

Q: ***How'd you know?***

A: Macintosh Easy Open's job is to suggest programs to open the mystery document you're double-clicking, right? As a result, it has to know what programs you have.

The trouble occurs when you start up the Mac with the Shift key down, thus turning off all extensions, including Easy Open. The next time you start up, Easy Open worries that, while it was turned off, you might have added or removed programs behind its back. It therefore insists on rescanning your disk — by rebuilding the Desktop — to make sure that its index of your programs is current.

Figure 4-24
Where on earth is Ulan Bator? Find out with the Map control panel.



To make practical use of the Map, you must set your home city, which becomes the reference point from which all distances and times are measured. To do this, locate your city on the Map, using the Find command, and then click the Set button. Your city now becomes mile zero and displays the current time. The Map calculates all distances and time differences based on your home city's location and time.

If your home isn't among the cities listed in the Map, use an atlas to determine the exact latitude and longitude of your home. (Or if you're not fussy, just click the approximate spot.) Use this information to add your city to the map: Type the name of the city, along with its coordinates, and then click Add City.

MAP SECRETS

Around the world in 80 Returns



To see all the locations that the Map already knows about, hold down the Option key while repeatedly clicking Find (or pressing Return). This action cycles through all the cities that the Map is programmed to find by name.

No clock-resetting for the PowerBook traveler

If you have a PowerBook (or travel with your desktop Mac), reset the Map's home city when you go on a trip. By resetting the map to your destination city, the time on the Mac's internal clock automatically changes to match the time in the new city. This way, you don't have to set your Mac clock at the end of each flight, and you'll still be able to check the time in your home city.

The importance of setting your home town

Here's solid proof that the Map can have a profound impact on your work: A magazine company in Oregon was struggling to keep its important QuarkXPress files up to date. An editor would open a nearly-completed magazine layout — only to get a warning from QuarkXPress that nearly all the imported graphics in the Quark file had been modified and needed updating. Yet, the editor knew perfectly well that the graphics had *not* been updated since the file was last saved. Still, not wanting to take chances, the editor would laboriously update each file. An hour later, though, the same thing would happen. It was driving the staff crazy. Why did Quark keep saying the pictures in the files had been modified when they weren't?



Incredibly, the Map was responsible. One of the designers had unwittingly set his Map's home city to Ouagadougou — the capital of Burkina Faso in West Africa. Even though his clock was set correctly, the Map was telling his Mac that it was really eight hours earlier in Oregon. Therefore, each file he saved was date-stamped with a time that was, by Oregon time, *eight hours ahead* of its actual save time. When the file was opened and saved on *another* Mac set to the correct time zone, Quark became hopelessly confused as to when the files had *really* been modified last. (Fact is, this same Quark problem can arise even when the Mac clocks on a network are out of sync by just an hour or two.) At any rate, simply resetting the Map brought all the Macs on the network back into sync and the problem vanished.

And *that's* why you shouldn't ignore your lowly Map.

Instant intercity distance readout

You can use the Map to quickly ascertain the distance between any two spots on Earth. Suppose that you live in Chicago but need to know the distance between Miami and Budapest. Easy: Type **Miami** in the location field, click Find (or press Return), and then click Set. As far as the Map is concerned, you just changed your home city. Next, type **Budapest** in the location field and press Return. The Map jumps to Budapest, and you'll have your answer: 5,330 miles.

Miles-to-kilometers calculator

The Map control panel contains an undocumented feature for converting miles to kilometers and vice versa. The distance between two map points is displayed in the lower-left corner of the Map window. If the distance is displayed in miles, click *mi*, and that number is instantly converted from miles to kilometers. Click the *km* text and the distance again is converted, this time to degrees. Click again to return to convert the figure back to miles.

Map zooming

You can view the map at three levels of magnification: normal size, twice normal size, and four times normal size.

Magnify the map by 200 percent by pressing the Shift key while opening the Map control panel. To do this, you must first double-click the Map icon and *then* press the Shift key (an icon won't open if you hold down the Shift key *while* double-clicking).

To magnify the map by 400 percent, hold down the Option key while opening the control panel. For an even more magnified view, try opening the Map while pressing both the Option *and* Shift keys. (Again, you must press Shift right *after* you double-click.)

A better Map



If you have a color or grayscale Mac, you can replace the uninspiring black-and-white map in the Map control panel with the splendid color world map stored in the Scrapbook. To make the switch, copy the color map from the Scrapbook. Open the Map control panel, click the map picture, and choose the Paste command. (The result is shown in Figure 4-24.)

You also can copy the map graphic *from* the Map control panel. Click anywhere on the map, and choose Copy. You now have a neat little world map that you can paste into any other program.

Figure 4-25
You can replace the Map with a picture of Neil Diamond — but why?



A new Map graphic

Actually, you can paste *any* graphic into the Map, although few choices other than a world map make any sense (see Figure 4-25).

A multilingual Map

You won't find *this* one anywhere but here. As we mentioned earlier, you can repeatedly press Option-Return to see every city in the Map's database. If you continue past Zürich, the Map starts at the top of its list again — but this time, it tells you each city's name *in the native language spoken there!*

What's the time difference?

You can find out the difference between any spot in the world and your own time zone. First, click somewhere on the map (or type the city name, such as **Paris**, and click Find). Then click the words *Time Zone*. The Time Diff. box now shows the time difference between the cities. (The tiny + or — symbol at the right indicates whether you're ahead or behind.)

The mystery of Lower Burrell



Even we are confounded by the presence of Lower Burrell, PA — population 13,200 — in the databases of both the Map and the Date & Time control panels. Yes, Lower Burrell ... but *not* Pittsburgh!

Even stranger: Lower Burrell's time zone seems to be an hour earlier than anywhere else in Pennsylvania. We suspect that it's a programmer's hometown ... but we'd love some knowledgeable reader to fill us in on the details.



And while you're at it: find out who's from Lake Nebagamon, WI. This geographical puzzler is, like Lower Burrell, an entry in the databases of both the Map and the Date & Time control panels.

Roll credits!

Click the version number at the right side of the control panel, and the words *v7.0, by Mark Davis* are inserted into the city-name field. The message disappears when you release the mouse button.

Memory

The Memory control panel (see Figure 4-26) manages several important memory-related functions: the *disk cache, virtual memory, RAM disks, Modern Memory Manager,* and *32-bit addressing.* For explanations of the real-world uses for these functions, see Chapter 9 (the memory chapter).

The Memory control panel automatically hides or shows controls, depending on your Mac model. For example, the original Mac LC doesn't work with virtual memory, so no virtual-memory options appear. And only Power Macintosh models offer the Modern Memory Manager choice.

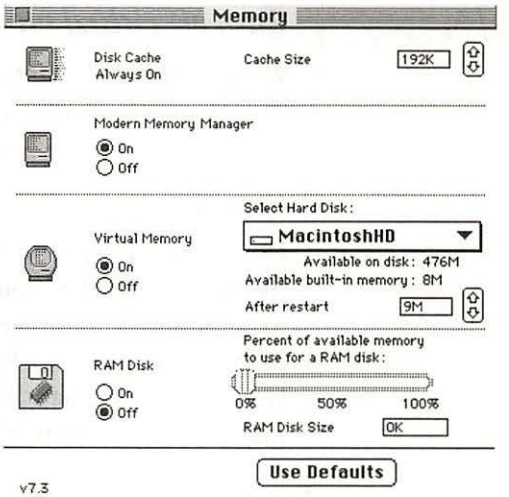


Figure 4-26
The many panels of Memory.

TRUE FACT
RAJAN'S DILEMMA

As we've noted, having the correct settings in the Map control panel can make a big difference to the way files are dated on your Mac. But the weirdness doesn't stop there, as free book winner Rajan Munshi observes.

I believe I have found a bug in the Map control panel. When the Map control panel is open, the time zone is displayed relative to Greenwich Mean Time (GMT) in England. I am currently in Jackson, MS (U.S. Central Time), which is six hours behind GMT.

However, during Daylight Savings Time, the "Time Zone" should now be *five* hours behind GMT. Fair enough. Yet, if you turn on " Daylight Savings Time" in the Date & Time control panel, absolutely nothing happens in the Map; its display of the current time and the difference from GMT don't change! Oddly enough, if you click the Set button, the times in the Map *will* immediately correct themselves — until the next time you open the Map, whereupon the time and time zone will both be wrong again.

The only way to solve this problem is permanently is to avoid the Daylight Savings Time option (in the Date & Time control panel).

MEMORY CONTROL PANEL SECRETS

Roll credits!

For this one, you need a Mac that works with virtual memory. First, turn on Virtual Memory. Hold down the Option key while clicking the pop-up menu used to choose a hard drive. Instead of a list of available drives, you see a hierarchical menu containing the names of the programmers. The submenus contain the hilarious nicknames of each of the programmers.

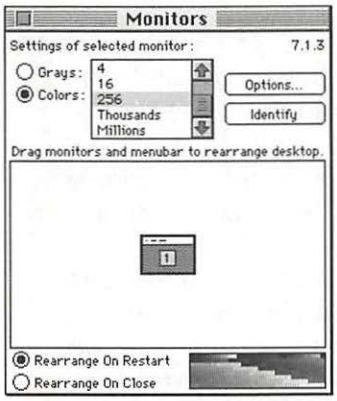
Turn off virtual memory at startup

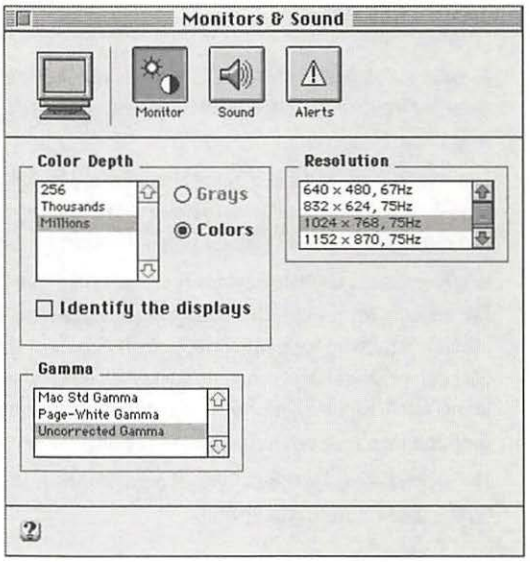
We're not sure how often you'll use this, but here it is: If you press the ⌘ key while your Mac starts up, you'll turn off virtual memory for that computing session.

Monitors

Use the Monitors control panel (or Monitor & Sound, described next) to set the number of colors your monitor displays (for example, to switch from color to black-and-white). The range of options depends on your Mac's video capability; the more video RAM (or *VRAM*) you have installed, the more colors your Mac can display. (Details on VRAM appear in Chapter 11.) The options range from two colors (black and white) to 16.7 million (see Figure 4-27).

Figure 4-27
The Monitors control panel. At right: System 7.5.3's replacement for Monitors (and for Sound).





Why not always display the maximum number of colors possible? In a word: speed. Working with more colors slows a Mac's display. So, if you're working on a large page layout, switch to black-and-white mode to speed screen redraws. As a general rule, the lower the color setting in the Monitors control panel (16 colors, 256, and so on), the faster your screen gets repainted.

(Some Power Mac models, of course, *can't* be set to black-and-white. See Chapter 13 for details.)

The Monitors control panel lets you make the switch, selecting the number of colors you want to display. The long rectangle at the bottom of the control panel displays the full spectrum of colors you selected.

(If you find that you change with some frequency the number of colors displayed, use either System 7.5.3's Control Strip, described earlier in this chapter, or use Color Coordinator, included on the CD that comes with this book [see Chapter 34].)

If you're lucky enough to own a *multisync* monitor (one whose image can be enlarged or reduced), the Options button is one way to switch from one zoom setting ("resolution") to another. (The faster way, in System 7.5.3 and later, is to use the Control Strip.)

You also use the Monitors control panel to set up multiple-monitor configurations when more than one monitor is attached to your Mac. A common example: a PowerBook with a color monitor attached. Each monitor connected to your system is represented in the Monitors control panel by a tiny monitor icon. Chapter 11's juicy exploration of multiple-monitors Secrets includes instructions for specifying which monitor should be the "main" one, how to figure out which monitor is which, and more.

MONITOR SECRETS

Correcting the gamma

You make subtle adjustments to the color balance on your monitor by using an undocumented feature in the Monitors control panel. To unlock the feature, click the Options button while holding down the Option key. If you're using your Mac's built-in video or an Apple video card, you see a dialog box with a checkbox marked "Use Special Gamma."

Apple monitors are manufactured by Sony. Apple found the overall image a little bit dim, however, and decided to adjust the gamma settings to create a brighter, whiter picture. Apple calls its preferred setting Standard Gamma. *Uncorrected gamma,* on the other hand, is the original, unmodified Sony Trinitron setting. Some Apple monitors offer additional gamma settings. Try each to see whether there's a gamma setting that you prefer.

Be smart about your settings

For best speed and best picture, use the 256-colors setting for word processing, on-line services, and most day-to-day work. Definitely switch to "Thousands" if you're going to be playing QuickTime movies, however. Reserve "Millions" for photo retouching.

Roll credits!

In the upper-right corner of the control-panel window, click the version number (such as 7.1.3). You see a pop-up list showing the names of the six programmers.

The fun isn't over yet. Keep holding down the mouse button (so that the list stays visible), and press the Option key. The tiny face next to Jim Straus's name sticks out its tongue each time you press the Option key. Press the Option key 11 times; the first and last names in the list begin to rearrange themselves and get replaced with the words *Blue* and *Meanies*. (The Blue Meanies are the System 7 test-and-cleanup SWAT team.)

Monitors & Sound

In System 7.5.3 and later, on PCI-slot Power Macs and Performas (see Chapter 13), the Monitors control panel (and the Sound control panel, too) have been replaced by one central multimedia application — called Monitors & Sound. In conjunction with its required extension, called SystemAV, this new pseudo-control panel works exactly like the older Monitors control panel, with only two differences. First, two additional buttons at the top of the control panel let you switch its screen to show you sound controls (see Figure 4-26). And second, all the functions of the Monitors control panel that used to be hidden away behind an Options button (such as Gamma and, for multisync monitors, resolution changing) are now easily accessible on the main panel.

More important, Monitors & Sound adopts the 1996 look for new Apple control panels: light gray background, large icon buttons at the top, and a Help button to click if you get confused.

With all this happiness in one single window, it's easy to overlook an important function that's been *removed* during the merger: the Record button that formerly resided in the Sound control panel. Clearly, some well-intentioned programmer forgot all about the handy feature that lets you record your own error-beep sounds.

To make up for the omission, Apple hastily created the Simple Sound desk accessory, described in Chapter 3, whose sole purpose is to let you record sounds. So much for the concept of everything-in-one-place!

Mouse

This control panel provides access to two vital mouse controls: tracking and double-click speed (see Figure 4-28).

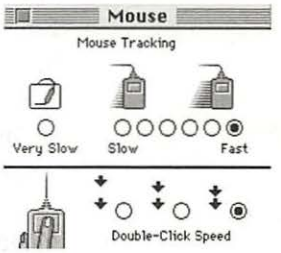


Figure 4-28
Fine-tune your mouse with the Mouse control panel. If you have a PowerBook and version 7.2 or later of this panel, you also have an option for thickening your cursor.

Mouse tracking is the ratio between the physical movement of the mouse on your desk and the movement of the pointer on your monitor. The higher the setting, the less you have to slide the mouse to move the pointer. In other words, at the fastest of the seven available settings, a tiny one-inch movement of the mouse on your desk may move the cursor *three* inches across the screen — or even more. The exaggeration of the cursor's movement is associated with how *fast* you move the mouse.

Even at the fastest tracking setting, when you move the mouse very slowly, the cursor on the screen moves exactly that much — one inch per inch of desk space. (That makes life easier when you're doing fine editing in a graphics program.) Yet, if you move the mouse that same inch very quickly, the cursor on the screen may jump most of the way across your monitor. (Your cheerful authors once were privy to a thick Apple document — a bound dissertation on mouse-acceleration research, believe it or not — in which the pros and cons of various cursor-speed logarithmic scales were discussed and tested at length.)

The higher settings are best for most applications. You're less likely to run out of mouse-pad (and desk space), and you can zip the pointer from one end of the monitor to the other with the flick of a wrist. We've heard it argued that the slower settings are good for graphics work, because a slow-moving pointer provides better control. Yet, as we said, even at the Fast setting, a slow-moving mouse gives you a slow-moving cursor. (You can make the mouse even faster using ResEdit; see Chapter 21.)

How does the Mac know the difference between a double-click and two single clicks? Using the Mouse control panel's Double-Click Speed setting, you tell the Mac how fast the two clicks must occur to qualify as a double-click. When adjusting this setting, watch the little picture of the mouse. The mouse button flashes to indicate the new minimum double-click rate.

In System 7.0 and System 7.0.1, the setting you make here also determines the amount of time you have to wait between (a) the time you click an icon's name to change it and (b) the appearance of the renaming rectangle that actually allows you to begin typing (see "Renaming icons" in Chapter 1).

Network

The Mac, in its wondrous multilingual way, can talk to several different kinds of networks. It can talk to LocalTalk (the built-in networking system). It can talk to the faster, more expensive Ethernet or Token Ring. The Mac even can communicate with such a thing as a *remote* network, which is what you become when you use Apple Remote Access to dial in. (See Chapter 32 for details on networks.)

You must use this control panel to direct the Mac's attention to the correct kind of network. For example, if your Mac is hooked up to a laser printer by Ethernet, and you now want to connect your PowerBook 180 (which doesn't have Ethernet) to transfer some files, you'll have to switch the Mac to LocalTalk by opening Network and clicking the corresponding icon.

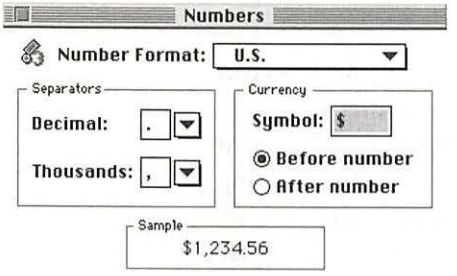
On Power Macs with Open Transport installed, this control panel is no more, having been replaced by the AppleTalk control panel.

Numbers

This control panel first appeared in System 7.1. Like Date & Time, the Numbers control panel was necessitated by System 7.1's "world-ready" feature.

This control panel determines where the commas and periods appear in big numbers. (In France, for example, periods are used instead of commas to separate the thousands, as in "you owe me a grand — yeah, 1.000 bucks.") Use the little pop-up menus to change the punctuation to serve as the decimal point and the thousands separator (see Figure 4-29), or simply type the punctuation mark in the box.

Figure 4-29
System 7.1's Numbers control panel makes your digits world-ready.



The right side of the control panel controls the way money amounts are displayed (such as what currency symbol appears).

Changing the Separators affects numbers in the Finder; a file that says "1,233K" will say "1.233K" after you restart the Mac. But we can't think of anyplace where the Currency changes would have any effect. In any case, you probably can see where we're headed with this: After you check out this control panel, throw it away.

Open Transport (and related files)

Open Transport, the 1995 universal networking software from Apple, introduces a bunch of clutter to your System Folder: **AppleTalk control panel, TCP/IP control panel, Apple Built-In Ethernet or Ethernet (Built-In), OpenTpt AppleTalk Library, OpenTpt Internet Library, Open Transport**

Library, OpenTptAppleTalkLib, OpenTptInternetLib, OpenTransportLib, Ethernet (built-in), Serial (built-in), AppleTalk Preferences, and **TCP/IP Preferences.** See Chapter 32 to find out what good all this does you.

Password Security

This control panel is a terrific idea. It purports to protect PowerBooks from unauthorized snooping by requiring a password each time you turn on (or, optionally, wake up) the laptop.

The good news: even pressing the Shift key during startup doesn't prevent this control panel from requesting the password. Starting up from another disk, such as Disk Tools, won't work either. Moreover, when you type your password, you see only bullets appearing in the Password blank, so that the guy in the airplane seat next to you can't learn your password by looking over your shoulder.

The bad news: Your only option is to take your PowerBook, complete with original purchase receipt, to an authorized Apple service center, where they have the special tools needed to bypass the security. (The 800-SOS-APPL staff can't help you here.)

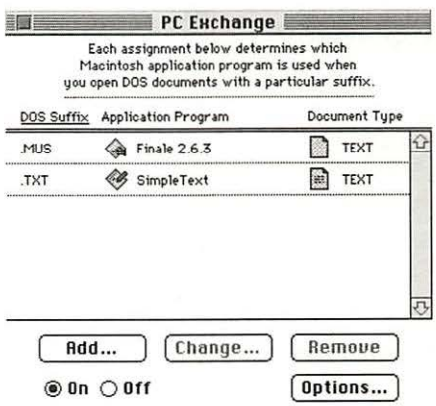
The good news (if you've forgotten your password): There's an incredible bug in most versions of this control panel. Instead of typing the correct password to get in, you can simply type the bullets themselves (••••) by pressing Option-8 several times — the control panel will accept that as the correct password! (This worked on three PowerBooks we tried, failed on one.)

PC Exchange

This handy control panel further breaks down the barriers between Macs and IBM-compatibles. With PC Exchange installed, you can insert a DOS or Windows disk into your Mac and see its icon on the Desktop, just like a Mac disk. And not just floppies — PC Exchange also lets DOS-formatted SyQuests, Bernoullis, Zip disks, and other removables appear on your Desktop.

The control panel itself (included with System 7.5 and later) is designed to let you map various kinds of DOS or Windows files to appropriate *Macintosh* programs that know how to open them (see Figure 4-30). After you've established these assignments, you can double-click a Word for Windows document on that IBM disk you inserted, and the document will open smoothly in your Mac version of Word.

Figure 4-30
A tool for trafficking with disks from the Dark Side.



PC EXCHANGE SECRETS



Off isn't really off

The Off button in the PC Exchange control panel only disables PC Exchange temporarily. If you restart the Mac, PC Exchange pops right back on! If you really don't want PC Exchange lurking around, eating up perfectly good RAM, disable it using Extensions Manager or Now Startup Manager (included with this book).



Why you don't want to use PC disks all the time

PC Exchange works so well that we've actually met people who have been using PC floppy disks — which they bought by mistake — for months without even noticing it. Since the Mac treats them *exactly* like Mac floppies, there's no way those people would know.

Well, almost. PC floppies, mounted on your Desktop via PC Exchange, are even slower than floppies usually are. Much slower. If this sounds like you, reformat your PC disks as Mac disks and enjoy the newfound speed.



Some commonly used PC-to-Mac links

In the control panel, you're expected to set up links between the three-letter filename-extensions of the PC files you'll be using (such as *.TXT*) and the creator codes for the programs you use on the Mac. Table 4-2 lists a few common matchups to get you started. See Chapter 16 for details on Creator codes.

Table 4-2
PC-to-Mac Link Decoder Ring

PC Suffix	Mac Creator Code	Mac Type Code	Will Open In
.AI	ART5 or ART3	TEXT	Illustrator
.DOC	MSWD	TEXT	Microsoft Word
.ASC or .TXT	MSWD	TEXT	Microsoft Word
.JPG	8BIM	JPEG	Photoshop
.PCX	8BIM	PICT	Photoshop
.TIF	8BIM	TIFF	Photoshop
.XP	XPR3	XDOC	QuarkXPress

A view of your SCSI situation



Behind the PC Exchange control panel's Options button lurks some fascinating information about the SCSI appliances (scanner, Zip drive, CD-ROM, and so on) attached to your Mac. This little window provides immediate feedback on whether or not the Mac is "seeing" all of your gadgets — an invaluable troubleshooting aid.

Alas, there's not much more you can do here except read about your SCSI chain and check the ID numbers assigned to each. To actually "mount" them onto the Desktop, you need SCSIProbe, included with this book. But if SCSIProbe isn't handy, PC Exchange is the only built-in Apple software that even hints at what's going on with your SCSI setup.

Performa

This control panel existed only during the three years when Performas and regular Macs used different system software. This control panel was responsible for adding the three "Performa features," as described in Chapter 15.

Pointer Mode

Because of some mysterious bug, the cursor itself isn't captured in the Picture 1 file you get when you press ⌘-Shift-3 on some Power Mac models. Moreover, on any System 7.5.3/7.5.5 Power Mac, the cursor disappears in QuickTime movies of screen activity (created with a screen-movie-capture program like CameraMan). This control panel puts the cursor back into the picture.

You know what? It's harder to make the "Macintosh is superior" argument at cocktail parties when Apple comes up with amateurish hacks like this one.

Portable

This aging control panel came with Apple's very first laptop attempts: the Mac Portable and PowerBook 100, 140, and 170. Its controls govern how quickly your hard drive and your whole computer go to sleep after a period of inactivity (see Figure 4-31).

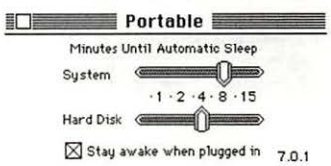


Figure 4-31
On earlier PowerBooks, this control panel can really put you to sleep.

Power Macintosh Card

Apple offered two ways to turn a standard Mac into a Power Macintosh: Install a small PDS circuit board, or get a complete motherboard replacement. The big advantage of the smaller upgrade card was that you could *turn it off*, restoring your Mac to its pre-Power Mac state.

You might want to do that if, for example, you have a Quadra 800 and want to run Excel 4.0 (which, as a non-"native" program, runs *faster* on the Quadra than on the Power Macintosh chip).

This control panel is a simple on/off switch for the upgrade card. If you click Off, turn off the computer, "and start it again, it reverts to its old, pre-Power Mac self. (Using the Restart command doesn't do the trick; you must shut down.)

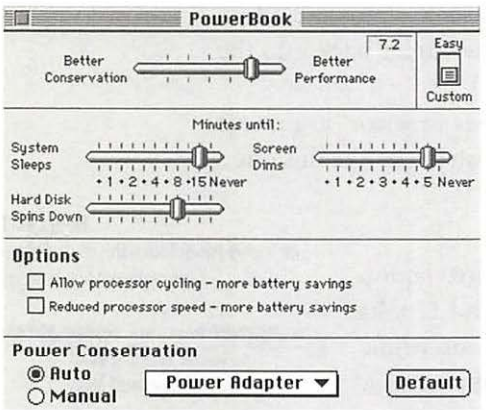
This control panel, by the way, contains one great secret: its hidden credits. Open the control panel while pressing the Option key: You get a picture of the programmers. Now, if you turn on Balloon Help, you can point to each person's mouth to get an introduction, and a witty remark, from each ("Hi, I'm Erica. Do you want to buy any Girl Scout cookies?").

PowerBook

The PowerBook control panel's purpose in life is to save battery power at the expense of speed.

When you drag the little switch (see Figure 4-32) into the Custom position, the dialog box expands to display three individual controls: System (how quickly the Mac goes to sleep after you stop using it), Screen Dims (how quickly the backlighting turns off), and Hard Disk Spins Down (how quickly the internal hard drive stops spinning). The farther to the left you place these sliders, the more battery power you'll save — and the more irritating it will be to try to get real work done.

Figure 4-32
The PowerBook control panel offers far more control than the Portable control panel that it replaces.



The two checkboxes eke out a few more dribbles of battery power by allowing your Mac's processor chip to rest between bursts of activity ("Allow processor cycling") or by slowing it ("Reduced processor speed"). You can really feel it when these options are turned on, too — your menu clock updates erratically, After Dark animations get jerky, and typing isn't quite as responsive — but each battery charge does indeed last longer.

Beginning with version 7.2 of this panel, you get a terrific feature. As in the commercial PowerBook utility kits, you can save one set of settings (quick-to-sleep) for battery use and another (maximum speed) for when the Mac is plugged in. Choose options from the pop-up menu at the bottom of the dialog box as appropriate.

POWERBOOK CONTROL PANEL SECRETS

Why you're confused

With every new generation of PowerBook models, Apple revamps these control panels. If your older PowerBook's software looks nothing like our illustrations, you have the *old* PowerBook control panel (before version 7.2). The older panel also contained today's PowerBook Setup controls (SCSI Disk Mode and so on).

The Wake on Ring feature (in case you're using your PowerBook as a fax machine) got moved, too, to PowerBook Setup. Of course, today's young whippersnappers don't even know what Wake on Ring *is;* it was only available on PowerBook 100-series models. In later models, it was replaced with that Automatic Wake-Up thing; see "PowerBook Setup."

Where are my battery-savings checkboxes?

If your PowerBook uses an '040 chip (such as the PowerBook 500 series or Duo 280), you're probably wondering why you don't have the two energy-saving checkboxes called "Allow processor cycling" and "Reduced processor speed."

Well, you don't have "Reduced processor speed" because your mile-a-minute '040 chip can't slow down; that's a feature only of '030 chips.

You *do* have processor cycling, though — it's just hidden. To access it, flip the control panel's upper-right switch to the Easy position (if it's not already in that position). Then, while pressing Option, slide the switch to Custom. When the panel opens next time, you'll see the processor-cycling checkbox, awaiting your command.



PowerBook Display

When Apple figured out how to add a video-out jack to a PowerBook, it opened all kinds of possibilities for people who make presentations. You can plug an external monitor or projector into the video port, and your audience can watch the monitor while you watch your PowerBook screen.

This control panel simply allows you to turn *mirroring* on or off (although using the Control Strip is much more convenient). When your two monitors are mirrored, the same image appears on both screens; you and your audience see the same thing. This explains why the image on the PowerBook 1400's extra-large 800 by 600-pixel screen gets *smaller* when mirroring is on (a big black border appears) — because the external monitor is always 640 by 480 pixels, maximum. Conversely, that's why the image on the *external monitor* gets smaller when connected to, say, a PowerBook 180 — because those

older PowerBook screens are 640 by 400, so the external monitor's image seems to be foreshortened. In both cases, the images match exactly.

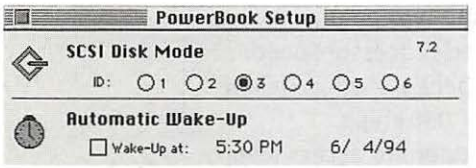
When mirroring is off, though, you have two independent monitors. Your audience can be watching slides on the external screen while you're privately reading your notes on the PowerBook screen. It's pretty great.

Earlier versions of this control panel also control how fast the built-in screen's backlighting goes off. Apple eventually removed the Screen Dimming control, because a much more powerful screen dimmer is built into the PowerBook control panel (7.2 or later).

PowerBook Setup

If your PowerBook comes with version 7.2 (or later) of the PowerBook control panel, you have an additional panel called PowerBook Setup (see Figure 4-33). This panel contains SCSI Disk Mode settings for more flexibility when you're using SCSI Disk Mode (see Chapter 14) and Automatic Wake-Up. There's not a word about this Wake-Up thing in the PowerBook manual, so we're not exactly sure what it's for. We'll just murmur something about letting this feature wake the PowerBook at a specified time in the middle of the night to receive a fax from Japan, and leave it at that.

Figure 4-33
PowerBook Setup, which once was part of the Portable control panel.



If you have a built-in modem, you'll also find here the dreaded Compatible/Normal switch. Consider the frustration of PowerBook owners trying to get this internal modem to work, who must choose between those two options — "Compatible" vs. "Normal"! How are they supposed to make a decision? More on this topic appears in Chapter 14. For now, just note that if you have a *Global Village* internal modem (for your PowerBook 500-series or Duo), and its software is 2.5 or later, this control has been moved to the PowerPort control panel.

PowerTalk Setup

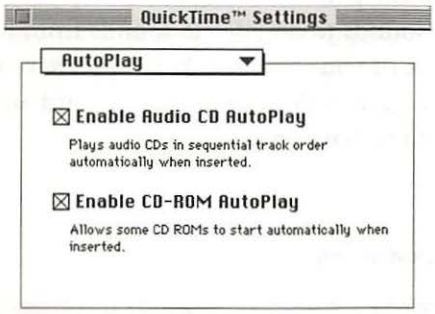
PowerTalk, the optional RAM-and-disk-hungry System 7.5 feature, is described more fully in Chapter 32. This control panel, however, is the master on/off switch; it also lets you configure and open your Key Chain (your master password system).

QuickTime Settings

You can read all about QuickTime itself in the "Extensions" section to follow. For now, suffice it to say that, beginning with QuickTime 2.5, QuickTime has

a front end — this application (see Figure 4-34). There are two "pages" of settings you can make here (choose from the pop-up menu). First, there's AutoPlay. It governs whether or not CDs begin playing immediately upon insertion into your CD-ROM drive. (Works pretty well with music CDs; actual CD-ROMs, however, don't auto-play unless they've been specifically programmed to do so.)

Figure 4-34
QuickTime's new face.



The second "page" of settings is of interest primarily to synthesizer and MIDI fans of the future, when QuickTime plug-in musical instrument extensions become available from various music companies.

ANSWER MAN

PowerBook Display isn't displayed

Q: ***Help! I can't find the PowerBook Display control panel on my new PowerBook!***

A: We bet you're looking at your control panel in a list view, sorted by name. Either that or you're looking for it in Conflict Catcher or Extensions Manager.

Q: ***Holy smokes — you're right! How did you know, O wise ones?***

A: Apple did something funky with the name of this control panel. To make it load first during startup, Apple put an invisible character in front of its name (similar to our "Really amazing re-alphabetizing secret" in Chapter 1). Consequently, you don't find it because you're looking for PowerBook Display among the P's. Look at the beginning of your control panel list — there it is, way up there!

Screen

This little panel works only on specific models (such as the LC 500 series, Color Classic, and Mac TV), which tend to be Macs with built-in color monitors. These monitors have no knobs to adjust. Therefore, you use this control panel to tweak the brightness, contrast, and automatic dimming. If you have any other model, toss this item. (See "Energy Saver 2.0 [and related files]," later in this chapter.)

Serial Switch

This is for the Mac IIfx and Quadra 950 only; otherwise, out it goes. This tiny on/off switch affects the modem port speed — and, therefore, your success at getting MIDI software and modem programs to work. Switch the setting to Compatible if you use any kind of music software, or it's bye-bye, MIDI.

Sharing Setup

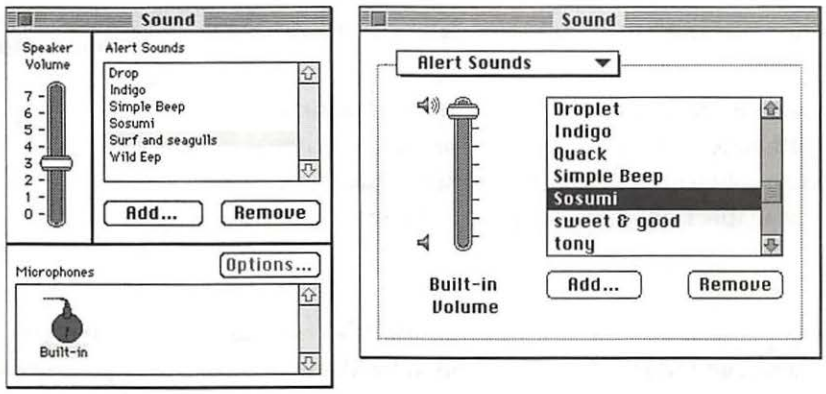
The Sharing Setup control panel lets you assign your Mac a unique network name and to identify yourself as its owner (and, therefore, the one who determines which items on your Mac are shared and which aren't). Mostly, however, you use this control panel to turn File Sharing on and off. For details on File Sharing, networking, and this control panel, see Chapter 32.

Sound

Why should you be content with a nondescript beep when you can make your Mac squeak, giggle, roar, burp, or play the theme song from "Hee Haw"?

With the Sound control panel (see Figure 4-35), you can change your Mac's alert sound, add sounds to and delete sounds from its repertoire, and adjust the overall volume of your Mac speaker. If you have the newer Sound control panel (right in Figure 4-35), you also can record and play from your Mac's CD-ROM drive, if you have one.

Figure 4-35
The old (left) and the newer (right) Sound control panels.



The newer Sound control panel takes a multiple-panel approach. Each time you change the setting in the pop-up menu, the controls change in the panel portion. Chapter 14 covers some of the effects you can achieve by using different settings. (In any case, System 7.5.3-and-later's Monitors & Sound control panel for PCI-slotted Macs should help comprehension.)

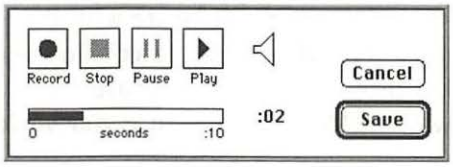
When the Sound panel's pop-up menu is set to Alert Sounds (the *only* setting for the older control panel), you see the Mac's small set of alert sounds: a

quack, the Wild Eep, a droplet, and so on. To play a sound, click its name in the list or click the volume adjustment bar. Whichever sound is selected when you close the control panel becomes the standard alert sound. That's an important fact to remember if you have long sounds in your arsenal, which are utterly annoying as error beeps (because the Mac is incapacitated until the sound finishes playing).

Record a sound — To record sounds, your Mac needs some kind of microphone. Some models (Classic, LC, IIsi, and so on) require the old-style gray Mac mike. Later models (Quadra 605, Power Macs, and so on) require the longer-plugged PlainTalk mike ($20). And if your *really* old model doesn't even have a sound-input jack on the back, you have to buy a mike that plugs into your modem port, like a MacRecorder (Macromedia).

To record, click the Add button, which opens a panel with tape recorder-like controls (see Figure 4-36). Click Record to begin recording your sound. Be ready to click Stop promptly when you finish, so that you don't record a block of dead air at the end of your sound. To save what you recorded, click Save and assign the sound a name. It now appears in your list of available alert sounds.

Figure 4-36
Recording a new sound.



Remove a sound — After you select the name of a sound you want to remove, you can get rid of it in three ways:

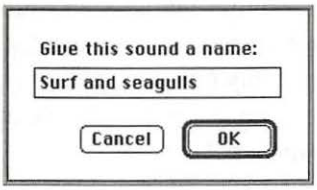
- Click the Remove button. A dialog box appears, asking for confirmation. If you click Yes, the sound is deleted from your System file. (You never can remove the Simple Beep.)
- Choose Cut from the Edit menu, or type ⌘-X. If you use this method, you don't get the warning dialog box. (After you cut the sound, you can paste it into your Scrapbook for long-term storage.)
- The easiest way is to press the Clear key in the numeric keypad.

You can add as many sounds as you want to your system file, but watch out: Digitized sounds take up lots of disk space. A seven-second sound file can be 150K or more. Adding too many sounds can bloat your System file quickly.

SOUND CONTROL PANEL SECRETS

How to rename a sound

Figure 4-37
Naming a new sound.



You may think that there's no way to rename a sound after you record it. Not so — here's how.

In the Sound control panel, select the sound that you want to rename. Remove it from the list, using the Cut command (Edit menu). Next, use the Paste command (or press ⌘-V) to paste the sound back into your list. When you do so, you are asked to give the sound a name (see Figure 4-37). Type a new name, and click OK.

Distributing or backing up your sounds

Any sound that you create with the Sound control panel becomes a draggable, trashable, movable icon. To see it, open your System Folder; then double-click your System-suitcase *file*. You'll see all your sounds listed in the window. Manipulate them as you would any other icons.

Startup Sound Memos

If your Mac has a microphone, you can use the Sound control panel to leave audio messages for yourself or the next person who uses your Mac.

Record a message, using the Sound control panel. Double-click your System Folder; double-click your System *file*. Then drag the sound file that contains your message out of the System suitcase and into the Startup Items folder (also in the System Folder). Your message automatically plays back the next time the Mac is turned on.

Roll credits!

Press Option as you make a selection from the Sound pop-up menu. You're treated to an utterance by a very drugged-out programmer — or somebody acting like one — and a quote from Jung.

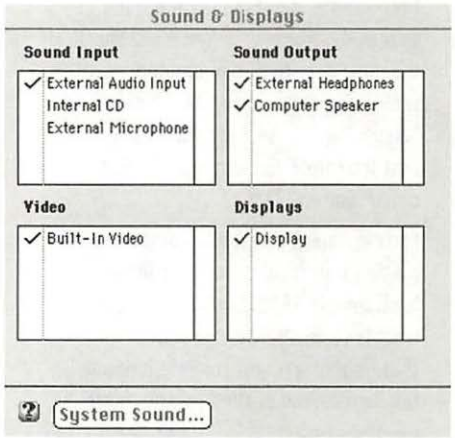
Sound & Displays

For a brief, unhappy moment, Apple computer released this horribly confusing control panel as a replacement for what had been *two* control panels:

Monitors and Sound. Only the first-release 7200, 7500, and 8500 Power Mac models carried this control panel.

The interface (see Figure 4-38) has four panes that correspond to video (input and output) and sound (input and output). You have to double-click an item in one of the four directories to open a window containing the options you actually want to change. For example, if you double-click the Display field, you get what looks like the older Monitors control panel. To change your error beep, you click the System Sound button; another window opens, containing what used to be in the Sound control panel.

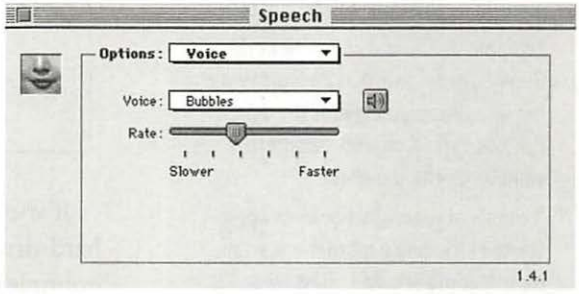
Figure 4-38
The Sound & Displays control panel was a blend of two old control panels, Monitors and Sound.



Speech

This thoroughly enjoyable control panel, shown in Figure 4-39, lets your Mac *read out loud.* It's the command center for the Mac's text-to-speech feature, in which the Mac speaks whatever you've typed into SimpleText (or other compatible programs). See Chapter 23 for the full Speech scoop.

Figure 4-39
This control panel comes with PlainTalk 1.4.1 and later, so that talking Macs (such as Power Macintosh models) can talk more naturally.



Meanwhile, this control panel lets you choose a default voice and rate of speaking. Best of all, if you click the speaker icon, you hear each voice tested, saying something hilariously in character. For example, the Good News voice sings, to the tune of "Pomp and Circumstance," "Congratulations! You've just won the sweepstakes, and you don't have to pay income tax again." Zarvox says, in its alien monotone, "That looks like a peaceful planet . . . " And Deranged says, voice shaking, "I-I need to go on a *really* long va-a-cation . . . "

Sometimes we think it must be really fun to work at Apple.

Speech Setup

You only need this control panel if you have an AV Mac or a Power Mac and you want to talk to it — or, rather, talk to it and have it *respond.* We're referring, of course, to Apple's PlainTalk speech recognition feature, discussed in detail (along with this control panel) in Chapter 13.

TRUE FACT

WHY IT'S CALLED SOSUMI

Ever wonder about the names of the sounds that come with System 7? For the most part, they're onomatopoetic, spelled like they sound: "Wild Eep," "Quack," and so on. But what about that staccato, E-flat, diminished triad called "Sosumi"?

Early in Apple's career as a computer-making superstar, there was a little legal trouble. (Apple's *always* in legal trouble somewhere in the world.) And that trouble was with, believe it or not, the Beatles. The Beatles' private record label was called Apple Records. The Beatles' lawyers claimed that Apple, in making a computer with sound capabilities, was trying to get into the recording industry, causing confusion in consumers' minds. After all, these two companies had the same names and were doing the same things, right?

So Apple sighed and promised Apple Records, in writing, that it would never get into the recording industry. Apple Records backed off, and Macintosh went forth into the world.

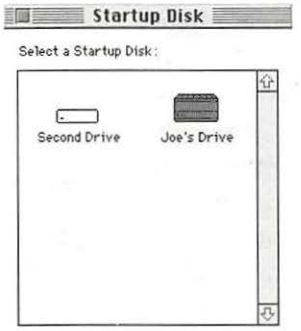
A couple of years ago, however, Apple started including a microphone with most Mac models. And guess what you're supposed to do with that mike? Yup — *make recordings!* It certainly would take a hypersensitive record company to interpret giving away a free microphone as "entering the recording industry." But you never know. A wily Apple engineer, recognizing the potential litigation, gave the alert sound a name that serves as a subtle tribute to Apple Records: *Sosumi!*

Oh, yeah — there's a hidden credit in here. Turn on Balloon Help, and point to the version number. Wowww.

Startup Disk

Startup Disk tells your Mac which disk it should start up from. Throw it away unless you have more than one disk attached to your Mac. Interestingly, even disks without working System Folders appear in the control panel. Click the one that you want to be the startup disk the next time you turn on or restart the computer (see Figure 4-40).

Figure 4-40
Pick a disk to get things started with the Startup Disk control panel.



If you have more than one hard drive, or if you have a hard drive and a cartridge system (Zip or SyQuest, for example), it's sometimes handy to have two system versions available — one System Folder on each drive. You use this control panel, in this case, to specify which System you want to be in control the next time the Mac starts. Beginning with System 7.5.3, Startup Disk can even distinguish among different *partitions* of a disk — provided they were formatted with System 7.5.3's Apple hard drive formatting software; see Chapter 8.

If you open this control panel and click in the blank white area *around* your disk icons, so that no icon is highlighted, the Mac will start up using the disk with the highest SCSI address number (see Chapter 30).

If you have only one hard drive, you can safely pull this one out of your System Folder.

TCP/IP

This control panel, which is installed with Open Transport, is the successor to MacTCP, described earlier in this chapter. Its function is the same: to let your Mac connect to the Internet or other "TCP/IP networks." (It's not required for America Online.) See Chapter 32 for details on Open Transport.

Text

This control panel, introduced in System 7.5, works in conjunction with WorldScript foreign-language systems. It allows you to specify (if you've purchased any foreign-language kits) which kind of writing system (Roman, Kanji, and so on) to use, and in which direction text should proceed across the page. We guess that this is a good one to throw away.

Token Ring

Another obscure one, this time useful only if you are that rare individual whose company has connected your Mac to a Token Ring network.

Trackpad

This control panel (see Figure 4-41) is, of course, useful only on PowerBooks — such as the 500, 1400, 5000, or 2000 series — on which you control the cursor by touching a track*pad*. The Trackpad panel's top two controls are exactly the same as those in the Mouse control panel (see the "Mouse" section earlier in this chapter).

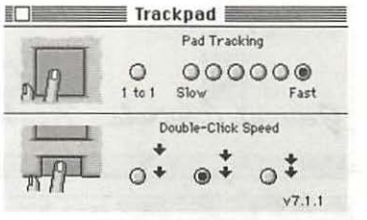
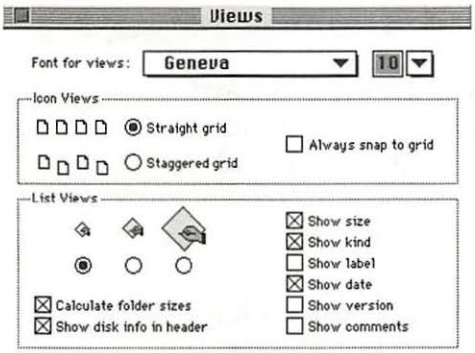


Figure 4-41
The Trackpad allows you to set up independent drag and click sensitivity for your PowerBook.

So why keep Trackpad *and* Mouse? Because you may want to use your PowerBook at home with a real mouse plugged into it, and yet use the trackpad when you're on the plane. By giving you two separate control panels, Apple makes it easy to set up separate degrees of responsiveness for each device. (This isn't true of the 100-series PowerBooks, in which the Mouse control panel controls both trackball and mouse sensitivity.)

If you're lucky enough to own a PowerBook 190, Duo 2300, PowerBook 1400 or more recent model, your Trackpad control panel offers a third set of settings. Whereas other PowerBooks' trackpads let you only *move* the cursor (you use the separate thumb button for clicking and dragging), these newer models let you do your clicking and dragging directly on the pad itself.

Figure 4-42
The Views control panel.

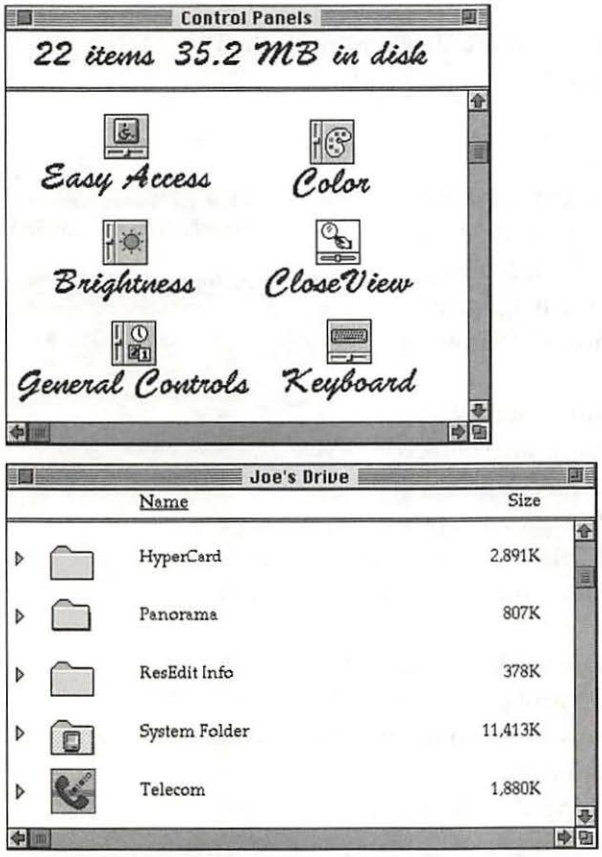


Because the techniques take some getting used to, these features are turned off when you first buy the machine. Here in the Trackpad control panel, you can turn them on — and see a quick animated demonstration of how you're supposed to work them. Details on these techniques in Chapter 14.

Users & Groups

You use the Users & Groups control panel to determine which network users (or groups of users) have access to the shared items on your Mac, and the degree of access each user is granted. Look for full details in Chapter 32.

Figure 4-43
Text in Finder windows can be displayed in any size up to 36 points. At bottom: Icon View or List View? The views look similar when you choose the largest of the three icon-size settings in the Views control panel.



Views

The Views control panel (see Figure 4-42) can change the font for all text in Finder windows. It also allows you to specify the information included in list views.

In the Icon Views portion of the control panel, you can specify how you want icons to be displayed: along a straight or a staggered invisible grid. Select the "Always snap to grid" checkbox if you want icons to snap in line with an invisible grid when you drag them in Finder windows. (As mentioned in Chapter 1, you can always override the setting you make here — press the ⌘ key as you drag the icon.)

You choose the font from the pop-up menu near the top of the control panel. Smaller fonts work best, but you can choose any size up to 36 points (see Figure 4-43). Although the pop-up menu lists only fonts up to 24 points, you can type larger point sizes directly in the size box. (*Hint:* select a font that's built into the Mac, such as Geneva, Chicago, or Monaco; TrueType and ATM-ready fonts take the Mac longer to display.)

For list views, you also can specify the size of the icons that are displayed next to each file's name. The largest of these views produces icons as big as the full-size icons.

The checkboxes in the bottom portion of the control panel allow you to select the information you want to see in list views. List views look much better if you eliminate categories that you don't use. If you don't use Labels on your files, for example, deselect the "Show label" checkbox. If the version number of each file is not important to you, get rid of that, too. If you deselect *all* the options, your list views shows only the names of files and folders (see Figure 4-44).

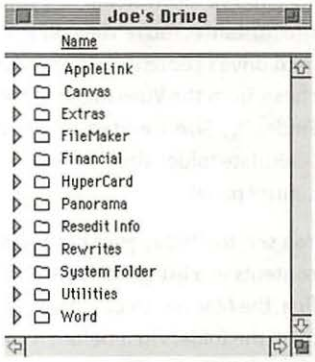


Figure 4-44
Uncheck all the boxes in the Views control panel, and you end up with a bare-bones list view, eliminating everything but file names.

There are two other list-view options to consider. Check "Calculate folder sizes" if you want list views to include the size (in kilobytes) of folders as well as files. (If this option isn't selected, you simply see a dash for each folder's size in a Finder window.) Do so only temporarily, however; when "Calculate folder sizes" is on, your Mac becomes sporadically sluggish as it attempts to add up the sizes of all your files in the background.

Check "Show disk info in header" if you want the amounts of available and used disk space to be displayed at the top of each Finder window. Both options provide useful information in your list-view windows. **Techie Note:** Views, by the way, is the only control panel you can control using AppleScript.

WindowShade

WindowShade is yet another shareware-program-made-good: Apple appropriated it for inclusion with System 7.5. It's a neat one, too, excellent for PowerBooks and other small-screen Macs. WindowShade allows you to collapse any open window into nothing but a title bar, as shown in Figure 4-45.

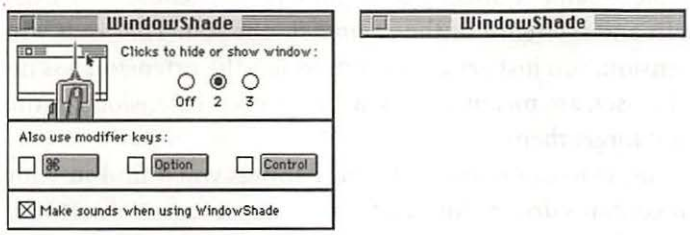


Figure 4-45
A before-and-after example, showing the WindowShade window itself in its normal and collapsed states.

To take this anticlutter step, you double-click the title bar of the window. With a neat little *whoosh,* the main portion of the window disappears, leaving only the title bar floating on the screen. (Note, however, that both the

ANSWER MAN

The sedated hard-disk window syndrome

Q: I've got a bizarre problem. When I double-click my hard disk icon — wow, it takes forever to open into a window...like two whole minutes. What's going on?

A: You've fallen victim to a unique circumstance: You're viewing your hard drive's contents in size order (you chose, from the View menu in the Finder, "by Size"); and you turned on "Calculate folder sizes" in the Views control panel.

You see, to display your hard disk contents in a list sorted by size, largest first, the Mac has to calculate the sizes of all the folders in it before it can open the window. That's what causes the delay.

If you were to turn "Calculate folder sizes" off, you wouldn't experience the delay, but all the folders would appear clumped at the bottom of your hard disk window, not sorted by size.

Likewise, if you choose any other sorting method from the View menu — by Name, for example — you wouldn't experience such a slowdown.

whooshing and the collapsing features default to being *off* when you first install your system software. You must open the WindowShade control panel and switch them on first.)

Unfortunately, some programs have their own ideas of what a title-bar double-click means (in Excel and Word, it means "expand this window to fill the monitor"). Therefore, WindowShade allows you to change the number of clicks required to collapse a window. You can even specify that you must hold down a key (such as Option or Control) while clicking for the collapsing to work.

In any case, you repeat the procedure to restore the window to its earlier size.

There's only one Secret here — a very small one. To see the hidden credit, click the picture of the mouse button in the control-panel window.

EXTENSIONS ONE BY ONE

An *extension* a system-software add-on. Many are background programs that load into memory when you turn on the Mac and stays there until you turn it off, like control panels without a panel (with no settings for you to change). Others are translators, modem files, printer drivers, bug fixes, and so on.

Extensions generally reside in your Extensions folder, although they can also be loose in your System Folder (or even in the Control Panels folder). Extensions are notable — and confusing to beginners — because they exist purely for the benefit and reference of the *computer*, not you. That is, if you double-click an extension, you just get an error message; the extension has no controls that you, the user, are meant to play with. Just put extensions in the Extensions folder and forget them.

To confuse the issue, extensions aren't the only things you'll find in your Extensions folder. It contains *drivers*, for one thing — those essential software tidbits that teach your Mac to communicate with some external appliance, such as a printer or a modem. And lately, all manner of Apple bug fixes and conflict patches have been spewing from Cupertino. These "updates," too, live in your Extensions folder.

Which brings us to our memo to Apple: Clean up your act! Put those 35 modem CCL files into one CCLs folder! Put the six CD-ROM drivers into a folder by themselves! Get those printer drivers together — as you did with the LaserWriter 8 settings files. Let's see some organization in the next system rev, OK?

Anyway, we shouldn't have to suffer for too much longer: Apple's plans for MacOS 8, if it ever arrives, include the complete elimination of extensions, much to the relief of anyone who's ever tried to troubleshoot a conflict. See Chapter 6 for details.

!PowerAV Update

A later version of the !TYC extension, still designed to fix that Power Mac AV 21-inch monitor problem. Unnecessary in System 7.5.3.

!TYC

A bug-fix extension for Power Mac AV models with Apple's 21-inch monitor. Unnecessary in System 7.5.3 and later.

040 VM Update

For 575- and 630-series Macs only. This extension fixes a bug that makes your Macs freeze when virtual memory is on. Unnecessary in System 7.5.3 and later.

630 SCSI Update

A bug-fix patch for LC, Quadra, or Performa 630-series machines that eliminates system freezes when transferring lots of data (such as to a tape backup). Unnecessary in System 7.5.3 and later.

7.5.2 Printing Fix

This patch was designed to solve printing problems and network slowdowns on the Power Mac 7200, 7500, 8500, and 9500 under System 7.5.2. Requires Open Transport 1.0.7 or later, and unnecessary in System 7.5.3 and later.

7200 Graphics Acceleration

The Power Mac 7200 comes with a graphics accelerator chip on its motherboard. This extension tells the Mac about its existence and thus speeds up graphics program' screen redraws by up to 20 percent.

950 Color Addition

Fixes an obscure video bug in the Quadra 950. Unnecessary with System 7.1 or later.

A/ROSE

Although the name may smell as sweet, A/ROSE by its other name is Apple Real-time Operating System Extension. This extension is required only for certain old Apple NuBus networking cards: Apple's short Ethernet card, Token Ring 4.16 NB card, Serial NB card, and Coax/TwinAx NB card. See Chapter 32 for details on networking.

Abaton Interfax, Farallon Remote ...

An increasing number of today's telecommunications programs — America Online, Apple Remote Access, FirstClass, and so on — rely on a software structure called Apple's *Communications Toolbox* (CT).

One of the convenient features of CT-aware programs is that you can select your modem's model, by name, from a pop-up list instead of having to enter its technical parameters (in a Setup dialog box, for example).

Unfortunately, some of these modem programs put their driver icons for all of those modem brands into your Extensions folder. Fortunately, there's absolutely nothing wrong with throwing away all these modem-specific documents except the one that you own. (Other examples of these CT modem documents: anything beginning with the words *Zoom, Prometheus, Hayes, Global Village, Practical Peripherals,* and so on.)

About Apple Guide

See "Apple Guide (and related files)."

ADSP

This abbreviation stands for AppleTalk Data Stream Protocol, a software scheme for data transfer over a network. Unnecessary in System 7 or later — not to be confused with the ADSP *Tool* (see "Apple Modem Tool" [and related files]").

AMMS MPEG Decoder

The extension (the driver) for the Apple MPEG Media System Card, which lets certain Mac models create high-quality, specially compressed QuickTime movies.

Apple Built-In Ethernet

See "Open Transport (and related files)."

Apple CD-ROM (and related files)

Apple CD-ROM is the cornerstone of Apple's sprawling constellation of CD-ROM extensions. It's the *driver* that permits your Mac to talk to any Apple CD-ROM drive, internal or external. (See Chapter 28 for more on CD-ROM.)

The Apple CD-ROM suite also includes a special translator extension called **Foreign File Access.** It lets your Mac play non-Mac CDs, such as PhotoCD, music-only, and DOS-format discs, provided that you have the proper translation extension installed. Your Mac comes with four such foreign-file translators: **Apple Photo Access** (lets your Mac read Kodak PhotoCD discs); **Audio CD Access** (lets your Mac play regular, non-computer *music* compact discs); **High Sierra File Access** (lets your Mac use non-Mac CD-ROMs, such as those designed for PCs); and **ISO 9660 File Access** (lets your Mac read another format of non-Mac CD-ROM discs). You can feel free to trash any of these four extensions if you never plan to use discs of the corresponding type.

Apple Color SW Pro CMM

See "LaserWriter (and related files)," later in this chapter.

Apple Event Manager

Lets AppleScript programmers send messages from one program to another. Unnecessary in System 7.5 or later.

Apple Guide (and related files)

Balloon Help, introduced in System 7, was supposed to change the world and put book authors like us out of business. Yet few people use Balloon Help. It's slow; it doesn't work in many programs; and perhaps above all, it doesn't show you what to do *next* if you're trying to accomplish something specific.

Enter Apple Guide, introduced in System 7.5. When you choose this command from the Help/Guide/question-mark menu, you get on-screen index cards that walk you through specific tasks, one step at a time. See Chapter 2 for details. This file is the master switch for the Apple Guide feature.

In order to provide information about a certain program, Apple Guide must see a Guide document — which stores all the text and graphics for the help screens. The Finder, Quicken, BBEdit, WordPerfect, and SimpleText are among the programs that come with Guide documents.

CASE HISTORY

THAT'S 800-SOS-APPL

An actual transcript from Apple's Assistance Center, based in Austin, TX, which you can reach by dialing 800-SOS-APPL.

Customer: Yeah, I'm calling about my free towel?

Apple Rep: Your what?

Customer: I received this pamphlet saying if I ordered 100 labels...I could receive a free Snapple towel.

Apple Rep: Sorry, did you say a free towel?

Customer: Yeah, I'd like to get my towel.

Apple Rep: What number did you dial to get to me?

Customer: 800-SNA-APPL.

Apple has developed more than 30 different Guide documents. Among those you may find in your Extensions folder are: **About Apple Guide** (gives information about Apple Guide itself); **Shortcuts** (keyboard shortcut summary); **Macintosh Guide** (contains instructions for basic Finder, printing, and control panel functions); **PowerBook Guide Additions** (laptop-related instructions); **PowerTalk Guide** (details on PowerTalk networking software); **Speech Guide Additions** (info on using speech-recognition features of Power Macs and AV models); and **Video Guide Additions** (about using video features of AV models).

Apple Modem Tool (and related files)

It may seem a distressing waste to find, in your Extensions folder, a fast array of seemingly useless files named things like **Apple Modem Tool, AppleTalk ADSP Tool, MP Telnet Tool, Serial Tool, Link Tool Manager,** and **Modem LinkTool Personal.** In fact, these "connection tools," as the Finder calls them, make life a lot easier; they ensure that whenever you install a new modem program — America Online, Netscape Navigator, Remote Access, whatever — you'll encounter the exact same screen when you set up the software (see Chapter 27). Whether you realize it or not, you're face to face with the **Communications Toolbox,** a standard set of software-meets-modem tools that make it easy for programmers to create these Setup dialog boxes. (Also part of the Comm Toolbox: "File Transfer Tools" (that let your Mac send and receive files according to certain protocols) such as **XModem, Kermit,** and **ZModem**; and "Terminal Tools" that let your Mac communicate with certain other computers, such as **TTY** and **VT102.**)

In addition to all these Tool extensions, you'll find in your Extensions folder several hundred thousand additional files, each named for a specific modem brand: AE Datalink PB, Apple Modem 2400, Express Modem 14400, Global Village Bronze, and so on. These are the names of the modems that show up whenever you configure your online software (in AOL 2.7's Setup box, for example) — another part of the Apple Communications Toolbox. By all means throw away all of these files except the one for your actual modem.

Apple Multimedia Tuner

Fixes bugs in QuickTime 2.0 to make playback of your movies smoother. Unnecessary in QuickTime 2.1 or later.

Apple Photo Access

See "Apple CD-ROM (and related files)."

AppleScript (and related files)

This extension, provided with System 7.5 and later, is — as programming languages go — a fairly easy system for "scripting" your Mac (making macros to perform repetitive tasks). For details on AppleScript, see Chapter 22.

AppleScript is the extension itself. Accompanying it in your System Folder are such files as **AppleScript Lib** (for Power Macs only; a *shared library* that makes AppleScript run in "native mode"); **Finder Scripting Extension** (lets you control the Finder with your AppleScripts — and gives the Find File program its special drag-and-drop features, as described in the previous chapter); **InLineFilter** (lets you control your Mac by voice command on certain Macs, which, behind the scenes, relies on AppleScript); and **Scripting Additions** (a folder of modules that provide additional features to the AppleScript language). See "Automated Tasks" in Chapter 3 for some examples of AppleScript in action.

AppleScriptLib

See "AppleScript (and related files)."

AppleShare (and related files)

The AppleShare extension teaches your Mac how to talk to other Macs over a network. One of its most useful communication skills is *File Sharing*, which lets you access a file on one Mac while you're sitting at another. Details in Chapter 32.

To accomplish all of this, your Mac comes with another typical Apple rat's nest of extensions and control panels. They include control panels like **Sharing Setup, Network** or **AppleTalk, Users & Groups,** and **File Sharing Monitor** (all described earlier in this chapter), as well as extensions like **Network** (which monitors which network type you're using). Also part of this collection are the individual network-type extensions, which let your Mac speak to various *kinds* of networks: **EtherTalk Phase 2, Mac TCP Token Ring, TokenTalk Phase 2** (for the Token Ring card), and **TokenTalk Prep** (the driver).

If you're not on a network and have no desire to transfer files between two Macs, you can safely trash *all* of this stuff.

AppleVision

The driver that lets the Mac communicate with AppleVision monitors.

Assistant Toolbox

This extension is only for PowerBooks; it comes with System 7.5 and later. It offers a random collection of useful portable-computing features, such as:

- As you'll discover in Chapter 9, a RAM disk remains safely on your Desktop, even if you restart, even if you have a system crash; the only time you vaporize its contents is by shutting it down. Enter Assistant Toolbox, which can *copy* your RAM disk contents back to the hard drive when you shut down — and to re-establish the RAM disk, with contents, the next time you start up again.
- Assistant Toolbox also lets you control certain functions from the keyboard: ⌘-Shift-zero puts your laptop to sleep, and ⌘-Shift-*Control*-zero makes your hard drive stop spinning.
- In deference to those who use their PowerBooks on the plane or in the cab, Assistant Toolbox adds *deferred printing* and *deferred e-mail sending* features — your printouts and e-mails are held in limbo until you reconnect to a network, whereupon they're sent automatically.
- The mere presence of Assistant Toolbox in your Extensions folder spares you the incredibly annoying message, "You are about to lose network services," every time you attempt to put your PowerBook to sleep when AppleTalk (in the Chooser) is on.
- Finally, as per its name, this extension works with the PowerBook File Assistant file-syncing program, provided with System 7.5 and later. File Assistant's purpose is to keep the contents of certain folders — one set on your PowerBook and a corresponding set on your desktop Mac — identical, no matter which set you have updated in your travels.

Audio CD Access

See "Apple CD-ROM (and related files)."

Audio Volume Extension

A bug-fix extension for 5200, 5300, 6200, and 6300 series Macs. Designed to permit the sounds of these models' built-in modem to be heard through the Mac's built-in speaker. (You might reasonably wonder why anyone would want to listen to those hideous shrieks, but hearing such sounds can be useful

in times of troubleshooting.) This extension also fixes a bug that results in poor sound quality when playing CD-ROM-type games.

AudioVision Extension

This one's not too tough: It's required for your Mac to work with the AudioVision color monitors — the ones with built-in speakers. (Recently, Apple changed the name of this line of monitors to AppleVision.)

AV Serial Extension

A bug-fix extension that solves certain printing and crashing problems on the Quadra AV series.

AV/PPC Serial Extension

On Macs with System 7.1 or earlier, this extension permits higher transfer speeds when using Global Village modems.

Basic Color Monitor

Fixes the "ooh, my monitor is sort of greenish!" bug on Centris and Quadra models.

Caps Lock

The traditional typewriter's Caps Lock key doesn't merely lock you into ALL-CAPITALS typing; the key *itself* locks in a depressed position until you press it a second time to release it. Most standard Apple keyboards have locking Caps Lock keys.

But PowerBook keyboards' Caps Lock keys don't stay down. And on the PowerBook 100–180c, there's not even a light to signal you that you're about to start typing in caps. For this reason, Apple created the Caps Lock extension. When your Caps Lock key is "engaged," this extension draws a fat, hollow arrow symbol at the upper-right end of your menu bar.

Catalogs Extension

See "PowerTalk Extension (and related files)," later in this chapter.

CFM Update

Part of the QuickDraw 3D software suite (see Chapter 20). CFM stands for Code Fragment Manager. Unnecessary in System 7.5.3 and later.

CFM-68K Runtime Enabler

Part of the Desktop Printer software (see Chapter 25); required on non-Power Macs only.

Climate Control Extension

For several generations of PowerBooks, people afflicted with sweaty hands or humid environments cursed at their laptops' trackpads. When moist, it produced erratic cursor movements. This extension makes the trackpad less sensitive — ideal for many moist-fingered people, but probably too sluggish for anyone else.

Clipping Extension

This little guy lets you drag a selected picture, sound, or paragraph out of a program and onto your Desktop, where it turns into a Clipping file (using Drag and Drop — see Chapter 1 for details). Without this extension, you can still drag text, sounds, and graphics between Drag-and-Drop-savvy programs — you just can't drag them back and forth to your Desktop.

Color Classic Update

A patch to fix a bug that kept Apple IIe cards from working on Color Classics using System 7.5. Talk about obscure.

Color Picker

The Color Picker is that dialog box that shows a big color wheel, allowing you to choose a particular color. It appears, for example, when you're in the Labels control panel and you click a label color to change it.

This extension adds a More Choices button to that dialog box, allowing you to choose from between two technical color-representation schemes: HSL (for Hue, Saturation, Luminosity) and RGB (for Red, Green, Blue).

Color SW 2000 Series CMM

ColorSync software for color StyleWriter 2400. See "ColorSync System Profile," earlier in this chapter. (Note that SW = StyleWriter, CMM = Color-Matching Module.)

ColorSync

This extension is the actual guts of ColorSync, Apple's color-matching system (see "ColorSync System Profile," earlier in this chapter). If you don't have

ColorSync Profiles in your System Folder for each scanner, monitor, and color printer you plan to use, you may as well toss this.

DAL

It's "Apple's client/server protocol for remote data access and is based on ANSI standard SQL (Structured Query Language). DAL is optimized to provide decision-support applications with uniform access to data." Yeah — we were *just* gonna say that. Anyway, thank goodness it disappeared with System 7.5.

Desktop PrintMonitor (and related files)

Desktop printing, as you'll find out in Chapter 25, is actually a handy concept. It means that, if you have multiple printers, you don't have to go to the Chooser every time you want to switch from one to another. Instead, Desktop printing puts an icon onto your Desktop — one for each printer (or fax modem). This way, you can simply drag your document icons onto the different printer icons to specify which printer you want to use for each.

You can install this new technology by using the Custom Install option of System 7.5.3 and later; it's part of the LaserWriter 8 software. You'll find, in your Extensions folder, not only **Desktop PrintMonitor,** but also **Desktop Printer Spooler** and **Desktop Printer Extension.** The whole affair is charmingly described in Chapter 25.

Display Enabler

This extension is for *multisync* monitors only (see Chapter 11). It adds, to your Monitors control panel, the ability to change the screen resolution. Unnecessary in System 7.5.3 or later.

Drag and Drop

For System 7.1 variants only. Gives you the Macintosh Drag & Drop feature described in Chapter 1; unnecessary in System 7.5 or later.

Drive Firmware Update Extension

Fixes noisy IDE hard drives (see Chapter 30).

Duo Battery Patch

Lets an ExpressModem-equipped PowerBook Duo work with Type II batteries. Unnecessary after System 7.1.1.

EM Extension

This extension is a component of Extensions Manager (see "Extensions Manager," earlier in this chapter). As a control panel, Extensions Manager actually loads *after* the very extensions it's supposed to manage. Therefore, you also have this extension, which loads before all other extensions. It gives you the chance, by pressing the Space bar during startup, to bring up the Extensions Manager control-panel screen, so that you can choose which extensions you want to load.

EM Sound Update

Only for 630-series Macs with internal ExpressModems. This extension lets your built-in Mac speaker carry the sounds you hear when using that modem (dial tones, modem squawks, and so on).

Energy Saver extension

See "Energy Saver 2.0 (and related files)," earlier in this chapter.

Ethernet (Built-In)

See "Open Transport (and related files)," earlier in this chapter.

EtherTalk Phase 2, EtherTalkPrep

See "AppleShare (and related files)," earlier in this chapter.

External CD Sound

Exclusively for 5200 models with *external* CD-ROM drives. Fixes a bug in which you couldn't hear, through your built-in speakers, sound from music CDs. Requires a Y-adapter cable that connects the CD-ROM drive's audio RCA jacks to the Mac's microphone jack; unnecessary in System 7.5.1 or later.

Fax Extension

See "GeoPort Extension (and related files)," later in this chapter.

Fax Terminal 7.5 Compatibility

See "GeoPort Extension (and related files)," later in this chapter.

File Sharing Extension

See "AppleShare (and related files)," earlier in this chapter.

Find File Extension

This extension simply launches System 7.5/7.6's Find File program when you choose Find File (or press ⌘-F). If it weren't for this little guy, you'd get the *old* Find box instead. And even without this extension, you can *still* call up the *new* Find File — by choosing its name from your menu.

Finder Help

This file contains the text for Balloon Help about the Finder.

Finder Scripting Extension

See "AppleScript (and related files)," earlier in this chapter. Actually, this AppleScript component is more important than most — it lets you drag things into and out of the Find File program, as described in Chapter 3.

Finder Update

See "PowerPC Finder Update," later in this chapter.

Foreign File Access

See "Apple CD-ROM (and related files)," earlier in this chapter.

GeoPort Extension (and related files)

This extension is the driver for a GeoPort Telecom Adapter, a $100 fax/modem simulator for Power Mac or AV-model Macs. See Chapter 27 for details.

You'll find other files in your System Folder, too, all pertaining to your GeoPort, such as the **Fax Extension** (lets you send and receive faxes with the GeoPort Adapter); the **Express Modem** control panel (described earlier), **Fax Terminal 7.5 Compatibility** (lets your GeoPort software work with System 7.5); and, in some cases, anything with the word **MegaPhone** in it (another set of extensions and control panels that lets your Mac act as a telephone answering machine).

Hardware System Update

One of a series of bug fix/patches released by Apple; see Chapter 6 for complete details.

High Sierra File Access

See "Apple CD-ROM (and related files)," earlier in this chapter.

CASE HISTORY

HOW INACTIVE IS THAT NUMBER?

An actual transcript of a call to Apple's Austin-based Assistance Center.

The customer had called because her Express Modem would no longer fax. She had an extra phone line, so the Apple agent tried to walk her through it to see what the error was.

Agent: Hold down the Control and Shift keys, and select "Fax Desktop" from the File menu.

Caller: OK. The fax dialog box came up.

Agent: OK, do you know the number of a fax machine?

Caller: No.

Agent: Then just go ahead and put some inactive number in there so we can see what happens when it tries to dial. Then click on "Send."

Caller: OK . . . Oh wow, it's dialing! It's ringing.

Unknown voice: Hello? Hello, who is this?

Caller: Oh no!

Voice (furious): Who the hell is this?!

Agent: Who is that?

Caller: Oh my God! It's my grandfather and he's freaking out! How do I hang up!?

IIci/IIsi Monitors

See "Quadra Monitors Extension (and related files)," later in this chapter.

InLineFilter

See "AppleScript (and related files)," earlier in this chapter.

Installer Cleanup

This extension, if you can glimpse it at all, will appear just after installing new Apple software. During the startup immediately following a software installation, Installer Cleanup takes care of a few technical loose ends — and then deletes itself! (If it doesn't for some reason, just trash it.)

Intelligent Battery Update

Apparently the "intelligent batteries" of the PowerBook 500 series weren't quite so intelligent: occasionally, the built-in battery microprocessor could become corrupted, passing along incorrect "remaining juice" information to the system software. This extension, along with the Intelligent Battery Recondition application, repairs the battery itself to prevent this problem. Interestingly, it only works on the battery in the right-hand battery compartment — if you have more than one battery, you'll have to run the Battery Recondition program repeatedly, once for each battery.

Internal Modem Sound

The predecessor to Audio Volume (see "Audio Volume Extension," earlier in this chapter).

IR Talk

PowerBooks in the 500, 5300, 1400, and upgraded 190 series, and desktop Macs with Farallon AirDocks, have an infrared transmitter/receiver. It looks like a little red plastic taillight, and it permits wire-free networking between similarly equipped machines. This is the extension that makes it all possible. See Chapters 14 and 32 for details.

ISO 9660 File Access

See "Apple CD-ROM (and related files)," earlier in this chapter.

LaserWriter (and related files)

These extensions are *printer drivers* — they teach your Mac to communicate with specific printer models. Obviously, you need only the one (or ones) that matches your printer (or printers). Without the driver, you can't print. Throw all the others away. Other printer drivers that probably got dumped into your Extensions folder are various **StyleWriter, LaserWriter Select, ImageWriter** drivers, and so on.

Letterhead

One component of the QuickDraw GX software kit (see "QuickDraw GX [and related files]," later in this chapter). In the handful of QuickDraw GX-savvy programs, you'll find a Letterhead paper choice in the Page Setup dialog box; this extension is responsible.

Macintalk (2, 3, or Pro)

Included with System 7.5 and later: lets your Mac *speak text* you've typed into SimpleText. Requires the Speech Manager control panel and the **Voices** folder in your Extensions folder, too. See Chapter 23 for details.

Macintalk 2 is for 68020 Macs and Macs running System 6; Macintalk 3 is for 68030, 68040, and PowerPC Macs; and Macintalk Pro requires a 68040 or PowerPC chip.

Macintosh Guide

See "Apple Guide (and related files)," earlier in this chapter.

MacTCP DNR

See "AppleShare (and related files)," earlier in this chapter.

MacTCP Token Ring

See "AppleShare (and related files)," earlier in this chapter.

Mailbox Extension

See "PowerTalk Extension (and related files)," later in this chapter.

CASE HISTORY

A BETTER MOUSE TRAP

Another actual, true transcript of a call to Apple's Austin, TX, 800-SOS-APPL help line.

While troubleshooting for printer problems with a customer, the Apple agent noticed that simple tasks were taking an inordinately long time.

Caller: This COMPUTER makes me SO mad! EVERY TIME I need to use the mouse I have to move my DESK back from the wall, UNPLUG the keyboard and connect the MOUSE. HOW FRUSTRATING!!

Agent: Ma'am, The mouse plugs into the keyboard.

Caller: You're kidding — you've GOT to be KIDDING. Oh, my God, I just knew there was something wrong. I've been using it this way for over a month!

Mount IDE Drive

For Macs with IDE-style hard drives only (such as PowerBook 150 and 630-series machines). This extension is designed to *mount* (bring onto the screen) your internal hard drive's icon if you're starting up from some *other* disk.

My Speech Macros

See "Speech Recognition (and related files)," later in this chapter.

N-Up Printing

Another component of the QuickDraw GX software kit (see "QuickDraw GX [and related files]," later in this chapter). This one lets you print multiple smaller "pages" on a single sheet of paper — to 16 pages on a single letter-sized sheet.

Network Extension

See "AppleShare (and related files)," earlier in this chapter. This Extension disappears when Open Transport is installed (see Chapter 32).

ObjectSupportLib

For Power Macintosh only; lets several running programs exchange Apple Event messages regarding *shared libraries.* See Chapter 13 for details.

OpenDoc Libraries

This folder, together with the helpfully named **SOMobjects for Mac** OS and the **Editor Setup** control panel, let your Mac work with OpenDoc parts. See Chapter 16 for the full explanation.

PC Card Extension, PC Card Modem Extension

These are the drivers that let PowerBook 500, 5000, and similar models to recognize "PC cards" (those little credit-card size things like modems and Internet cards).

PC Clipboard Translator

Suppose your Mac has a DOS Compatibility Card installed (see Chapter 16). If you copy some text from a Windows program, and then switch to a

Macintosh program, you'll want your Clipboard contents to survive the switch. This extension makes it possible.

PlainTalk Speech Recognition

See "Speech Recognition (and related files)," later in this chapter.

PowerBook 150 Update

A patch to fix a bug on PowerBook 150s in which the modem sucks up too much battery power while asleep. (Available from online services, if you don't have it.)

PowerBook Guide Additions

See "Apple Guide (and related files)," earlier in this chapter.

PowerBook Monitors Extension

See "Quadra Monitors Extension (and related files)," later in this chapter.

PowerPC Finder Update

This extension, for four-digit Mac models only, is the master switch for letting a Power Mac run "native-PowerPC" software. It also adds a new segment to the dialog box that appears when you highlight a Power Mac-native program and choose Get Info from the File menu. The new segment contains a message that tells you how much actual RAM you'll save if you turn on virtual memory. See Chapters 9 and 13 for details. This extension is unnecessary in System 7.5.3 and later.

PowerPC Monitors Extension

See "Quadra Monitors Extension (and related files)," later in this chapter.

PowerTalk Extension (and related files)

PowerTalk is a complex, very technical set of interrelated software components for use in office networks. It's described more fully in Chapter 32. In brief, however, PowerTalk's purpose is to provide a single password, and a single folder on your Desktop, to collect e-mail, fax, and voice messages from a variety of different sources and services.

Some of the PowerTalk components you'll find in your System Folder after installation are: **Catalogs Extension** (lets you create and manage icons full of addressee data called *catalogs*); **Mailbox Extension** (creates the Mailbox icon on your Desktop to store incoming e-mails, faxes, and so on); **PowerTalk**

Manager (manages the Mailbox and other services); **Serial Tool** (lets your PowerTalk software dial the modem to retrieve e-mail); and others.

PowerTalk Guide

See "Apple Guide (and related files)," earlier in this chapter.

PowerTalk Manager

See "PowerTalk Extension (and related files)," earlier in this chapter.

Printer Descriptions

This folder contains PPDs (PostScript Printer Descriptions) for individual printer models. It's used only by the LaserWriter 8 printer driver (see Chapter 25). Feel free to open this folder and discard the icons for any printers you don't plan to use.

Printer Share

This handy extension lets you share one StyleWriter among several networked Macs. See Chapter 25 for details.

PrintMonitor

The only full-fledged application in your Extensions folder. For details on PrintMonitor, see Chapter 25.

Processor Info Extension

On 5200, 5300, and 6200 series Macs, this patch fixes a bug in which the computer doesn't even know its own processor speed.

Quadra Monitors Extension (and related files)

This optional extension provides your Monitors control panel with specific information about the Quadra's (or Centris's) video features. The only way you can see its effect is by opening the Monitors control panel and clicking the Options button. There you may see some additional choices — such as the ability to change the *gamma settings* (see "Monitors," earlier in this chapter), which are specific to your Mac model's family.

Other model-specific Monitors Extensions include **PowerBook Monitors Extension, Quadra AV Monitors Extension, PowerPC Monitors Extension,** and so on.

QuickDraw 3D

The "master switch" that lets your Mac create, store, and display three-dimensional graphics. See Chapter 20 for details.

QuickDraw GX (and related files)

The cornerstone of the vast QuickDraw GX fonts-and-printing empire (including **ATM GX, Letterhead**, the **QuickDraw GX extension,** and much more), provided with System 7.5 and later. See Chapter 25 for details.

For now, note that when you install QuickDraw GX, you may notice a curious change to the icons in your Chooser: They all have the letters *GX* added to their names. Yes, it's true: The QuickDraw GX extension hides the icons of all your *normal* printer drivers.

If you want your original drivers to return to the Chooser — for example, if your laser printer or software doesn't work with the GX drivers — the fix is simple. Just restart your Mac with the QuickDraw GX extension turned off. (Turn it off by using Extensions Manager or Conflict Catcher, included with this book.) Your normal icons return, and it will be the *GX* drivers' turn to vanish.

QuickTime

When you add this extension to your System Folder, your Mac can run programs that record, edit, and play digital movies — QuickTime movies. It also helps graphics programs open certain kinds of compressed graphics formats (such as JPEG) and even lets your Mac play MIDI music files. Chapter 23 provides details on this amazing movie technology.

QuickTime Musical Instruments

This amazing file contains the realistic sounds of 30 musical instruments. In conjunction with the QuickTime extension — and a program like Movie Player — it lets you open standard MIDI music files and play them using the Mac as a synthesizer. For the first time, the Mac is free from its age-old four-notes-simultaneously chord limit. See Chapter 23 for details.

QuickTime Power Plug

For Power Macs only. Adds PowerPC-native programming for QuickTime movies. Doesn't help playback especially, but dramatically shortens the time it takes to *create* (compile and save) QuickTime movies of your own.

Record Button Extension

This one came with the Apple Adjustable Keyboard (the weird-looking one that splits in half). This keyboard has special buttons for controlling the Sound control panel: volume up, volume down, and — you guessed it — Record. The Record Button Extension is what allows the Adjustable Keyboard to send signals to the Sound control panel.

Not needed for Power Mac and AV models.

Scanner

The driver (translator) that lets your Mac talk to an Apple scanner.

Scripting Additions

See "AppleScript (and related files)," earlier in this chapter.

SCSI Manager 4.3

This extension, part of System 7.5 and 7.5.1, is the software that lets AV and Power Mac models take advantage of their faster SCSI circuitry, resulting in faster data transfer between SCSI devices (see Chapter 30 for more on this extension).

Serial Port Arbitrator

This extension is installed with Apple Remote Access (see Chapter 32). If you've set up your Mac to answer the phone, this extension lets other programs use your modem port in the mean time (so you can surf the Web, for example, without having to turn off ARA).

Serial Tool

See "PowerTalk Extension (and related files)," earlier in this chapter.

SerialDMA

Some pretty sophisticated software is required to manage all the high-speed data that gets shoved in and out of your modem port — particularly modem and MIDI transmissions. This extension is it.

Shared Code, Shared Code Manager

Thank you, Microsoft. This extension and folder full of support files are dumped into your Extensions folder by any Microsoft program. They contain all the messy pieces of Microsoft's lame OLE technology; recent Microsoft programs won't run without this stuff.

Shared Library Manager, Shared Library Manager PPC

These two extensions (for four-digit models only) let multiple Power Mac-native programs share chunks of computer code, theoretically saving memory when you're running multiple programs. (Everyone uses the Microsoft Office suite as the example of programs that can share the same chunks of code.)

Shortcuts

See "Apple Guide (and related files)," earlier in this chapter.

Slow SCSI Extension

This extension is included with recent PowerBook models to solve problems getting data from slower SCS devices — most notably, Zip drives. Use it if you need it.

SOMobjects™ for Mac OS

See "OpenDoc Libraries (and related files)," earlier in this chapter.

Sound Input Amplification

Apple's PlainTalk microphone generates an electrical signal that's strong enough to make the Mac's sound-recording software happy ("line-level" signal). Other microphones, however, are too weak. This extension adds a "Microphone amplification" option to your Sound control panel.

Sound Manager

There have been various versions of this sound-management software, each designed to make recording and playing back sounds better and more flexible. For example, version 3.2 was incorporated into System 7.5.3 — but then the QuickTime 2.5 installer introduced Sound Manager 3.2.1 into even your System folder once again.

Speech Guide Additions

See "Apple Guide (and related files)."

Speech Manager

See "Speech Recognition (and related files)."

Speech Recognition (and related files)

The Power Mac and AV lines, among other features, introduce *speech recognition:* You speak into your Mac's microphone, issuing orders, and the Mac

obeys. A separate set of programs provides *text-to-speech* features — which can run on any recent Mac — in which the Mac reads out loud, in a pseudo-human voice, what you've typed into SimpleText. See Chapter 23 for details on both features.

These speech features add all kinds of junk to your Extensions folder: several **TTS Voice** files (the voices used for text-to-speech); **SR North American English** (dictionary for recognized terms); **SR Monitor** (listens to the mike); **System Speech Rules** (teaches the Mac how English works); **PlainTalk Text-To-Speech** or **Speech Manager** (the heart of the text-to-speech feature); **My Speech Macros** (new spoken commands you've created, using the **Speech Macro Editor** program, for the Mac to understand); and so on.

SR Monitor

See "Speech Recognition (and related files)," earlier in this chapter.

Startup Tuner

For System 7.5.3 only. This patch repairs a problem in which the Startup Disk control panel doesn't do its thing (see "Startup Disk," earlier in this chapter).

StyleWriter

See "LaserWriter (and related files)," earlier in this chapter.

System Speech Rules

See "Speech Recognition (and related files)," earlier in this chapter.

SystemAV

See "Monitors & Sound" in the control panel descriptions earlier in this chapter.

Text Preview

When you're examining files in the Open File dialog box (see the beginning of Chapter 9), there's a little Preview area in certain programs, notably ClarisWorks. This extension lets you see a few words of text files you're browsing — right there in the little Preview area — without actually having to open those files.

Thread Manager

A pre-System 7.5 extension that opens the way for certain programs (of which very few exist) to perform one task — like initializing a floppy disk — while you continue to work on something else.

TokenTalk Phase 2

See "AppleShare (and related files)," earlier in this chapter.

TokenTalk Prep

See "AppleShare (and related files)," earlier in this chapter.

TTS Male Voice, etc.

See "Speech Recognition (and related files)," earlier in this chapter.

Type III Battery

Lets your PowerBook take advantage of the Type III battery's extended life.

Video Guide Additions

See "Apple Guide (and related files)," earlier in this chapter.

Video Startup

As you'll read in Chapter 23, some Macs — the 7600, 8500, and 9500, for example — let you create digital QuickTime movies simply by hooking your camcorder up to a jack on the back. This extension is required by Apple Video Player, the program Apple gives you to capture the incoming footage.

WorldScript Power Adapter

You may suspect that extension has something to do with WorldScript Language Kits (if you've bought any). In fact, it's far more useful; it actually speeds up text processing (by patching over non-native code) on Macs with PowerPC chips.

THE ULTIMATE EXTENSION-LINKING GUIDE

Just about everyone in America now has some kind of program for *managing* all of these extensions — either Extensions Manager, which comes with System 7.5, or its two more powerful rivals, Conflict Catcher and Now Startup Manager.

All three programs let you link various *clumps* of extensions, so that turning one of them on turns the entire group on. For example, an Apple CD-ROM drive comes with no fewer than *six* extensions, and a horrifying eight are required for Microsoft Word 6. To save you time and effort, here's a list that shows what extensions should be turned on together. Even if you don't use an extension-management program, this list should help you better

understand the purpose of all those seemingly random files that clutter your System folder.

Note, first, though: (1) You may not have all of these components; our purpose here is to help you figure out which software suite something in your System folder came from. (2) Not all of these elements will even show up in your extensions-management program. Some have no startup code to manage, and are simply support files, or are otherwise invisible to such programs.

Apple CD-ROM
Apple CD-ROM
Audio CD Access
Apple Photo Access
Foreign File Access
High Sierra File Access
ISO 9660 File Access

Apple Remote Access
Apple Remote Access Client
Dial Assist (application)
Link Tool Manager
Modem Link Tool Personal
Remote Access Aliases
Remote Access Setup (control panel)
Remote Only
Serial Port Arbitrator

Apple Telecom Software
AddressBookLib.ppc (shared library)
AddressBookLib.68K (shared library)
Apple Fax Gateway
Apple Phone Extension
Fax Extension
Fax Sender
Fax Sender GX
Log Extension (shared library)

At Ease
At Ease 7.5 Layer Patch
At Ease Items
At Ease Setup
At Ease Startup

File Sharing
AppleShare
File Sharing Extension
Network Extension

GeoPort Software
AudioTuneUp
Apple Telecom Modem
Express Modem (control panel)
Express Modem Tool
GeoPort for Power Macintosh (shared library)
GeoPort Extension
GeoPort Serial Driver (shared library)
GeoPort Telecom Adapter (shared library)
GeoPort Telephone Tool
GeoPort/Express Modem CNG
Serial Extension (shared library)
Telephone Manager Extension

Microsoft Word or Excel
Microsoft Dialog Library
Microsoft Find File Library
Microsoft Mail Library
Microsoft OLE Automation
Microsoft OLE Extension
Microsoft OLE Library
Microsoft Office Manager (control panel)
Microsoft Tool Editor Library

Open Transport (networking)
Network Software Selector
Open Tpt AppleTalk Library
Open Tpt Internet Library
Open Transport Guide Additions
Open Transport Library
OpenTptAppleTalkLib
OpenTptInternetLib
OpenTransportLib
AppleTalk (control panel)
TCP/IP (control panel)
Apple Built-In Ethernet or Ethernet (Built-In)

QuickDraw 3D
QuickDraw 3D
QuickDraw 3D Accelerator
QuickDraw 3D RAVE
QuickDraw 3D Viewer

QuickDraw GX
EPSExtension
ATM GX
Letterhead
QuickDraw GX
LaserWriter GX, etc.

QuickTime
QuickTime
QuickTime Musical Instruments
QuickTime Power Plug
QuickTime Settings (control panel)

PowerTalk
Apple Fax Gateway
AppleTalk Service
DigiSign
Mailbox Extension
PowerTalk Catalogs
PowerTalk Extension
PowerTalk Manager
PowerTalk Guide
PowerTalk Setup

Speech
Macintalk
My Speech Macros
Speakable Items (folder)
Speech (control panel)
Speech Manager
Speech Recognition
SR Monitor
System Speech Rules
InLine Filter
Voices folder

Chapter 5

Enablers, Installers, and Apple Extras

IN THIS CHAPTER:

- The other crud in your System Folder: Enablers, System Updates, and more
- Details on the automatic System Folder subfolders
- A few words about the System file
- Apple Extras
- The Installer nobody knows

That handful of control panels, extensions, and DAs described in the preceding two chapters doesn't completely explain why a System 7.5 System Folder can consume 30MB of your hard drive — 80MB or more if you have, for example, a Language Kit or most of System 7.6's goodies installed. Your Mac comes with a lot of other fascinating software, too — and the flood doesn't stop: Every few months, Apple releases some Updater or other, which you're supposed to know about, get, and install. Your Mac even comes with some software the Installer doesn't install; those additional programs get left behind on the original System software disks, or dumped into an unexplained folder on your hard drive called Apple Extras. All of it is worth knowing about.

THE SYSTEM FOLDER FOLDERS

System 7 greatly reduced the cluttered, no-nested-folders setup of System 6. System 7 introduced a set of standard folders *within* the System Folder (see Figure 5-1): one each for **Extensions** (INITs), **Control Panels, Preferences, Fonts** (in System 7.1 and later), **Apple Menu Items, PrintMonitor Documents, Startup Items, Shutdown Items** (System 7.5), and **Launcher Items** (System 7.5). Depending on your model and System version, you may also have folders that collect things such as Speakable Items and Control Strip Modules.

Figure 5-1
The basic System Folder folders.



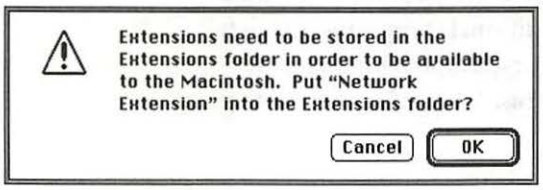
As you probably know, you're not expected to place each System Folder-bound icon into the appropriate subfolder manually. When you drop a font, sound, control panel, desk accessory, keyboard layout, or extension icon on top of the System Folder icon, the Mac automatically dumps it into the correct subfolder (and it tells you so, as shown in Figure 5-2). And by the way — we're sick of reading that this only works if you drop the incoming items onto a *closed* System Folder icon. It makes no difference whatsoever whether the System Folder icon is open or closed, just so you drop the stuff on the *icon.*

In fact, you can even drop a whole group of System Folder items of mixed types — even a folder containing them — onto the System Folder. All of the items still get stashed where they belong.

In any of the System Folder's placement proposals, you're welcome to decline the suggestion shown in Figure 5-2 by clicking Cancel. If you want to place the item somewhere other than the proposed folder, however, you can't do it by dropping it onto the System Folder icon. First, you must open the System Folder into a window and *then* drag the icon into place.

Here, then, folder by folder, are the System Folder folders.

Figure 5-2
The System 7 System Folder has some drag-and-drop brains.



Apple Menu Items folder

Beginning in System 7, Apple programmers hit upon the clever idea of using a menu that's been on your screen for years — the Apple (🍎) menu — as an ever-present file launcher. You can put *anything* into this new, improved 🍎 menu — not just documents and programs, but folders, disks, the Trash . . . literally anything in the entire Mac universe that can be represented by an icon.

To change what's listed in the 🍎 menu, you simply add icons to (or remove them from) the Apple Menu Items folder. (More often, actually, you put an *alias* of the original file there. And in System 7.5, you don't even have to do that — just highlight the original icon and choose *Add Alias to Apple Menu* from the Automated Tasks command in your 🍎 menu.)

After you know about the relationship between this special folder and your 🍎 menu, you'll discover that the System 7 🍎 menu is one of the operating system's most useful and well-designed features. See Chapter 3 for more on Apple Menu Items and desk accessories.

TRUE FACT
QUOTE FROM HISTORY

"A fully loaded System Folder can easily weigh in at 200K, which doesn't leave much room for application programs and documents on disk . . . It is ironic that, for the time being, making the Mac an efficient computing tool means eliminating portions of the system that add convenience and appeal."

Macworld magazine, April 1985

Say . . . would it help to throw out ISO 9660 File Access?

Control Panels folder

Today's control panels, as noted in Chapter 4, are increasingly more like individual, double-clickable programs than mere tiles of a central control panel, as they were in the bygone days of System 6.

Actually, as mentioned in Chapter 4, most control panels don't even have to be *on your computer* — they can live perfectly comfortably on some backup disk, or in another folder of your choosing, until you want to *change* one of your settings. You can open a control panel just like a double-clickable program, no matter where it is. Chapter 4 contains more information about control panels than you'll ever want to know.

Control Panels (Disabled)

See "Extensions (Disabled) folder."

Control Strip Modules folder

This folder is required for the glorious Control Strip found on PowerBook laptops (beginning with the 500 series) and any Mac running System 7.5.3 or

TRUE FACT

THE FOLDER THAT WASN'T

System 7 was supposed to include one more special System Folder subfolder: the Help folder. The Help folder was designed to be another anti-clutter repository — it was supposed to be where all your programs stored their Help files. A Help file contains all the on-screen information that appears when you use a program's Balloon Help, Apple Guide, or any other online help mechanism.

But as the release date of System 7 drew near, there was intense debate. Darin Adler, the head of Apple's "Blue Meanies" squad of System 7 bug-killers and project overseers, thought that a Help folder would be superfluous. In the end, the Help folder was nixed.

Of course, the Help folder wasn't the only System 7 feature to get yanked out of the software at the last moment. We can think of at least three other features that were promised but not delivered in the original System 7 software: a rebuild-the-Desktop method that didn't wipe out comments you typed into the Get Info boxes of your files (incorporated into System 7.5.3, five years later); background sound playing (double-click a sound file, then start word processing while the sound plays); and a new printing architecture, known today as QuickDraw GX.

In the absence of a Help folder, most software companies store their programs' help files in their own proprietary folders. A Claris program, for example, creates a Claris folder inside your System Folder to contain its Help (and spelling and translator) files. Aldus, Quark, Microsoft, and other companies use a similar tactic.

later. (If you don't have the Control Strip, as described in the previous chapter, use your System 7.5.3-or-later Installer and use the Custom Install option.) Any "tile" on the Control Strip has a corresponding icon in this folder.

Desktop PrintMonitor documents

See "PrintMonitor documents," later in this chapter.

Extensions folder

If you read Chapter 4, you know about all the different things — extensions and not — that go in the Extensions folder. An extension also works fine loose in the System Folder or even in the Control Panels folder.

Extensions (Disabled) folder

In the *very* old days, if you didn't want some extension (INIT) to load when you turned on the Mac, you'd have to drag the extension's icon out of the System Folder. Then came better days, in which programs like INIT Picker let you selectively turn extensions on and off from one central window. Those programs worked by changing the extensions' behind-the-scenes Type codes from *init* to *xnit*. The Mac didn't recognize them as INITs anymore, and thus ignored them during the startup process.

Trouble would occur, however, if you found yourself without that INIT Picker-type program — you had no way of changing that extension *back* into a real extension!

That's why all of today's extension managers, including Extension Manager (included with System 7.5), Now Startup Manager, and Conflict Catcher (included with this book), use a much safer method of turning extensions off. Instead of *modifying* the extensions, they simply *move* the extensions — into a folder

they create themselves, called Extensions (Disabled). This method has two advantages: First, you can restore an extension simply by dragging it back into the Extensions folder yourself. Second, the file itself isn't changed, so your virus-checker program won't go shrieking bloody murder.

You'll also see **Control Panels (Disabled)** and, sometimes, **System Folder (Disabled)** folders. They're created by those same extension-managing programs, this time to handle control panels and items loose in the System Folder, respectively.

Fonts folder

This Fonts folder, introduced in System 7.1, is a sweet idea, too long in coming. In all previous versions of the System, you installed fonts into the System *file* itself (into the little suitcase icon inside the System folder). That method had a few problems:

- Installing a font was time-consuming.
- You could only install a font if no programs were running.
- Having a lot of fonts led to a hugely bloated System file — never a healthy situation.
- If your System file somehow got damaged, all your fonts got nuked.

By keeping all your fonts — not just TrueType fonts, but also screen (suitcase icon) and printer files for PostScript fonts — safely in one folder, you circumvent all of those hassles. (As you'll learn in Chapter 24, QuickDraw GX makes storing fonts even simpler — but makes *understanding* them harder.)

The maximum number of font files that can be in the Fonts folder is 128. This doesn't mean 128 *fonts,* however — it's 128 font *files* (suitcases). *Each* suitcase, in turn, can contain as many as 128 different individual fonts. Even so, big-time desktop publishers and font zealots still find a font-management program, such as Suitcase, to be a necessary and handy add-on. (Much more on these topics in Chapter 24.)

A last note on font files: A delightful feature of System 7, if you hadn't already discovered it, is that you can *double-click* a screen font file (or a TrueType font file) to see what the font looks like (see Figure 5-3).



Figure 5-3
Double-click a TrueType font file, or a regular PostScript screen-font file, to see what the font actually looks like. Cute sentence, huh? It uses all the letters, but it's not quite as plausible as "The quick brown fox jumps over the lazy dog." Then again, as the owner of this book, you can change the sentence to say anything you want! See Chapter 21 for instructions.

Launcher Items folder

If you have the Launcher, you have the Launcher Items folder. The Launcher, of course, is the handy one-click icon-launching window. You have it on your Performa or on any System 7.5-or-later Macintosh.

The Launcher Items folder works exactly like the Apple Menu Items folder described earlier. In this case, any icon (or alias) you place into the folder shows up immediately in the Launcher window (and not the menu). For the full scoop, plus some Launcher Items folder Secrets, see "Launcher" in Chapter 4.

Preferences folder

A Prefs file (or Preferences file) is a storage bin for a program's settings. Every time you tell PageMaker that you prefer to work in picas instead of inches . . . or you change the font used for icon names in the Finder . . . or you select a new "scratch disk" for Photoshop . . . or you store your name and password into some Internet program . . . the program in question records your settings in a Prefs file.

In the early days, a program might record such options settings in the body of its own code. But *self-modifying* programs are considered a programming no-no. Today, there are numerous drawbacks to programs that modify themselves: they trigger anti-virus programs, they can't be run from a CD-ROM (because nothing on a CD-ROM can be changed), and they can't be shared from a network server (see Chapter 32). Therefore, most well-behaved programs today never modify themselves; your settings changes are recorded in a Prefs file.

The contents of your Preferences folder, therefore, aren't for your use at all. The Preferences folder exists for the benefit of your programs. There's virtually nothing you can accomplish by messing with Prefs files, except to read an error message that tells you so.

These files do, however, represent cumulative hours of work over many months. As such, they should be backed up with great reverence and transferred carefully whenever you perform a clean system install, as described later in this chapter.

We also believe that this folder gets gunked up rather quickly with Prefs files from programs you no longer use. Every little shareware program you try, every program you delete from your hard drive, leaves behind that little piece of itself in your Preferences folder. Review the contents of your Preferences folder every couple of months, and throw away the Prefs files of programs you don't actually use. (This process is much quicker if you use the

Case History

Last Resort and the Preferences Folder

Generally, our statement is true that nothing in the Preferences folder is there for your benefit. It's definitely not true, however, if you have the miraculous control panel known as Last Resort (from Working Software).

Last Resort lurks in the background and records everything you type, storing it automatically into a text file stamped with today's date. These text files reside in a Last Resort folder in your Preferences folder. Over time, you accumulate dozens and dozens of little text files, each containing everything you typed on a certain day. (Now Save, part of the Now Utilities, works similarly.)

So what's the point? Safety. If you ever have a system crash, but forgot to save — or typed something you liked, then erased it, and later wished you had it back — then Last Resort is there. You just open up the appropriate text file that was created behind the scenes, and there's everything you ever typed.

Last Resort has a few fascinating aspects worth mentioning. First, it records (in each text file) which program you were in when typing. That's wonderful when you can't remember *where* you typed something. One of your two cheerful authors (who wishes to remain unidentified) regularly types phone numbers as they're read to him over the phone. Trouble is, he can never remember whether he typed them into his Rolodex program (QuickDex), his calendar program (Now Up-to-Date), or whichever Word document happened to be on-screen at the time. More than once he couldn't find the phone number at all when looking for it days later and wound up having to open the Last Resort file for the appropriate day. When all other ransacking fails, he can count on Last Resort to record the typed phone number, regardless of the document or program that was open at the time.

Along the same lines, Last Resort can be a handy note-taker on the spur of the moment, even when *no* document or program is running. Suppose that you're on the phone — and in the Finder — and the person you're talking to starts spewing forth great ideas. You don't have time to launch Word and wait while it loads! Instead, you can start typing away, blindly, of course, but typing nonetheless. Last Resort, your invisible word processor, will dutifully log everything you type. You can open it up later with a word processor.

Finally, remember, for better or worse, that Last Resort is something of an electronic wiretap. If people don't *know* it's installed, scary things can happen. We know one poor guy who went away for a week but gave his fiancée free use of his Mac while he was gone. Shortly after he returned, he was using his Mac and had a System crash. But when he began looking through the Last Resort files for the text he'd lost, he found everything his fiancée had typed while he'd been away — and discovered that she'd been dialing up a BBS and typing graphic sexy messages to men she met there.

Is there such a thing as suing for electronic infidelity?

trick we described in Chapter 2, in which you use your Labels menu to tag all the *official,* Apple preference files. Then, when it comes time to clean out all the irrelevant reference gunk you've accumulated, you can see at a glance which icons to throw away.)

On a related topic: A corrupted Preferences file is one of the most common causes of computer-induced insanity. You try everything — zap the PRAM, rebuild the Desktop, reinstall the software — and some phantom glitch remains, much to your exasperation. The problem is likely to be a corrupted Preferences file. More on this topic in Chapter 33; for now, simply remember that if you throw away a Preferences file, the program it belongs to will automatically generate a fresh, clean new one the next time it runs.

PrintMonitor Documents folder

When you use the Background Printing feature, described in Chapter 25, an interesting thing happens each time you choose Print from a program's File menu. Instead of sending the printing information to your *printer,* the Mac sends it to a *file* on your hard disk. Then, as you continue to work on your Mac, these saved-up print files get fed, little by little, to your printer.

While they're waiting to be printed, your files' waiting room is the PrintMonitor Documents folder. (Or, if you've installed the Desktop Printing extension [see Chapter 25], this folder is called Desktop PrintMonitor Documents.) Under normal circumstances, you'll never have need to interact with this folder's contents. But in times of troubleshooting, or when you're being particularly clever with one of the techniques described in Chapter 25, it's useful to remember that this is where your printouts-to-be live.

Shutdown Items folder

System 7.5 posed this fascinating question for the first time: If there's a Startup Items folder, why isn't there a Shutdown Items folder?

And now there is. Any icon you put into Shutdown Items gets magically "double-clicked" by the Mac's ghost when you use a Shut Down command. Whereas the self-launching items in the Startup Items run just *after* the Mac starts up, anything in Shutdown Items — need we say — runs just *before* the Mac actually cuts off its own power.

And what possible purpose could that serve? We can think of a couple, offhand. First, you could put a sound file there — maybe Porky Pig saying "Th-th-that's all, folks!" — so that your Mac can bid you adieu at the end of a hard day's work. Second, you could put in a backup program's alias, or the alias of

an AppleScript (see Chapter 22), so that it runs automatically before shutting the computer down for the day.

Speakable Items folder

Here's a folder exclusive to owners of AV and four-digit (PowerPC) models.

As you'll find out in Chapter 23, those so-called speech-recognition Macs actually have a pretty limited vocabulary. In fact, you can see a list of the phrases they understand — just open your Speakable Items folder.

In other words, anything you put in this folder (almost always aliases) gets added to the Mac's vocabulary (almost always files and folders). If you're working on a spreadsheet called "Fourth Quarter" a great deal lately, put its alias into Speakable Items; from now on, the Mac will understand you when you command: "open Fourth Quarter." See Chapter 23 for details.

Startup Items folder

Anything you put into this folder gets automatically double-clicked when you turn on the Mac. Normally, you might place a program (a word processor, say, or its alias) in the Startup Items folder, so that you can start working on it immediately when you turn on the computer. You can also put a particular document (or set of documents) in this folder to ensure that your Mac will be ready for you to start work immediately. If you put several items in here, they launch in alphabetical order — two alphabetical-order cycles, really: first all the "real" icons, then any aliases.

CASE HISTORY

THE LASER PRINTER FROM HELL

Judy is the wife of an extremely famous director. (This is a true story.) She fell in love with her first Mac immediately. She played with it for three days. And then she moved to a different state and didn't have a chance to use the Mac for two weeks.

When she arrived at her new home, she set up the Mac and printer. Then she turned on the Mac — and it *immediately* started printing the same ten-page document over and over and over again! She panicked and turned off the Mac. She waited patiently for 15 minutes while it "cooled itself off" (as she described it later).

But when she turned the Mac on again, *the same thing happened!* Pages spewed out of the printer like crazy.

Here's how it happened, and what she could have done about it.

At the end of one day, she tried to print her ten-page document. She chose Print from the File menu. *Nothing happened.*

She had Background Printing turned on, so instead of printing, she was actually creating a disk-based file in the PrintMonitor Documents folder in her System Folder. Of course, *she* didn't know any of this. She just knew that no printing was going on.

So, what did she do? She tried to print the document again. It didn't work again, so she tried to print it *again.* Little did she know that she was creating one PrintMonitor document after another, all piling up in her PrintMonitor Documents folder, waiting to be printed. When no printing had started in those 30 seconds, she gave up and shut down the Mac.

Of course, the next time she started up, good old reliable PrintMonitor took up from where it had left off and sanguinely began to print all of those ten-page documents, one after another.

Judy could have solved this problem by calling up PrintMonitor and deleting the items from the list, as described in Chapter 25. But perhaps a simpler method would have been to open the PrintMonitor Documents folder and physically trash all the little icons therein.

Just remember that whatever icons you put into this folder will behave as though you double-clicked them. You may get unexpected results if you put something you're not supposed to interact with (such as a Preferences file) into the Startup Items folder. On the other hand, with a little creativity, you can come up with some useful innovations. For example, you can put an alias of your Monitors (or Monitors & Sound) control panel into the Startup Items folder. That way, each time you turn on the Mac for the day, you can quickly switch to color or black-and-white, depending on the job you're about to do.

For details on the Mac's startup process, see Chapter 7.

Loose in your System folder

Every System folder contains several other files that aren't stored in one of the subfolders described in the chapter thus far: the Clipboard file, Scrapbook file, and Note Pad file.

The Clipboard file stores whatever you have most recently cut or copied. It's wiped clean whenever you shut down the Mac. It exists as a file primarily so that you can double-click it to remind yourself of what's on the Clipboard at the moment.

The Scrapbook and Note Pad files, of course, store the information you've typed or pasted using those desk accessories (see Chapter 3).

ALL ABOUT ENABLERS

An *enabler* is, we suppose, a relative of the extension. It, too, is installed into your System Folder for the benefit of the Mac itself and has no settings that you can make. An enabler, however, is supposed to be stored loose in your System Folder and not in the Extensions folder. And it only works in System 7.1 or later.

Why Enablers exist

In days gone by, Apple unleashed a new, improved (and newly numbered) System software version about every six months. There was System 6.03, then 6.04, then 6.05, and so on. What necessitated each new version of the System was the introduction of a new model of Macintosh. Each had slightly different circuitry, requiring a slightly modified version of the System.

Unfortunately, keeping up with Apple was no easy feat. With each new version of the System, power users lurched into action, getting their hands on the new System by hook or by crook (which usually meant downloading it from an online service such as America Online). The rest of us slogged along in quiet obsolescence, or got so much anxiety over having somehow been left in the dust that we finally got the new System from an Apple dealer.

So, Apple did what they hoped was a clever thing: They left a convenient software outlet in System 7.1. Into this socket could be plugged a little file that explained a specific Mac's circuitry to the System. As each new model of Mac came out, Apple wouldn't have to rewrite (and rerelease) the entire System Folder; instead, Apple could just make available the appropriate plug-in file, now called an *enabler.*

Sure enough, beginning in 1992, every new Mac model came equipped with an enabler. The enabler is important; without it, those models *can't even run.* (Before enablers, there were only *two* absolutely essential files: the System file and Finder.) And each enabler only works with one specific Mac model (or model family — there was only one enabler for the original three Power Macintosh models, for example). Your enabler came on its own disk, usually called Install Me First.

System 7.5 resets the counter

The next phase in Enabler History began with the introduction of System 7.5. Millions of Mac fans gasped — the enablers were *gone!*

Apple did indeed incorporate the computer instructions contained in all 20 or so of the different enablers that had been released into System 7.5's System file. System 7.5 by itself could run *any* model Mac that had come before it, even including the very first three Power Macs, without any separate enabler files. If you put any of those existing enablers (040, 001, 065, and so on) into your System 7.5 folder, you'd just be wasting disk space.

As soon as new models continued to roll off Apple's assembly line, however, enablers reappeared — with a vengeance. Not only did Apple revert to the whole enabler scheme, it began releasing updated versions of *existing* enablers, making matters even more confusing. A PowerMac 8100/110, for example, required not only System 7.5.1, but also PowerPC Enabler 1.1.1. The 1995 Power Macs required yet another enabler, the mysteriously-numbered System Enabler 701. Unfortunately, confusingly, the same new Power Macs *also* require another one of those double-decimal-point system-version upgrades — they come with System 7.5.2! Doesn't that defeat the entire purpose of enablers?

Ah well. Anyway, if your Mac was one of the 90 models introduced before the fall of 1994, you *don't* need an enabler file with System 7.5.

System 7.5.3 resets the counter again

As you'll read in Chapter 6, System 7.5.3 and System 7.5.5 were intended to be other attempts at global, runs-any-Mac System folders — the last universal System file ever. Once again, enabler consolidating has taken place: now a single enabler, called System 7.5 Update, incorporated enabler information for all Macs released hitherto.

32-bit enabler and Mode32

Those model-specific enablers aren't the only enablers. For years, owners of the Macintosh II, IIx, IIcx, and SE/30 were limited in the total amount of memory their Macs used — the upper limit was 8MB. The 32-Bit Enabler solves the problem, letting them use more than 8MB (up to 128MB, or more if your Mac can use virtual memory).

After you install this enabler (by dropping it into your System Folder), a new pane appears in the Memory control panel, offering you an on/off switch for "32-bit addressing." See Chapter 9 for much more detail on the two memory-related enablers, Apple's 32-Bit Enabler (for System 7.1 only) and Mode32 by Connectix.

THE SYSTEM UPDATE SERIES

As the Mac gets more complex, Apple's challenge — adding new features that work with all the *existing* features and models — becomes more and more difficult. As such, Apple programmers are spending more and more of their time fixing ("patching") their own system-software code.

They release these fixes in the form of *System Updates* — collections of debugged control panels or extensions, new enablers, faster printer drivers, and so on. Unfortunately, there's virtually no logic to these updates' names, their timing, or their distribution. Your only hope is to stay alert — subscribe to a Mac magazine, hang out in the Mac forums of the Internet or an online service, join a user group, or sign up for Apple's free e-mail software-update notation service. To do so, send an e-mail to *listproc@listproc.info.apple.com* and put the words *Subscribe Infoalley* and *Your Name* into the message area. (Type your actual name in place of *Your Name*. What you put into the subject line makes no difference.)

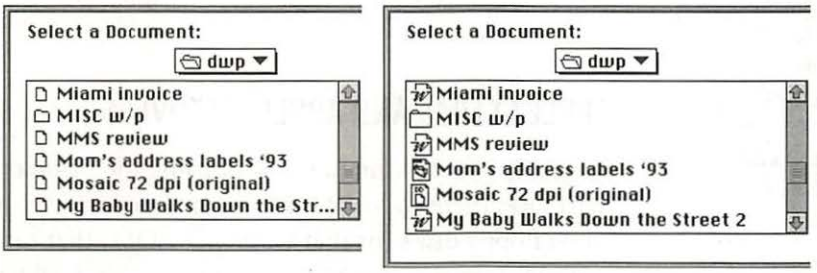
System Update 3.0

If you use System 7.1-point-anything, this most crucial file belongs in your System Folder. SU 3.0 incorporates all the bug fixes and enhancements introduced in its predecessors, Hardware System Updates 1.0 and 2.0.1, plus a huge number of other improvements.

Dozens of bugs die when you install SU 3.0 (each affects only certain models): Various mysterious crashes; the famous HFS disk (blinking question-mark) bug; creeping-System memory syndrome (where the System seems to use more and more memory all day); the About This Macintosh memory-bar-draws-too-long-and-grows-out-of-the-dialog-box problem; but Sound-control-panel-won't-remember-my-Playthru-CD-ROM-setting bug; and so on.

In addition, SU changes your Mac world in several interesting ways. For example, when you're viewing an Open File or Save File dialog box, you now get to see the *actual color icons* for your files and folders, instead of generic document and folder icons (see Figure 5-4).

Figure 5-4
The Open File dialog box — before (left) and after the installation of SU 3.0. Note the icons, the spacing of items, and, best of all, the fact that you can now read the entire names of the files (but only, for some reason, in certain programs).



Of course, all of these improvements were automatically rolled into System 7.5.

System 7.5 Update 1.0

This four-disk set, available for free from online services or user groups, turned any System 7.5 System folder into System 7.5.1; see Chapter 6 for a complete description of the new features. For now, feel free to hold a moment of silence to remember that this upgrade introduced the Picasso-esque Mac OS logo (see Figure 5-5) in place of the "Welcome to Macintosh" startup screen.



Figure 5-5
The new Mac OS logo of System 7.5.1. Kind of commercial, and yet nicely related to the original "happy Mac" logo that still appears when you first turn the machine on.

TRUE FACT

THE MOST USEFUL BUG EVER FIXED

When we read the technical documents that describe System Update 3.0, one particular item caught our interest. It seems that SU 3.0 fixes a long-standing System 7 bug that, frankly, we're sorry they fixed.

Try it for yourself (in any version of System 7 before 7.5). Get ready to save a new document for the first time, so that you're looking at the Save File dialog box.

Now then. You know, of course, that you can press ⌘-S instead of manually clicking the Save button, right?

But did it ever occur to you to try ⌘-*O*? Yes, a slinky little bug slipped through Apple's hands — the keystroke that usually means *Open* also triggers the *Save* box! Now you've got one all-purpose keyboard shortcut for both the Open File *and* Save File boxes.

Until you install SU 3.0, that is

System 7.5 Updates

For details on this confusing series of patches and update files, see Chapter 6.

THE SYSTEM FILE ITSELF

Mac users almost never think about the System file — that little suitcase icon inside the System folder. And why would they? The System file's primary duty is to serve the machine, not you. It's supposed to lurk behind the scenes, working with the machine's ROM chips (see Chapter 7) to manage windows, fonts, and menus.

But as savvy Mac users know, you can indeed interact with the System file. You can drag-and-drop keyboard layouts, Fkeys, or sound icons on top of it (or onto the System Folder icon), instantly installing them. Similarly, you can double-click the System file icon to open it into a window, where you can see all the keyboard layouts, sounds, Fkeys, and (up until System 7.1) even fonts you installed.
(For more on keyboard layouts, see Chapters 9 and 21.)

APPLE EXTRAS AND APPLE LEFTOVERS

Even if you install the full System using the Installer onto a hard disk, there's a lot of System software left over on those white floppy disks (or that black CD-ROM) that came with your Mac. Every new Mac also comes with a folder called Apple Extras on the hard drive.

In either case, the Apple Extras folder contains such miscellany as the PlainTalk software (see Chapter 23); Apple's telecommunications and fax software; MegaPhone, a program that allows you to use your Mac as a speakerphone; the Pointer Mode control panel; QuickTime movie-recording software (on Macs with video inputs; see Chapter 23); AppleScript miniprograms; and so on.

Adobe Acrobat Reader

Acrobat Reader is a program designed to let you read electronic manuals. The goal of the Acrobat file format was ambitious: to provide a way for anyone to read electronic instruction sheets that are fully formatted with fonts, colors, pictures, and so on — to be able to view them with exactly the layout and fonts the original designer had in mind. Unfortunately, Acrobat Reader is a monster, requiring lots of RAM, disk space, extensions, and even an installer.

Frankly, we were perfectly content reading our instructions in SimpleText documents.

MACINTOSH SECRET

GONE BUT NOT FORGOTTEN

In order to prevent this book from breaking that sales-killing 6,500-page limit, we've had to offload the descriptions of several older Apple Extras components onto the CD-ROM that comes with this book.

For the purposes of making sure they're mentioned in the index, however, so that you would find this sidebar when searching for them, here are the programs we've moved into the electronic attic on the CD: Apple File Exchange, Font/DA Mover, Apple Classic Fonts, Hardware System Update (HSU), Desk Accessory Mover (DAM).

Apple HD SC Setup (or Drive Setup)

Here's a useful utility program that Apple gives you free with your Mac. It's used to prepare a brand-new Apple hard drive for use. One reason most Mac users aren't familiar with this program is that *internal* Mac hard drives come preinitialized and loaded. And most *external* hard drives, purchased from non-Apple manufacturers, come with their *own* hard-drive formatting programs.

Still, Apple HD SC Setup and its successors, Drive Setup and Internal Drive Setup, are important. They can *partition* your hard drive, and even unlock several hidden megabytes of space on your hard disk! These techniques, and more, are described in Chapter 8.

Apple Video Player/FusionRecorder

If your Mac model has a *Video In* RCA jack on the back panel, it's capable of converting footage from your VCR or camcorder into a QuickTime movie. The software responsible for this *digitizing* is FusionRecorder or Apple Video Player, depending on your model. For complete instructions, see Chapter 23.

AppleScript

AppleScript is a programming language that lets you automate certain tasks on your Mac. As programming languages go, it's a simple one — but that's not to say that it's easy. Learning to program *any* language is a true hobby, not to be learned in one sitting.

Fortunately, your Apple Extras folder (System 7.5 and later) doesn't just contain the tools you need to write your own little programs (called *scripts*); it also contains several ready-to-run scripts. To run one of these little programs, you either double-click it or drop one of your own icons onto it. For example, the program called Add Alias to Apple Menu (in your Useful Scripts folder) is one of the latter kind: Drop a regular icon onto it, and — presto — after a moment, an alias of that icon appears in your menu.

For descriptions of the included ready-to-run scripts, see "Automated Tasks" in Chapter 3. For more on AppleScript, see Chapter 22.

Disk First Aid

Like Apple HD SC Setup, Disk First Aid can be extremely important. It's your first resort when a disk — hard or floppy — is acting up. You can think of Disk First Aid as an economic version of, say, Norton Utilities (a commercial disk-repair program). For details, and a few great Disk First Aid Secrets, see Chapter 8.

For PowerBooks Only

Today's Mac laptops come with a couple of special software bundles preinstalled on the hard drive. They'll be in folders called things such as Utilities, Applications, as well as the familiar Apple Extras folder. Inside, you'll find an assortment of useful information and utility programs like these:

- **PowerBook File Assistant** — This program is useful if you have two Macs — a PowerBook and a desktop machine at home, for example. File Assistant solves the age-old problem of updating the appropriate machine's documents before and after you leave on a trip. In other words, it can *synchronize* a folder (or set of folders) on each machine, making sure that the most-recent files from each Mac exist on both Macs.
- **Battery Recondition** — Use this program to fight the *memory effect* of NiCad batteries, the type used in most PowerBooks (and camcorders, by the way). The memory effect is a problem that develops if you repeatedly use up a battery only partway — and then recharge it. Eventually, the battery may come to believe that that halfway-discharged point is its *fully* discharged point. In other words, your battery now holds only half a charge.

  Clearly, the solution is (whenever possible) to use your battery until it's empty, and only then recharge it. Battery Recondition is a little program that does exactly that, automatically — it uses up the remaining juice in your battery, then recharges it completely.

- **Floppy Disk Maker or Disk Mounter** — When you buy a desktop Mac, you usually get a CD-ROM or a stack of floppy disks containing a backup of everything that came on the hard drive: the system software, for example, plus the Apple Extras described in this chapter. But when you get a CD-ROM-less PowerBook, you get no backup at all. Instead, you're supposed to make a backup onto your own stack of floppies using this program: Floppy Disk Maker. It's pretty idiot-proof; most new PowerBooks, in fact, automatically launch the Floppy Disk Maker program, throwing it up in front of your face every time you turn the computer on, until you break down and actually make the copies.

  For more information about floppy-disk-making programs, see Chapter 8.

- **Apple IR File Exchange** — Lucky, lucky PowerBook owners: the back panels of most recent models (such as the 5000, 190, and 1400 series) contain a tiny red plastic transmitter. It's for wireless infrared networking. You can transfer files, or play games, between two thus-equipped PowerBooks without connecting any cables between them. This software, IR File Exchange, is the program you launch when you want to begin such a transfer. (You can also equip a desktop Mac with wireless networking if you purchase for it a Farallon AirDock.)

- **Remote Access Client** — Remote Access, of course, is the Apple software that lets you dial into one Mac from another one anywhere in the world — provided both are equipped with modems. This free software, called Remote Access Client, is what you use to dial *in;* Apple makes you *buy* the software for the receiving end. (It's called Remote Access Personal Server.)

- **PC Card Modem Files** — Recent PowerBooks (such as the 500, 5000, 1400, and 190 series) let you install a modem simply by inserting a metal card — a *PC card* — about the size of your Visa card. This folder contains the extensions you need to install to make your PowerBook recognize such a modem.

Games

Fortunately, Apple finally saw the light: it began including some games, preinstalled, on each new Mac's hard drive. They've included **Eric's Solitaire Sampler, Spin Doctor,** and **Super Maze Wars.** We won't take up precious pages describing them — if you have time for games, you have time to figure these out for yourself — but we are happy that Apple has begun to realize that games sell computers.

LaserWriter Utility (Apple Printer Utility)

LaserWriter Utility (LU), like its descendant, Apple Printer Utility, is a collection of miscellaneous PostScript laser printer-management features, all stuck together into a single program. We've resisted the temptation to go into delicious detail here. Instead, you'll find our potent LaserWriter Utility Secrets in Chapter 25, where they rightfully belong. For now, we'll just point out that LU is the key to making your laser printer quit spewing the wasteful start-up page every time you switch it on.

Network Software Selector

This tiny application may get deposited into your Apple Extras folder if you install Open Transport, the new networking software (described in Chapter 32). As shown in Figure 5-6, it simply lets you switch your Mac between the older networking software — known as AppleTalk — and the newer one, Open Transport.

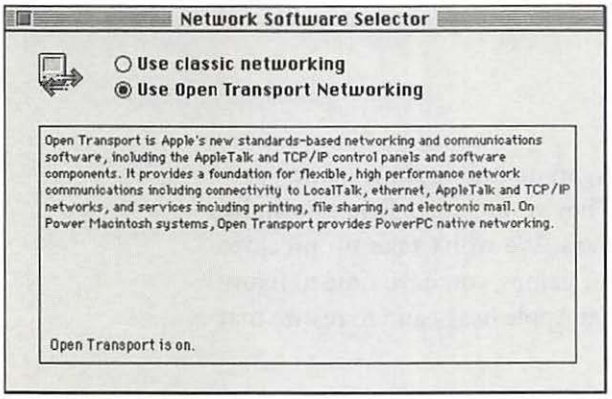
Of course, on any Mac with PCI slots — soon to be *all* Macs — Open Transport is the only networking software that runs. Something tells us, therefore, that this particular application isn't likely to be with us for very long.



We wanted to mention Network Software Selector, however, because it does something extremely weird and unorthodox — and yet effective. As free book winner Nick Fraser discovered, choosing the Open Transport option actually makes your MacTCP control panel (used for *AppleTalk*-based Internet connections) *invisible!* And when you switch back to AppleTalk, it makes your TCP/IP control panel (used for *Open Transport*-based Internet connections) invisible!

Well, that's one way to prevent you from getting confused — make control panels disappear before your eyes.

Figure 5-6
You'd think this kind of preference-setter would be a control panel, wouldn't you? But nooooooooo.



Text-to-Speech, English Speech Recognition

If you have a four-digit Mac model (a recent Performa, a Power Mac, and so on) or a Quadra AV model, your Mac can respond to spoken commands; the

software is called **English Speech Recognition.** And if you have System 7.5, your Mac — *any* model — can read text back to you; the software is called **Text To Speech.** Together, the speech technologies are known as PlainTalk.

PlainTalk software, however, doesn't get automatically installed. You have to use this separate Installer to do the deed. See Chapter 23 for more on speech features.

QuickDraw GX

This is the installer for QuickDraw GX. For details on this little used printing-and-fonts technology, see Chapter 24 and 25.

QuickTime Extras

This folder contains the QuickTime Musical Instruments extension, described in the previous chapter. Heaven knows why Apple ships it like this, alone in a separate folder.

Universal Access

CloseView and Easy Access are control panels designed to make using the Mac easier for the disabled. They're described in Chapter 4, and they're inside this folder.

WorldScript Install

As mentioned in Chapter 4, WorldScript is an Apple software kit that lets your Mac word process in non-English alphabet sets, including ones that go vertically or from right to left across the screen. Installing this software will do nothing for you unless you have purchased a language kit from Apple (Japanese, Korean, and so on).

THE INSTALLER ("INSTALL MAC OS" PROGRAM)

The Installer is the program that gives birth to a System Folder — an extremely important program, in other words. It loads your Mac with all the system software described in the previous chapters. The Installer figures out which pieces of software are required to operate your particular Macintosh model, and places each required file where it belongs. Every Mac — except Performas (see the next section) — come with this Installer.

If you're like most people, you bought your Mac with the system software already installed. Therefore, you may not have had to mess with the Installer. But everyone encounters the Installer at some point. You may use it for one of the following reasons:

- To eliminate corruptions and inefficiencies in your current System Folder by replacing it with a fresh one
- To install system software onto a backup cartridge or hard drive
- To create a floppy disk that can be used as a startup disk (systems before 7.5)
- To replace your current system software with a newer version
- To create a leaner System Folder to conserve dwindling hard drive space and memory

As a matter of fact, we think that you should run the Installer every few months as a disk-health measure, replacing your older (and possibly corrupted) System file with a fresh, clean, untarnished version. Most software companies use a program similar to Apple's Installer to install *regular* (non-System) software onto your disk.

You'll find the Installer either on a CD-ROM (if your Mac came with a built-in CD-ROM) or (on older Macs) on a white floppy disk called *Install* or *Install Me First.*

How to use the Installer

In the olden days, you could install the system just by dragging the files you need from the floppy disks onto your hard drive. But using the Installer is better and safer for the following reasons:

- The Mac looks for the various pieces of system software in specific locations within the System Folder. The Installer ensures that everything will wind up where it belongs (control panels in the Control Panels folder, and so on).
- Not every Mac model requires *every* piece of system software. The Installer copies only the files needed for your machine. You don't clutter up your hard drive with extensions and control panels you'll never use.
- If you're upgrading from one System version to another, the Installer can intelligently build a new System Folder around your old one, preserving whichever fonts, control panels, sounds, and extensions you added (although we don't recommend this technique, as we'll explain later).

- The Installer eliminates the need to drag and copy dozens of files. It prompts you to insert the System disks one at a time and takes care of the copying all by itself.
- With the Installer, you can *customize* an installation to create a system perfectly suited to your needs. If you don't have a laser printer, for example, you can certainly live without the LaserWriter printer driver taking up 219K of your hard disk. The Installer lets you choose which optional items get placed into your System Folder.
- The software to be installed has generally been compressed to save disk space. The Installer automatically decompresses whatever you're installing, sometimes even rejoining pieces that had to be split apart. You can't do that manually.

Start up without extensions

To perform an installation: first, start the Mac with extensions off. Indeed, we strongly believe in turning extensions off before installing *any* software. Apple and experience both demonstrate clearly that software installers, when affected by the code already in memory (having been loaded by extensions at startup), can introduce corruptions into your system. Therefore:

- If your System software came on floppies, insert the Install Me First (or, on older systems, Install 1) disk.
- On recent Macs, just insert your System CD-ROM while the computer is turned off, then start the machine up while pressing Shift. Your System CD will successfully boot the Mac even without the Apple CD-ROM extensions.
- If you have an older Mac that came with System CD, you may have to press the C key during startup to make the Mac boot from the CD.

In any case, you should now see an icon called something like System Installer or Install Mac OS. Double-click it (see Figure 5-7).

Figure 5-7
The Installer, as it may appear on the Installer disk.



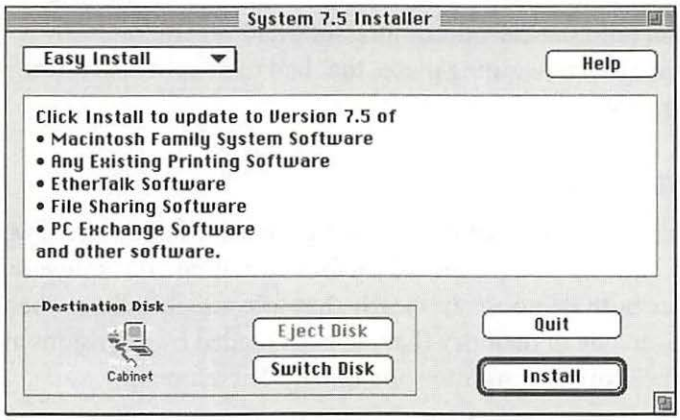
Running the installer

If you're installing System 7.6 or later, you'll be prompted to check your hard drive before proceeding (see "System-Switching Secrets" later in this chapter). Regardless of your system version, you'll eventually see the Installer's title screen; click OK. Then you must specify which disk you want to install a

System Folder onto. (In Systems before 7.6, there's a Switch Disk button for this purpose.)

Now you're faced with a decision (see Figure 5-8): You can perform the Easy Install or choose Custom Install to configure your own installation.

Figure 5-8
Click Install to begin Apple's Easy Install. If you want to install only certain items, choose Custom Install from the upper-left pop-up menu. If you have the older-style Installer, click the Customize button instead.



Clicking the Install button (or simply hitting Return) starts the Easy Install. Our advice: *Don't do it.*

The Easy Install copies onto your hard drive all the control panels, a full selection of fonts, the entire arsenal of printer drivers (even if you only own one printer), and the software needed to connect your Mac to a network. A System Folder created with the Easy Install command fills up to 85MB of your hard drive, depending on which system version you're installing.

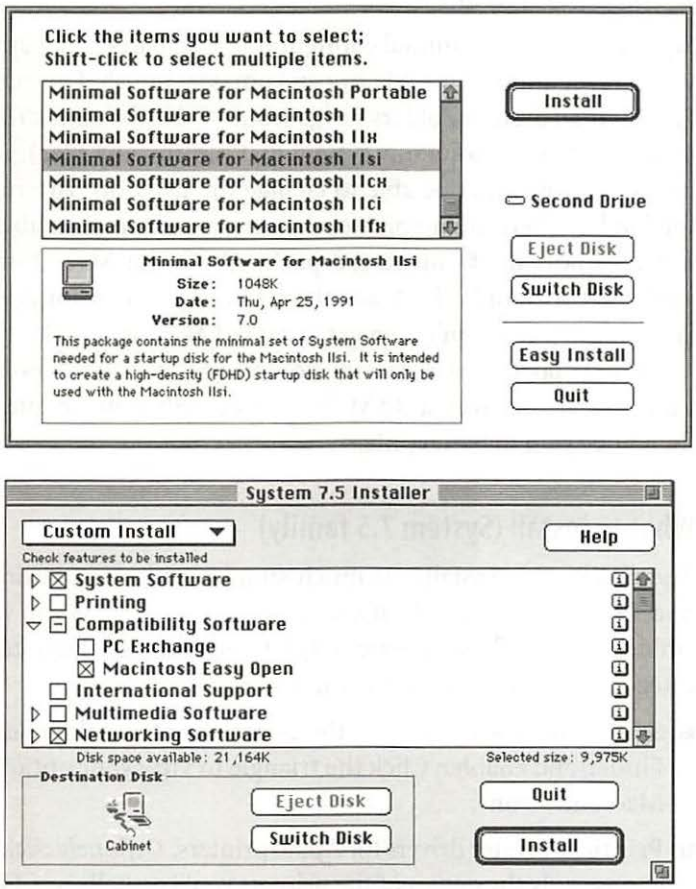
Your cheerful authors recommend, therefore, that you generally opt for the Custom installation. You're now allowed to choose only the items that do you any good (see Figure 5-9), using the following discussion as your guide. You can save plenty of installation time and clutter on your disk by selecting only what you need.

What to install (System 7 and 7.1)

The scrollable field within the Customize window displays the full range of system software modules. In the System 7 and 7.1 Installer, there are five categories of software:

- A standard set of system software that runs almost any Mac model
- Printer drivers for specific Apple printers
- Networking and file-sharing software
- The standard system software for your specific Mac model
- A Minimal Software configuration

Figure 5-9
The old Installer's Customize window is shown at top. In this window, press the Shift key to select only the items you want from the scrolling list. At bottom: the newer Installer, which comes with (for example) System 7.5. It's superior in several ways: You can resize the window; you can switch back to the Finder without quitting (to make more room on your hard drive, for example); you can click the little i button to get a description of something; you have much more control over what gets installed, even down to the individual control panel, because of the Finder-style triangle buttons; and the check boxes make it clear exactly what will get installed.



Click any option to display a brief description of the configuration and see its total size. Select the option you want and then click Install to begin the installation. Usually, however, you'll want to press the *Shift* key as you select items in this list. That's the only way to select more than one item for installation.

Software for Any Macintosh

Don't use this option. It copies dozens of unnecessary files onto your disk, taking up time, disk space, and your psychic energy. For example, this option installs Brightness, which only works on a Classic; PowerBook control panels, which are meaningless on a desktop Mac; and so on.

We can think of exactly one instance where this option is useful: if you're installing onto a portable hard drive that you plan to use as a startup disk with a whole bunch of different Mac models.

The minimal system

Squeezed into the minimal configuration is a bare-bones system — as lean as you can get and still be able to run your Macintosh. For example, the System 7.1 minimal System Folders range from 974K (for a Mac Classic-only installation) to 1,300K (for a tiny system that can run any Mac). You get no control panels, so you won't be able to change the Desktop pattern or alter views in the Finder. There are no printer drivers, so you won't be able to print. There's *nothing* under the menu except the About this Macintosh command. And you're left with only the Mac's three built-in system fonts: Geneva, Monaco, and Chicago. You don't even get a colored menu logo!

This stripped-down system, however, is ideal for PowerBook users who want to start up from a RAM disk (as described in Chapter 14) in exchange for a huge gain in battery life.

What to install (System 7.5 family)

The newer-style Installer is much simpler and more flexible than the older one. Its check boxes make it exactly clear which items you will install, and its "folder triangles" (see Figure 5-9) let you control which items come in each category. Here, in fact, are the categories:

- **System Software:** Refers to the essential System folder heart — System, Finder, and enabler. Click the triangle to view your options (minimal, any Mac, and so on).
- **Printing:** Printer drivers for Apple printers. *Definitely* click the triangle, and choose only the names of the printers you'll actually use. (You can always run the Installer again later if you want to connect to an additional printer.)

- **Compatibility Software:** Macintosh Easy Open and PC Exchange (described in Chapter 4).
- **International Support:** Control panels for working in languages other than English.
- **Multimedia Software:** QuickTime movie extension and related files.
- **Networking Software:** For File Sharing. If your Mac isn't connected to a network, and you don't have an ISP Internet account (see Chapter 28), you don't need all this stuff.
- **Utility Software:** This includes nonessential items such as the Apple Guide, AppleScript, and ColorSync. You should install AppleScript; many programs rely on it to automate certain tasks. Apple Guide is dispensable, though, if you don't think you'll need online coaching. And you can forego ColorSync if you don't require monitor-to-printer color matching.
- **Fonts:** The basic set of True Type fonts that come with every Mac. If you're upgrading your system and you've purchased and installed your own fonts, you may not want to install these.
- **Apple Menu Items:** Installs the full complement of items that appear by default under the menu, but you can pick and choose among the available items. Here's your chance to eliminate the Jigsaw Puzzle before it gets installed on your Mac.
- **Control Panels:** The standard set of System 7.5 control panels.

Your System 7.5 disks, as you've probably noticed, also offer separate Installers for PowerTalk and QuickDraw GX. See Chapter 32 for more on PowerTalk and Chapter 25 for details on GX. For now, the point is that most people should *not* install these resource-hungry software features.

Even System 7.5 alone, however, takes up more RAM and disk space than 7.1. On a typical Power Mac, the Easy Install of System 7.5.5 gobbles up 33MB of hard drive space — that's *without* PowerTalk or QuickDraw GX. Items such as Apple Guide, the QuickTime extensions, and AppleScript-related files bloat the System Folder by at least another 6MB.

What to install (System 7.6 family)

The concept of System 7.6's installation is the same as that of the System 7.5 family — you just have far more individual packages of software to choose from. For example, you can install America Online (see Chapter 28), Open Doc (see Chapter 16), Cyberdog (see Chapter 28), QuickDraw 3D (see Chapter 20), Apple Telecom software (see Chapter 23), and so on. Let the size of your hard drive be your guide.

INSTALLER SECRETS



The golden troubleshooting rule: A clean install

Here's one of the most important Secrets in this whole book: There's a difference between installing System software and performing a *clean install.*

When you run the Installer under normal circumstances, it actually *updates* whichever System you already have on your disk. This is a great feature; suppose that you're using System 7.1 and you customize it to the hilt with desk accessories, control panels, and so on. When you upgrade to System 7.5, the Installer thoughtfully preserves all of your customizations: fonts, sounds, DAs, extensions, and so on. (Even if you reinstall the *same* version of the System, this same process takes place.)

A potential problem with this technique lurks, however. If there's some dormant corruption or problem with the existing System file, it's still there when the file is upgraded to the new version of the System. (That's why you sometimes hear of people who have reinstalled the System for the purpose of eliminating some mysterious crash they've been having — and it *doesn't work.* They're just building one System file onto an existing bad one.)

To get around this, you can force the Installer to place a *completely new* System Folder onto your disk. It won't just update the existing System; it creates a completely clean, untarnished, factory-fresh one. This process is called "doing a clean reinstall."

System 7.5 family: At the screen containing the Install button, press ⌘-Shift-K. You'll be asked whether you want simply to update your existing System Folder (a normal install) or to install a completely new one (a *clean install*), archiving your old System Folder. Make your selection and continue using the Installer normally. When the installation is over, your original System Folder will have been named *Previous System Folder,* and the new System Folder will be in place.

System 7.6 family: No need to press the cryptic keystroke, as in System 7.5. Instead, after you've clicked the Start button on the Software Installations screen, click the Options button on the regular Installer screen. You'll be offered the "Create additional System folder" option. (If you click Customize before clicking the Options button, you'll also get the chance to scan the hard drive for damage before installing.)

All previous systems, and Performas: Open your existing System Folder. Drag the Finder into any other folder — put it in the Preferences folder, for example. Now rename the System Folder. (Call it "Old System Folder," or something.)

Then run the Installer (non-Performas), or the Restore System Software program (if you have a recent Performa CD), or the Apple Restore program (if you

have an older Performa and your stack of backup floppies). Regardless, your installer will create a completely new System Folder because it can't find an old one to update. (A System Folder without a Finder isn't a System Folder at all!)

Finishing up: When the Installer is finished — regardless of your System version — open up the old and new System Folders in side-by-side, list-view windows. Carefully compare them. One by one, drag the stuff you've added in the course of using your Mac from your old System Folder into your new one — especially fonts, menu items, extensions, control panels, preferences, and software-company folders (Claris, Microsoft, and so on) that aren't already in your new System Folder.

(Troubleshooters' note: Of course, to be *really* safe, you should *reinstall* those customized items from their original disks instead, in case *they* contain whatever corruption has been plaguing you.)

Use your new System Folder for a few days, to make sure that everything works well. Finally, trash the old System Folder.

A clean reinstall of System software is almost guaranteed to improve the performance and reliability of your Mac.

The Un-Installer

You can use the Installer to *remove* printing and networking software from your current system if you no longer need it.

System 7.5 Installer: Choose Custom Remove from the upper-left pop-up menu.

Pre-System 7.5 Installer: First click the Customize button to open the Customize window. Then hold down the Option key; the Install button turns into a Remove button.

With the Option key still depressed, scroll through the configuration options. Items that can't be removed are dimmed. Select what you'd like to remove from among the undimmed items and click the Remove button. The selected items will be deleted from your System.

Why you're getting all that extra junk



It happens to the best of us: Using the Installer's Custom Install screen, you carefully select only the System elements you want to install. Yet when you examine the resulting System Folder, you discover tons of useless files you didn't ask for! It's almost as though the Installer went ahead and did an Easy Install despite your specifications.

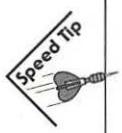
Actually, that's sometimes exactly what it does. There's an Installer bug that gives it a "memory effect" not unlike the one in PowerBook batteries: If you ever installed a previous System onto this same disk, that Installer left behind a little scrap of code indicating what *kind* of installation you did. Any subsequent Installer will indeed *ignore* your directions and obey, instead, that little

instruction. If, therefore, you once installed System 7.1 using an Easy Install, the 7.5 Installer will again perform an Easy Install, regardless of the items you select in its Custom Install screen!

The workaround is simple: Do a clean reinstall, as described in the first Installer Secret, thus forcing the Installer to dodge the little scrap of previous Installer code.

The floppy-free, hassle-free install

As Apple's system software grows ever more humongous, it will arrive into your life aboard ever larger stacks of floppy disks. Until everybody has a CD-ROM drive and can thus install new system software conveniently from a single disk, installing new system software will become an ever more painful process.



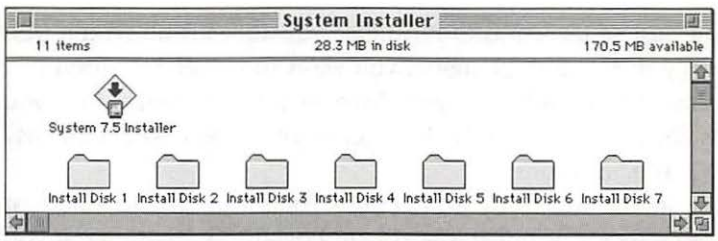
Here's a way to eliminate the hassle. All that you need is a disk that's big enough to hold all of those installation floppies' contents — a SyQuest cartridge or Zip disk, say.

Copy all of the floppies into a single folder called, say, System Installer. (Each floppy, of course, becomes a folder when it's dragged to your cartridge.) Open the first installation disk and drag the Installer icon itself, plus the Installer Script, into the System Installer disk, floating loose among the floppy-disk folders. The setup should look something like Figure 5-10.

Now, when you double-click the Installer, it works beautifully but *won't* request that you insert any floppies. As an added bonus, you can even install System software over a network with this method by copying the disks to a network volume or sharing the installation folder on your drive.

This technique generally works for any software with a multiple-disk installation, by the way — not just Apple's.

Figure 5-10
How to end your floppy-shuffling days forever — and cut your System-installing time by three-quarters.



SWITCHING BETWEEN SYSTEM VERSIONS

Whenever you switch major System versions — from 7.1 to 7.6, for example — compatibility is an issue. Older programs (especially games, ATM, fax/modem software, Suitcase, and After Dark) may not run until you get upgraded versions.

You can eat your cake and have it, too. As long as your Mac doesn't *require* the very latest system, you can install *both* Systems and switch between them as needed. Here are several methods.

Two different disks

The easiest way to set up a two-System environment is to install one system on each of two drives (your hard drive and a SyQuest or Zip disk, for example).

To switch from one to the other, do this:

1. Open the Startup Disk control panel.
2. Click the icon for the disk that contains the System you want to switch to.
3. Restart the Mac.

Two different disks (occasional method)

Suppose you almost always use System 7.5.3, but occasionally want to run System 7.6 (or vice-versa). If you have two hard disks, try this. Install System 7.6 on the hard drive built into your Mac. Install System 7.5.3 on the external drive.

On the day you want to start up with System 7.5.3, switch on the computer. Press the ⌘, Option, Shift, and Delete keys continuously. The Mac will *ignore* the internal hard drive, System 7.6 and all. In fact, the drive's icon won't even show up on the Desktop. Instead, the Mac will boot from the first System Folder it finds — in this case, System 7.5.3 on the external drive.

TRUE FACT

THE SECRET MESSAGE IN THE SYSTEM FILE

Nobody doubts that Apple's renowned system-software programmers have a sense of humor. But here's how you can prove it to yourself.

Launch Microsoft Word. While pressing the Shift key, choose Open from the File menu. Navigate to your System Folder and open the *System file* itself.

If you're using System 6, there's a copyright notice and only one other intelligible sentence: *"Help! Help! We're being held prisoner in a system software factory!"*

The joke was good enough to live on. If you open the System file for System 7.0 through 7.1 in this manner, the sentence says, "Help! Help! We're *still* being held prisoner in a system software factory!" And in System 7.5, it changed again, to "Help! Help! He's STILL being held prisoner in a system software factory!"

This story's happy conclusion lurks in System 7.6: "Mercenaries hit the factory and freed the prisoners," Hurrah!

Interestingly, if you try this trick in System 7.5, you can scroll down into the document for an extremely interesting set of additional credits. (We'd give almost anything to know precisely what services were provided by Domestic Partner Amy, the Underpaid Process Dude, or The Flake.)



That much we've heard before. Here's our added little spin on this Secret: You don't have to go without your internal hard drive all day after using this trick. After your Mac has successfully started up from the external drive, launch SCSI Probe, a control panel we included with this book. Click its Mount button. Presto! Your internal drive pops right back onto the screen so that you can access its contents.

One disk

Conventional wisdom has it that you should never put two System Folders onto a single hard disk, or you're certain to get crashes. Actually, that's passé; starting with System 7, you have nothing to fear. Go ahead and keep two System Folders on one disk. Only one of them — *the one you most recently opened and closed* — will display the telltale Macintosh icon on its folder (and all the special folder icons inside). The other System Folder will be officially disabled.

The one functional System Folder is, in programmer parlance, the *blessed* folder — the one that will be in charge the next time you start up the Mac.

SYSTEM-SWITCHING SECRETS

System-disk switching on the fly

If you do much switching between start-up disks — one with System 7.1 and one with System 7.6, for example — then the routine of opening the Control Panels folder, double-clicking Startup Disk, closing Startup Disk, and restarting the Mac gets tired fast.



Consider investing in Conflict Catcher or Now Utilities (special versions are included with this book). Each offers a quick and convenient way to switch start-up disks *at start-up time.* Just hold down the spacebar; when the Conflict Catcher (or Now Startup Manager) window appears, choose a disk from the Startup Disk pop-up menu. Your Mac will automatically restart with the new start-up disk you specified. (If your Conflict Catcher screen doesn't show the start-up-disk menu, click the Prefs button and then turn on Show Startup Disk Menu.)

Three steps to trouble-free System folder upgrading

When you migrate from one system version to another, take 15 minutes to perform the following three safety steps. (Indeed, System 7.6's Installer *makes*

you take these steps; see Figure 5-11.) Those 15 minutes may save hours of headaches down the line — ask anyone who tried to install System 7.5 Update 2.0 (in other words, System 7.5.3) *without* taking these steps first.

Figure 5-11
System 7.6's Install Mac OS program makes sure you follow Apple's guidelines to a safe System upgrade. It walks you through the process of (1) reading the Read Me files, (2) updating your hard-disk drivers, (3) checking your hard drive for damage with Disk First Aid, and finally (4) proceeding to the familiar Installer. As you complete each step, a green check mark appears — and if you skip steps, you'll be sternly warned that you're not truly ready to proceed with the installation.



- Whenever you upgrade to a new system, first check out your hard drive using Disk First Aid (on your Disk Tools disk or System CD) or a commercial hard-drive doctor program like MacTools or Norton Utilities. This step takes care of any lurking corruptions or problems that may get magnified under the new system.
- A *hard-disk driver* is an invisible set of software that tells your Mac how to control your particular brand and model of hard drive. It's some of the most important software on your Mac.

  A driver that worked fine under System 7 *won't* necessarily work fine under System 7.5 or 7.6, however. This is one of the most under-publicized aspects of migrating to a new System: You *must* update the hard-disk driver!

  Updating the driver, fortunately, doesn't mean that you have to erase the entire disk. Just run whichever drive-preparation program came with your new system software — Drive Setup, Apple HD SC Setup, or whatever. (Or, if

DIALOGUE
Compatibility Checker

JS: David, we should describe the Compatibility Checker.

DP: No, we shouldn't.

JS: But it's free from Apple. We should at least mention it.

DP: No, we shouldn't.

JS: What is your problem? The Compatibility Checker is a clever and helpful program that comes with your System 7 or 7.5 Upgrade Kit. It actually goes through the stuff on your hard drive like some kind of personal assistant and automatically reports back to you on what stuff isn't compatible with the new System software you're about to install.

DP: Did you run it?

JS: What?

DP: Have you actually tried it?

JS: Well, I . . . No, I mean — well, I didn't have to. My Mac came with System 7.5 already installed. So for me, it wasn't a matter of choosing whether or not to upgrade from System 7.

DP: Well, it's terrible. The Compatibility Checker winds up reporting that nearly everything on your hard drive is incompatible!

JS: Really?!

you have a commercial hard-disk formatting program, such as Drive7 or Hard Disk ToolKit, use the latest version of that instead.) But *do it.* If you don't, you risk erratic and unpleasant system crashes and hangs once you're running the new system. See Chapter 8 for details.

- Finally, do a *clean install* of your new system version, as described earlier in the Installer Secrets.

THE GREAT INVISIBLE FILES OF SYSTEM 7

The Mac, in its efforts to be user-friendly, hides all kinds of technical goings-on from you. If you use a program like ResEdit, however, you can peek at all the files the Mac chooses to make invisible. You'll also spy these folders if you examine your own hard drive via network, while seated at another Mac. (Actually, you can also sneak a peek at these files using the Find File program — while pressing Option, choose Visibility from the search-criteria pop-up menu and set the second pop-up menu to "invisible.")

- **Shutdown Check:** You've undoubtedly seen the "Your Macintosh was shut down improperly" message when you restart after a crash. (Then again, if you take our advice and turn off the "warn me" checkbox in the General Controls control panel, you'll never see that message again.) Anyway, when the shutdown doesn't go as planned — that is, when the computer crashes — the Mac doesn't get a chance to delete this little invisible file as it usually does during a proper shutdown. The next time you start up, the presence of the Shutdown Check file triggers the "shut down improperly" dialog box on the next startup.
- **VM Swap File:** Virtual memory, as you'll read in Chapter 9, works by setting aside a large chunk of hard drive space to use as temporary memory. The chunk of space is actually a file — called a *swap file.* This is it. It goes away if you turn off virtual memory.

- **Desktop DB:** The Desktop BNDL file. It's where the Mac stores the *bundles* — the relationship between a certain program or document and its icon. See Chapter 1 for details.
- **Desktop DF:** Stands for Desktop Files. This is the database that records what files you've got and what the icons look like.
- **Move&Rename:** You'll only see this mysterious invisible folder if your Mac has ever been networked (connected to other Macs). It's used by System 7's File Sharing feature when somebody at a remote Mac is trying to move or rename a file on your disk.
- **Icon:** If you change the icon of a disk or folder, as described in Chapter 1, the Mac must store your pasted-in icon graphic *somewhere.* (When you paste a new icon into a *file,* the graphic is stored in the Desktop file. But if you replace the icon of a *disk or folder,* the Mac creates the Icon file.) If you trash this invisible file, your disk or folder's icon will be in an iconic no-man's land, having neither its original nor its replacement icon . . . so it's best to leave this, and all invisible icons, alone.
- **Trash:** The Trash in System 7 and later doesn't just *act* like a folder — it *is* one. That's why you can drop things onto it, double-click it to view it as a window, and so on.
- **Desktop:** The Desktop folder holds any icons that, under System 7 and later, have been placed out on the Desktop outside of any window. Keep this in mind when you try to access your Mac over a network — the very icons you put out on the Desktop so they'd be *easy* to find are, when viewed over the network, hidden away in the Desktop folder.
- **Temporary Items:** The Temporary Items folder is a locked, invisible folder that lives permanently at the root level of your hard drive. Applications are allowed to use this hidden folder for any purpose; generally, programmers instruct applications to use the Temporary Items folder to store scratch files or other

DP: Any time there's a product or program whose status Apple didn't know for sure, the Checker reports that it needs looking into. And it suggests that you contact the manufacturer. I actually know people who didn't upgrade to System 7.5 because the Compatibility Checker scared them so much, listing almost every piece of software they owned as being a trouble spot.

JS: So, what are you supposed to do? Throw it away?

DP: I would.

JS: Oh, great. Now you're telling people to throw away perfectly good software.

DP: Besides, it's been a long time since System 7.5 came out. It's not as though software companies haven't had time to make their stuff compatible. I think it's fair to say that 99 percent of the programs being sold today are 7.5-compatible.

JS: Being sold, sure. But what about all the great software people already have? That they've already paid for? What about all the great old games that aren't compatible with System 7.5?

DP: Well, for their benefit, I guess it's a good thing we wrote a section on switching back and forth between two System versions, eh?

JS: Darned right.

temporary data. QuarkXPress, for example, drops an XPress Temp file in this folder whenever you have a Quark document open. Microsoft Word also uses this folder as a temporary dumping ground. In the days of Word 5, these files were called WordTemp-1, WordTemp-2, and so on; Word 6, tags them with bizarre names such as <<dftmpAIBDBENKkkkkkk.>> (Our theory behind the name: This is the sound Word 6 users make when they first encounter the program's bloated interface.)

Incidentally, *you* are absolutely forbidden to name a folder Temporary Items. No matter where you create a new folder — on the Desktop, on the root level of your hard drive, or anywhere else — you can't name it Temporary Items. If you try, a dialog box will ask you to choose another name. (Some programs create a Temporary Items folder inside the Preferences folder, but it's not really called Temporary Items. Look closely — there's an extra space at the end of the name; that's the only way the Mac will accept it.)

Ever wonder about the strange Rescued Items folder that periodically appears in the Trash? Usually this folder shows up when you restart your Mac after a crash or freeze. It contains all the files that were in the Temporary Items folder when you crashed. When you finish using a program and use the Quit command, the program is supposed to neatly purge the Temporary Items folder. But if a program quits unexpectedly, or your system crashes, the program never gets a chance to empty the Temporary Items folder. So, when you restart and your Mac notices that you still have files left over in the Temporary Items folder, the System automatically creates a new Rescued Items folder in the Trash and moves the files there; it's the Mac's last-ditch effort to salvage your unsaved work. Every now and then, you can actually recover some of your work by poking into the rescued temp files.

CASE HISTORY

TEMPORARY ITEMS AND THE CASE OF THE VANISHING FILE

If you're using System 7.0 or 7.1, the Temporary Items folder is easy to find—too easy, in fact; it shows up in most Open and Save dialog boxes, just like any other folder. And this can get you into serious trouble. Consider this true story.

A graphic designer was working in Adobe Illustrator. When he was done with the file he was creating, he hit Save, named the file and looked for a place to store it. While in the Save dialog box, he noticed the Temporary Items folder on his hard drive. Not realizing that this was an invisible folder — and not one that he had created — he thought, "I'm only going to need this file for about a week, so I'll put it in this Temporary Items folder." Sure enough, when he went to retrieve the file later that day, he couldn't find it; it was still in the Temporary Items folder, which was completely invisible in the Finder. He frantically opened and closed folder after folder, trying to track down the Temporary Items folder.

Just when he was almost convinced that he was the victim of an insidious file-eating virus, when he figured out what happened. He was able to rescue his work — by relaunching Illustrator and using the Open command, which once again revealed the otherwise invisible Temporary Items folder.

Had he restarted his Mac, of course, the file would have ended up in the Trash, in the Rescued Items folder. You have to wonder how many files have inexplicably disappeared over the years as a result of users innocently placing files in the Temporary Items folder, unaware that they might never see them again.

Chapter 6

The System Software Museum

IN THIS CHAPTER:

- Every system version Apple ever released
- The differences between System 7.1 and 7.0.1
- The differences between 7.5, 7.5.1, 7.5.2, 7.5.3, 7.5.5, 7.6, and so on
- The SECRETS time line
- Mac OS 8 — what's left of it — explained
- Guide to AppleSpeak

In a little more than a decade, Apple has served up no fewer than 32 different versions of the Mac operating system. We will attempt in this chapter to guide you on a never-before-attempted journey: We will describe virtually all these permutations of the Mac's system software, from the short-lived System 1.0 to the sprawling, sophisticated System 7.6. Beyond that we'll show you exactly what to expect from Apple's as-yet-unreleased system updates and the still-evolving Mac OS 8.

THE SYSTEM SOFTWARE MUSEUM

Why create a museum of the Mac's system software? For one thing, exploring the nitty-gritty of system compatibility may prove valuable to Mac troubleshooters. It can be pretty handy to know, for example, that in a pinch you can run an LC II with System 6.0.8, but not 6.0.7. Or that a Quadra 630 can

run System 7.1.2P, but not the nearly identical System 7.1.2. Furthermore, the rash of System 7 varieties has boggled even us. Quick, without looking: What's the difference between versions 7.1.1, 7.1.2, 7.1.3, and 7.5? And what on Earth was System 7.5.3 Revision 2.1?

On a more philosophical level, this retrospective provides a stunning overview of just how far the Mac has come since its introduction. As we dug up this information, we were continually surprised to learn how many of the basic Mac interface features that we take for granted *weren't* around when we bought our first Macs.

For example, did you know that in the original Finder, you couldn't drag a disk into the Trash to eject it? That folders were nonexistent in Open and Save dialog boxes? That the original Calculator buttons were in a completely different order? How quickly we forget.

Join us now as we stroll down the corridors of the System Software Museum. Watch as the Mac operating system evolves before your very eyes.

System 1.0

The original Mac operating system was tiny by today's standards — a total of about 216K, including the Finder (46K) and a solitary printer driver, the Imagewriter file. (Note the lowercase *w*. The ImageWriter designation came along later.) Desk accessories, such as the Alarm Clock and Calculator, were installed in the System file, which was a whopping 142K, with fonts accounting for about 86K.

If you opened the System Folder on an original Mac 128K, you saw only six files — all with identical Finderlike Mac icons (see Figure 6-1).

The original system also included a separate tutorial disk, called Mousing Around, to help new users get acquainted with using the mouse. Remember, the whole concept of a mouse as a pointing device was new to the general public in 1984. Mousing Around (the forerunner of Macintosh Basics) let you play connect-the-dots and plunk out tunes on a tiny on-screen keyboard to hone your mousing skills (see Figure 6-2). We have one dark secret to tell you about Mousing Around, though — it was incompatible with the Finder! Apple actually had to ship a different version of the System and Finder on the Mousing Around disk. If you tried to use your Mac using *that* copy of the System, your Mac crashed!



Figure 6-1
The entire contents of the System Folder — all 216K of it — as it appeared in 1984.

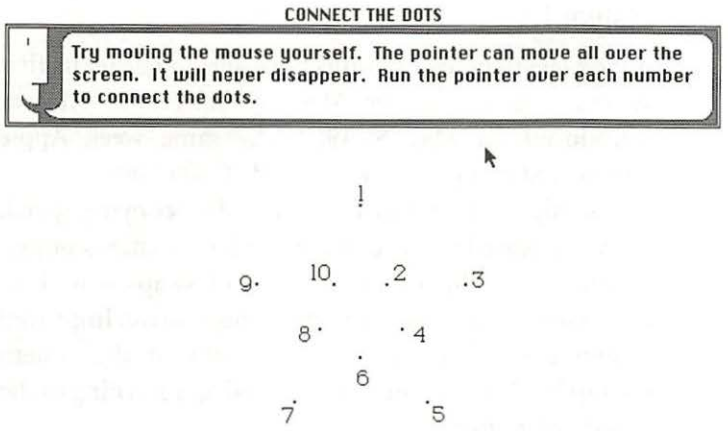


Figure 6-2
Hey, remember this? Mousing Around was mouse training at its most basic — and it came with all the early Macs.

TRUE FACT

THE *MAC SECRETS* SYSTEM SOFTWARE QUIZ

Think you've got Apple's never-ending parade of system software updates and variations all figured out? Then test your knowledge of Mac OS trivia with our System Software Quiz. If you know the answers to *all* these questions, you definitely need to get out of the house more. (Answers below.)

1. Name the only three desktop Macs ever made that can run System 7.5.2.
2. Which one of these is not a real part of System 7.5 Update 1.0? Find File 1.1.1, Macintosh Easy Open 1.1.1, WindowShade 1.3.1, Shared Library Manager 1.1.2.
3. Name the only Macintosh that can run 7.5.1, but not System 7.5 or 7.5.2.
4. Explain, in 20 words or less, the difference between System 7.1.2P and System 7.1P2.
5. Compare and contrast Stickies versions 1.0 and 1.0.1.
6. Of the following three Power Macs — the 6100/60, 6100/66, 7100/66 — only one requires an enabler to run System 7.5. Which one?
7. Name the only one-piece Mac that can run System 7.0.1, but not System 7.0.
8. What's the minimum version of System 6 required to run a Mac Classic?
9. Which of these operating systems cannot be run on a Mac Plus? System 7 Pro, System 7.5, System 7.5.1.
10. What's the difference between "System 7.5.3 System 7.5 Update 2.0" and "System 7.5 Version 7.5.3?"

Answers: (1) Power Mac 7200, 8500, 9500. (2) Shared Library Manager 1.1.2. (3) LC 5200/75. (4) 7.1P2 was released only on Performa models; 7.1.2P was used on 630 Quadras, LCs, and Performas. (5) Version 1.0.1 corrected a bug that caused a crash if Stickies was launched while notes were collapsed. (6) 6100/66. (7) Classic II. (8) System 6.0.7. (9) System 7 Pro. (10) They're the same, but the former refers to the upgrade to 7.5.3, while the latter is the official name of a new copy of 7.5.3.

THE OFFICIAL SECRETS MACINTOSH TIME LINE

4/76 Steve Wozniak and Steve Jobs, age 21 and 26, finish work on a preassembled computer circuit board. It has no keyboard, case, sound, or graphics. They call it the Apple I. On April Fool's Day, they form the Apple Computer Company.

5/76 David Pogue and Joseph Schorr, in Ohio and New York, respectively, graduate from seventh grade.

7/76 The Apple I board goes on sale to hobbyists for $666.66.

1/84 The Macintosh 128K is introduced with System 1.0. Price: $2,500.

2/84 Navy Captain Bruce McCandless and Army Lt. Colonel Robert Stewart become the first humans to fly free of a spacecraft during a Space Shuttle mission.

5/84 System 1.1 is released.

9/84 The Mac 512K is introduced with a list price of $3,200. At the same time, the price of the Mac 128K drops to $2,200.

11/84 Ronald Reagan is elected to a second term as President of the United States.

1/85 Apple announces the first LaserWriter printer. Price: $7,000.

3/85 Construction of the MX missile is approved by Congress.

4/85 Finder 4.1 is released. The Empty Folder command is replaced by the New Folder command.

System 1.1

It took less than four months for Apple to release its first system upgrade for the Mac. System/Finder 1.1 was introduced on May 5, 1984, the same week Apple announced that it had already sold 70,000 Macs.

The big selling point of 1.1 was disk-copying speed. Apple increased the size of the Finder's memory buffer, significantly reducing the number of swaps it took to copy a disk on Macs with a single floppy drive. Improved system code also reduced the length of the system startup by about 20 percent and sped up returning to the Finder after quitting an application.

Finder 1.1 also included, for the first time, a Set Startup command in the Special menu, so you could designate a specific application to launch automatically when starting the Mac.

Still, there was no New Folder command; there was always an empty folder on each disk, no matter how many times you tried to delete it. If you renamed the empty folder (to use it for something), another empty folder appeared instantly. And there was no Shut Down command!

System 2.0

Nearly a year went by without the release of a new system. Then, in April 1985, Apple engineers unveiled System 2.0. Evidently, they had done most of their tinkering in the Finder; its version number jumped from 1.1 to 4.1. (And for the next three years, these two primary components of the operating system — the System and Finder — continued to have different version numbers.)

Finder 4.1 was not only faster, it was packed with new features. Some commands (such as Put Back and Close All) were removed forever. For the first time, list views displayed tiny icons next to file names. A new desk accessory, Choose Printer, was introduced — the forerunner of the Chooser. The Empty Folder command was replaced with the New Folder command. Another new

command, Print Catalog, appeared in the File menu; it let you print a listing of a disk's or folder's contents. The Special menu sported two new commands: Shut Down and Use MiniFinder.

The MiniFinder was an embryonic version of what would someday be At Ease. Here's how it worked. You selected the icons of the applications you wanted and then chose the Use MiniFinder command. A dialog box appeared, asking whether you wanted to install the selected applications in the MiniFinder. After that, whenever you quit an application, the MiniFinder dialog box would open, showing the icons of all the programs you had installed. You then could launch an application by double-clicking its icon.

Surprisingly, it wasn't until Finder 4.1 that dragging a disk icon into the Trash resulted in ejecting the disk and removing its icon from the Desktop. In versions 1.0 and 1.1, you had no choice but to use the Eject Disk command — and only then could you drag the icon to the Trash to remove it from the Desktop.

All these changes made for a much more sophisticated and polished operating system. But, of course, even these enhancements weren't enough for some people. Mac gurus were already searching for ways to optimize Mac performance. In early 1986, one Mac magazine suggested rebuilding the Desktop. Doing so, an article pointed out, would trim "15K worth of System-slowing stuff" from your Mac. Interestingly, rebuilding the Desktop didn't just erase Get Info comments back then: It removed *all* your folders, leaving all your icons naked and shivering on the Desktop.

System 3.0

The Mac Plus appeared in January 1986, equipped with a hot new Mac operating system — System 3.0 and Finder 5.0.

This upgrade brought some of the biggest changes in the Macintosh operating system to date. It featured a faster and more efficient Finder. It introduced the RAM

1/86 The Space Shuttle Challenger explodes. The Mac Plus debuts, along with several new system software features, including a RAM cache and the Hierarchical File System (HFS). HFS goes on to win *InfoWorld* magazine's 1986 Readers Choice Award for operating environment product of the year.

2/86 Mac gurus suggest speeding up your Mac's performance by rebuilding the Desktop, thereby reducing system clutter by 15K.

2/86 Swedish Premier Olaf Palme is assassinated in Stockholm.

6/86 Apple releases System 3.2 and Finder 5.3.

2/87 Disk First Aid is born.

2/87 The Tower report finds that President Reagan was "confused and uninformed" about the Iran-Contra affair.

4/87 AppleShare 1.1 is introduced.

10/87 The stock market crashes.

1/88 Apple introduces the first CD-ROM drive, the AppleCD SC, for $1,200.

2/88 Panamanian ruler Gen. Manuel Noriega is indicted in federal court for assisting the Medellin drug cartel.

6/88 Apple releases System Software Version 6.0, the first version of the system to include the MacroMaker, CloseView, and Map utilities. The price is $49.

11/88 George Bush is elected President.

4/89 Apple announces the FDHD External Floppy Drive for a price of $629. Takeover rumors swirl.

8/89 System 6.0.3 is released with the SE/30.

9/89 Apple introduces the Macintosh Portable.

10/89 In the wake of a major earthquake, the *San Francisco Chronicle* and the *San Francisco Examiner* are published on October 18 using Macintosh computers connected to generators.

3/90 Apple introduces the IIfx, the fastest Mac to date. Suggested price is $9,870.

1/91 The Persian Gulf war begins.

5/91 System 7.0 is introduced. Pope John Paul II issues an encyclical, "Centesimus Annus," urging a peaceful resolution to world conflicts.

9/91 System 7.0.1 is completed.

10/91 NASA reports that the ozone level in the stratosphere has dropped to the lowest level on record.

5/92 IBM, Motorola, and Apple announce a collaboration to develop the PowerPC family of RISC microprocessors

8/92 System 7.1 debuts.

11/92 Bill Clinton elected President.

2/93 Apple ships the ten millionth Macintosh computer.

5/93 The cult of zealot David Koresh ends in a fiery standoff with federal authorities.

cache — a small portion of superfast memory that speeds up Mac performance by storing frequently used instructions during a work session (today called Disk Cache). This was also the first version of the system that came with the Installer.

The most significant change was, without question, the mainstream introduction of the Hierarchical File System (HFS), replacing the old Macintosh File System (MFS). The old MFS system, you may recall, was non-hierarchical. In other words, you couldn't nest one folder within another. Oh, you could *put* files into a folder, but as far as the Mac's brain was concerned, all the files were on one level — the only level. When you used an Open or Save dialog box, the folders disappeared and all your files appeared in one gigantic list. (HFS had first appeared as a patch to accompany the HD20, Apple's 20MB hard disk, which hooked up to the floppy connector on the back of the Mac and which could have a floppy drive daisy-chained to it!)

System 3.1

You don't hear much about this version. It was released just one month after System 3.0 and was paired with an upgraded Finder — Version 5.2. Evidently, it had serious bugs; this is one system that Mac gurus of the day urged users to avoid.

System 3.2

Apple released System 3.2 in June 1986 (along with Finder 5.3) to fix about 30 bugs. Among other things, this release featured a redesigned Calculator. The old Calculator, frankly, drove a lot of people crazy; its buttons didn't match the layout of the numeric keypad — the division, multiplication, and equal buttons along the top row were in the wrong order (see Figure 6-3). The new Calculator had (and still has) a layout that exactly matches the numeric keypad on Apple keyboards.

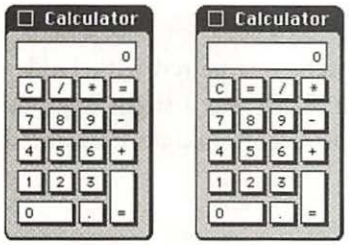
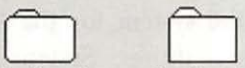


Figure 6-3
The layout of the old Calculator (left) didn't match the numeric keypad. The current layout (right) was introduced with System 3.2.

This update also fixed problems with the Chooser. It patched up a problem that was causing italicized fonts to get mysteriously chopped off when printed, and it also fixed bugs involving lost files and system crashes.

TRUE FACT
EVOLUTION OF THE FOLDER

Many elements of the Mac operating system have remained constant as newer versions of the system have been developed, but most have gone through at least a few little refinements. Folder icons are a good example. Sure, there were folder icons in System 1.0 — but the original folders were different: They had four widely rounded corners and tabs that were one pixel shorter than today's folders; the current design (below, right) features three sharp, pointy corners and a slightly rounded upper-right corner (look closely — a one-pixel chunk is missing, creating a slightly softer edge).



The Trash also received a tiny cosmetic change. In the older versions of the system software, the lines indicating the ribbing on the body of the can were drawn with edges leading off to the right. In Finder 5.0, the Trash can design was inexplicably flipped around, with the lines trailing off to the left, and it's stayed that way ever since (as you can see if you view the Trash in black and white). Now that's progress.

8/93 The Apple Newton is introduced.

3/94 Apple introduces the Power Macintosh. Takeover rumors swirl.

6/94 O. J. Simpson's white Ford Bronco is pursued by law-enforcement authorities in a slow-speed chase across the highways of Southern California.

7/94 The PowerBook Duo 230 is discontinued. Tonya Harding is stripped of her U. S. figure skating championship.

9/94 The first PowerPC-based Performa — the 6110 — makes its debut. Takeover rumors swirl.

11/94 System 7.5 is released.

12/94 Robert Duvall, Raisa Gorbachev, and Diane Keaton turn 65, 64, and 50, respectively.

1/95 Apple replaces the PowerPC chips in its first three Power Mac models with faster versions.

3/95 Eleven people die and more than 5,000 are injured in a nerve gas attack on the Tokyo subway by the Aum Shinri Kyo religious sect.

4/95 The first authorized Macintosh clone, the Power 100, is sold by Power Computing.

5/95 A car bomb devastates a federal building in Oklahoma City, killing at least 167 people.

8/95 The second generation of Power Macs is released — the first Macs to contain PCI slots instead of NuBus. Takeover rumors swirl.

10/95 O.J. Simpson is acquitted of murdering his ex-wife Nicole and her friend Ronald Goldman. Apple releases the Performa 6300 — the 45th Performa model released since October 1992, meaning that Apple has released one new Performa model every 3 1/2 weeks for a period of three years.

12/95 The U.S. government "shuts down" over budgetary deadlock in Congress.

1/96 Apple releases System 7.5.3, the first universal Mac OS version since System 7.5.1. Takeover rumors still swirl. Apple's quarterly report includes a $700 million loss, triggering a year-long wave of negative publicity, and the hiring of a new CEO, Gil Amelio.

2/96 The Tokyo Macworld Expo draws 170,000 attendees, and Apple's market share in Japan reaches 25 percent.

7/96 TWA Flight 800 crashes off the coast of Long Island.

8/96 Mac clone manufacturer Power Computing unveils the 225 MHz PowerTower Pro — the fastest personal computer in history.

8/96 Apple releases the first minitower Performa.

9/96 System 7.5.4 is yanked from distribution hours before its official release and replaced the next day with System 7.5.5. Four companies (Power, Umax, Daystar, Motorola) are manufacturing Macintosh clones, with several more gearing up to do so.

System 3.3

This incarnation of the system was paired with Finder 5.4. It debuted in January 1987. It was a slight upgrade from 3.2. It was designed to accommodate networked Macs that used AppleShare.

System 4.0

In March 1987, Apple released System 4.0. This time, the Finder didn't get upgraded; the current version (5.4) remained. Apple recommended this system for all Macs with at least 512K of RAM. In other words, this was the first system that could *not* be run with the original Mac 128K. Mainly, System 4.0 fixed bugs that were still floating around in Versions 3.2 and 3.3.

Cosmetic changes took place, too. Mac Pluses and ImageWriter IIs rolling off the assembly line were no longer beige. They were clothed in Apple's official new color: platinum.

System 4.1

This upgrade was released in April 1987 along with Finder 5.5. The new system came with AppleShare 1.1, which was required for networking the Mac II. Apple recommended this version of the system for the Mac Plus and higher. Among other things, System 4.1 improved performance of *large capacity* hard drives — meaning, of course, any drive over 32MB!

System 4.2

This update was released in October 1988. It became available to current Macintosh users as part of the Apple System Software Update 5.0, which included System 4.2 and Finder 6.0. This update introduced the first version of MultiFinder — the pre-System 7 answer to multitasking. MultiFinder (code-named Juggler) let you run two or more applications simultaneously and switch between

them by clicking an application icon in the menu bar. (Andy Hertzfeld's rival multitasking technology, called Servant, was never officially adopted by Apple.)

10/96 After three quarterly losses, Apple's finances stabilize with a $25 million quarterly profit.

11/96 Bill Clinton is re-elected President.

1/97 Apple releases System 7.6, the first version of the System Folder to require a 68030 chip or better.

System 6.0.2

The System 6 era began in August 1989 with the release of System 6.0.2. (This also began the era of *three*-digit system numbers; a change in the third digit, after the second decimal point, indicates an even more minor upgrade than a change in the second digit.) Savvy Mac fans noticed a single visual change that immediately signaled the presence of System 6: a single black pixel. This extra screen dot appeared at the left edge of any Finder window, where the double line beneath the disk information joined the left wall of the window. (And by the way: What happened to System 6.0 and 6.0.1? The former was so buggy that it was immediately replaced — and the latter was so buggy that it was never even *released.*)

By this point, the system disks had grown into a four-disk set. Small upgrades and enhancements followed over the next two years, many of which simply accommodated the needs of specific new Mac models and printers.

System 6.0.3, 6.0.4, 6.0.5, 6.0.7

System 6.0.3 made its debut with the SE/30. Apple recommended 6.0.3 for all recent models. System 6.0.4 is the oldest version of System 6 that can run on a IIci. For a IIfx, you need at least System 6.0.5, whereas 6.0.7 is required to run a Classic, IIsi, or the LC under System 6. (The LC II, however, requires at least 6.0.8, whereas the LC III requires System 7.0.)

System 6.0.8

Apple's code name for System 6.0.8 was Terminator — a fitting name, as this was indeed the last version of System 6, released just months before System 7 was unveiled. According to Apple, this is the only version of System 6 software that can run an LC II. It supports Macs as early as the Mac Plus. In essence, this system was 6.0.7 with improved printer drivers.

As the sun set on System 6, the Mac's System and Finder, weighing in at about 610K, had more than tripled in size since the days of System 1.0.

System 7.0

System 7 was Apple's quantum leap forward. Much hyped and heavily criticized, System 7 — code-named Big Bang — was rolled out in May 1991.

Upgrading to System 7, for many, was something of a pain. You had to have a hard drive. You had to have 2MB of memory or more. The System 7 upgrade kit itself cost money. And upgrading all your existing programs to versions that *ran* under System 7 cost a *lot* of money.

But System 7 made life a great deal easier. Several bugs had been fixed, a lot of poor interface elements had been improved, and a lot of thought went into making System 7 as effortless and elegant as possible. The completely refurbished operating system introduced dozens of new features. Among the most significant: 32-bit addressing (which finally allowed Macs to access more than 8MB of RAM); aliases; an menu that could contain not just desk accessories, but also applications, folders, documents, and so on; the Application menu; Balloon Help; colorized 3-D windows; faster printer drivers; built-in File Sharing; the ever-useful Put Away command; the Startup Items folder; stationery pads; the Views control panel; and QuickTime.

In fact, System 7 introduced many of the basic Mac interface features that we've now come to take for granted: hierarchical list views that let you expand and collapse the contents of nested folders; shortcuts that let you select icons, open and close windows, and collapse and expand folders from the keyboard; the "renaming" rectangle that appears when you click an icon's name; the capability to paste custom icons onto files; and a Trash can that *doesn't* automatically purge its contents every time you shut down.

System 7.0.1

Users had only a few months to enjoy the fresh, clean, hearty feeling of having an operating system with a big, round integer before Apple followed System 7 with System 7.0.1, adding not one but two irritating decimal points. At Apple's headquarters in Cupertino, the new system version was known by two code names: Road Warrior and Beta Cheese.

The new version was mainly about bug fixes — especially an insidious disappearing icons-problem — and accommodations for the then-new PowerBook and Quadra families. For example, the old Portable and Brightness control panels (left over from the Mac Portable) were updated, and the Caps Lock extension made its debut. The Cache Switch control panel, along with internal system file-tweaks, was introduced for the 68040 Macs. And the software governing RAM disks and sound management were touched up for the new machines.

System 7.1

After the harrowing experience of cranking out System 7.0.1 solely to support a couple of new Mac lines, Apple hit upon the enabler scheme described in Chapter 5 and rolled it out in System 7.1, which was destined to be a solid "reference release" for several years.

System 7.1 was remarkable for another reason, too: It was the first system-software update Apple didn't give away. You had to *buy* it, much to the fury of user groups and online services that had gotten used to making each new system release available to everybody. Backing down in the face of the protests, Apple eventually offered the System 7.1 upgrade kit to user-group and online service members for less than $30. But the writing was on the wall: Apple was jealous of Microsoft, system-software superstore to the world.

Many wondered if the upgrade was even worth it. System 7.1 incorporated a huge number of changes, but the vast majority were deep-seated, core-level rewrites that added no usefulness to standard American Mac users. For example, System 7.1 *enabled* (but didn't provide) foreign-language translations, using a technology called WorldScript. Along with that change came new control panels for "internationalizing" your Mac: Numbers, Date & Time, and so on.

Except for the QuickTime extension (see Chapter 23), the sole practical new feature of 7.1 was the Fonts folder. For the first time, all your fonts could be stored sensibly in one Fonts folder in the System Folder — instead of being buried in the System *file* or, in the case of printer-font files, scattered to the winds of your System Folder.

System 7 Pro (System 7.1.1)

System 7 Pro formalized Apple's practice of throwing existing software programs into the System 7 box and calling it a new operating system. This October 1993 release, aimed at networked offices, was nothing more than System 7.1 with the addition of the utterly incomprehensible and prematurely hatched PowerTalk (see Chapter 32). It also included AppleScript and QuickTime (see Chapters 22 and 23, respectively).

Overall, the $150 System 7 Pro was the least-exciting upgrade — as far as the individual Mac user was concerned — in memory.

System 7.1.2

This minor upgrade accompanied the first-generation Power Macintosh models. Despite what you may expect, it was *not* substantially rewritten in

"native" code to add a speed boost. In fact, only about 10 or 15 percent of the system was native — according to Apple, the parts that are used most frequently.

The physical signs of change were primarily in the new Memory control panel — that weird Modern Memory Manager setting — and its effects. For example, turning on virtual memory now let you lower your programs' Get Info memory sizes, as you'll see in Chapter 9.

Otherwise, 7.1.2 includes only subtle internal tweaks and remains, for all practical purposes, another spin on System 7.1.

System 7.1.2P

Don't confuse this subtle variation on System 7.1.2 with System 7.1*P2*. The former is a special version of 7.1.2 that was released with the Quadra (and LC and Performa) 630 models. It's a standard Macintosh operating system, essentially the same as System 7.1.2, but included on all 630-series machines, regardless of their designation as LCs or Performas. On the other hand, System 7.1P2 was a *Performa-only* version of System 7.1. See "Performa System-Software Annex," later in this chapter, for details.

System 7.1.3

This system debuted with the PowerBook 500 series and merited the new number only in that it included some improved software — notably the Control Strip (see Chapter 4).

Here's a little-known fact, however: A PowerBook 500 came with the equivalent of System 7 Pro. It was bundled with PowerTalk, QuickTime, and all of Apple's usual goodies. We shudder to wonder if, having purchased a PowerBook 540c, anyone then went out and purchased System 7 Pro to use on it.

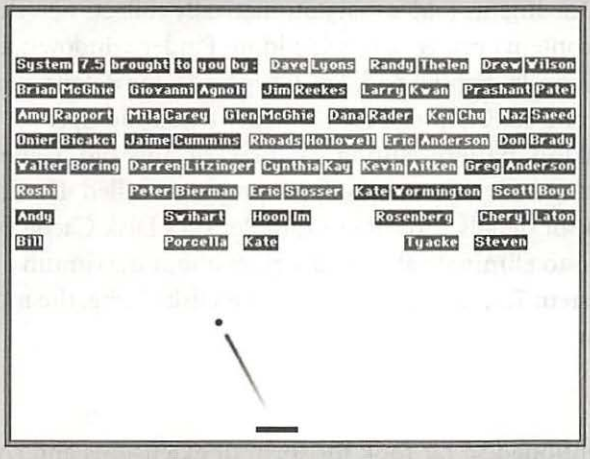
System 7.5

There wasn't much surprise about the contents of System 7.5 by the time Apple released it in late 1994. The new "reference release" included dozens of truly useful new features, but most had been available in other forms before being incorporated into System 7.5. In fact, the only truly new, significant features from Apple were Macintosh Drag & Drop (see Chapter 1), QuickDraw GX (the new font and printing software — see Chapters 24 and 25), and Apple Guide (see Chapter 2).

MACINTOSH SECRET

APPLE'S BEST SECRET ABOUT BOX YET

In System 7.5, open any Drag-and-Drop-savvy program, such as the Note Pad or SimpleText. Type secret about box. Select the phrase. Drag it onto the Desktop, creating a Clipping file. The Note Pad disappears and is replaced by a game of Breakout!



Move the mouse to control your paddle; try to make the bouncing ball break through all the "bricks" containing System 7.5's authors' names. Click the mouse to return to your life already in progress.

To everyone's horror, Apple removed this awesome secret About box in System 7.5.1 — but replaced it with something equally delicious in System 7.5.2.

Amazingly, though, the secret game of Pong lives on even in later versions of System 7.5. We'll show you how to restore it in Chapter 21.

The most surprising new inclusions were shareware. Apple licensed a handful of popular shareware programs and adopted them as official system software. This must have come as a pleasant and remunerative surprise to their authors — the one-man operations who wrote MenuChoice, WindowShade, and SuperClock!, for example.

Added value

Apple also tossed in some utility programs that it had previously sold separately: PowerTalk network software (see Chapter 32), formerly available only with System 7 Pro; PC Exchange, the IBM disk-reading software (see Chapter 4); Macintosh Easy Open, which suggests applications capable of opening an

orphaned document (Chapter 4). For PowerBooks, System 7.5 made the Control Strip available (which had originally been included only with the 500 series) to all PowerBook models. System 7.5 included enhanced desk accessories, too: a new Note Pad, Scrapbook, Puzzle, and Find File command, for example.

The new General Controls panel offered several features that had debuted on the Performa line: a Documents folder that automatically collects new documents; System Folder contents protection; self-hiding Finder windows; and the Launcher one-click icon-launching pad. See Chapter 15 for details about these Performa features, and see Chapter 4 for Launcher tricks and tips.

Meanwhile, the Desktop pattern-editing features of the old General Controls panel were relegated to a stand-alone program called Desktop Patterns. (See Chapter 4 for details.) Another example: 7.5's Disk Cache (see Chapter 9) was rewritten to eliminate all the silly rules about maximum and optimum settings. In System 7.5, the higher you set the Disk Cache, the more speed your Mac will gain.

Deep-seated changes

All the new features mentioned so far took the form of extensions and control panels, which you could install or remove as you wished. Not every change was represented by a modular plug-in, however. Apple also made some substantive changes to the body of the system itself. For example, Apple incorporated into System 7.5 the bug fixes and updates of System Update 3.0 (see Chapter 5). It also added the purple window highlighting you see when, while dragging an icon from one window to another, your cursor moves inside the destination window (a nice touch introduced with System 7.1.3 with the PowerBook 500 series).

System 7.5, overall, didn't change much of the behind-the-scenes operating system at all; it was System 7.1 with fine-tuning. (Faster file copying and Trash emptying were among the subtle tweaks.) But the enhancements Apple *did* choose to include showed a great deal of thought and were beautifully done. As a result of this conservative approach, you didn't have much software-upgrading to do. Anything that worked with 7.1 generally worked well with 7.5, eliminating worries of another compatibility nightmare (à la System 7's introduction).

System 7.5, in fact, was probably disappointing to only two groups of people. Power Mac owners had hoped that Apple would rewrite the operating system to incorporate more "PowerPC-native" code (see Chapter 13). That crucial speed enhancement, Apple hinted, would not appear until the release of Mac OS 8. The upgrade was also disappointing to those users running

short of disk space or memory. System 7.5, particularly with QuickDraw GX installed, consumed substantially more RAM and hard drive than any system before it.

System 7.5.1 (System 7.5 Update 1.0)

Shortly after System 7.5 was released, Apple discovered more than a few nasty bugs that were in desperate need of patching. In the months that followed, Apple released a series of updated system components that fixed specific problems — EM Sound Update, PowerBook 150 Update, and Mount IDE Drive, to name a few. However, by March 1995, these patches started mounting up. To avoid more confusion, Apple's development team decided to roll the patches together, throw in a generous bundle of system enhancements as a bonus, and release the whole thing under one new name — the System 7.5 Update. (This later came to be known as System 7.5 Update *1.0*.)

System 7.5 Update 1.0 was a four floppy-disk affair that dumped all kinds of updated components into your System Folder, swallowed up the chunks that were obsolete and, most significantly, officially upgraded your operating system to 7.5.1.

System 7.5.1 improved memory stability and fixed potential crash problems when pasting large blocks of data. It cleared up a weird problem in which double-clicking an alias on the Desktop opened the *wrong* original file. The update also cared for a number of model-specific issues. On the PowerBook 150, for example, it extended battery life by reducing the amount of power required in sleep mode. On the PowerBook 500-series, the update improved trackpad performance.

The update also introduced new and improved versions of many system components. File Sharing version 7.6.1, for example, eliminated the need to turn off file sharing in order to eject a removable disk or CD-ROM. Launcher version 2.7 added drag-and-drop support and a number of other slick Launcher features (described in detail in Chapter 4). There were also new versions of Apple Guide (rewritten in native PowerPC code), SCSI Manager, Speech Manager, PowerTalk Mailbox, General Controls, Apple Menu Options, Keyboard, WindowShade, MacTCP, Macintosh Easy Open, SimpleText, Find File, Stickies, PowerTalk Catalogs Extension, and the LaserWriter printer driver (updated to version 8.2). The update also gave most Macs the ability to be turned off with a press of the Power key.

Even the seemingly insignificant Jigsaw Puzzle desk accessory got an update, to version 1.0.1. (The 1.0 version released with System 7.5 evidently had sound problems caused by conflicts with certain third-party extensions.)

TRUE FACT

NOT ABOUT THIS MACINTOSH

If you choose About This Macintosh (About This Computer) from the System 7.5 (or later) menu, you may be in for a rude shock. That dialog box no longer specifies one prominent fact About This Macintosh — your Mac model. Instead, it just identifies the general class, such as Macintosh, Power Macintosh, or Macintosh PowerBook. (Actually, this is only true if you perform a "clean install" of System 7.5. If you install it normally onto a Mac running a previous system, your model information remains.)

Apple wrote System 7.5 to hide the model information because of changing times. For example, your About This Macintosh window used to extract the model information from a chip on your Mac's motherboard. But, today, Apple builds the identical logic board into several different Mac models — for example, the Performa 6115 and the Power Mac 6100. Furthermore, Apple's logic boards are now available in *other* companies' Mac clones. In both cases, logic boards can no longer be trusted to accurately identify the model they once defined.

Of course, to find out your Mac's model name, you *could* just read what's painted on the front panel.

What System 7.5.1 *didn't* offer, once again, was a significant rewrite of the operating system to PowerPC-native code. As of System 7.5.1, only three components of the operating system had been rewritten to take advantage of the speed of the PowerPC chip — QuickDraw, Modern Memory Manager, and Apple Guide.

Nevertheless, 7.5.1 was a substantial upgrade — a must-have for every user of System 7.5.

System 7.5.2

Five months after the System 7.5 Update appeared, Apple released the first Power Macs with PCI slots (see Chapter 31) and a new fleet of PowerBooks. Yet another update was needed to address the new hardware features on these models. The result: System 7.5.2. The only Macs capable of even running this operating system were the Power Mac 7200, 7500, 8500, and 9500 — and the PowerBook 5300 line (or 500-series PowerBooks with a PowerPC upgrade).

The release of 7.5.2 caused a lot of confusion. Hordes of Mac owners heard about 7.5.2 and scrambled to get what appeared to be another essential upgrade — the vital System 7.5 Update, which had converted System 7.5 to 7.5.1, evidently was still fresh on everyone's mind — only to discover that *this* version of the System had absolutely nothing to offer most Mac owners.

Worse, the PowerBook and the PCI-Mac versions of 7.5.2 *weren't the same!* To the horrified bewilderment of everyone everywhere, it became apparent that Apple had released two different, mutually incompatible operating systems *with the same name.* The world held its breath until the universalized 7.5.3 made its debut.

System 7.5.2 also got some bad press because of the number of bugs and quirks reported by users shortly after its release. Many users reported problems establishing PPP or SLIP access to the Internet using 7.5.2's Open Transport networking scheme. Apple hastily churned out successive Open Transport patches — versions 1.0.6, 1.0.7, and 1.0.8 — to deal with the problem.

MACINTOSH SECRET

APPLE'S SECOND-BEST SECRET ABOUT BOX

When it really counts, Apple listens to its customers.

For example, when System 7.5.1 appeared without the famous System 7.5 secret game of Breakout (or Pong), as described in an earlier sidebar, Mac aficionados screamed bloody murder. Fortunately, in System 7.5.2, Apple came to its senses and put some fun back into the secret architecture.

Once again, the trick is to type the words **secret about box** into any Drag-and-Drop text program (such as SimpleText or the Note Pad), highlight those words, and drag them onto the Desktop. The secret picture now revealed is that of Apple's Cupertino headquarters. The QuickTime movie flag in the foreground reads, "iguana iguana powersurgius" (Power Surge was the code name for the PCI-slot Mac models; the secret movie is actually part of the ROMs in PCI Macs and was included in the System 7.5.2 software on PowerBook 2300s and 5300s.)



By moving the mouse, you can change the direction of the waving flag (move the mouse downward to draw the flag "toward" you, up for "away," and left or right). In fact, you can make it break off entirely, fluttering toward the ground and off the screen. (Whip the flag right and left or toward you and away; at just the right level of violence, the flag will break off.) Even when the flag is adrift, you can control its direction with the mouse. Meanwhile, various inside jokes scroll by.

As though to prove themselves totally apologetic for having interfered with our good, clean secret-About-box fun of System 7.5, Apple's programmers even added secrets *within* the secret About box. By pressing certain keys just after you begin dragging the words *secret about box* to your Desktop, you can make all kinds of strange things happen in your little hidden world:

Press letter **P** to see a picture of the design team, with an iguana, on the flag. (With System 7.5.3 and later, pressing **P** puts a picture of the Mac OS logo on the flag.) Press letter **Q** to see a pink flag, blank background, and a message that QuickTime must be installed. Press letter **W** for a dialog box that displays the current coordinates of the mouse. Press letter **T** for a dialog box that identifies your QuickTime frame rate (of the waving flag). Try pressing **P**, **Q**, **W**, and **T** in combination, too. The letter **S** prevents the scrolling names from appearing.

Despite the fact that this secret About box can't possibly remain a secret at Apple, the Powers That Be were good enough to let this gem remain; as of System 7.5.5, the great Cupertino Iguana flag flaps proudly still.

Oddly enough, this specialized system also required a new model-specific *enabler* and, in keeping with Apple's well-established tradition of giving enablers names that bear absolutely no relation to the Macs on which they are required, this new file was dubbed System Enabler 701. (It gets worse; the 7200 and 9500 require version 1.1 of System Enabler 701 version, while the 7500 and 8500 call for version 1.2.)

Probably the best news about System 7.5.2 was that it increased the maximum size of a volume that can be mounted on Mac from 4 gigabytes to 2 *terabytes* (the equivalent of 2,048 gigabytes), thus providing support for even more massive storage devices.

System 7.5.3 (System 7.5 Update 2.0)

After the disastrous confusion caused by its preceding System 7.5-point-something updates, Apple attempted to set the record straight in early 1996 with System 7.5.3. This was Apple's effort to reset the counter and establish a standard system supported by all current Mac models — no enablers needed. System 7.5.3 incorporated all existing enablers and system-software updates into a single package. Once again, several dozen little system bugs were fixed and a number of system components were replaced with new versions (among them Screen, Apple Modem Tool, PC Setup, Find File, Apple Video Player, Macintosh Easy Open, File Sharing, and the LaserWriter printer driver). A new QuickDraw 3D-capable version of SimpleText (1.3.1) appeared, and Monitors & Sound replaced the Sound & Displays control panel on PCI Power Macs.

Apple took advantage of this update as an opportunity to clean up its increasingly sloppy, sprawling, extension-ridden System Folder. The numerous little patches and updates Apple had been cranking out to fix specific problems in the months prior to the release of 7.5.3 were all merged into the System 7.5.2 Update file or the System file itself. Files such as 7.5.2 Printing Fix, 040 VM Update, 630 SCSI Update, CFM Updater, EM Sound Update, and Serial Update 406 were all eliminated. SCSI Manager 4.3 also was incorporated into the System file and terminated as a standalone extension. The Apple Multimedia Tuner became part of QuickTime 2.1.

But the new system was more than just a patch-up job; it introduced some fascinating refinements to the Mac operating system. For example, on a Power Mac running 7.5.3, when you drag an icon, it no longer turns into a simple outline as you drag it. Now a translucent, ghosted version of the icon remains visible as it is dragged across the screen — a fundamental change in the Finder's behavior. (Actually, this feature was originally conceived as a component of Mac OS 8, but was instead folded into System 7.5.3.) The

Name field in the Finder's list views got wider, permitting you to read more of your long-titled files' names.

System Update 2.0 also introduced Open Transport 1.1, Apple's revamped networking system software intended to replace the aging AppleTalk networking scheme. This version of Open Transport worked with all 68030 and 68040 Macs, as well as with all the Power Macs except, oddly enough, the 5200, 5300, 6200, and 6300 series.

Realizing that this new networking software was likely to be incompatible with plenty of existing programs, Apple tossed another odd little application into 7.5.3 — the Network Software Selector. This tiny program served one purpose — on non-PCI Macs, it let you *choose* between Open Transport and classic AppleTalk (provided that you had the older networking software on your Mac before installing the system update). Network Software Selector installed or deinstalled the appropriate suite of extensions and control panels, depending on which networking scheme you chose. If your dial-up Internet connection suddenly stopped working when you installed Open Transport, you could simply switch back to the old networking software and use that to configure your network connections.

Another noteworthy change: Under 7.5.3, for the first time in Mac history, you can rebuild the Desktop file without destroying any comments typed into a file's Get Info box. The new system also speeds up Finder copying (eliminating some of the advantage of copy-acceleration programs such as CopyDoubler) and comes with text files that describe every extension and control panel in the System folder.

The Memory control panel got smarter, too, automatically adjusting the default value for the Mac's disk cache based on the amount of physical RAM installed. (The default is 32K for each meg of RAM, up to 4,096K.)

Finally, the new system introduced more components written in native PowerPC code to speed up Power Mac models. The Resource Manager was rewritten in native code, as was the software that controls the serial ports. Desktop Printing software also was released in completely native PowerPC form.

Other 7.5.3 improvements included a new, faster version of Apple Guide (version 2.0); an improved, more reliable Apple Menu Options control panel; and, at last, a version of the Control Strip for all Macs, not just PowerBooks.

System 7.5.3L

Virtually identical to System 7.5.3, this variation was created specifically for Macintosh clones. Mac-compatibles from companies such as Power Computing, UMAX, and Daystar all shipped with 7.5.3L systems.

ANSWER MAN

The many faces of System 7.5.3

Q. ***What's the difference between System 7.5.3 and System 7.5 Version 7.5.3?***

A. Congratulations. You've just discovered that Apple has two different names for exactly the same system. Try to follow the logic here: System 7.5 Version 7.5.3 is the name of the *software* Apple sold to people who wanted to upgrade to System 7.5.3 from a version of the system prior to System 7.5. On the other hand, System 7.5.3 is what actually appears in the About this Macintosh window of desktop Macs that *shipped* with System 7.5.3.

Q. ***OK, so then how come, on my Mac, the About this Macintosh window says I'm running System 7.5.3 Revision 2. But on my friend's Mac, the About this Macintosh window says he's running System 7.5.3 Updated to Revision 2. Who's got the newer system?***

A. Again, they're identical. The only difference: Your Mac came with the revised version of System 7.5.3 pre-installed, while your friend upgraded his copy of System 7.5.3 using the System 7.5.3 Revision 2 updater.

System 7.5.3 Revision 2

In the months following the release of System 7.5.3, Apple released a couple of minor patches and updates — items so minor they didn't even earn a version number. Within a short time, however, the bug reports came pouring in and it became obvious that some larger updates were necessary to address problems that were cropping up on PCI Power Macs and PowerPC-based PowerBooks.

Thus was born System 7.5.3. Revision 2 — the first of what Apple dubbed its "rapid response updates" to address problems discovered between major system releases. (The "2" was chosen, by the way, to reflect the fact that earlier patches of 7.5.3 *did* exist, though there was never a Revision 1.) Revision 2 was a two-disk upgrade released to fix a few select problems on specific models — the PowerBook 5300 and Duo 2300 systems; any PowerBooks (PowerPC or otherwise) running Connectix RAM Doubler; any PowerBook 200 or 500 models that had been upgraded to PowerPC; and all 7200, 7500, 7600, 8500, and 9500 systems. Revision 2 doesn't do a thing on any other models, except change the name of the operating system to "System 7.5.3 Updated to Revision 2" — yes, that's the *name* of the system that appears in the About This Macintosh box.

Apple distributed the update for free via the Internet. You could also buy the update on floppy disks or CD-ROM direct from Apple for $13.

Unfortunately, this update resulted in even more confusion among thousands of Mac users, who understandably mixed up System 7.5 Update 2.0 (which installed System 7.5.3) with System 7.5.3 *Revision* 2. Macintosh experts and columnists (such as your cheerful authors) had to refer to cheat-sheets to claw their way through comprehending Apple's system-software version stew, praying that Apple would come to its senses and start getting its version act together.

Still, Revision 2 did, at the very least, re-establish a standard system for all Macs.

System 7.5.3 Revision 2.1

Just when it seemed that Apple had again unified the operating system and come up with a version that worked on all Macs, along came the Performa 6400 — a 200 MHz, PowerPC 603e-based minitower. The 6400 required a new version of LocalTalk DMA in order to transfer files across a network properly, and a video driver patch to fix a problem that occurred — get this — when the computer went into sleep mode while connected to a 15-inch monitor. Apple had no choice at this point but to release a revision of the revision of the update to accommodate these tiny changes.

At any rate, the obscure System 7.5.3 Revision 2.1 was only for the Performa 6400/200 and 6400/180 — no other models were affected.

ANSWER MAN

How to install System 7.5.3-anything

Q: ***Auuuugggh! I've had nothing but trouble since trying to install System 7.5.3!***

Q: ***Grrrr! My installation of System 7.5 Update 2.0 froze and now my Mac won't boot!***

Q: ***@#*&$)(*!)(*!!! I can't get System 7.5.5 installed!***

A: Clearly, none of you folks bothered reading the instructions for installing Apple system-software updates happily. Turns out you're supposed to do so ***after first doing a clean installation*** of whatever you had before.

See Chapter 33 for details on doing a clean install; for now, suffice it to say that you'll probably have no troubles installing these various updates over a clean installation of, say, System 7.5.3.

And remember our general advice for updating your System folder, too: Before doing so, run Disk First Aid (described in Chapter 33) and make sure your hard-disk drivers are up to date.

System 7.5.4

Apple planned to release System 7.5.4 in September 1996. Once again, the objective was to create a standard, universal system that would work with any Macintosh. Primarily, the new system was supposed to make PowerPC-based PowerBooks and PCI Power Macs more stable and reliable. It was also supposed to improve memory management and boost performance when using virtual memory.

However, just after limited, pre-release distribution of System 7.5.4 began — and literally just *hours* before the moment of the system's official release — a glaring bug was discovered that created problems with the 5400 and 6400 models. Apple frantically pulled System 7.5.4 from distribution and canceled its release.

System 7.5.5

The day after System 7.5.4 was canned, Apple patched it up and released it with a shiny new version number — 7.5.5. Apple recommended this update was for *all* System 7.5.3 users, but it didn't contain any new features or interface changes.

System 7.5.5 was largely about improving the stability of Power Macs and PowerPC-based PowerBooks. For example, it eliminated one of the problems that was causing newer Power Macs to lock up when accessing a hard disk. It also improved the reliability of the higher performance Power Macs — those with 604 or 604e chips that run at 180 MHz or faster — particularly when formatting floppy disks.

For all models, System 7.5.5 made virtual memory work better, speeding up the time it takes to launch big programs, switch between programs and switch between large documents within a program. (It also made virtual memory more reliable when used over an Ethernet network.) On Power Macs, the update improved memory management and eliminated at least one cause of Type 11 errors.

The update's other fixes were fairly minor and specific. It improved reliability when using floppy disks on a Mac equipped with a DOS Compatibility Card; made some improvements in LocalTalk; improved the stability of the Apple TV Tuner and Macintosh TV Remote Control; helped with sound performance on Quadras and Centrises equipped with a PowerPC Upgrade Card; and made shared printers more stable.

The biggest news about 7.5.5 is that it allowed you to create a universal System Folder — one that can start up any Mac, from the Mac Plus to the Performa 6400. This system represented a watershed of sorts for older models, too. It was the last system Apple ever released that can run on Macs without built-in 32-bit addressing (see Chapter 9): the Mac Plus, SE, Classic, Portable, PowerBook 100, original SE, SE/30, LC, II, IIx, and IIcx.

(Mac clone-owners' note: Interestingly, System 7.5.5 does *not* necessarily work correctly on the 1996 wave of Mac clones, those that came with System 7.5.3L. Apple suggests you contact the manufacturer on an upgrade-by-upgrade basis to see if your clone will run subsequent OS revisions.)

The Road to Copland — and System 7.6

Even as System 7.5 began shipping in 1994, Apple was promising its customers something better — much better. Within a year Apple intended to release its biggest and most dramatic rewrite of the Mac OS in history. Codenamed Copland, this version of the Mac's system software was supposed to be designed exclusively for the Power Macintosh, with almost every key component written in native PowerPC code. Copland was supposed to take a completely new approach to memory management and multitasking that would allow your Mac to perform several functions simultaneously without running into memory problems. Perhaps best of all, Copland promised to be the most stable operating system to date.

However, it soon became obvious that Apple's engineers had bitten off more than they could chew. Copland's release date was pushed back, first to the end of 1995, then to the middle of 1996, then to the end of 1996, and eventually to the end of 1997. In the meantime, Apple started calling this still-nonexistent operating system by its official name — Mac OS 8.

With millions of customers growing impatient for the long-promised benefits of a more modern operating system, Apple decided to throw together an interim release that would incorporate several features originally intended for Copland. The code-named Harmony release would make some Copland interface features available in advance of the release of Mac OS 8 itself.

However, as deadlines continued to slip and the company's image in the national press took a beating, Apple suddenly switched to a radically different upgrade plan in August 1996. Instead of rolling Copland-like features into a single Harmony release — and then waiting yet another year to unveil a totally revised, colossal Mac OS 8 — the company would offer a *series* of incremental upgrades, each with a few of the features originally promised to arrive in Copland.

TRUE FACT

REACH OUT AND UPGRADE SOMEONE

By the time you read this, Apple will undoubtedly have released system upgrades, updates, patches, and revisions that aren't listed here. If you want to get your hands on the latest system software updates — or any of the *older* operating systems, patches and updates described in this chapter — you can get them for free over the Internet at *http://www.support.apple.com* or *http://www.info.apple.com*. (See Chapter 27 and Chapter 28 for more about downloading software over the Internet.)

Under this plan, a new operating system would emerge every six months, with updates issued quarterly to fix bugs and compatibility problems. The continuously changing operating system would, in essence, *evolve* into Mac OS 8 over a period of a couple of years.

System 7.6 (Harmony)

The first of these incremental releases, still code-named Harmony, finally arrived in early 1997 — officially called System 7.6. To the profound disappointment of many, this release did *not* include any Copland-derived features. Instead, it consisted primarily of an enormous multi-megabyte compilation of previously released software:

- The latest LaserWriter 8.4 drivers, including the Desktop Printing features described in Chapter 25
- America Online 3.0 (see Chapter 28)
- QuickTime 2.5 (see Chapter 23)

- QuickDraw 3D (see Chapter 20)
- A new version of Open Transport (see Chapter 32)
- Open Doc 1.1 (see Chapter 16), including a starter set of LiveObjects (OpenDoc components)
- Cyberdog (see Chapter 28)
- Apple Telecom 3.0 software (see Chapter 27)
- PlainTalk 1.5 and Text-to-Speech 1.4.1 (see Chapter 23)
- Apple Remote Access 2.1 Client (see Chapter 32)
- PC Compatibility Setup 1.5 (for Macs with DOS cards)

In addition, System 7.6 offers behind-the-scenes OS support for multiprocessor Mac models, such as the "MP" models from Apple, Daystar, Umax, and others. A newer, more sophisticated Extensions Manager is also included (see Chapter 4), plus a smarter Installer that walks you through the safety checks you were previously told about only in Read Me files: running Disk First Aid, updating your hard drive driver, and so on (see Chapter 5 for an illustration). As a final touch, the new Speech 1.5 control panel can be configured to *speak* the messages displayed in dialog boxes after a moment or two — in case you've dozed off, we suppose.

Code name: Tempo

The first real Copland goodies to hit Mac fans' hard drives were postponed until the summer of 1997, in the biannual OS update code-named Tempo. The most dramatic change in Tempo is likely to be the rewritten Finder — at last, a PowerPC-native Desktop! Both multithreading (described in Chapter 16) and the Appearances control panel, illustrated later in this chapter, are finally scheduled to hit the main stream.

As of this writing, little more is known about this long-awaited System folder overhaul; we'll keep you posted as we learn more, however. Be sure to visit this book's Web page at *http://www.idgbooks.com/idgbooksonline/macsecrets*, where we'll post periodic updates.

THE SYSTEM FORMERLY KNOWN AS COPLAND (MAC OS 8)

When Apple announced its incremental upgrade plan, many people liked the idea of getting new system features sooner rather than later. The problem was that the company was infuriatingly vague as to *which* Mac OS 8 features

MACINTOSH SECRET

THE ULTIMATE GUIDE TO UPGRADING SOFTWARE

As you probably know, buying a program is more like *subscribing* to something than owning it, because every year, you get some brochure in the mail cheerfully pointing out that the version *you* bought is now obsolete. Upgrading Macintosh software is an art unto itself — not nearly the all-weekend nightmare it is on other computers, but still a project.

Most companies, including Apple, label their software updates according to this scheme:

Double-decimal-point upgrades: The Double-Decimal-Point Upgrade is when a company updates the software in such a minor way that the program's number changes from, say, version 1.5.1 to version 1.5.2. (Don't ask us why the second decimal point is even necessary.) Such a tiny tweak in the number generally signifies that the new version offers no *new* features. Instead, it's only a cleaned-up (less bug-ridden) version, or it's just been updated to be compatible with some new Mac model or new System-software update.

Certain kinds of software are especially susceptible to frequent tiny updates of this kind: fax software (especially Global Village), screen-saver software (especially After Dark), virus software, and other enhancements (especially ATM, RAM Doubler, and Speed Doubler).

Fortunately, a Double-Decimal Upgrade is almost always free. In fact, it's almost always available for free *electronically* — you can download a little updater program from America Online or the Internet. After this updater whirs and clanks for a moment, you wind up with a single, updated version of the program in question. Documents you've created (for example, ClarisWorks files) aren't affected by a Double-Decimal Upgrade.

The software companies, unfortunately, generally don't tell you when they release these tiny upgrades. They might not even change the version number. For example, ClarisWorks 4.0 was been silently updated several times — "4.0v1," "4.0v2," and so on — and the only way you'd know that a newer version exists would be by calling the company. Microsoft, Intuit, and other companies operate similarly.

Therefore, your sources of info are Mac magazines and newsletters, user groups, and online gossip.

Major upgrades: Then there are the meatier upgrades, where the number *immediately* to the left or right the decimal point changes (from 3.3 to 3.4, for example, or from 3.0 to 4.0). You generally have to pay for these, and the program's document format may change.

Unfortunately, "downgrades" are becoming increasingly common; the new versions of some programs are so huge, bloated, and sluggish that they're not worth getting (see Word 6, for example).

System-software upgrades: In many ways, upgrading your Mac's System Folder is much like upgrading any other software. As with other software, finding out that such updates are available isn't necessarily easy, although Mac magazines *always* have articles about this kind of thing.

Whenever you install new system software, restart your Mac from the System CD-ROM (or the Disk Tools floppy) that came with your computer. On that CD-ROM (or Disk Tools disk), you'll find Disk First Aid. Running this little program before you install new System software is an excellent idea. It locates any little kinks or potholes that have developed on your hard drive's surface that could corrupt your new System folder.

As with any installation, you should start up the Mac with the Shift key pressed (until the screen says "Extensions off") before installing new system software.

Apple's system updates generally give your Mac better speed, fewer crashes, and a couple of juicy new features. Unfortunately, these updates sometimes also mean that all your *other* programs may need updating to work with the new System software. The software you need to worry about mostly are the extensions and control panels: RAM Doubler, Speed Doubler, fax software, After Dark, ATM, virus checkers, printer drivers (Chooser icons), and programs of their ilk.

would appear in *which* system update, except to say that the first real Copland features would not appear until the release scheduled for July 1997. That system version, code-named Tempo, will include at least some of Copland's interface changes (see the following discussion for details). The releases scheduled for 1998 are to include the major system architecture overhaul needed to yield more efficient memory management and greater stability.

The bottom line, though, is that no one — including Apple — knows for sure what the next few system versions will look like, or what set of features will truly constitute Mac OS 8. We *do* know, however, what features were *supposed* to be included in Copland. And we know that you can expect to see most — if not all — of these features in an upcoming system update or in Mac OS 8, whenever it's officially declared to have arrived. Here, then, are the most important features that will be added to the Mac OS in the next year or two:

- **The ultimate in customization:** Mac OS 8 takes the concept of customizing your Mac far beyond creating your own Desktop pattern. In fact, almost every element of the new operating system is customizable. You control not just Desktop patterns, but also the colors and styles of scroll bars, windows, folders, and the fonts used in menus and dialog boxes (see Figure 6-4). Using the new multi-user feature, each user can save his or her custom look as a *workspace* and restore all the styles, colors, fonts, and patterns associated with that look simply by logging in under a specific user name. A set of predefined looks, called *themes*, will be available to

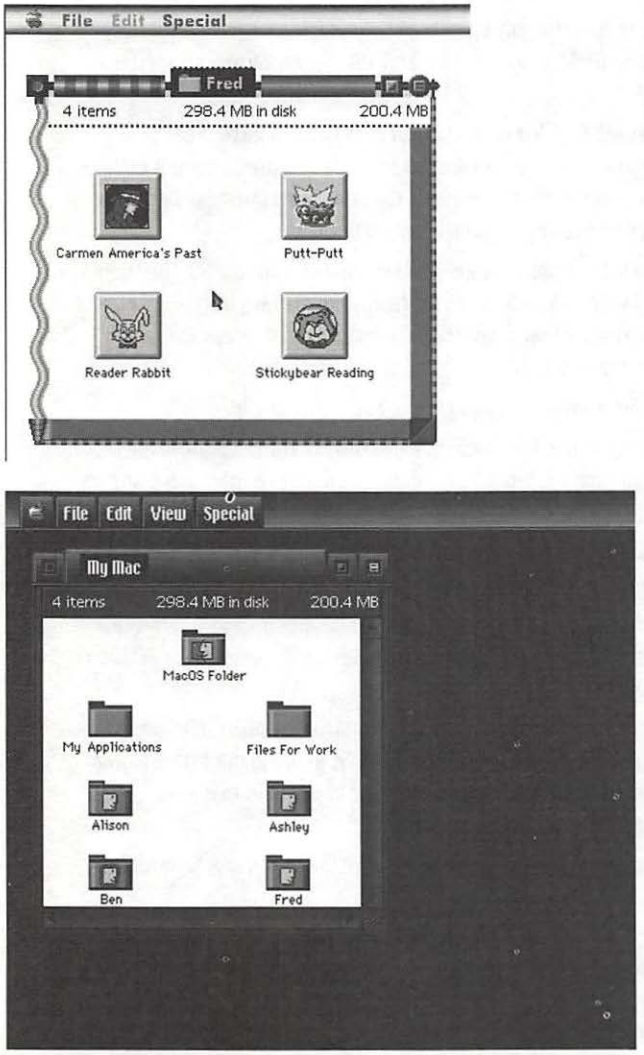


Figure 6-4
With Apple's new "themes" feature, you'll be able to make your Mac look like almost anything, from a black, sleek, hi-tech, glossy machine to a kids' playhouse. (All Copland illustrations courtesy Apple Computer, Inc.)

choose from. Even though each theme will give the interface a completely different appearance, the function of the underlying interface elements — scroll bars, menus, and so on — will all work the same way.

- **A scalable interface:** The new OS lets you scale the entire Mac interface to display only the features appropriate to the skill level of the user. For beginners, the system can be set up to display only minimal menus and options (and hide more sophisticated functions such as File Sharing), while at the expert level, full access to all system features is available. Unlike At Ease, the scalable interface will affect the whole computing environment, not just program launching. (See Figure 6-5.)
- **Spring-loaded folders:** Folders and dialog boxes have been redesigned to provide faster access to files, too. For example, when you drag an icon on top of a Copland folder, the folder springs open, automatically and temporarily, allowing you to drop a file directly into a deeply nested folder. (When you release the mouse, the folder snaps shut again.)
- **Collapsible windows:** Any open window can be dragged to the bottom of the screen, where it becomes a small button-like tab (see Figure 6-6). When you click the tab, it turns back into a window.
- **An Undo that really undoes:** When you think about it, the current Undo command doesn't do much in the Finder. Under the future system, you'll be able to undo all kinds of Finder actions (such as moving folders, dragging items to the Trash, and copying files). And a Redo command will give you the option of performing these actions again after undoing them.
- **The first understandable Save File and Open File dialog boxes:** For years, the Open File and Save File list boxes (see Chapter 9) have confused the heck out of beginners and infuriated everyone else. The ingenious new design (see Figure 6-7) shows all nested folders at once, making backtracking simple.

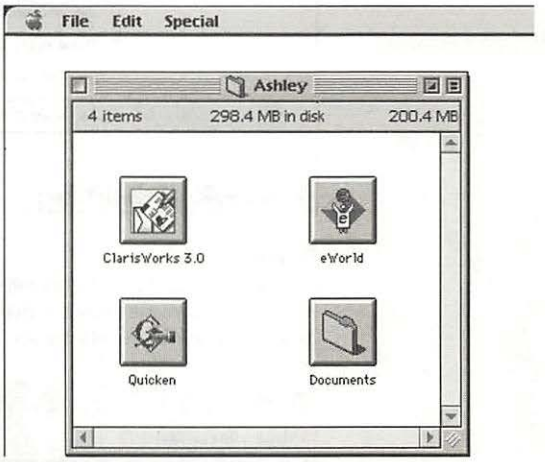


Figure 6-5
Using the multi-user feature, the Desktop (and which files appear there) can be totally different for each person who uses the Mac. For a child, for example, you could make windows open in the Launcher-like button view.

Figure 6-6
A few highlights of the soon-to-be-improved look of your Macintosh. Note that the Chicago font has been replaced by what Newton fans know today as Espy Sans. Icons have a 3-D look, you can pile up multiple copying jobs, and you can collapse any window into a "tab" that hugs the bottom edge of the screen — until you click the tab to make it turn back into a window.

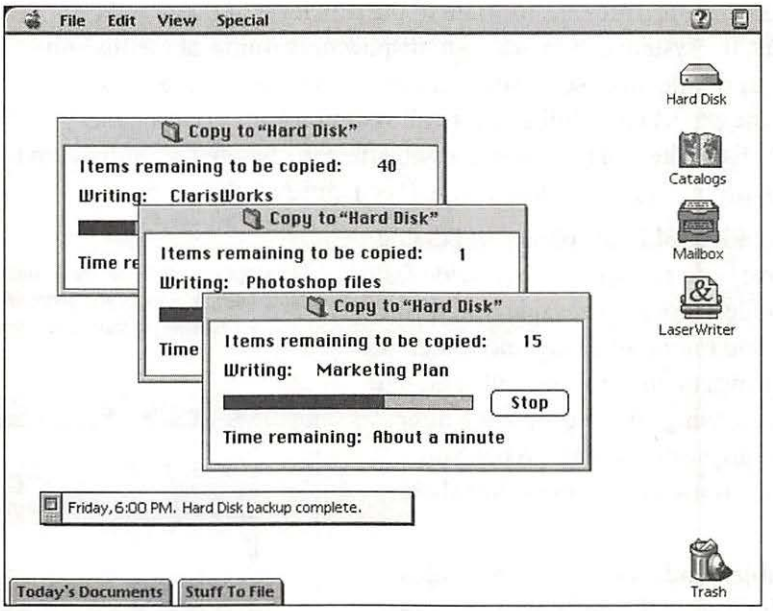
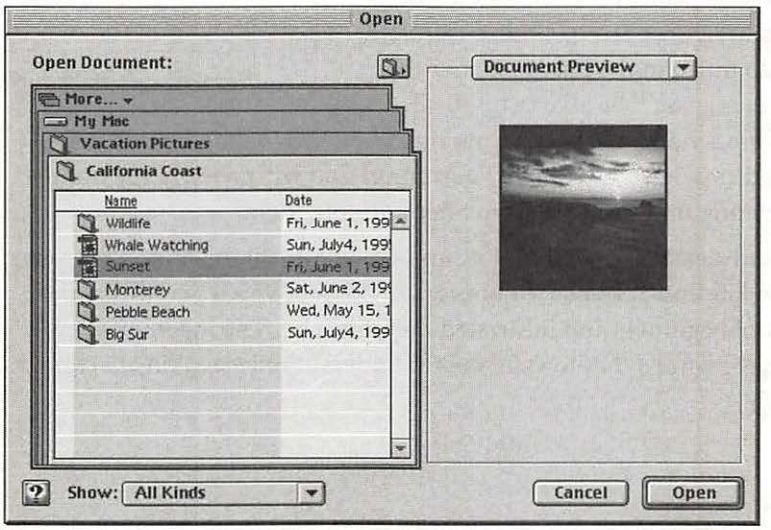


Figure 6-7
In the future, you won't get lost trying to open a file and burrowing into nested folders; the entire path you have traveled remains visible in a cascade, as shown at left. You can see the new 3-D folder look and the additional file info revealed in this box.



- **Contextual pop-up menus:** It's not hard to figure out where Apple got this idea; Claris, Netscape, and Microsoft have been doing it for years. Throughout the Finder, you'll be able to invoke pop-up menus that list the commands you're most likely to need. The menus will change according to the specific task you're performing. (See Figure 6-8.)

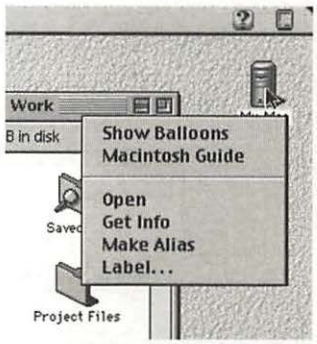


Figure 6-8
Contextual menus will offer you a choice of the most frequently used commands throughout the Finder.

- **Protected memory:** The OS will allow each program to access and manipulate only the specific chunk of RAM allocated to it; any other available memory — the RAM being used by the system itself, for example — is *protected.* By strictly protecting each program's memory allocation, the OS makes it less likely that the crash of one program will bring down the entire system.
- **Preemptive multitasking:** Suppose you have several programs running on your Mac simultaneously. Ordinarily, each program tries to grab whatever CPU processing cycles and memory it can to carry out its tasks. The resulting conflicts are generally what cause those "application unexpectedly quit" messages. The new system architecture prohibits programs from competing with each other for resources, however, by *preempting* the requests of each individual program. It systematically controls the switching between tasks that require attention and stands between applications that would otherwise be grabbing for the same resources at the same time. Mac OS 8's preemptive multitasking is only partial, though, in that it controls the division of memory and clock cycles only on specific functions. Full preemptive multitasking will have to wait for an even more distant Mac operating system.
- **Demand-paged memory:** Another memory-management scheme that will make it possible to run more programs on less memory. With demand-paged memory, the system doesn't load a whole program into RAM when the program is launched. It loads only as much of a program as is demanded at the moment and swaps in additional chunks as needed.
- **Finding by content:** A beefed-up Find function will make it easier to search for files based on their *contents.* For example, you'll be able to locate all Excel spreadsheets on your hard drive that contain both the words "mackerel" and "barium." The Find function will rank the results in order of their relevance to your search criteria. (See Figure 6-9.)
- **Improved list views:** Instead of simply listing files by name or date, the revamped system allows you to set up list views according to specific sets of criteria. For example, you can set up a view that displays only ClarisWorks documents stored on a particular file server and created within the last two weeks.

Figure 6-9
This is Finding as it was meant to be: You can search for a file based on any combination of words found within it. The list of found items are ranked according to how relevant that appear to be to your search criteria.

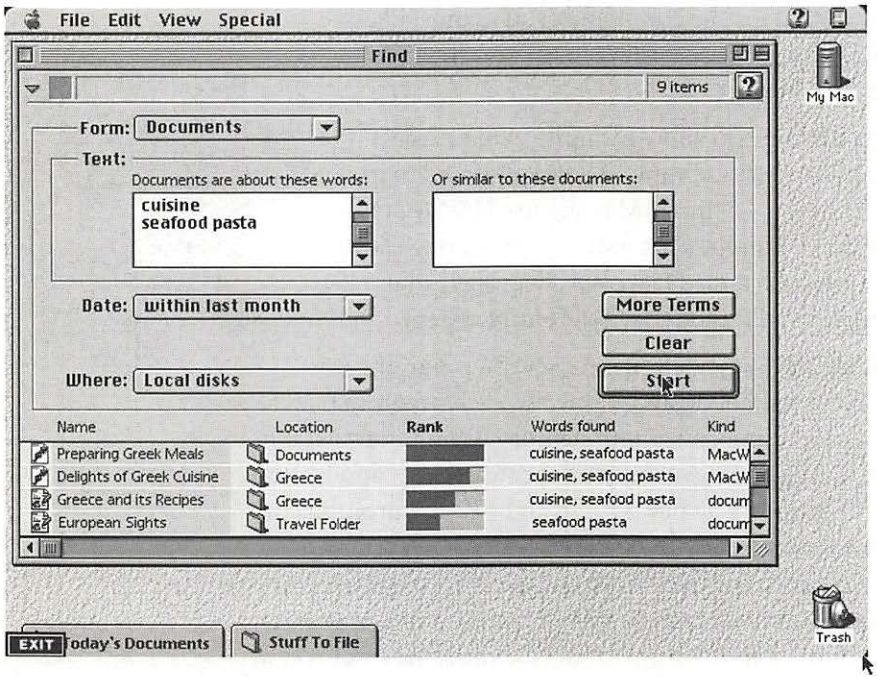
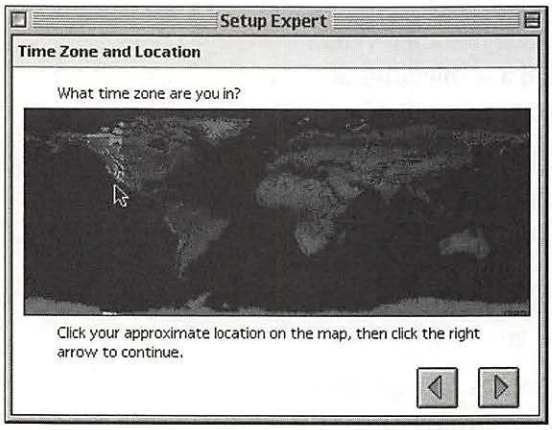


Figure 6-10
An example of a Mac OS expert at work. The expert asks you a question, you type or click on a response. Then the expert takes care of the job at hand. This expert, for example, sets your clock and time zone correctly.



- **Active assistance from the experts:** Upcoming system updates will take System 7.5's Apple Guide concept further, providing more ways to automate repetitious tasks without having to buy third-party macro programs or delve into AppleScript programming. Under Mac OS 8, on-screen help systems called *experts* will learn your working style (through interview-style questions) and then develop scripted "agents" to automatically handle the tasks that you need to do. (See Figure 6-10.) Another component of the system will automatically display tips to suggest better ways of handling the tasks you perform on your computer.

- **Increased storage capacities:** Talk about a quantum leap: Apple will increase the maximum size of a single volume from 2 terabytes to *256* terabytes. That means that maximum size of a Mac hard drive can now climb to around 262 *million* megabytes.
- **QuickDraw GX:** Apple originally introduced QuickDraw GX as an option with System 7.5, but in the future, QuickDraw GX is to be standard, as is QuickDraw 3D.
- **Communications and networking:** More sophisticated Internet access tools are slated to come with future versions of the Mac OS, as is a telephony interface to support voice mail and software-based fax modems. Cyberdog, a collection of tools for searching and navigating the Internet, will be incorporated into the system, providing a single built-in interface for browsing the World Wide Web, handling E-mail, searching remote databases, and downloading files from FTP sites.

BEYOND THE MAC OS

Of all the new features and enhancements originally promised to arrive in Copland (or in Gershwin, the code name for the system once expected to follow Copland), the ones that count the most are preemptive multitasking, protected memory, and, of course, a system written entirely in native PowerPC code. Those features, taken together, would result in a huge speed boost and a dramatically more stable operating system — certainly, the best operating system ever to run on a Mac.

Incredibly, a system with all of these features already exists. It's called the BeOS, and it was developed by Be, Inc., a company under the leadership of Jean-Louis Gassée, the former president of Apple Products. The BeOS is 100 percent PowerPC native, offers full preemptive multitasking and protected memory. In short, it has all the vital technologies everyone's been waiting for years to see in Copland.

One small problem with the BeOS — it can't run *any* Macintosh programs. It runs on the PowerPC *chip*, but it's a completely different operating system from top to bottom.

Nevertheless, many software companies feel it wouldn't be too difficult to create a Mac-compatible version of the BeOS. By the end of 1996, rumors were swirling about negotiations between Apple and Be, Inc., with the goal of licensing the BeOS and using it as the foundation of a future Mac operating system.

PERFORMA SYSTEM-SOFTWARE ANNEX

As we describe in Chapter 15, the original Performa line of Macs differed from their mainstream counterparts primarily in their system software. There was never as much black magic to these special "P" system versions as most people thought — the "P" versions ran on mainstream Macs, just as non-P versions run on Performas.

Today, of course, there's no longer any differentiation between Performa system software and mainstream Mac System Folders. That's why we've removed our comprehensive Performa System Software Annex from this chapter; there's simply no such thing as a Performa operating system any more.

If, for some reason, you still need to know the difference between System 7.1P3 and System 7.1P4, we've included the complete Performa System Software Annex on the CD-ROM that came with this book.

THE *MAC SECRETS* GUIDE TO APPLESPEAK

The Mac started out easy — there was a System file, a Finder, and a tiny handful of other files you had to know about to create and print documents. That was it. No OpenDoc. No CyberDog. No PowerTalk.

But as the Mac has grown more complex, so has Apple's terminology. In fact, Apple has pumped out so many system components and given them so many similar-sounding compound names (AppleLine, AppleLink, AppleMail, AppleNet, and so on) that the terms have practically become a language unto themselves. We call it "AppleSpeak." It can be as incomprehensible as Swahili.

For example, if you consult Apple's official list of trademarks and service marks — an eight-page catalogue of more than 300 items — you'll find listings for HyperCard and HyperTalk, as well as HyperAgent, HyperBrowser, HyperClient, HyperKiosk, HyperKnowledge, HyperLearning, HyperMover, HyperReader, HyperScan, HyperTelevision, and HyperTV. Even Apple's own public-relations staffers couldn't tell us what half this stuff was.

Then there's the Quick series: We all know about QuickTime, but did you know Apple also markets QuickClips (a CD-ROM with multimedia content), QuickRing (a data-transfer system), QuickStart (VAR program), QuickTake (digital camera), and QuickFile (an application, but we don't know what it does)?

Like it or not, you have to master at least *some* AppleSpeak to know what's going on in the Mac community. So here's a quick guide to the AppleSpeak jargon you're most likely to encounter if you drop into an Apple dealership or pick up a copy of *Macworld.*

Apple Guide — The online, step-by-step interactive help system introduced in System 7.5.

ApplePrice — For years, computer-product list prices were a joke. Nobody *ever* paid retail price. In an attempt to make more sense out of the pricing system, and to compete with PC clones, Apple created this new pricing system for all of its products, which better reflects actual street prices.

AppleScript — Apple's scripting language that lets you write scripts to automate various Mac functions. (See Chapter 22.)

AppleSearch — A text-archiving and retrieval program that automatically extracts text from documents on a network, pours the information into a central database, and then allows network users to retrieve specific documents.

AppleShare — A system-software extension that allows you to access other Macs across a network. (See Chapter 32.)

AppleTalk — The networking language used by Macs to communicate with other devices on a network. AppleTalk is built into every Mac.

Cyberdog — Apple's integrated suite of Internet tools. CyberDog provides one unified interface for a World Wide Web browser, e-mail reader, Newsgroup handler, Gopher browser, and FTP client. (See Chapter 28.)

EtherTalk — Another networking language that can be used by Macs to transfer data between devices. (See Chapter 32.)

GrayShare — The networking/grayscale technology used with Apple's QuickDraw-based printers, such as the StyleWriter II. The "gray" part of GrayShare refers to the printer driver's ability to print grayscale halftones on a non-PostScript printer. The "share" refers to the fact that GrayShare-driven printers can be shared over a network. (There's also such a thing as ColorShare, included with the Apple Color Printer.)

HyperCard — A software construction kit that lets you use a basic programming language, HyperTalk, to build your own programs. (See Chapter 23.)

HyperTalk — The programming language used within HyperCard (see preceding entry).

KanjiTalk — The Japanese operating system for the Mac.

Live Objects — The individual parts or components that make up a document under Apple's OpenDoc technology. (See "OpenDoc," later in this chapter, and Chapter 16.)

LocalTalk — The hardware — wires, connectors, cables, and so on — used to connect Macs together in a network. AppleTalk is the name of the protocol the Mac uses for networking, AppleShare is the actual extension that enables AppleTalk to operate, and LocalTalk describes the stuff you actually plug in to make it happen.

MacroMaker — A basic (and now out-of-date) macro program that Apple included with most versions of System 6.

Moof — The official Apple-owned sound emitted by the Dogcow (yes, another Apple trademark), the Holsteinlike canine that appears in the Page Setup Options dialog box.

OneScanner — Yes, this is OneWord, NotTwo, and it refers to Apple's own brand of flatbed scanners for the Mac. Ironically, there are *two* OneScanners: a grayscale model and a color model.

OpenDoc — Software that lets you access the features of one program — say, a spreadsheet — from within another program. OpenDoc enables you to combine the components of several different programs — called Live Objects — into a single document without having to individually launch and quit each of the programs. (See Chapter 16.)

Open Transport — Apple's latest networking scheme that provides a consistent interface and set of guidelines for setting up networking services and communications protocols. (See Chapter 32.)

PlainTalk — The speech-recognition technology built into the AV Macs that lets you issue commands by speaking into a microphone.

PowerLatch — The docking mechanisms that connect PowerBook Duos to MiniDocks and Duo Docks.

PowerPC 601, 603, 603e, 604, 604e — The specific chips — designed by Motorola, Apple, and IBM — that serve as the main processors in the Power Macintosh series. In general, the higher the number, the faster the chip — except for the 603, which is smaller, less power-consuming, but on par with the 601's speed.

PowerShare — The application that allows PowerTalk to operate from a central server (see the next entry).

PowerTalk — A now abandoned set of system software modules, included with some Macs and system versions, that attempts to integrate networking, e-mail, and telecommunications into a single interface. (See Chapter 32.)

QuickDraw — The behind-the-scenes core programs that the Mac uses internally to draw graphics on your computer screen.

QuickDraw GX — Apple's upgrade to QuickDraw. While traditional QuickDraw is geared toward representing images at a relatively crude screen resolution of about 72 dots per inch, QuickDraw GX supports high-resolution output to printers. It also makes it easier to select a Mac printer when sending a print job and it handles printing faster than QuickDraw. (See Chapter 25.)

QuickDraw 3D — a system extension for creating and displaying 3-D graphics. It lets you do workstation-level 3-D modeling on a Power Mac. (See Chapter 20.)

QuickTake — Apple's low-cost digital camera.

QuickTime — A system extension that enables you to play, edit, and compress movies and sounds on the Mac.

QuickTime VR — A new variation on the original QuickTime technology that lets you rotate your view of a photographic-quality scene a complete 360-degrees. (See Chapter 23.)

ResEdit — Apple's resource-editing utility program. You can use ResEdit to customize programs by editing the menus, dialog boxes, sounds, pictures, and icons found within applications. (See Chapter 21.)

TokenTalk — A networking language for high-traffic networks that can be used by Macs to transfer data between devices. Macs using TokenTalk (which is installed as a system extension) have to be equipped with Token Ring hardware.

WorldScript — A feature included in System 7.1 and later that allows you to convert your Mac to a foreign language by installing a foreign language keyboard script into the System file.

Zeal — In Apple parlance, this is not a fervor or passion for something, but merely the name of a TrueType font.

Zhong-WenTalk — The Chinese operating system for the Mac. (You probably won't encounter this bit of AppleSpeak too often, but it's kind of neat to know, isn't it?)

ANSWER MAN

Q: ***Can you, in 100 words or less, explain the difference between all the different System 7.5.3 versions?***

A: No.

To do that, it takes a huge table. We're happy to oblige. Here's a list of the 11 different OS versions between System 7.5 and System 7.6. The left column lists what it might say in your About This Macintosh dialog box. The right column shows how you got there.

About This Macintosh says:	How you got it:
System 7.5	Sold commercially. Also came installed on new Macs.
System 7.5.1	Start with System 7.5, then install System 7.5 Update 1.0 (a free multi-disk installer set).
System 7.5.2	Came installed on new PCI Power Macs. A different version came on PowerBook 190, 5300, & Duo 2300 models.
System 7.5.3	Came pre-installed on some desktop Macs.
System 7.5.3L	Came pre-installed on Mac clones.
System 7.5.3 System 7.5 Update 2.0	Start with any of the above, then install System 7.5 Update 2.0 (a free multi-disk installer set).
System 7.5.3 Updated to Revision 2	Install System 7.5.3 Revision 2 (a free multi-disk installer set).
System 7.5.3 Revision 2	Sold commercially. Also came installed on new Macs.
System 7.5.3 Revision 2.1	Pre-installed on Performa 6400.
System 7.5.3 Revision 2.2	Pre-installed on Power Mac 9500/200 and Performa 6360.
System 7.5.5	Start with any flavor of System 7.5.3, then install System 7.5.5 Update (a free multi-disk installer set).

Part II:

Secrets of the Machine

Chapter 7: On, Off, and Everything in Between
Chapter 8: The Disk Chapter
Chapter 9: The Memory Chapter
Chapter 10: Keyboards and Mice
Chapter 11: Monitors
Chapter 12: From 128K to Quadra: Model by Model
Chapter 13: The Power Macs: Model by Model
Chapter 14: PowerBooks Exposed
Chapter 15: A Puny Performa Chapter

Chapter 7

On, Off, and Everything in Between

IN THIS CHAPTER:

- What happens when you press the power button
- The startup sequence: the ROMs, the System file, loading extensions
- The complete list of startup keystrokes and what they do
- What happens when you shut down
- The inside story on the Reset and Interrupt switches
- Sleep modes

POWER ON

Apple has created hundreds of design elements that are consistent from one Mac model to the next. But the method of turning them on isn't one of them. Your Mac's power switch may be (a) a rocker switch on the back panel (as on one-piece Macs and LCs); (b) a key on the keyboard (as on most Quadras and most Power Macs); (c) a round nubby button on the front panel (as on 610- and 6100-shaped models); or even (d) a half-inch long, capsule-shaped button on the top surface (as on a PowerBook Duo).

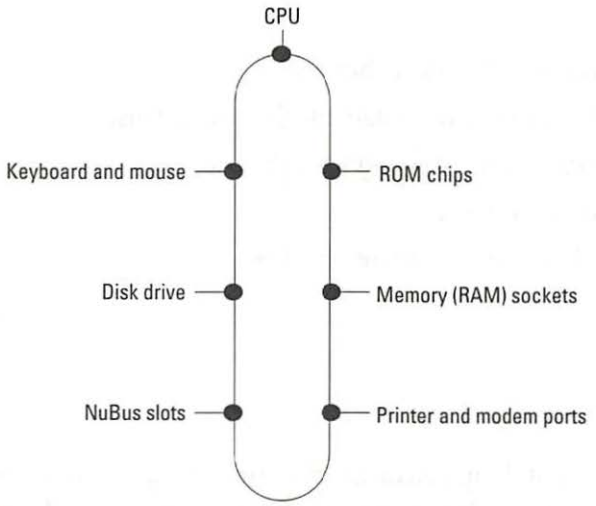
THE ADB BUS

The term *bus,* as it applies to the Mac, makes much more sense if you imagine the stream of electricity that courses through the computer's veins. It streams along specific pathways — wires and circuits — much like, well, a bus route

in a *very* congested city. Along the way, this stream of electricity makes regularly scheduled stops, checking to see if there's any new information to pick up (see Figure 7-1).

The term *Apple Desktop Bus,* or, redundantly, the ADB bus, is the official name for one particular loop of the bus route: the one that includes the keyboard and mouse. As you probably know, some Macs have two ADB jacks in the back, one each for the keyboard and the mouse. (You can plug either into either jack.) But most recent models include only one ADB jack, requiring you to plug the mouse *into* the keyboard, which in turn is plugged into the Mac.

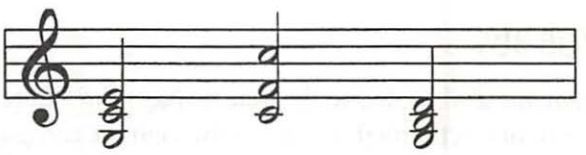
Figure 7-1
A bus map for your computer, showing all regularly scheduled stops to pick up and discharge messages: the keyboard jack (have you typed anything?), the mouse plug (are you clicking?), and, eventually, the Grand Central Station of the Mac — the Motorola central processor chip (CPU) that serves as your computer's actual brain.



THE STARTUP SEQUENCE

All right, juice is flowing. You hear the startup chime (see Figure 7-2).

Figure 7-2
From left to right: The Quadras and PowerBooks play the breathy C-chord sound. The Mac II startup sound is an open fifth: F and C. The AV Macs start up with a majestic G chord. Interestingly, these three startup chords, played in sequence, form the harmonies for "La Bamba."



POWERING-UP SECRETS

How to turn on the Mac when there's no keyboard

If you turn on your computer by pressing your keyboard's power-on key, it's useful to know about the alternative method (for when you have a broken or missing keyboard, for example). The alternate method: Press the small, round, slotted button in back of the computer. It's about the size of a pea, usually in the lower-left corner of the back panel as you look at it. On some models (such as the tower-style Quadras, the 630-series and Power Macs), it's at the *top* left — and on recent Power Macs and Power Computing machines, it's on the *front* panel. (The 630's button isn't slotted, though; it's a barely-noticeable round nub that protrudes from the plastic case, just next to the monitor port.) In a pinch, such as when the system has crashed, you can turn the Mac off using this button.

Trivia: In all of Mac history, only a couple of models had *no* power button. Can you name the first? (Hint: It's the Quadra 840AV.)

A Mac you can't turn off

If you use a particular Mac as a *network server* (a central holding tank for files shared by all Macs on a network), you may wish that it would *never* turn off. Yet in real life, fuses blow, blackouts occur, and janitors unplug power strips in order to vacuum.

Look at the back panel of your Mac. Do you have a small round power button (see the previous Secret)? If so, use a screwdriver to turn that button a quarter turn, so that the slot is vertical, and the entire button is flush with the back of the computer. It's now in permanent On position. If the power goes out for any reason, the Mac restarts itself automatically.

On the one-piece Macs, it's a single ding (a ninth above middle C). On the Quadras and PowerBooks, you hear a second-inversion C chord played by a synthesizer. The AV Macs play a straight-ahead, root-position G triad. On a few Performas, such as the 6290, it's an open fifth — D and A. In fact, Apple's startup harmonies — from the single note of the Mac Plus to the five-note chords of the Power Macs — are growing ever more complex. The Power Macintosh startup chord is a complex E V11 chord, strummed as a harmonic on a jazz guitar.

In any case, you may have wondered: What the heck *takes* so long for the computer to come to life?

The answer is that the Mac is busily running programs without your even knowing about it. These programs are normal Mac software, but they're not sold in any store, and they don't come on any disks. They come "hardwired" into the permanent silicon memory of your Mac — the ROM chips.

ROM: the hidden software

ROM stands for *read-only memory;* the implication is that you, O user, may not store (write) anything in this kind of memory. It's *read-only.*

Every Mac has ROM chips. Indeed, the ROM chips are what makes a Mac a Mac. Some of the "programs" (more accurately, *code libraries*) stored on the ROM chips are QuickDraw, the software that draws lines and colors on your screen; the Window Manager, responsible for drawing and manipulating the familiar Macintosh windows; and the Menu Manager, which creates the menus at the top of your screen.

Because these programs are built into the Mac, people who write Mac programs are spared the time and headache of writing lines of menu-handling code, or window-handling code, and so on. They just write references ("calls") to the Mac's ROM, which takes it from there. No wonder most Mac programs work alike — they all rely on the same chunks of interface code.

Why the Mac needs a System file

So, if the Mac operating system is stored in ROM, why do you need a System Folder?

Actually, the System file and the ROM work together to create an operating system. The System either *adds to* or *replaces* parts of the ROM. Apple, for example, improves or enhances its system software at least twice a year — and sometimes more often than that. (In a period of two years, Apple managed to release System 7.5, 7.5.1, 7.5.2, 7.5.3, 7.5.5, and 7.6.) You can imagine what a mess you'd have if Apple had to replace your Mac's ROM chips twice each year! As it is, the company just creates a new software-only System Folder with programming that supersedes or adds onto what's in ROM.

The second reason for a System file: As in any software, the code in the ROM chips is sometimes buggy. What do programmers do when their code has been permanently etched into silicon and they discover a mistake? Simple: Write a fix for the bug in the System file (the part that comes on a disk), which forms a computer-code detour around the problem in ROM.

The startup continues

Back to our story in progress. The electricity sparks the ROM chips' programs into life. These startup programs are instructed, first of all, to check out the machine. The computer sends electronic feelers into its own circuitry, making sure that everything is as it should be. The Mac inspects the chips that control the keyboard jack, the SCSI port, and so on, restoring them to their "ready-for-action" settings.

One familiar example is the memory (RAM) checkup: The ROM programs test the health of your RAM chips every time you turn on the computer. If even *one pin* of a memory board (each has dozens of pins) isn't solidly seated in its slot, the ROM program reports the bad news to you. Instead of playing the usual chime, it plays a Chime of Death.

The Chime of Death is four single arpeggiated notes (Mac II's), the first strain of the *Twilight Zone* theme (Quadra or Centris), a drum solo (Quadra AVs), a flute series (LC models), or a car-crash recording (Power Macintosh). (See Chapter 33 for troubleshooting tips.)

That's why the more memory your Mac has, the longer it takes to start up — because there are more RAM chips to inspect. You particularly notice the longer delay after you install more memory.

TRUE FACT

HOW BIG IS YOUR ROM?

The Mac's ROM chips are growing.

As each successive Mac model becomes more complicated, more and more of the computer's Notes to Itself must be crammed onto its chips. The original Macintosh, for example, fit all of its identity into 64K of silicon. When the faster Mac Plus came along, the ROM chips grew to 128K. Color-processing instructions bloated the Mac II's ROMs to 256K; the complex 68030 CPU chip used in the IIci and most of the II series required 512K ROMs.

Today, the awesome power of the Power Macintosh calls for 4MB of ROM instructions — that's 32 times more ROM than the first Mac had RAM!

The ROM chips' diagnostic report can show up in several forms, both audio (as we noted) and visual. If something is drastically wrong inside, you may see the "sad Mac" icon on a dark screen. See Chapter 33 for details.

The Power Mac, by the way, occasionally takes especially long to start up — for your own protection. If the Mac wasn't shut down properly last time — for example, if you had a system freeze and had to restart — the Power Mac ROMs perform an additional test, a scan of the hard-drive to confirm the integrity of the disk file structures, during the appearance of the happy Mac icon.

How does it know that you crashed the last time? During a normal shut-down, the Finder clears vulnerable file-directory information out of RAM first and then resets a system flag — a tiny invisible software "switch" — signaling that all is OK on your hard drive. When you shut down after a crash, however, without using the Shut Down command, that flag never gets reset. When the Mac restarts, the ROM encounters the "file system dirty" flag and assumes the

Finder *didn't* safely clear all the file info out of RAM the last time you shut down. That's what triggers it to (a) spend a little extra time checking the drive's data to make sure they survived the abrupt shutdown, and (b) brings up the "This Mac wasn't shut down properly" message (if that option is turned on in the General control panel; see Chapter 4).

The larger your hard drive — and the more files you have stored on it — the longer this extra integrity test takes.

The search for a good system

When the hardware checks out as OK, the ROM hands off to your System file — or tries to. It seeks a System Folder in the following order:

- On the floppy disk in the main floppy drive
- On the floppy disk in an external drive (if any)
- On the hard disk you selected (if any) using the Startup Disk control panel
- On the internal hard drive (whose SCSI ID number is always 0; see Chapter 30 for a discussion of SCSI ID numbers)
- On an external hard drive with ID number 6, and then 5, and then 4, and so on

If the Mac doesn't find a *startup disk* (a disk with a System Folder), it checks the internal hard drive again, and then waits for you to insert a floppy disk with a System Folder on it. (That's when the blinking question mark appears.) In that event, go find your system disks or startup CD-ROM. Insert Disk Tools if you want to find out if anything's wrong with your hard disk, or insert the Install disk (or CD-ROM) if you want to reinstall the System Folder.

The first programs to run: enablers

The Mac is now turned on. It's passed its own checkup, and it's found a working System Folder. If it's a System 7.1 (or later) Mac, the first programs to run are the enablers, if any. (As described in Chapter 5, an enabler is a file that updates or enhances the regular Mac System software.)

If the enabler is missing from the System Folder on your designated startup drive, that's the end of the startup sequence — even if there's a perfectly good System Folder on another disk. The Mac displays an error message ("This model Macintosh requires a newer version of the System software") and sits there until you turn it off or the warranty expires.

Get out your original System disks (or CD-ROM) and get busy reinstalling the System software.

More startup software: extensions and control panels

After owning a Mac for a while, most people begin to tailor its startup sequence to their specific needs. You do this by adding extensions and control panels to your System Folder (see Chapter 4). Your Mac runs these programs after the enablers, but before it gets to the Finder.

Normal programs run (get loaded into memory) only when summoned with a double-click. Extensions and some control panels, on the other hand, load at startup. Then they lurk, doing their pre-programmed magic, in the Mac's memory for as long as the computer is turned on. For this reason, they're ideal for — and designed for — customizing the Mac's overall behavior. America's favorite add-on control panels include screen savers (After Dark, for example), Adobe Type Manager, fax software; and so on.

Extensions and control panels: how they load

Extensions and control panels load separately according to the folder they're in, in the following order:

- ***System file.*** Few people realize it, but some extensions are actually installed into the System file itself, just like a sound or a keyboard layout. *You* can't put one there — only certain Apple extensions (invisible to you) are stored there.

  One example: Tuna Helper (System 7.0 or 7.0.1). The System 7 Tuner extension, which you *can* see, installs Tuna Helper into your System file without your even knowing it. (You can see Tuna Helper if you open up your tuned-up System 7.0 or 7.0.1 file with ResEdit. See Chapter 21 for details.)

MACINTOSH SECRET
THE POWER OF SHIFT

The Shift key plays a critical role in the startup process. If you press and hold Shift before the "Welcome to Macintosh" message appears on the screen, you prevent your extensions, control panels, and startup items from loading. This, of course, is one of the most important tools in the arsenal of anyone trying to solve a mysterious system-crash problem.

The Shift key also prevents such Apple add-on extensions as System Updates and Tuners from loading. It also prevents Mode32 from loading and reduces your Disk Cache setting to a bare-bones minimum (see Chapter 9). Pressing Shift also turns off virtual memory on most Macs.

The Shift key, however, doesn't prevent *all* extensions from loading. It certainly doesn't block an enabler that your Mac requires to run, for example. Nor does it turn off any printer drivers that you need to print.

A single, very sound principle governs Apple's programming in every case: The Shift key turns off all software that isn't *required* for the Mac to start up with its basic functions intact. That's why model-specific enablers are permitted to run, but not System Updates that aren't actually required for the Mac's operation.

Remember that the Shift key is designed for helping you troubleshoot. It's designed to assist in your process of elimination as you attempt to rule out extraneous software influences on your Mac's behavior.

- The contents of the ***Extensions folder,*** in alphabetical order.
- The contents of the ***Control Panels folder,*** in alphabetical order. In other words, an extension in the *Extensions* folder called Zipper actually loads before one in the Control Panels folder called Alpha. It's okay to put extensions in the Control Panels folder and vice versa, by the way. These folder names are just for convenience; technically, you don't have to put anything particular in one or the other.
- The contents of the *System Folder*'s main level, in alphabetical order. Yes, it's fine to put extensions and control panels loose in the System Folder.

Your personalized loading order

Armed with this information, you have complete control over the loading order of your extensions and control panels. That's good, because some extensions (such as hard disk or optical-disk drivers, virus checkers, and extension managers) only work if loaded first. Loading order is also important when you're trying to troubleshoot a recurrent system crash or freeze, since the order in which extensions load is often responsible. (More about solving extension conflicts in Chapter 32.)

Here are some examples of things you can do:

- Make one control panel load before all the others by putting its alias into the Extensions folder. (But leave the original in the Control Panels folder so it'll be there when you need to change its settings.)
- Take an extension that's supposed to load before all the others and put a space in front of its name. Leave it in the Extensions folder. It loads first because it's first alphabetically *and* in the first folder the Mac looks at.



- Use Conflict Catcher (or Now Startup Manager) to simply drag startup files into the order you want.
- Take an extension that's supposed to load *after* all other extensions and control panels. Put a Z at the beginning of its name and then put it loose in the System Folder.

Drivers: sometimes invisible, always vital

Among your now-loading extensions, by the way, are the *drivers* for your equipment. Simply stated, a driver is a piece of software that teaches the Mac all it needs to know about a piece of peripheral equipment. Almost *every* Mac

add-on gadget — printer, CD-ROM drive, SyQuest cartridge drive, modem — comes with a driver you put into your System Folder. (On Power Macs, the driver for the built-in Apple CD-ROM drive doesn't get dropped into the System Folder; it's built into the ROM.)

Most critical of all, of course, is your hard disk driver. (This particular set of software is on its own invisible partition.) It's important because you use your hard disk more than any Mac add-on — constantly, in fact.

When you upgrade to a new system version and get random error messages and system crashes, your first suspect should be a damaged or out-of-date hard disk driver. Now you understand why there are a half-dozen *commercial* hard disk driver programs on the market. Each is supposed to work with most brands of hard drives and is supposed to be extra-safe. See Chapter 8 for details.

CASE HISTORY

THE NEW JERSEY COMPUTER WIDOW

The owner of Atlantic Computer Systems, a wonderful Mac dealer in New Jersey, told us about one Mac widow who took things into her own hands. (A Mac widow, of course, is a woman whose husband spends more time with his computer than with his spouse. We know a Mac widower or two, too.)

Anyway, this particular woman took a low-tech approach to solving a high-tech problem. She grabbed a hammer and smashed in her husband's Apple 14-inch color monitor.

No report on whether that New Jersey couple now spends more time together.

Icon row

As each extension and control panel is loaded, its icon usually appears on the bottom of your screen. We say *usually,* because many control panels have a check box that lets you eliminate the appearance of the startup icon — and some Apple extensions are programmed not to display a startup icon at all. (Control-freak notice: You can use Conflict Catcher to force them to appear; see Chapter 34.)

The icons appear one-by-one in a horizontal row. Depending on whether or not there's a tiny piece of "wrap the icons!" code in any of the extensions, these icons may even wrap upward to start a second row above the first — and a third, and a fourth, and so on. (One extension freak boasts that he regularly runs 120 system extensions without crashing. We'd like to see it.)

This is worth mentioning, only because it can be a clue when you're in extension-conflict hell. If you're suffering from startup-crash blues and having trouble figuring out which extension is crashing your Mac, watch those icons as they appear. Often one particular icon pops up just before the crash, each time you restart. That icon may represent either the extension that's causing the crash or the one just after it. (For much more on extension conflicts and how to solve them, see Chapter 33.)

STARTUP KEYS

Mac lore is filled with tales of little-known stunts your computer performs if you press certain mysterious key combinations while the computer is starting up. Here, together at last, are all the different startup key combos. We threw in a couple of other miscellaneous startup Secrets while we're at it.

STARTUP SECRETS

The Shift key (no extensions)

Hold down your Shift key, beginning no later than the appearance of the smiling-Macintosh icon. Release it when you see the words "Extensions off." You've just started up the Mac without any extensions or control panels (except for invisible, Apple-installed extensions that live in the System file itself). You also prevented anything in the Startup Items and Shutdown Items folders from launching, and prevented File Sharing from turning on.

You also made some changes to the Memory control-panel settings: You set the Disk Cache to 96K (System 7.5 and later) or 64K (before System 7.5) and turned off virtual memory. You may find it confusing that, when you actually *look* at the Memory control panel, all settings seem to be where they normally are. That's because the Mac treats its special Shift-key settings as temporary, and your regularly-scheduled settings are restored the next time you start up the Mac.

The Shift key (no Startup Items)

If you wait to press Shift until *after* your extension icons have finished appearing on the screen — but before the Desktop appears — then you prevent the contents of your System Folder's Startup Items folder without turning off your extensions.



Interestingly, the Shift key — if it's still being pressed as the Desktop appears — performs one undocumented additional function: It prevents any windows from opening upon your arrival at the Desktop. (See the next Secret for a strange coincidence.)

Option (all windows closed)

There's no end to the secret key combinations that do things when you start up the machine. Press Option, for example, if you want to be greeted by a clean, neat Desktop, with no windows or folders open. (Normally, the Mac

always reopens whichever windows were open when you last shut down.) As noted earlier, the Shift key also performs this function, but Option performs *only* this function.

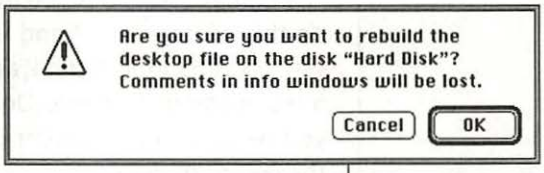
Technically, you only need to press Option at the end of the startup process — from the end of the extension-loading phase to the appearance of the Trash can, for example.

⌘-Option (rebuild the invisible Desktop file)

As you read in Chapter 1, there's an invisible Desktop file on every disk. Over time, the Desktop file becomes bloated with icons belonging to files and programs you've long since taken off your disk.

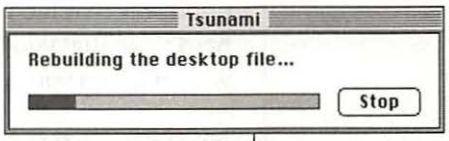
To make the Mac "forget" all superfluous icons (and, in a System prior to 7.5.3, all Get Info comments) from your current Desktop file, press and hold the ⌘ and Option keys when the Mac is starting up. You don't need to press them right away — technically, the critical moment is just after your extensions have all loaded). You can let go of the keys when the Mac asks you specifically if you want to rebuild the Desktop file (see Figure 7-3).

Figure 7-3
The Mac asks if you're sure you want to wipe out your old, invisible Desktop file.



If you click OK, the Mac takes a minute or so to cleanse its Desktop file, resulting in a slimmer, quicker, invisible database (see Figure 7-4). You get a separate message for each disk that's attached to the Mac.

Figure 7-4
The Mac rebuilds the Desktop file. If you grow impatient, click Stop; no harm done. Your old Desktop files will remain in force.



We should point out that Apple's official recommendation is that you rebuild the Desktop only *after* you've turned off all your extensions and control panels; certain system extensions can interfere with the Desktop rebuilding process. (Frankly, though, we've rebuilt the Desktop plenty of times without turning off other extensions and it's never been a problem.) If you're running any version of System 7 prior to 7.5, the Apple-sanctioned procedure, then, is to *first* restart with the Shift key held down (as described earlier in our first Secret), wait until you see the words "Extensions off" and *then* switch to the ⌘ and Option keys. See "Desktop File Secrets" in Chapter 2 for details.

⌘ key (turn off virtual memory)

If you press the ⌘ key during startup, the Mac will turn virtual memory off (if it had been on). Virtual memory will be on again the next time the Mac starts up. (See Chapter 9 for details on virtual memory.)

C to startup from Power Mac CD-ROM

When you start a Power Mac with a startup CD-ROM in the drive, hold down the C key to force the Mac to load from the CD-ROM's System Folder instead of your hard drive — a very handy troubleshooting tip! (This trick also works with some CD-equipped *non*-Power Mac models, such as the Performa 630/640 series.)

⌘-Option-P-R (zap the PRAM)

Your Mac has a tiny chunk of memory called parameter RAM or PRAM (pronounced *pea*-ram). This smidgen of memory is where the Mac stores settings it's supposed to retain even when the computer is turned off — like the settings you make using the Control Panels (mouse speed, keyboard settings, monitor color setting, Desktop pattern, choice of startup disk, and so on).

In times of trouble, you may need to flush this bit of RAM and start over. To do this with System 7 and later, you use another hidden key combination at startup: ⌘, Option, letter P, and letter R keys. Keep them pressed until you hear a second startup chime. (On a PCI Mac, you can't zap the PRAM with a restart; you have to turn the computer completely off, press the keys, and then turn the computer on.)

Then use your control panels to reset your settings.

⌘-Option-Shift-Delete (ignore internal drive)

If, just after you turn on the Mac, you hold down ⌘, Option, Shift, and the Delete key, your Mac completely ignores its internal hard drive (if any). This is a good way to force your Mac to use a different startup disk, such as an external hard drive that you loaded with a different System version. (This is also a good way to sprain your hand.)

⌘-Option-T-V (use the TV for a monitor)

Hold down ⌘-Option-T-V during startup to make an AV-style Quadra use an attached TV as a monitor. (See Chapter 23 for details.)

Interrupt switch (to hear the Chimes of Death)

On a Power Mac, you can hear the "Chimes of Death" car-crash sound whenever you want. *Just* after you turn on the Mac — while the monitor is still black — press the Interrupt switch (see "The Interrupt Switch" sidebar later in this chapter). Yikes, what a grisly sound!

Mouse down (eject a floppy)

Suppose that you accidentally left a floppy disk (with a System on it) in your disk drive, but you don't want to boot from it. Are you condemned to wait for the startup sequence to finish so that you can eject the disk and restart from your hard drive?

Nope. As soon as you realize your mistake (or sooner, since this has to happen before the floppy's System displays the smiling Mac), press and hold down the mouse button. The floppy ejects itself, and the startup process begins with the hard drive's System Folder.

Startup screens

You can display a picture of your choice when the Mac starts up in place of the usual "Welcome to Macintosh" screen. See Chapter 21 for instructions on creating your own.

Startup movies

If you have the QuickTime extension installed (see Chapter 23), there's a special treat in store. You can designate a particular QuickTime movie to play in the middle of your screen when you start up the Mac!

To do this, rename the movie *Startup Movie.* Put it loose in your System Folder. Then restart the Mac and watch the fun. (Of course, your movie won't *start* playing back until the QuickTime extension itself loads. And once it does start playing, the remainder of your Mac's startup sequence gets put on hold until the movie ends. You can interrupt the flick, though, by pressing the spacebar.)

You can even combine a movie with a still picture, creating a theatrical "stage" for your movie. Create a startup *screen*, as described in the previous Secret. Create it, though, so that it has a nice central hole in which your movie can play (see Figure 7-5). When you restart, the still picture appears first, and then the movie plays in the center of it! Handily, the startup movie always stops on its last frame, where it stays until the Mac is finished starting up.

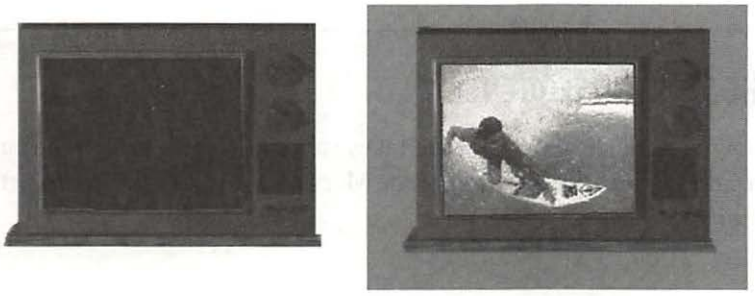


Figure 7-5
Create a startup screen/frame (left). When the startup movie plays, it neatly fills the hollow part of the frame, if you've set it up right (right).

Startup at a specified time

Your Mac gets along perfectly well without you — or at least it can turn itself on without you.

If you have a recent Mac, one that can be turned on by pressing a keyboard key (such as a Power Mac or even late-model Quadra), use the Auto Power On/Off control panel, or the new-style Energy Saver control panel as described in Chapter 4. It will turn on the Mac at a specified time — one day, or every day.

Most PowerBooks can do this, too. It's an option in the PowerBook control panel (with System 7.1 and later) that lets you make the computer wake itself up at a specified time.

If you have any other Mac, buy a PowerKey (Sophisticated Circuits, 206-485-7979). It's a surge-protected power strip that turns on all your Mac gear with a touch on the keyboard power key (even compact and LC Macs). It comes with a little software doodad that lets you schedule the Mac's turning itself on and off unattended.

Startup Items to the background

Many people stick an alias of their word processor into the Startup Items folder, so that a blank word-processing screen awaits them shortly after they turn on the Mac. Nothing wrong with that.

Sometimes, however, the program in your Startup Items folder is designed to be a *background* program. Speech-recognition software (such as Power Secretary), answering-machine programs (such as MegaPhone), and many screen-saver programs fall into this category. Unfortunately, these programs wind up being the frontmost application when the startup process is complete.



Not, however, if you put an alias of your *hard drive* into the Startup Items folder, too. Doing so will bring the Finder to the front (at the end of the startup process) and open its window automatically. Just make sure that the item you want to end up in front is the last in alphabetical order (begin its name with a Z, for example).

BEYOND THE STARTUP SEQUENCE

Now you know why starting up the Mac takes so long — between checking the hardware and loading the software, some Macs take several minutes to get ready for action.

The Mac's next step is to launch the Finder program. Your Finder menu bar (File, Edit, View, Label, Special) appears. Then the computer consults an important, though invisible, file on each disk: the Desktop file. As described in Chapter 1, the Desktop file stores all kinds of information about your disks, folders, files, and their icons. When the Mac knows (from the Desktop file) which icons you have and where they should appear, they start popping onto the screen. Then the Mac looks for disks (such as your hard drive), whose icons it now draws in the upper-right corner of your screen.

Startup Items

Inside the System 7 System Folder is a folder called Startup Items. Just after the Desktop appears, the Mac opens anything you had put into this folder, as described in Chapter 4.

The Mac launches the items in the Startup Items folder in this order: applications, documents, and then aliases — and alphabetically among each category. You can use this fact to your advantage; by renaming the items in this folder, you control which programs load first for the day. As you'll find out in Chapter 9, controlling the loading order of multiple programs is one weapon you have against *memory fragmentation.*

Here's a nice trick for the Startup Items folder: Make an alias of it. Put the alias at the lower-left corner of your screen. At the end of each workday, drag an alias of the document you're working on into the Startup Items folder alias. Next morning, you'll turn on your Mac and be immersed in exactly the same documents, ready to go.

CASE HISTORY

STARTUP ITEMS, RIGHT?

In our work as roving Mac tutors and observers, we sometimes think we've seen it all. But then there was the call from a hysterical, new Mac owner. He claimed that "all Hell" kept breaking loose every time he turned on his Mac.

A little visit solved the mystery. As a perfectly logical human being, he had filled his Startup Items folder with, yes, *startup items* — namely, all his control panels and extensions. (Of course, they actually belong in the Control Panels and Extensions folders.) So each day when he turned on the Mac, he got a screen full of error messages (as the Mac "double-clicked" each extension) and control panel windows (as they opened by themselves).

We doubt he was the first.

SHUTTING DOWN

As you know, Apple strenuously suggests that you never turn your Mac off by cutting off power using the power switch. Instead, you're always supposed to use the Shut Down command.

The rationale is that the Mac needs to do some "housekeeping" before turning off the machine. The examples usually cited include:

- Updating your invisible Desktop file with your current icon and window positions
- Offering you the chance to save your work in any documents still open
- Correctly quitting any open programs, deleting any "temp files" in the process
- Ejecting any floppy disks

We can think of plenty of times when you can't get to the Shut Down command, however. Imagine a system crash or a freeze, for example. In those instances, you have no choice but to cut power to the computer.

We suggest that you use the Shut Down command as recommended by Apple. We do not, however, endorse the wide-eyed, paranoiac approach of many books and magazines. Use Shut Down when you can, but don't waste a milliliter of adrenaline if you do have to shut the Mac off abruptly.

Anyway, today's Mac offers you a number of ways to shut down. Every Mac, of course, has a Shut Down command in the Finder's Special menu. System 7.5 (and later) also offers a Shut Down command in the menu, meaning that you don't have to switch to the Finder to get at it.

System 7.5 or later offers an even handier option: You can press the power key on your keyboard. You're shown a dialog box with three options: Restart, Cancel, or Shut Down. (On PCI-slotted Power Macs and PowerBooks, you get a fourth option — Sleep. Clicking the Sleep button leaves your computer on, but cuts the video signal to the monitor, causing the screen to go black. See "Sleep Modes" later in this chapter.)

The cycle of last chances

The Mac follows a specific series of steps when you've chosen the Shut Down command.

If any programs are open, the Mac quits them automatically, first offering you the chance to save your work in any unsaved documents. If you're connected to a network and other Macs are sharing some of your files, you're warned that you're about to slam the door in their faces (see Figure 7-6). If you click Cancel in any of the dialog boxes that appear during the shutdown process, the entire shutdown cycle is derailed; the Mac stays on.

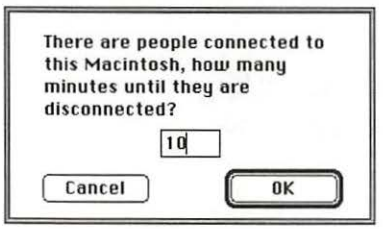


Figure 7-6
About that run-on sentence: You don't suppose Apple could afford a proofreader, do you?

SHUT DOWN SECRETS

Shut down from the keyboard — for all

When Apple designed System 7.5.1, which lets you shut down by pressing the power key on the keyboard, it hit upon a good idea. It makes no particular sense for you to go to the Finder and choose a specific command just to turn off your computer.

If you don't feel like upgrading to that system version, you can still shut down safely by pressing a key (and without returning to the Finder). Just use QuicKeys or KeyQuencer, included with this book; define a Shut Down extension macro (one of the Specials). See Chapter 34 for details on KeyQuencer.



Automatic shutdown at midnight

Suppose you're downloading some huge file from America Online. Your Mac tells you that it's going to keep downloading until, say, 3 a.m. You want to go to bed, but you don't want to leave your system on all night.

Most recent Macs let you use the Energy Saver control panel (described in Chapter 4) to turn off your Mac automatically — at a certain time, or after a specified amount of idle time. (A dialog box appears five minutes before shutdown, offering you the chance to postpone the shutdown for another hour — or to cancel the shutdown entirely. And if you're actually using the Mac at the time of scheduled shutdown — even downloading — the shutdown doesn't take place.)

If you'd prefer your entire system to shut down — printers, CD-ROM drives, everything — then you need a PowerKey from Sophisticated Circuits. Its four grounded outlets all cut off at the same time whenever the Mac shuts down.

Canceling a Shut Down or Restart command

Suppose you choose the Shut Down command, only to realize three nanoseconds later that you forgot to copy a batch of important files to your backup disk. Any chance you can stop your Mac from shutting down once it begins the process of closing up shop?

Yes! The moment you realize you don't really want to shut down, quickly launch another application — SimpleText, the Calculator, anything! Simply launching a program forces the Mac to abort its shutdown. (Our suggestion: use KeyQuencer or another macro program. At moments like these, you can simply slap the key corresponding to some "launch a program" macro.)

And if you have a screen saver, you can activate *that* to bail out of the shutdown, too.



THE RESTART (RESET) SWITCH

What it's *called* is the Reset switch. But what it *does* is restart the Mac. Every Mac model has a pair of these funny little switches. One of them, the Interrupt switch, is fairly useless unless you're a programmer. But its twin, Reset, is wonderfully useful.

Where is it?

Before we tell you how handy they are, we'll help you figure out *where* your switches are. On any **SE, Mac II, IIfx,** or **IIx,** you got a connected pair of flat, one-inch-square, plastic buttons that you were supposed to install by snapping onto the outside of the Mac's case. On other **Mac II**-series machines (IIcx, IIci, IIvx), you install the plastic piece on the *inside.*

More recent desktop Macs have special buttons for the Interrupt and Reset functions; there's nothing to install. They're located on the front of the **7100, 8100,** most **Quadras,** most **Power Computing clones,** and the **Centris (Quadra) 650** — and on the back of the **Centris (Quadra) 610** and **6100** (on the right as you look at the back).

If you have a **PowerBook 140** through **180,** your Interrupt and Reset switches aren't on a separate piece. Open the back panel, and you'll see two tiny holes on the right as you look at the back. You're supposed to "push the button" by inserting a straightened paper clip into one of these holes.

Virtually **all other Macs** have *hidden* Reset and Interrupt switches. Or, to be perfectly accurate, they don't have switches at all. Instead, you're supposed to press **⌘, Control, and the power button** all at the same time. (That's to restart. For the Interrupt function, it's ⌘-power button.)

If your model has an actual button, switch, or hole (for a straightened paper clip), please note: The Interrupt switch is usually marked by a circle. The Reset switch — the one we want you to notice — has a left-pointing triangle. It matches the left-pointing triangle on the power key on your keyboard. Both have to do with *starting* the computer, get it?

Please note also that even if your Mac does have physical Restart and Interrupt switches or buttons, those magic Apple keystrokes — such as ⌘-Control-Power button — may also work. Try it on yours and see!

What is it?

The reset switch is a great feature for two important reasons:

- When your Mac has hung or crashed, you can't do anything except restart it. Restarting by pressing the Reset switch is much better for the circuitry

than turning the power off and then on again; every time you power up your Mac, a tidal wave of surging electricity smashes through its circuits. Using the Reset switch prompts your Mac to go through its startup routine, *without* forcing it to power up from a cold state all over again. It also takes less time.

- If you're using the built-in RAM disk feature, as described in Chapter 8, restarting the Mac using the Reset switch *preserves* the contents of the RAM disk. Don't ask us how that happens; it's something to do with the fact that restarting the Mac doesn't interrupt the current. In any case, turning the computer off *does* wipe out everything on the RAM disk.

We really want to impress upon you the convenience and simplicity of the Reset switch. If you're not using it whenever you have a system bomb or your cursor freezes on the screen, you're missing a great thing.

SLEEP MODES

In the name of conserving electricity, Apple seems to enjoy defining new variations of On and Off. There's the Sleep mode on PowerBooks, for example (see Chapter 14). Then there's the Color Classic, the LC 520, and so on, which do something alarming but useful. After a certain amount of time has passed since you last used your mouse or keyboard, the *monitor* turns itself off. (You determine how much time should elapse by using the Monitors control panel; the longest time is one hour.) The computer itself stays on, and everything you were working on is perfectly safe. Your only indication that the Mac is not, in fact, *off* is the power light that glows on the front of the machine.

To "wake up" one of these Macs, click the mouse. The monitor can take up to a minute to warm up again. During this time, the screen remains dark. To let you know that the Mac has noticed your mouse-click, it emits a little low boop sound, every second or so, from the speaker.

Power Macs with PCI slots (the 7200-7600, 8500, and so on) introduce an even more radical concept: *desktop Macs* that go to sleep, just like PowerBooks.

TRUE FACT
THE INTERRUPT SWITCH

We don't use the Interrupt switch (the half of the programmer-switch pair marked by the dot). But we're told that it can occasionally get you out of a system crash.

When the system crashes, press the Interrupt switch. A special empty dialog box appears on the screen, containing nothing but a > symbol. Here are the various things you can type at this point, and what they're supposed to do.

G FINDER (then press Return) is supposed to get you back to the Finder safely.

SM0A9F4 (then press Return) **PCFA700** (Return, again) **G** (Return, again) is another Return-to-Finder sequence. Those are zeros, by the way, not letter "Os."

SM A78 3F3C 0002 A895 (press Return, then) **G A78** (and another Return) shuts your Mac down.

Honestly, we've found that these codes rarely work. On the other hand, when the system crashes and we've got important unsaved work on the screen, we'd jump up and down and say "gigabyte" ten times backward if we thought it would help.

DIALOGUE

Leaving your Mac on all the time

DP: JS, exactly why do we require an entire topic for Shutting Down in our outline?

JS: What do you mean? It's something you do every day. It's worth a topic.

DP: Well, I know plenty of people who don't.

JS: What?

DP: Sure. Lots of people never shut their Macs down.

JS: What? They leave their Macs on all the time?

DP: Don't go ballistic. Everybody knows it's better for your Mac's internal circuitry not to be turned on and off all the time. Every time you switch on the power, it's like sending a solid brick wall of electrons smashing through your computer's fragile veins. If you turn your machine on and off all the time, you're going to shorten its life.

JS: That is the biggest old wives' tale! Have you ever in your life heard of somebody's Mac going in for repairs, where the repair person announces that you did your computer in by turning it on too much?

DP: Well, no.

JS: It's a myth fabricated by the electric companies. They want you to leave it on all the time so that you run up your utility bills.

DP: Talk about old wives' tales!

In fact, these Macs take the whole sleep concept a step further, providing independent controls for the sleep behavior of the monitor and the hard disk (via an enhanced Energy Saver control panel). In other words, you can have the monitor blink off after 30 minutes, whereas the hard drive waits a full hour before spinning down into low-power mode. To wake the sleeping Macs up, press a key or click the mouse.

MACINTOSH SECRET

YOU HAVEN'T GOT TIME FOR THE PAIN

Conflict Catcher, a demo of which is included with this book, does much more than catch conflicts. We stumbled onto a little-known feature in version 4 the other day that made us gasp in amazement. (The demo of version 4 wasn't available when we prepared the *Secrets* CD-ROM, but it's available now; you can download it from America Online or our Web page, *http://www.idgbooks.com/idgbooksonline/macsecrets*.)

With the control panel open, choose "by Load Time" from the right-hand pop-up menu. You'll be shown exactly how long each extension and control panel takes to load as your Mac starts up! Some of this information will shock you: you've been waiting *four seconds* every single morning for Apple Guide to load into memory? It scarcely seems worth it.

This exercise may convince you that some of your extensions aren't worth leaving installed for everyday use. Cumulatively, over the many startups of your Mac, the time you'll save could be substantial.

MACINTOSH SECRET

OUR FAVORITE ACRONYM

"Most applications crash — if not, the operating system hangs."

You may shudder at the cold, stark reality of this statement — but this is more than a Mac truism; some people believe it's how the Macintosh got its name. Just put together the first letters from each of the words in the sentence and you'll see what we mean. This fanciful bit of etymology was suggested by one of our readers who, at the age of 13, has evidently already experienced his share of system bombs, crashes, and hangs.

JS: It's not! Look, do the math. I called up the electric company -

DP: You called up your electric company!?

JS: Hey, I happen to care about the environment. Anyway, you look at your electric bill to see what a kilowatt-hour of juice costs. Mine says 13 cents. Then you figure out how much power your Mac uses — to do that, you multiply Amps by Volts. So, a Power Mac 8500 is 9 amps, 110 volts; monitor is 1.0 amps. That's 1,100 watts an hour. You're paying about 14 cents an hour to leave your Mac on.

DP: Yeah, yeah, so what's the bottom line?

JS: In a year, that's $1,226 down the sewer. Whereas, if I turned the thing off at night (and I work eight-hour days), I only pay $324 a year.

DP: But the wall of electrons...

JS: Furthermore, do you realize that the production of electricity in this country is responsible for 35 percent of the carbon dioxide in the atmosphere? Do you understand that New York City is going to be underwater in 150 years?

DP: Under —

JS: From global warming.

DP: New York is...?

JS: Common knowledge.

DP: I stand enlightened.

JS: You see?

DP: From now on, I'll turn off the monitor at night.

Chapter 8

The Disk Chapter

IN THIS CHAPTER:

- Of volumes, floppies, and hard drives
- The invisible driver software
- Defragmenting, partitioning, reformatting
- Reclaiming the hidden megabytes from an Apple drive
- SyQuest, Zip and Jaz drives
- Other disk technologies

The moment you shut down your Mac, everything in its memory vanishes into oblivion. Every application you launched, every document you created, every file you modified during a work session — they all evaporate into nonexistence as soon as you turn off the juice. This happens because memory chips hold data only when electricity is running through them.

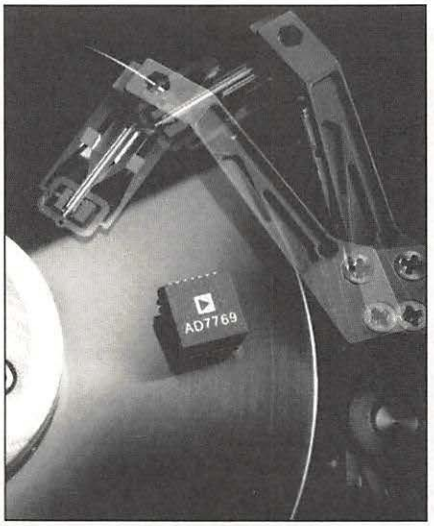
That's why you need disks. Floppy disks, hard disks, and other storage media provide a stable format that can permanently record the data you manipulate in your Mac's memory.

In this chapter, we'll confront all the disk-related technoid terms you hear flogged about in Mac user-group meetings: *initializing and formatting, interleave, defragmenting, optimizing,* and *partitioning.* Impressively, you can do a number of these stunts to your hard drive without spending a penny. You can use Drive Setup or, if you have an older Mac, Apple HD SC Setup — two vastly underpublicized free hard-drive utility programs. We'll show you how.

DISK BASICS

The Mac "writes" data to a disk, whether hard or floppy, by sending out a stream of positive and negative electrical signals that correspond to the series of bits (1s and 0s) that make up the data currently in the computer's memory. Based on those signals, an electromagnet in the disk drive's *read/write head* (a moving arm, like the needle of a record player) creates a pattern of tiny magnetic bands along the surface of the disk as it spins (see Figure 8-1). Because the disk is coated with metallic particles that are extremely sensitive to magnetic charges, the patterns created by the drive remain intact indefinitely. The area taken up by each magnetic charge is so microscopically tiny that a single high-density floppy disk can store more than 11.5 *million* bits of data.

Figure 8-1
The magnetic read/write head moves across the disk surface like the needle of a record player. On a disk, however, it doesn't start at the outside and move in; it jumps all over the disk surface as needed.



Data is read back into the Mac through a reverse process in which the read/write head *reacts* to the magnetic fields on the disk. Then it transfers the positive and negative signals back to the Mac's memory.

With millions of bits of data scattered over the surface of a disk, how does the Mac find a particular string of recorded data?

Sectors, tracks, and blocks

Simply put, it follows a map. The surface of each disk is mapped out into a series of concentric circles called *tracks*. Each track is, in turn, partitioned into smaller segments called *sectors*. The Mac relies on these dividers as guideposts. It keeps track of which bits of data get stuffed into which sectors (or groups of sectors, called *blocks*), so that it can find them again when needed. In essence, the surface of a typical Mac's hard disk has been divided into thousands of little numbered parking spaces for information.

When you pop a new, completely blank floppy disk into your Mac, the Mac must *initialize* the floppy disk before using it (see Figure 8-2). Here's the reason: A blank disk fresh out of the box hasn't been mapped out with tracks, sectors, and blocks. During initialization, the Mac inserts those reference points, creating the map it will later use to navigate around the disk, storing and retrieving specific pieces of data.

Figure 8-2
You can't use a floppy disk until it's been initialized with the guideposts the Mac needs to find its way around.



This drive setup scheme explains the otherwise puzzling fact that your Mac lists not one, but *two* different sizes for any file or folder. As you may have noticed, when you try checking the size of a file using the Finder's Get Info command, you see something like "25K on disk (19,112 bytes used)". So, which is it — 25 or 19?

It's both. On any given hard drive, the blocks — the parking spaces in which files (or portions of files) are stored — come in fixed sizes. On a 1-gigabyte hard drive, for example, each block is 32K — never larger, never smaller. Therefore, some space almost always gets wasted — the Mac *rounds up* the amount of space taken up by a file to the nearest kilobyte. If a file is 40K, the Mac must reserve *64K* kilobytes for it, because the file won't fit in one block (32K), and consequently a second block gets used up, even though it's not fully filled. Bottom line: the Mac can't subdivide a block.

(**Techie note:** Actually, the situation can be even worse if the file in question has both a *data fork* and a *resource fork,* the two separate chunks of code that can constitute a Mac file. These chunks can't coexist on a block — so that 40K Mac file, if it contained 36K of data and 4K of resources, could consume *96K* of space — two blocks for data and one for resources.)

This different-block-size-for-each-disk phenomenon explains another quirk of the Mac universe: the changing-alias syndrome. On a floppy, an alias is only 1K — but drag it to a 2GB hard drive, and the very same alias balloons to 32K! Similarly, you might drag your important 64K speech onto a floppy — and see it shrink before your eyes to 8K. There's nothing the matter at all; you're merely seeing these small files occupy a single block on each disk.

Want to make an impression at Silicon Valley cocktail parties? Let this terminology fly: The number of blocks used up is the *physical file size.* The actual size of the file, which is always *smaller,* is called the *logical file size.* The two numbers you see in the Get Info box are the physical and logical sizes of the file. The first number, the physical file size, is always expressed in K; the second number, the logical file size, is always given in bytes.

There's only one more strange aspect of file sizes. We just said that the *physical* file size (the first number in the Get Info box) is always *larger* than the second number because it reflects a certain amount of wasted space. But if you look at Figure 8-3, you'll see an apparent contradiction! The example there says "903K in disk (922,112 bytes used)" — the first number is *smaller* than the second! Right?

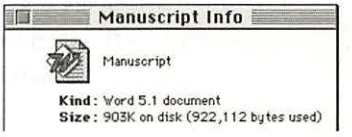


Figure 8-3
When is 903 not 903? When it's 922. Which, believe it or not, is smaller than 903.

Wrong! Don't forget that there are *not* 1,000 bytes in a kilobyte, despite your lessons in Greek prefixes. Because a computer can count only in powers of two, there are actually *1024* bytes in a kilobyte! Therefore, the sentence "903K in disk (922,112 bytes used)" is perfectly logical. If you do the math, you'll discover

that the Get Info box is really saying 903K in disk, *900K* used! And, as we said, the first Get Info number is truly larger than the second number. Always.

What's a volume?

In the olden days, a disk was a disk. Then there were cartridges. Then there were CD-ROM discs, tape cassettes, and Zip disks. The world needed a generic term to cover *any* kind of individual storage unit/disk/disc/cartridge/cassette — you know, something that shows up on your Desktop with its own name and icon.

The term they came up with is *volume.*

HARD DISKS

Crack open any hard drive (don't *do* it — we're just being hypothetical), and you'll find not *one* disk, but a *series* of metal or glass platters. Each is coated with a magnetically sensitive material. These disks spin at 3,600 rotations or more per minute, passing within 10 millionths of an inch of the read/write heads that transfer data to and from the disks.

A hard drive's performance, however, is dependent on more than sheer rotations-per-minute. In the next few pages, we'll cover some of the other factors that determine how well a hard drive does its job.

Two things you don't want to think about — but should

We don't mean to be depressing, but before we get into the nitty-gritty of the hard disk discussion, we feel morally obligated to mention a couple of unpleasant realities.

First, disks and disk drives are among your Mac's few *mechanical* components. They have motors, gears, levers — parts that actually *move*, parts that can be scratched, get sticky, rattle loose, or require lubrication. Disks and disk drives are much more vulnerable to problems than most other parts of your computer system.

At the same time, disks are among the most important devices you use each day, because they are the repositories of virtually all the work you do on your Mac. For this reason, we suggest that you take especially good care of disks and disk drives. They should be handled with care, maintained using the techniques we'll give you, and not taken for granted.

Which brings us to Depressing Reality No. 2: The day will come when your hard drive grinds to a halt. It will die. This is not a remote possibility; it is

your unchangeable destiny. When you lift a brand new hard drive out of its foam packing crate for the first time and proudly place it on your desk, you may not want to think about this, but the manufacturer already has labeled that drive with an MTBF — a Mean Time Between Failures rating. This rating represents the number of hours the manufacturer estimates the drive will operate before it fails because of one problem or another. Some drives have an MTBF of just a few years. Others are rated to last a dozen or more years.

But they *all* are expected to fail at some point. When this happens — and it will if you use your Mac long enough — you will probably panic. You will want to tear your hair out in frustration. So, plan ahead. Always make backups of irreplaceable work and heed this chapter's tips on keeping your hard drive in good working order.

TRUE FACT

WHAT A DIFFERENCE A DECADE MAKES

"The whole notion of computing takes a quantum leap when you discover that information can be stored in one place rather than scattered over hundreds of little disks. Average users can store all their programs as well as a year's worth of files on a 10MB hard disk — and theoretically never have to look at a floppy again."

We thought you might enjoy this fanciful, forward-looking editorial. It was in the very first issue of *Macworld* in 1985.

Three pages earlier, there's an ad for exactly such a device: a 10MB hard drive. List price: $1,495.

The device driver

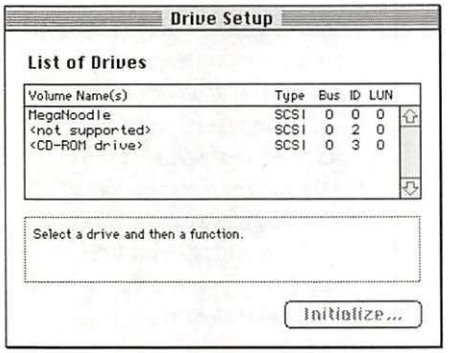
Nestled away in its own little corner of your hard drive is a little piece of software called its *driver* — yet another program that works behind the scenes managing the operation of your Mac without you even knowing that it's there. Every time you store data on your drive or retrieve data from it, the driver software is called upon to manage the operation. (The driver is also the file that stores the *icon* used by your drive when it appears on the Desktop.)

Most new Mac hard drives come preformatted with driver software included on the drive. Even though you never really *see* driver software, you need to think about it if you're interested in coaxing the best possible performance out of your hard drive. Some new non-Apple drivers are faster than others. Some drivers are configured for use with specific drives and Mac models. To get the fastest and most reliable performance, you need an up-to-date driver that is fully compatible with your drive.

For example, if you start getting annoying system crashes when you first install System 7.5.3, it's time to update the drivers. Likewise, if you get system crashes after you've installed some new RAM chips, requiring you to turn on 32-bit addressing (see Chapter 9), it's again time to update those drivers.

If you have an Apple hard drive, you can update the driver using the latest version of the drive formatting utility that came with your Mac — Apple HD SC Setup, Internal HD Format, or Drive Setup, depending on which Mac

Figure 8-4
Drive Setup, Apple's latest drive formatting utility, lets you update your hard drive's driver.



model you have (see Figure 8-4). (At least one of these programs is on your system software's Disk Tools disk or system CD-ROM; newer versions can be downloaded from online services.)

All about IDE

As you'll learn in Chapter 30, some PowerBooks and lower-cost Desktop Mac models these days don't have a typical SCSI hard drive inside (see the "The IDE Macs" sidebar). Instead, they come with a hard drive style known as *IDE* (Intelligent Drive Electronics), popular in the world of IBM PC and clones. IDE drives cost less than SCSI equipment, yet have about the same speed. Furthermore, you don't have to worry about address conflicts, cabling, or termination, as you do when using SCSI equipment.

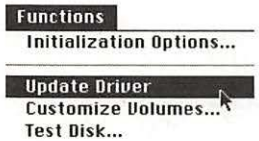
What does the presence of an IDE hard drive mean to your life? In general, nothing; it's a purely internal component. You still get the standard SCSI jack on the back of your computer, to which you can plug the usual scanners, CD-ROM drives, and so on; they work completely independent of the internal IDE hard drive.

How to update your hard-disk driver

First of all, updating your driver *doesn't* reformat, initialize, or erase a disk. When you update a driver, your data stays intact. Only the software that controls the drive's operation is changed.

Get the newest version of the Apple drive formatting software that came with your Mac. Until recently, most Macs came with Apple HD SC Setup; version 7.3.5 was released in mid-1996. If your Mac came with an internal IDE drive, get the latest version of Drive Setup; version 1.0.5 was current when this book went to press. Do an online search to make sure you have the very latest. (On America Online, it's keyword: *AppleComputer*. On the Web, start at *http://www.apple.com*.)

Figure 8-5
Update your hard disk drive using the latest version of Drive Setup.



Launch the program, and then choose Update Driver from the Functions menu (or click the Update button, if you're using Apple HD SC Setup) to install a new version of the driver (see Figure 8-5). This assumes, of course, that you have a *newer* version of the driver that came with your drive; reinstalling the current version of the Apple driver doesn't update it. Drive Setup (or Apple HD SC Setup 7.3.5) also can be used to *initialize, partition,* or *test* an Apple drive.

However, these utilities generally don't work unless your hard drive is an Apple drive. On non-Apple drives, you need a third-party driver updater. Some examples are Drive 7 (Casa Blanca Works) or SilverLining (LaCie). These updaters also can be used to *replace* the Apple driver on your original drive with newer, faster driver software.

Interleave

We mention interleave only because you're likely to encounter the term if you use a disk utility program to reformat your hard drive.

Data comes pouring into and out of a hard drive extremely fast — too fast, in fact, for older Mac models to handle. To slow the data transfer rate to a speed Macs such as the Classic and SE can manage, you must configure hard drives on older Macs to intentionally *skip* sectors on a disk with each revolution, thus regulating the flow of data. This sector-skipping scheme is known as the *interleave ratio.*

Older Macs, such as the Mac Plus, require an interleave ratio of 3:1. On each revolution of the disk, the read/write head looks only at every third sector. The disk must spin three full times before an entire track is read. Classic, SE, and PowerBook 100 models required an interleave ratio of 2:1; their drives read every *other* sector with each revolution. Most other Macs, from the SE/30 on, have port speeds fast enough to operate on a 1:1 ratio, using each consecutive sector available on a disk without skipping any.

All modern hard drives are set to 1:1 interleaves and use *caches* (small pockets of special RAM) to compensate for slower Macs' automated transfer ratios.

TRUE FACT
THE IDE MACS

Is your Mac's internal hard disk a traditional SCSI drive or one of the PC-style IDE drives that Apple's been popping into selected (usually lower-cost) models of late? If you have one of these models, you can't use Apple HD SC Setup to format or partition your drive; you need either Internal HD Format or Drive Setup:

Macintosh LC 580
Macintosh LC 630
Macintosh Quadra 630
Macintosh Performa 630
Power Macintosh 5200/75 LC
Power Macintosh 5260/100
Power Macintosh 5400/120
Performa 6200 series
Performa 5300 series
Performa 6300 series
Performa 6400 series
PowerBook 150
PowerBook 190
PowerBook Duo 2300
PowerBook 5300

The *SECRETS* hard-drive maintenance schedule

Your hard drive is filled with hidden goings-on and invisible files. Every time you save, copy, or delete a file, all kinds of stressful activities take place: the hard drive must update its internal table of contents (the invisible Desktop DF file), log any new icons or icon positions (the invisible Desktop DB file),

and keep track of how the file is fragmented (in the invisible *extents* and B-tree files).

We mentioned backups, formatting, and rebuilding the Desktop. But when do you do all this stuff? Here, for the careful Mac user, is our recommended schedule for hard-drive maintenance. Photocopy, clip, and save it.

When you get the drive

Format it using whatever drive-formatting program came with the drive. (If it's an Apple drive, it's already been formatted with Drive Setup or the equivalent.)

Set up partitions, if you want them. (See "Partitions," later in this chapter.)

When you change System software versions

Before installing the new System, run Disk First Aid (on your System disks or CD-ROM) to make sure that the disk's software structures are healthy. Then, get the *latest* version of Apple HD SC Setup (or Drive Setup) and update the driver.

Every day

Back up whatever files you worked on during the day. If it's important work, make two backups — on two different disks — and back up more than once a day. Use DiskFit Direct, included with this book.

Once a month

Rebuild the Desktop (press ⌘-Option as the Mac is starting up). See Chapter 1 for unbelievable detail.

Every three months

Reinstall a fresh copy of the System software. Do a "clean install," as described in Chapter 5. (This eliminates any corruption that may have crept into your System file during day-to-day use.)

Every six months

Defragment your drive if it's more than 80 percent full.

Every two years

Back up your entire drive and reformat it. Among other things, reformatting locks out bad sectors on your disk, so you won't try writing data to portions of the disk that have developed tiny flaws and may not be reliable. Beyond that, we just like the feeling of wiping out any lurking problems that may have wiggled into existence.

HARD DRIVE SECRETS

All the terminology that's fit to print

Both disk storage and RAM are measured in the same units, spelling confusion for anyone who's already having trouble telling disk storage and memory apart.

A *bit* is the smallest piece of information. It's one single binary signal — on or off — for the computer's billions of electronic switches. (*Bit* is a contraction of *binary digit*, actually, but nobody writes it "b'it," except maybe Klingons.)

On a disk, these two possible conditions correspond to the two possible charges a particle on the disk surface may have: positive or negative.

Eight bits make a *byte*. (Everything in the computer world is a power of two, and things seem to increase in multiples of eight.) A byte is enough information for the computer to specify one character — a W, for example, or a comma. (If an alphabet, as in Asian and Middle Eastern languages, has too many symbols to be specified by a single byte, then *two* bytes are required to specify one letter. That's where the term *double-byte language system* comes from. System 7.1 is the first Mac system software that can handle double-byte language systems with the simple installation of a language kit.)

Take 1,024 bytes — that's the closest a power-of-two machine can come to 1000 — and you have a *kilobyte*, or K. Take 1,024 of *those* and you have a *megabyte* or MB.

And 1,024 of *those* is a *gigabyte* or GB.

And 1,024 of *those* is a *terabyte*.

And 1,024 of *those* is one *huge* hard drive.

Finding a disk's SCSI ID

Every hard drive must have its own personal ID number on your SCSI chain (see Chapter 30 for details on SCSI). If two hard drives have the same ID number, you're asking for crashes and oddball behavior.

But it's no picnic figuring out what a disk's SCSI number *is*. Sometimes the SCSI number is set by the positions of tiny DIP switches underneath the unit. Sometimes there *is* no indication.

We discovered, however, that you can find any disk's SCSI address much more easily: Simply select its icon and choose Get Info from the File menu (see Figure 8-6).





Figure 8-6
The Get Info box for a hard drive gives a wealth of secret information, including its SCSI address.



Of course, there's an even easier way to find a disk's SCSI ID number: Just use SCSIProbe, which is included on the disc that comes with this book.

Who makes your drive?

The company who sold you your drive didn't make it.

In fact, very few companies actually *make* the hard-drive mechanism: Quantum, Seagate, IBM, and a couple of others. The 100 companies who *sell* hard drives to you, the customer, buy up these mechanisms. They install the drive into a plastic or metal housing, paint their brand name on the front, throw in a manual and some formatting software, and mark up the price.

The result is, therefore, that 100 different companies may compete, but they're actually marketing identical equipment. (The term for that handful of companies who make the internal guts of the drive is *OEM,* for Original Equipment Manufacturer.)

Making pain-free backups

Because every hard drive is destined to fail one day, your only hedge against disaster is backing up your work. If you're a corporate- or office-type person, we're sure that you've heard the usual advice: Keep *multiple* sets of backup files, made on different days of the week. Keep a copy of the most-important files in a different building. If possible, choose a building located in a different *city.*

If you're working on a home computer, you may not need to be quite as paranoid. Backing up every day, however, is still a quick dose of insurance. Here are three ways to go about it.

First, you can simply gather up the documents you worked on each day and copy them to a different disk. The Find File command makes this especially easy: At the end of the day, launch Find File, and search for all documents modified on the current date. When the list of found files appears in the Items Found window, press ⌘-A to select all the files, and then drag the icons to another disk (a SyQuest, Zip or Jaz drive, or a second hard drive) for backup. Of course, you can also copy the backups onto a stack of floppies if necessary.

But a much less painful strategy is to use a genuine backup program that automates the backup process. They automatically hunt down the files that have been changed since the last backup, instruct you to put in floppies, and do the copying for you. Fastback, Retrospect, and DiskFit are some popular backup packages. Of course, as the owner of this book, you don't have to shop for a backup utility; you already have one! Dantz Development's DiskFit Direct is included with this book. Check out Chapter 34 for the details.

File fragmentation

When you copy files to an empty hard drive, the data is written to contiguous (adjacent) sectors on each disk; think of playing cards being laid end to end. This makes it easy for the Mac to retrieve the information later, because every piece of data is grouped with the data that's supposed to come next. That's why a brand-new drive is the fastest drive.

But things don't usually stay that way. Over time, drive space gets used up. Small files get deleted, leaving little pockets of available space here and there. *File fragmentation* occurs when, after extended use, the only storage space available on your disk is in various unconnected sectors, scattered in various locations. At that point, saved files are stored in pieces, wherever empty sectors are available. The Mac can still access such fragmented files. However, reading fragmented files takes a little bit longer because the read/write heads must physically move farther to find all the pieces necessary to retrieve the file.

You can regain the tiny bit of speed lost through file fragmentation by *defragmenting* your hard drive. Defragmenting also increases the chance that you'll be able to recover files successfully after a crash using a repair utility; your files will be in solid chunks and not scattered across the drive in tiny segments.

To defragment a hard drive, you can either buy a disk-defragmenting program or simply reinitialize your disk. Both methods are outlined in the Secrets that follow.

ANSWER MAN

Q. *The custom icon for my hard drive has disappeared! Instead of a colorful, smiling Ferengi from Deep Space Nine, I now have only a generic document icon! I've tried to paste on a new icon, but I got some weird message about "it" not being found. I also tried rebuilding the Desktop, reinstalling my hard disk driver, and correcting the problem with ResEdit, but I'm still stuck with the generic icon. Can you help me?*

A. Custom icons are stored in invisible icon files that live on your hard disk. Your hard drive is showing up with a generic icon because the Ferengi icon file is evidently missing. The problem is, your disk's custom icon flag is still set — in other words, the disk still thinks that it has to look for a custom icon and, when it can't find one anywhere, it has no choice but to display the generic icon instead.

To reset the custom icon, use Disk Rejuvenator, a free program from Aladdin that fixes this problem. Once you've used it (it's included with this book) to turn the custom icon flag off, your hard drive's original icon will reappear. Then you can paste on a new custom icon — Ferengi or otherwise — without any trouble.

Keep in mind, though, that a hard drive must be almost entirely full — and probably suffer several *years'* worth of fragmentation — before any of this really makes a difference. There are plenty of users who never defragment their hard drives and don't notice any appreciable speed loss.

On the other hand, if you record and play QuickTime movies, file fragmentation can make a big difference. When it comes to digital video, every nanosecond counts. A video clip containing 15 to 30 individual frames per second may stutter and jerk when played back if your Mac must retrieve the movie frames in small chunks scattered all over a hard drive. It's best to record digital video on a freshly defragmented hard drive that can store video data in large solid chunks.

You'll also sometimes hear the term *optimizing* a drive. A disk optimizer not only defragments the files on the drive — it even tries to figure out where to put them, in their reassembled conditions, so that defragmenting is less likely to occur again. The optimizer may put your applications, which aren't very likely to be modified, at the outside edges of the drive surface, for example.

DEFRAGMENTING SECRETS

Defragmenting the inexpensive way

You don't need a special hard-drive utility program to defragment files and optimize your drive. You can accomplish the same thing by erasing your drive and starting over.

Granted, this isn't the easiest way to defragment the files on a disk, but it gets the job done. To do this you must (a) back up *everything* on your drive — either to a stack of floppies or some other drive; (b) reinitialize the drive by using either the Erase Disk command in the Finder or the Apple Drive (or HD SC) Setup's Initialize command; and (c) copy all your files *back* to the reinitialized disk. The files will be written to contiguous sectors of the now-empty disk, on which almost every sector is available.

Defragmenting made easy

You save yourself a great deal of the hassle involved with the previous suggestion by using a hard disk optimizer program; some examples are Speed Disk (part of Symantec's Norton Utilities), Mac Tools Deluxe (Symantec again), and DiskExpress (AISoft).

Optimizer programs defragment files *without* requiring you to reinitialize the disk. How? They read large chunks of files into RAM, erase the section of the disk where they lay, and then rewrite the data in a new location on the

disk. An optimizer tries to store the data in contiguous blocks, beginning with the first blocks available on the disk.

One warning: Because some optimizer programs temporarily store files in RAM, you risk losing data if there's a power failure — or if you accidentally unplug your computer — while the optimizer is running. For this reason, we recommend backing up valuable files before you optimize — just in case.

PARTITIONS

Hard drives and removable cartridges can be *partitioned* into smaller minivolumes with the help of a utility program. To illustrate this point: A 500MB hard drive can be partitioned into two distinct volumes, one of 300MB and another of 200. On the Mac's Desktop, that one hard drive will appear as *two* volumes, each with its own name and icon. In essence, partitioning fools the Mac into thinking that you have two (or more) drives connected instead of one.

We can think of several reasons why you may want to partition a drive in this way:

- By subdividing a large disk into two smaller volumes, you reduce the size of its *blocks* — the tiny spaces mapped out on the disk's surface to store chunks of data. In the long run, smaller block sizes mean more efficient storage and less wasted disk space. For the rationale behind this, see "Partitioning for smaller block sizes," later in this chapter.
- If you share your Macintosh with other people, you can partition your hard drive into a number of smaller volumes, one for each person. The volumes can be individually password-protected so that users have access only to their own data.
- You can create a partition exclusively for your applications and keep it locked to prevent accidental modification or deletion of programs.
- You can use one partition as a vault for old files. Later, if you need to search for an archived file, you won't have to waste time searching your whole hard drive for the document in question. You can restrict the search solely to the archive partition. Of course, the smaller the volume, the faster the search.
- It can confuse your Mac to have two versions of the *same* application on a disk. By partitioning, you can create a separate volume containing an older version of a program that you need to read some older files.

- You may find it handy to have both System 7.5 and 7.6 (for example) available for your work. With partitioning, you can create two volumes on a single drive, one with a System 7.5 folder and another with a System 7.6 folder.

How to partition a hard drive

Changing partition sizes or adding new partitions almost always means reinitializing a disk — that is, *erasing all your files.* So, if you want to partition a drive you're already using, copy all your data to another drive, set up the partitions, and then copy everything back again.

To perform the actual partitioning, you can use either Drive Setup or Apple HD SC Setup, free disk utilities that came with your Mac. If you're using Apple HD SC Setup, make sure that you have at least version 7.3.5; earlier versions don't let you create multiple Macintosh partitions.

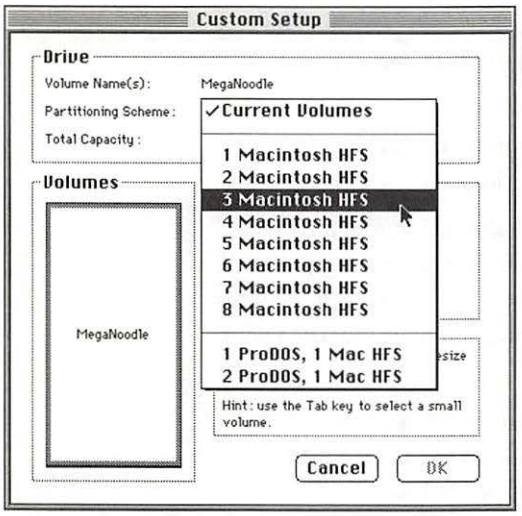
Using Drive Setup

Launch Drive Setup and choose the name of the drive you want to partition from the drive list that appears in the main window. Then, choose Customize Volumes from the Function menu.

In the Custom Setup window, use the Partitioning Scheme pop-up menu to select the number of partitions you want to make on the drive, as shown in Figure 8-7. The menu lets you create up to eight distinct Mac partitions on a single drive. (The "HFS" that appears next to the partition numbers refers to the Hierarchical File System — the filing scheme used by the Mac OS. The last two options on the menu are for splitting a drive between a Mac partition and one or two ProDOS partitions, the filing system used by the old Apple II computers.)

Once you've chosen the number of partitions you want to create, a map of your subdivided drive appears in the Volumes box in the lower-left portion of the Custom Setup window. You can then drag each partition on the map to change its size (see Figure 8-8). When you're finished, click OK and initialize the drive.

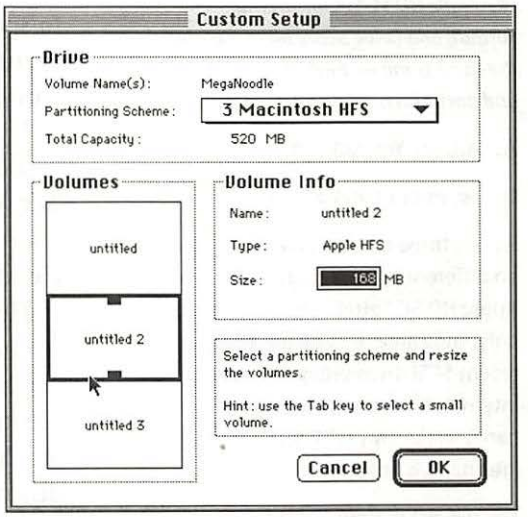
Figure 8-7
Partition a drive into as many as eight separate Macintosh volumes with Drive Setup.



Using Apple HD SC Setup

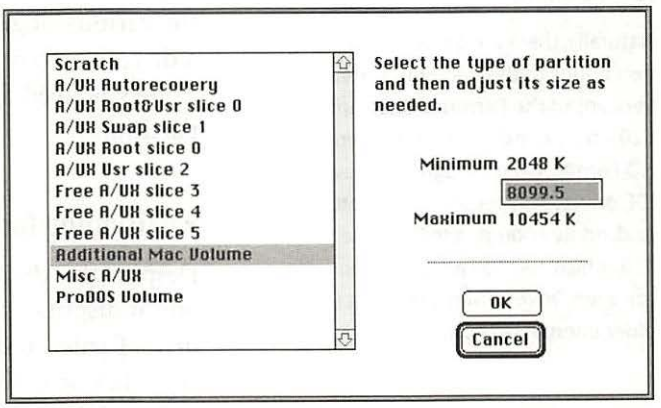
If you have Apple HD SC Setup — the forerunner of Drive Setup — the partitioning process isn't quite as straightforward. Click the Drive button to select the hard drive you want to partition, and then click the Partition button. The partition dialog box will open, displaying a map of all the partitions on your drive, including the one reserved for the driver software. Select and delete any of the other existing partitions using the Remove button. Then drag out a new partition on the map at the size you want. The gray space on the map represents the disk space available for partitioning. When you've dragged out your new partition, the window shown in Figure 8-9 opens, allowing you to select the *type* of partition you want to create.

Figure 8-8
Drag the resize handles to change the size of each partition.



At this point, you'll notice that most of the options are utterly useless; they create partition types such as A/UX Root&Usr slice 0 or Free A/UX slice 3 — formats that appear to have originated on other planets. Ignore these alien terms and instead select Additional Mac Volume from the list. Follow the same steps to create as many other partitions on the drive as you like.

Figure 8-9
Choose Additional Mac Volume from this list of options to subdivide your hard drive into multiple Macintosh volumes.



Of course, you can also partition your disks using commercial programs like Hard Disk Toolkit (FWB), Drive 7 (Casa Blanca), or SilverLining (LaCie). In addition to letting you create multiple partitions on a disk, these programs also allow you to assign each volume its own custom icon and password protection.

ANSWER MAN

Q. ***Wait a minute! It sounds to me like Apple HD SC Setup, Internal HD Format, and Drive Setup all do exactly the same thing — format, initialize, and partition hard disks!***

A. Ah, yes. You noticed.

Q. ***So, what's the deal . . . ?***

A. All three do the same job — but on different types of hard drives. Apple HD SC Setup is for SCSI drives only, and came with all but the most recent SCSI drive-equipped Macs. Internal HD Format, on the other hand, works only with Macs with internal IDE drives.

The newest member of the trio, Drive Setup, comes with all current Macs, offers a few more initializing options, and works on both SCSI and IDE drives.

Naturally, there are a few bizarre exceptions to the rule. Some later versions of the Performa 5200 and 6200, for example, can't run Internal HD Format, even though they have IDE drives; they require Drive Setup. And, oddly enough, the PowerBook 150, which also has an IDE drive, can't run Drive Setup; it requires the older Internal HD Format.

The truth about partitioning and speed

Lots of people will tell you that partitioning is a sure way to speed up your Mac. Frankly, this is only a half-truth. Partitioning *can* speed up your work, but it depends entirely on *how* you use the partitions.

In theory, partitioning a big hard drive into three smaller volumes should produce a noticeable speed gain. The Mac ought to be able to retrieve information about your files and their icons faster, because the Finder's Desktop file for each individual volume is smaller.

However, if you access a number of different volumes as you work, partitioning can slow you down. Suppose you have QuarkXPress on one volume, but the open document is on another. The hard drive's read/write heads will have to keep jumping to different parts of the actual disk surface, fetching pieces of information first from one partition and then from another. The more a hard drive has to play seek-and-ye-shall-find, the slower it seems.

The key to partitioning is to avoid making your hard drive's heads jump back and forth frequently between the various "logical" volumes (partitions) you create on a drive. Try to organize your work so that almost everything you need during a work session is within the same partition.

Partitioning for smaller block sizes

Despite the doubt concerning speed increases, there's one indisputable advantage to partitioning a big hard drive. Earlier in this chapter, we pointed out that files on your disk actually waste space if their sizes don't exactly fill up the blocks on which they're stored. Remember, every drive, no matter what its size, is divided up into roughly the same number of uniformly-sized *blocks* — and therefore, if you think about it, the larger the drive, the larger its standard block size. An 80MB hard drive's blocks may be 2K each; a 1-gig drive's blocks are 32K; and so on.

Well, the smallest any file can be on any hard drive is *one* block. Therefore, a 9K SimpleText file on a one-gig drive

takes up one block — 32K — and *wastes* 23K! When you multiply that space by the thousands of files on your drive, you can see that you wind up wasting a considerable chunk of disk space. (And, no, there's no way to squeeze another file into the same block to reclaim the unused space. The rule is a maximum of one file per block.)

MACINTOSH SECRET
DEEP CLEAN YOUR HARD DRIVE

When you format your hard drive using Apple's Drive Setup utility, you get two options that weren't available in the older Apple HD SC Setup utility — *low-level format* and *zero all data*. Unfortunately, Apple provides almost no information about *why* you might choose either of these options. Here's an explanation.

Ordinarily, initializing a disk doesn't erase data; it simply zaps the disk's directories, so that the location of existing data is forgotten and can be overwritten. The low-level format option take this one step further, obliterating all the directory structures *and* erasing all the data. Apple doesn't recommend performing a low-level format unless you're formatting a pre-System 7 disk more than five years old.

When you choose the "zero all data" option, the data on your hard drive is actually replaced by a string of zeros. This is a security measure; it makes it impossible to retrieve data from a reformatted disk, even using a disk-recovery program.

You can also perform an initialization with either of these options. The process will take much longer, but you'll end up with one clean hard drive.

It stands to reason, then, that the smaller the blocks on your disk, the less of it is wasted. If you partition a hard drive into two smaller drives, you *double* the total number of blocks — and they're *half* the size they used to be. Therefore, less space gets wasted if you have a lot of little files.

So, why did Apple devise a filing system that *wastes* so much space? The answer is that this whole system was developed back in the days when a 20MB hard drive was considered absurdly huge! The tiny amount of space

DEFRAGMENTING

JS: I'm sorry to poke my nose into the middle of a chapter, but after rereading our section on file fragmentation and optimizing, I'm more than a little concerned.

DP: Is there a problem?

JS: Well, yes. It almost leaves you with the impression that you should actually go ahead and defragment your hard drive.

DP: And — shouldn't you? Isn't that the whole point?

JS: Surely you're joking.

DP: Why? Everyone knows that defragmenting gives you improved hard-drive performance and speed gains.

JS: Speed gains? Look, consider this sobering bit of reality: Last week, I decided to defragment my hard drive so that I could experience this euphoric speed gain everyone's always talking about. Well, to be safe, I first had to back up my entire 500MB hard drive to a stack of 44MB SyQuest disks. That took an hour or so. Some speed gain!

DP: Now, wait a minute, you should back up anyway.

JS: Then I spent another few minutes launching my drive-formatting software and scanning my drive to see how badly fragmented my files were. That ate up another four minutes. Turns out that after six months of heavy hard drive use, about 4.6 percent of my files were fragmented. So, I clicked the Optimize button.

DP: And...?

JS: It took nearly nine minutes for the files to be defragmented. Nine minutes. And some optimizing utilities take even longer — a couple of minutes per megabyte.

DP: So? Weren't you thrilled by how much faster you were able to open and save files once your disk was fully optimized?

JS: Hardly. After all that work, I now save maybe a fraction of a second each time I open a file.

DP: See that? You're already gaining time back.

JS: The speed gain is an illusion. I mean, it's so slight that, at this rate, it will take months to make up the time I spent just doing the defragmenting to begin with. Now that I think about it, it may even take years.

DP: Okay, but at least at that point your optimization will finally begin to pay off.

JS: Right — and by then it'll be time to optimize again, and I'll be back in the hole.

wasted by a 20MB hard drive's partially-filled blocks is, indeed, negligible. But when the same system is used on a 2GB hard drive, where each block is 64K, you start to notice all those unused megabytes.

Revising the fixed-size blocks issue is a priority for Apple — but in which upcoming system-software update it will be, no one can say.

Your hard drive's secret partitions

Even if you don't partition your hard drive into multiple volumes, the one Macintosh volume you *do* have can never equal the total storage capacity of the drive. That's because drive formatters create *secret* partitions on your drive without you knowing it. These partitions don't show up on your Desktop, but they are critical to the operation of the drive.

One of the secret partitions contains a *partition map*, a directory of all the storage spaces on the disk. This map tells your Mac which blocks are empty and which are occupied by data. It also catalogs the location of each piece of data stored on the drive so that the Mac knows where it can find the particular chunk it needs. Another secret partition (see Figure 8-10) is occupied by the hard-disk driver itself (the software that controls all the Mac-to-drive communications).

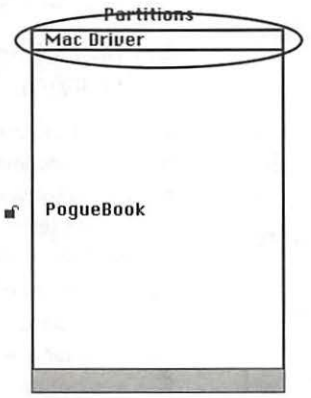


Figure 8-10
One of your drive's secret partitions rears its head in the custom partitions window. This partition containing the drive driver shouldn't be resized or deleted; it holds the instructions the drive needs to operate properly.

Reformatting

Reformatting your hard drive erases every last kilobyte on it. This means that you have to back up all your data before reformatting — and then copy everything back to the disk when you're done. With so much hassle involved, why even consider doing it?

Here's one important reason: Over a period of time, a hard drive inevitably develops a few *bad sectors* — sections of the disk surface that are no longer reliable for storing data. A portion of a disk may get slightly damaged through contact with a read/write head or may be marred by a microscopic speck of dirt. Reformatting software is smart enough to watch for these bad spots and, in its private map of the hard-

disk surface, denote these bad sectors as "off limits" — they can no longer be accessed by the drive. After bad sectors have been mapped out of a disk, data no longer will be stored in any of the potential danger spots.

By the way, if your driver software does map out a few bad blocks, thereby reducing the amount of space you have available for data, don't feel too cheated. Most manufacturers intentionally make drives with a disk capacity slightly *larger* than advertised so that bad blocks can be mapped out without depriving you of the advertised storage space.

There's no particular reason to reformat your drive, except as a last resort, when your drive is acting up and you've tried everything else in our Troubleshooting Chapter.

TRUE FACT

NEW — NOT IMPROVED

When a software company releases a new version of a program, you generally expect the update to offer you, the user, *something* new — a better interface, fewer bugs, updated features.

Sometimes, though, you get none of the above. Apple, for example, has created no fewer than *four* versions of the disk utility Internal HD Format, but users haven't exactly been clamoring for this free upgrade.

Why not? According to Apple's own technical note on the upgrade: "Functionally, the Internal HD Format utility versions 1.0 through 1.3 are the same. There is no benefit to using 1.3 over 1.1 or 1.0. Macintosh Users with internal Apple IDE hard drives may use any of the above versions." (Yet another identical version, 1.2, was never even released, Apple says, because "the version string information was changed incorrectly.")

Anticipation is already building for version 1.4.

FLOPPY DISKS

The original Mac's disk drive could only read 400K disks. Eventually, Apple adopted a drive that could read both 400K and 800K disks, maintaining that critical backward-compatibility. All Macs made today have an *FDHD SuperDrive*, a fancy way of saying that they can read 1440K high-density disks (*and* 800K disks *and* 400K disks). We imagine that FDHD stands for Floppy Disk, High-Density. We suppose that they call it a SuperDrive because — with the PC Exchange control panel installed on your Mac — the disk drive can read same-size disks from IBM computers and clones.

As you probably noticed, no disk *ever* holds the amount of information it says it does. A 400K floppy may only hold 388K of your data, for example. The rest of the space is filled with invisible files, such as the disk driver and directory map (on hard drives) and the Desktop file we discuss in Chapter 1 (both hard and floppy disks).

How they work

Floppy disks operate on the same magnetic storage principles as hard disks. But the disk inside a floppy is made of an extremely thin (and, therefore, floppy)

TRUE FACT

HOW BIG IS TOO BIG?

In 1984, the largest single volume you could mount on a Macintosh was 400K — the total capacity of a solitary floppy disk. Today it's not uncommon to see Macs equipped with hard drives of several *hundred* megabytes or even a few gigabytes. Is there any limit to how large a single Mac volume can be?

Yes. Until System 7.5, the Mac organized data using a 32-bit (32-digit) number to identify each byte on a volume. This allows the Mac to specify a total of 2,147,483,648 different bytes, which is equal to two gigabytes. That's as much as the Mac's filing system could keep track of — and as large as a single volume could be.

Time and technology march on, however. System 7.5, in recognition of the increasing number of jumbo-disks on the market, introduced a new scheme that boosted the maximum-size limit to 4 gigabytes. And System 7.5.2 pushed the upward limit even more — to an astonishing 2 *terabytes* (that's 2,048 gigabytes)!

sheet of Mylar instead of glass or plastic. Floppies don't spin as fast as hard disks, and consequently provide slower access to data.

Floppies are also a lot less reliable than rigid disks. They go bad all the time. If you need to transport an important file to, say, an important presentation, copy the same file to a couple of *different* floppies and take them all. Your cheerful authors swear by this one.

The obligatory "floppies-are-fragile" discussion?

This would be the appropirate paragraph in which to expound on the fragility of floppies. Every manual and Mac book does, after all. We're supposed to say that dropping a flppy is bad for it, and that you have to watch out for deadly invisible magnetism, like that emitted from telephones. We're supposed to raise the dire spectre of disk failure if you slide open the shutter on a floppy disk.

Truth is, we've never seen a floppy disk die from any of these harsh treatments. David drops his floppies nearly once a week. And Joe snaps the shutter open and closed sometimes while he's on the phone. Both of us regularly carry floppies through airport metal detectors. None of these floppies have ever become unreadable as a result.

We're not suggesting that floppies *don't* go bad. We're just pointing out that to suppose that we, as mere mortals, have some control over the destiny of our floppies is utter arrogance. In truth, floppies go bad when they're ready to go bad. Some microscopic piece of pollen lands on the disk surface, heat warps the Mylar, a cosmic ray shoots completely through the disk in a fraction of a nanosecond, and it's gone. It's the little, invisible things that kill a disk — not the grosser effects of human handling.

On the other hand, we don't actually encourage *touching* the brown shiny disc inside the floppy's shutter, which computer techno-dweebs (definitely not us) refer to as "the cookie."

MACINTOSH SECRET

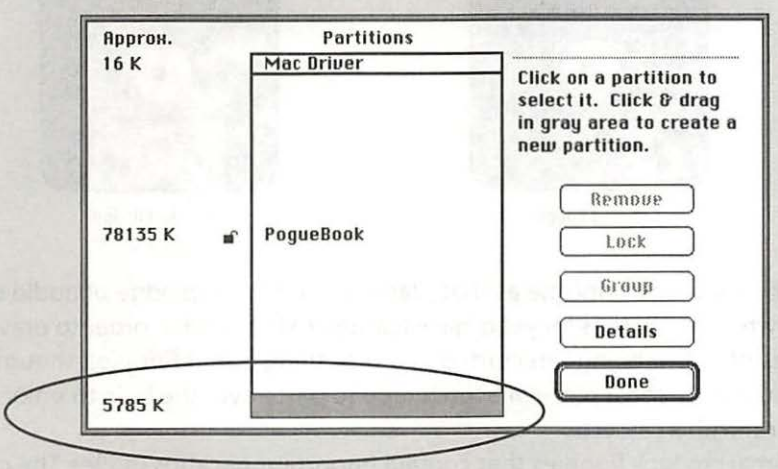
THE GREATEST HARD-DRIVE SECRET EVER TOLD

If you're completely cramped for space on your only hard drive, you'll love this Secret, because it unlocks several megabytes of storage space you never knew you had.

This procedure, however, involves *erasing your entire drive;* so, once again, you must back up every file and then copy them all back to the hard drive when you're finished. It's a pain, but in this case, it really may be worth the trouble. And, although this trick is outstanding for PowerBooks, don't use it on a PowerBook with a 120MB hard drive, which is more susceptible to an obscure HFS disk bug that occasionally crops up on these drives.

Here's the Secret: Most Apple factory-formatted hard drives contain several megabytes of unallocated free space. It's space that is completely wasted; it's not used by the driver software and can't be accessed to store files. On one old 80MB drive we looked at, only 78.1MB were partitioned for storage. Another *5.7MB* were unallocated and inaccessible. (Yes, we know this adds up to 83.8MB; the 80MB designation is an approximation. Most drive manufacturers throw in a little extra storage space to compensate for bad blocks that may develop on the drive through normal use.)

You can use Drive Setup or HD SC Setup to repartition the drive and unlock the extra space. For example, lunch HD SC launch, click Partition, and then click Custom. This opens a window displaying all the partitions on the drive. The gray area near the bottom of the partitioning window represents the unallocated space on the drive. In the figure below, you can see that there's plenty of unused free space — 5.7MB's worth — on this 80MB hard drive.



Click anywhere on the main storage partition (the one called PogueBook in the figure above) to could select it, and then click Remove to delete it.

Then drag in the gray area to create a brand new partition bigger than the original — one that makes use of all, or almost all, of the extra space available. When you're finished, click Done.

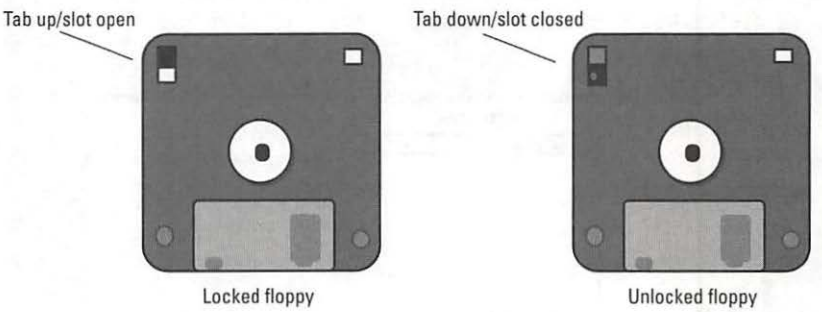
FLOPPY DISK SECRETS

Locking a floppy

Locking a floppy disk prevents you or anyone else from accidentally (or intentionally) modifying or trashing the files stored on it. When a floppy is locked, you can still read its contents. You can open folders, rearrange icons, launch applications, open documents, and even copy files *from* the locked disk to another drive — but when you eject the disk, all will be as it was before you started. A locked floppy disk can't be renamed, either. Come to think of it, a locked floppy behaves exactly like a CD-ROM.

To lock a floppy, turn it over so that the disk's circular hub is facing you. In the upper-left corner of this disk you see a little black tab; push it upward, opening a tiny rectangular window, as shown in Figure 8-11. That's it; the disk is locked.

Figure 8-11
Lock a floppy by sliding the little black plastic tab up to open the tiny rectangular window at the corner of the disk. Don't confuse this window with the other rectangular hole — on the right side — which simply identifies the floppy as a high-density disk.



This is the same principle as that plastic tab on the top edge of audio cassettes, which audio fans for years have learned to break off in order to prevent the cassette from being rerecorded. The nice thing about floppies, though, is that you don't need a piece of Scotch tape to paste over the hole to unlock it, as you do with a cassette.

It's smart to lock floppies that contain important backups of files. The contents of a locked disk can't be trashed, changed, or infected by a virus.

Ejecting a disk

The most obvious, though not the easiest, way to eject a disk from a floppy drive is to select its icon and then choose Eject Disk from the Special menu.

We discourage using this approach for two reasons: (1) Pulling down a menu is too much trouble, and (2) the Eject Disk command leaves a ghosted image of the disk on your Mac's Desktop. Even worse, any of the disk's open windows remain on the screen even after the disk is gone. If you try to drag the phantom icon into the Trash, you may be asked to *reinsert* the disk you just ejected!



Instead of selecting Eject Disk from the menu, you can press ⌘-E. But even this method still leaves the ghosted disk icon on the screen. It's better to avoid these problems by using one of the following alternatives:

- Drag the disk icon straight into the Trash. The disk pops out of the drive and its icon disappears.
- Select the disk icon. Use the File menu's Put Away command or the ⌘-Y keyboard shortcut. This accomplishes the same thing as dragging the disk to the Trash. The disk ejects and the icon disappears.

Eliminating ghosted icons and windows

If you *do* eject a disk using the Eject Disk command or ⌘-E, how do you get rid of that annoying ghosted icon? Just drag the disk icon to the Trash. You see a message asking you to reinsert the disk. *Don't do it.* Instead, press ⌘-period. This dialog box goes away. The icon vanishes from the Desktop and so do any of its windows that are open on the Desktop.

Ejecting shortcuts

Apple has built in three other keyboard shortcuts that let you eject a disk regardless of whether it has been selected.

- ⌘-Shift-1 ejects a floppy disk from an internal drive. (The floppy drive connected to a PowerBook 100 or a Duo counts as the internal drive, oddly enough.)
- ⌘ -Shift-2 ejects a floppy disk from an external drive (or the second drive if your Mac is one of the few with two built-in floppy drives).
- ⌘ -Shift-0 ejects a floppy disk from a *third* drive if you have one connected.

Even though these commands save you the trouble of selecting a disk icon before ejecting, they also leave ghosted icons on the screen. It's still best to select the disk you want and use ⌘ -Y.

Resorting to the paper clip

No discussion of floppy disk ejection would be complete without at least mentioning the paper-clip trick. If a floppy disk simply refuses to be ejected after

MACINTOSH SECRET

FLOPPY LIES

You've probably heard it a thousand times: Absolutely *never,* under any circumstances, put floppy disks near a telephone or any other item that generates a magnetic field because this can obliterate your data.

To this we respectfully respond: Baloney.

We took several of our floppy disks — some containing chapters of this book, as a matter of fact — and put them directly on a *ringing* telephone. We stuck the disks under the phone, next to the phone, between the handset and the phone unit. We waved the handset to and fro, millimeters away from the disk. We *rubbed* a disk against the phone. We tried a few different telephones. No matter what we attempted, it didn't result in the destruction of a single file or even a bit of data.

Our curiosity aroused, we kept experimenting. We waved a few kitchen magnets across the surface of a disk. *We fastened a floppy disk to David's refrigerator using a magnet — all day!* Still, no problems.

Our conclusion: Yes, a strong enough magnetic field probably *can* mess up the information on a floppy disk. But we're not talking about refrigerator magnets here; more like the kind they stick on the end of a 75-foot crane to pick up scrap automobiles, or those bulk tape erasers they use to erase audio- and videotapes.

One of our tech editors insists that he's seen floppies go bad that were left on the front left corner of an ImageWriter I, where a magnet lurks. All we know is that we couldn't make it happen, no matter what we tried.

P.S.: We feel vindicated. We received the following e-mail from reader Thom Fries concerning this sidebar:

I have a Ph.D. in physics. My area of research dealt with the effects of high magnetic fields on certain types of semiconductors. Part of my research was done at the Francis Bitter National Magnet Lab at the M.I.T. Until very recently, the strongest magnetic fields in the world were generated there.

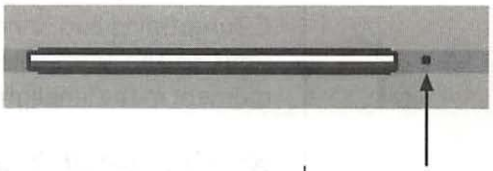
All the data acquisition is computerized. In the areas around the magnets, nobody can use color monitors because they become unreadable at high fields. The colors all blend into one, and the image on the screen begins to rotate away from vertical.

We were very careless with our floppies. They were routinely sitting on the monitors, or the metal cases of the PCs. Other than actually putting the floppies on the magnets themselves, we made no attempt to protect the floppies. Turns out the floppy-failure rate was no higher for lab disks than for any other floppy ever used.

Thought you might want to know.

you've tried all of the aforementioned eject commands, you can force it out manually. Poke a straightened paper clip, slowly and firmly, into the tiny hole on the front of the drive (see Figure 8-12) until the disk pops out.

Figure 8-12
A time-honored solution to jammed disks: Poke a straightened paper clip into the tiny hole beside the disk drive slot until the disk is forced out.

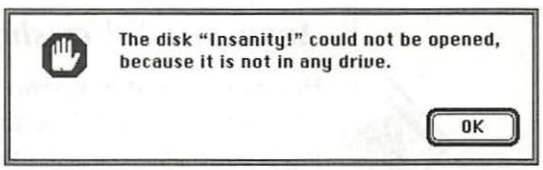


If the disk is physically jammed inside the drive, the reason may be that the shutter is bent or that the sticky disk label has come unglued and has grabbed onto something inside the drive. In both cases, forcing the disk may damage the drive unless you first free the obstruction. Try sliding an index card in on top of the caught label or shutter. You should also try pushing the disk back into the drive a little bit, then gently trying to pull it out again.

Getting out of an "insert disk" loop

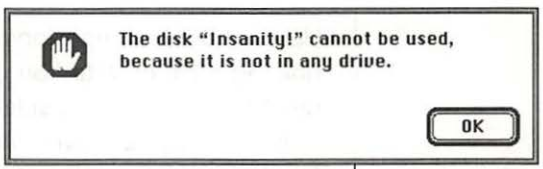
If you inadvertently double-click the icon of a disk that's already been ejected, the Mac asks you to reinsert the disk. You don't have to obey. Just press ⌘-period. A dialog box like the one in Figure 8-13 appears, telling you that the disk cannot be opened.

Figure 8-13
The Mac's self-evident statement.



Click OK or press Return. Usually, the Mac makes one last attempt to open the disk and asks you to insert it. Press ⌘-period again. This time, you see a slightly different message, telling you that the disk can't be *used* (see Figure 8-14). The Mac is giving up. Dismiss the message and the loop stops.

Figure 8-14
The Mac's last attempt at communication.



Rebuilding the Desktop on a floppy

In Chapter 7, we discuss the value of periodically rebuilding your hard drive's invisible Desktop file. This purges the file of superfluous information, prevents the Finder from getting sluggish, and makes more space available on the disk. You can rebuild the Desktop of a floppy disk, too, but there's a Secret to it. See the Desktop file Secret called "De-bloat a floppy disk" in Chapter 1.

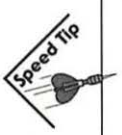
Finding the Secret floppy message

Here's a Secret we guarantee you'll never stumble across by accident — it's too weird and it only works with versions of System 7 prior to 7.5. Insert a floppy disk and rename it either *KMEG JJ KS* or *Hello world JS N A DTP*.

Now eject the disk using ⌘-E. This leaves the ghosted disk icon on the Desktop. Double-click the icon and — surprise — the resulting "please insert the disk" dialog box displays the line: "HFS for 7.0 by dnf and ksct."

As you undoubtedly guessed, dnf is David N. Feldman and ksct is Kenny S. C. Tung. David and Kenny are the Apple programmers who developed extensions to the Mac's Hierarchical File System for System 7, and this is their moment in the limelight.

Erasing two disks at the same time



That's right, you can erase two disks simultaneously. You may use this trick if your Mac has two floppy drives, or a floppy drive and a SyQuest cartridge, for example. Shift-click to select both disk icons and then choose the Erase Disk command. Both disks get erased simultaneously. (You don't actually save much time, but you do avoid having to step through all the confirmation and renaming dialog boxes.)

Automatic disk erasing



Here's another little-known shortcut for erasing floppy disks: If you hold down ⌘-Option-Tab while inserting a disk into the floppy drive, the dialog box asking if you'd like to erase the disk pops up as soon as the disk mounts, saving you the trouble of choosing the Erase Disk command from the Special menu.

Turning 400K disks into 800K double-sided disks

Here's another straightforward conversion trick: All 400K disks are capable of holding 800K of data. You can double the capacity of a 400K disk simply by reinitializing it as a two-sided disk using the Erase Disk command.

For years, gurus have pointed out that only *one* side of a 400K disk is tested for defects during manufacturing. They say, technically speaking, that the safety of the second side is, therefore, questionable.

Using System 7, however, any bad spots on the disk are set aside. For this reason, System 7-reformatted disks are much less susceptible to the potential flakiness that sometimes resulted from this 400K/800K formatting.

Turning 800K disks into high-density disks . . . or not

Along the same lines as the previous Secret, it's theoretically possible to create a disk that the Mac treats as a high-density disk by punching a hole in the upper-left corner of an 800K disk. We've even seen special hole punches for sale.

However, going from 800K to high-density disks is a far riskier proposition than going from 400K to 800K. The shiny disk material inside a high-density disk has a different magnetic coating. The data is also written with a weaker magnetic field into a smaller area on a thinner surface.

Turning high-density disks into 800K disks

You get into trouble if you get greedy and try to create high-density disks from 800K disks. Now we'll tell you that being *un*-greedy doesn't help, either.

You'd think that it would be no problem to go the *other* way — to format high-density disks as double-sided by inserting them into an older 800K disk drive. (We can imagine doing this in a pinch, for example, when you have nothing but high-density disks on hand.)

We have two problems with this approach. First, if you try to insert this 800K/high-density disk into a SuperDrive, you are told it's "improperly formatted." Click Eject and then put a piece of tape over the hole across from the sliding tab. This is a temporary but effective way to get the SuperDrive to recognize the contents of the disk. (It's also the only way to *re*format a high-density disk to its high-density status after it's been formatted to 800K on a non-SuperDrive Mac.)

The second problem is that the differences between the two systems may get you in trouble. The stronger magnetic fields of an 800K disk drive may cause errors with the thinner high-density media.

It appears, then, that the best strategy is to attempt to use high-density disks exclusively in the appropriate drives.

Fixing good disks gone bad

It happens to everybody sooner or later: You insert a floppy disk, and you get the "This disk is unreadable" message.

Three times in ten, the floppy works if you (1) try inserting it again; (2) try inserting it into another Mac; (3) remove the disk, manually turn the silver hub with your fingernail, shake the disk around a little, and put it back in. Restart the Mac, thus clearing the floppy drive port — the Mac equivalent of blowing your nose. (Item 2 has a very high success rate with PowerBook disk drives, which are somewhat more finicky than regular drives.)

If the problem with the disk appears to be that the protective metal shutter is jammed, bent, or broken, try this radical-but-effective trick: Carefully pull the entire shutter off the disk; it can be broken off quite easily. Be careful not to touch the Mylar disk material. Immediately insert the bare disk into the drive. Your Mac will have no trouble reading the disk, despite the missing shutter.



Obviously, this technique ruins the floppy disk, but it might enable you to access files from a broken disk that otherwise could not be inserted into a drive.

Fixing good disks that have really gone bad

If you tried the steps in the previous Secret with no success, and you're sure that the disk has really gone bad, all hope is not lost.

There are ways to recover files from a damaged disk. Most often, in fact, your files have not been damaged; the problems lies with the disk's *catalog* of your files. In other words, your precious files are still intact, but the Mac's instructions for *finding* them have gotten mangled.

Your Mac comes with a repair program called Disk First Aid. It's on the Disk Tools disk (or in the Apple Extras folder on the System CD-ROM) that came with your Mac When you click Start, Disk First Aid scans a selected disk, checking for problems it can fix and then offering to make the repairs. If necessary, it rebuilds the disk's catalog file, which may be all that's needed to make your files readable again.

Recovering files from damaged floppies

If you insert a floppy disk and get a message that says the disk is unreadable, you still may be able to recover the files on it by doing the following: Leave the disk in the floppy drive and open the *application* in which the files were created. Use the Open command from within the application to open the file, and then resave the file to a new disk.

If this doesn't work and the disk is truly ruined, there's still a glimmer of hope. A file recovery program such as Symantec's Norton Utilities may be able to locate the file — even on a fairly mangled disk — and allow you to copy it to another location (see Chapter 22). As a last resort, a little program called RescueText by Abbott Systems lets you search for text strings on a disk block by block. The process may take a while, but if you're trying to hunt down a precious bit of data that you absolutely can't live without, the search may be worthwhile.

Cleaning your floppy drive with a vacuum

A dirty floppy drive can be dangerous; a few specks of dirt on a disk surface can send it crashing. It's a good idea to keep the drive as dust-free as possible. They do sell special cleaning disks, but we've actually heard of these scratching disk heads. Instead, try using your old vacuum cleaner to clean out dust that may build up in the drive slot. You may feel odd standing in front of your computer with the hose of a Hoover in your hand, but your efforts could pay off in the end with fewer disk-reading problems. (Needless to say, remove the vacuum's heavy-duty carpet-sweeper head before trying this and leave the Mac off, but plugged in, so that it's grounded.)

OTHER KINDS OF DISKS

Hard drives and floppy drives are by far the most frequently used storage devices. But there are plenty of other storage options available, some of which

offer unique advantages over traditional hard drives. Here are some of the most popular emerging technologies in the data storage department:

- **SyQuest removable drives:** Removables act like super-reliable floppy disks. As with floppies and hard drives, data is recorded on spinning magnetic disks, but each of these disks can hold anywhere from 20 to 270 megabytes of data and is sealed into a cartridge that can be ejected from the drive. (The older 5.25-inch SyQuest cartridges are usually formatted to hold either 44, 88, or 200 megabytes each, while the newer 3.5-inch versions can handle up to 270 megabytes each.)

  With removables, you don't have to start shopping for another drive every time you need additional storage space; you just buy another cartridge (they run about $30 to $80 each, depending on type and capacity) and pop it into the drive. For a relatively low price, you get virtually unlimited storage. The speed of these systems is about the same as a hard drive's.

- **Zip drives:** These sleek, slender, removable disk systems from Iomega (the Bernoulli people) were introduced in 1995 and have grown immensely popular since then. It's not hard to figure out why. The 3.5-inch Zip disks look like extra-thick floppies, but they hold about 100MB each. The Zip disks also offer quiet, super-reliable performance at nearly the speed of a hard disk. Best of all, they're incredibly economical. The Zip drive itself costs only about $150 — or you can get one built into a Power Computing Mac clone — and new 100MB disks run only about $15 a piece. If you're looking for a cheap, reliable way to transport lots of data or make backups, you just can't beat a Zip drive and a stack of disks.

- **Jaz drives:** Also from Iomega, and also wildly popular, these high-capacity removables are a multimedia glutton's dream. The Jaz drive itself is under $500 and each 3.5-inch Jaz disk holds an amazing 1.2 gigabytes of data — yet costs only about $100. The Jaz is fast, too — as fast as fast hard drives, and, therefore, perfectly suited for digitizing QuickTime movies and other speed-intensive tasks.

- **SyQuest EZ Drive:** These miniature SyQuest cartridges, of course, were designed to be the ultimate Zip-drive killers: similarly priced, similarly sized. As every magazine review has hastened to observe, these cartridges hold slightly more (135MB) than Zip disks, and are slightly faster. Well, sure, their *access* times might be faster. But no one ever mentions the hassle of inserting and removing these disks. For example, to remove one, you must (a) drag its icon to the trash, (b) push a button, (c) wait for the cartridge to spin down — or risk damaging it, and finally (d) push the lever that ejects the cartridge.

In this day of fast, cheap, ubiquitous Zip and Jaz drives that load nearly instantly and don't require fussy little eject buttons and levers, our fond feeling toward SyQuest technologies — no matter how many new formats the company comes up with — is fading.

- **CD-ROM:** Yes, they're disks, too. But instead of using magnetic particles, CD discs are optical disks. CD-ROM discs are read and written using laser beams. They're very slow — ten times slower than hard drives. Each CD-ROM can hold about 650MB of data. Look for more details on CD-ROM in Chapter 29.
- **CD-R:** That stands for CD *recordable.* Unlike traditional CD-ROMs, which are *read-only,* CD-Rs are compact disks on which you can record your own data. A CD recorder uses a laser to burn 600-nanometer-wide pits into a chemical layer on a blank disk. In essence, CD recorders allow you to become your own CD-ROM producer. Once data is recorded to a CD using one of these systems, the disk can be read by any standard CD-ROM drive.

  The very first recordable CD systems were ridiculously expensive — somewhere in the neighborhood of $30,000. But prices have plummeting for the last few years, and now it's not hard to find CD recorders in the $1,200 to $2,000 range.

  Most people use CD-Rs for archiving; you can record about 650MB of data on a single CD, and the blank CDs are cheap — about $15 to $20 each. Still, a Jaz drive holds twice as much, costs half as much, is erasable, and is many times faster; although blank Jaz cartridges cost more, we suspect CD-R's time on Earth is limited — especially with recordable versions of DVD compact discs, which hold 14 times as much, on the drawing boards for release in a few years.
- **Magneto-optical (MO) drives:** Rewritable optical disks (another kind of optical disk) that come in cartridge form. The smaller cartridges, which resemble standard-size floppy disks, can hold up to 256MB. The larger, 5.25-inch square cartridges can contain up to 1.3 gigabytes of data.

  In a magneto-optical system, a finely-focused laser heats material on a double-sided spinning disk. A magnetic head on the opposite side of the disk simultaneously alters the heated material's magnetic orientation. When the material cools, the magnetic pattern is locked into place. A lower-powered laser is used to read back the magnetic spots when data is retrieved. Because the data is laser-etched, optical disks aren't as susceptible to corruption by strong magnetic fields.

  Magneto-optical disks aren't as popular as SyQuests, but they've been catching on, especially with graphic artists — and, now, PowerBook fans, who can get a snap-in MO drive for the latest models — who need to trans-

port and archive hundreds of megabytes at a time. Magneto-opticals are slower than removables, and the drives themselves are more expensive, but they're economical for large-capacity storage. You can buy a blank 1.3 gigabyte optical disk for about $70 — a much better deal than a SyQuest cartridge in terms of dollars-per-megabyte and about on par with the Iomega Jaz drive.

- **Tape drives:** These are designed primarily as backup devices because they don't provide *random access.* In order to find a specific block of data, you have to fast forward or rewind through tape, which takes time. All that winding and rewinding takes its toll on the tape's life expectancy, too; some tapes are likely to stretch and wear out if accessed more than a few dozen times. Really, tape backups aren't meant for repeated use. The idea is to back data up to tape and then store the tape in a vault or a safe-deposit box. If an earthquake swallows your house, or a satellite falls on your office building and wipes out your network, you can restore your data from the tapes and carry on with your life.

  Some tape drives record data on the same 8mm tape cassettes used in video recorders. Others write the data to *DAT* (digital audiotape). Tape drives are great for large-network backup because they can archive a huge amount of data — as much as 16 gigabytes on a single tape! They're also the least expensive form of mass storage. A tape cassette capable of holding 16 gigabytes of data costs under $30.

- **Worm drives:** Forget it. These you-can-only-record-on-it-once CDs are already technological dinosaurs. We've never even seen one. We guess accountants use them. (Stands for Write Once, Read Many.)

SYQUEST/ZIP/JAZ SECRETS

What's that racket?

The racket a cartridge makes when you first insert a SyQuest cartridge is the sound of the platter's acceleration to 4200 rpm, where centrifugal force flings any microscopic dust off its surface.

Why can't I eject my cartridge?

There's a famous bug involving removable cartridges and System 7 file sharing prior to System 7.5.1. You can't *remove* a removable if it was in the drive when file sharing started up.

ANSWER MAN

Q. ***I've heard rumors that Bernoulli removable drives are actually named after Daniel Bernoulli, the 18th century Swiss mathematician who studied fluid dynamics and discovered the aerodynamic principle of lift. What the heck does lift have to do with my removable drive?***

A. Believe it or not, the operation of a Bernoulli drive is dependent on precisely the same principle that enables a 747 to fly. The magnetic disk inside the Bernoulli drive is made of an extremely flexible material, so flexible that when it's stationary, it just droops down like a wet pancake safely away from the read/write heads.

When the drive is powered up, the disk starts spinning and the motion draws in air across the top of the disk. The rushing air creates a low-pressure pocket above the disk. Because the air pressure is minutely higher below the disk, the flexible disk is lifted up to the read/write heads — the same way an airplane wing is lifted up in flight. The Bernoulli effect lifts the disk to within 10 millionths of an inch of the head, where it rides on a stabilized cushion of air.

Now you can see what makes Bernoulli drives particularly safe. When the drive accidentally falls off your desk or there's a power failure, the flow of air is interrupted, the disk loses its lift, and the platter immediately drops away from the head, preventing a head crash.

Here are a few solutions:

- You can wait to insert the cartridge until after file sharing has started up.
- You can turn file sharing off while you eject the disk.
- You can use the Control Strip to temporarily turn file sharing off while you eject the disk. (See Chapter 5 for details on how to use the Control Strip on both PowerBook and desktop Macs.)
- You can use the freeware program called File Sharing Improvement Doohickeys, which quickly turns File Sharing off and on again when you eject a cartridge, or Unmounter, another shareware gem.

Should I worry about data integrity?

In the late '80s, people whispered questions about the integrity of SyQuest systems. They said that these cartridges were more likely to go bad than any other kind of disk.

A couple of developments have improved the picture. First, SyQuest drive mechanisms have been improved. Second, we read somewhere that the trick to keeping SyQuest cartridges secure is to *keep them in their plastic cases* whenever they're not in the drive. We're convinced that this is the answer. Between us, your cheerful authors have worked with literally hundreds of Syquest cartridges, many of which have been repeatedly FEDEXed cross country. Of those, a handful have shown some signs of damage, but in almost every case, we were able to retrieve the data on the disks by simply remounting them and reinstalling the disk driver software, or by using a file recovery utility.

My SyQuest removable cartridge doesn't show up

On certain Macs, with certain SCSI-chain setups, on certain days of the week, you may insert a SyQuest cartridge (after the Mac is already on) and discover that its icon doesn't appear on the Desktop.

The solution is simple. Install SCSIProbe, included with this book. Then, if you're nipped by this won't-mount problem, just press ⌘-space. SCSIProbe will wake up and forcibly bring your SyQuest onto the Desktop. (You can change this keystroke in the SCSIProbe control panel.)

If you're using a Zip or Jaz drive, of course, the solution is even easier; run the little Iomega Guest program included with your drive. No extension needed.



Either way, if your disk refuses to pop up on the Desktop, here's an alternative, software-free trick: restart your Mac with the cartridge or disk already inserted into the drive. The Mac will pull it onto the Desktop because at this point it appears to be a standard SCSI external hard drive!

The Surgeon General's warning

Smoking is bad for your lungs, and it also can spell disaster for SyQuests. Evidently, if even the tiniest bit of tobacco smoke manages to worm its way into an exposed SyQuest cartridge, a microscopic smoke particle can damage the disk surface and cause the drive to crash. Maintaining a smoke-free office will help keep your data safe — and probably prolong *your* life, too.

Chapter 9

The Memory Chapter

IN THIS CHAPTER

- The Save, Save As, and Revert commands
- What memory is and where it goes
- 32-bit addressing and all that
- Allotting memory to programs
- How to use the Disk Cache, RAM disks, RAM Doubler, and virtual memory

When you double-click a document or a program icon, your hard drive spins furiously at 3,600 rotations per minute. Like a record player, the Mac reads the information contained in your file off the disk. The Mac doesn't send this data to a speaker, however — it copies the information into memory. (By the way, we don't belong to the "disks are memory" school. Disks are disks. Memory is memory. There's no such thing as "disk memory.")

By the time your memo (for example) appears on the screen, you have two copies of it — one copy on the disk and another in memory (RAM) on the screen before you. If you keep this distinction in mind, much of Macintosh computing becomes clearer.

If you've ever held a *SIMM* or *DIMM* (a memory board, about the size of a stick of Juicy Fruit) in your hand, you know that RAM looks pretty unimpressive. RAM stands for random-access memory; *random-access* implies that the computer can jump directly into any part of it to fetch a piece of information. Contrast this random-access device with, say, a tape recorder, which is a

sequential-access device; you can only get to a certain song on a cassette by waiting while it fast-forwards or rewinds to the appropriate spot.

Despite its humble appearance, *memory is about 1,000 times faster* than a disk at sending information to the Mac's brain. This critical fact accounts for almost everything you're about to read, because programmers deliberately use memory whenever speed is an issue. When you're editing your memo, of course, you don't want to have to pause for ten seconds each time you scroll to a new paragraph, which is what would happen if your memo wasn't in memory. As owners of the Classic can tell you, the Mac can be slow enough as it is.

Suppose you make some changes to a memo, updating it to reflect your new thoughts. The memo in memory is now *different* from the one on your disk. At this delicate stage, you have three choices. You can make the *disk copy* match the one on the screen (in RAM). You can make the *RAM copy* match the one on the disk. Or you can *create a second disk copy* that matches the version in RAM, so that there's an old and a new disk copy.

Why bother with the disk copy at all? Because when you turn off your computer, the entire contents of its memory disappear; the Mac's memory chips only maintain information while electric current is running through them. So why not leave your Mac running all the time and never save anything onto the disk? Two reasons: First, because your Mac's memory doesn't hold nearly as much as your hard disk; and second, because system crashes or power failures may *make* you turn off your Mac, whether you like it or not. As frequently as possible, then, you should transfer the contents of memory back onto the disk. (Of course, anything stored on the disk is preserved even when you turn off the Mac.)

SAVE, SAVE AS, REVERT

Because you can't understand memory without understanding its relationship to your hard drive, we decided that this is the place to discuss that most critical juncture between the two: the Save As and Open File dialog boxes. These complex screens are where you specify how you want to transfer data between the hard drive (where it's stored) and RAM (where you work on it).

Save and Revert

When you choose Save from a program's File menu, the Mac stores your memory-based document on the disk.

The Revert command, in the File menu of most programs, does just the opposite. Instead of bringing the disk copy up to date so that it matches the document in memory, it restores the *memory* copy to match the older *disk* copy. In other words, the document reverts to the condition it was in the last time it was saved.

This, of course, is precisely what you want to do if you make a mess of a file — when a search-and-replace operation has gone awry, for example. The Revert command is the ultimate Undo.

Some programs, such as Microsoft Word 5, don't offer a Revert command. You can accomplish the same effect manually: Close the file without saving changes, then reopen it.

If your program has neither a Revert *nor* a Save command (such as FileMaker), there is *no* way to restore the file after you've worked on it for a while. If you use FileMaker, your only protection is to make a duplicate disk copy before *each use* of the database (using the "Save a Copy As" command, for example). If something goes wrong, you can use the copy.

Save As

The third interaction between the RAM-based and disk-based copies of a document is the Save As command.

In a way, Save As is a cross between Save and Revert; it lets you eat your cake and have it too. You save the changes you've made — they become part of the *new* document — and you also close the older one without saving changes. Then you have two different versions on disk, an old and a new one.

When working under unstable conditions — that is, when either your boss or the software is a little flaky — you may want to create an electronic paper trail of your progress on a certain document. Use the Save As command frequently to create documents called Memo 1, Memo 2, Memo 3, and so on. If an indecisive boss (or a buggy, file-corrupting program) decides that the current version is no good, you can go back to any of the saved versions.

ANSWER MAN

Save a Copy As

Q: ***You mentioned that FileMaker has no Save command. But it has something called Save a Copy As. Isn't that the same as Save As? (I discovered the same command in Photoshop, by the way.)***

A: Not quite.

The more common Save As command duplicates your file, but leaves the new copy open on your screen. The copy you'd been working on is automatically closed (and not saved).

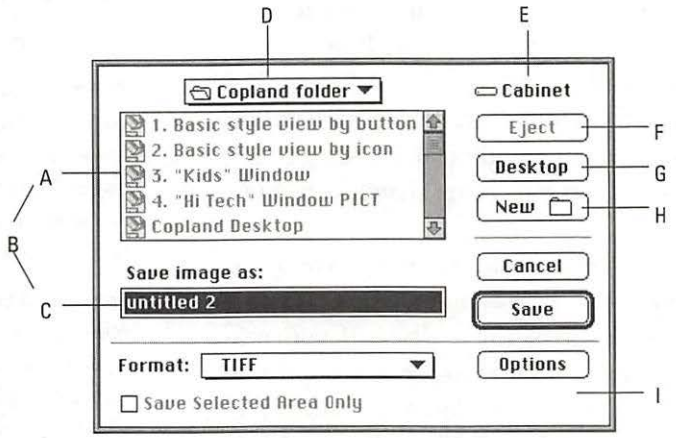
The "Save a Copy As" command — found in FileMaker, Photoshop, HyperCard, and an increasing number of other programs — is slightly different. It creates a duplicate of your file, but leaves the original copy open on your screen. You don't even see the new copy unless you now open it.

In other words, "Save a Copy As" is something like an Export command. If you use it periodically, you can create a "paper trail" of versions of your file in different stages of development.

A visual tour of the Save box

The simple Save File dialog box — the list box that appears when you choose Save As (or Save for the first time) — is loaded with hidden features. Here's our summary (see Figure 9-1).

Figure 9-1
The Save As box deconstructed.



We're going to assume that you already know what Save and Cancel do.

A This list shows the contents of the disk or folder identified by item D. You use this list to navigate and to choose which folder you want to store this file in.

Ever wonder why everything's gray? Because gray is the universal Mac signal "not available." When you're saving a new file, the only icons that are available are *containers* — disks and folders, in other words. You can't very well store a document inside another document.

B Item B represents a concept, not an interface element: There are *two different* places where you can do typing. You can type a title (C) or you can type to choose a folder (A). We'll discuss this feature in more detail in a moment; note here simply that pressing the Tab key jumps you from area A to area C.

C In this text box, you type the name of the file you're creating: up to 31 letters, no colons.

D This pop-up menu shows the name of the disk or folder whose contents you're browsing through. If you want to burrow deeper into folders-within-folders, you double-click a folder name in the list (A). To back out

from the contents of a folder, however, you must use this pop-up menu. It lists, in upside-down order, the nested folders you traveled to reach the location you're viewing now. That is, the disk is always second-to-last in the pop-up menu, and the Desktop is always at the bottom.

E This indicator identifies the disk whose contents you're browsing.

F This button is only available when you're viewing an ejectable disk or its contents. Use this button when you want to save your document onto some disk that isn't currently in the drive. (Unfortunately for floppy-disk users, this command is the equivalent of the Special menu's Eject Disk command: yes, it ejects the disk, but it leaves the disk icon's ghost on the screen. Within moments of your next visit to the Desktop, your Mac will begin asking you to re-insert that floppy.)

G The Desktop button (System 7 and later) takes you directly to your bird's-eye view of the disks accessible by your Mac. It shows each as an icon, including your hard drive, any floppies or cartridges, and any networked drives that you've mounted.

In Desktop view, you also see any folders or files whose icons you've dragged out of a window onto the Desktop. Interestingly, you also see a dimmed icon of the Trash. (We've always wondered why it's always dimmed. We've written documents now and then that we wouldn't have minded saving directly into the Trash.)

H This button's presence is up to the programmer of each particular piece of software. It's available, for example, when you try to save something from Word, Now Up-to-Date, and America Online, but not from FileMaker.

Anyway, it's handy. Needless to say, it lets you create (and name) a new folder, in case you're trying to save a document for which no existing folder is quite right.

I More and more programs offer specialized controls down here at the bottom of the dialog box. Usually there's a pop-up menu, as shown in this illustration, that lets you specify what *kind* of document you want to save: a text file, a Word file, and so on. That's good, because saving your work as another file *type* (exporting it to another file format) is one of Save As's most important uses.

By the way, we're happy to advise you that the complexities of the Save/Open File dialog boxes will recede into nostalgia as Apple's periodic system updates work their way toward System 8 (Copland). As shown in Chapter 6, the proposed Save/Open File box is a model of clarity and simplicity.

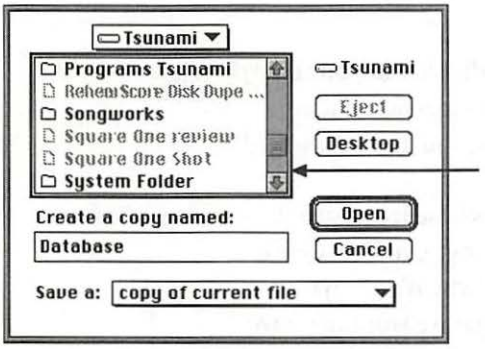
SAVE FILE AND OPEN FILE DIALOG BOX SECRETS

Two different places you can type

When you're staring at the Save As dialog box (see Figure 9-1) or the very similar Open File dialog box, Apple has designated two different areas where your typing has some effect.

First, look at area A in the previous figure. When this area is ready for typing, it has a thick black border, as shown in Figure 9-2.

Figure 9-2
The thick outline tells you that your typing will start selecting file, folder, and disk names.



We'll cover exactly what you're supposed to type when the list-outline is with you in the next Secret.

You can also type in the blank box where you're supposed to name the file that you're saving. As we mentioned earlier, you can jump from one typing area (the file name) to the other (the list of files) in either of two ways — click with the mouse or press Tab.

What you can type in the list area

When the thick outline tells you that you are in list-typing mode, as shown in Figure 9-2, you can select items in the list without having to use the mouse. Here's the ultimate list of keystrokes that move you around. Note, in all these cases, that typing only highlights selectable items. In the Save File box, you can't ever highlight one of the dimmed *file names* — only folder or disk names.

Space — Press the space bar to highlight the first item in the list.

P — This letter key, or any letter key, highlights the item in the list whose name begins with this letter — or the next closest one *after* it. If you have several beginning with the same letter, you can type several letters quickly — PA, for example — to close in on the one you want.

Z — Type Z to highlight the file whose name starts with the letter closest to Z (not necessarily the last file).

` — The unshifted tilde key, in the upper-left corner of your keyboard, highlights the *last* file in the list.

↑ — The arrow keys move the highlighting up and down the list, one item at a time.

How fast you have to type

When you're typing letters to highlight a file's name, you're generally told to "type a few letters quickly" to pinpoint a specific file. But how fast is quickly? How long do you have to wait between one typing spurt and starting over?

It turns out that *you* decide what pause constitutes an "I'm going to start over typing" period. The Mac goes by, believe it or not, your Keyboard control panel. Set the Key Repeat Rate setting to a shorter time, and you won't have to wait as long before starting over when type-selecting a file in the list box.

Other hidden keyboard shortcuts



You should never have to use the mouse at all when you're opening or saving a file. Here are the alternatives.

⌘-D Makes the list jump to the Desktop level — the same as clicking the Desktop button. ⌘-Shift-↑ accomplishes the same thing.

⌘-↑ Moves "upward" one level closer to the Desktop. This is how you move outward from an inner folder to the one that contains it.

⌘-↓ Opens the highlighted folder or disk; the same as pressing Return or Enter.

⌘-→ Changes the list to show you the contents of the next disk. You go in the order that the disks appear on your Desktop, from top to bottom. Press ⌘-← to cycle through the disks in the other direction.

This keyboard shortcut is well worth learning. Without it, the only way to switch disks is to jump to the Desktop level and then double-click the next disk you want to view. That's a lot of trouble.

⌘-N This is the same as clicking the New Folder button, if your program gives you one.

⌘-O This is the equivalent for clicking the Open button, when appropriate.

⌘-S The same as clicking the Save button.

⌘-. (That's ⌘-period.) It's the same as clicking the Cancel button.

Return (Or Enter.) This key's effect changes, which causes some confusion for beginners. And for us.

You see, pressing Enter or Return is usually the same as clicking Save. Your file gets saved, and the dialog box goes away. (Or, if we're talking about the Open File box, then Enter or Return opens the highlighted file, folder, or disk.)

But *if* you're in type-to-select-a-file mode (the thick outline is around the list of files) *and* a folder or disk's name is highlighted, then Enter or Return opens the highlighted folder.

That often throws us. We press Enter, thinking we're saving the file. But some folder was highlighted at the time, unbeknownst to us — and so then the file *didn't* get saved, but we're now inside some arbitrary folder. Puzzled and confused, we press Enter *again*. This time we succeed in saving the document, but into the wrong folder! No wonder beginners often complain that they create documents and can never find them again.

Hidden things to click

Actually, there's really only one hidden thing to click. It's the disk name, as identified by letter E in Figure 9-1.

But it's handy: It's the same as pressing ⌘-up arrow. Clicking here moves you out of the folder whose contents you're viewing, and one folder level closer to the Desktop.

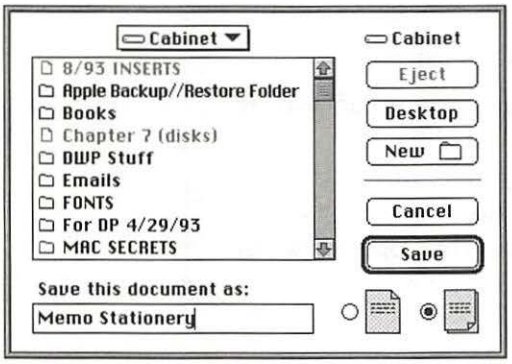
Double-click an alias, and Option-click

When you're viewing the Open File dialog box shown in Figure 9-2, alias names show up in italics. If you double-click one, the original file (from which the alias was made) opens.



If you *Option*-double-click it, though, you don't open it. Instead, you're instantly shown the contents of the *folder* that contains the original item.

Figure 9-3
One of the few programs we found with a Stationery icon and button (lower right).



Stationery

When System 7 was introduced, one of the most interesting new features was Stationery Pads. Whenever you save a document, you're supposed to find, in the Save File box, a Stationery button, as shown in Figure 9-3.

What's supposed to happen is that you prepare a document that contains elements you re-use often. It may be your letterhead, a salutation, or a contract template, where all you have to fill in is the names and numbers. Then, when you save the document using the Save As command, you're supposed to be offered a Stationery option.

A document saved as Stationery doesn't actually open when double-clicked. Instead, a perfect *copy* of it opens, named Untitled. The original — the master — is left safely on your disk. You can modify the Untitled copy to your heart's content and eventually save it with its own name. You saved yourself the effort of re-creating whatever elements are already in it (your logo, for example).

Figure 9-3 shows the Save File box belonging to *SimpleText*, the only program Apple provides with each Mac that has a Save command. The Stationery option in SimpleText was supposed to be the model for all new System 7-savvy programs. However, other than ClarisWorks, we can't think of a single program that adopted SimpleText's model (showing those two special document icons in the lower-right of the box). Instead, most Stationery-aware programs offer Stationery in a pop-up menu of file formats.

STATIONERY SECRETS

Turning any document into stationery

Even if your program doesn't have a Stationery option (or icon) in the Save File box, you can actually create stationery out of *any* document that came from *any* program.

Go to the Finder and highlight the icon. Choose Get Info from the File menu and select Stationery Pad.

From now on, whenever you double-click this document's icon, the Mac will instantly create a copy of it. Before the appropriate program even opens, the Mac asks you to name the document's new copy (see Figure 9-4). If you click OK, your new duplicate file will be stored wherever the Stationery document was. To save it into some other folder, click Save In.

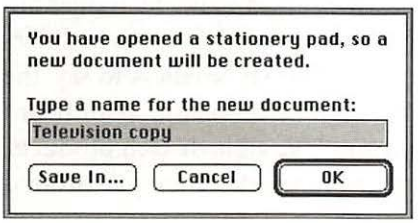


Figure 9-4
The Mac asks you to title the new duplicate file.

MACINTOSH SECRET
SELECT THE DESKTOP YOU WANT

When you're saving a new document, it's often useful to save it onto the Desktop. That way, when you're finished working in your program, the new icon will be sitting out, in plain sight, ready for you to file away.

To do so, when the Save File As: box appears, just click the Desktop button (or press ⌘-D). Then click Save, and your file will be saved on the Desktop.

Little-known fact, however: Technically, even though the *icon* appears on the Desktop, your file is actually being stored on your main (start-up) hard drive.

If you have more than one drive, however, it might occasionally be useful to store that file on the Desktop, but belonging to one of your *other* drives (or partitions). Here's how you do it:

When the Save dialog box appears, click Desktop, so that the icons of all your drives appear. Click once on the drive you want, then click in the box where you type the file's name. If you consult the upper-right corner of the dialog box, you'll see that, indeed, you've now switched to another drive — and yet the Desktop is still your new file's destination.

Adding a Stationery option to any program

You know what? We actually *prefer* the crude, not-really-how-it's-supposed-to-work scenario described in the previous Secret to the one Apple envisioned. We really like being asked to name the copy and save it *before* it opens on the screen.

A program that's "Stationery-savvy" works differently. You double-click a Stationery icon and get an *untitled* document on the screen. It's up to you to name and save it. Somehow, naming and saving the file right off the bat seems to make the whole Stationery concept clearer. You understand better what's happening.

You can't add Stationery-awareness to a program that doesn't have it. But you *can* make a program that *does* do Stationery "right," such as Word 5, act as though it doesn't. In other words, you can make any program's documents behave as described in the previous Secret. We'll save the actual instructions, however, for our ResEdit discussion in Chapter 21.

RAM: THE CHIPS

RAM chips come on tiny circuit boards called *SIMMs* (for *single in-line memory modules*) or, on most Power Macs, *DIMMs* (for *dual* in-line...and so on). A SIMM is actually a bunch of memory chips (memory modules) carefully fastened, in a neat row (in-line), to a small epoxy board. With your permission, from now on, we're just going to use *SIMMs* when we mean "SIMMs or DIMMs, depending on your Macintosh model."

If you examine a SIMM, you'll note that the little black memory modules are connected to the board with tiny legs. The board portion is constructed of impossibly thin layers of epoxy resin. In between layers, computers and acid have arranged and etched circuitry. The legs of the memory pods make contacts with this internal circuitry with extreme precision and specific depths.

These minicircuit boards (the SIMMs) can be snapped, with some difficulty, into corresponding receptacles inside every Macintosh model. Various models have various numbers of SIMM slots, usually in multiples of two or four.

The number of SIMM slots doesn't necessarily affect how much memory your Mac can have installed, however. The SIMMs themselves come in different capacities, from 1/4MB to 64MB on a *single* SIMM! Needless to say, the technology required to cram 64MB of RAM on a three-inch piece of board makes them wildly expensive — at the moment. Like all high-tech products, however, prices of memory chips will forever plummet. (Were you around

during the Great RAM Price Crash of 1996? Ah, it was a great time to be alive.)

We've figured out precisely how much memory your particular Mac model can accept. Rather than bore you by listing it all here, we'll direct you to Chapters 12 and 13, where you can read about your model and ignore the others. You may also wish to spend some quality time with GURU, the amazing storehouse of model-by-model RAM information included on the CD-ROM with this book.

Where your memory goes

We recently heard an Apple engineer discussing the design of the very first Mac. It seems that, in the early '80s, Apple decided to break the bounds of personal computers. Costs be damned, Apple was going to absolutely *pack* memory into its flagship machine: a whopping 64K!

Of course, even in the time it took the Mac to reach market, 64K began to look paltry; the first Mac contained 128K of RAM.

The Fundamental Law of Software Glut dictates, however, that the amount of memory considered the crudest minimum doubles about once per year; at this writing, a System 7.5 Power Mac feels memory-cramped unless it has at least 16MB of memory. Some of the latest Macs can handle a hearty 768MB. (Even paradise has its inconvenience, though: the more RAM your Mac has, the longer it takes to start up every morning.)

Where does it all go? Here's how the math goes on a typical 16MB Power Macintosh. Remember that one megabyte of anything isn't 1,000 kilobytes — it's *1,024* kilobytes. So, our 16MB machine has 16,384 kilobytes of RAM.

In our tests, a simple System 7.5.3 system with all extensions *removed from the System folder* (not just turned off) took up 2,640K of RAM right off the top. Set your Disk Cache (we'll get to this) to the recommended setting for a 16MB machine, and you're out another 512K.

16,384K	(Total Mac memory)
– 2,640K	(System)
– 512K	(Disk Cache)
= 13,232K	

The frightening part about memory, though, is that *every single feature* of your Mac saps away a little more. Internet extensions . . . CD-ROM extensions . . . AppleTalk, virtual memory, speech — each sucks away more RAM all the time your Mac is on (unlike programs, which you can quit when you want to). The CD-ROM extension grabs 225K, AppleTalk wants 107, File Sharing takes 264, QuickTime wolfs down 768, and so on.

So, suppose we turn those basic System 7.5.3 extensions back on. Nothing exotic — just the default System 7.5.3 installation (plus the Microsoft Word/Excel extensions) — and you're out another 3.5 megs!

13,232K	
– 3,467K	(basic extensions and control panels)
– 371K	(File Sharing and AppleTalk)
= 9,394K	

After you add a few extensions of your own, you rob even more memory. Suppose you add, for example, QuicKeys (530K), a Global Village modem (318K), and StuffIt Deluxe (768K) — and we won't even *begin* to talk about RAM gobblers like ATM and Apple's speech software.

9,394K	
– 1,616K	(three commercial control panels)
= 7,778K	

Imagine: You've lost 53 percent of your RAM just by turning on the computer!

Do you still question our assertion that the minimum requirements for Mac memory double every year?

What to do about the RAM shortage

We can think of three solutions to this apparent problem.

- Just run one program at a time. It won't kill you, but you won't be getting as much out of your Mac as you can.
- Use virtual memory or RAM Doubler. We'll cover both of these shortly.
- Buy more memory. Upgrading that 16MB machine to 32MB costs about $200 (at this writing, anyway).

If you do decide to install more RAM, the following section provides some pointers.

How to buy SIMMs/DIMMs

You can find three sources of memory upgrades today. First, you can take your machine into a computer store. They will provide the memory, install it, and test it. Having a dealer do the job certainly provides peace of mind, but it will cost you much more than what it will cost to do the job yourself. You'll also have to do without your Mac while it's in the shop (depending on how friendly your dealer is).

The second possibility is to install the RAM yourself and buy the RAM from a general Mac-merchandise mail-order company, such as Mac Connection. We like this option because your purchase, if not your Mac, is well protected. Mac Connection (or another of the major Mac mail-order companies) guarantees everything, frets over your satisfaction, may include a how-to-install video (or at least a good manual), and ships overnight for $5. The drawback is that each chip costs close to 50 percent more (say, $45 instead of $30 each) than it would if you bought it from a chip company.

The third option entails ordering your SIMMs directly from a chip company (like The Chip Merchant). This, too, is mail order, and it's the cheapest place to get RAM. You pay more for shipping; you may not get instructions; and you may not be able to pay by credit card.

Both of the mail-order sources we mentioned carry ads each month in the back of each issue of the major Mac magazines (*Macworld, MacUser, MacWeek*). They all have toll-free numbers for advice and information.

Types of SIMMs

You'll hear a few different terms bandied about in your efforts to buy memory. First, there's speed. Typical speeds are 70, 80, and 90 nanoseconds (ns). Getting a faster speed chip than your Mac needs *doesn't* speed up your Mac at all. However, getting a chip that's too slow for your Mac can cause trouble. See Chapters 12 and 13 (or the program on your CD called GURU) for model-by-model listings of the memory speeds required in each Mac. As a general rule, though, the slowest Macs used 150 ns chips; the fastest need 60 ns.

Each model family requires the different kind of RAM board. For example, you can't use memory from your old Mac IIci in a Power Mac; nor does PowerBook memory work in a desktop model. And, as we've mentioned, all current Power Mac models (those with PCI slots) require DIMMs — yet another RAM format — instead of SIMMs.

Again, this information is listed in Chapters 12 and 13; the point is to mention your Mac model when ordering memory upgrades.

Installing memory

If the thought of installing memory makes you a little queasy, you can have either a dealer or some local guru do it. Do *not* upgrade a PowerBook with a three-digit model number yourself. If you have a Plus, SE, or black-and-white Classic, you need an $8 set of special tools to open the case and an illustrated manual. And, to upgrade some tower-style Macs (such as a Quadra 800,) you

must remove a number of internal components to get at the RAM chips. For these models, once again you may want to go the local-guru route.

For the remaining models, installing RAM isn't difficult. But because different model requires chips in different multiples (two or four, for example), and because every model's slots are in a different place, we won't attempt to walk you through the process. The video or manual provided by some mail-order companies does an excellent job of explaining the task.

When you're finished with the installation, here's a tip: Don't bother hooking everything up again. Leave the Mac opened up, and try turning it on. If all went well, you'll hear the usual start-up ding or chime; wait a moment to make sure that the Mac has completely finished starting up — even if the monitor isn't connected — and then turn it off manually.

If, on the other hand, you hear the Chimes of Death (four single notes, the Twilight Zone theme, a flute or drum solo, or a car-crash sound — depending on your model), then one of the SIMMs is faulty or, more likely, not seated right. All of its contacts aren't correctly mating with the leads in its slot. Don't freak out; this happens fairly frequently, and it's easy to fix. Remove the SIMMs you just put in and start over.

Finally, when everything starts up okay, turn off the Mac and put it all back together.

32-BIT ADDRESSING AND ALL THAT

You *know* it's not 1984 anymore when a basic Mac control panel has an option called *32-bit addressing.* (We've noticed that Apple no longer advertises the Mac as "the computer for the rest of us.")

32-bit addressing

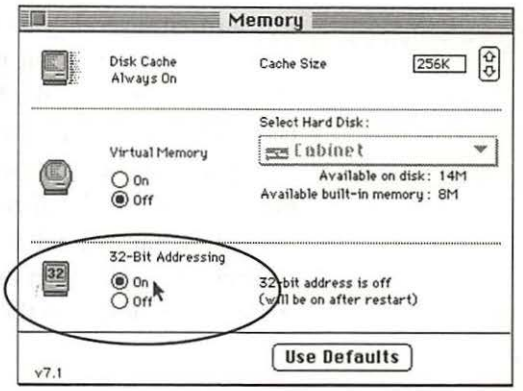
Here's the basic rule: *Your Mac can't use more than 8MB of memory without 32-bit addressing.*

The 32-bit-addressing problem zaps one of every two people we know who get new memory installed into their older Macs. They pay to upgrade their Macs from, say, 8MB to 20MB of memory. When it's all over, the Mac's About This Macintosh command does indeed reveal that it has 20MB installed, but the *System* is using 12 of them!

Making the Mac aware of its new memory is easy. Open the Memory control panel and turn on 32-bit addressing (see Figure 9-5). Then restart the Mac.

This option is available only in System 7 or later, and only on older models (Centris and LC models, for example). Recent models don't have an on/off switch for 32-bit addressing — they're *always* in 32-bit addressing mode.

Figure 9-5
How to make your Mac know that it's got more than 8MB of RAM.



Why it's called 32-bit addressing

Deep down, a computer's primary job is to shuffle around zillions of tiny pieces of information into zillions of corresponding pigeonholes. Each little data mailbox is numbered, so that the Mac will be able to find the information again later. The programmers call the data location's number its *address.*

As you can imagine, the computer needs a very long number to express a certain address if there are millions of possible locations. (Especially because the computer counts in base *two* instead of base ten, like us.) In fact, to put this in an understandable context — it takes a number *24 digits long* to be able to pinpoint every memory address in 8MB of RAM. Some letter "W" you've typed, for example, might be stored at RAM address 100101101011010001101010.

But now we're asking the Mac to store information in *more* than 8MB of memory! It's exactly the same problem the phone company had as the U. S. population grew. Simply put, Ma Bell was running out of phone numbers. Pretty soon, seven digits just weren't enough for every citizen to have a different phone number! So, area codes were born. Suddenly, every phone number was *ten* digits long instead of seven.

In the same way, Apple Computer had to give the Mac some extra digits to play with, starting in System 7. Because it has more memory and more places to stick information, the Mac can use *32* digits in its addresses. Hey — it's *32-bit addressing,* get it?

With 32-bit addressing on, your Mac can address huge amounts of memory: 768MB of RAM, for example. We say "for example" because 32-bit addressing can actually address up to *four gigabytes* (4,096MB) of RAM, but there's no Mac yet made with enough slots to hold that many SIMMs!

So, for the moment, you'll have to scrape by with 768B of RAM or so — plus the 1GB of *virtual memory,* described later, that 32-bit addressing lets you access.

Problems with 32-bit addressing

Software, too, involves memory addresses. Suppose you have a program that was written several years ago, when Macs had a maximum address length of 24 bits. Suppose that the programmers didn't leave room for potential expansion. Then, any time the Mac tries to look for a RAM location whose address is higher than the 24-bit maximum, a system error will result.

A program that properly handles 32-bit addressing is called *32-bit clean*; otherwise, it's *32-bit dirty.*

So, how can you tell if a program is 32-bit dirty? There's no easy way. If it crashes when you turn on 32-bit addressing, that's one good sign. Combine that information with the program's age, and you'll have a pretty good idea.

Mode32, the 32-Bit Enabler, and dirty Macs

Funny thing is, some *machines* weren't written to Apple's guidelines, either — the Macintosh II, IIx, IIcx, and SE/30 models. Their internal circuitry prevented them from ever using more than 8MB of memory. Go figure.

Connectix, a memory-savvy company, came up with a way to make these models 32-bit clean. It was a program called Mode32, which Connectix merrily sold to owners of the afflicted Mac models. It was a software patch to the Macs' ROM code that made them 32-bit clean.

Unfortunately, Apple's own specification sheets for these models *said* that they could access up to 128MB of RAM. Mac users were not happy campers at having to spend money to make their Macs do what the ads said they would do.

So, Apple did a very cool thing: *bought* Mode32 from Connectix and gave it away free to whoever wanted it! For a couple of years, that's the way it stood. The 32-bit dirty Macs were no longer dirty, and everyone was happy.

Then, in early 1993, Apple introduced its own clone of Mode32. It did exactly the same thing, but (we're guessing) didn't involve paying licensing fees to Connectix. It was called the 32-Bit Enabler; Mode32 was more or less orphaned. Ironically, when System 7.5 appeared, Apple's own 32-bit Enabler stopped working! So, Connectix updated Mode32, and Apple once again started giving it away.

The upshot: Use whichever extension (Mode32 or the 32-Bit Enabler) causes your software fewer problems.

RAM: FOR PROGRAMS

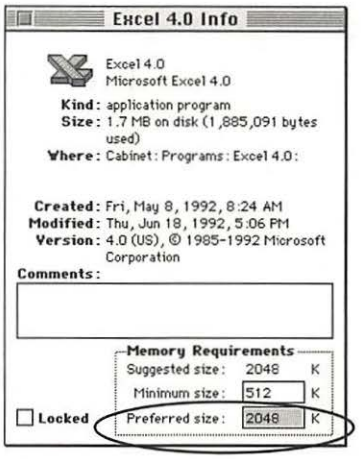
As we've pointed out, the Mac uses RAM for all kinds of things before you even run a single program. But, sooner or later, you're going to use your RAM for running applications.

The most important thing we can convey is that *you* control how much memory appetite a particular program has. If you're working on an especially large ClarisWorks file, for example, you may want to give ClarisWorks more memory. Or if you're working on a PowerBook with limited RAM, and you're just writing memos, you may want to give WordPerfect a smaller memory allotment.

To change the program's memory allotment — its *memory partition* — go to the Finder. (The program can't be running yet.) Highlight its icon and then choose Get Info from the File menu (see Figure 9-6).

Finally, change the number in the lower-right corner of the Get Info box. If you set this number below the program's suggested or minimum size, the Mac will notify you, because you're inviting System crashes.

Figure 9-6
Change a program's memory appetite. In different System versions, the box is labeled differently — it may be called Current size or Preferred size — but the idea is the same.



The two out-of-memory messages

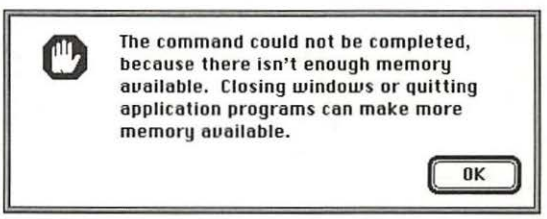
There are two kinds of "not enough memory" messages that your Mac may show you. Ironically, the one you see most often doesn't mean what you think.

When a *program* you're running gives you an "out of memory" message, it's *not* because your Mac doesn't have enough memory! Even on a Mac with 768MB of RAM, a program can tell you that it's out of memory (see Figure 9-7).

This message appears because you haven't *allotted* the program *enough of* the Mac's memory. Use the method just described to increase the program's memory partition, and those out-of-memory messages will go away.

If, on the other hand, you get the message shown in Figure 9-8 as you're *launching* a program, then it *is* your Mac that is short on memory. (Actually, your Mac is short on *contiguous* memory, as described later in "See where your memory's going.") Quit some of the programs you're running and try launching the new program again.

Figure 9-7
You see this message when the program you're using hasn't been assigned enough memory. The solution is to quit some of the programs you're running.



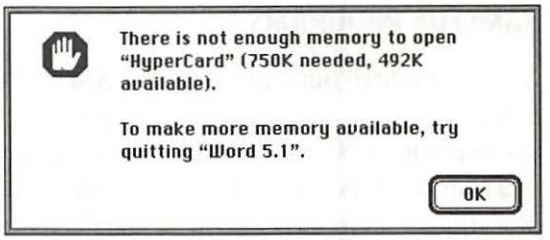


Figure 9-8
This message means that your Mac simply doesn't have a large enough block of unused memory to launch the new program you're opening. In System 7.1 and later, it even suggests which currently running program you can quit to free up memory.

Three different memory sizes per program

In System 7.1 and later, the Get Info box has three different boxes showing memory sizes (see Figure 9-6). The *Minimum* size is the programmer's opinion of the least RAM the program needs to run at all. It will open, but it will run slowly. (Previous systems don't show this number.)

The *Suggested* size is the amount the programmer thinks the program needs to run comfortably and at full speed. And the *Preferred* size is the number that you're allowed to change. We like to think of it as *actual size;* it's the amount that will be set aside for the program — *if* that much RAM is available. If not, the Mac will launch the program, using up a RAM chunk as close to that size as possible (provided, of course, that the available RAM is higher than the Minimum number).

By the way: As you'll read in the sidebar "Why Power Mac programs are RAM hogs," on any Mac with a four-digit model name, *you can cut a program's Preferred and Suggested memory appetite by as much as 50 percent* by turning on virtual memory or RAM Doubler.

The Finder's memory partition

In Chapter 1, we insisted that the Finder itself is a program. Like any program, the Finder has a specific amount of memory allotted to it. And like any program, the Finder can run out of memory in its partition. The more windows you have open, or the more icons displayed on the screen, the more RAM the Finder needs. Sometimes it says, "There is not enough memory to keep this window open" or ". . . to open that control panel right now." That's a clue that the Finder is gasping for RAM.

In theory, System 7's Finder is supposed to be self-adjusting — but we still get out-of-memory messages from it. Yet, you can't change its memory allotment using the same Get-Info-while-it's-not-running method described previously; the Finder's Get Info box *has* no memory-size boxes in the lower-right corner.

ANSWER MAN

Why Power Mac programs are RAM hogs

Q: *Why do Power Mac programs require so much more memory?*

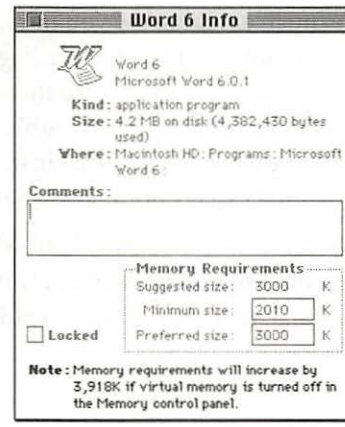
A: To follow this discussion, you have to recall the basics of how a program runs. When you double-click a program's icon, the hard drive spins, and your Mac reads the program's *code* — the computer instructions that constitute a program — into memory.

Don't forget that the Power Mac processor chip — the PowerPC chip — is completely different from the chips in non-Power Mac models. As a result, it doesn't handle this hard-disk-to-memory process the same way. A non-Power Mac program may read pieces of its code from the hard disk — and get rid of that code — as necessary. For example, when you print, your program reads the printing code on the hard disk and loads it into RAM; when the printing is finished, those printing instructions are dumped out of memory.

"Native" Power Mac programs, on the other hand, don't have the luxury of being able to read and dump code fragments as necessary. Their code is stored on the disk as one giant chunk. Therefore, a native program requires much more memory than its non-native counterpart because it must load the entire program code into RAM when you launch it. As you can imagine, this also means that a native program takes ***longer*** to load.

Fortunately, there is a quick and easy solution to this problem — a simple mouse click that permits a Power Mac to handle a native program in code-fragments-as-necessary, just like non-native programs. Just open your Memory control panel and turn on Virtual Memory. Adjust the setting so that the amount is only about one or two megabytes more than your actual installed memory. (Actually, you'll probably discover that Apple turned it on for you.) You'll find a complete discussion of virtual memory later in this chapter.

Because virtual memory, at heart, is simply a method of rapidly swapping information between the hard drive and RAM, it works beautifully on a Power Mac. Microsoft Excel, for example, requires ***6,500K less*** memory when virtual memory is turned on! FreeHand requires seven megs of RAM on a Power Mac — but only three megs when virtual memory is turned on. In fact, it's easy to find out how much memory savings you'll get: highlight a program's icon and choose Get Info from the File menu. As you can see in here, the savings are easy to spot.



In other words, when it comes to virtual memory on a Power Mac, forget everything you've heard. On a Power Mac, turning on virtual memory not only doesn't slow down your machine — it actually speeds you up.

RAM Doubler, as you'll hear us mention several times in this chapter, is a particularly sweet blessing on PowerPC-based Macs (those with four-digit model numbers). It not only performs its usual stunt of letting you launch twice as many programs as before, but it also switches Power Mac native programs back into their low-RAM mode, exactly as virtual memory does, but without using up any hard drive space.

There are two ways, then, to adjust the Finder's memory size. First, you can use Conflict Catcher (a three-day demo is included with this book); in its General Preferences, turn on "Guarantee System Heap."

The second way is to use ResEdit to achieve the same result. See Chapter 21 for details.

See where your memory 's going

Memory Central is the About This Macintosh (or About This Computer) command in the menu. Choose this command at any time to get some great statistics on how your memory is working (see Figure 9-9).

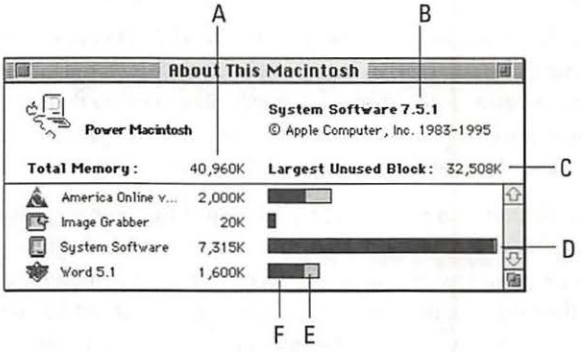


Figure 9-9
Your memory-usage resource.

Needless to say, the About This Macintosh box lists all the programs you're currently running, including the System and Finder. Here's how it breaks down.

A This indicator shows how much memory is installed in your Mac.

If you're using virtual memory, your About This Macintosh box looks a little different. It shows *two* figures — the Built-In Memory, which is how much actual RAM you have, and the Total Memory. That's how much memory you have, *including* the disk-based virtual memory. (For details on virtual memory, see the remainder of this chapter.)

If you have RAM Doubler installed, the number shown here is twice or three times your actual installed RAM (even though, as we will discuss shortly, that's not really what RAM Doubler gives you).

B Here's where you find out what system-software version you're using. You'll see all kinds of crazy notations here: for example, if you have System 7.5.3, this legend might read "System 7.5.3 Revision 2," "System 7.5 Update

2.0," or even "System 7.5 Version 7.5.3." (See Chapter 6 for details on various system-software versions.)

If your Mac is older, a • symbol indicates that you've installed the Tuner extension (Systems 7.0 or 7.0.1). A *P* (as in 7.1P) indicates that you're using the Performa's specialized system software.

C This is a biggie. The Largest Unused Block *isn't* how much memory you have free in the Mac. Instead, it's the *largest* block of unused memory — but there may be several others. If the Largest Unused Block is 1,200K, then you may have other free blocks of 1,000K and 400K: a total of *2,600K* free!

Why does the Mac track this statistic? Because whenever you open a program, it can't open unless there's a block of *contiguous,* unbroken memory (see "A calm discussion of memory fragmentation," later in this chapter for details). This gauge is here to help you figure out why your 2500K program won't open, even though your own personal math says there should be a total of 2,500K free.

D Ever wonder why this bar of the graph — the one for System Software — is always the longest?

The System Software bar of the graph represents that 2,000K(or whatever) that the System actually requires, *plus* every extension and control panel you have installed. That includes big chunks of memory required by the Disk Cache, a RAM disk (see Chapter 14), QuickTime, QuicKeys, networking and CD-ROM software, and so on. It all gets tallied in this bar of the graph.

E In the previous section, we mentioned that you can set the amount of memory a particular program uses when launched. That's the amount of memory that program grabs; that's also the amount shown by this graph, including the light-blue end portion.

F However, a program may not actually *need* as much memory as you give it. If we change ClarisWorks' memory allotment to 12,000K, it still only really needs the 1,400K the programmers designed it to use. The black part of this memory bar indicates how much of a program's memory partition it's actually using.

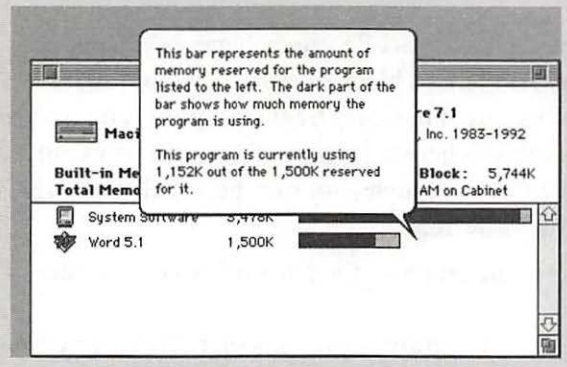
If you see a huge white portion of this bar, that may serve as a signal that you're wasting your RAM by allotting too much to that program.

MACINTOSH SECRET

GETTING THE DETAILED MEMORY SPECS

Most people think of Balloon Help as a crutch for beginners. In this instance, however, it can be a sophisticated tool for the power user who's trying to do some memory sleuthing.

As you know, the About This Macintosh/About This Computer shows you how much of your memory is being used by which programs. But only Balloon Help shows you how much each program is using of its allotted total RAM. Just turn on Balloon Help and point to each bar of the graph, as shown here, and you'll see what we mean.



RAM Doubler to the rescue

RAM Doubler is an incredible idea that's been executed pretty darned well. It's software — an extension sold by Connectix. You drop it into your System Folder ('030, '040, and PowerPC Macs only), and it apparently doubles or triples the amount of memory installed in your Mac.

RAM Doubler uses some clever schemes — part virtual memory, part data compression in memory — to achieve this feat. It has a number of tiny drawbacks. It slows your Mac down by perhaps 3 percent. RAM Doubler is the least successful on RAM-starved (that is, 4MB) Macs, and it's yet another extension, and, therefore, another potential source of conflicts.

Most of all, understand that RAM Doubler is for opening *more small* programs, not for giving a *single big* program more memory. Each *individual* program you want to open must fit into your genuine installed RAM. Bottom line: If you can't open that RAM-hungry program *now*, you won't be able to open it with RAM Doubler installed. If you want to run three programs simultaneously instead of just one, however, RAM Doubler is an inexpensive, pain-free solution. Furthermore, RAM Doubler offers special advantages for

PowerPC-based Macs, as discussed earlier in this chapter (see "Why Power Mac programs are RAM hogs," earlier in this chapter).

RAM DOUBLER SECRETS

RAM Doubler versus Photoshop

Few topics generate so many questions as the Photoshop versus RAM Doubler issue. Photoshop, of course, is an amazing program that gets more amazing the more RAM it has. RAM Doubler would seem a natural for it. Yet, when you launch Photoshop with RAM Doubler installed, you get an error message saying that virtual memory is turned on. Worse, if you're not careful, you'll get crashes and incredibly slow behavior. Here's the story:

First of all, you can ignore the "virtual memory is on" message completely; click OK and go on.

It's crucial, however, that you understand how RAM Doubler and Photoshop work together. Using the Get Info method described in this chapter, give Photoshop as much real memory as you can — don't include any of the "RAM Doubler" memory.

In other words, choose About This Macintosh/About This Computer from your menu. Subtract the amount of RAM your system is using (for example, 4 megs) from the "built-in memory" amount (for example, 16 megs). That leaves 12 megs — 12 megs of real RAM — which means you can allot only 12 megs to Photoshop. It makes no difference that RAM Doubler has made your "total memory" figure, say, 32 megs, 64 megs, or whatever.



If you get greedy, and you allot to Photoshop more RAM then you actually, physically have available (anything above 12 in this example), you'll pay the price — system crashes and unbelievably slow performance.

RAM Doubler yes, extensions no

OK. You're pressed against the wall. You need every last shred of memory you can eke from your Mac. Your natural inclination, of course, is to turn off your extensions — all those RAM-hungry, gluttonous extensions — by pressing the Shift key as the Mac starts up. Yet you'd be silly, under these circumstances, to turn off RAM Doubler itself, right?



Right. That's why we're glad that free book winner Jon Silvernail discovered this keystroke: ⌘-Shift-Option-R. If you press those keys during startup, you'll turn on RAM Doubler even though all your other extensions are off.

Extensions yes, RAM Doubler no

Interestingly, you can do the opposite of the previous Secret, too: You can start up the Mac without RAM Doubler, yet permit all your other extensions to load. The trick is to hold down the ~ key (in the upper-left corner of your keyboard) while the Mac is starting up.

This technique has a distinct advantage over turning RAM Doubler off with an extensions manager such as Conflict Catcher or Extensions Manager, by the way: The *next* time you restart the Mac, RAM Doubler will be on again. (Turning RAM Doubler off with an extensions manager generally requires restarting the Mac *twice* afterward to make RAM Doubler happy.)

RAM Doubler's Easter egg



Highlight the icon of a PowerPC-native program. Examples: Excel (version 5 or later), Word (6), ClarisWorks (4), FileMaker (3), SimpleText, America Online (3), and Photoshop (3). Now, while pressing ⌘ and Option, choose Get Info from the File menu.

The usual Get Info box appears — well, *almost* usual. As free book winner Gabriel Gilder notes, at the bottom of the box is RAM Doubler's contribution to popular health guidelines: "Note: Sleep is a poor substitute for caffeine."

Actually, it gets weirder. We discovered that if you move some other window in front of the Get Info window, then away again, RAM Doubler's cute little comment is gone. One minute, it's there — the next, it's been replaced by the usual Get Info box note about using virtual memory.

A calm discussion of memory fragmentation

Imagine that you're trying to park in Manhattan. Your car is 10 feet long. You come upon a city block where there actually are 10 feet of curb space left for your car, but some guy has parked so that the 10 feet are broken into two pieces. There's 5 feet of empty curb on either side of his car. Obviously, you can't park unless he moves his car.

The guy we're talking about has *fragmented* the parking space.

Programs using your RAM are as much like cars on a curb as this analogy will allow. When you launch a program, it seeks empty RAM not being used by programs you've already opened. But if your free RAM has been broken up by the presence of other programs, that new program can't open at all.

So, what fragments RAM? Here's the scenario. Your Mac has 5MB of memory, let's say. At noon, you start the Mac. Your memory usage looks like Figure 9-10.

At 12:05, you open the Calculator. For this example, let's say that its memory requirement is half of a megabyte. When you then launch Excel, your Mac's memory map looks like Figure 9-11.

At 12:15, you close the Calculator. Your memory map looks like Figure 9-12.

If you look at this last drawing, you'll see that you can't launch ClarisWorks now (it needs 1.5MB) — there aren't 1.5MB of *contiguous* memory left! Because of the sequence, you've fragged your RAM.

The only way to defragment your RAM is to *quit* all your programs, so that only the Finder is running. When you relaunch them, in sequence, they'll use up consecutive chunks of RAM, and they'll all fit.

Actually, there's a good way to *prevent* memory fragmentation, if you're that much of a careful planner. Launch the programs you'll want to leave open all day *first.* Launch programs you think you'll be quitting last.

Figure 9-10
Your memory usage when you start out.

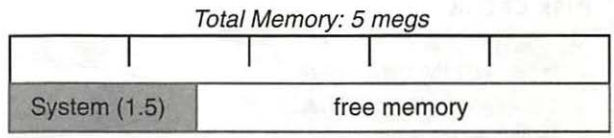


Figure 9-11
Memory after launching two programs.

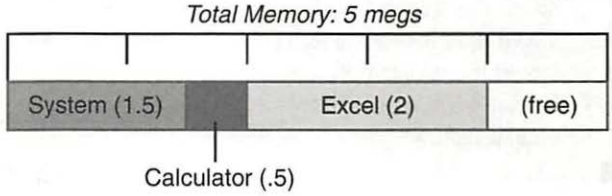
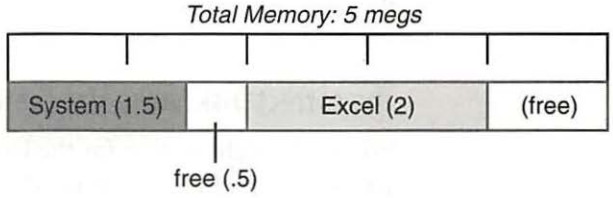


Figure 9-12
Memory after quitting the Calculator.



THE DISK CACHE

Cache, pronounced *cash,* is French for *hide.* When a computer caches some information, it tucks it away into a protected, private part of its head, separate from the rest of its memory and circuitry.

The Disk Cache is a feature that speeds up your Mac. And we can all use *that* kind of feature.

Setting the Disk Cache

You access this feature by opening the Memory control panel, as shown in Figure 9-13.

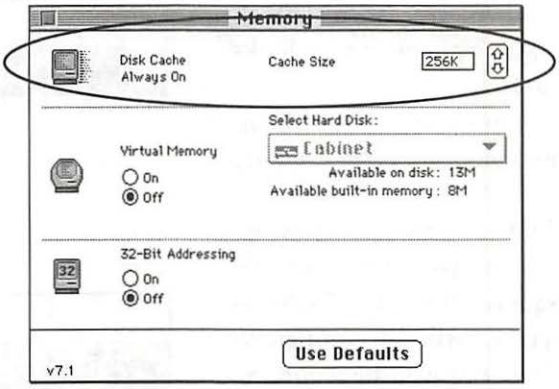
TRUE FACT

RAM CACHE VERSUS DISK CACHE

In System 6, the feature we're discussing was called *RAM cache*. Technically speaking, that's wrong. That's why it was renamed *Disk Cache* in System 7.

The cache works by storing up pieces of data it reads from the disk, so they'll be ready for instant recall. In other words, it's caching the *disk* information. So, Disk Cache is, indeed, the more accurate term.

Figure 9-13
The Mac's built-in speed feature eats up a percentage of your RAM but gives you a nice speed boost.



The Disk Cache attempts to sock away frequently used information from the hard drive into RAM. The Mac thereafter can grab this important data from memory, instead of having to find it on the hard drive — and the overall effect is a jump in your Mac's speed. You can try it yourself: Double-click your System Folder and see how long it takes to open. When you try this a second time, you should see it really fly open.

The correct Disk Cache size (before System 7.5)

What's the right setting for the Disk Cache? Logic tells us that the higher you set the cache, the faster your Mac will go. Strangely, though, the Mac speed increase drops off as you set the disk cache past a certain point. And, if you set it too high, the Mac actually slows down!

So, what's the right setting? The basic rule is: Set the Disk Cache to 32K for each megabyte of RAM in your machine. For example:

Your machine has:	**Try this setting:**
2MB	64K
4MB	128K
8MB	256K
20MB	512K

Did you notice the cockamamie number we gave for the 20MB configuration? That's because of the Disk Cache anomaly — a pre-System 7.5 Mac's performance actually gets *worse* if you set the cache much higher than about 256K or 512K.

Regardless of these rules, the cache's effects on your Mac also vary with the size of your hard drive, and whether or not you're using virtual memory. Our advice, then, is to use the numbers we're giving you as a *starting* point. Then experiment, if you have the time.

The correct Disk Cache size (System 7.5)

If you're using System 7.5 or later, forget everything that we told you. Apple reworked the Disk Cache to make much better use of the memory you give it. Under the new scheme, it's very simple: The more RAM you can afford to surrender to the Disk Cache, the faster your Mac will go. They don't say anything about it in the manuals — but it's true, and some simple tests on your part will prove it.

DISK CACHE SECRETS

A reminder

No on-screen message tells you this, but you do have to restart the Mac after changing the Disk Cache setting in the Memory control panel for it to take effect.

What's an internal or onboard cache?

Some Mac models, such as Power Macs, are advertised as having an optional "onboard cache" or "L2 cache."

This special kind of cache is a cousin to the Disk Cache. But instead of storing data from the *hard disk* that the Mac may be needing again shortly, it stores information from the Mac's main RAM. (The cache card has its own private RAM chips in which to do this storing — usually 512K worth.)

What exactly is the point of storing RAM in RAM? The cache card's RAM is extremely *high-speed* RAM. It's so fast that, by storing frequently used information in the fast cache-card RAM instead of regular RAM, your Mac's overall speed increases between 10 and 20 percent.

And speaking of cache cards, several readers have asked us, after installing a Level 2 cache SIMM into a Power Mac, if there's any way to check to see if it's working properly. According to Apple, no. According to us, yes, you can just run Cache-22, included with this book. It will tell you promptly whether or not your cache card is being acknowledged by the Mac.



The maximum size of the Disk Cache

Of course, if you're running System 7.1 or lower, you're nuts if you set your Disk Cache much above 512K or so. But you *can* set it as high as one-fourth the total RAM in your Mac. On an 8MB machine, that's a 2MB Disk Cache.

But, as we said, we don't advise it because of the performance drop-off that a setting above 512K produces with system software prior to System 7.5.

A better Disk Cache

The Disk Cache in System 7.5 is dramatically improved over its predecessors. However, there's a better Disk Cache yet — it's a component of the Speed Doubler software set from Connectix. Using more-sophisticated algorithms, it ekes a few additional percentage points of speed from your day-to-day Mac operations.

RAM DISKS: HIGH-SPEED IMAGINARY DRIVES

A *RAM disk* is yet another fun way to use memory. In this scenario, you use a sophisticated program that sets aside a block of RAM and convinces the Mac that it's a *disk*. The RAM disk even shows up on your Desktop as an icon, as shown in Figure 9-14.

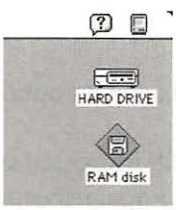


Figure 9-14
The phantom of the disk drive — a RAM disk.

A RAM disk is a wonderful and underused invention. Think how much time Mac users spend in the quest for *speed:* They shop and compare hard drives and CD-ROM drives, trying to identify the fastest one; they try shareware speed-testing programs; and so on. Imagine that you can have a drive with almost *zero milli seconds* access time!

That's what a RAM disk is: almost infinitely fast. Any program copied to this disk launches almost instantly when double-clicked. And why not? It's *already* in memory. Saving huge, complex PageMaker files takes only a fraction of a second. QuickTime movies play with effortless smoothness. And forget about that two-minute start-up sequence; starting up from a RAM disk takes only seconds.

What's wrong with RAM disks

Of course, the RAM disk subtracts its size from the amount of RAM you have available for programs — as always, it's a trade-off.

The more serious concern used to be that a RAM disk was a dangerous place for your data. If a file is on a RAM disk, it disappears forever when you turn off the Mac. There are three reasons why this doesn't bother us anymore:

- You can do very well just copying your System Folder and programs onto a RAM disk. These items are easily replaceable. If your power goes out, you've got the originals safely on your hard disk, where they were to begin with.
- Even if you do put your data files onto the RAM disk, you can just copy them back to a real disk, like your hard drive. If you do this at regular intervals, you still get the speed gain of the RAM disk without losing the safety of having it on a disk.
- The biggest not-to-worry argument of all: On all Macs manufactured after 1992, the contents of a RAM disk *don't* disappear when you *restart* the Mac. They vanish if you turn the Mac *off*, but not when you restart.

  So, even if you have a system crash, you can just hit the reset switch on your Mac's case (as described in Chapter 7), and your Mac will restart — *with the RAM disk intact.*

Where a RAM disk comes from

A RAM disk is created by a *RAM-disk program.* We italicize this because the terminology can be confusing. Someone may say to you, "Hey, I got a great shareware RAM disk." What they mean is a RAM-disk *program;* a RAM disk exists only on a single machine (the one whose memory it's using), and it can't be handed to friends.

Anyway, all recent Mac models, both desktop and laptop, come with a built-in RAM disk program; you'll find the On/Off switch in the Memory control panel. (The inclusion of a RAM-disk program on the PowerBook may strike you as odd, because PowerBooks are traditionally *strapped* for memory, not blessed with it. As you'll find out in Chapter 14, however, you can use a RAM disk to very clever advantage in doubling the life of a battery charge.)

One popular RAM-disk option, AppDisk, doesn't survive restarting the Mac. It does, however, have two tremendous advantages: (1) It's much easier to load, resize, and quit than Apple's RAM disk, and (2) you already own it. It's included with this book. Read about it in Chapter 34 and *try it* — a RAM disk is really a mind-blower.

RAM DISK SECRETS

How to destroy an Apple RAM disk

Creating a RAM disk is easy. Just open your Memory control panel (if you have the appropriate kind of Mac). Turn on the RAM disk option, set the slider, and restart the computer. (On a PowerBook with System 7.0, the RAM disk option is in the Portable control panel instead.)

Getting *rid* of the RAM disk is more difficult. None of the obvious ideas — dragging the disk to the Trash, using the Erase Disk command — work. (Apple set this up so that you can't accidentally turn off your RAM disk, thus losing everything on it.)



The key is that you must first get *everything* off of it. Throw it all into the Trash and then empty the Trash. (Or use the Erase Disk command in your Special menu — wow, is it fast when the disk is made of RAM!) Only then can you open the control panel and turn the RAM disk off or resize it.

TrashBack's interference

If you use Norton Utilities' TrashBack feature, you'll have a hard time getting rid of your RAM disk. That control panel is designed to let you recover files you've trashed — when you choose Empty Trash, TrashBack simply *hides* your Trash-bound files instead of actually deleting them.

Because you must completely empty your RAM disk before you can resize or remove it, you can see the problem: Because TrashBack doesn't let you truly erase your RAM disk, you won't be able to remove or resize your RAM disk until you turn off TrashBack.

VIRTUAL MEMORY: INSTANT, FREE RAM

A RAM disk is when a Mac gets fooled into treating a hunk of memory as a *disk*. Virtual memory is the opposite — it's when the Mac gets fooled into thinking that a hunk of disk is *memory*.

At first glance, this doesn't seem to make sense. Haven't we been spending this entire chapter figuring out how to get more data *off* the disk and into memory (to gain speed)? Why would we consider storing stuff on the disk that rightly belongs in memory? Wouldn't virtual memory slow things down instead of speeding them up?

The answer is that virtual memory offers you yet another speed-for-money tradeoff. The idea is to save money by letting you get by with less actual RAM; the price you pay is speed, because virtual memory slows down the works somewhat on non-Power Macs.

CASE HISTORY

NIGHTMARE IN THAILAND

One of your cheerful authors took a trip to Thailand with his PowerBook Duo. Shortly after arriving for his two-week stay, he set up his RAM disk with System 7.1, content that his battery charges would now last three times longer than usual (see Chapter 14 for details on this trick).

After copying the System and Finder to the RAM disk, he used the Startup Disk control panel to select the RAM disk as the start-up disk. And he restarted the Duo.

Imagine his horror at receiving the dreaded "You need a newer version of the system software" error message — a telltale signal that he had forgotten to include the Duo's *enabler file* on the RAM disk! Without the enabler, the Mac would not start up. Yet, without starting up, your cheerful author would be unable to *get* the enabler from the hard drive — or to switch to the functional System Folder already on the hard drive.

Because he hadn't brought his Duo's floppy drive, he had no alternative but to repeatedly restart the Mac, receiving that same message each time, growing more and more convinced that the PowerBook would be dead weight for the remainder of the trip.

Then he thought to press the Shift key at the next start-up; because the Shift key turns off extensions, he hoped that perhaps that action would disable the Memory control panel (which is responsible for creating the RAM disk).

It didn't. The Mac still created the RAM disk.

Interestingly, though, the Mac produced the "This disk is unreadable" message at start-up and displayed the RAM disk's icon. Our hapless hero clicked the Initialize button; the Mac started up from the hard drive; a *blank* RAM disk appeared on the screen; and all was well.

Why the Shift key erases the RAM disk remains a mystery; but here's hoping that this trick proves a useful safety net if you need it someday.

But for anyone who has an 8MB Mac and wants to run System 7.5 (3MB), Excel (5MB), and FileMaker (3MB) simultaneously, virtual memory is an immediate, free solution. It's also a good last resort in emergencies, when you're trying to open some huge Excel spreadsheet for which you just don't have enough real RAM.

(It has this ability only with System 7 and later, requiring a Mac with an '030 processor or better. That rules out the Plus, SE, original Classic, original Mac II, and original LC.)

How it works

When you turn on virtual memory, the Mac sets aside a huge chunk of hard-disk space. (If your hard drive is full, forget about virtual memory.) This area is called the *swap file.*

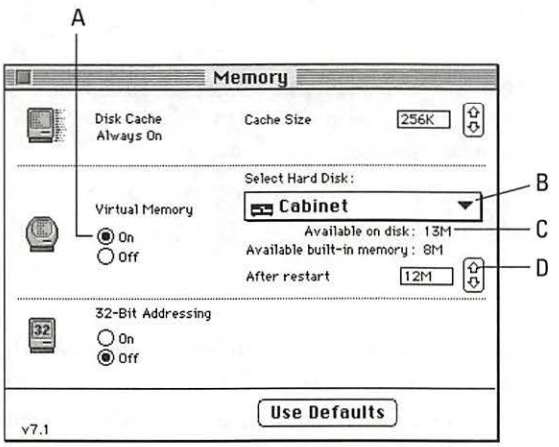
In fact, System 7 sets aside a swap file of a size equal to *both* your built-in RAM *plus* the amount of extra virtual memory you want. If you've got 8MB of real RAM, and you want 12MB total, you can't just create a 4MB swap file. System 7 will use a full 12MB of hard drive space.

No program on Earth can *run* from the disk. Every program must be copied into RAM before it can run. Virtual memory works by rapidly shuffling data between the disk and RAM. This shuffling — and the corresponding delay — occurs mainly when you *switch* from one program to another. While you're working in a specific program, however, you'll probably notice very little slowdown.

How to turn on virtual memory

Open the Memory control panel (see Figure 9-15).

Figure 9-15
These are the controls you need to turn virtual memory on and off.



Click On (that's A in the illustration). If you have more than one disk large enough to store the virtual memory swap file, select the one that you want to use from the pop-up menu (B). *All* your hard drives are listed here; the Mac tells you, as you select each, whether or not there's room for a swap file. If there is, you'll be shown how *much* room there is (C). You'll quickly discover that the Mac doesn't, at first, let you put the swap file onto a removable disk, such as a Zip or Jaz disk. (But see our Secret below.)

Finally, based on that figure, you can set the amount of total memory, real + virtual, you'll want (D). Restart the Mac.

Remember that the higher you set this number, the more virtual memory slows things down; greed doesn't pay. The crunch gets critical if you set the Mac's total memory to more than twice the amount of real RAM it has.

VIRTUAL MEMORY SECRETS

Virtual memory and PowerPC PowerBooks

If you read that all-important sidebar called "Why Power Mac programs are RAM hogs" earlier in this chapter, you'll remember that native Power Mac programs require much more memory than their pre-Power Mac counterparts — unless you turn on virtual memory. If you are the owner of a PowerPC-based PowerBook, such as a 5300, you probably winced. "Ooh, turn virtual memory on — on a PowerBook? What, and run through my battery charge in 15 minutes?"

That's a legitimate concern; after all, virtual memory relies solely on the hard drive, and the hard drive is an enormous battery drainer. That's why RAM Doubler is a natural for a PowerPC-based PowerBook; it achieves the same effect — making PowerPC-native programs require half as much memory — without touching your hard drive.

(Much as you might suspect that we're being paid by the RAM Doubler company, by the way, we're not. We're merely considering the three other options facing a PowerPC PowerBook owner — use non-native [slow] programs; buy more RAM; or use virtual memory and carry extra batteries — and recommending the least-expensive one.)

Use virtual memory on Zips, SyQuests, and removables

The Memory control panel lets you choose where you want your invisible swap file to be — and we mean on which *hard drive*. What a shame that System 7's virtual memory feature won't let you store the swap file on the most obvious storage device in the world: a removable cartridge like a SyQuest, Zip or Jaz disk, or Bernoulli.

ANSWER MAN

Virtual memory is dragging me down

Q: ***You said, "While you're working in a specific program, you'll probably notice very little slow-down." I'm using Photoshop, and I have virtual memory turned on, and my Mac has the speed of an anesthetized turtle. Are you guys lying?***

A: Not per se. We haven't, however, mentioned the exceptions to our statement.

First, we're correct that you won't notice much slowdown when you're in a program — *if* it's a program that would have run within your real RAM anyway. That is, if your Mac has 4MB of RAM, and you run a program that requires 1MB of RAM, you'll notice no sluggishness. But if you use virtual memory to run scanning/OCR software that requires an 8MB machine to run at full speed, you're in for some waiting. That's because of all the massive copying of information back and forth from the hard drive the Mac is forced to do.

The other exception: programs such as Photoshop, which are equipped with their own proprietary virtual-memory schemes. Photoshop creates its own private, huge, temporary file on your hard drive. If you compound all the disk-thrashing that *that* entails by using virtual memory and *its* disk-thrashing, you're in for a seriously slow-working setup.



Actually, though, it can be done. You need a shareware program called Virtual Memory Tuner, included with this book.

Speed up virtual memory

Remember that virtual memory works by shuffling data between the hard drive and RAM. It shuffles a lot. It stands to reason, then, that the faster your hard drive is, the better virtual memory works. And that's why some people argue that you can speed up virtual memory by regularly defragmenting your hard drive. (See Chapter 8 for more on this topic.)

But, frankly, we believe that members of the Defragment-for-Speed movement are somewhat deluded. Unless you've been working with a totally full disk for weeks, defragmenting your hard drive won't produce any perceptible speed increase in your virtual memory at all.

Chapter 10

Keyboards and Mice

IN THIS CHAPTER:

- What the ADB chain is
- The extended keyboard: What all those keys *do*
- Making the dead keys come alive
- Ergonomics basics
- A few mouse tricks

Keyboards and mice are known by the geeks as *input devices* — they're the mechanical gadgets by which you communicate with your machine.

Apple's designed some weird ones in its day. It's redesigned the mouse at least four times. It's put two different trackballs and two different touch pads on PowerBooks — plus the Mac Portable's trackball, which you could put on either side of the keyboard. The keyboard on the PowerBook Duos is slightly bowed upward into a subtle curve. The wonderful, strange, discontinued Apple Adjustable keyboard breaks in half right down the middle of the keys, and its space bar isn't a bar — it's a pad.

ABOUT THE ADB CHAIN

As we mentioned in Chapter 7, the Apple Desktop Bus (ADB) is designed to be a chain of equipment, just like the SCSI chain. You can plug one ADB device into the next, as many as 16 in all — and you don't even need a terminator at the far end!

TRUE FACT
WHERE DID THE ⌘ SYMBOL COME FROM?

If you're an Apple designer, what symbol do you choose to mean *command?*

According to one of the Mac's original designers, the Mac's space bar-nestling key originally had a hollow apple graphic on it, as the Apple IIc and Lisa computer keyboards had had. But as the Mac was readied for release, some people at Apple felt that using the corporate logo on a key was somehow trivializing the logo — using it for something it wasn't designed for.

At the last minute, Mac graphic artists Susan Kare and Barbara Koalkin were asked to come up with a new symbol for this special key. The symbol had to be small, easily represented in a screen font, and unique. Oh — and it had to mean "command."

The artists pored through books and sources until they found the familiar cloverleaf (or propeller, or flower, or freeway) symbol. It came, of all things, from a book of Swedish campground and trail markers.

It meant "remarkable feature."

Ironically, when Apple started selling the same keyboards for both Mac and Apple II, it had to put the hollow apple symbol *back* onto the keyboard *with* the ⌘ symbol, defeating its entire original purpose.

What to plug in

This scenario permits some interesting possibilities. Most Mac keyboards have two ADB jacks, for example, and that's why you can plug your mouse into either side. That means that you can plug a full-sized keyboard into the back of the PowerBook, an external numeric keypad into the keyboard, and a mouse into the keypad. (The otherwise glorious AppleDesign keyboard is the exception; its cable to your Mac is permanently attached to the middle — and that's where the mouse jack is, too.) The ADB jack accommodates more than just mice, by the way; we've seen ADB-based modems, remote-controlled mice, and other kinds of substitute mice.

About the ADB power

Actually, the ADB jack is more than just a connector; it's also a power outlet. Your keyboard and mouse get their juice from the feeble drool of electricity it provides. In fact, many *modem*-port devices — digitizing tablets, headset microphones, and so on — have a secondary, "pass-through" connector that's supposed to plug into your ADB jack just for this power. (You're then supposed to plug your keyboard cable into the back end of your gadget's ADB connector. In fact, at least one modem we know of — the SupraExpress FAX 288 — uses *only* the ADB jack's power; you don't plug it into the wall at all.)

The fact that electricity runs through your keyboard jack explains a couple of interesting Mac phenomena. First, have you ever noticed your mouse suddenly becoming incredibly sluggish, immediately suspected your Mouse control panel, and opened it only to find that it was still at the fast-mouse-speed setting? What actually happened was that your mouse became unplugged and then plugged again (either by you or by a barely noticeable jiggle). In the process, the electricity flow was interrupted, and the Mac no longer remembers what control panel setting was established at startup. Only restarting the Mac restores your speed setting.

Another side effect of the ADB power stream is our fervent advice: *Turn off the Mac* before plugging or unplugging any ADB device. We mean it this time. When you, an imperfect human, unplug the mouse, you're not detaching all of the pins at the same instant. The damage is done in the split second when the juice is flowing through some pins but not others as you do the unplugging. We have actually seen ADB ports fried because mice were attached or removed while the Mac stayed on.

THE KEYBOARD

Apple's smaller "standard"-style keyboards have 81 keys. The "extended" keyboards have 105 keys, including a numeric keypad, a bank of page-control keys (Home, End, and so on), and a row of function keys at the top. Interestingly, only 62 keys actually *type* something; the remaining 40 percent of the keys are used either to modify what those 62 keys *do*, or to control the computer itself.

Apple was forced to come up with the extended keyboard in order to be taken seriously by the DOS-dominated corporate world, where keyboards of this layout were the norm. The silly thing was, however, that the Mac didn't *need* these specialized keys; most of these extra keys did absolutely nothing.

Today, the extra keys — Control, Page Up, Page Down, F1, F2, and so on — *still* do nothing in many Mac programs. True, word processors respond to the navigation keys like PageUp and PageDown. And beginning in System 7.5.3, the F1, F2, F3, and F4 keys automatically "choose" Undo, Cut, Copy, and Paste from the Edit menu in most programs (including the Finder). Beyond these simple examples, however, only a few applications — notably Microsoft products — make use of the Fkeys.

However, you *can* do something with these keys if you have a macro program, such as Tempo, QuicKeys, or KeyQuencer. The glory of macro software is that you can *make* these keys do things — in fact, anything you want. Make F1 type out today's date; F2 can type your name and return address; F3 can shut down the Mac; and so on. We've included versions of KeyQuencer and Tempo on the CD with this book so that you can see what we mean.

We recommend using the Control key as the basis for your own custom macro combinations. The Control key is a safe choice for triggering macros because almost no programs come with preprogrammed keyboard shortcuts involving it. Make Control-C open your Calculator; Control-E empty the Trash; and so on. See instructions for Tempo and KeyQuencer in Chapter 34.

A FEW ODD KEYS AND WHAT THEY MEAN

In the programs that do respond to presses on the bank of six page-control keys, here's what they're supposed to do:

- **Help:** Brings up the on-line help for your software, if there is any.
- **Home, End:** Scrolls the document to the very first or very last sentence in your document.
- **Page Up, Page Down:** Actually scrolls you a *screen* up or down.
- **Del:** Deletes the letter to the *right* of the insertion point. (The regular Delete key nukes the letter to the left.)

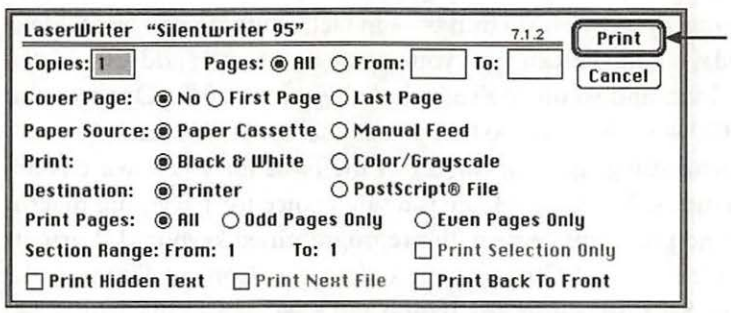
Fortunately, those navigation keys work in a refreshing number of today's programs — including the Mac's own dialog boxes, Finder windows, and so on.

We're sure that you know these others, too, but here they are for the sake of completeness:

- **Return** and **Enter:** In years gone by, these keys served identical functions in most programs. Today, an increasing number of programs distinguish between the two. For example, in Excel, FileMaker, and many word processors, Return and Enter don't do precisely the same thing. (In FileMaker, for example, Return begins a new paragraph within a record, and Enter deselects all fields.)

  In general, though, both keys can end a paragraph in a word processing program, and pressing them is the same as clicking the button in a dialog box that has a heavy outline, as shown in Figure 10-1.

Figure 10-1
Whenever you spot a heavily-outlined button in a dialog box, dispense with the mouse and just press Return or Enter.



- **Esc:** This means Escape, which really means Cancel. This key, too, originally did absolutely nothing and was included solely to soothe the psyches of IBM lovers and telecommunications nuts who were making the switch to Mac. However, today a number of programs let you press Esc instead of clicking on-screen Cancel buttons with the mouse. All Microsoft programs work this way, for example, and so does Apple software, including the System software.
- **Command (⌘):** This is, of course, the most frequently used modifier key of them all. It's the one most listed in menus to indicate keyboard shortcuts for menu items.

  When the Mac first appeared, and even today, the glorious simplicity and mnemonics of its keyboard shortcuts made us rejoice. What can be more natural than ⌘-P for Print, ⌘-O for Open, ⌘-C for Copy?

  We even forgave Apple for making Paste be ⌘-V, Cut be ⌘-X, and Undo be ⌘-Z, because of the natural adjacency of the Z, X, C, and V keys on the keyboard. And you can justify X for Cut (sort of like crossing it out, or a pair of scissors). ⌘-Z is okay, too, because it is directly next to the ⌘ key itself. And ⌘-V is obviously necessary for Paste, since ⌘-P is already used for Print.

  Anyway, compared to the complex and arbitrary keyboard command sequences in the IBM world, we love this stuff.

The Option key

The Option key is sometimes used as just another modifier key, pressed in conjunction with the Shift or ⌘ key. When it's used in conjunction with the mouse, however, it consistently does one of three things. In the Finder, it's almost always used to close windows; see Chapter 1 for the Golden Option-key Trick.

In graphics programs, Option changes the function of a drawing or painting tool. It might change the magnifying glass's effect, for example, to "zoom out" instead of "zoom in."

But the Option key's most famous function is to turn the entire keyboard into a symbol generator for creating symbols like the ones shown here:

To get this . . .	Press Option and type this
©	g
™	2
ç	c

(continued)

TRUE FACT

THE CIRCA-OR-APPROXIMATELY KEY

One of the best parts about writing a bestseller in the computer world is getting feedback from our readers. What are we to make of this comment, for example, which reader Stephen Randall Carnefix e-mailed to us about this chapter?

"A correction: the tilde key is not a tilde key. Unless the keystroke is altered by a superscript option with an overstrike, the ˜ symbol is a 'circa' (chronology) or an 'approximately' (mathematics) — it prints and displays in the middle of the text line. A *tilde* is a phonetic modifier that appears *over* the letter N in Spanish to change an 'enay' (n) to an 'enyay' (n with a tilde over it)."

Well, Stephen, you're absolutely correct on every point. Heck, you could have gone even further, pointing out that to produce an *actual* tilde, you press Option-N — a key with *nothing* to do with the "tilde key."

Problem is, *everyone* calls that key (usually the upper-left key on the keyboard) the tilde key, not just us. Every book, every article, even Apple itself. Hey, if it were up to us, we'd call it the "circa key" or the "approximately key" . . . but the rest of the world wouldn't know what we were talking about.

(continued)

To get this . . .	Press Option and type this
¢	4
¡	1
£	3
•	8
®	r
†	t

It's nice to know that you have a complete built-in cheat sheet that shows the locations of these characters on the keyboard: the Key Caps desk accessory, as described in Chapter 4. For more on hidden Option-key characters, see Chapter 24.

The Power key

For years, this key — the big fat one at the top of the keyboard, with a left-pointing arrow — was the Mac world's biggest mystery. It did nothing at all. To this day, it's a useless appendage on computers like the Classic, the LC series, and even the Power Mac 6100.

In any case, we highly recommend the Sophisticated Circuits PowerKey. Not only does it make your power key actually work — on *any* Mac model except 100-series PowerBooks — but it makes it work twice as well, switching on *all* your equipment (monitor, printer, modem, and so on) instead of just the Mac.

A word or two about Caps Lock

Any self-respecting Caps Lock key gets *locked* down in its depressed position when you press it, just as the Caps Lock has for decades of typewriters. However, when locked down, the Mac's Caps Lock key doesn't really work the same as when you hold down the Shift key. The letter keys produce capital letters, but the number keys still produce numbers.

In any case, the Caps Lock key on 100-series PowerBooks doesn't lock down. The only indication you have that you've engaged the key is that a hollow up-arrow symbol appears on your menu bar, *if* the Caps Lock extension was installed when you installed your PowerBook System Folder (see Chapter 4).

On Duos and some later PowerBooks, the situation is slightly better. The Caps Lock key still never stays down, but at least a little light comes on within the key itself. This way, at least, if you tend to look at your hands while you type, you won't inadvertently fill your screen with all-capital typing.

The best solution, however, was the one included with such PowerBook utilities as the discontinued Norton Essentials: a little system extension that required *two* presses of the Caps Lock key to make it engage. This way, when you work on a PowerBook, you're saved the hassle of having to retype pages of manuscript after *accidentally* striking Caps Lock.

MACINTOSH SECRET

HOW TO FIX THREE PAGES OF ACCIDENTAL ALL CAPS TYPING

It happens. You hit Caps Lock by accident, continue to type, and notice three minutes later that all your text is capitalized, looking like a Western Union telegram.

There's an easy way to fix what you've typed without having to retype anything. Launch Microsoft Word 5. Open the file, highlight the problem text, choose Change Case from the Format menu, and select Sentence case. (WordPerfect, Word 6, and various shareware text processors have similar features — including Tex-Edit, included on the CD-ROM with this book.)

After you convert the text, you'll have one additional task. You'll have to change each occurrence of the word *I*, as well as any proper nouns and acronyms, back to capitals. That's because Word and its ilk automatically lowercase *any* word that's not at the beginning of a sentence.

A guide to the strange keyboard symbols

We all know and love the ⌘ key. You're never in doubt as to which key it is — it's painted right onto your keyboard, for heaven's sake.

All too often, however, in program manuals and menus, they've started using symbols to represent *other* keys, too. But these symbols, unlike the ⌘ symbol, give no hint as to which corresponding key they refer to on your keyboard. Here's the actual list, with the best mnemonic suggestions we can come up with.

⇧ This is the **Shift** key. ***Mnemonic:*** It makes capital letters. *Taller* letters, so there's an up arrow, see?

⌥ Here's the **Option** key. It looks like a side view of a key being pressed. Of course, this doesn't exactly specify *which* key it is, which is why we have trouble remembering this one. ***Mnemonic:*** Maybe you can tell yourself it looks like one key being held down

while another is about to be pressed, which is how you make those special symbols like ¢ and ©, as we discussed earlier.

^ This represents the **Control** key, believe it or not. ***Mnemonic:*** It actually has a pretty good mnemonic, if you're a modem junky. In the olden days of IBM-ish telecommunication programs, this caret symbol meant *break* — as in, "Listen, you remote mainframe computer, stop." (Something like the Mac's ⌘-period keystroke.) Anyway, this was called a *control character.*

␣ Weird, huh? It means the **Space bar.** ***Mnemonic:*** It does look like a bar that's being pressed below its usual level.

⌤ You'd never guess this in a million years. It's the ***Enter*** key! ***Mnemonic:*** We give up.

Incidentally, you can type these and other symbols into your very own documents. Use the Chicago font (the TrueType version that comes with System 7 and later).

To get these symbols	press these keys
	Control-T
	Control-Q
^	Control-B*
␣	Control-G*
⌥	Option-Control-Shift-A*
⇧	Option-Control-Shift-D*

* The symbols marked with asterisks, interestingly, *don't* show up if you use 12-point size (which is what most people would naturally choose for Chicago). Any other size, such as 11- or 13-point, works fine. (It's not that Apple desperately wanted to hide these symbols; it's because these symbols are in the *TrueType* font, but not the bitmapped screen font. [See Chapter 24 for an explanation of these terms.] Therefore, when you choose a nonstandard size, TrueType is called into the act to display all Chicago symbols, and its hidden symbols suddenly appear.)

KEYBOARD SECRETS

Copilots of the same Mac

Our little trick about stringing multiple ADB devices together can be handy when you're training somebody, when you're collaborating two-on-a-Mac, or when you're playing a two-person game.

The Secret is that you can plug *two* keyboards and a mouse into the same Mac. And all of it works! (One person can type the vowels, or something.)

On a Mac model with two ADB jacks in the back (a IIcx or IIci, for example), you can have two complete ADB chains — that is, a keyboard and mouse. On a Mac with only one ADB jack, you can only have one ADB chain. Because the mouse has no ADB jack, you'll discover that you can have two keyboards, but only one mouse in such a setup. The mouse must always end the ADB chain. Or must it?

Actually, you *can* have two mice, if you get an ADB cable with a Y-jack. And they do make such a cable; Sophisticated Circuits sells one, for example.

Extend your ADB

Feel the need to lean back a little farther from your desk? Then you may need an extra-long keyboard cable. You can buy one from Kensington, of course. Or, you can go to a Radio Shack store and buy an *S-video cable.*

It's designed to hook up expensive VCRs, but, amazingly, it works as a keyboard cable!

Shave 25 percent off your typing efforts

If you could see how much of this book we actually typed ourselves, it would be so skinny you'd demand a refund.

In reality, we made extensive use of TypeIt4Me, a terrific *typing-expander* program. You teach it to recognize certain typed abbreviations — *kb* for *keyboard,* for example. Thereafter, whenever you type one of your abbreviations, in any program, TypeIt4Me instantly expands it to its full form.

Y can see th in ts sentence, fex, we let h mc do h work!

(You can see that in this sentence, for example, we let the Macintosh do the work!)

If you do much writing at all, we encourage you to try TypeIt4Me and see if you love it as much as we do. We've made it easy for you; it's included on the CD with this book. For full instructions, see Chapter 34.



ANSWER MAN

How the keyboard works

Q: *How does the keyboard work?*

A: Incredibly, the keyboard is practically its own minicomputer. It's got a processor and even memory! The keyboard's processor inspects each key periodically (once every 3 milliseconds) to find out whether or not you're pressing it. Then it checks the suite of modified keys — Shift, Option, ⌘, Control, and Caps Lock. Based on what it finds out, it transmits a keyboard code to your Mac.

The keyboard driver (yes, even your keyboard has a driver) consults its table of codes and letters, and then informs the Mac what the appropriate character should be. Finally, the typing appears on your screen.

Type ahead

You may have noticed that the Mac is especially forgiving about premature typists. That is, you can type on several keys before there's anyplace to type. The Mac will store this typing in a piece of memory called the *keyboard buffer,* and deliver it to the screen when the time comes.

Here are some examples. Choose Print from the File menu. If you're sure you don't want to change any of the Print dialog box settings, press the Return key before the Print dialog box even appears. You'll see the dialog box — or, rather, its empty *outline* — blink onto the screen for an instant and then disappear as your previously-typed Return message hits it. In some programs, you can carry this technique to extremes: If you've arrived at one dialog box by clicking some button in another, you can close both dialog boxes and return to your document by pressing Return twice in rapid succession.

Or, try launching your word processor. You can actually begin to type during the latter half of its launching phase. When a document finally appears on the screen, the typing you've done will suddenly tumble into place.

(This magical phenomenon breaks down if you have something happening in a background program — downloading or printing, for example. In those cases, you might see only a random *few* of the letters you typed appear.)

How to avoid typing "Made in the U>S>A>"

We hope you know what we mean by that title: You're trying to type capital letters, and there's a period in the phrase, but you don't think to lift your pinky off the Shift key for each letter. Unfortunately, you wind up creating > symbols (Shift-period) in place of periods.

This is incredibly easy to fix; here are a couple of methods. First, you can use ResEdit to edit your keyboard layout. Instructions are in Chapter 21. Second, you can use the glorious SmartKeys, a program included with this book, to turn them off. (SmartKeys can also join double hyphens into the more correct long dashes, prevent you from typing a double space after a period, and automatically curl your straight quotes. See Chapter 34 for details.)

The dead keys and how to make them alive

Certain Option-key strokes are *dead keys:* When you press them, nothing appears on the screen. The Mac waits for you to type a *second* letter, which will appear beneath the first. With this method you can create symbols such as ü and ñ.

However, there *is* a way to create the symbol by itself without requiring a letter below it: Press Shift, too. To create the ˜ or ´ or ¨ symbol by itself, press Shift-Option N, E, or U. (Alternate: Type the dead key followed by a space.)

Dead keys that aren't supposed to be dead

You don't realize how much you take a fully operational keyboard for granted until that moment when a key suddenly stops working. If the deceased key is fairly insignificant (such as the bracket or backslash key), you might be able to limp along — but try writing a report without a W or an A key. Or, try doing *anything* with a nonfunctioning Return key.

There are a few different ways to get around such a dilemma. You could, of course, simply copy the dead letter from an existing document and paste it every time you need it. You could use a stand-in character like a % or # and then, later, use your word processor's Find/Replace function to paste in the actual letter.

Here's the best solution: Use ResEdit to remap your keyboard. Assign a *working* key to type the broken letter. For example, if the Return key dies, remap the keyboard so that pressing the backslash key (located directly above the Return key) generates a Return character instead of a backslash. (For complete instructions on how to do this, see Chapter 21.) This arrangement will tide you over until you can have the keyboard repaired (as we've discovered through painful experience).



The tale of the Dvorak layout

You may have heard this story: The arrangement of the keys on today's keyboard was never designed for efficient, accurate typing. Quite the opposite: According to legend, typewriter maker Charles Sholes designed the layout to be as *inefficient* as possible, since fast typing made the keys of his prototype machine jam. (For the benefit of his sales staff's demonstrations, he also put all the letters necessary for the word *typewriter* in the top row.)

August Dvorak, decades later, designed a better layout, in which the most commonly typed keys are all directly beneath your fingers on the "home row." Your fingers travel only a fraction of the distance during the course of a day; Dvorak-layout converts swear that they type faster, more accurately, and with less fatigue than they do on standard ("QWERTY") keyboards.



If you'd like to try the Dvorak layout, the Mac makes it simple to do so. Just drop the Dvorak keyboard layout, included with this book, onto your System Folder to install it. From now on, whenever you want to switch from your old QWERTY layout to the new one, use the Keyboard control panel (as described in Chapter 4) or the Keyboard menu (which you can make appear using ResEdit; see Chapter 21). And, to see where the keys are, consult your Key Caps desk accessory (or print out a copy of its screen). Relearning your keyboard takes about two weeks; let us know how you fare.

THE MOUSE, TRACKBALL, AND TRACKPAD

The mouse — and its practically identical upside-down successor, the trackball — are neat. Grab yours right now and follow along.

TRUE FACT

WHEN THE MAC TAKES DICTATION

For slow typists, repetitive-strain sufferers, and bad spellers, the day has finally arrived: The Mac can take dictation.

A program called PowerSecretary, which Articulate Systems will be happy to sell you for $2,000, comes with 12 floppy disks and a headset microphone. Once installed, you can actually speak into the microphone, and your words will be transcribed onto the screen — in any program where you can type. Yes, it really works.

There are all kinds of caveats, though (as though the cost weren't obstacle enough). The program needs 13MB of RAM all to itself (meaning you need a Mac with 24 or 40MB). You — must — talk — like — this, with a tiny pause after each word. The program never does improve much at discerning homonyms (*too* vs. *to*, for example). Actually, it's not very accurate discerning *any* words when you first start using it; only if you correct its errors (by voice), word by word, over the weeks, does PowerSecretary's accuracy and speed improve.

But improve it does. If you keep at it, after a few weeks, Power Secretary starts to seem like science fiction. One of your cheerful authors, a tendinitis sufferer, has had to use nothing but PowerSecretary for two years (including while writing this edition of this book). He gets about 55 words per minute (and would get more if he didn't stop to correct errors). Since the program has solid connections with QuicKeys and AppleScript, you can easily control your Mac's functions by voice ("Edit: Cut," "Style: Italic," "Launch Excel," and so on). (Cheaper versions, which only type into a specific word processor and don't actually *control* your Mac, are available for $500.)

The best news of all: It's still an infant technology. Twenty years from now, maybe *keyboards* will be the most expensive optional equipment.

Journey to the interior

This is perfectly, 100 percent safe, and you don't void any part of any warranty by doing it. Turn the mouse upside-down in your hand. First, check out the strip of waxy stuff at the front end of the mouse and on the retaining ring. Know what it is? Sure you do — you cook on it every day. It's Teflon.

With your other hand, push counterclockwise on the round ring, through whose center you see the mouse ball peeping out. It should rotate a quarter-turn or so and then stop. (The tiny letters L and O, if your mouse has them, stand for Locked and Open.) If your mouse's retaining ring doesn't rotate, then it's the newer style that just slides away from the mouse cable. (Opening a PowerBook trackball is exactly the same.)

Turn the mouse right-side up, dumping the retaining ring and the mouse ball into your waiting palm. Look at the mouse ball first. Its color varies, depending on the Apple manufacturing plant that created it.

Set the ball and ring aside. Then peer into the cavity of the mouse. You're about to see why the movement of this thing on your desk controls the pointer on your screen. See the three little wheels that make contact with the mouse ball? (On most newer mice, these are made of white plastic.) As you roll the mouse across the desk (or spin your trackball), the ball makes these wheels turn.

One of the wheels is spring-loaded; it's just a shock absorber. The other two, however, usually at the 9:00 and 12:00 positions, are on shafts connected to *other* wheels inside the mouse's body. These hidden wheels have spokes. Incredibly, your mouse/trackball has tiny *lights* inside shining through these spokes. An optical sensor on the other side of each little wheel measures the rate of flashing from the little lamp. By comparing the light-flashing rates from the two perpendicular rollers, the Mac calculates how fast your mouse is moving in each direction. That's how it moves the cursor across the screen.

Cleaning the mouse or trackball

Any time your cursor's movement becomes sticky, chances are high that the mouse or trackball is dirty. After all, you spend all day dragging the mouse through invisible dust and paper crumbs, or handling your PowerBook trackball with oily fingers. If you've got a pet, forget it — that angora cat hair just loves to cuddle up and wrap itself around the roller shafts inside the mouse.

Open the mouse or trackball, as described above. Take out the ball. Run it under the faucet for a few seconds. Shake off the excess water and blow it dry. You've just solved half the sticky-cursor problem.

The other source of trouble is the rollers and the shafts. Gunk tends to accumulate in a sickening stripe right down the center of your rollers. Tiny threads and strands of hair get wound around the shafts, too. We've seen mice so clogged up with debris that they'd stopped working completely.

You can scrape stuff off the rollers with a fingernail, toothpick, or a Q-tip dipped in alcohol. Or, try pressing an inside-out ring of Scotch tape against the stuff to pull it away. Take care, though, not to let the detritus fall anywhere but directly into the center of the cavity, so that you'll be able to tap it out of the mouse/trackball completely when you're done.

To reassemble the mouse or trackball, just drop the ball inside and replace the ring. Anyway, now you know why Apple switched to touchpads for all its PowerBooks; that cleaning-the-trackball routine was just too much of a drag.

Mouse alternatives

About a million mouse replacements flow across the desks of reviewers every year. There are trackballs, joystick-like deals, touch screens, and even head mice (so you can move the cursor without using your hands at all).

Few of them are as good as the good old Apple mouse. A few people prefer trackballs to mice, since a trackball takes up less desk space. But we bet the total number of people using those other wacky mouse replacements don't amount to one percent of America's Mac-using population. (The one really valuable mouse replacement/enhancement is the digitizing tablet, such as those from Wacom, which are beloved by graphic designers everywhere. These electronic pen-and-pad arrangements become more like their real-world equivalents every year, even offering an "eraser tip" on the opposite end of the stylus.)

By the way, we couldn't think of *any* mouse secrets. For some track*pad* secrets, see Chapter 14. As for the mouse, you already know how to control the rate of movement across the screen (Mouse control panel, Chapter 4) and that you can do without the mouse completely (Easy Access, Chapter 4, again). And now you know how to clean it.

At this point, there's nothing left but to reflect gratefully on the fact that you don't live in the age when the only way to control the cursor was by pressing arrow keys.

ERGONOMICS BASICS

In the interest of fending off lawsuits from carpal-tunnel sufferers, Apple now includes in every Mac manual extensive instructions for creating a comfortable ergonomic computer setup. To recap: Feet flat on floor; knees higher than seat of chair; shoulders relaxed; minimize glare; occasionally focus on distant objects; blink often (no joke, this is what it says); take frequent short breaks; and consult a physician if chronic arm pain develops.

To this we'd like to add the following secrets, which we've developed through painful experience:

- **Spend money on your chair.** If you work in an office that's already sprung for a nice ergonomic full-back-support chair, no problem. But otherwise, heed this advice, for your short-, medium-, and long-term comfort. Really decent, well-designed desk chairs cost $300 or more. Trust us, it's worth it.
- **Don't put the monitor in front of a window.** It turns out that if bright light is coming in from *behind* your monitor, your pupils contract, adjusting to the light. Trouble is, what you're *trying* to focus on is the screen, which is relatively dim. The result, by the end of the day, is a burning, painful eye strain. Put your monitor at right angles to the light source, on the other hand, and you'll be much happier.
- **Elbows higher than wrists.** In terms of height and position, you'll read all kinds of wild measurements and statistics. As far as we're concerned, though, there's only one big rule: Your elbows can't be lower than your wrists! If they are, then the angle of your wrists, cocked down to grab the mouse, is a surefire repetitive-strain inducer.

One final ergonomic thought — on typing. Avoid joining the surprisingly well-populated ranks of repetitive-strain injury sufferers (carpal-tunnel syndrome, tenosynovitis, and so on) by using some common sense when you type. Specifically: (1) Take breaks. *Never* just keep typing madly all day. (2) Don't rest your wrists on a wrist pad (or even the PowerBook wrist rests), except when you're *resting*. If you put them there when you're *typing*, you bend your wrists back at an unnatural angle and invite problems.

CASE HISTORY

WHAT IT'S LIKE LIVING WITH WORLDSCRIPT

As we've mentioned several times in this book, WorldScript is Apple's modular language kit. Pop in the Japanese module, and poof! — your Mac can word process in Japanese.

Unfortunately, we've never provided much more detail than that, because we've never actually tried a WorldScript kit. That's where our Mac Secrets correspondents come in. Here's a first-person account from reader Stephen McCabe:

If you want to work in, say, Japanese on your Mac, you could simply install KanjiTalk, the Japanese edition of the Mac OS. Of course, that will make all the dialogue boxes and menus appear in Japanese. Furthermore, KanjiTalk 7.5 is notoriously flaky; it tends to conflict with control panels and extensions that weren't specifically localized for Japan.

But suppose, on the other hand, you simply want to use Japanese in your documents but don't want the whole computer taken over by Japanese. Enter the Japanese Language Kit, which uses WorldScript to let you input Japanese into documents, or to use Japanese programs, without ever needing to leave the comfort of an English environment. Simply by pressing ⌘-spacebar, you can switch between Japanese and English text input, without ever losing the overall "Englishness" of your computer.

Usually, for the Roman alphabet, one "digit" of computer information — one byte — is all that's needed to specify the character you want to display. But because of the enormous numbers of characters needed to write Japanese, two bytes are needed to specify all the characters. WorldScript lets the System handle two-byte fonts.

The Mac starts off in the default language, in my case English, and the only way you'd know that the language kit is installed is by the presence of the Keyboard menu between the Guide and Application menus. You can choose any language whose kit is installed — Chinese, Hebrew, and several others are available, and all work the same way.

Even without selecting Japanese text entry, menus from Japanese applications and Japanese text in documents automatically appear in Japanese — in most cases. If the menus of your application look like this — ÉtÉ@ÉCÉäï"èWÅ@ — then you have yet to "register" your application using the Japanese Language Register application, installed with the Language Kit software.

If your document contains text looking like that gibberish, then you probably need to change the font of the offending text to a Japanese font such as Osaka or Kyoto.

While WorldScript is a very useful piece of software, it's still not perfect. There is one rather key application that can't be registered as Japanese — the Finder. Using the Views control panel can show icon names in a Japanese font, but it won't affect the contents of dialog boxes; for that you'll need the shareware Dialog View to set a Japanese font, or spend your days sifting through files with names like ñ°ëOñ≥Çµ. You'll have a similar problem using the menu's hierarchical menus to show the contents of your hard disk: if you have any files with Japanese names, they'll show up in Chicago-font gibberish.

Unfortunately, Microsoft products don't use WorldScript properly (what else is new?). Inputting Japanese text often produces random spaces, and trying to delete text is even more haphazard; two-byte characters seem to disappear one byte at a time, resulting in some rather bizarre and obscure unwanted characters on the screen. ClarisWorks and Emailer work beautifully in Japanese, but FileMaker Pro acts like a Microsoft program as soon as I switch to Kotoeri. As I write this, I'm still waiting for a reply from Claris about this problem, but most of the advice I've found on Usenet suggests buying a Japanese edition of FileMaker — but then what's the point of the Language Kit?

Chapter 11

Monitors

IN THIS CHAPTER:

- How a CRT picture tube works
- What VRAM is and how it affects your display
- The importance of monitor resolution
- Tricks and shortcuts for multiple-monitor setups
- The PowerBook screen: How it works

MONITOR BASICS

In terms of our attempt to explain monitors, the good news is that a computer screen works essentially like a TV screen. The bad news is that even a TV monitor is hard to explain.

How a CRT works

The *CRT* (cathode-ray tube) is your normal desktop monitor. TV sets use something called a *cathode* (electron gun) to spew streams of electrons from the back of the set. That's why TVs and computer screens have to be so deep; the gunner has to be back far enough to be able to hit the entire screen surface.

The screen itself is coated, on the inside, with phosphors. When phosphors are excited by those electrons, they light up. (Remember the glow-in-the-dark Crunchberry stickers from boxes of Cap'n Crunch? It's the same idea.)

Of course, if the electron gun were left on its own, it would continuously fire into the center of the glass screen, giving you nothing but a very bright dot, making it exceptionally difficult to do large spreadsheets. In order to counteract this, the electron beam is surrounded by electromagnets. These magnets, with incredible precision, turn on and off exceptionally fast, bending the electron stream in this direction and that. If you saw a map of the beam's path, you would see that it was a zigzag pattern, starting at the top of the screen, painting each row down to the bottom.

The electron stream actually illuminates only one screen dot (*pixel*, short for *picture element*) at a time. But it fires so quickly — painting the screen 60 times per second — and each pixel takes so long to fade after being struck, that you perceive a continuous, solid image. (*Usually* that's what happens. If you want to prove our zigzag, phosphor-painting theory to yourself, chew a Lifesaver while watching the screen from 15 feet away. Because the vibrations make your skull move out of its stationary position, you'll see, for the first time, a decided flicker in your screen. The image will break up a little, as you catch only parts of each beam's journey down your screen.)

Flicker

The larger a monitor is, the longer it takes the electron gun to paint the inside of the glass. (The speed of this painting process is called the *refresh rate.*) If the gun paints the screen 60 times per second, the techies would say "The refresh rate is *60 hertz.*" In general, the larger the monitor, the more expensive the electronics needed to maintain a high refresh rate, which is desirable.

Unfortunately, typical room lighting, especially fluorescents, interacts with a typical monitor's refreshing process, and the result is what we know as *flicker.* If you want less flicker — not to be confused with the entire picture shaking, which is often caused by another appliance on the same circuit — turn out the lights.

ABOUT VRAM

We're especially proud to discuss VRAM ("v-ram") in this book because we hear about it all the time, and it's actually very important. However, no one ever seems to define it or explain it.

VRAM stands for "video RAM." It refers to the memory that stores the current screen picture at any given moment. Every Mac must have VRAM, or it wouldn't have any screen picture at all. Every single pixel on your screen has a corresponding bit of memory that stores its color.

What gets tricky, though, is that each Mac model stores its VRAM in different places. VRAM may be hidden in the following three places:

- **Scenario 1:** The Mac's VRAM can be a chunk of regular memory (your system RAM) that's earmarked for video.
- **Scenario 2:** The VRAM can be a separate bunch of memory chips built into the Mac circuitry and devoted exclusively to the screen picture.
- **Scenario 3:** The VRAM can come aboard a *video card* (a NuBus or PCI card into which you can plug a monitor), in the form of specialized memory chips.

In a few older models (IIci, IIsi), the VRAM was just a chunk of regular system memory (Scenario 1). While they don't require a video card (Scenario 3), these Macs didn't draw the screen as efficiently as Scenario 2 Macs — those with built-in, separate video memory, which almost all subsequent models have (Quadras, LCs, most Power Macs, and so on).

On the other hand, many old Mac models (such as the II, IIx, IIcx, and IIfx) came with *no* video RAM, either as dedicated chips or as system memory. Even one recent model, the tower-of-power Power Mac 9500, comes with no VRAM at all. Instead, these Macs *require* a video card (Scenario 3), which is an extra purchase.

And then there are the Power Macs that have *two* monitor jacks (the non-AV 7100 and 8100, for example). One jack is a high-speed version of the Scenario 1, in which some of the Mac's regular system RAM is used as VRAM. The other jack is driven by a little video card.

Deeper colors, bigger screen: more VRAM needed

We said that for each pixel on the screen, there must be 1 bit of VRAM. That's true for black-and-white monitors: The 1 bit of memory has to say either "on" or "off." (Remember, a *bit*, the computer's basic thinking unit, is an on/off switch. Therefore, 1 bit can adequately describe the condition of a screen pixel: either black or white.)

However, if each pixel can be one of *four* colors, then it requires *2* bits of memory (each of which can be either on or off, result in a total of *four* possible combinations).

A palette of four different colors for your whole screen isn't exactly what you'd call photorealistic color, however. So, they have what they call *8-bit* color; until very recently, this was the most common Mac video setup. If you count up all the possible combinations of on/off that those 8 bits of VRAM can be, you find out that there are 256 possible combinations. Therefore, in 8-bit color, there can be 256 *different* colors displayed on the screen at the same time.

Then there's *16-bit color,* provided with most new Mac models today, and ideal for showing QuickTime movies. In the professional world, *24-bit color* is the norm for photo retouching, scanning, and so on. Grab the calculator, and you find out that if each screen dot's color is determined by the precise status of 24 bits, then it can be one of 16,777,216 different colors. This may seem silly, since the average 14-inch color monitor only *has* 307,200 pixels. True, in 24-bit color, you can't even *see* all the different colors at once on the screen. But because each pixel *can* be any one of 16 million colors, the result is a very, very realistic picture.

We read in a recent magazine that the *really* fussy video and photo professionals are pushing for the Mac to support *48-bit color,* which would mean an *extremely* realistic color picture. We doubt the naked eye could tell the difference between 24- and 48-bit color, however.

At this point, we're talking about a sizable amount of RAM for each pixel. We're also talking about a sizable delay while the Mac computes the correct color for each dot on the screen. *The more colors on the screen, the slower the screen picture is updated.*

Each of these memory arrangements (1-bit, 8-bit, 24-bit, and so on) is called a *color depth.* You change color depths (to change from black-and-white to color, for example) by using the Control Strip (System 7.5.3 or later) or a control panel like Monitors or Monitors & Sound.

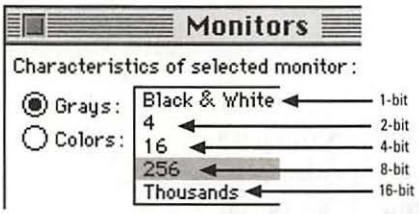


Figure 11-1
The Monitors control panel shows only the *result* of each color depth. More often, however, you'll hear the terms listed on the right when people talk or write about the Macintosh.

Incidentally, the Control Strip, Monitors control panel, and Monitors & Sound control panel do not use the bit terminology that we (and Mac magazines) use. Instead, the Monitors control panel shows only the *result* — the total number of colors that the Mac can show at once (see Figure 11-1). Beyond 256 colors or grays, it doesn't give the exact number; it just says "Thousands" (for 16-bit color) or "Millions" (for 24-bit).

How much VRAM do I need?

Well, you can pretty much do the math yourself. Just remember these two golden rules. (1) The more pixels there are on your monitor, the more VRAM will be needed to remember their colors. (2) The greater the number of potential colors a pixel can be, the more VRAM it requires.

Therefore, when you're shopping for one of the Macs with built-in, dedicated VRAM, it turns out like this:

- 256K of VRAM, as found on most PowerBooks, can handle 8-bit color on a 13- or 14-inch Apple monitor. (As you'll find out in a moment, 13-inch and 14-inch are the same thing.)
- 512K of VRAM, which is what you got on, say, the LC III, can handle 8-bit color on a *16*-inch Apple monitor.
- 512K of VRAM can also handle *16-bit* color on *part* of a 13-inch display. That is, the bottom 80 pixels will just be blank, but you get much more realistic color on the remaining part of the screen. It's a perfect example of the trade-off between screen size and color depth. (Actually, though, you can only do this on a handful of Mac models. See the Macintosh Secret in the following section.)
- 1MB of VRAM gives you 16-bit color on monitor sizes up to 16 inches.
- For 24-bit color on 21-inch monitors, you need 4MB of VRAM.

These are a few examples. By changing the proportions or the color depth, you can come up with other configurations.

COLOR VERSUS BLACK-AND-WHITE

Black-and-white monitors, when they were available, were clearer, crisper, and easier to read than color monitors. The reason is that a black-and-white monitor has only one color per pixel to think about. A color monitor, on the other hand, has *three* dots — red, green, and blue, arranged in a triangle — that constitute a single pixel. It's no wonder that color is a little bit blurrier.

Color is also much slower than black-and-white. We've seen Mac users turn their color monitors to black-and-white mode for the first time and positively *shout* about the speed increase. Their Mac seems to be twice as responsive — and no wonder; instead of having to compute and display *three* dots for every screen pixel, it only has to manage one.

Want to prove it to yourself? Put your Mac in color and open a word-processing document that's several pages long. Start at the top and simply scroll down continuously. Note how lively the scrolling seems. Then switch your Mac to black-and-white mode and try the same scrolling. About twice as fast, right? (If you didn't see much difference, then your Mac probably has an accelerated video card.)

MACINTOSH SECRET

16-BIT COLOR, FOR FREE

The LC III came with 512K of video memory. That's enough RAM to handle 8-bit color on most Apple monitors.

However, like such other Macs as the Duo 270c, 280c, and the PowerBook 540c, this model (along with its equivalent, the Performa 450) has a unique feature: It can also dedicate that same VRAM to giving you more realistic color at the expense of screen size. That means that you can have 16-bit color — approaching photo-realistic — if you're willing to work with a smaller picture-tube area.

Here's how you do it. Open your Monitors control panel and click Options. You'll see two choices: Macintosh Hi-Res Display and 640 by 400 Hi-Res. Select the second option and restart the Mac.

When you restart, the picture is shorter from top to bottom. Your screen area, instead of being 640 by 480 (standard 14-inch monitor size), is now 640 by *400* pixels. The colors are much more vivid and realistic, as you'll notice if you try to play a QuickTime movie or look at a scanned photo.

Unfortunately, several readers have alerted us to the fact that this secret seemed to stop working in System 7.5.3.

Switching modes

Our advice, then, is to switch color depths regularly, depending on what you're doing. Here's a typical example: You start up in color so that you can see all those great color icons. Then you launch your word processor and change to black-and-white for speed. Jump to a spreadsheet or a game, and you may want to go back to color.

Of course, you probably aren't doing all this switching right now. Our guess is that it's much too much trouble to keep lumbering off to the Monitors control panel just to switch your monitor back and forth.

That's why we've included Color Coordinator on the disc with this book. Color Coordinator actually changes color depths *automatically* as you switch from program to program.

Grayscale

Ah, yes. Then there's grayscale.

Grayscale is like color in more ways than you realize. It, too, slows things down. Yet it has only grays and not colors.

Don't forget that any color monitor is *also* a grayscale monitor. The Monitors control panel (or equivalent) lets you switch between black-and-white, color, and grayscale. On a PowerBook, by the way, grayscale has several additional advantages — such as longer battery life, lower computer cost, and less weight and bulk.

A WORD ABOUT DPI

You've probably heard the term *dpi*, meaning dots per inch, used primarily in conjunction with printer quality. That's because, for years, the Mac's monitor resolution (the number of pixels per inch) was always the same: 72. In other words, every Mac monitor had 72 screen dots per inch.

And 72 was a clever choice — not only did it ensure crisp, readable text, but there are 72 points to an inch. A *point* is a unit of typographical measurement. In other words, Mac fonts could be designed so that each increase in point size corresponded perfectly to the addition of one pixel to the character shape. Furthermore, text on the screen would always be actual size.

Today, however, resolutions of monitors vary, even among Apple monitors. The Apple 21-inch color monitor packs in 79 dpi, whereas the discontinued 12-inch color monitor had only 64 gigantic dots per inch.

How big is your monitor — really?

Inches-versus-dpi isn't the only thing that's confusing about monitor sizes. For one thing, the Apple 13-inch and 14-inch color monitors are actually the same size! For years, computer companies tried to fudge with the facts to make their monitors seem larger than they actually were. IBM, for example, would measure from corner to corner of the *glass* of the monitor instead of the *image area,* which is always smaller.

Apple, for years, tried to do the right thing. They measured their monitors (and advertised them) from corner to corner of the actual image area. Of course, that meant that the marketing people had to listen to customers say: "$300 for a 13-inch monitor? Why, by golly, when I used to own an IBM, I could get a *14-incher* for that money!"

As long as no one was giving Apple any credit for their more truthful approach, Apple said: "The heck with it." From that day on, Apple marketed its monitors the same way its rivals do — by measuring diagonally across the glass. Thus, the Apple 13-inch and 14-inch screens are identical in size, but come from two different marketing policies. (Anyway, truth in monitor advertising, thanks to a recent lawsuit, is making a comeback. Today, advertisements say things like, "Avanti 15-inch monitor, 12.7 inches diagonal".)

ANSWER MAN

The creepy BAMS (Black Apple-Menu Syndrome)

Q: ***Hey! How come my Apple menu icon's black all of a sudden? Isn't it supposed to have colored stripes?***

A: Yes. But here's one of the weirdest aspects of the Mac we've ever seen: If you open your Monitors control panel and set it to ***Thousands of Grays,*** your screen goes to thousands of ***colors!***

Try it — it's true. We have no idea what sense that makes.

Anyway, setting your screen to Thousands of Grays has one other peculiar side effect: It turns your Apple-menu icon solid black. So if your screen is in color, but the Apple is black, you're in Thousands of Grays mode. Open your control panel and set the screen to a Colors setting instead.

(Of course, if your Apple logo has ***always*** been black, then perhaps you used your system-software installer's "Minimal" option, which omits the colors to save disk space.)

Even so, inches aren't everything. In fact, they can be downright misleading. Here are two examples:

- Consider Apple's sole dud monitor, the 12-inch color. From the name, it sounds as though it's larger than the Mac Classic screen, which is only 9 inches diagonally.

  Surprise! The 12-inch color monitor has about the same *number* of pixels as the screen on a Mac Classic. Both have 512 pixels across; the 12-inch color measures 384 pixels vertically, and the Classic has 342.

- Many griped when the PowerBook Duo appeared. Its screen, measured with a ruler, was an inch smaller than the original PowerBook screen!

  Yet you can see *every bit* as much of a page on a Duo as you can on the original PowerBook. It has the same *number* of dots (640 across, 400 down) as the original "larger" PowerBook screens — they're just closer together (see Figure 11-2 and Figure 11-3).

Figure 11-2
Which PowerBook screen is bigger? It's not an easy question

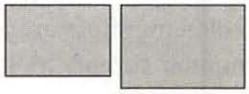
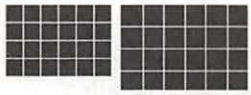


Figure 11-3
Actually, both PowerBook screens are the same size. Each shows the same slice of a page. The Duo's screen (on the left) packs its dots closer together so that the image is smaller than actual size. But it's showing the same number of pixels.



Some standard monitors and their dots per inch

Here's a rundown of some typical Apple monitors and the number of dots you get with each.

- Apple 16" color monitor: 832 by 624 pixels (at 70 dpi)
- Apple 21" color monitor: 1152 by 870 pixels (at 79 dpi)
- Apple 12" color monitor: 512 by 384 pixels (at 64 dpi)
- Apple Portrait Display: 640 by 870 pixels (at 80 dpi)
- Mac Classic: 512 by 342 pixels (at 72 dpi)
- Color Classic: 512 by 384 pixels (at 76 dpi)
- Apple 13" and 14" color monitors: 640 by 480 pixels (at 69 dpi)
- Performa Display: 640 by 480 pixels (at 67 dpi)
- PowerBook 165c 10" built-in screen: 640 by 400 pixels (at 77 dpi)
- PowerBook Duo 9" built-in screen: 640 by 400 pixels (at 85 dpi)

- PowerBook 180c 8.5" built-in screen: 640 by 480 pixels (at 94 dpi)
- PowerBook 5300ce 10.4" built-in screen: 800 by 600 pixels (at 94 dpi)

The bottom line on resolution: The higher the dots-per-inch rating, the smaller but *sharper* the image will be. It's the same syndrome when you reduce something on a copying machine — the picture and text get smaller but crisper because the dots are compressed into a smaller space.

When you reach very high dpi ratings, though (some monitors go as high as, say, 94 dpi), normal-sized text becomes so small that it's hard to read. Your cursor and menus also get smaller. (If that effect bothers you, there's plenty of shareware available to help out. Greg's Buttons can enlarge your menus, for example.)

Multisync (multiple-scan) monitors

One of the most interesting developments in monitor technology is the *multisync,* also called *multiple-scan* or *multiple-resolution,* monitor. These monitors — all of today's Apple monitors, for example — let you switch from one resolution to another. You can kick into 92-dpi mode if you need to do page layout and don't need to read the text, but just want to get an overview of as much graphic image as possible. When you need to edit, you can pop into 70-dpi mode, where text is large and legible.

For example, using the Monitors control panel or the Control Strip, you can switch Apple's 20-inch multiple-scan monitor between three different modes: what Apple calls presentation mode (640 by 480 pixels, just like a standard 14-inch screen — but they're gigantic pixels); actual-size (832 by 624 pixels); and page-layout mode (1152 by 870 small pixels), which shows you two entire pages.

Depending on your Mac model's VRAM and video circuitry, it may even let you choose, in the Options dialog box, pixel dimensions *larger* than the monitor itself. In such a case, the Mac — such as the 8500 — will actually create a *virtual screen;* roll the cursor against the edge of the display, and the entire picture slides in the opposite direction, as though your monitor's glass were merely a window onto a much larger desktop beneath.

The monitors in Apple's multiple-scan series do more than change resolutions, though. They come with a raft of other smart-screen technologies. For example, they have front-panel controls that let you fiddle with the dimensions and positioning of the image on the glass. And, in conjunction with most recent Macs, they can shut themselves off after a period of inactivity (using included control panels, such as Energy Saver; see Chapter 4).

TRUE FACT

WHICH MONITORS CAN YOUR MAC SUPPORT?

No, we're not talking about built-in video support here, but actual *physical* support — as in weight-bearing capability.

Most people probably don't give a second thought to plunking a monitor on top of their Mac — but think about it: A typical 21-inch monitor weighs 80 pounds. Keeping such a unit stacked on your computer is like having a healthy sixth-grader standing on your Mac, all day, every day. Is your Mac really meant to bear all that weight?

Maybe not, according to Apple. For example, Apple says the IIsi, Quadra 605, Performa 475 and 476, and Macintosh LC 475 can support displays of up to 35 pounds — but no more.

The other Macs in the LC series are a bit more stable; they can carry loads of up to 50 pounds — but Apple doesn't recommend sticking a 16-inch monitor on the back of an LC, anyway. The weight's fine, they say, but the configuration is a little top-heavy and could be unstable.

The same holds true for the IIvx (and Performa 600), the Centrises, Quadra 610, 660AV and 840AV, and the Power Mac 6000 and 7000 series. The cases of these Macs are strong enough to support a 16-inch monitor weighing 47 pounds, but Apple cautions that the setup might not be stable.

On the other hand, the Mac II, IIx, and IIfx were constructed with special supporting posts in the chassis that enable them to support a hefty two-page monitor of more than 50 pounds.

To be honest, we're not sure how important all of this is. Fact is, we've been to plenty of offices that break all the rules, with heavy large-size monitors stacked on top of IIsi's, and we've never seen any signs of damage as a result.

MULTIPLE MONITORS

Any Mac into which you can plug an external monitor (almost any Mac made recently) also lets you plug in *more* than one monitor. Here are four ways to get a multiple-monitor setup going:

- Get a Power Macintosh 7100 or any AV Power Mac. These models all have two video jacks on the back.
- Get any Mac with slots. Use its built-in video jack for the first monitor. Install a video card into one of your Mac's slots. Plug the second monitor into the jack provided by the video card.
- Use a PowerBook that has a video output jack. Plug an external monitor into the video port. Your built-in PowerBook screen acts as one screen, and the external monitor acts as the other.
- If you have a Performa 5200, you can plug an Apple External Video Connector into the logic board, allowing you to run an external monitor in

addition to the built-in 15-inch display. (However, the external only works in "mirroring" mode, duplicating the image on the internal display.)

You can even have *more* than two monitors (up to six). You can theoretically install more than one video card into your Mac's slots, each with a separate monitor attached.

Arranging the monitors in space

After you've hooked up all these monitors, you can control their behavior in a number of impressive ways — using the Monitors control panel. (On some Power Macs, it's called the Sound & Displays control panel; on recent models, it's the Monitors *&* Sound control panel.)

You can specify, for example, how the Mac will think the screens are ordered from left to right. For instance, you can specify that your PowerBook be the monitor on the left. When you move your cursor off the right edge of the screen, only then will the cursor appear on the external monitor.

Note, of course, that the external monitor may be *physically* placed to the left of the PowerBook. Even so, if the Monitors control panel thinks that it's to the right, the cursor will appear at the external monitor's left edge as soon as it leaves the primary monitor's right side (see Figure 11-4).

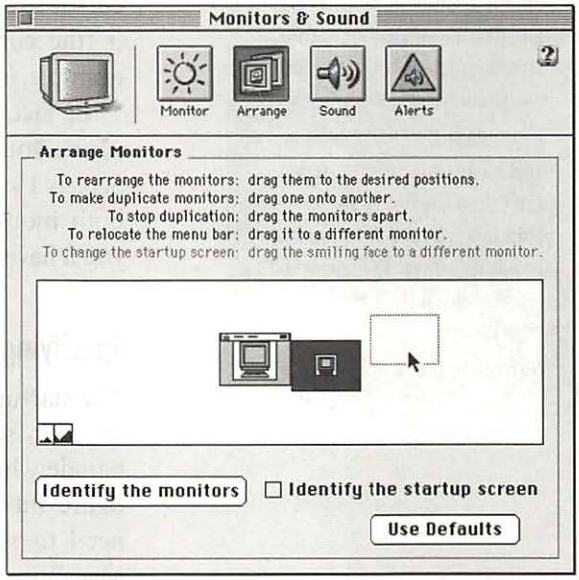
Now that we've given you the warning, here's how you specify the positioning: Click the Arrange icon that magically appears in the Monitors & Sound control panel (if you have it); then, regardless of which control panel you have, simply drag the images of the respective screens within the control panel (see Figure 11-5).

It's possible to get confused as to which little screen icon corresponds to which actual monitor on your desk. That's the function of the Identify button (see Figure 11-6), which comes in especially handy when you have *four or five* monitors connected.

Figure 11-4
Suppose you indicate, using the Monitors control panel, that the external monitor is on the right (first example in the figure). From now on, the Mac will always treat the external monitor as an extension to the right of the PowerBook screen. You can move the actual monitor to the left (at right in the figure), and the Mac will still treat the external monitor as being on the right.



Figure 11-5
Drag either screen to change the Mac's idea of its spatial relationship. The Monitors & Sound control panel is shown, but the monitor-icons effect is the same on the older Monitors control panel, as you can see in Figure 11-6.



MACINTOSH SECRET
THE ONE WINDOW YOU CAN'T MOVE

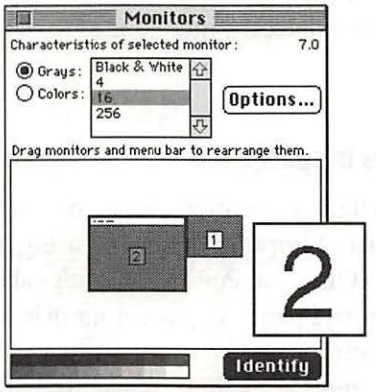
Here's a bombshell to throw out at the next cocktail party gathering of Macintosh nerds. "Hey, I got one. When you've got multiple monitors connected, what's the one window you can't ever slide from one screen to another?"

After the conversation dies and everyone stares at you for a minute, you can cleverly reveal the answer. "Why, the Monitors & Sound window itself, of course!" You can then go on to explain that when using this program with multiple monitors, a version of its dialog box appears on *every screen*. The purpose of this behavior, of course, is to make it simple for you to customize the color depth, resolution (zoom level), and gamma setting for each screen independently (because each now has its own private Monitors & Sound window).

This means, of course, that you can't drag any one of these Monitors & Sound windows onto any other screen; they're locked forever within their own monitors.

No need to thank us.

Figure 11-6
When you click Identify, a number appears on each screen icon in the control panel. A corresponding number flashes onto the physical screens of your monitors.



As you set up your monitors, keep in mind that you can drag these little screen icons into any configuration. The most important point here, though, is that the cursor can only cross from one monitor to another where their little screen icons are touching.

Otherwise, there are no limitations. Screen 2 can appear anywhere relative to screen 1: above it, below it, to the left or right, northwest of it, and so on. If you want the cursor to appear on the external monitor when you move it (the cursor) off the bottom of the main screen, for example, just drag screen icon 2 underneath icon 1.

In fact, if you have the Monitors & Sound control panel, you can even drag Screen 2's icon *squarely onto* Screen 1's; the result is just what you would imagine — both monitors will show exactly the same picture, and you'll have no additional screen space at all!

Specifying the startup monitor

The startup monitor is the screen across which the icons of your startup files (control panels and extensions) parade when you first turn on your Mac. We can't really figure out how this is useful (except to programmers, who need to specify which monitor the debugger, such as MacsBug, using this trick), but there you are.

Anyway, you specify the startup monitor in the Monitors control panel by pressing the Option key. A tiny smiling Mac appears (see Figure 11-7). Drag this smiling Mac onto the icon of another screen, and you've done it. (If you have the newer Monitors & Sound control panel, this feature isn't nearly so hidden. In fact, a check box called "Identify the startup screen" is staring you right in the face, as shown in Figure 11-5.)

Figure 11-7
Specify the startup monitor — good only for the startup icon parade — by dragging the microscopic happy Mac.



Selecting the main monitor

The *main monitor* is the one with the menu bar and the menu. You can specify which monitor is the main one by dragging the little *menu bar* in the control panel from one monitor to another, as shown in Figure 11-8.

Then restart the Mac.

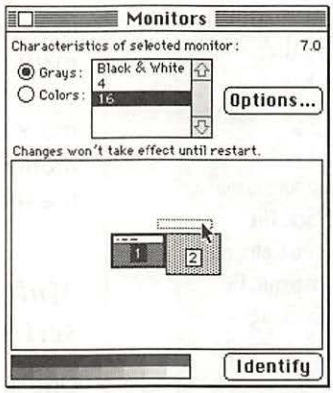


Figure 11-8
Drag the tiny title bar to control which actual monitor will house the Desktop.

MONITOR SECRETS

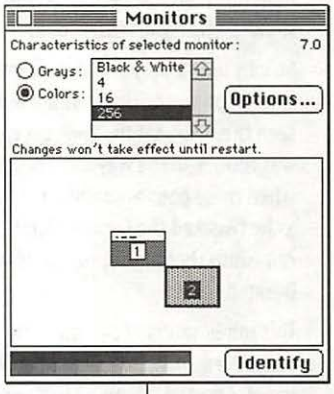
Multiple monitors: preventing cursor flyover I

When you're just beginning to work with two monitors, you're still used to the cursor stopping when it hits the boundary of your main screen's display area. It can be annoying, at first, when the cursor slips off your main monitor.

We've got a clever solution. When you're using two monitors, the pointer can cross over from one monitor to the next only where the *monitor icons* (in the Monitors control panel) *touch*. Position screen 2 so that only its *corner* touches screen 1, as shown in Figure 11-9.

Then it's *impossible* to move the cursor onto screen 2, unless you decisively roll it through the imaginary "gateway" at the lower-right corner of screen 1.

Figure 11-9
Position the icons like this to prevent accidental cursor flyover.



Multiple monitors: preventing cursor flyover II

Suppose that you read the previous Secret, but you don't like it: You *like* the ability to move your cursor conveniently to the other screen — you just hate



CASE HISTORY

HELP! BOTH MY MONITORS ARE GRAY!

We were fortunate enough to witness a near-disaster recently. This took place at a seminar in a New York City hotel ballroom. The incident involved a PowerBook attached to a projector that the presenter had rented for the occasion.

With 25 minutes to go before the presentation, this presenter (who we'll call Gary) hooked up the projector to his PowerBook's video port. It was an LCD projection pad that he'd been guaranteed would work with his Mac.

Yet, when Gary turned everything on, *nothing* came on. The projection pad showed a solid black. The PowerBook screen was completely gray: no icons, no menus, no cursor, nothing! Gary began to panic. He could *hear* the PowerBook's hard drive churning away, exactly as though it was starting up normally.

With five minutes to go before the speech, he finally realized what was happening. First, he saw nothing on the PowerBook screen because it wasn't selected as the *main monitor* in the Monitors control panel! The external monitor, number 2, was selected. Therefore, the PowerBook was considering its own screen to be an extended area of the *external* monitor. What *is* off to the right of any Mac main monitor? Plain, blank, gray infinity. That's what showed up on the PowerBook.

So why didn't Gary see all his icons and windows on the LCD projector? As it turned out, he *would* have seen them, except the Contrast control on the LCD was turned all the way up. (This often happens when these pads are shipped or handled.) As soon as he tweaked the Contrast knob, the projector came into sharp focus, complete with his usual Desktop.

This combination of *two* mishaps gave Gary quite a scare. Eventually, he opened the Monitors control panel, dragged the menu bar back onto the screen 1 icon (his PowerBook's built-in screen), and restarted the Mac. Then the *projector* acted as the extended area of the Mac, just as he'd intended.

accidental flyover, as when you're going for your menu or Application menu, and slip over to the other screen without intending it.

In that case, open your Monitors control panel, and position the second monitor's icon just *a few pixels* lower than the primary monitor's. This way, your cursor can't cross over at the corner — yet when you move the cursor in the *middle* of the first monitor's boundary, it slips easily across to the second.

Multiple monitors, multiple color settings

One fascinating aspect of the Monitors control panel is that you can set the "color depth" (the setting: black-and-white, 256 colors, and so on) and resolution (640 x 480, 800 x 600, etc.) independently for *each* monitor. All you have to do is *click* the icon, in the control panel, of the monitor whose color depth you want to change, *then* change the setting.

In the newer Monitors & Sound program, creating independent settings is much simpler — each monitor appears with its own private copy of the Monitors & Sound window, complete with Color Depth, Resolution, Gamma, and Pointer Visibility settings.

Using this information, you can easily set up your multiple monitors to have *different* color depths. For example, you might display a color image in a Photoshop window that spans both monitors (or you could have two windows of the same image, one on each screen). One monitor could display the image in 24-bit

color, and the other could appear in, say, 256 colors, so you'll know exactly what this image will look like when appearing on somebody else's Mac.

Multiple monitors, one big screenshot

It's no big secret these days that pressing ⌘-Shift-3 produces the sound of a camera shutter — and a file on your hard drive called Picture 1. That file is a graphic that depicts whatever was on your screen at the moment you pressed the keys.

But as free book winner Carol Ferrier points out, this powerful built-in screenshot function actually handles multiple monitors beautifully. The resulting PICT file will include the images — correctly positioned relative to each other — of all monitors attached to the Mac, no matter how big the PICT file, therefore, must be.



Correcting Gamma?

Gamma relates to the balance of the middle colors displayed on the Mac. Gamma correction helps keep colors from looking washed out.

The Monitors control panel gives you access to a gamma-correction feature if you're using certain monitors (including most Apple color monitors). To see it, open the Monitors control panel. Click Options while pressing the Option key. Then you'll see the Special Gamma options (see Figure 11-10). (In the Monitors & Sound program, the Gamma settings are right in the main dialog box.)

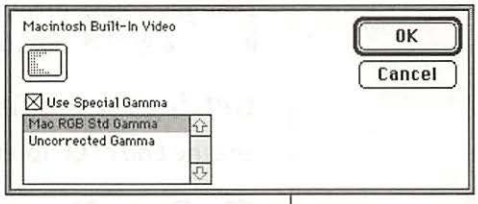


Figure 11-10
The Gamma nobody knows.

For example, the Apple 16-inch monitor offers three gamma settings: *Uncorrected,* which means "as it was when Sony manufactured it" and creates a slightly darker picture; *Page White,* which actually makes white images appear slightly yellowish; and *Mac Standard,* which makes whites a crisp white, which is Apple's preferred setting.

Cleaning the screen

As an electronically charged device, the glass surface of your monitor draws dust and grime like moths to a porch light.

This is another one of those are-you-conservative-or-liberal arguments. We've read in plenty of Mac magazines that you're never supposed to use glass cleaner on the monitor. This puzzles us because (a) it *is* glass, and (b) it's not *even* glass — it's glass covered by a plastic bonded sealant. As a matter of fact, we've used Fantastik for years to clean the monitor glass, and it works great. (We use paper towels, but a clean rag would probably be better.)

They *do* make special cleaning fluid for these screens. But we'd bet $100 that if you did a chemical breakdown, you'd find out that it's basically Fantastik.

Explaining the shadow line

The Apple 13-inch and 14-inch color monitors have a dark thin line that runs horizontally across the screen about two inches from the bottom. Don't bother returning your monitor — it's *supposed* to be there. The larger Apple monitors have *two* lines.



Turns out that these monitors are actually Sony Trinitron picture tubes. The design calls for a wire inside the picture tube to stabilize the *colormask grid* (an array of vertical wires that helps the electron beam strike only the correct spots on the phosphor). Despite this shade effect, says Apple, there's no better monitor technology available.

Adjusting the multiple monitors finely

Don't lose sleep over this one, but we thought we'd report it.

When you're working with multiple monitors, you usually start by adjusting the positions of the two little screen icons in the Monitors/Monitors & Sound control panel, as described earlier. Only one can be selected at a time, however; a selected icon shows a thick black border (or, in Monitors & Sound, changes color). Anyway, here's the Secret: You can nudge a selected screen icon in any direction, one pixel at a time, by pressing the arrow keys.

Getting the Mac on TV

See the end of Chapter 23 for details on this frustrating topic.

The Power Mac (and so on) monitor-doesn't-work solution

If you're buying a new Mac with a used monitor, you may bump your head against the "sync on green" problem: Old monitors may not work with new Mac models. That's because Apple removed a synchronization signal (on the green channel, get it?) from the video signal of these newer models that were present in the original color Macs. The AV and Power Macs, LC III, Quadra 605, and Performa equivalents, along with PowerBooks using external video adapters, all face this problem.

The company that made your monitor may offer a cheap new cable or a video-card upgrade to make your old monitor compatible with the new models. If your monitor maker (such as Radius) doesn't offer such an adapter, $35 buys you a Griffin Communications (615-399-0990) adapter plug that does the trick.

PowerBook monitors

For the scoop on this mutant screen technology, see Chapter 14.

Chapter 12

From 128K to Quadra: Model by Model

IN THIS CHAPTER:

- What the specs mean
- The specs for every Mac model ever made
- Secrets of the pre-PowerPC Mac models
- Just how much your Mac has devalued

Yes, we've already been told that we're nuts to attempt the next two chapters of this book. Since 1984, Apple has created more than 140 different Mac models — including 35 different PowerBooks and 53 different Performas! Each year, Apple piles on another dozen or so new models. By the time you finish reading this page, another Performa model probably will have been born.

So, writing a couple of chapters that are supposed to describe every model is an exercise in futility.

But we're going to attempt it anyway, taking the models one by one and tracking their speeds, specs, and life cycles. This chapter will cover *all* the Apple Macs — both desktop and portable models — from the birth of the original Macintosh 128K to the release of the PowerBook 190, the last Mac ever made that was based on Motorola's 68000-series processor chip. When you're finished reading this chapter, you will be one of the few people on Earth who actually knows the difference between a Performa 550, 560, 575, 577, 578, 580, and 588.

Chapter 13 will cover every *Power* Mac — or, more accurately, every PowerPC-based machine (those with four-digit model numbers) — from the first ones released in 1994 to the models released just minutes before this book was printed. Of course, what separates the models in this chapter from those in the next is the microchip: At the heart of every Power Mac is the PowerPC chip, a faster, cheaper, and more energy-efficient microchip. (For details, see Chapter 13. And for news on models released after you bought this book, check the *Secrets* Web page at *http://www.idgbooks.com/idgbooksonline/macsecrets.)*

Despite the seemingly pointless array of nearly identical models, Apple's lineup actually has some logic: There are exactly four classes of Macs. For the portable person, there are PowerBooks. Educational customers alone are now offered the LC series. For the home market, there are Performas. And for business use, there were the Quadras and now their potent replacements, the Power Macs. Of course, Apple is never completely consistent in its marketing distinctions; the first LCs, for example, were *not* restricted to educational buyers — but across the model lines, there's considerable duplication. At any rate, keep the laptop/education/home/business distinction in mind as you read. (All photos are courtesy of Apple Computer, Inc.)

COMING TO TERMS

We really don't like using technical terms — we cringe every time we find ourselves saying things like, "That microchip lacks a PMMU." But when comparing various Mac models, you must understand what some of the technical specifications really mean. Here's a guide to the terms we'll be using.

Processor chip: Sometimes called the CPU, this chip is the absolute guts of the computer, a collection of microscopic transistors etched in a single square silicon chip. This microchip does the actual data processing. Until the Power Macintosh, all Macs were built around one of four microprocessor chips manufactured by Motorola: the 68000, 68020, 68030, and 68040. The higher the number, the more powerful the processor. (The Power Macintosh uses a PowerPC chip — the 601, 603, or 604, for example — as you'll find out in the next chapter.)

Clock speed: This number is the other important speed statistic for a Mac. It refers to the speed at which data moves through the Mac's circuits, as measured in *megahertz,* or millions of cycles per second. The earliest Macs ran at 8 MHz; the newest Power Mac models run at speeds of up to 225 MHz. (The

Power Macs' names actually hint at their speeds; the 7200/75 model, for example, runs at 75 MHz.) Two Mac models may use the same microprocessor yet run at different speeds — because one has a lower clock speed.

Note well, however: *A faster clock speed doesn't necessarily mean a faster Mac.* The computer's processing speed is determined by the particular processor chip *and* the speed at which it is set to run. For example, a Quadra 630 running at 33 MHz is *faster* than a IIfx running at 40 MHz — because the Quadra's 68040 chip is inherently faster than the IIfx's 68030 chip. As a rule, *you can't compare MHz across processor chips.* (Keep that startling fact in mind the next time somebody brags about the speeds in the PC world. "My Pentium runs at 110 MHz for the price of a 75 MHz Mac," you'll be misleadingly told.)

ANSWER MAN

Apple's "clock-doubled" marketing

Q: ***The specs for a Quadra I just bought say it has a "66/33 MHz" processor. Which is it — 33 or 66?***

A: In 1994, Apple started this new twist in advertising the Macs based on the 68040 processor chip (Quadra models, for example). (IBM-clone manufacturers had been listing speeds this way for years.) The higher number refers to the data speed inside the processor; the lower number is how fast data moves through the computer itself. For the sake of comparison with other Macs, the lower number is what counts.

Data path: The wider the data path, the larger the chunk of data that a microprocessor can push through the Mac's circuits at one time. (Most manuals and articles prompt you, at this point, to imagine lanes on a highway.) The wider the data path, the faster the Mac. Macs with a 16-bit data path are notably slower than those with a 32-bit data path. The PowerPC chip uses a 64-bit data path, which is one clue to its speed.

Processor-Direct Slot (PDS): This connector inside some Macs lets you plug an expansion card (such as an accelerator, digitizer, or video card) directly into the computer's main processor. Each Mac can have only one PDS — and, alas, cards for one Mac model's PDS might not fit a later model's.

NuBus slot: Like a PDS, this is a thin rectangular connector into which expansion cards can be plugged. A Mac can control several NuBus cards simultaneously. A IIvx, for example, has three NuBus slots; the II, IIx, and IIfx had six (the most ever). For eight years, most desktop Macs included this kind of slot. (See Chapter 31 for more on NuBus and PDS.)

PCI: You'll see this term mostly in the next chapter, which covers Power Macs. PCI stands for *Peripheral Component Interconnect,* and it's Apple's new design for expansion slots, replacing the NuBus slot. PCI cards are supposed to mean lower prices and faster speeds than NuBus cards. (Again, see Chapter 31 for more.)

PMMU: This acronym stands for *Paged Memory Management Unit.* It's a *coprocessor* (a second "brain" designed to take some of the load off the main one) specifically designed to handle memory-related tasks. PMMUs are significant for only one reason: They allow a Mac to use virtual memory (see Chapter 9). In the following discussions, we won't specifically identify models with PMMUs; but any Mac based on a 68030, 68040, or PowerPC processor has the PMMU (and virtual memory). (A PMMU was optional on a few 68020-chip Macs.)

FPU: This stands for *floating-point unit,* the math coprocessor chip included in some Macs to handle certain mathematical computations, such as trigonometric and logarithmic calculations. Read this twice: For most everyday tasks — word processing, database, or even fairly complex business spreadsheet work — an FPU makes *no difference* to the speed of a Mac. Only if you get into heavy-duty math applications, high-end drafting, a few Photoshop filters, or 3-D rendering does an FPU speed things. The FPUs used in Macs are Motorola 68881 or 68882 chips, or they're built into the '040 processor. (The Power Macs have a powerful, redesigned FPU — so different that non-PowerPC software can't use it.)

SIMM speed, SIMM type: SIMMs (*Single Inline Memory Modules*) are the little circuit cards you plug into a Mac to increase the amount of RAM available. (See Chapter 9 for details.) Some types of SIMMs take longer to produce a requested piece of information for delivery to the main processor. This speed is measured in *nanoseconds* (ns) — *billionths* of a second. Some Macs require faster SIMMs to take advantage of their microprocessor's speed.

Each new generation of Macs tends to require a different *type* of SIMM, too — chips of different sizes and numbers of pins, for example. The newest Power Macs use DIMMs (*Dual* Inline Memory Modules), yet another permutation of the memory chip. We include this information in the following discussions so you'll know that, for example, the 20MB of extra RAM you bought for your Quadra won't work in your new Power Macintosh.

VRAM: In Mac models that include built-in video support (those that don't require the purchase of a video card), monitor display tasks are handled by separate *VRAM,* or *video RAM.* As we discussed in Chapter 11, VRAM consists of memory chips mounted on the main logic board. Generally, you can expand your Mac's VRAM if you want to increase the number of colors a Mac can display, or if you need more VRAM for a larger monitor.

Price then/price now: Of course, our figures here are rough, and they're likely to change by the time you finish reading this book — or even this sentence. Still, we think it's fun to see what happens to your investment over a very short period of time.

COMPACT MACS

Macintosh 128K

There it was: a beige one-piece computer with no fan, no expansion slots, and a $2,500 price tag. Steve Jobs's brainchild, a direct descendant of the neato, but grossly overpriced, Lisa, was born January 24, 1984, out of his passion, his rages, and his vision of a computer as commonplace as the telephone. Jobs borrowed aspects of the Mac's revolutionary point-and-click interface from prototypes that he saw running at Xerox's Palo Alto Research Center. He packed in a whopping 128K of memory, twice as much as the popular Commodore 64. And, at the last minute, Steve Jobs grudgingly agreed to make the square, 3.5-inch, 400K disks part of the Mac — and only because the disks he preferred, the 143K 5 1/4-inch floppies then used on the Apple II, couldn't even hold a System and a Finder. (We shouldn't make fun of Steve, though. We shouldn't make fun of anyone who had $200 million in the bank by age 25.)

MACINTOSH SECRET

THE MAC'S BIG DEBUT

Apple's first Macintosh television commercial made its historic debut during the 1984 Super Bowl, right?

Wrong. The famous "1984" ad, directed by film director Ridley Scott (*Alien, Blade Runner*), actually was run for the very first time by a local station in Twin Falls, Idaho. It aired at 1 a.m. on December 15, *1983*.

Apple broadcast the ad in December so that it would qualify for the 1984 Clio Awards.

Some people laughed at the Mac. Some called it a toy. It had no SCSI port, no ADB jack, no slots of any kind (see Figure 12-1). In retrospect, it seems astonishing that the little machine caught on at all, having been introduced when virtually no software or peripherals were available.

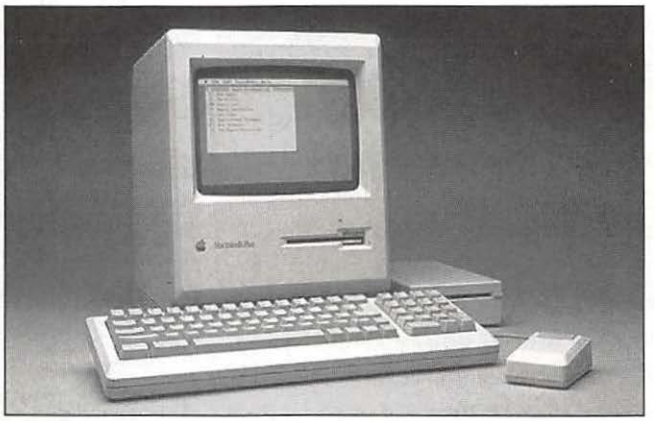
Yet, if you were among those who first drew in MacPaint in 1984, you may remember the simple irresistibility of the computer, which was the most user-friendly ever built.

Price:	$2,500 then, $20 now
On the market for:	22 months
Processor and speed:	68000 at 8 MHz
Soldered memory:	128K, not expandable (150-ns chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU

Macintosh 512K

The Macintosh 512K — the "Fat Mac" — was introduced September 10, 1984. An Apple press release described it as a "powerful business computer" that allowed users to "take advantage of larger documents and models, faster response time, and the more than 40 business productivity software packages now shipping." (See Figure 12-1.)

Figure 12-1
The original Macintosh case design. This one-piece, compact, essentially sealed-shut enclosure was the chassis for the Mac 128, the Mac 512K, and the Plus.



The 512K is simply the original Mac with four times as much RAM. Its debut was accompanied by two Apple marketing announcements that set the pattern for future Mac generations. First, the price of the original Mac 128K dropped (by $300); second, Apple offered an upgrade from the earlier model to this latest one.

The Macintosh 512Ke, for *enhanced,* appeared in April 1986, sporting an 800K floppy-disk drive.

Price:	$3,200 then, $25 now
Apple code name:	Fat Mac
On the market for:	18 months (512K), 17 months (512Ke)
Processor and speed:	68000 at 8 MHz
Soldered memory:	512K, not expandable (150-ns chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU

Macintosh Plus

"One Full Megabyte of Memory." With these words, Apple proudly announced the release of the Mac Plus in January 1986.

Compared with previous Macs, the Mac Plus *was* a major step forward. "With one full megabyte of RAM available, the Macintosh Plus can accommodate memory-intensive application programs," boasted Apple in one press release. And storage? The sky was the limit — *800K* on each double-sided floppy disk. That wasn't all the good news for storage addicts, either. The Mac Plus was the first model with a built-in SCSI port on the back, to which you could attach a (*very* expensive) hard drive.

TRUE FACT
MAC OBSOLESCENCE

If you're thinking of buying a new Mac, remember the golden rule of Mac obsolescence. Before you go salivating over the hottest new PowerBook and emptying your bank account, keep the following realities in mind:

- Apple is introducing more new computer models, and retiring old models, faster than ever before. Some models, like the Quadra 900, were on the market for only 90 days before being canned. Furthermore, newer models are always much less expensive and much more powerful than previous models. (This is true, of course, of any personal-electronics gadget.)
- However, this will always be the case. Your holding off on buying a Mac in the hope that one day the market will settle down simply means that you'll go longer without having any computer at all. If you wait forever, you will get an incredible deal, but you'll never get any work done.

  Therefore, do your best to anticipate what new models Apple has in the pipeline (by reading the Macintosh-area America Online messages, for example), make a decision, and then buy something. Plan, from the start, to feel cheated and deceived as prices continue to drop. Expect the Performa you buy in February to cost $300 less in May. Don't be shocked. It will happen.
- Just because a computer has been discontinued by Apple doesn't mean it's obsolete. It still does your word processing, doesn't it? It still does what you bought it for. By definition, then, it's still a good computer. Don't fall prey to LAGS (latest-and-greatest syndrome). At least don't fall prey to it as much as we do.

  In fact, the relentless parade of newer, faster Mac models can actually work in your favor when it comes to finding a good deal on a computer. We know plenty of savvy shoppers who actually wait for the particular Mac they want to be discontinued — then they buy it, just after Apple slashes the price of the model by $500 to clear it out and make room for the hot, new machines. Smart buyers know that a model's being discontinued hardly makes it obsolete. They realize that every Mac, no matter how well designed or enthusiastically received, will probably be discontinued within a year. So why pay a premium for a currently shipping model?

The Plus remained part of Apple's product line for nearly five years, longer than any other model, before or since. But today, the Plus is barely recognizable. It doesn't have an internal hard drive, uses the older-style keyboard that predates the Apple Desktop Bus, and can't be expanded beyond 4MB of RAM without the use of third-party expansion kits. Nevertheless, thousands of Pluses are still around and still being used effectively. We know of at least one semiweekly newspaper that's written almost entirely on dusty old Mac Pluses. Incredibly, the Mac Plus cost the same as a Power Macintosh 7600 today.

Price:	$2,600 then, $50 now
Apple code name:	Mr. T
On the market for:	4 years, 10 months
Processor and speed:	68000 at 8 MHz
Memory:	1MB, expandable to 4MB (150-ns, 30-pin DRAM chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU
System software notes:	Requires System 3.2 or later

MAC PLUS SECRETS

Finding the programmer's message

Here's a trick that will give you a taste of the madcap humor that's so typical of Apple's development staff. (It works on the SE, too.)

Hit the rear part of the programmer's switch — the Interrupt switch, as described in Chapter 7. Type **G 40E118**. (That's a zero.) This produces the message "Stolen from Apple Computer."

When you stop laughing and regain your composure, press the front part of the programmer's switch (the Restart switch).

Zapping the PRAM — Plus style

We've mentioned the Mac's parameter memory: the portion of the Mac's memory that holds Control Panel settings and preferences. To reset the PRAM on a Plus running System 6, simply shut off the machine and take out the battery for a few minutes. When you reinstall the battery and restart, the PRAM will be cleared.

Macintosh SE

The SE, released in March 1987, was originally billed as Apple's mainstream business computer (see Figure 12-2). The SE shares the Plus's compact design and 68000 microprocessor, although it runs 15 to 20 percent faster than the Plus. New SE users who had owned previous Mac models probably were shocked the first time they powered up an SE; it made noise! This was the first Mac equipped with a cooling fan, ending an era of silent Mac computing.

The SE marked several other firsts: It was the first Corporate Gray Mac (its predecessors were beige), it had the very first expansion slot and ADB keyboard jack, and a built-in hard drive was optional. (If you didn't opt for the hard drive, you could get an SE with *two* floppy-disk drives.)

Figure 12-2
The light gray, slotted case design of the SE series.



Price:	$3,700 then, $75 now
Apple code names:	Aladdin, Chablis
On the market for:	2 years, 5 months
Processor and speed:	68000 at 8 MHz
Memory:	1MB, expandable to 4MB (150-ns, 30-pin DRAM chips required)
Equipment:	Built-in, black-and-white, 9" screen; 1 Processor Direct Slot; no FPU
Special note:	Some later models (bearing the FDHD logo on the front) were produced with SuperDrives capable of reading high-density 1.4MB disks
System software notes:	Requires System 4.1 or later

A MAC SE SECRET

The hidden SE development team

A picture of the SE development team is hidden in the SE's ROM chips. To reveal this picture, press the computer's Interrupt switch. (For details on the Interrupt and Reset switches, see Chapter 7.) Then type the following sequence: **G 41D89A**. Press Return. You get to see a slide show of four alternating pictures. To stop the show, press the Reset switch (the one with a triangle on it).

Macintosh SE/30

Four times faster than an SE, the Macintosh SE/30 was released in January 1989 and was an extremely popular workhorse.

MACINTOSH SECRET

THE VERY FIRST MAC SURPRISE

By now, you've probably learned that if you poke around the Mac's System software long enough, you'll eventually find the name of a Mac programmer or two hidden in some unlikely spot. It usually takes some obscure Option-mouse click combination to uncover these hidden credits.

But the ultimate hidden-credits trick dates back to the very first Macintosh model (and persisted through the SE models). Crack open the case of an original 128K or 512K Macintosh, and you'll find the signatures of the first 47 Mac team members etched (in raised handwritten lettering) in the rear part of the plastic casing.

The SE/30 was another machine of firsts: the first compact Mac to be based on the 32-bit Motorola 68030 microprocessor; the first with an FPU to speed complex math functions; the first with an internal SuperDrive to read high-density floppy disks and provide MS-DOS disk compatibility; and the first to include color QuickDraw, enabling you to add a video card to the SE/30's processor-direct slot and connect it to a color monitor.

Price:	$4,900 then, $350 now
Apple code name:	Green Jade
On the market for:	2 years, 9 months
Processor and speed:	68030 at 16 MHz
Memory:	1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)
Equipment:	Built-in, black-and-white, 9" screen; 1 Processor Direct Slot; FPU
System software note:	Requires System 6.0.3 or later

SE/30 SECRETS

Making the SE/30 32-bit clean

The ROMs of older Macs, such as the SE/30, II, IIx, and IIcx, are not *32-bit clean.* As we discussed in Chapter 9, these models use only 24 bits instead of 32 to reference individual memory locations in RAM. Such machines are, therefore, limited to *using* 8MB of memory, no matter how much you install.

You can make these machines 32-bit clean with a free extension from Apple called the 32-Bit Enabler. This extension (for System 7.1 or later) allows the Mac to address up to 128MB of RAM. (See Chapter 9 for more information on 32-Bit Enabler and Mode32.)

The SE/30's secret attitude

Press the Interrupt switch on your SE/30. When the message box appears, type **dm 4082E853 20** and press Return. There on your screen, spelled out in plain-text letters, are the words *"WHAT ARE YOU STARING AT?".*

Macintosh Classic

After releasing increasingly faster and more powerful computers for several years, Apple released a cheaper, more basic compact Classic model, based on the slower 68000 microprocessor, in October 1990. Why this step backward? Apple was attempting to create a truly competitively priced computer, one that would be especially attractive to new users. The stripped-down Classic without a hard drive listed for about $1,000 — a new low in Mac pricing (see Figure 12-3).

The modest price also meant modest equipment. The Classic was only 25 percent faster than the Mac Plus released more than four years earlier. The limited processing power outdated the Classic quickly; it was discontinued less than two years later and replaced by the more powerful Classic II.

Price:	$1,500 then, $200 now
Apple code name:	X0
On the market for:	1 year, 11 months
Processor and speed:	68000 at 8 MHz
Memory:	1MB, expandable to 4MB (requires a RAM card); 120-ns, 30-pin DRAM chips required
Equipment:	Built-in, black-and-white, 9" screen; no slots; no FPU
System software notes:	Requires System 6.0.6 or later

Figure 12-3
Lose the grooves of the SE, and you've got the case design for the Classic and Classic II.



►A MAC CLASSIC SECRET ■

The hidden ROM disk (and hidden credits)

The Classic was and is the only Mac model with a secret internal *ROM disk* (a disk whose contents are permanently etched into the computer's ROM chips and whose icon shows up on the Desktop like any other disk).

Hold down four keys while starting the Mac: ⌘, Option, letter O, and letter X. Wait. In a moment, a new disk appears on your Desktop, containing System 6.0.3. (Don't leave your fingers on the keys *too* long, however, or the Mac will think that you're trying to rebuild the ROM disk's Desktop. You'll probably get a system crash.)

If you have ResEdit, open the ROM disk's System Folder and look at the invisible folders therein. You'll see the names of the engineers.

Macintosh Classic II (Performa 200)

The Classic II, also marketed as the Performa 200, was the last of the original compact Macs. It runs twice as fast as the Classic and includes a connector for an optional math coprocessor. Unlike the Classic, the Classic II has a microphone jack for sound input. It also supports virtual memory and 32-bit addressing, so that you can expand your RAM to 10MB.

The Classic II is newer than the SE/30, which it replaced in October 1991. To the chagrin of Mac users who loved the SE/30, however, the Classic II handles most processing jobs about 30 percent *slower*, even though it's equipped with the same microprocessor. What accounts for the difference? The *data path*. The Classic II is equipped with only a 16-bit data path between the '030 processor and the RAM chips, whereas the SE/30 provides a 32-bit data path. In other words, the Classic II can move only *half* as much data at one time between the computer's memory and central processor as the SE/30.

When the Classic II was released, it cost about $1,000 less than an SE/30 (which at the time was selling for more than $3,000), making it a good deal despite the slower speed.

Price:	$1,900 then, $275 now
Apple code name:	Montana
On the market for:	1 year, 11 months
Processor and speed:	68030 at 16 MHz
Memory:	2MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in, black-and-white, 9" screen; no slots; FPU optional
System software notes:	Requires System 7.0.1 or later

A CLASSIC II SECRET

The Brightness control panel

The Classic II and Classic are among the few Macs that can actually use the Brightness control panel — part of the System software that does nothing on most Macs. Controlling the screen brightness via software instead of a physical knob on the monitor was a cost-saving measure.

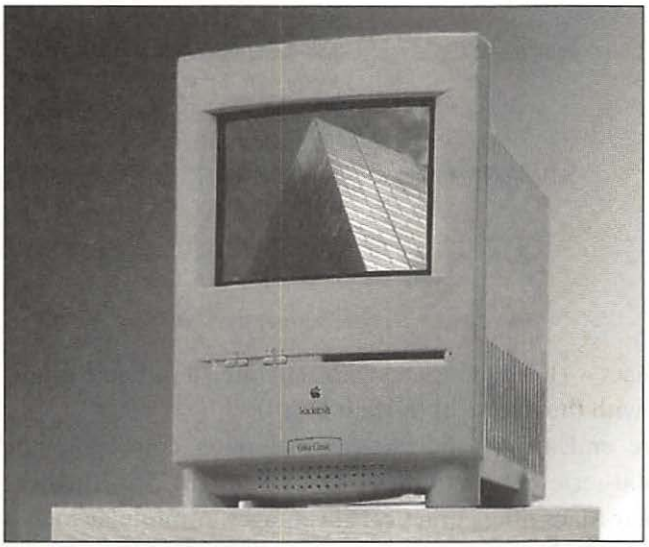
When the Brightness control panel is open, you can adjust the Classic's screen brightness with the on-screen slide control. You also can use this keyboard shortcut: Type a number between 1 and 9 to set the brightness you want (1 is the dimmest).

If you choose a setting lower than 4, the Classic automatically resets the screen brightness to a higher level the next time you start your Mac. Apple worried that if you kept the brightness too low, you'd forget about it and think that the computer's display was broken the next time you tried to use it.

Macintosh Color Classic (Performa 250) and Color Classic II

The squat/tall, strange/wonderful-looking Color Classic was the first compact Mac with a built-in 256-color screen. It was released in February 1993 and discontinued 15 months later. Electronically speaking, the Color Classic is an LC II in a compact case (see Figure 12-4).

Figure 12-4
The weirdest case shape yet: that of the Color Classic and Color Classic II.



The Color Classic also was the first compact equipped with an easily accessible *logic board* (main circuit board). You can slide the entire board out the back of the Mac simply by unlatching two clasps at the rear. This makes adding RAM or expansion cards much easier than in previous compact models, for which special tools were required. The Color Classic also was the first desktop Mac with a tiny electret microphone built into the front of the case, making it easy to record voice annotations or other sounds. The unusual front-panel sound-volume control buttons make playing with sound even easier.

Although it's built around the same chip and runs at the same clock speed as its black-and-white counterpart, the Color Classic is slightly slower overall than a Classic II. (The Color Classic II, on the other hand, zips along at a

TRUE FACT
THE ALTERNATE DISK?

The first Macintosh owner's manual provided detailed instructions about how to use the Mac's *Alternate Disk*. This was an imaginary disk whose icon was supposed to have appeared on the Mac's Desktop; its purpose was to help you copy one disk onto another (because the original Mac only had one disk drive).

The Alternate Disk wasn't actually a disk; it was more like a temporary holding area for data. The idea was that you first would copy files to the Alternate Disk icon, and then eject the floppy disk, insert a destination disk, and copy the files from the Alternate Disk to the new floppy disk.

As it turned out, the Macintosh programmers at the last minute figured out a more intuitive way to accomplish disk copying. They eliminated the Alternate Disk just before shipping the first Macs. So the Alternate Disk didn't appear in the first version of the System software, but it *did* show up in the owner's manuals and the original Macintosh Guided Tour disks.

ANSWER MAN

Powering up the Color Classic

Q: ***Help! I just got a used Color Classic, and it seems to be dead. When I turn on the main power switch, nothing happens. What's going on?***

A: You say you turned on the main power switch? On the back on the Mac?

Q: ***Yes!***

A: Relax. Your Mac is doing exactly what it's supposed to do. On a Color Classic and the LC/Performa 500 series, the power switch ***doesn't*** turn on the Mac; it simply delivers power from the electrical outlet to the computer. To actually power up the machine, you have to use the Power key on the keyboard, which now acts as the Classic's on/off switch. You press it once to turn the machine on and once to turn it off.

goosed-up 33 MHz and can handle up to 36MB of memory — but, alas, was sold only in Asia.)

The Color Classic was briefly marketed as the all-but-forgotten Performa 250. It was also the noble ancestor, by the way, of the LC 520 (described later in this chapter) and the entire line of inexpensive, color, educational-targeted, easily upgradable machines.

Price (Color Classic):	$1,390 then, $575 now
Apple code name:	Slice
On the market for:	1 year, 3 months
Processor and speed:	68030 at 16 MHz
Memory:	4MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in 512-by-384-pixel Trinitron color display with 76 dpi; 256K VRAM (can be upgraded to 512K); 1 LC-style PDS slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 401) or later

THE MAC II SERIES

The era of modular Macs — those designed with separate, detachable monitors — began in 1987 with the release of the first Mac II.

Compact Macs are endearing (and they're making a comeback; the Performa 500- and 5000-series return to the all-in-one design). Still, the two-piece design of modular Macs offers practical advantages. A modular Mac is easy to expand, for example, because you can open it easily. There's plenty of room in the case for multiple expansion cards and additional storage devices. Also, with a modular Mac, you can shop for any size and type of monitor you prefer. Finally, the modular design allows you to place a large, bulky CPU on the floor instead of on your desktop, leaving more room on the desk for large monitors and other peripherals.

Macintosh II

The Macintosh II (March 1987 to January 1990) was the first Mac built around the 68020 microprocessor. It also has a 32-bit data path, allowing it to operate roughly four times faster than a Plus. (The only other Mac with the '020 chip is the LC, introduced three years later.)

The II had a major emphasis on expandability. You could add RAM up to an unprecedented 68MB. Furthermore, the six NuBus slots (and the pop-off lid) made installing add-ons particularly easy. Except for the IIx and IIfx, no other Mac model (even the Quadras) ever offered six NuBus slots.

Like most of the early modular Macs, the Mac II has no built-in video capability. To connect a monitor to it, you must install a video card.

Price:	$6,500 then, $125 now
Apple code names:	Jonathon, Milwaukee
On the market for:	2 years, 10 months
Processor and speed:	68020 at 16 MHz
Memory:	1MB, expandable to 68MB (special 120-ns, 30-pin PAL chips and 32-Bit Enabler, required)
Equipment:	Video card required; 6 NuBus slots; FPU
System software notes:	Requires System 4.1 or later

A MAC II SECRET

Making the Mac II 32-bit clean

The Mac II itself does not support 32-bit addressing, a feature you need to use more than 8MB of RAM. But you can endow it with 32-bit addressing capabilities; see the earlier Secret, "Making the SE/30 32-bit clean."

Note, however, that the original Mac II, with its 800K disk drive, can't use more than 8MB of RAM, even *with* the 32-Bit Enabler (or its predecessor, Mode 32)! To use more than 8MB of RAM at all, you must upgrade the Mac II by purchasing Apple's SuperDrive/ROM upgrade. This upgrade (if you can still find it) adds a PMMU chip (for virtual memory), a high-density disk drive, and new ROM chips to the Mac.

Macintosh IIx

Released in September 1988, the IIx (see Figure 12-5) was the first modular Mac equipped with a 68030 microprocessor and an FPU. The use of the '030 instead of the '020 chip makes the IIx about 15 percent faster than the Mac II.

On the IIx, a SuperDrive was standard (instead of an option, as on the Mac II). The IIx also offers better memory-expansion possibilities than the II; RAM can be boosted to 128MB instead of 68MB. For notes that also apply to the IIx, see "Mac II Secrets" earlier in this chapter.

Price:	$9,300 then, $250 now
Apple code name:	Spock
On the market for:	2 years, 1 month
Processor and speed:	68030 at 16 MHz
Memory:	1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)
Equipment:	Video card required; 6 NuBus slots; FPU
System software notes:	Requires System 6.0.0 or later

Macintosh IIfx

The IIfx debuted in March 1990. Dubbed "wicked fast" by Apple, it reigned as the top-of-the-line speed-demon Mac until the introduction of the Quadra in 1991. The IIfx is housed in the same larger-size case as the original Mac II (see Figure 12-5).

Figure 12-5
The Mac II's big, boxy chassis is the same as that of the IIx and IIfx.



Though it employs the same 68030 microprocessor used in previous models, the IIfx runs at a faster clock speed — 40 MHz. That made the IIfx the first great choice for high-end applications: scientific data analysis, commercial publishing, multimedia production, 3-D animation, and so on. Also contributing to the IIfx's speed is its built-in 32K static RAM cache, which stores the processor's most frequently used instructions.

The IIfx is notable to us, by the way, because it's one of many dramatic examples of price deflation; a Mac IIfx bought only six years ago is today worth only *four percent* of its original $10,000 price!

Price:	$10,000 then, $400 now
Apple code names:	F-16, Stealth, Blackbird
On the market for:	2 years, 1 month
Processor and speed:	68030 at 40 MHz
Memory:	1MB, expandable to 128MB (80-ns, nonstandard notched 64-pin DRAM chips required)
Equipment:	Requires video card; 6 NuBus slots, 1 Processor Direct Slot; FPU; SCSI chain requires special, 200-ohm black terminator
System software notes:	Requires System 6.0.5 or later

A IIFX SECRET

Brought to you by . . .

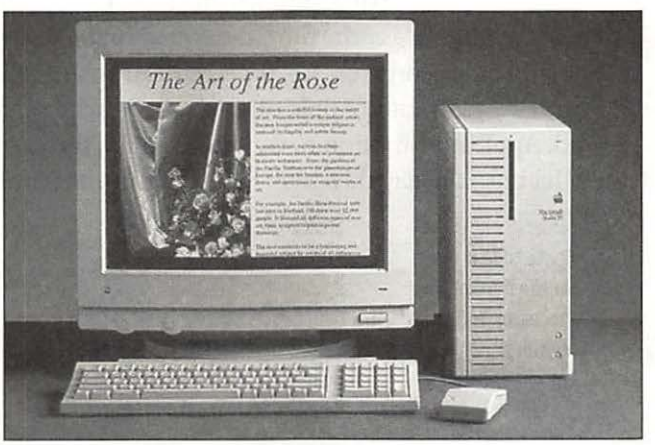
A digitized color picture of the IIfx's design team awaits your discovery. To see the picture, set the Mac's internal clock to 3/19/90, and set the monitor to 256 colors. Then restart your computer. As it restarts, hold down four keys: ⌘, Option, and the letters F and X.

Macintosh IIcx

Six months after the release of the IIx, Apple introduced the IIcx. The two machines are very similar, but the IIcx has a quieter fan and a smaller, more compact design. (It's one of the few models that can be set either vertically or horizontally on a desk, as shown in Figure 12-6.) The IIcx offers three NuBus expansion slots instead of the IIx's six.

The IIcx was widely hailed as a breakthrough computer because it was

Figure 12-6
The compact desktop case of the Quadra 700 (the IIcx and IIci design is very similar).



designed for manufacture — that is, for the first time, components were designed with ease of factory assembly in mind. Its parts snap easily into the IIcx case without screws or solder. (In a famous demonstration, then Apple Vice President Jean-Louis Gassée assembled a IIcx in about a minute in front of a huge crowd at a Macworld Expo.) As a result, the IIcx was less expensive to build and easier to repair.

Apple was rewarded for its thoughtfulness by great enthusiasm from the Mac community, many members of which thought that the IIcx was one of the best-designed Macs ever. Great gnashing of teeth followed when the IIcx was discontinued at the height of its popularity.

Price:	$5,300 then, $250 now
Apple code name:	Aurora
On the market for:	2 years
Processor and speed:	68030 at 16 MHz
Memory:	1MB, expandable to 128MB (120-ns, 30-pin DRAM chips required)
Equipment:	Video card required; 3 NuBus slots; FPU
System software notes:	Requires System 6.0.3 or later
Note:	Requires 32-Bit Enabler to use more than 8MB of RAM

Macintosh IIci

When it was released in September 1989, the IIci was the fastest Macintosh computer ever made. Physically, the IIci looks exactly like the other three-slotted modular Mac, the IIcx (see Figure 12-6). But the IIci's processor runs at 25 MHz instead of 16, giving it enough horsepower for almost any kind of work (short of 3-D renderings and scientific modeling), including color graphics and QuickTime movies.

Rumor was that the *i* in the name stood for *integrated video* — it was the first Macintosh that didn't require you to buy a $400 video card to make a monitor work. Instead, the IIci has video circuitry built right in, resulting in a new port on the back panel into which you can plug a monitor directly.

The IIci can hold a *cache card* (described in the next section) that increases the machine's speed by up to 20 percent. At first, the cache card was a $300 add-on. Two years later, Apple offered a free cache card for a limited time. In the end, Apple's promotion never did wrap up; the cache card came free with every IIci until the day this model was discontinued in 1993.

Price:	$8,800 then, $325 now
Apple code names:	Aurora II, Pacific
On the market for:	2 years
Processor and speed:	68030 at 25 MHz
Memory:	1MB, expandable to 128MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in color video support; 3 NuBus slots; FPU
System software notes:	Requires System 6.0.4 or later

IICI SECRETS

Maximizing the IIci's memory

To an extent, you can crank a speed boost out of your IIci exactly as you can with a IIsi (see the "Speeding up the IIsi" Secret later). The speed boost won't be as great, however, and the trick works only if your IIci has 5MB of RAM.

As with the IIsi, if you crank up your Disk Cache to 768K, you may see some improvement in the machine's speed. The fastest option of all, of course, is to use a video card instead of the built-in video option.

See the IIci design team

To see a full-color picture of the IIci's design team, change the date on the Mac's internal clock to 9/20/89 and set your monitor to 8-bit (256) color. Restart the Mac while pressing four keys: ⌘, Option, letter C, and letter I.

Macintosh IIsi

The inexpensive IIsi (born in November 1990) was based on a 68030 chip running at 20 MHz. This machine was the first in the II-series to have at least 1MB of RAM soldered onto the main logic board. And it was the first Mac — along with the LC — to include built-in circuitry for recording your own sounds. You can plug the included microphone into the sound input port.

As with most subsequent models, you don't have to install a separate video card to hook a monitor to the IIsi. All these features fit into the slimmest, most elegant gray plastic case ever — a low-standing shape that Apple called the "pizza-box" design (see Figure 12-7).

ANSWER MAN

SIMMetry

Q: ***Why can you add SIMMs to an LC or Classic in groups of two but have to install four SIMMs at a time in an SE/30, IIsi, IIci, and IIfx?***

A: The answer has to do with the way information is transferred to and from your SIMMs. Each individual SIMM can accept or send out only 8 bits of memory at a time. Because the LC and Classic's processors gulp down data in chunks of 16 bits each, they need to grab data from two SIMMs at a time (2 x 8 = 16).

On the other hand, the processors of the SE/30, IIsi, IIci, and IIfx access data in chunks of 32 bits each. Therefore, these processors have to slurp information from four SIMMs at a time to fill the 32-bit data path.

Q: ***OK, so how come you have to add only one SIMM to the LC III, Quadra 800, and Centris models?***

A: Those Macs use larger 72-pin SIMMs. These special chips can send and receive data 32 bits at a time, so only one SIMM is needed to accommodate the Mac's data path.

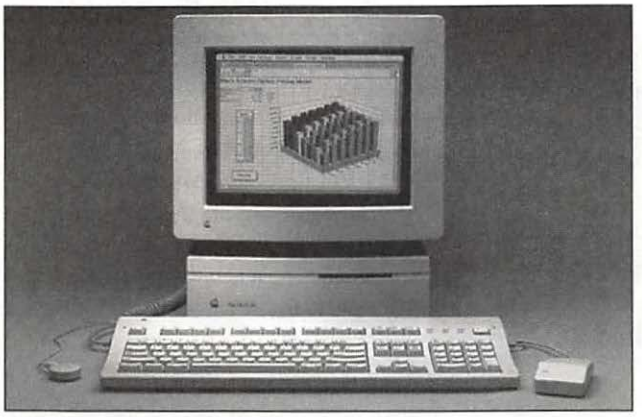
Q: ***I'm with you so far. But that doesn't explain why some Power Macs go back to requiring SIMMs in pairs, even though they're 72-pin SIMMs!***

A: Ahh. That's because certain PowerPC models have a data path that's twice as wide — 64 bits wide, which is four times wider than the LC or Classic. So a Power Macintosh can gulp down data from two 72-pin chips simultaneously.

Q: ***So then how do you explain the fact that my Power Mac 7200 can be upgraded by one DIMM at a time?***

A: That's because the newer 168-pin DIMMs send data at twice the rate of the old 72-pin SIMMs. So, once again, a single memory module fills the Mac's data path.

Figure 12-7
The slimline IIsi case design, ancestor of Macs like the Quadra 630.



Price:	$3,800 then, $250 now
Apple code names:	Ericson, Raffica, Oceanic, Ray Ban
On the market for:	2 years, 5 months
Processor and speed:	68030 at 20 MHz
Memory:	1MB, expandable to 65MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in 256-color support, using System memory; 1 slot (with adapter, can hold NuBus or 030 Direct cards); FPU optional
System software notes:	Requires System 6.0.6 or later

IISI SECRETS

IIsi sound woes

The IIsi's sound output has a nasty habit of momentarily dropping out without warning. The chronic problem involves a faulty contact between the computer's speaker and the motherboard. You can sometimes fix the problem — at least temporarily — by opening the Sound control panel, dragging the volume slider bar down to zero, and then resetting the volume to the level you want.

For a longer-term fix, open the IIsi's case, clean the contacts between the speaker and the logic board, and replug the speaker cable. Alternatively, simply plug an external speaker into the speaker jack on the back of the IIsi. Because this sound-output jack has nothing to do with the speaker, the sound is always clean and crisp.

Speeding up the IIsi

Most Macs that don't need a video card have a built-in video memory chip (VRAM). The IIsi also has built-in video support — but instead of having a dedicated memory chip, the IIsi uses *system* RAM to handle display tasks. As a result, the IIsi gets *much* slower when your monitor is set to show colors — as much as 60 percent slower.

Here's the famous Secret: You can get a huge speed boost from your IIsi by setting its *Disk Cache* (see Chapter 8) to 768K!

The reason: The IIsi has 1MB of RAM soldered onto the main circuit board, plus whatever SIMMs are in its RAM slots. The computer uses that soldered-on RAM both for video RAM and for the Disk Cache. If there's any RAM left over from that 1MB, your programs try to use it — but they'll be much slower than they would be if they used RAM in the SIMM sockets. By filling that soldered-on RAM with an extra-large Disk Cache, you force your programs to use the memory in the SIMM sockets. Thus, you avoid the slowdown caused by the IIsi's internal video feature.

A video card, of course, adds even more speed. The IIsi then won't have to rely on the slower built-in memory for video at all.

Macintosh IIvx (Performa 600), IIvi

The IIvx, released in October 1992, was the last member of the Mac II series. Its price was similar to that of the discontinued IIci; interestingly, so was its speed, despite the fact that the IIvx's processor runs at 32 MHz and the IIci's runs at 25 MHz. The IIvx loses its speed advantage because of the system bus speed: The IIvx pushes information through the processor at only 16 MHz, compared with the IIci's 25 MHz. (See Figure 12-8.)

The IIvx's new twist: It was the first Mac to come with a built-in CD-ROM-drive option. Like the IIfx, the IIvx was equipped with 32K of cache memory to give its performance an extra boost. A lower-speed IIvx — without the cache or math coprocessor — was sold as the Performa 600.

After getting rave reviews in the Macintosh trade press, the IIvx — outpriced and outperformed by the Centris machines — was discontinued by Apple less than a year later. Thousands of buyers felt burned, despite the fact that the IIvx was (and is) a solid, flexible performer.

The IIvi, a IIvx that runs at half the clock speed, was never sold in the United States.



Figure 12-8
The IIvx case (right) was the harbinger of the ventilation-hole look, also used for such Macs as the IIvi, Centris 650, and Power Macintosh 7100. At left: the big, low-slung case of the "6" series — the Quadra/Centris 610, Power Mac 6100, Performa 6115, and so on.

Price:	$2,950 then, $400 now
Apple code name:	Brazil
On the market for:	11 months
Processor and speed:	68030 at 32 MHz
Memory:	4MB, expandable to 68MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); 3 NuBus slots; cache slot; FPU
System software notes:	Requires System 7.1 (with Enabler 001) or later

THE LC SERIES

LC originally stood for *low-cost color.* It wasn't exactly a powerhouse computer, but it was dirt cheap, and that's all that mattered to the thousands who snapped up this slim machine to make it one of Apple's biggest hits.

Over time, LC has come to be the educational line. Indeed, today you can buy LC computers only through schools and universities. Still, the line became more and more powerful, finally offering Quadra and then PowerPC power at the same low LC prices.

Macintosh LC

The LC was introduced in October 1990 as the lowest-cost color-capable Macintosh. Apple intentionally scaled back some features that were present in the II-series — eliminating all but one expansion slot, for example — to keep the size and cost down and to attract buyers who wanted color capability on a modest budget. The strategy worked. The LC quickly become one of Apple's best-selling computers; more than 500,000 were sold in the first year.

The LC, like the Mac II, is built around the 68020 microprocessor. That makes it about twice as fast as an SE or Classic but slower than most other Macs. (It also means no virtual memory.) The LC was discontinued in 1992, having been replaced by the LC II and III.

Price:	$2,500 then, $150 now
Apple code name:	Elsie
On the market for:	1 year, 5 months
Processor and speed:	68020 at 16 MHz
Memory:	2MB, expandable to 10MB (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (256K VRAM, expandable to 512K); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 6.0.6 or later

AN LC SECRET

The LC-series power key

The large rectangular power key on the LC series doesn't function as a power key; it can't turn the LC on or off. Unless, of course, you buy a PowerKey (about $80), which lets you turn on your Mac *and* any attached devices by pushing that button.

Meanwhile, you still use the power key to serve as the Reset or Interrupt switch, as on many future models: Press Control-⌘-Power to reset the Mac in the event of a crash or freeze, and ⌘-Shift-Power as the LC's Interrupt switch. (See Chapter 7 for more on the Reset and Interrupt switches.)

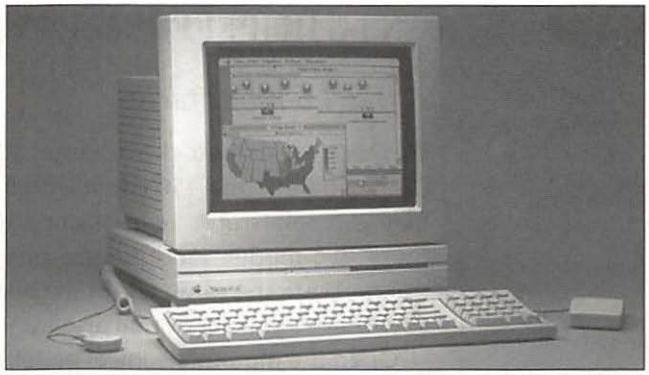
Macintosh LC II (Performa 400-430)

The LC II, introduced in March 1992, was destined to be a short-lived Mac model (see Figure 12-9). Apple replaced the LC's 68020 microprocessor with the faster 68030. But Apple retained the 16-bit data bus, limiting the computer's capability to take advantage of the extra processing power. The result: an upgraded computer with almost no improvement in speed.

The only practical difference between the LC and LC II is that the latter can use virtual memory (because it includes a PMMU on the '030 chip). The LC II's memory, however, still is expandable only to 10MB. The LC II lasted on the market only about a year before being displaced by the LC III.

The LC II also was sold as the Performa 400. With a built-in modem, preinstalled software, and monitor, it was called the Performa 405, 410, or 430, depending on the hard-drive size.

Figure 12-9
The original pizza-box LC I, II, and III, later inherited by the Performa 400 through 467.



Price:	$1,240 then, $250 now
Apple code name:	Foster Farms
On the market for:	1 year
Processor and speed:	68030 at 16 MHz
Memory:	4MB, expandable to 10MB by installing 12MB and wasting 2 (100-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (256K VRAM, expandable to 512K); 1 Processor Direct Slot; FPU
System software notes:	Requires System 6.0.8 or later

Macintosh LC III (Performa 450, 460, 466, 467)

Introduced in February 1993, the LC III (Performa 450) is what the LC II should have been: a significant improvement from the LC. The LC III's '030 chip runs at 25 MHz, making this model twice as fast as the LC or LC II. The LC III also came with more video RAM (512K) to support larger color monitors without additional memory. Its price and expandability made it a perfect entry-level Mac. (On the other hand, its requirement for a new kind of RAM chip — the 72-pin style, popular on IBM clones — irritated some owners of previous Macs, who couldn't use their previously purchased SIMMs.)

The Performa 460, 466, and 467 are identical to the LC III (see Figure 12-9) — same slim shape, same video possibilities — except that they're faster. They run at 33 MHz instead of 25.

Price:	$750 then, $300 now
Apple code name:	Vail, Elsie III
On the market for:	1 year
Processor and speed:	68030 at 25 MHz
Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (256K VRAM, expandable to 768K); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 003) or later

AN LC III (PERFORMA 450) SECRET

A free 16-bit miracle

We mentioned this trick in Chapter 10, but it's too good not to repeat here. The LC III and Performa 450 come with 512K of video memory — enough to display 256 colors on-screen at once. Nice, but not what you'd call lifelike. But these two models (and others, such as the Duo 270c and PowerBook 540c) can dedicate the same VRAM to giving you more realistic color, even though you'll have a smaller overall display.

Open the Monitors control panel; click Options. Select "640 by 400 Hi-Res." Restart the Mac. The picture is shorter (you've lost 80 pixels vertically), but now you have super-vivid 16-bit color. Unfortunately, Apple apparently removed this option from System 7.5.3; maybe it's time for a letter-writing campaign.

Macintosh LC 475 (Performa 475 and 476)

See "Macintosh Quadra 605 (LC 475, Performa 475 – 476)," later in this chapter. Same Mac, different names.

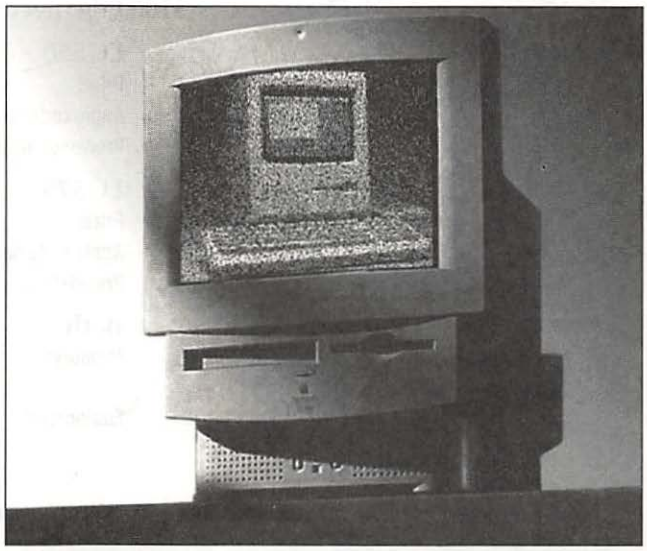
Macintosh LC 520

In June 1993, with this strange-looking, one-piece hybrid of the LC III and Color Classic, Apple introduced a peculiar new shape for its Macs (see Figure 12-10). It's nearly as big as (and contains the same electronics as) an LC III with a 14-inch monitor, but it's constructed as a one-piece unit, complete with juicy multimedia features like a built-in CD-ROM drive, microphone built into the monitor, and — unlike any Mac before it — stereo phase-shift speakers.

Like all LC models, the 520 wasn't available through computer or electronics stores; it was offered exclusively to schools. The new package proved to be such a hit that Apple replaced the 520 with faster, but identical-looking models, only seven months later.

Price:	$2,000 then, $525 now
On the market for:	7 months
Processor and speed:	68030 at 25 MHz
Memory:	5MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in, 14" Trinitron color monitor; 1 Processor Direct Slot; no FPU
System software notes:	Requires System 7.1 (with Enabler 403) or later

Figure 12-10
The case for the "5" series: the LC 520, 550, 575, 580; Performas 550 through 588; and so on. Picture it jet black, and you'll have the short-lived Macintosh TV.



Macintosh LC 550 and 575 (Performa 550 – 578)

The popularity of the 520 — a result of its low cost and multimedia prowess — led Apple to follow it up with two speedier sequels. In February 1994, these one-piece, stereo-speakered, 14-inch-Trinitronned, built-in-CD-ROMmed Macs made their debut (see Figure 12-10).

The only difference between the LC 550 and the LC 575 is the speed; the latter offers a potent 68LC040 chip (the same chip used in the Performa 630 series) instead of '030. These relatively inexpensive machines proved once and for all that the LC designation doesn't mean underpowered. Both machines were enthusiastically received by Mac fans, who appreciated their

MACINTOSH SECRET

THE LC 550'S SECRET PARTITION

If Apple's programmers, in creating the Performa series, were aiming to make idiot-proof computers, they were serious about it. The Performa 550 is an amazing case in point. When you run the included Apple Backup program (see Chapter 15), you get a little surprise that you didn't count on: a *hidden partition* on your hard drive!

This invisible chunk of hard drive space contains a miniature, invisible System Folder. Apple's internal memo explains it this way:

"When a system problem (one that prevents the Performa from booting) is detected, a [dialog box] informs the user of a system problem. The user can choose to fix the problem manually or to reinstall software from the backup partition's Mini System Folder."

If you choose to reinstall your System software, you get the wristwatch cursor for a moment while the miniature System Folder is silently copied to your main hard-drive partition. The Performa restarts from the restored hard drive, and the invisible system partition disappears once again.

We got a Performa team member to admit that this kind of sneaky save-the-users-from-themselves approach may well be adopted in other Performa models.

Who knows what goodness lurks in the hearts of men?

crisp color screens, speedy performance, rich sound, and upgradability to Power Macs down the line.

Apple ensured wider access to a good thing by selling these same computers as Performa models, bundled with CD-ROM discs, software, and keyboard. The Performa 550 is identical to the LC 550. The 560 was the "*Money* magazine edition" of the 550 and came bundled with financial-management software; the 577 and 578 were simply the LC 575 with additional RAM and hard drive space.

All 575 family members have a special internal connector that Apple calls the communications slot. It's designed to accept either of two cards from Apple: a $100 Ethernet card or a high-speed fax/modem card.

LC 550

Price:	$1,200 then, $600 now
Apple code name:	Hook
Processor and speed:	68030 at 33 MHz

LC 575

Price:	$1,700 then, $750 now
Apple code name:	Optimus
Processor and speed:	68LC040 at 33 MHz

Both

Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in, 14" Trinitron color monitor (512K VRAM, expandable to 1MB); 1 Processor Direct Slot; no FPU
System software notes:	Requires System 7.1 (with Enabler 065) or later

Macintosh LC 580 (Performa 580, 588)

Take the all-in-one design of an LC 578 (see Figure 12-10): install System 7.5; replace the SCSI hard drive with an IDE drive (see Chapter 8) that holds half a gigabyte; add TV input and output jacks (the output jack operates in "mirror mode" only, so that the monitor and the external TV show the same thing) — and you have the LC 580. The Performa 580, of course, is the same computer with the usual home-computer software bundle and modem.

Price:	$1,200, $775 now
Processor and speed:	68LC040 at 33 MHz
Memory:	8MB, expandable to 52MB
Equipment:	500MB IDE hard drive, communications slot, built-in microphone

LC 630

See "Macintosh Quadra 630 (LC 630, Performa 630 — 638)," later in this chapter. These Macs are identical.

LC 630 DOS Compatible (Performa 640)

One of many spin-offs from the Quadra 630, described later, this model was introduced in May 1995 (see Figure 12-12). It's equipped just like a 631CD, but its PDS expansion slot has been fitted with an Apple DOS Compatibility Card containing a 66-MHz 486DX2 microprocessor. With this set up, you can switch between the Macintosh operating system and Windows (or DOS). Of course, having the PDS filled means you can't install any other options that would require plugging into the PDS (such as an accelerated video card). The Performa 640 version comes with a 15-inch monitor, modem, and the usual software bundle.

Price:	$2,200, $1,400 now
Processor and speed:	68LC040 at 33 MHz and 66-MHz 486DX2 on PDS card
Memory:	8MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (nonexpandable 1MB VRAM); 1 LC-style PDS slot; 1 Apple Video System slot; 1 communications slot; built-in CD-ROM

Macintosh TV

This jet-black, weird-looking, one-piece hybrid machine is . . . a computer! It's a CD player! It's a *television?*

All of the above. (It resembles the LC 500-series enough that we included it here in our LC descriptions; see Figure 12-10.) Everything's black: the TV, the mouse, the keyboard, and the *remote control.* With a video source plugged into the back of the machine (be it a VCR, cable, or camcorder), this Mac suddenly becomes a 14-inch stereo TV. The remote control handles both channel-changing and the CD player. You press a key on the keyboard to switch the Mac between showing your work and showing the TV signal.

You can capture single frames (from whatever you're watching) as PICT graphics files. You can't, alas, watch TV in one little window as you work on a

spreadsheet in another (although you can hear the TV *sound* while you work). Neither can you capture incoming TV as a QuickTime movie. Yet, this Mac was an interesting and, in many ways, practical 40-pound piece of electronics. Perhaps because of its limited availability (250 stores) and limited expansion options, the Mac TV was quietly discontinued only a few months after its October 1993 introduction.

Price:	$2,000 (including keyboard) then, $525 now
Apple code name:	LD50
On the market for:	5 months
Processor and speed:	68030 at 32MHz
Memory:	5MB, expandable to 8MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in, 14", 69-dpi monitor (8-bit Mac, 16-bit TV); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 404) or later

THE CENTRIS/QUADRA LINE

Apple's early-'90s, mainstream business Macs were built around two variations of the Motorola 68040 processor: the regular '040 and the 68LC040, a less expensive chip that lacks an FPU chip. (We like to think that the *LC* stands for *lacking chip.*)

Macintosh Quadra 605 (LC 475, Performa 475 – 476)

Figure 12-11
Take one LC case, lose the horizontal front- panel groove, and you get the sleek case of the Quadra 605 (also known as the LC 475 and the Performas 475/476).



Apple's October 1993 shakeup introduced one new Mac with four different names: Quadra 605, LC 475, and Performa 475 or 476 (see Figure 12-11). To many people, this was a revolutionary Mac. Inside its neat, slim case is a very fast processor, the likes of which would have cost $10,000 three years earlier. Unbelievably, this Mac cost less than $1,000.

That chip is the 68LC040. With its single, LC III-style Processor Direct Slot (PDS), which accepts boards designed for all LC models, the 9-pound 605 is like an '040-based LCIII: sleek, fast, and pretty.

Price:	$900 then, $400 now
Apple code name:	Aladdin, Primus
Processor and speed:	68LC040 at 25 MHz
Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); 1 Processor Direct Slot; FPU optional
System software notes:	Requires System 7.1 (with Enabler 065) or later

Macintosh Quadra 610 (Centris 610)

The Centris 610 was introduced in February 1993. It introduced the broad, low-slung, CD-ROM-ready case that became a staple of the Macintosh model line (see Figure 12-8). It also introduced one heckuva strange power button. Instead of turning the machine on with the keyboard or a back-panel switch, owners of this design (and all subsequent Macs based on it) must use a protruding button/nub on the *front* panel to turn the machine on *and* off.

The Centris 610 was built around the 68LC040 (no FPU). In October 1993, this model was renamed the Quadra 610 and (except for the 8/160 model) blessed with a faster 25 MHz processor *with* the FPU. Neither 610 can take memory chips in sizes less than 4MB each.

The 610 doesn't have a ready-to-use NuBus slot; by adding a $100 adapter, you can install either one 7-inch NuBus board or one PDS board. The Centris 610 can use up to 68MB of RAM. Because the Centris models were expected to find homes in corporate offices, high-speed Ethernet circuitry is available.

Price:	$1700 then, $525 now (Quadra)
Apple code name:	Speedbump 610
On the market for:	8 months
Processor and speed:	68040 at 25 MHz (Centris: 68LC040 at 20 MHz)
Memory:	4MB, expandable to 68MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); with adapter; slot can hold a 7-inch NuBus board or PDS board; FPU
System software notes:	Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 610 DOS Compatible

In February 1994, Apple released a special edition of the Quadra 610. From the outside, it looks exactly the same as previous 610s (see Figure 12-8) — except for the intriguing words *DOS Compatible* painted on the nameplate. Indeed, this model has Intel inside, a PDS card containing IBM-clone circuitry. By pressing ⌘-Return, you make the Mac screen fade smoothly to black; fading in is the hostile world of DOS, right there on your Mac screen. You even can run Windows at respectable speeds.

For those who have to coexist in offices with IBM compatibles, the DOS Compatible was a clever, inexpensive solution (except that it doesn't work, obviously, with IBM add-on *cards*). The 25,000 of these machines that Apple manufactured were snapped up quickly, making everybody wonder what the company was thinking when it announced, two months later, that no more would be manufactured. That gives this model the dubious honor of being the shortest-lived Mac model in Apple history. (The specs are the same as those listed for the Quadra 610, except for a higher original price tag and an additional 25-MHz Intel i486 processor.)

Macintosh Quadra 630 (LC 630, Performa 630 – 638)

Released in August 1994, this small, attractive desktop Mac represented new highs in speed and multimedia flexibility — and new lows in pricing. Shortly after it was released, it became one of Apple's top-selling Macs (see Figure 12-12).

Figure 12-12
The blockbuster 630 case design. This same plastic box housed Mac models ranging from the Quadra 630 to the LC 630 to the Performa 630 through 638, as well as the PowerPC-based 6200 and 6300 lines.



The 630 has a 33 MHz '040 processor — surprisingly enough, as fast as the old Quadra 950 — and was sold as part of the Performa, Quadra, and LC families. This replacement for the Quadra 610, 650, and 660AV had three slots, each of a different type: (1) an LC-style PDS; (2) a communications slot like that found on the LC 575 (for an Ethernet card or — as bundled with the Performa models — a fax/modem card); (3) a video slot for either the $150

Apple Video System card (which lets you record video as a quarter-screen, 10-frames-per-second, 16-bit-color QuickTime movie), or a $250 Apple TV/Video System card (which offers a TV tuner and cable hookup for watching TV in a resizable window, as well as QuickTime recording). You can also hook up the 630 to the $300 Apple Presentation System, a converter card that can send the Mac's image to a TV or VCR.

All this for $1,200? Some of the cost-cutting strategies were apparent. There's only one SIMM socket for memory; only one keyboard/mouse jack (as with subsequent models); you can't expand the 1MB of video RAM; the 630 can only play back, not record, stereo sound; and the internal hard drive introduced the cheaper IDE format, as described in Chapter 8.

Nonetheless, the 630's slide-out motherboard, high speed/price ratio, easy upgradability to PowerPC, and distinctive front panel (which has volume buttons, a headphone connector, and a tiny receiver panel for the TV tuner's remote control) — added up to a remarkable, and remarkably popular, machine.

The Quadra and Performa versions of these machines aren't exact equivalents, by the way. The original Quadra 630 has a full 68040 chip, whereas all the Performa models are equipped with the 68LC040, without an FPU. The letters CD at the end of a model number mean it's equipped with an internal double-speed CD-ROM drive.

Price:	$1,280 then, $500 now. (Performa with CD-ROM and monitor: $2,250 then, $750 now)
Apple code name:	Crusader
Processor and speed:	68LC040 at 33 MHz (Quadra: full 68040)
Memory:	4MB, expandable to 36MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (nonexpandable 1MB VRAM); 1 LC-style PDS slot; FPU (in Quadra model); 1 Apple Video System slot; 1 communications slot; optional built-in CD-ROM
System software notes:	Requires System 7.1 (with Enabler) or later

Macintosh Quadra 650 (Centris 650)

The Centris 650 (born in February 1993), like the IIvx, is a IIcx-size, tallish gray box with a bizarre set of perforations on the lower front panel (see Figure 12-8).

It's bigger than the 610, yes, but also more expandable, thanks to its three NuBus slots. The 650 is faster, too, built on a quicker '040 chip, giving it a natural niche at the high end of Apple's 1993 product line. All but the base-model 650s include a math coprocessor (missing on the 610). The 650 offers roughly the same speed as the discontinued Quadra 700; the Quadra 650, which it was dubbed in October 1993, is faster still, thanks to its 33 MHz chip.

Like the 610, the 650 has an internal compartment that can hold an optional CD-ROM player, hard drive, or other storage device. (Also like the 610, 4MB RAM chips are the smallest denomination you can install.) All but the base-model 650s include Ethernet capability.

Price:	$2,700 then, $700 now
Apple code name:	Speedbump 650
On the market for:	1 year
Processor and speed:	68040 at 33 MHz (Centris = 25MHz)
Memory:	4MB, expandable to 136MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (512K VRAM, expandable to 1MB); 3 NuBus slots; 1 Processor Direct Slot (adding a PDS board, however, covers one of the NuBus slots); FPU
System software notes:	Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 700

The Quadra 700, released in October 1991, was the first Macintosh built around the 68040 chip — and, with the Quadra 900, was the first to displace the IIfx as the top-of-the-line Mac. Both the Quadra 700 and 900 run about 20 percent faster than a IIfx. The Quadras were the first Macs with built-in support for Ethernet networking.

The original Quadras look different from other modular Macs; they have a tower-style case designed to stand upright and to be placed below or beside a desk. The 700, however, is the size of a IIcx (see Figure 12-6). Therefore, it's small enough to be placed *on* a desk and can be used in a horizontal orientation.

Price:	$6,000 then, $650 now
Apple code names:	Shadow, IIce
On the market for:	1 year, 5 months
Processor and speed:	68040 at 25 MHz
Memory:	4MB, expandable to 20MB — or, with sometimes-problematic 16MB chips, to 64MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in 256-color video support (512K, expandable to 2MB); 2 NuBus slots; one Processor Direct Slot; FPU
System software notes:	Requires System 7.0.1 or later

A QUADRA 700 SECRET

Throwing away your RAM

To boost a Quadra 700 to its maximum RAM (64MB), you need four 16MB SIMMs. When you add these to the 4MB soldered onto the logic board, you get 68MB. But the Quadra 700 can address only 64MB, so the last 4MB are wasted.

MACINTOSH SECRET

NAME THAT PERFORMA

Apple released no fewer than eight different Performa and LC variations on the standard 630 model. The problem is that Apple's naming conventions for these models are so wildly inconsistent that it's almost impossible to distinguish which Performas do what.

The seemingly random numbering system is so confusing that Apple's own specification documents are sometimes wrong about how each model is equipped. It would be nice if there was a consistent rule like, the higher the model number, the bigger the hard drive, or something.

Abandon all such hope; it's much, much stranger than that.

The 631CD comes with 8MB of RAM, a 500MB hard drive, and a 14,400 bps fax modem, whereas the 635CD has only 4MB of RAM, a 250MB hard drive, and a 9600 bps fax modem — but it comes with a 15-inch monitor. The 636 is identical to the 635, but it comes with a 14-inch monitor, and, oh yes, it's available only to the higher-education market. The 636CD, however, is available to the general public and, of course, it has 8MB of RAM. Then there's the 637CD, which is exactly the same as the 635CD, except that it's the *Money* magazine edition, which included financial software such as Personal Record Keeper, Will Maker, Wealth Builder, and MacInTax/Tax Planner.

So, what's the 638CD? Obviously, it's a 635CD — with Apple's Video/TV Tuner card pre-installed.

Unfortunately, we're forced to admit that there's exactly one piece of logic to all of these naming conventions. As explained to us by somebody in the biz, Apple gives each consumer-electronics chain (Circuit City, The Wiz, and so on) the mostly exclusive right to one particular model. And what's the point of that? The stores can now honestly promise to beat any other store's price on that model. Not so tough — when they're the only ones carrying it!

Macintosh Quadra 800

The 800, released in February 1993 and discontinued 13 months later, was a terrific machine for the age (see Figure 12-13). It's less expandable than the 950, but it also is faster, lighter, more compact, and less expensive. Interestingly, this model can't produce 24-bit color (the "millions of colors" setting) on any monitor, no matter how much VRAM or video card you buy for it — Apple deliberately crippled this machine to enhance the attractiveness of the Quadra 900 and 950 models!

Figure 12-13
The Quadra 800 minitower design was also used for such Macs as the 840AV and the Power Macintosh 8100 and 8500.



MACINTOSH SECRET

THE 630'S REMOTE CONTROL: IT'S A SONY

If you bought the TV/Video System card for your 630 Mac, you also got a tiny remote-control unit. It can turn the Mac on or off, mute the sound, change TV channels, change the video display size, and control the CD-ROM drive (play, stop, eject, pause, fast-forward, and reverse on audio discs).

This remote control is a Sony (model RMC-A1, as it happens). Therefore, if you have a Sony TV in the same room as your Mac, you may run into problems — turning off the TV, for example, will also turn off your Mac!

You have no choice except to (a) disable the Apple remote, or (b) move the TV.

Just be grateful the thing doesn't operate your garage-door opener.

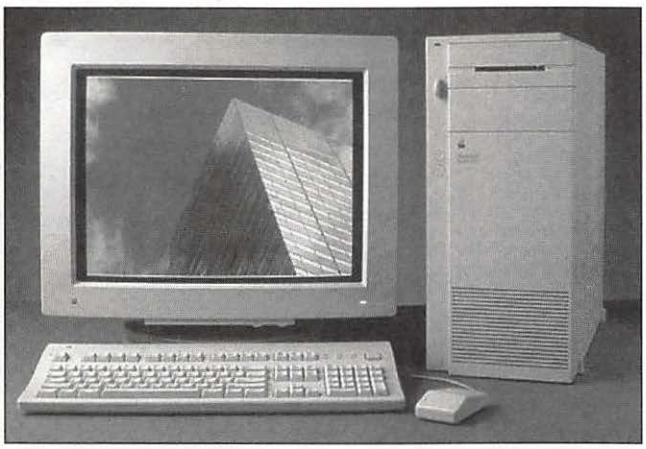
The 800 also offers *memory interleaving*, whereby the Mac can access two SIMMs of the same size and speed at the same time. (Memory interleaving also is a feature of the Centris 650.) And like other tower Macs, the 800 has two extra storage bays. Only *one* of the two extra spaces is big enough for a 51/4-inch device, such as a SyQuest or CD-ROM. The other bay can hold a smaller appliance, such as a hard drive or one of those new minicartridge systems.

Price:	$4,700 then, $850 now
On the market for:	13 months
Processor and speed:	68040 at 33MHz
Memory:	8MB, expandable to 146MB (60-ns, 72-pin DRAM chips required)
SIMM slots:	Four slots that accept 72-pin SIMMs
Equipment:	Built-in video support (512K VRAM, expandable to 1MB); 3 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet
System software notes:	Requires System 7.1 (with Enabler 040) or later

Macintosh Quadra 900

The huge, tower-design Quadra 900 (see Figure 12-14) was released simultaneously with the Quadra 700 at the beginning of 1992. Like most of the Quadras, it has built-in Ethernet and video support. The 900 had the most expandable memory of any Macintosh before it; you can boost it to 256MB by plugging SIMMs of 16MB each into each of the 16 slots. It also has room for up to four internal hard drives (or other storage devices).

Figure 12-14
The full-size tower of the Quadra 900 was also the enclosure for other "9-" series Macs: the 950, Power Macintosh 9500, and so on.



Along with the usual mouse and keyboard, the 900 came with one piece of equipment alien to all previous Macs: a key. The key-lock control can be set to Off, On, and Secure. When the key-lock is set to Off, the machine can't be powered up. In Secure mode, the ADB port (and, thus, the mouse and keyboard) and the floppy disk drive are

disabled, presumably for use when the Quadra is doing duty as a dedicated file server.

Price:	$8,500 then, $650 now
Apple code names:	Darwin, Ilex
On the market for:	6 months
Processor and speed:	68040 at 25 MHz
Memory:	4MB, expandable to 256MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (1MB VRAM, expandable to 2MB); 5 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet
System software notes:	Requires System 7.0.1 or later

QUADRA 900 SECRETS

Upgrading the 900

The upgrade to the Quadra 950 (no longer available) sped the 900's performance. But you can speed the 900 just as much by adding an inexpensive cache card instead. You can buy a card for the Quadra 900 for less than $300.

The Quadra 900 and SCSI termination

On most Macintosh models, an internal SCSI device should be terminated, but the Quadra 900 is an exception to the rule. Internal SCSI devices connected to a Quadra 900 should be *unterminated* because the 900's internal bus already is terminated on the motherboard and on the internal cable. The *external* SCSI jack on the Quadra 900, however, is just like that of any other Mac. (For more on SCSI and termination, see Chapter 30.)

Macintosh Quadra 950

The hulking Quadra 950, which replaced the identical-looking 900 after only six months, weighs more than 36 pounds *without* a monitor (see Figure 12-14). Running at 33 MHz, it runs applications 30 percent faster than the Quadra 700, and it can display 16-bit color on monitors of up to 19 inches. The 950 offered a faster hard-drive data-transfer rate than any Macintosh before it: 3,800K per second.

Price:	$6,100 then, $1,000 now
Apple code name:	Amazon
Processor and speed:	68040 at 33 MHz
Memory:	8MB, expandable to 256MB (80-ns, 30-pin DRAM chips required)
Equipment:	Built-in video (1MB VRAM, expandable to 2MB); 5 NuBus slots; 1 Processor Direct Slot; FPU; Ethernet
System software notes:	Requires System 7.0.1 or later

Macintosh Quadra (Centris) 660av, 840av

The original audiovisual duo of July 1993, the 660av and 840av, are based on the '040 chip running at 25 MHz and 40 MHz, respectively. The Quadra 660av, originally called the Centris 660av, resembles the Centris 610 in its low-slung case (see Figure 12-8). The Quadra 840av has the same towerlike case as the Quadra 800 (see Figure 12-13) and will forever rest secure in its place as the fastest non-PowerPC Macintosh ever built.

Both models introduced several redesigned components, including a new *32-bit data path* that gives all internal components direct access to the memory chips (meaning that 32-bit addressing is on all the time; see Chapter 9); an improved input/output subsystem for faster access to attached disks and storage devices; *built-in 24-bit* (840av) or 16-bit (660av) video for more lifelike colors; and *TV input and output*, which allows you to watch the Mac's video picture on a TV, or record it directly to videotape, in a variety of TV-signal outputs (NTSC, PAL [the European standard], and S-video).

Most impressive of all, however, was the new AT&T *DSP* (digital signal processor) chip in both Macs. This special chip can process huge streams of sound and video information. It makes possible a number of amazing options:

- **Speech recognition.** You speak into the microphone, and the Mac understands you. We're not talking about a Mac that takes dictation. The AV Macs recognize only certain sets of commands that have to do with using the Mac — menu commands, for example.

  Alas, subsequent (and superior) versions of the PlainTalk software were *incompatible* with these guinea-pig AV models; see Chapter 23 for details.
- **Talking.** These Macs don't just listen; they also speak words over your speaker. (Once again, see Chapter 23 for more info.)
- **Sound digitizing.** Like other models, these Macs can *digitize* (record to disk) sounds. Because of the DSP chip, however, these models and the Power Macs can record in *16-bit sound* — the same fidelity as that used by audio compact discs.
- **GeoPort.** This serial-port connector is akin to the modem port found on older Macs. Previous Macs' serial ports handled only one task at a time. But the GeoPort's speed is so great that it can, in theory, print, send a fax over the phone lines, and remain connected to a network — all from a single port. Most people, however, use the GeoPort jack only to connect the GeoPort Adapter ($100), which can impersonate a modem's chirps and squawks. See Chapter 27 for more on the GeoPort and its possibilities, including speakerphone/answering machine features.

To further complement this multimedia mogul machine, Apple introduced its first AudioVision monitor (today known as AppleVision), with stereo speakers and a built-in microphone.

All this miraculous technology carried, for some, a steep price in compatibility. Programs like Suitcase, ATM, After Dark, and most fax/modem software needed upgrades to be compatible. Perhaps worse for many people was the "sync on green" problem — the AV Macs didn't work with many standard Mac monitors. For some monitors, you could get a special cable that works with the AV (call the monitor company and find out); others couldn't be made to work at all.

Quadra 660av

Price:	$2,000 then, $675 now
Apple code name:	Tempest
On the market for:	14 months
Processor and speed:	68040 at 25 MHz
Memory:	8MB, expandable to 68MB (70-ns, 72-pin DRAM chips required)
Equipment:	Built-in 16-bit video support; 1 7" NuBus slot (requires adapter); no FPU
System software notes:	Requires System 7.1 (with Enabler 088) or later

Quadra 840av

Price:	$4,100 then, $1,200 now
Apple code name:	Cyclone
On the market for:	9 months
Processor and speed:	68040 at 40 MHz
Memory:	8MB, expandable to 128MB (60-ns, 72-pin DRAM chips required)
Equipment:	Built-in 32-bit video; 3 enhanced NuBus slots; FPU; Ethernet
System software notes:	Requires System 7.1 (with Enabler 088) or later

QUADRA AV SECRETS

FREE! Upgrade to the next Mac model!

If you bought your 660av before October 1993, you probably gurgled with jealousy at everyone who bought *after* October 1993. *You* wound up with a Centris. *They* got a Quadra. Sure, these two Macs are 100 percent identical, but nonetheless, the latecomers got Quadras!

Take heart — here's an exclusive Secret that enables you to upgrade your Centris 660av to a Quadra 660av without using a screwdriver. All you need is the *Enabler* from a Quadra 660av (Enabler 088), version *1.1 or later*. Get it from an Apple dealer or an online service. Drop the Enabler into your System Folder (remove your original Enabler) and restart. Choose "About This Macintosh" from your Apple menu. Hey, presto! Your Mac's had an identity overhaul — now you've got a *Quadra* 660av! (Changing the painted words *Centris 660av* on the front panel is your responsibility.)



The secret Apple QuickTime movie

If your AV Mac came with a CD-ROM drive, you also received a CD-ROM containing System software. This CD-ROM contains a hidden QuickTime movie of the AV development team cheering, staring at circuitry, and drinking champagne. To find it, launch a QuickTime-playing program (such as Word or Simple Player). Choose Open from the program's File menu and look on your system CD-ROM disc, inside the System Folder, inside the Preferences folder. Thar she blows!

PORTABLE MACS

Macintosh Portable

The Mac Portable, born in late 1989, was Apple's first attempt at a laptop version of the Macintosh. It failed miserably, mainly because of its weight. Though it has a laptop-style fold-down design, the Mac Portable weighs 16 pounds — as much as a compact Mac! Its excessive weight and high price — almost $7,000 — made it very unpopular.

Nevertheless, the Portable has an active-matrix LCD screen (see Chapter 14) that provides a sharp, clear image, free of ghosting. And the Portable was the forerunner of the PowerBook 100, which inherited much of the Portable's internal design.

Price:	$6,500 then, $100 now
Apple code names:	Esprit, Laguna, Malibu
On the market for:	1 year, 5 months
Processor and speed:	68000 at 16 MHz
Memory:	1MB, expandable to 9MB (special 30-ns static RAM card required)
Equipment:	Built-in, 10", black-and-white, active-matrix 640-by-400-pixel LCD screen (backlighted on later models); video-output jack for external monitor; 1 nonstandard 120-pin PDS slot; no FPU
System software notes:	Requires System 6.0.4 or later
Battery:	Lead-acid; lasts about 5 hours
Weight:	16 pounds

PowerBook 100

The PowerBook 100, born with the PowerBooks 140 and 170 in October 1991, was the low-end, budget version of the PowerBook. It is equipped with the same slower 68000 microprocessor found in the Mac Classic.

The 100 is lighter than the other early PowerBooks because it's missing a lot of features; it has no internal floppy disk drive, only a 20MB hard drive, and no sound-recording capabilities. (You could buy a $200 floppy drive that attached to the back of the PowerBook.) The case is made of lightweight plastic instead of the polycarbonate used for the other PowerBooks. The 100's sealed lead-acid battery lasts two to four hours before requiring a recharge.

Probably because of the missing components, the PowerBook 100 didn't sell well. Apple shrugged and decided to sell off as many remaining 100s as possible. It slashed the price; PowerBook 100s were selling for $900 on the West Coast and $700 on the East Coast. Suddenly the 100 was the hottest Mac ever. Soon, as Apple had hoped, the inventory was gone.

Price:	$2,500 then, $300 now
Apple code names:	Derringer, Rosebud
On the market for:	10 months
Processor and speed:	68000 at 16 MHz
Memory:	2MB, expandable to 8MB (100-ns pseudostatic RAM card required)
Equipment:	Built-in, 9", black-and-white, passive-matrix 640-by-400-pixel LCD screen; no slots; no FPU; no video-output jack
System software notes:	Requires System 7.0.1 or later — officially; 6.0.7 also runs
Battery:	Lead-acid; lasts about 2 hours
Weight:	5.1 pounds

POWERBOOK 100 SECRETS

The PowerBook 100 and System 6

Here's a good Secret to keep in mind, given the PowerBook 100's limited memory: The PowerBook 100 happens to be the only PowerBook that does not require System 7. It can run on System 6.0.7 or 6.0.8, both of which require several hundred kilobytes less memory than System 7.

Using the PowerBook 100 in SCSI mode

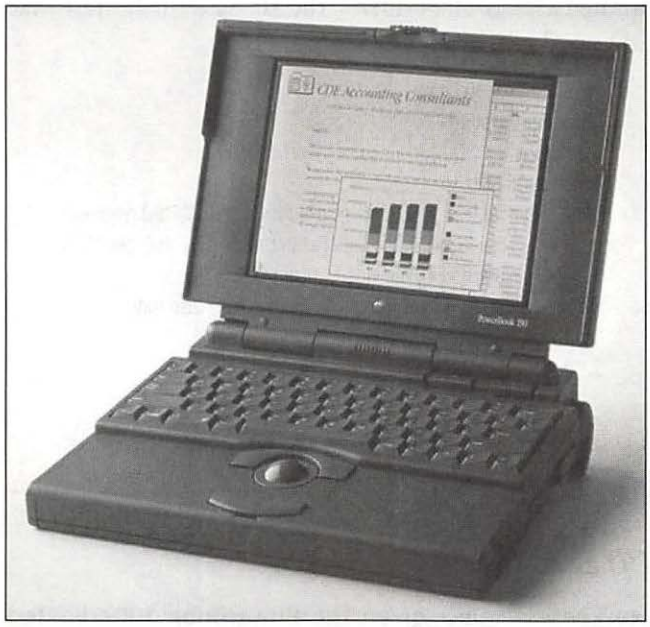
The 100 is the only first-generation PowerBook that can be used as a SCSI device. In other words, you can connect it to your desktop Mac's SCSI port and copy files to and from it as though it were an external hard drive.

SCSI Disk Mode, as this setup is called, allows you to transfer files much faster than you can with System 7's File Sharing. The PowerBook 140 and 170 both lack this feature. We've included full instructions on using a PowerBook in SCSI Disk Mode in Chapter 14.

PowerBook 140

Heavier and more powerful than the 100, the 140 was the middle of the original three PowerBook models. It's equipped with a passive-matrix screen similar to that of the 100, but the 140's screen is larger, and its dots are less dense on the screen. As a result, text is easier to read (see Figure 12-15).

Figure 12-15
The PowerBook 100-series case, used in such Macs as the PowerBook 140, 145, 150, 160, 165, 165c, 170, and 180.



Instead of a lead-acid battery, the 140 uses a NiCad battery that provides between 90 minutes and two hours of power. The 140 also has a larger trackball than the PowerBook 100 (30mm instead of 25mm), making it easier to control. Finally, the 140 can record sound (and came with a microphone), unlike the PowerBook 100.

Price:	$3,000 then, $425 now
Apple code name:	TIM Lite
On the market for:	10 months
Processor and speed:	68030 at 16 MHz
Memory:	2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", black-and-white, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; no video-output jack
System software notes:	Requires System 7.0.1 or later
Battery:	NiCad; lasts about 2 hours
Weight:	6.8 pounds

MACINTOSH SECRET

THE MACINTOSH PORTABLE AND THE POWERBOOK 100

What do the PowerBook 100 and the defunct, overweight Macintosh Portable have in common?

A lot. Sony, the company contracted by Apple to build the 100, started with the original Mac Portable and simply miniaturized its components to create the 100. That's why the design of the 100 is fundamentally different from that of the other PowerBook models; it's really just a shrunk-down Mac Portable. The Portable and the 100 share the same overall design and even the same ROM.

PowerBook 145

The 145 is a faster (and less expensive) version of the 140, which it replaced at the end of 1992. The sole noticeable difference is that the 145's chip runs at 25 MHz instead of 16 MHz.

Price:	$2,150 then, $475 now
On the market for:	10 months
Processor and speed:	68030 at 25 MHz
Memory:	2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", black-and-white, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; no video-output jack
System software notes:	Requires System 7.0.1 or later
Battery:	NiCad; lasts about 2 hours
Weight:	6.8 pounds

PowerBook 145b

Whenever Apple lowers its prices, it's rewarded by a huge groundswell of new purchasers. That phenomenon clearly is what Apple had in mind for this PowerBook model, which debuted in June 1993.

The specs of the 145b are identical to those of the PowerBook 145 except for the original price: about $1,300 for the 40MB-hard drive model. (The price has dropped to about $500 now.) What you lose in the bargain (compared with a PowerBook 145) is the microphone and a set of System disks. The 145b's low price, and the fact that the low price doesn't mean less computing power, put all the necessary nails into the 145's coffin.

PowerBook 150

In the never-ending series of replacements for replacements, the 150 is the next heir in the 140-145-145b lineage. Its $1,300 price tag appealed to the

budget-minded. But "inexpensive" no longer meant "slow"; the 150's 33 MHz 68030 processor is the same as the one that drives, for example, the LC 550. Also of note: The 150 was the first PowerBook to use a less-expensive IDE internal hard drive instead of a SCSI drive. (See Chapter 8 for more details about IDE drives.)

The most startling aspect of the 150 was the appearance of some PowerBook Duo technology. For example, the 150 uses Duo-style memory SIMMs, and it preserves the contents of RAM while you change batteries, just like the Duos. Unfortunately, the paucity of jacks also matches the Duos — the 150 has only one serial (modem/printer) jack, and it lacks the Ethernet and monitor jacks of its PowerBook contemporaries.

But members of the student-and-starving-artist class said, "Ports, schmorts!" This model's speed, low price, and unusually low weight (1.3 pounds less than other full-size PowerBooks) gave it definite appeal. The 150 was discontinued in August 1995.

Price:	$1,300 then, $525 now
Apple code name:	Jedi
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 40MB (70ns Duo DRAM card required)
Equipment:	Built-in, 9.5", 4-level grayscale, passive-matrix LCD, 640-by-400 pixel screen; no slots; no FPU; no video-output jack
Battery:	NiCad; lasts about 2.5 hours
Weight:	5.5 lbs.

►A POWERBOOK 150 SECRET ■

Formatting a 150 hard drive

To reformat the hard drive of your PowerBook 150, you can't use Apple HD SC Setup, the drive formatting utility that until recently came with most Macs. That's because HD SC Setup is strictly for SCSI drives and the 150 is equipped with an IDE drive. However, if you try to use Drive Setup, Apple's newer IDE-compatible drive formatter, on the 150's hard drive, you'll get an error message, too.

The solution is to use the utility called Internal HD Format, which came with the 150 originally. The IDE drive installed in the PowerBook 150, it turns out, uses a initialization scheme that's slightly different than all other PowerBooks and desktop Macs — even those that do have IDE drives. As a result, the 150 is the only Mac that absolutely requires Internal HD Format for initializing and partitioning.

PowerBook 160

Released in September 1992 and dropped 11 months later, the PowerBook 160 is similar to the 145 — same weight, dimensions, processing speed (see Figure 12-15). But the 160 also offered five important improvements:

- The 160's LCD screen offers 16 levels of gray instead of just black and white.
- The 160 has a video-out port so that you can connect it to an external monitor easily. The 160 can fill the external monitor with up to 256 colors.
- The 160 can hold an internal hard drive of up to 120MB, whereas previous models could be expanded only to 80MB.
- The 160 was the first PowerBook since the original PowerBook 100 that could be used in *SCSI Disk Mode* (in which it's connected to your desktop Mac just as though it were an external hard drive) for super-fast data transfers. (See Chapter 14 for details.)
- Finally, the 160 was the first PowerBook on which memory could be expanded beyond 8MB. You can boost it to 14MB.

All these features came at a price of only about $300 more than the PowerBook 145, making the 160 an exceptionally flexible, functional Mac.

Price:	$2,430 then, $600 now
On the market for:	11 months
Processor and speed:	68030 at 25 MHz
Memory:	4MB, expandable to 14MB (85-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", 16-level grayscale, passive-matrix LCD, 640-by-400-pixel screen; no slots; no FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) or later
Battery:	NiCad; lasts about 2.5 hours
Weight:	6.8 pounds

PowerBook 165

See the preceding section. The 165 (born in August 1993) is identical to the PowerBook 160 in every possible way, except that it runs at 33 MHz instead of 25 MHz. Yet it was even less expensive than the model it replaced; it debuted at about $1,300 (and goes for $625 used these days).

PowerBook 165c

The PowerBook 165c, released in February 1993, was the first color PowerBook. The 165c's passive-matrix LCD display is smaller than that of

most other PowerBook models — only 9 inches instead of 10 — but it can display 256 colors.

The 165c, like the PowerBook 180 on which it's based, is a fast and powerful machine, with a 33 MHz 68030 microprocessor and an FPU chip. But many Mac fans didn't find its color screen (manufactured for Apple by Sharp) very impressive. The passive-matrix technology is slow, it lacks brightness, and it's tough to read in bright sunlight. Another negative involves the 165c's NiCad battery life. A charge lasts only about an hour, thanks to the juice required by the dual backlights.

Price:	$3,400 then, $825 now
Apple code name:	Monet
On the market for:	10 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 14MB (85-ns, special notched chips required)
Equipment:	Built-in, 9", 256-color, passive-matrix LCD, 640-by-400-pixel screen; no slots; FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) or later
Battery:	NiCad; lasts about 1 hour
Weight:	7 pounds

PowerBook 170

The PowerBook 170 was the top-of-the-line PowerBook in 1991 — one of the original three models (see Figure 12-15). It was eventually replaced by the faster, cheaper, sharper-screened PowerBook 180.

Overall, the 170 runs about 50 percent faster than the PowerBook 140. The key differences between the 170 and the 140: The 170 has a clock speed of 25 MHz (instead of 16 MHz); it's equipped with a math coprocessor; and it came with an optional, troublesome, built-in fax/modem.

This model was the first PowerBook to offer an active-matrix display (see Chapter 14), which produces a much brighter, crisper image with less ghosting and sluggishness than the passive-matrix display used on other PowerBooks.

Price:	$4,600 then, $675 now
Apple code name:	TIM, Road Warrior
On the market for:	1 year
Processor and speed:	68030 at 25 MHz
Memory:	2MB, expandable to 8MB (100-ns, pseudostatic RAM card required)
Equipment:	Built-in, 10", black-and-white, active-matrix LCD, 640-by-400-pixel screen; no slots; FPU; no video-output jack
System software notes:	Requires System 7.0.1 or later
Battery:	NiCad; lasts about 2 hours
Weight:	6.8 pounds

PowerBook 180

The PowerBook 180, which debuted in October 1992, was by far the most sought-after PowerBook to date. Months after its introduction, Apple still couldn't manufacture it fast enough for its customers. In frustration, dealers took orders, pleaded with Apple, and waited for a few precious machines to come their way — a pattern to be repeated with many subsequent Mac models well into the 1990s.

The 33-MHz 180 is a faster version of the 170, with enough processing power for even heavy-duty business tasks. The 180 also is the first PowerBook with a 16-shade *active*-matrix grayscale screen, the clarity and beauty of which was primarily responsible for this Mac's popularity. This grayscale screen makes the Desktop look richer and more attractive, and it makes possible some QuickTime and graphics work.

Like the 160, this model has a video-out port so that you can connect it to an external monitor. The 180 was the first PowerBook to sport a built-in microphone. Like the 160, the 180 can be connected to another Macintosh as a SCSI device. A fax/modem is optional.

MACINTOSH SECRET

GETTING THE WHOLE PICTURE

PowerBooks were routinely advertised by Apple as having a "full-size screen," but that's not quite true on the original line. All PowerBooks before the 180c have 640-by-400-pixel screens — which means that they display 51,200 fewer pixels than standard 640-by-*480* desktop monitors (the Apple 14" displays, for example).

You probably won't notice the more limited view in most cases. But, if you try to view graphics or multimedia presentations designed to fill a standard-size screen, those 100-series PowerBooks can't display the whole picture. They simply chop off the bottom 80 pixels of the images.

Price:	$4,110 then, $750 now
On the market for:	1 year, 7 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 14MB (85-ns chips required)
Equipment:	Built-in, 10", 16-level grayscale, active-matrix LCD, 640-by-400-pixel screen; no slots; FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) or later
Battery:	NiCad; lasts about 2.5 hours
Weight:	6.8 pounds

PowerBook 180c

This was the screen that everyone had been waiting for: an *active*-matrix *color* screen (the first PowerBook model to have one). Introduced in June 1993, the 180c offers a glorious display that is not only vibrant, but also big — not in inches, but in image area. That is, the 180c's screen was the first on a PowerBook to match, pixel-for-pixel, the dimensions of a standard Apple 13-inch or 14-inch monitor. But, because the screen resolution is 94 dots per

inch, the dots are densely packed, and the physical dimensions of the screen are *smaller* than on a traditional PowerBook.

As usual, you paid a price for the active-matrix screen, both in battery power and (dramatically) in dollars. Nonetheless, the 180c was the hot model for quite a while — at least until the active-matrix color screen came to other PowerBook models.

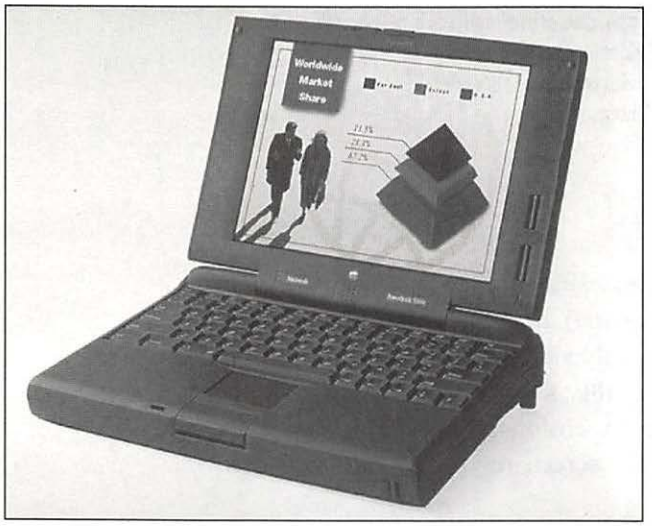
Price:	$4,160 then, $975 now
On the market for:	8 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 14MB (85-ns chips required)
Equipment:	Built-in, 10", 256-color, active-matrix LCD, 640-by-480-pixel screen; no slots; FPU; video-output jack
System software notes:	Requires System 7.1 (with Enabler 131) or later
Battery:	NiCad; lasts about 1 hour
Weight:	7.1 pounds

PowerBook 190, PowerBook 190cs

Released in August 1995, the PowerBook 190 and 190cs were the last of Apple's non-PowerPC portable Macs. Like the 500-series PowerBooks (described later), these models are based on the 33 MHz Motorola 68LC040 processor — the same chip used in the Performa 630 series.

The 190 has essentially the same solid-black design as the PowerPC-based PowerBook 5300 laptops (see Figure 12-16). It offers many of the same state-of-the-art PowerBook features: built-in PC Card slots; a removable floppy drive; and a trackpad that lets you double-click by tapping on the pad instead of clicking a button (see the Chapter 13 for a full description of these features).

Figure 12-16
The 1995 PowerBook line's case. PowerBook 190 series and 5300 series look like this.



Apple's idea in releasing the 190 was to provide a low-budget model that was nevertheless equipped with some of the more-advanced PowerBook features. What it *doesn't* have (that the 5300 series does) is the PowerPC chip, a video-output jack, an infrared transceiver, and a sound input jack; you can add all but the sound-input jack as added-cost upgrades. The 190's passive-matrix

screen and its lack of a PowerPC chip make it about half the price of its PowerPC counterparts.

The only real difference between the 190 and 190cs is the screen quality. The 190 has a grayscale screen, while the 190cs has a slightly larger, dual-scan color display. Apple discontinued the 190 series in September 1996.

190

Price:	$1,900 then, $800 now
Equipment:	Built-in, 9.5" passive matrix grayscale; optional video-out port; 16-bit stereo output
Battery:	NiMH; lasts about 2 hours
Weight:	5.9 pounds

190cs

Price:	$2,300 then, $1150 now
Processor and speed:	68LC040 at 33 MHz
Equipment:	Built-in, 10.4", dual-scan color passive-matrix LCD; optional video-out port; 16-bit stereo output

Both

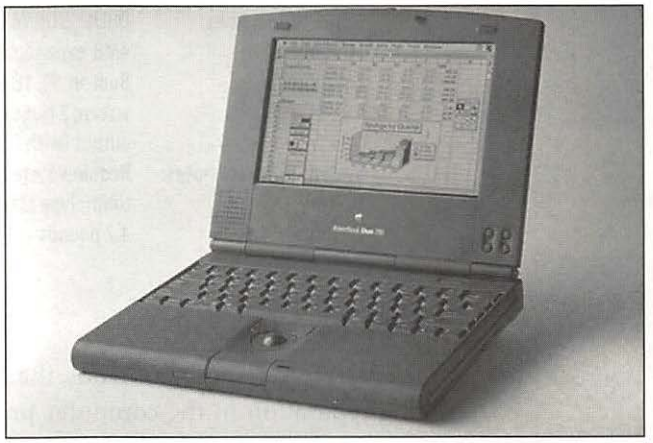
On the market for:	1 year, 1 month
Apple code name:	Omega
Memory:	8MB, expandable to 40MB
Battery:	NiMH; lasts about 2 hours
Weight:	6.4 pounds

PowerBook Duo 210 and 230

The PowerBook Duos, introduced in October 1992, are super-lightweight portables. The name stems from the fact that a Duo can function either as a stand-alone notebook computer or, when inserted into a docking station (called a Duo Dock) or attached to a connector strip (the Mini Dock), as a desktop system. See Chapter 14 for details.

The first Duo models — 210 and 230 — look the same (see Figure 12-17). Built around a light-but-sturdy magnesium frame, they weigh just 4.2 pounds each — nearly 3 pounds lighter than the other PowerBook models. The Duos are only 1.4 inches tall.

Figure 12-17
The slimline Duo is the lightest-weight Macintosh ever created. This design housed the 210, 230, 250, 280, and (in slightly thicker incarnations) the 270c and 280c.



Of course, many features were shrunk or eliminated to compress the Duos into such a compact package. There's no built-in floppy drive; a separate disk drive is optional. The screen is an inch narrower than previous PowerBook screens, although it has the same number of pixels (they're just packed in more closely). And the trackball is more than a centimeter smaller than other PowerBook trackballs. There are only three connectors on the back of either Duo: a modem/printer port, a power adapter jack, and the 152-pin connector for attaching the computer to a Duo Dock or Mini Dock.

The Duo nickel-metal-hydride battery recharges faster than the NiCad batteries used with most PowerBooks. There have been three generations of Duo batteries, known as Type I (shipped with the Duo 210 and 230), Type II (Duo 250 and 270), and Type III (the 280s). Each type lasts longer than the preceding type, ranging from about two hours of power (Type I) to three hours (Type III). All three types work in all Duos.

Despite their size, the Duos have powerful features. The 210 and 230 are built around the 68030 microchip and can be upgraded to 24MB of RAM. The displays can show 16 levels of grayscale. The 210 is the slower of the two machines, running at 25 MHz.

Duo 210

Price:	$2,250 then, $425 now
On the market for:	1 year
Processor and speed:	68030 at 25 MHz

Duo 230

Price:	$2,610 then, $475 now
On the market for:	1 year, 8 months
Processor and speed:	68030 at 33 MHz

Both

Apple code names:	DBLite, BOB W, Cinnamon
Memory:	4MB, expandable to 24MB (70-ns DRAM card required)
Equipment:	Built-in, 9", 16-level grayscale, passive-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)
System software notes:	Requires System 7.1 (and PowerBook Duo Enabler) or later
Battery:	NiMH; Type I lasts about 2 hours
Weight:	4.2 pounds

PowerBook Duo 250

The second generation of Duos, the 250 and 270c, rescued the Duo line's flagging reputation in the computer press. First, the active-matrix LCD screens

on these new models, introduced in October 1993, are glorious to look at. Second, these models came with the improved Type II Duo battery, which meant that a Duo can hold a charge much longer than before — perhaps just under three hours with normal use.

The 250 is simply a 230 except that it has an *active*-matrix grayscale screen instead of a passive one.

Price:	$2,500 then, $625 now
Apple code name:	Ansel
On the market for:	7 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 24MB (70-ns DRAM card required)
Equipment:	Built-in, 9", 16-level grayscale, active-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)
System software notes:	Requires System 7.1 (and PowerBook Duo Enabler) or later
Battery:	NiMH; Type II lasts about 2.5 hours
Weight:	4.2 pounds

PowerBook Duo 270c

Something had to give when Apple designed its first color Duo — size, weight, and battery-charge length. The Duo 270c is almost a half-pound heavier than other Duos. It's also a quarter-inch taller, making it slightly too big to fit into a Duo Dock. (You had to buy a replacement top half of the Duo Dock from Apple to accommodate the 270c, or else use a Duo Dock II.)

Still, this model offers a fast processor, a stunning screen that offers a complete 640-by-480 display area, and an FPU. It even has a remarkable color-display feature in common with the LC III (see the following Secret). It may not weigh much, but the 270c is no lightweight.

Price:	$3,100 then, $950 now
Apple code name:	Escher
On the market for:	7 months
Processor and speed:	68030 at 33 MHz
Memory:	4MB, expandable to 32MB (70-ns DRAM card required)
Equipment:	Built-in, 8.4", color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)
System software notes:	Requires System 7.1 (and PowerBook Duo Enabler) or later
Battery:	NiMH; Type II lasts about 2 hours
Weight:	4.8 pounds

A DUO 270C (AND 280C) SECRET

Getting 16-bit color

As we hinted earlier, the Duo 270c normally displays up to 256 colors on a screen that, pixel for pixel, is as large as the standard 14-inch desktop monitor. If you're willing to lose 80 pixels, you can redistribute your video memory so that it shows *thousands* of colors (16-bit color) in a smaller area. This trick makes photos and QuickTime movies look *awesome*. See "An LC III (Performa 450) Secret," earlier in this chapter for instructions.

PowerBook Duo 280 and 280c

Apple's May 1994 Duos further refined its subnotebook genre by adding a critical ingredient: speed. The 280 (active-matrix grayscale screen) and 280c (active-matrix color screen) are identical to the 250 and 270c, except that they include a 33-MHz 68LC040 processor — in other words, Quadra power in a four-pound package. Apple sweetened the deal by including the longer-lasting Type III batteries with these Duos, along with the promise that these models would be easily upgradable to the PowerPC-based Duo models.

Duo 280

Price:	$2,550 then; $1,950 now
Equipment:	Built-in, 9", grayscale active-matrix LCD, 640-by-400-pixel screen; 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)

Duo 280c

Price:	$3,000 then; $1,975 now
Equipment:	Built-in, 8.4", color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); 2 NuBus slots (in Duo Dock only); FPU (in Duo Dock II only); video output (with full or mini Dock)

Both

Processor and speed:	68LC040 at 33 MHz
Memory:	4MB, expandable to 24MB (70-ns DRAM card required)
System software notes:	Requires System 7.1 (and PowerBook Duo Enabler 2.0) or later
Battery:	NiMH; Type III lasts about 3 hours
Weight:	4.2 pounds (280c = 4.8 pounds)

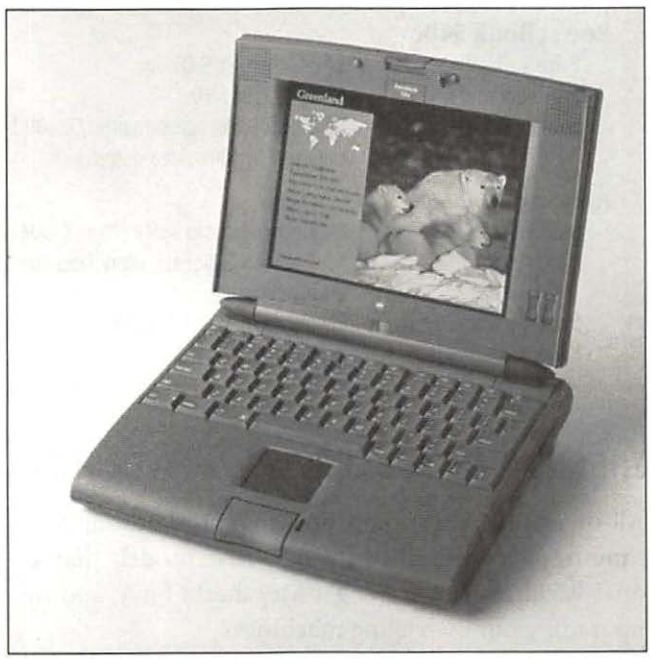
PowerBook 520, 520c, 540, and 540c

Apple's May 1994 crop of PowerBooks, code-named Blackbird, introduced several dramatic improvements to the PowerBook line:

- They were the first full-size Mac laptops to contain a speedy '040 processor chip, just like a Quadra. (The 520s run at 25 MHz; the 540s go at 33 MHz.)
- They could be upgraded to Apple's PowerPC-based PowerBook models.
- These sleek models offered, for the first time on a PowerBook, a *full-size* keyboard that even includes a row of function keys. (A 100-series PowerBook keyboard is, overall, 1/2-inch narrower than a desktop keyboard.)
- The trackball was replaced by a small touchpad that you operate by dragging your finger. (There's only one mouse button now, below the trackpad.)
- Small stereo speakers adorn the upper corners of the screens.
- New battery technology gives these Macs longer life per charge.

Finally, most remarkably, a 500-series PowerBook has a module bay (see Figure 12-18), into which you can insert a second battery, for a total of about four hours of color-screen working time. A few other companies manufacture additional modules for this bay — such goodies as PC cards (credit card-size expansion cards, popular on IBM clones), cellular modems, and so on. You can leave the bay empty for lighter weight.

Figure 12-18
The two-tone 1994 PowerBook case design housed the 520 and 540 series (and their color incarnations).



The stereo speakers, larger (and higher-quality) screens, and quick performance make these the first serious multimedia PowerBooks. Despite the sleek feel of the 500s' rounded, Duo-esque, two-tone gray cases, they're actually slightly larger and heavier than the 100-series PowerBooks. Like the Duo family, they also include only one serial port: a modem/printer jack. Most people, attracted by the full-size keyboard, life-size screens, and upgradability to PowerPC models, didn't mind a bit.

PowerBook 520

Price:	$2,270 then, $750 now
Processor and speed:	68LC040 at 25 MHz
Equipment:	Built-in, 9.5", grayscale passive-matrix LCD, 640-by-480-pixel screen; video-output jack

PowerBook 520c

Price:	$2,900 then, $1,100 now
Processor and speed:	68LC040 at 25 MHz
Equipment:	Built-in, 9.5", color dual-scan passive-matrix LCD, 640-by-480-pixel screen (dual-scan's quality is halfway between that of previous passive- and active-matrix color screens); video-output jack

PowerBook 540

Price:	$3,160 then, $975 now
On the market for:	5 months
Processor and speed:	68LC040 at 33 MHz
Equipment:	Built-in, 9", grayscale, active-matrix LCD, 640-by-480-pixel grayscale screen; video-output jack

PowerBook 540c

Price:	$4,840 then, $1,500 now
Processor and speed:	68LC040 at 33 MHz
Equipment:	Built-in, 9", color active-matrix LCD, 640-by-480-pixel screen (or, in 16-bit color, 640 by 400); video-output jack

All four

Memory:	4MB, expandable to 36MB (70-ns DRAM card required)
Battery:	PowerBook Intelligent Battery; lasts about 2.5 hours (two may be used simultaneously)
System software notes:	Requires System 7.1.1 (and PowerBook 500 Enabler) or later
Weight:	7.1 pounds

THE ONLY UPGRADE GUIDE YOU'LL EVER NEED

All of us fall victim, now and then, to latest-and-greatest syndrome. Every time Apple comes out with new Mac models that are much faster than the ones we already own, we get Megahertz Envy, and we start to seek advice on upgrading our own aging machines.

We have only one word of advice about upgrading your Mac: Don't.

The new models Apple releases every Wednesday aren't just faster; they're also continually less expensive. We've done the math about a thousand times, and we're hard-pressed to come up with a scenario in which you're better off, financially speaking, upgrading your Mac. Instead, you should sell your old Mac and buy the latest model from Apple. Here's how we figure it. (The following prices are current at this writing, but this principle will still apply when you read this.)

Suppose that you own a Quadra 630 with 8MB of RAM and a 250MB hard drive. Daystar offers a Power Mac upgrade card for the Quadra 630 that adds a 601 PowerPC chip to the computer and boosts its speed to a respectable 100 MHz. That card costs about $1,000. Sounds pretty reasonable — until you do the math.

Instead of upgrading, you could *sell* your Quadra for, say, $600. (Advertise in the library, grocery store, user-group newsletter, newspaper, or in the America Online Classifieds forum.) With that money and $1,200 more, you could then buy a brand new Power Macintosh 7200/120. You've spent just $200 over the accelerator-card option, but you now own an even faster model with an internal eight-speed CD-ROM drive, twice the RAM, five times the hard drive space, PCI expansion slots, and more VRAM to support larger monitors! Plus, you get to start fresh with a new one-year warranty, the latest operating system, a new system CD, and a more up-to-date model. Obviously, this is a *much* better deal.

We admit that there are exceptions to our general "don't upgrade" policy. Upgrading your RAM, for example, makes plenty of sense, especially given the dramatic drop in RAM prices in recent months. SIMMs aren't a huge investment, and they can give your existing system a lot more power. Otherwise, we think Mac upgrades are rarely worth it, regardless of Apple's offerings-of-the-moment.

ANSWER MAN

Where the model numbers come from

Q: ***How does Apple come up with these model names — by drawing numbers out of a hat?***

A: Sarcasm duly noted.

Truth is, though, you're right: Apple's model-numbering scheme has never seemed to have much consistency. Why is the 7600 way faster than the 8100? Why is the PowerBook 1400 much more desirable than the higher-numbered 5300?

At least for the last several years, among desktop models, the first digit of the model number has consistently referred to the shape of the actual case: the 5, 6, 7, 8, and 9 families are, respectively, the one-piece built-in monitor models (LC 550 and 580, for example); the thin "pizza-box" shape (Quadra 630, Power Mac 6100); the thicker desktop models tall enough to accommodate NuBus or PCI cards (Quadra 700, Power Mac 7600); the mini-towers (Quadra *8*00, Power Mac *8*500); and the full-height towers (Quadra *9*00, Power Mac *9*500).

And what about your inevitable objection that the Quadra 650 actually has the same case shape as the 7-something family, or that the Performa 6400 is a full-size tower like the 9-something models?

Tell it to Apple.

Chapter 13

The PowerPC Macs: Model by Model

IN THIS CHAPTER:

- The PowerPC chip
- The specs for every desktop and portable PowerPC model
- What the model numbers mean
- Mac clones, PPCP, and the future of PowerPC

In March 1994, Apple introduced a completely new breed of Mac — the Power Macintosh. After more than a decade of building Macs around the Motorola 68000, 68020, 68030, and 68040 chips, Apple shifted to a much faster, more powerful microprocessor — the PowerPC chip.

From the start, Apple made it clear it was deadly serious about getting these Power Macs into the world; the prices on the original models were low, and prices on the second-generation Power Macs dropped lower still. A well-equipped Power Mac 8500, running at 180 MHz, with 32MB of RAM, a 2 GB hard drive, and a eight-speed CD-ROM drive costs about $500 *less* than the original Mac SE/30!

When the Power Macs were first released, Apple promised that *all* future Mac models would be based on the PowerPC chip. Although that didn't immediately prove to be the case — the PowerBook 500 series, the PowerBook 190, and the Quadra 630 series were among the 68040-based machines released *after* the Power Macs — by the fall of 1996, Macs with four-digit model numbers (PowerPC-based Power Macs, LCs, PowerBooks, and Performas) were the only computers still in production. In less than two years,

the Power Mac line has grown to over 45 models. That's why, in this edition, the Power Macs — and PowerPC *PowerBooks* — get their own chapter.

One more note: We've included the most important specs for each model in this chapter. For the real nitty-gritty, however — detailed information about jacks, VRAM, and so on — see the Apple Specs database on the CD-ROM that came with this book.

THE POWERPC CHIP

Remember, the PowerPC isn't a *computer.* It's just a *processor chip* that can form the *basis* of a computer, whether it be a Macintosh, a Windows NT machine, or an automobile transmission. This much-hyped RISC chip, which began shipping in September 1993, is the result of joint development by the two former archenemies — Apple and IBM — and Motorola. (For your cocktail-conversation pleasure: Yes, the PowerPC chip *is* faster, cheaper, and less energy-demanding than the corresponding Pentium chips found in high-end DOS-based PCs. Furthermore, the PowerPC is a new architecture with plenty of room for growth. For example, by mid-1997, an Apple-sponsored startup company called Exponential Technology will be shipping 466 MHz, 500 MHz, and 533 MHz PowerPC processors in the form of a new chip called the X704. The Pentium chip, by contrast, is already reaching its limits.)

RISC, by the way, stands for *reduced instruction set computer.* This reduced instruction set is one of the things that makes the chip so fast; the RISC chip uses a more concise, less-convoluted vocabulary of instructions. Therefore, it can handle more tasks in less time than earlier chips could. Furthermore, the RISC chip not only can process instruction data in larger chunks (32 bits instead of 16 on 68040-based Macs), but also handle more than one set of instructions at the same time. Even the *slowest* Power Mac can theoretically run programs six times faster than, say, a Quadra 800.

The original Power Mac models — the 6100, 7100, and 8100 — used the first-generation 601 PowerPC chip and ran at clock speeds of 60, 66, and 80 MHz, respectively. Since then, four new versions of the PowerPC chip have been released — the 603, 603e, 604, and 604e. The 603-series chips aren't faster than the original 601, just more energy-efficient. They've been used primarily in PowerBooks and Performas. The 604 and 604e chips, on the other hand, are considerably faster and permit dramatically higher clock speeds. See "Get your chips straight," later in this chapter, for details.

All about emulation

To experience the exhilarating speed of a Power Mac in all its glory, you must run software specially written for the PowerPC chip. This special software is called *native-mode PowerPC* software. (That term is often shortened to "native," even though the term *native* actually means "written specifically for this chip," whether it's a PowerPC chip or not.) Every program you owned before March 1994, on the other hand, was written in a foreign language, as far as the Power Mac is concerned.

Obviously, Apple couldn't release a Mac that didn't run existing Mac software. So, to ensure compatibility with existing Mac programs, Apple included an *emulator* program in the Power Mac's ROM. This emulator works behind the scenes, automatically translating the normal Mac code (in which your programs were written) into a format that the PowerPC chip understands. So, despite the fast processor speed, these older programs don't run any faster in Mac emulation mode on the original Power Macs than they would on, say, a Quadra 700.

Better emulation

Fortunately, the emulation picture is getting brighter. The second-generation Power Macs, such as the 7500 and 8500, use a greatly improved emulator called the DRE (for *Dynamic Recompilation Emulator*) that translates old-style Mac programming into PowerPC code up to 30 percent faster than the original Power Macs did. And, of course, even faster Power Macs mean faster emulation. Even in emulation mode, for example, the latest Power Mac 9500, which runs at 200 MHz and employs the new DRE, is faster than the fastest Quadra. (For first-generation Power Mac owners, the Connectix program called Speed Doubler provides an emulation speed-up that ties or even beats the DRE mechanism.)

On the positive side, emulation means that a Power Mac runs almost all the software you already own. The only programs guaranteed *not* to run on a Power Macintosh are those that require an FPU (math coprocessor chip for high-speed computations); the PowerPC's FPU is a completely different (and incompatible) design from the relatively inefficient FPU of the Quadra series. As a result, those few 3-D rendering and drafting programs that required an older-style FPU would crash on a Power Macintosh. Fortunately, those were the very programs most likely to take advantage of the RISC chip's speed and, therefore, the first converted to native PowerPC versions.

The emulated OS

Ironically, Apple's *own* software is largely non-native. In its rush to get the Power Macintosh to market, Apple had time to rework only a small percentage of the Mac's behind-the-scenes *Toolbox* (the set of computer instructions upon which all commercial programs rely and which handles such basic Mac tasks as creating windows and menus) in System 7.1.2.

With each system update, Apple has added a few more nuggets of native PowerPC code to the operating system. By the time System 7.5.3 rolled out in 1996, key components such as QuickDraw, Modern Memory Manager, Desktop Printing, and the Resource Manager were all rewritten in native code. Of course, every Power Mac owner's fantasy would be a *completely* native-PowerPC operating system; Apple is working on it. It's called Mac OS 8 (code-named Copland). Until Apple produces a realistic schedule for completing OS 8, the company will be releasing incremental System-software upgrades, each with a few more chunks of native code. (See Chapter 6.).

In any case, when you run native-PowerPC software on a Power Macintosh, no emulation is required. These programs leave even the fastest Quadra in the dust. Fortunately, all Mac software companies generally release every new program with installers that offer a choice of PowerPC version, 68000, or *fat binary* — a single program version that includes both PowerPC and non-PowerPC code, making it take up lots of disk space, but ensuring its compatibility on any Mac.

Look and feel

On the outside, Power Macs look no different from their predecessors, and most existing Mac appliances — printers, modems, CD-ROM drives, and so on — work fine with Power Macs.

However, as new Power Macs have continued to roll off the assembly line, driven by even faster versions of the PowerPC chip, some fundamental changes have taken place. Although the first PowerPC models used the same 72-pin SIMMs used in other recent Mac models, the newer Power Macs require 168-pin DIMMs, which transfer data at 64 bits at a time instead of 32. Also, the newest Power Macs are equipped with PCI (Peripheral Component Interconnect) expansion slots — instead of the standard NuBus slots found on most earlier Macs — for items such as video digitizer cards, graphics accelerators, and networking hardware. So, although your old laser printer will work just fine with a new Power Mac, the graphics card that came with your monitor will probably have to be replaced. (See Chapter 31 for more about PCI slots.)

Special features

Every Power Macintosh offers audiovisual features previously associated only with the AV Macs (see Chapter 23). These features include speech recognition, the GeoPort, CD-quality stereo recording and playback, and, in the case of the PCI Power Macs, fax/modem/voice mail software (see Chapter 27). All Power Macs come with built-in Ethernet, too (see Chapter 32).

The original Power Macs (6100, 7100, 8100) — which we'll henceforth call the "first-generation" Power Mac models — offered an added-cost AV option. This card provided an input jack for video (so you could make your own QuickTime movies), an additional video-output jack, and more VRAM for richer color displays on your monitor. As you'll read later, most of these features are standard on the second generation of Power Macs — no add-on card is required — and even on some low-cost LC and Performa models.

Upgrading to PowerPC

With the release of the first Power Macs, Apple provided existing Mac owners with several easy and cheap ways to upgrade to Power Macs. Shortly thereafter, Apple stepped aside and left the business of PowerPC upgrades to DayStar, the popular accelerator-card company (and, more recently, a maker of high-powered Mac clones).

Upgrade cards or motherboard swaps were offered for most 1993/1994 Mac models (Quadra 610 through 950; LC 475 through 575 models; Performa 475 through 600; IIvx; and so on). But frankly, given the remarkably low prices of the newest Power Macs, we find it hard to justify most of these upgrades. In almost every case, you're better off selling

TRUE FACT

THE POWER MAC DOES WINDOWS

So, what's this about the Mac running IBM software?

It's true. You can outfit your Power Macintosh with a program called SoftWindows, which runs software designed for IBM-compatible computers, and Windows, the Mac-clone software from Microsoft. Insignia Solutions, the company that makes SoftWindows, suggests you have from 16MB to 24MB of RAM to use the software.

The first version of SoftWindows (which was actually bundled with some versions of the Power Mac 6100) was on the lame side. It offered the performance of a 25 MHz Intel 486SX-based Windows PC and could run only those Windows programs written in Standard Mode, not the more popular 386 Enhanced Mode. Also, SoftWindows couldn't handle programs requiring the popular PC-clone SoundBlaster audio cards, meaning that you couldn't run SoundBlaster-dependent CD-ROMs and games on your Power Macintosh.

SoftWindows 2.0 was much improved, but still no substitute for an actual PC. It still gave your Mac the speed of a rather low-end 486 PC, but it could run any Windows program, including those on CD-ROM and those requiring Enhanced Mode. And, although Soft-Windows 2 supports the Windows Sound System, it still doesn't emulate a SoundBlaster card. SoftWindows 3.0, released in 1996, runs Windows about 30 percent faster than the previous version and does have SoundBlaster support. A Windows 95 version of SoftWindows is also available.

Granted, SoftWindows still runs slower than even an inexpensive PC, but for occasional use with programs that don't require lightning-fast performance, SoftWindows is actually a decent way to emulate Windows on your Mac — without investing in a considerably more expensive PC Compatibility card.

your old Mac and investing in a brand new machine. (See "The Only Upgrade Guide You'll Ever Need" in Chapter 12.)

What PowerPC really means

Yes, you get some nifty audiovisual features with the Power Macintosh. But mainly, you get *speed.* Think about the time you spend watching the wristwatch icon. Think about Photoshop operations that currently make you wait for minutes on end. Recall the time you wait for QuickTime movies to be saved — and how jerkily they play back. Imagine how slowly you scroll through the pages of a lengthy PageMaker document. Many of these waiting moments become insignificant when you run PowerPC-ready programs.

The PowerPC chip is also an invitation to software companies to dream up entirely new kinds of software — involving video, 3-D graphics, telephone or answering-machine features, and the like — that previous Macs simply were too slow to handle.

On the other hand, native programs take up much more disk space than non-native software. Worse, PowerPC gobbles up *memory* like you wouldn't believe. System 7.5 alone, for example, takes up more than 4MB of RAM, and each native program has an enormous appetite — on the order of 3MB *more* than its non-native equivalent's memory requirement. (Using virtual memory or RAM Doubler on a PowerPC Mac is the only way to reclaim some of that memory. See the Secrets near the end of this chapter for details.) The absolute minimum amount of RAM for a PowerPC Mac is 8MB, just as 4MB was the absolute minimum for an ordinary System 7 machine.

Get your chips straight

Every Power Mac described in this chapter is based on one of five *different* PowerPC chips — the 601, 603, 603e, 604, or the 604e. But what's the difference between a 601 and a 603? And what makes the 604 different than a 604e? Here's the rundown:

- The **601** was the first-generation PowerPC chip used in the earliest Power Macs. The first 601s ran at 60 to 80 MHz. Later versions were accelerated to 120 MHz, but that's about as fast as you can reliably speed up a 601 chip.
- The next-generation chip, the **603**, *isn't* faster than the 601; in fact, it's slower, because it has a less efficient cache design. For this reason, a 603 running at 75 MHz offers about the same speed as a 601 running at just 66

MHz. On the positive side, the 603 is less expensive, smaller, and more energy efficient. Apple used the 603 in the 5200-series and the early 6200-series models only.

- Next comes the **603e**, an update of the 603, with a larger chunk of level 1 cache memory (32K instead of 16K). This cache makes the 603e a bit faster. Because the 603e is smaller and runs cooler than any of the other PowerPC chips, it's the one found in all the PowerPC-based PowerBooks. Apple also uses the 603e in its lower-end desktop Macs, including the 5300-, 5400-, 6300-, and 6400- series Performas. With its more power-efficient design, the 603e can be accelerated more dramatically than the 601, with speeds beyond 200 MHz.
- The **604** chip, found in the first 7600, 8500 and 9500 models, is considerably faster than the 601 and 603 chips. To illustrate: A 604 running at 150 MHz is *faster* than a 603e running at 200 MHz. The 604 has the same size internal cache as the 601, but with a more efficient structure — the 32K cache is divided into two sections, one for instructions and another for data. A 604 chip can run at clock speeds of up to 166 MHz.
- Finally, there's the **604e**, a revision of the 604. The 604e is actually a much more sophisticated chip. It has twice as much internal cache memory as the 604 and can initiate four instructions per clock cycle — twice that of the 603e. It's also smaller than the 604 (and, therefore, it uses less power), squeezing 5.6 million circuits into 148 square millimeters. Expect to see Macs in the near future with speeds of 300 MHz or more running on the 604e.

All of this emphasizes a point we've made repeatedly in this book: You can't compare the speed of Power Macs (or any other computers, for that matter) based solely on clock speed. A Power Mac 8500/180 and Performa 6400/180 both run at 180 MHz — but the 8500 is 30 to 50 percent faster, because the 604e chip is inherently faster than the 603e.

(A note about this chapter: Since the dawning of the Power Mac era, you can tell how fast a Mac's processor chip runs just by looking at its name; the number after the slash mark always indicates the Power Mac's clock speed. The official name for the first 9500, therefore, is really 9500/132. But Apple tends to release "speed bump" Macs, identical in every respect to their predecessors, but with a marginally faster PowerPC chip. For example, the Power Macintosh 7200/90 was replaced by the 7200/120. For simplicity's sake, we'll usually leave off the chip-speed designations in our model-by-model discussions.)

CASE HISTORY

CLIENTS FROM HELL, PART VI

David Schargel, former president of Aladdin Systems, has a pretty good idea why even the Macintosh isn't easy for everyone.

Years ago, he says, he got a phone call from a frustrated elderly woman who was trying to turn off her Macintosh. David did what he could to talk her through the process, much as the air-traffic tower may try to talk down a novice pilot.

But things weren't going well. Over and over again, Schargel calmly attempted to teach her how to use the Shut Down command (in the Special menu). "OK, Mrs. Speck," he'd say, "do you see the word *Special* at the top of the screen?"

"Yes," she'd say.

"OK," David would reply. "Now just point to that word, *Special*, and press down on the button."

"All right, I'm doing that," Mrs. Speck would say.

David wiped his brow. "All right. So, now do you see the list of commands? Including the one that says *Shut Down*?"

"No," she'd say. "All I see is that word *Special* and the gray screen."

So David would go through it all again. "You're pointing *right* at the word *Special*? And you're *holding down* the button?"

"Yes," she'd say.

Finally, after 20 minutes of this, Mrs. Speck interrupted the cycle. She asked him, "When you say 'the button,' you mean the *big* button, right?"

David's blood ran cold. "Um . . . what . . . what do you mean, 'the big button'?"

She told him, "I'm pressing the *big* button. With one hand. And with the other, I'm pointing at the word *Special*. Right?"

From there, it was only another five minutes before David realized what she'd been doing. For the entire call, she'd been pointing to the Special menu — *with her finger.*

And she had indeed been pressing the button. Not the mouse button—the *big* button.

The spacebar.

POWER MACS, MODEL BY MODEL

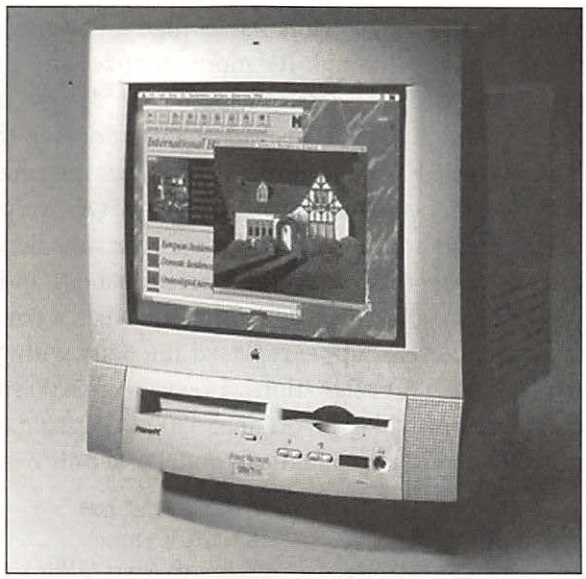
Power Macintosh 5200 LC, Power Macintosh 5260, Performa 5200-5270

The 5200, released in April 1995, occupies a unique position in Mac history — it was the first Mac ever to contain a PowerPC 603 processor (a chip similar to the one used in the PowerBook 5300 series).

At first glance, the 5200 looks like simply a large monitor; it's about the same size as a standard 15-inch screen. But when you look closer, you notice the floppy-disk drive, CD-ROM drive slot, and stereo speakers nestled in

along the bottom edge of the machine. Apple fused a variant of the 15-inch Multiscan Display with the CPU case itself, creating one sleek-looking unit that can tilt and swivel (see Figure 13-1).

Figure 13-1
The monitor-as-CPU concept. Looks like a monitor, but houses the entire computer! This case design was used for the LC or Performa 5000 lines.



The 5200 models with the LC designation are available only to schools, while the Performa models are sold to the general public. Once again, Apple altered its naming conventions with this model, tacking the LC designation on to the *end* of the model name instead of the beginning.

And speaking of naming conventions: Shouldn't a Mac that's *newer* than a 6100 have a number that's *higher* than 6100? No, because Apple now uses the number 5 at the beginning of a desktop model number to indicate that the machine has a one-piece design (Performa 575, 580, 5200, etc.) instead of a modular design.

The 5200 has been a popular choice with schools because of its low price and compact design. It's also easily expandable. Like the old Color Classic, the 5200 has a pull-out tray for access to its expansion slots, which are very similar to those in the Quadra 630. There's a communications slot for an Ethernet card, a video-in slot for the Apple Video System, a connector for Apple's optional TV tuner, and a single LC-style PDS slot. Into this final slot you can plug the MPEG Media System, a card that allows you to play back full-motion video with CD-quality sound. The 5260 also includes a slot for a 256K cache

card. (On the 5200, 256K of level 2 cache memory is soldered on the logic board and can't be upgraded.) There are four versions of the basic 5200: The 5210 and 5220 are sold outside the U.S., while the 5215 is a 5200 with a 1 GB hard drive.

The 5200 is a perfect example of how higher MHz numbers don't necessarily mean better performance. You might think that one of these 75 MHz Macs would be faster than a 60 MHz Mac (such as the Power Mac 6100). Not true; actually, a 5200 runs *slower* than a Power Mac 6100/60. That's because the 603e chip, although it's more compact and consumes less power than a 601 chip, also has a less-efficient cache design; it has only half the Level 1 cache of the 6100 (16K instead of 32K). So, even though the microchip at the heart of the 5200 is running faster in sheer megahertz, the machine as a whole doesn't process data around any faster. (As we pointed out in Chapter 12, MHz ratings are useful only for comparisons between *identical chips* — you can't compare the MHz ratings between a 601 and a 603e PowerPC chip, and you can't compare the MHz ratings between a Power PC and a Pentium.)

After one year, Apple replaced the 5200 with the Power Macintosh 5260 (*without* the LC designation), a revved-up 5200 running on a 100 MHz 603e chip. The 5260, like the original 5200 LC, is sold only to educational institutions. The 5270 is an identical model sold only overseas.

Price:	$2,000 then, $1,200 now
On the market for:	1 year (5200 LC version)
Processor and speed:	5200: PowerPC 603 at 75 MHz. 5260: 603e at 100 MHz
Memory:	8MB or 16MB expandable to 64MB
Equipment:	IDE hard drive; built-in video; 15" tilt-and-swivel display; internal quad-speed CD-ROM drive; front-mounted speakers; internal 14.4 Kbps data/fax/voice modem; one PDS slot
Apple Upgrade options:	Power Macintosh 5300/6300 Logic Board Upgrade available for $700 accelerates CPU to 100 MHz

Power Macintosh 5300 LC, Performa 5300, 5320

On the outside, the 5300 is exactly the same as the 5200 (see Figure 13-1). The sole difference: It's powered by the 603e chip instead of the 603, and it chugs away at 100 MHz instead of 75. This means, of course, that the 5300 is virtually the same as the 5260, but with more RAM (16MB instead of 8MB). (The 5320 is the same model sold outside of the U.S.)

Price:	$2,400 then, $1,500 now
Processor and speed:	PowerPC 603e at 100 MHz
Memory:	16MB expandable to 64MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video with 1MB of DRAM; includes Apple Multiple Scan 15"; quad speed CD-ROM drive; 28.8 Kbps fax modem

CASE HISTORY

WORLD'S DUMBEST USER STORIES, PART I

As consultants and troubleshooters, we've seen it all. We've taken the calls from people whose printer simply wouldn't work (it wasn't plugged in); people who couldn't manage to stick a floppy disk into the drive (a disk was already in the drive); and people whose work disappeared suddenly and without a trace (they had clicked the Desktop, sending their word-processor window to the background).

But that's small potatoes compared to some of the stories we read in the *Wall Street Journal* recently. A technician at Compaq Computers told of a frantic call he received on the help line. It was from a woman whose new computer simply wouldn't work. She said she'd taken the computer out of the box, plugged it in, and sat there for 20 minutes waiting for something to happen. The tech guy asked her what happened when she pressed the power switch. The lady replied, "*What* power switch?"

In the Mac world, we're used to pressing Return or Enter to dismiss a dialog box. In the PC world, however, it's common for the screen to say, "Press any key to continue." Incredibly, literally *hundreds* of people wind up calling the computer makers to complain that they can't *find* the "Any" key on the keyboard. Compaq is actually considering changing the instruction to "Press the Return key."

Then there's the immortal tale of the help-line technician who asked the caller to send him a copy of the disk that was giving her trouble. Sure enough, several days later, the technician received a photocopy of the disk. (It was a two-page enclosure, of course, because the disk was double-sided.)

Our credulity is stretched nearly to the breaking point, however, by the following story told by a Dell computer technician. As the *Wall Street Journal* put it: "A customer called to say he couldn't get his computer to fax anything. After 40 minutes of troubleshooting, the technician discovered the man was trying to fax a piece of paper by holding it in front of the monitor screen and hitting the Send key."

Power Macintosh 5400 – 5420

The latest of Apple's for-schools-only computers, the Power Mac 5400 looks identical to all the other one-piece 5200- and 5300-series models (see Figure 13-1). Inside the case, however, it's a whole new Mac. In developing the 5400, Apple finally scrapped the logic board architecture that had been used in the Quadra 630 and Performa 5200, 6200 and 6300 models, and replaced it with an entirely new logic board based on the PCI architecture used in higher-end Power Macs. The 5400 logic board includes one PCI slot, 8MB of soldered-on RAM, and 64-bit RAM slots that hold the 168-pin DIMMs used in newer Power Macs. (This same design scheme forms the basis for the tower-style Performa 6400, discussed later in this chapter.)

With this new design comes new speed, with a 603e chip running at 120 MHz. In fact, with a level 2 cache card installed (a $100 option), the 5400 is even faster than a Power Mac 7200/120.

At the same time, the 5400 has the easy expansion options and slick multimedia features found in the earlier 5200- and 5300-series models: digital video input and output; stereo sound; a bay for a TV tuner; a video converter for output to a television; and a super-sharp 15-inch monitor that can switch between three different zoom levels. This is a very slick compact classroom Mac. The two spinoffs of the 5400 — the Performa 5410 and 5420 — are sold only outside of the U.S.

Price:	$2,300
Processor and speed:	PowerPC 603e at 120 MHz
Memory:	16MB expandable to 136MB (70-ns, 168-pin DIMM chips required)
System software notes:	Requires System 7.5.3 Revision 2
Equipment:	Built-in 15-inch multiple scan tilt-and-swivel color display; 1.6 GB IDE hard drive; quad-speed CD-ROM drive; 10BaseT Ethernet connector; NTSC video converter; two GeoPort-capable serial ports; SRS 3-D sound enhancement; communications slot; TV tuner slot; video input and output jacks

Power Macintosh 6100, Performa 6110–6118

Introduced in March 1994, the 6100/60 was the entry-level Power Macintosh (read: least expensive). Its wide, low-slung case looks exactly like that of a Quadra 610 (see Figure 12-8 in the previous chapter). It's equipped with the 601 PowerPC chip running at a 60 MHz or 66 MHz clock speed.

Like the 610, the 6100 offers a PDS slot, which (with a $99 adapter) can accommodate a NuBus card. (Buyer, beware: The special circuit board on the *AV* model fills the PDS slot, so the 6100/60 AV *can't* accept any additional cards.) Also like the 610, you turn the machine on by pushing a front-panel button, not by using the keyboard. The original price of the 6100, around $1,600, was an incredible value at the time. With the optional $300 cache card, this Mac blazed even faster than the original 7100.

Six months after the 6100 made its debut, it started showing up in department stores under the Performa designation — the very first of the PowerPC-based Performas. As always, the Performa versions of the 6100 (the 6110, 6112, 6115, 6116, 6117, 6118) included monitor, modem, CD-ROM drive, and pre-installed software.

The 6100/60 was replaced in January 1995 by the 6100/66, a nearly identical computer with — as its name indicates — a faster clock speed.

Price:	$1,700 then, $650 now (with AV option: $2,400 then, $850 now)
Apple code name:	PDM
On the market for:	9 months (non-Performa version)
Processor and speed:	PowerPC 601 at 60 or 66 MHz
Memory:	8MB, expandable to 72MB (80-ns, 72-pin DRAM chips, in pairs, required)
Equipment:	Built-in video (uses System RAM); with adapter, slot can hold a 7" NuBus board or PDS board (except on the AV model, whose slot is already filled); optional AV model includes TV input/output, additional video jack; optional cache card provides 15 percent speed-up; Ethernet; 2 GeoPort jacks; records and plays 16-bit CD-quality stereo sound
System software notes:	Requires System 7.1.2 (with PowerPC Enabler) or later

Power Macintosh 6200, Performa 6200–6230

The July 1995-born 6200-series models — six Performas and one Power Mac version — were conceived as low-cost computers with a heavy-duty multimedia slant. Each Performa has a 1 GB hard drive, 8MB or 16MB of RAM, a 15-inch screen and an internal quad-speed CD-ROM drive. Come to think of it, a 6200 is nothing more than a 5200 split into two pieces — a monitor and a CPU box — which resembles the Quadra 630 (see Figure 12-12).

As usual, distinguishing between the various Performa models is confusing at best. The *solitary* difference between a Performa 6200 and a 6205 is the speed of the modem (a 6200 has a 14.4 Kbps modem, while the 6205's modem runs at 28.8 Kbps). The next model up *isn't* called the 6210 or 6215 — it's the *6216*. Why? Because it comes with one additional piece of software — Expresso, a personal information manager. After that comes the 6218, with 16MB of RAM instead of 8 (and, oddly enough, a *14.4 Kbps* modem). The 6220 comes with a TV tuner and the Apple Video System, which allows you to digitize video from a VCR or camcorder. And the Performa 6230CD comes with Apple's $300 MPEG Media System preinstalled, a card that compresses and decompresses full-motion video and 16-bit CD-quality sound.

Like the Quadra 630 series, the Performa 6200 (and the 5200 series, described earlier) comes with an IDE hard drive instead of the usual SCSI hard drive. See Chapters 8 and 30 for IDE details.

Price:	6200: $2,000 then, $1,275 now; 6230: $3,000 then, $1,700 now
Processor and speed:	PowerPC 603 at 75 MHz
Memory:	8MB or 16MB expandable to 64MB (80-ns, 72-pin DRAM chips required)
Equipment:	IDE hard drive; built-in video with 1MB of DRAM; includes Apple Multiple Scan 15"; quad-speed CD-ROM drive; fax modem

MACINTOSH SECRET

THE MODEM PORT SCANDAL OF '95

Every desktop Mac comes with two standard serial ports in the back—a modem port and a printer port, right?

Not quite. Take a look at the back of any Performa with a built-in modem, such as the Performa 6200 or 5200, and you'll see something unprecedented in Mac history — instead of a modem port, there's a little plastic cap with a label that says, "Do not remove." If you pry off the cap and try plugging something into this port anyway, nothing happens. The port is dead.

What's going on here? Believe it or not, the internal Global Village IIv fax modem that comes installed in the communications slot on those 5200 or 6200 models *disables* the external modem port. That's why Apple politely covers the port on those models with a plastic cap.

Apple's thinking on this was evidently, "Who needs a modem port? You've *got* an internal modem." The problem is, of course, modem ports aren't just for modems; they link all kinds of serial devices to your Mac — MIDI keyboards, monitor calibrators, handheld scanners, QuickCam video cameras, Newtons, and so on.

So what if you need to use that dead modem port on your 6200? There *is* a solution: You can remove the internal modem card from the communications slot. As soon as the communications slot is empty, your modem port springs back to life. (Of course, Apple is quick to point out that any damage caused by the removal of the modem is *not* covered under warranty.)

Our advice: Don't buy a 5200 or 6200 with an internal modem. Some of the 6200s and 5200s come bundled with external modems. Buy one of those and you'll get every port you've paid for.

Performa 6260CD, 6290CD

While seemingly identical to other models in the 6200-series family (see Figure 12-12), the Performa 6290, introduced in January 1996, is actually a faster and more powerful computer, built around a 603e chip running at 100 MHz. The 6290 package comes with a 1.2 GB hard drive, 28.8 Kbps internal fax modem and a 14-inch monitor (instead of the 15-inch monitor that came with the earlier 6200-series machines.) The 6260, released six months later, is an identical machine, sold only overseas.

Price:	$2,200 then, $1,400 now
Processor and speed:	PowerPC 603e at 100 MHz
Memory:	8MB expandable to 64MB
Equipment:	Built-in video with 1MB of DRAM; includes Apple Multiple Scan 14"; quad-speed CD-ROM drive; 28.8 Kbps fax modem

Performa 6300 – 6360

The Performa 6300, introduced in November 1995, is a Performa 6290 with more RAM, a 15-inch monitor, and three additional software programs thrown into the Performa bundle (see Figure 12-12). (You can, in fact, turn your 6200 into a 6300 with a $700 logic-board upgrade from Apple. The upgrade is also available for 5200-series and 630-series Macs.)

The Performa 6320, rolled out six months after the original 6300, is a souped-up version of the 6300, running at 120 MHz. However, Apple canned the 6320 in September 1996, just five months after its release, making it one of the shortest-lived Mac models in history. Then, a month later, the 6360 debuted — a 160 Mhz machine that, with its 16MB RAM, 1.2 GB hard drive, 28.8 modem, and 8X CD-ROM for $1,500, actually made Windows computers look expensive by comparison.

Price:	*6300:* $2,800 then, $1,650 now; *6360:* $1,500
Apple code name:	Crusader
Processor and speed:	*6300:* PowerPC 603e at 100 Mhz; *6360:* PowerPC 603e at 160 MHz
Memory:	16MB expandable to 64MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video with 1MB of DRAM; includes Apple Multiple Scan 15"display; quad-speed CD-ROM drive; 28.8 Kbps fax modem

Performa 6400

Take one glance at a Performa 6400 and your concept of the Performa as a low-end, beginner's-only Macintosh is forever shattered. These hefty, tower-style Macs, introduced in August 1996, are high-powered machines, with 603e chips running at 180 MHz or 200 MHz. The new Performa minitower case resembles a puffed-up 8500, but with softer edges, a rounded, bulging top, and a headphone jack mounted smack in the middle of the front panel (see Figure 13-2).

Figure 13-2
Apple's first minitower Performas: Tall, sleek, powerful. (Courtesy of Apple Computer, Inc. Photograph by John Greenleigh.)



Of course, the 200 MHz Performa 6400 isn't as fast as the 200 MHz Power Mac 9500, which runs on the newer 604e chip. But it *is* as fast as a 150 MHz Power Mac 9500 — and that's still one very fast Performa.

The 6400 doesn't just run faster than other Performas — it sounds better, too. It's the first Performa equipped with a sophisticated sound system that includes SRS surround-sound enhancement and a subwoofer speaker. Plug

ANSWER MAN

The cache story

Q: *I've noticed that some Power Macs come with level 2 cache and some don't. What the heck is Level 2 cache? For that matter, what's level 1 cache?*

A: Both terms refer tiny chunks of super-fast memory that do nothing but feed frequently-used data and instructions to your Mac's PowerPC chip. The larger the cache size, the faster your computer will run.

Level 1 cache is a tiny piece of memory that's built right into the processor chip itself. The size of the level 1 cache depends on the type of PowerPC chip; the 603s has a 16K cache, while the 604e has 64K. At any rate, level 1 cache is etched into the chip; you can't upgrade it.

Level 2 cache is a different story. It's yet another piece of ultra-high-speed memory that retains and feeds data into the PowerPC chip, but this cache isn't a part of the processor chip. It exists in the form of a SIMM or DIMM that plugs directly into the logic board. With most Power Macs, you can upgrade the level 2 cache simply by installing a cache SIMM or DIMM in the appropriate slot. (The SIMM and DIMM chips used in cache slots are *not* the same as the chips you use to upgrade your RAM—they're a special design.) Most Macs can handle up to 256K of level 2 cache, but some can be upgraded to 512K or 1MB.

The bottom line is that adding level 2 cache can speed up your Power Mac by 10 or 15 percent — if you're running native software. As the PowerPC chip speeds through its clock cycles, it looks for instructions to execute. The extra bits of memory in the two caches keep the pipeline full, feeding a continuous flow of data to the CPU for processing. With each clock cycle, the microprocessing chip first checks its internal cache (level 1) for instructions, then checks the external cache (level 2). Finally, it checks your Mac's RAM to grab the next instruction. But cache memory is much faster than standard RAM, so the more cache, the steadier the flow of data to the microprocessor.

Our advice: If your Power Mac supports level 2 cache memory and you don't have any installed, you should definitely add it; a 256K cache chip costs less than $100. (On the other hand, upgrading from 256K to 512K doesn't produce nearly as much of a performance gain.)

Apple's TV/FM Radio System into the special expansion bay provided on the 6400 and you can listen to your favorite radio stations (or watch TV) in full, rich stereo.

The 6400 is also one of the first Performas that's easily expandable. It's equipped with two PCI slots as well as a variety of specialized communications and video slots. The Performa 6400 Video Editing Edition, released in October 1996, added an Avid Cinema software suite to Apple's Video System digitizing card, making it easy for camcorder or VCR owners to produce QuickTime movies on the family computer.

Price:	6400/180: $2,400 then, $1,900 now; 6400/200: $2,800 then, $2,200 now; 6400/200 Video Edition: $2,700
Apple code name:	Instatower
Processor and speed:	PowerPC 603e at 180 or 200 MHz
Memory:	16MB (or 32MB in the Video Edition) expandable to 136MB (70-ns, 168-pin DIMM chips required)
Equipment:	Eight-speed CD-ROM drive; 1.6 GB or 2.4 GB IDE hard drive; 256K level 2 cache (with 200 MHz model); two PCI expansion slots, communications slot, input slot for Apple Video System, expansion bay for Apple TV/FM Radio System; 1MB of VRAM; 28.8 Kbps fax modem

Power Macintosh 7100, 7100AV

This Mac was the middle-priced, midrange model of the original Power Macintosh trio that debuted in March 1994. The 7100 looks like a Quadra 650 (see Figure 12-8) and runs at 66 or 80 MHz. It has three NuBus slots and room for a PDS card. As on the 6100, the optional cache card grants you another 15 percent speed increase — a worthy feature.

This Mac has four RAM slots; as with the other first-generation Power Macs, you must fill those slots with pairs of identical SIMMs. The 7100, like the 6100, was an impressive amount of computer for the money.

The 7100/66 models were replaced in January 1995 by the 7100/80 and 7100/80AV. In addition to providing more speed, the 7100/80 fixed a fairly major problem with the 7100/66 — a glitch that caused slower NuBus performance. Although this slowdown wasn't noticeable with many types of NuBus cards, it was *very* noticeable to those who plugged a video compression card (such as the Radius Spigot Power AV) into one of the slots. The 7100/66's NuBus slot wasn't transferring data fast enough to keep up with the video-capture hardware. The 7100/80's NuBus slots can transfer data three to four times faster than the 7100/66.

CASE HISTORY

WORLD'S DUMBEST USER STORIES, PART II

The Dumb User stories we mentioned in a previous sidebar are sad indeed, but we've heard tales on our own that we think match the *Wall Street Journal's.*

For example, a Microsoft friend told us about a guy who wanted to insert one of the old-style 5¼-inch floppy disks into his 3½-inch drive. Frustrated, he simply folded the disk in half — and then called tech support in disbelief when the drive would not read his mutilated diskettes.

Or this, from Aldus: A woman called the company, irate and screaming, when she learned that PageMaker had no keyboard shortcut that would translate her newsletter into French.

Hmm . . . ⌘-F, maybe?

Price:	$2,900 then, $850 now (AV model: $3,900 then, $1,200 now)
Apple code names:	Carl Sagan, BHA
On the market for:	9 months
Processor and speed:	PowerPC at 66 or 80 MHz
Memory:	8MB, expandable to 136MB (80-ns, 72-pin DRAM SIMMs, installed in pairs, required)
Equipment:	Built-in video (uses System RAM) plus PDS video on non-AV model (1MB, expandable to 2MB); three NuBus slots; AV model includes TV input/output and additional video jack (2MB VRAM); optional cache card provides 15 percent speed-up; Ethernet; 2 GeoPort jacks; records and plays 16-bit CD-quality stereo sound
System software notes:	Requires System 7.1.2 (with PowerPC Enabler) or later

Power Macintosh 7200, 7215

In August 1995, the 7200/75 became the new low-end Power Macintosh, replacing both the 6100 — and 7100-series Power Macs. Although it's built around the same PowerPC 601 chip found in the earlier Macs, the 7200 runs at a faster clock speed, making it noticeably faster than its predecessors. The first 7200s ran at 75 MHz or 90 MHz. In 1996, Apple released a "speed-bumped" version of the 7200 which revved its CPU up to 120 MHz. Its bulged-out version of the Power Mac 7100 case design is shown in Figure 13-3.

Figure 13-3
The Power Macintosh 7200 case design also houses such Macs as the 7300, 7500, and 7600.



The 7200 may have been at the bottom of the heap among the second-generation Power Macs, but its features rivaled or outshined those of the high-end Macs of even a year or two earlier. Even the basic 7200 includes a quad-speed CD-ROM drive, a 500MB hard disk, Ethernet support, and three PCI expansion slots (see Chapter 31 for the significance of PCI). The 120 MHz version of the 7200 comes with an eight-speed CD-ROM drive and a 1.2 GB hard drive. There's also a DOS-Compatible version of the 7200, which is simply a 7200/120 with a 100 MHz Pentium processor card pre-installed in one of the PCI slots.

The 7200, along with the other second-generation Power Macs, was one of the first desktop Macs that could be put into sleep mode — just like a PowerBook — to conserve energy. When you put a 7200 to sleep, the computer cuts the video signal going to the monitor, which blacks out the screen. The hard drive keeps spinning, however, and the CPU keeps drawing power.

A special version of the 7200/90 with 16MB of RAM was released in January 1996 and sold overseas as the Power Macintosh 7215/90.

Price:	*7200/75:* $1,700 then, $850 now; *7200/90:* $1,900 then, $1,150 now; *7200/120:* $1,900 then, $1,600 now
Apple code name:	Catalyst
Processor and speed:	PowerPC 601 at 75, 90, or 120 MHz
Memory:	8MB, expandable to 256MB via four DIMM slots (16 MB standard on 120 MHz version)
Equipment:	16-bit stereo input and output; Internal AppleCD 600i quadruple-speed CD-ROM drive (eight-speed CD on 120MHz models); 3 PCI slots; 1MB of VRAM, expandable to 2MB; Level-2 cache slot for optional 256K or 512K L2 cache (256K included with 120 MHz model).
System software notes:	Requires System 7.5.2 (with System Enabler 701) or later

Power Macintosh 7300

The Power Mac 7300, released in early 1997, is Apple's replacement for the inexpensive 7200 models, which the 7300 resembles. The three 7300 models, all PowerPC 604e-based, have speeds of 166, 180, and 200 MHz, respectively. The prices are proportional: $2,300, $2,700, and $3,000 or so. Like the 7200 models, they lack video inputs and memory-interleaving advantages; but like all current Macs, the 7300s come ready for business — 32MB of RAM, a 2 GB hard drive, a level 2 cache for added speed, and a built-in CD-ROM.

Be sure to visit our Web page, *http://www.idgbooks.com/idgbooksonline/macsecrets,* for details (this printing of the book came out before the models were actually introduced!).

Power Macintosh 7500

The Power Mac 7500 looks identical to the 7200; it shares the same case design (see Figure 13-3). But within that case, the 7500's PowerPC 601 chip runs at a faster 100 MHz. The 7500 is also faster because it has been designed with a higher-speed *system bus,* which runs at 50 MHz. Thanks in part to the improved system bus, the 7500/100 fitted with a 256K cache card (optional) is actually *faster* than an 8100/110 at most tasks. The 7500 is more expandable than the 7200, too. With eight DIMM slots instead of four, you can install up to 512MB of RAM.

The 7500's most distinguishing characteristics, however, are its AV features. This second-generation Power Mac, released in August 1995, has sound and video options previously available only in Apple's special AV models. For example, the 7500 has RCA-style plugs for line-level stereo input and output, which provide much better audio quality than the miniplug-style audio jacks found on most other Macs. The 7500 also has RCA phono jacks for video input from a typical VCR or camcorder, as well as an S-video input connector for the higher-quality video signal from Hi-8 and S-VHS recorders.

The 7500's video digitizing features allow full-screen (640-by-480 pixel) video capture at 15 frames per second. And, like the earlier Power Mac AV models, the 7500 has an internal DAV — a digital audio/video connector — for adding third-party compression/decompression cards that support 24-bit video input.

Despite a winning combination of features, the 7500 was quickly eclipsed by the even faster Power Mac 7600, which replaced it just eight months later.

Price:	$2,700 then, $1,750 now
Apple code name:	TNT
Processor and speed:	PowerPC 601 at 100 MHz
Memory:	16MB of RAM, expandable to 512MB via 8 DIMM slots; Requires 64-bit-wide, 168-pin, 70-ns DIMMs
Equipment:	Internal AppleCD 600i quadruple-speed CD-ROM drive; 2MB of VRAM, expandable to 4MB; GeoPort fax and telephony software; 3 PCI slots; 10Base-T and AAUI-15 Ethernet connectors; internal Fast SCSI bus; RCA phono jacks for 16-bit stereo audio input and output; minijacks for 16-bit stereo audio input and output; RCA phono jacks for composite video input; S-video input connector; digital audio/video (DAV) connector for video compression/ decompression cards
System software notes:	Requires System 7.5.2 (with System Enabler 701) or later

Power Macintosh 7600

In April 1996, Apple swapped the 7500's PowerPC 601 chip for the faster 604 chip, boosted its speed to 120 MHz, replaced the quad-speed CD-ROM drive with an eight-speed drive, added a slightly larger hard drive and re-christened it the 7600. (A 132 MHz version was released at the same time.) In every other respect, the 7600 is identical to the 7500. Like the 7200, the 7600 is available in a DOS-Compatible configuration, with a 100 MHz Pentium processor card pre-installed in one of the PCI slots.

Price:	*7600/132:* $3,000 then; $2,300 now
Processor and speed:	PowerPC 604 at 120 or 132 MHz
Memory:	16MB of RAM, expandable to 512MB via 8 DIMM slots; Requires 64-bit-wide, 168-pin, 70-ns DIMMs
Equipment:	Internal eight-speed CD-ROM drive; 2MB of VRAM, expandable to 4MB; 256K level 2 cache (132 MHz model only); GeoPort fax and telephony software; 3 PCI slots; 10Base-T and AAUI-15 Ethernet connectors; internal Fast SCSI bus; RCA phono jacks for 16-bit stereo audio input and output; minijacks for 16-bit stereo audio input and output; RCA phono jacks for composite video input; S-video input connector; digital audio/video (DAV) connector for video compression/decompression cards
System software notes:	Requires System 7.5.3

Power Macintosh 8100, 8100AV, 8115

At its introduction in March 1994, the 8100 was the fastest personal computer ever made, running native software at an unheard-of 80 MHz and equipped with a 256K cache for even more speed. On the outside, the minitower 8100 looks like a Quadra 800 (see Figure 12-13). Its roomy case houses the same three NuBus slots and room for extra internal storage devices, such as additional hard drives, CD-ROM players, or SyQuest drives. The 8100 with the AV option (a PDS card that adds television inputs and outputs) was the first Mac in several years to cost more than $5,000.

The 8100/100 and the 8100/110 were built on faster-still 601 chips. The only thing more impressive than its speed was its scarcity; virtually no one could find one to buy. (Overseas, the fastest of the 8100-series models was sold as the Power Macintosh 8115/110.)

Apple pulled the plug on the 8100/80 models in January 1995 and discontinued the faster versions nine months later.

Price:	*8100/80:* $4,250 then, $1,100 now; *8100/80AV:* $5,660 then, $1,400 now
Apple code name:	Cold Fusion
On the market for:	9 months
Processor and speed:	PowerPC 601 at 80, 100, or 110 MHz
Memory:	8MB, expandable to 264MB (80-ns, 72-pin DRAM chips required)
Equipment:	Built-in video (uses System RAM) plus PDS video on non-AV model (2MB, expandable to 4MB); three NuBus slots; optional AV model includes TV input/output, additional video jack (2MB VRAM); 256K cache card; Ethernet; 2 GeoPort jacks; records and plays 16-bit CD-quality stereo sound
System software notes:	Requires System 7.1.2 (with PowerPC Enabler) or later

ANSWER MAN

The upgradable 7500, 7600, 8500, and 9500

Q: ***Didn't I read somewhere that the second-generation Power Macs have a removable processor chip? That I can replace my processor with a faster one next year?***

A: Absolutely correct. These models' PowerPC chip are fastened to a removable circuit board — technically known as a ***daughterboard.*** When your budget and technology have reached high enough levels, you can pop out the original daughterboard and replace it with one containing a faster PowerPC chip. (This easy upgradability is also a feature of the higher-end Power Computing clones.)

As of this writing, 100, 132, and 150 MHz upgrade cards are available. Any of these Macs — and, presumably, future PCI Power Macs — can accept new PowerPC chips up to 200 MHz (when such upgrades become available).

Power Macintosh 8500, 8515

Toward the end of 1995, this was the Power Macintosh everyone wanted — a screaming-fast machine with a stunning range of standard AV features, three PCI slots for expansion, and, at its heart, a PowerPC 604 chip running at 120 MHz. The 8500 thereafter received three speed bumps. In April 1996, two versions running at 132 MHz and 150 MHz were introduced. Then, four months later, Apple replaced the 604 chip with a 604e and again upped the speed, this time to 180 MHz.

TRUE FACT

"CUPERTINO, WE HAVE A PROBLEM . . . "

Early in the spring of 1996, Apple officials were horrified to discover several serious problems in the ROM and cache components used in the 5200 and 5300 LC Power Macs, as well as the Performa 5200, 5300, 6200, and 6300 models. The faulty components were causing frequent system freezes on some models and sudden, random color shifts on the monitors of others. At the same time, a series of distressing hardware-related problems were emerging on the 5300 PowerBook family: Video screen bezels were separating at the seams, AC power connectors were failing, and PowerBooks were dropping off LocalTalk networks.

These weren't the kind of problems that could be fixed with a software update or yet another system enabler. Apple realized it had only one choice: Notify the tens of thousands of customers who bought the affected models and fix the problems for free.

Thus was born the euphemistically-named *Repair Extension Program for the Apple Power Macintosh and Performa 5200, 5300, 6200, and 6300* and the *Apple PowerBook Repair Extension Program.* Company officials cautiously avoided referring to either of these programs as recalls. In fact, in an official press release, Apple helpfully explained, "This is a repair extension program, not a product recall."

Recall, repair, whatever — the point is that if you have one of these Macs, you're eligible for a free repair if your model suffers from the aforementioned problems. The affected desktop models are: 5200/75 LC, 5300/100 LC, Performa 5200, 5215, 5300, 6200, 6205, 6214, 6216, 6218, 6220, 6230, 6290, or 6300. (The problem was fixed in the 5260 and 6320 models before they were released.) Before calling 800-SOS-APPL to schedule a repair, however, download the free program called 5xxx-6xxx Tester from America Online or Apple's Web page (http://www.info.apple.com); it will tell you whether or not your model has the hardware problem, so you don't wind up schlepping your Mac away only to find out that you had a simple extension conflict. (That diagnostic software tests the desktop models, not the PowerBooks.) The repairs are handled by local Apple dealers.

The eligible PowerBooks include the 5300, 5300c, 5300ce, and 5300cs; 190 and 190cs. To get the free repairs, call 800-801-6024. Apple will send you a freight-paid shipping box so you can send in your PowerBook without charge. (If your PowerBook's serial number has the letters AA at the end of its serial number, it was manufactured since the problems in the construction process were corrected. You have nothing to worry about.)

Apple plans to continue the free repair programs for each desktop and portable model until seven years after it is discontinued. If only that free seven-year warranty applied to our Macs for *any* problem that might arise . . .

The 8500 has the same audio features as the 7500 — RCA-style plugs for 16-bit sound — and can also record video signals via composite and S-video jacks. However, the 8500 goes a step further, offering built-in video *output* capabilities, too, so you can show your QuickTime movies on a TV or record them on your VCR in 24-bit color. (Previous AV Macs were limited to 16-bit color for video output; see Chapter 11 for definitions.) If you upgrade the 8500's VRAM to 4MB (the maximum), you can display images on your computer screen *and* a TV at the same time. Thanks to its speed, the 8500 is a QuickTime moviemaking monster. It can capture full-motion video — 30 frames per second — at 320-by-240 pixel size without requiring a compression card or other hardware.

Like its predecessor the 8100, the 8500 is housed in a tower-style case (see Figure 12-13) with three slots (PCI) and a bay for an additional internal drive. As with most of the recent Power Macs, Apple released an overseas-only version of the 8500, too, called the 8515.

Price:	*8500/120:* $4,000 then, $2,600 now; *8500/150:* $3,600 then, $3,000 now; *8500/180:* $4,500 then, $3,700 now
Apple code name:	Nitro
Processor and speed:	PowerPC 604 at 120, 132 or 150 MHz; or PowerPC 604e at 180 MHz
Memory:	16MB or 32MB of RAM, expandable to 512MB via 8 DIMM slots; requires 64-bit-wide, 168-pin, 70-ns DIMMs
Equipment:	Internal AppleCD 600i quadruple-speed or eight-speed CD-ROM drive; 2MB of VRAM, expandable to 4MB; GeoPort fax and telephony software; 3 PCI slots; 512K cache card; 10Base-T and AAUI-15 Ethernet connectors; internal Fast SCSI bus; RCA phono jacks for 16-bit stereo audio input and output; minijacks for 16-bit stereo audio input and output; RCA phono jacks for composite video input and 24-bit video output; S-video input/output connector; digital audio/video (DAV) connector for video compression/decompression cards
System software notes:	120 MHz version requires System 7.5.2 (with System Enabler 701) or later; faster versions require System 7.5.3 or later.

MACINTOSH SECRET

PLAY YOUR RAM CARDS RIGHT FOR BETTER SPEED

Most PCI-based Power Macs (7500, 7600, 8500, and 9500, for example), as well as the high-end clones from Power Computing, offer a unique trick for getting more speed called *memory interleaving.*

If you examine the DIMM slots inside your machine, you'll discover that they're arranged in two separate clusters, called banks. (See Chapter 9 for details on installing RAM.) When you upgrade your RAM, buy your DIMMs in identical pairs, and install them in identical positions in the two banks. For example, buy two 8MB DIMMs, and install them into the rightmost slot (slot 1) in both banks (banks A and B). Your Mac will automatically gulp down data from the two parallel chips as though it's a single entity, resulting in a speed gain of about 10 percent for some processes.

If you have an odd number of DIMMs to install, data accessed from the single DIMM will be at the normal, noninterlaced speed; all DIMMs that *have* been installed in matched pairs, however, will still benefit from memory interleaving.

Power Macintosh 9500, 9500/180MP, 9515

This June 1995 top-of-the-line Power Mac was, weirdly enough, the *first* of the second-generation Power Macs; it preceded the 7200, 7500, and 8500 by two months. It was, therefore, the first Mac to be built around the PowerPC 604 chip and the first Mac with PCI slots instead of NuBus slots.

Originally, there were two versions of the 9500 — one that ran at 120 MHz and one at 132 MHz. Subsequently, Apple released a 150 MHz version (in April 1996) and two versions based on the 604e chip (August 1996), one running at 180 MHz and one at 200 MHz.

Unlike the other second-generation Power Macs (notably the 7500 and 8500), the 9500 *wasn't* designed to be a multimedia powerhouse. It has neither RCA-style audio jacks for audio cables nor video input/output jacks. In fact, it doesn't have built-in video *at all.* You have to buy the Apple Accelerated Graphics Card or a third-party graphics card just to hook the 9500 up to a monitor.

What the 9500 does offer, pure and simple, is speed and room to expand; it has *six* PCI slots and can hold up to 768MB of RAM (see Figure 12-14). This machine was intended for high-end users who need the 9500's sheer processing muscle for color publishing or multimedia production.

And speaking of sheer processing muscle, the 180 MHz model, officially called the 9500/180MP, was a landmark release — the first computer in Apple's history to offer *multiprocessing;* it's equipped with not one but *two* 604e chips, which work simultaneously to process data. (The MP in the name stands for *multiprocessing.*) One processor handles the Mac OS and controls the stream of information pouring in and out of the computer, while handing off other tasks to the second chip for processing. Obviously, a pair of 604e chips working in tandem in this way can chug through graphics and video data very fast, but software has to be specially rewritten to take advantage of this multiprocessing scheme. Fortunately, a number of companies — Adobe Systems, Deneba, Macromedia, Strata, and others — have promised to release programs to take advantage of multiprocessing. A multiprocessor-compatible version of Photoshop, for example, is already available. When used with software that supports multiprocessing, the 9500/180MP can handle tasks twice as fast as a single-processor Mac.

Price:	*9500/120:* $4,700 then, $2,350 now; *9500/132:* $5,300 then, $2,700 now; *9500/150:* $4,800 then, $3,700 now; *9500/180MP:* $5,700 then, $5,200 now
Apple code name:	Tsunami
Processor and speed:	PowerPC 604 at 120, 132 or 150 MHz or PowerPC 604e at 180 or 200 MHz
Memory:	16MB of RAM, expandable to 768MB; requires 168-pin, 64-bit, 70-ns DRAM DIMMs
Equipment:	Internal AppleCD 600i quadruple-speed (or eight-speed) CD-ROM drive; 2MB of VRAM, expandable to 4MB; 512K Level 2 cache; 6 PCI expansion slots; 10Base-T and AAUI-15 Ethernet connectors; one sound-output port for stereo CD audio and one sound input port for 16-bit stereo sound input
System software notes:	Requires System 7.5.2 (with System Enabler 701) or later; 150, 180 and 200 MHz versions require System 7.5.3 or later

PORTABLE POWER MACS

In the summer of 1995, Apple introduced the first PowerBooks driven by a PowerPC chip — the PowerBook 5300 series. For these models, yet another incarnation of the PowerPC chip was developed — the 603e chip. The 603e is slower than the 601 (the chip in the original desktop Power Macs), but it consumes only a third as much power and has three reduced-power sleep modes. The 603e chip itself also is smaller than the 601, making it perfect for a laptop.

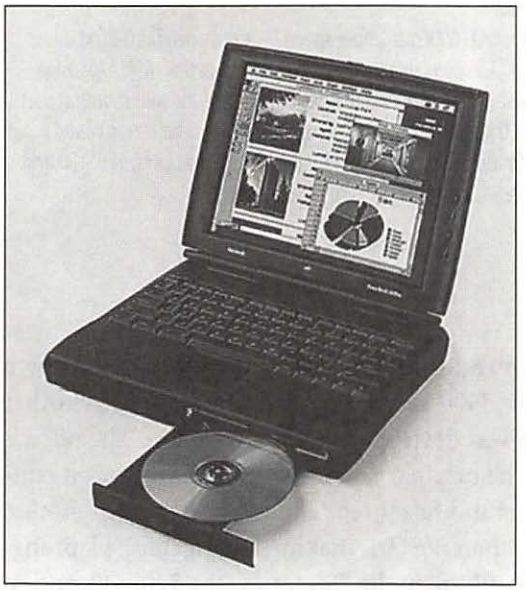
You can upgrade any 1994 PowerBook in the 500 series (the 520, 540, and so on) to be PowerPC equipped, of course; but the new PowerBooks — with the exception of the PowerBook 190 — are designed from the ground up around the PowerPC processor.

PowerBook 1400 family

After the quality-control problems of the 5300 PowerBook series (see "PowerBook 5300," later in this chapter), Mac fans longed for one rock-solid, reliable, glitch-free PowerBook. And they wanted a CD-ROM built in.

Apple was listening (see Figure 13-4). The PowerBook 1400 debuted in October 1996, filled with crispness and solidity refinements. The trackpad, keyboard, screen-hinge "brake," and overall construction were all improved, and none of the 5300-style quality problems emerged.

Figure 13-4
The PowerBook 1400's new case is actually the same size as its predecessor, the 5300 — but appears slimmer and slimmer, thanks to a clean, sculpted design and tighter-fitting clamshell halves. (Courtesy of Apple Computer, Inc. Photograph by John Greenleigh.)



Moreover, this PowerBook was the first with a full-size CD-ROM — a 6X CD-ROM unit whose tray slides out of the front edge of the machine (see Figure 13-4). The entire drive pops neatly out of the PowerBook, too, so that you can slide the floppy drive (or a third-party Zip drive, hard drive, or magneto-optical drive) into its place. Other new features: a flip-up keyboard to make upgrading easy, and a clear plastic cover to replace the usual dark gray top panel. Beneath this plastic panel you can insert a BookCover — a colorful paper insert from Apple; your travel itinerary, phone numbers, or business cards; solar-panels; leather, woodgrain, or stainless steel covers; and so on.

Otherwise, the 1400 is much the same as the former top-of-the-line 5300ce — at a fraction of the price. For example, the 1400 inherits the 5300ce's enormous, brilliant, 800-by-600 dpi screen (about the equivalent Desktop area of a 16-inch CRT monitor).

The 1400's speed didn't increase as much as many fans had hoped — the standard model uses the same 117 MHz PowerPC 603e processor chip (with no level 2 cache) as the discontinued 5300ce, although a more expensive 136 MHz model (with a cache) is available. Nor did weight (about seven pounds) or battery life (the same two-hour NiMH battery) improve. Otherwise, the 1400's

sleek new case design, screen, keyboard, CD-ROM, and trackpad are so well designed that you'll quickly forget you're using a laptop. Surprisingly, this handsome machine is meant to be the *low* end model of Apple's PowerBook line; its prices begin at $2500, including 12MB of RAM, the floppy drive, that enormous color screen, and a 750MB hard drive.

Price:	*1400cs without CD-ROM:* $2,500; *1400c with 136 Mhz processor and CD-ROM:* $4,000
Apple code name:	Epic
Processor and speed:	603e at 117 or 133 MHz
Memory:	12 to 16MB of RAM, expandable to 64MB
Equipment:	Removable Apple SuperDrive/6X CD-ROM; 11.3" dual-scan or active-matrix color display (800 by 600 pixels); 750MB or 1 GB hard drive; enhanced, clickable trackpad; 2 PC Card slots (for two Type I or II PC Cards or one Type III card); Nickel-Metal-Hydride battery; internal slot for 8-bit video or Ethernet card; 16-bit stereo sound input/output ports; built-in speaker and microphone

PowerBook Duo 2300c

The 2300 was Apple's first PowerPC Duo. Like other Duos, the 2300 is super-light — only 4.8 pounds — and has a docking connector that fits all Duo docks and mini-docks, as described in Chapter 12 (see "Duo 210/230"). Like the larger 5300-series PowerBooks, the 2300 contains a PowerPC 603e chip running at 100 MHz. Of course, the 2300 is faster than previous Duo models, but it also has a better screen — a 9.5-inch active-matrix color display that's bigger and brighter. Unlike the PowerBook 5300s, the 2300 has a trackpad that lets you double-click simply by tapping on the trackpad, drag-lock with a down-up-down tap, and briefly lift up your finger during a long drag.

Price:	$3,700 then, $3,150 now
Apple code name:	AJ
Processor and speed:	603e at 100 MHz
Memory:	8MB of RAM, expandable to 64MB
Equipment:	9.5" active-matrix color display (640 by 480 pixels); 750MB or 1.1 GB hard drive; enhanced trackpad; docking port

MACINTOSH SECRET

THE ASSISTANT EASTER EGG

Not many people use Apple's PowerBook File Assistant, despite its many wonders (described in Chapter 5). Those who do, however, can play this little undocumented game, discovered by free book winner Robin Poirier.

If you press Option while choosing About File Assistant from the menu, you'll discover a series of names flashing away in the dialog box at warp speed. They continue racing by, too fast to read, until you release the Option key. When you do so, the display will freeze on the one name that happened to be blinking into place when you released the key. It's like an electronic game of musical chairs. Or maybe you'd call it a random name generator?

Code name: Hooper (PowerBook 3400 family)

As we write this, Apple's Spring 1997 PowerBook models haven't yet been announced. But this much is clear: these models, code-named Hooper, are Power Mac 8500's in a laptop, with no compromises.

These laptops are based on a PCI-slot architecture, exactly like the current desktop line, with all the expandability that implies. All the speed, too: A 64-bit data pathway, running at 33 MHz, means less waiting for data to dance through your circuit boards. Moreover, these laptops are based on a new PowerPC-chip, the 603ev, running at 180 or 200 MHz, making previous PowerBooks (indeed, previous laptops of any kind) look like turtles.

The now familiar removable 6X CD-ROM is on board. But the video features are a revelation: while the pixels reveal the same 800-by-600 Desktop area, they're larger dots, filling 12 inches diagonally — there's practically no gray plastic framing this glorious display. A video output jack is backed by enough VRAM to fill an external monitor's 1,024-by-768-pixel image. Four speakers fill the air with portable sound.

All of this speed and multimedia talent don't come cheap: this PowerBook costs a pretty penny, and it weighs a pretty seven pounds. But when you recognize that you're getting a PCI Power Mac in a laptop, the money and the weight — and the *wait,* considering the inevitable shortage — may be worthwhile.

Be sure to visit our Web page, *http://www.idgbooks.com/idgbooksonline/macsecrets,* for additional information when these laptops are actually available.

PowerBook 5300 family

Apple introduced PowerPC technology to the PowerBook line in August 1995 with the 5300 series. The four differently named models vary only in their screen technologies (see the specs below); the 5300ce was the first PowerBook to offer a colossal 800-by-600-pixel desktop. (The physical dimensions are no larger, but the pixels are much more tightly packed; see Chapter 14 for details.)

Three of these models contain a 603e chip running at 100 MHz — the same chip used in the 5300- and 6300-series desktop models. The 5300ce has a faster 603e chip — 117 MHz. Unfortunately, the 603e isn't the speediest chip on Earth, and these Macs don't have a level 2 cache for frequently used instructions. As a result, these PowerBooks are nowhere near as fast as their MHz ratings would seem to indicate. Running native PowerPC software, you get about the speed of the slowest Power Mac ever made (the 6100/60). And running *non*-native software — such as, alas, System 7.5 — these laptops can seem *very* slow.

The 5300's are bigger and chunkier looking than earlier PowerBooks, but Apple packed much more into them (see Figure 13-5). For example, these laptops have removable floppy drives; you can pop the whole drive out of its bay and replace it with another device — or leave it at home if you won't be needing it when you travel.

Figure 13-5
The PowerBook 5300 series and the 190 share the same case design: The first totally black PowerBooks, crammed with more removable pieces and slots and compartments than any Mac before them.



In addition to the expansion bay, there are two PC-card slots. You'll need those slots if you want, for example, a modem or Ethernet hardware, because there isn't room inside the case for built-in versions of those features. PC cards, popular on DOS-based laptops, were formerly known, hopelessly, as PCMCIA cards. You can also buy PC cards that are little hard drives, pagers, and so on.

The 5300's innovative built-in infrared transceiver lets you connect and transfer files to any other Mac that has infrared capabilities. (If you don't have an IR-equipped desktop Mac, you can add an IR pod, such as the $70 Farallon Air Dock.) With the 5300's IR transceiver, you don't have to mess with cables to connect to a network; you just point the transceivers at each other (within a range of about six feet) and start transferring files.

The 5300's represented Apple's state-of-the-art PowerBook technology in every respect but one: They didn't have the improved double-clickable trackpad found on the PowerBook 190, 1400, and Duo 2300 — which allows you

TRUE FACT

THE MOST EXPENSIVE MACS OF ALL TIME

What do the Power Mac 8100/110 CD, Mac Portable, Mac IIci, and Mac SE/30 have in common? They are all among the ten most expensive Macs ever released.

True, by today's standards, you would hardly think of the IIci as a powerhouse computer (or consider the leaden Mac Portable much of a laptop). But at the time of their release, these machines represented Apple's cutting edge — and people paid top dollar to get that new technology into their own hands. Amazingly, people paid $8,800 to get a brand new IIci in September 1989 — about $3,400 more than it cost in 1995 to buy the most expensive Power Mac 9500/132!

You could argue that the single most expensive Mac model ever released was the almost universally ignored Mac XL, originally called the Lisa, which predated the original Mac 128K by a full year. (Though many people don't consider the XL a real Mac, it *could* run Mac software — up to System 3.2 — and was written up in the earliest issues of *Macworld*.) The Mac XL debuted in January 1983, with a whopping price tag of $10,000.

Here, for the record, are the nine other top-dollar Macs, listed with their original prices:

Model	Released	Original price
Mac IIfx	March 1990	$9,870
Mac IIx	October 1988	$9,300
Quadra 950	May 1992	$8,800
Mac IIci	September 1989	$8,800
Quadra 900	October 1991	$8,500
PowerBook 5300ce	August 1995	$6,500
Mac SE/30	January 1989	$6,500
Mac Portable	September 1989	$6,500
Power Mac 8100/110 CD	January 1995	$6,300

to double-click by tapping right on the trackpad. (See Chapter 14 for details.)

The PowerBook 5300 also has the dubious distinction of being the first and only Macintosh ever to be *recalled*. Shortly after the PowerBooks were released, Apple discovered that the new lithium ion (LiIon) batteries included with the 5300 models had an unfortunate potential to burst into flames. About 1,000 of the 5300 machines had to be shipped back to Apple, where they were refitted with nonexploding (and shorter-life) NiMH batteries.

Price:	*5300:* $2,200 then, $1,050 now; *5300c:* $3,700 then, $2,000 now; *5300cs:* $2,800 then, $1,600 now; *5300ce:* $6,500 then, $3,350 now.
Apple code name:	M2
Processor and speed:	PC 603e at 100 or 117 MHz
Memory:	8MB of RAM, expandable to 64MB via one RAM card expansion slot
Display:	*5300:* 9.5", 16-level grayscale, passive-matrix display, 640 by 480 pixels. *5300cs:* 10.4", passive-matrix color display, 640 by 480 pixels. *5300c:* 10.4", active-matrix color display, 640 by 480 pixels. *5300ce:* 10.4", active-matrix color display, 800 by 600 pixels.
Equipment:	Removable Apple SuperDrive; internal 500MB or 1.1 GB hard disk; 2 PC Card slots (for two Type I or II PC Cards or one Type III card); Nickel-Metal-Hydride battery; 8-bit video output port; 16-bit stereo sound input/output ports; built-in speaker and microphone; trackpad

POWERPC-MAC SECRETS

The extension hazard



As we've mentioned, software that isn't specifically written for Power Macs can really slow down your machine. It follows, therefore, that non-native *extensions* are particularly problematic — because these programs run *constantly* in the background. Versions of ATM before 3.8, for example, slow a Power Macintosh by as much as 15 percent. Do a clean install of your System Folder (as described in Chapter 33) after months of adding fun junk to your Power Mac, and you're likely to be shocked at how much faster it is *without* them.

So, how can you tell if your entire system is being dragged down by a few non-native extensions? Use Conflict Catcher (or the demo, included with this book). Open the control panel, click the Reports button, and choose Patched System Traps from the pop-up menu. Read the list of your extensions. Those with multiple asterisks beside their names are those that are probably dragging your entire Mac into the slow lane.

You can also use a freeware utility called PowerPeek (available on the Web at *http://www.zdnet.com/macuser/software/*). Among other things, PowerPeek lists all the native files on your system, so you know exactly which of your programs run under emulation and which don't. PowerPeek also flashes an indicator light in the upper-right corner of your screen to tell you whether or not your Mac is running native code. The indicator flashes green when you're running native code and flashes red when you're running under emulation.

Not all slots are created equal

A Power Mac 9500 has six PCI slots — but don't fill them arbitrarily. Cards in the top three slots run slower than those plugged into the bottom three. The speed difference has to do with the PCI architecture, which requires one controller for every three slots. Evidently, Apple's design taxes one trio of slots more than the other. So, if you have a choice, fill your slots from the bottom first for the best performance.

Identifying a chip's type and speed

Apple has used five different types of the PowerPC chip in its Power Macs, running at speeds ranging from 60 MHz to 200 MHz. How can you tell which chip is in *your* Power Mac and determine its actual clock speed? Is there any way to tell what chip is running your Mac just by looking at it?



Yes. Open your Mac's case and take a look at the FCC ID label located on the back side of the processor card. The number on the FCC ID label contains nine characters, the last six of which identify the processor and the speed. For example, if the FCC ID ends in 604132, it means you have a 604 processor set to run at 132 MHz.

Zapping PRAM — the PCI way

We mention zapping your Mac's PRAM (parameter RAM) several times in this book; it's a useful troubleshooting technique for stopping crashes and clearing odd glitches from your system. However, PCI Macs store certain information, such as data related to your video-display options, in *nonvolatile RAM* (NVRAM) instead of PRAM.

So here's how you can zap both at the same time to return to default settings. First, shut down your Mac. Then start it again holding down the usual zap-the-PRAM key combo (⌘-Option-P-R). After you hear the second startup chime, press Shift so that your Mac starts up with extensions turned off. Finally, drag the file called Display Preferences out of the Preferences folder in the System Folder and into the Trash — and restart.

Use the right video jack, Jack

As we mentioned earlier, first-generation Power Mac models (6100, 7100, 8100) offer *two* video jacks: The one on the back panel and the one provided by the AV or PDS-video card. This arrangement may leave you with a dilemma: To which jack should you hook your main monitor for the best speed?

If you're running *native* PowerPC programs, use the built-in back-panel jack for a 15 percent screen-redraw speed-up. If you're using *non*-native programs, the back-panel jack gives you a 35 percent *slowdown*. Therefore, if you're doing most of your tasks in emulation, use the card-provided video jack.

The classic Power Mac car-crash sound

When something goes wrong on a Power Macintosh, you hear neither the four tones of a Mac II-class machine nor the *Twilight Zone* theme of the Quadras. Instead, you hear a horrific digitized recording of a car crash.



Want to hear it for yourself without actually damaging anything? The next time you start your Power Mac, press the Interrupt switch *just* after the machine begins to start up (before the screen even lights up). You'll hear it, all right. (See Chapter 7 for the locations of this switch.)

How to tell if it's a native application

Life sure is confusing now that there are two strains of Mac software — native and non-native. Wouldn't it be nice if you could tell at a glance whether some program was native or not?

You can. Just highlight an application's icon and choose Get Info from the File menu. If, at the bottom of the Get Info window, you see a message about turning on virtual memory (and how much real memory you'll save as a result), you've got native software on your hands.

If not, not.

Memory savings recapped

In case you missed it: The most important money saver on a PowerPC Mac is the virtual-memory oddity. Turn *on* virtual memory, even a little bit (or install RAM Doubler), and each native program requires as little as *half as much memory.* (Look at the Get Info box for a native program and see for yourself! See the sidebar "Why a Power Mac needs more RAM" for the reason.) This is one hunk of hard-disk space that's well worth trading away.

An updated Memory Secret

You already know, from having read Chapter 4, that there's a buried surprise in the Memory control panel — you turn on virtual memory, press Option, and click the hard drive pop-up menu.

On PowerPC-based Macs, though, there are new surprises in that secret pop-up menu. Our favorite: "Mr. 601 — the Power to Crush the Other Microprocessors." (You *did* see that *Saturday Night Live* ad spoof, didn't you?)



An updated Monitors Secret

Open the Monitors control panel on a PowerPC Macintosh. Press Option and click the version number. Keep the mouse button down and press the Option key over and over again. This Secret works much like it did pre-PowerPC, with a couple of differences: First of all, some even wackier names and transpositions take place — and now there's color!

(Unfortunately for fans of this trick, modern Power Macs come with the Monitors & Sound control panel instead, which has no juicy little Easter eggs buried in it.)

TRUE FACT

WHY A POWER MAC NEEDS MORE RAM

When you double-click a program's icon, the hard drive spins and your Mac reads the program's code into memory.

The PowerPC chip doesn't handle this hard-disk-to-RAM process the same way the 68000-series chips did. Older Macs could read *pieces* of program code from the hard disk — and get rid of that code — as necessary. For example, when you print, your program loads the printing code from the hard disk into RAM; when the printing is finished, those printing instructions are dumped out of memory.

Power Mac programs, on the other hand, can't read and dump code fragments as necessary. Their code is stored on the disk as one giant chunk. That's one of the reasons a native PowerPC program requires much more RAM than its non-native counterpart; such a program must load *all* program code into RAM when you launch it. As a result, a native program takes longer to load.

Fortunately, there's a way to let a Power Mac handle a native program in a code-fragments-as-necessary fashion, just as non-native programs do. Turn on Virtual Memory (see Chapter 9). Set that virtual memory amount to 1MB or 2MB more than your actual installed memory. Or, alternatively, install RAM Doubler.

Because virtual memory, at heart, is a method of rapidly swapping information between the hard drive and RAM, it works beautifully on a Power Mac. Microsoft Excel, for example, requires *6,500K less* memory when virtual memory is on or RAM Doubler is installed.

A deeply buried credit

You need MacsBug, Apple's debugging software for programmers, for this one. (It's available on America Online, among other places.) Ask MacsBug to display memory address 40B2E280.

You'll get a testimonial to Gary Davidian, the Apple software genius who single-handedly wrote the 680x0 emulator code that lurks inside every Power Mac — and that just may have saved the company.

The much-too-colorful Mac

Purchasers who laid down multiple thousands to become adopters of Power Mac technology are in for a fascinating surprise. On many Power Macs (the 8500, 7100, and 8100, for example), a couple of important choices are missing from the Monitors' control panel — namely, any color settings below "256." You read that correctly: These Macs *cannot* be switched to black-and-white!

And not just black-and-white — you can't switch these Macs into 4- or 16-color mode, either. The only people who'll care are those several million Mac fans who have games and CD-ROM discs that require 16-color or black-and-white modes to run. Or, people who want fast screen redraws. Or, people who want to take screen-capture PICT files that aren't enormous on the disk. Or,... oh well.

On first-generation Power Macs, this quirk kicks in if your monitor is connected to the Power Mac's *extra* video jack (the PDS video card's output), not the built-in video jack at the bottom of the case. On later Power Macs, you've only *got* one video jack — you're stuck forever in 256 colors or higher.

We called one of our friends in the engineering department at Apple. We got the classic response: "It's a feature, not a bug."

(What he meant, of course, was "It's less expensive this way.")

What to do with those old NuBus cards

Bought one of those spiffy new PCI-slotted Power Macs? Got a couple NuBus cards left over from your previous Mac? You don't have to dump them. You can buy a NuBus expansion chassis from Second Wave (512-329-9283) that lets you use those cards in your PCI slots.

Ditch the 68000 code

Some of today's programs are labeled "fat binary," meaning that they contain the program code for *both* kinds of chips — both the PowerPC and the previous 68000 series. Of course, if you have only a PowerPC, you might not care to waste all that disk space for storing code you'll never use. And if you have only a Quadra, you could happily do without the bulky PowerPC code. Yet, a fat-binary program is represented by only a single icon! How can you strain out the unneeded code?

Use PowerPCheck, included with this book. It strips out the kind of code you don't need, leaving you with a much smaller, more compact program.

MACINTOSH CLONES

In 1994, Apple announced that it would begin licensing System 7.5 and the PowerPC Macintosh ROM chips to other computer makers so that they could begin building *Macintosh clones.* No single event in Mac history produced more shock waves in the Mac community.

Until 1995, the only computers on Earth running Mac software were the Macs that had rolled off Apple's own assembly line. Now, Apple would let other companies license its trademark operating system. Suddenly, the distinguishing characteristic of a Mac was no longer to be the computer itself but the Mac OS. (This change of philosophy was first visible in System 7.5.1, which starts up not with the traditional "Welcome to Macintosh" message but the updated "Mac OS" logo — see Chapter 6 — and, later, in System 7.6, where the first command under the menu says "About This Computer" instead of "About This Macintosh.")

In sanctioning such a change, Apple's hope is that its loss of the monopoly on Mac making will be recouped by collecting licensing fees — and the further proliferation of Macintosh. Apple also hopes that by carefully controlling and supervising the clone-maker licensing process, it will spare the world from the kind of compatibility nightmares caused by a clone-making free-for-all (as happened in the DOS world).

In the spring of 1995, the very first Mac clones arrived, manufactured by a small, new, California-based company called Power Computing. Since then, Radius, DayStar Digital, Motorola, Bandai, APS, Akia, Pioneer, and UMAX have announced that they'll be bringing clones to market; other companies have clones on the way. Even IBM is at work on a version of its popular ThinkPad notebook computer capable of running the Mac OS. At this writing, the machines introduced so far have been, reassuringly enough, 100 percent Mac-compatible — although Apple won't allow any of them to be *called* Mac or Macintosh.

Mac clones generally offer the same variety of video options, ports, expansion slots, and drives you find on genuine Power Macs. Some, in fact, offer features *not* available from Apple; Power Computing makes clones fitted with internal Zip or Jaz drives, for example. Daystar's Genesis line of clones feature *four* PowerPC processors in a single machine for lightning-fast multiprocessing of large graphics files in Photoshop. (See "Power Macintosh 9500"earlier in this chapter for more on multiprocessing.) And, of course, clones usually cost 10 to 15 percent less than equivalent Apple machines.

Power Computing is by far the most prominent clone maker in the U.S. The company makes PowerPC-based models in a wide variety of configurations, from a "starter" system running a 132 MHz PowerPC 604 processor to the high-end PowerTower Pro, a 604e-based system that runs at 225 MHz. All the Power Computing models come with a keyboard and mouse, the latest Mac OS software, and a huge software bundle. (If you call Power Computing directly, they'll put together a custom system for you; you just specify which RAM, hard disk, video, and CD-ROM options you prefer.) Power Computing's prices are excellent and the systems have won high ratings from reviewers and customers. And, because the company sells computers in far lower quantities than Apple, its machines are always able to include the very latest, very fastest new PowerPC chips — at a time when these chips are still too scarce for Apple to consider.

Radius, a company known primarily for its accelerator and graphics cards, introduced a handful of clones in 1995, but has since sold its cloning technology to UMAX, which introduced its clones in 1996. The UMAX clones are based on the 603e and 604 chips and, like the Power Computing machines, come with an enormous software bundle that includes programs like Adobe PageMill, Conflict Catcher, ClarisWorks, Quicken, Now Up to Date, and Now Utilities.

Motorola's clones are significant because they're from Motorola. As such, they're built to meet unusually high construction standards, and they come with an unheard-of five-year warranty. As of the turn of 1997, however, none

of the clone companies could be described as innovators; what makes them significant is their lower prices, ability to deliver higher-speed chips before Apple can, and (in Motorola's case) extraordinary warranty.

THE FUTURE: THE POWERPC (CHRP) PLATFORM

The Power Macs are certainly a major leap forward, but the biggest leaps are yet to come. Apple, IBM, and Motorola are already working with prototypes of future incarnations of the PowerPC technology. The G3-series processor, for example, is a next-generation chip now in the works that will be able to run at 400 MHz. And its successor, the G-4 series chip, is eventually expected to reach clock speeds of 500 MHz. And, as we mentioned at the beginning of this chapter, Exponential Technology plans to be producing its 533 MHz in large quantities by mid-1997. In the short term, this can only mean faster, cheaper, and more powerful Macs.

But the PowerPC chip's speed and genius of design won't confer benefits only to Macintosh. Already, Ford and Time-Warner are installing the PowerPC processor in their cars and TV-top boxes.

Perhaps most shocking to old-time Mac purists, Apple and IBM are working *together* on a totally new computer platform. This machine — which, to corporations who buy hundreds of computers at a time, is the Holy Grail of personal computing — will be able to run *your choice* of operating system: the Mac OS, Windows NT, OS/2, or AIX (IBM's version of the Unix environment).

TRUE FACT

CODE NAME: LAST LAUGH

As you may have surmised from reading this chapter and the last one, Apple engineers have a code name for each Mac model while they're designing it (and before Marketing has figured out what it'll actually call the thing).

As Apple bet more and more of its future on the PowerPC Macs, the code names for the three first models began to leak out. The least-expensive one was known internally as PDM, the middle model was Carl Sagan, and the high-powered Mac was nicknamed Cold Fusion.

Meaningless, right? Not a chance; Apple programmers are famous for their stinging wit. In this case, everything becomes clear when you find out what *PDM* stands for: *Piltdown Man*. Remember that case? In 1909, an archaeologist unearthed this fossil skull in Sussex, England. For years, it was believed to be the missing link between apes and men — and then, in 1953, it was proved to be a fake.

OK. So, we've got a hoax, another hoax (cold fusion), and . . . Carl Sagan.

Well, this famous astronomer didn't much care for the implications. He got legal. His lawyers met with Apple's, and he wrote a couple of stern letters stating that his name was being used without permission. Apple's legal staff promised to make its programmers change the code name of the new Mac model.

So, they changed it to BHA. "Random initials," they told the lawyers. Carl Sagan was happy. He went away.

Guess he didn't know what *BHA* stood for: *butt-head astronomer*.

Believe it or not, Sagan sued *again*. After months of haranguing by lawyers, the case was finally settled in 1995 — the judge threw out Sagan's complaint.

MACINTOSH SECRET

THE GRAPHING CALCULATOR NOBODY KNOWS

Who'd have guessed it? The Graphing Calculator, the oft-neglected PowerPC-native demonstration program included with every Power Mac, is absolutely ripe with secrets. Thanks to its programmer, Greg Robbins, we've been able to reveal a few of them here.

- Turn on Balloon Help and you'll discover some surprises. For example, point to the csc and hyperbolic cosine buttons on the large keypad, the program icon itself, and all the credits pages. (Hint: Ernest Rutherford was one of the great pioneers in nuclear physics, having discovered radioactivity.)
- The Graphing Calculator is Macintosh Drag-and-Drop savvy; you can drag graphs right onto the desktop, where they become PICT files. What's really neat is that they carry their equations with them, behind the scenes; dragging a graph back into the calculator restores its equation as well.
- There's a secret benchmark mode that you can use to test your Mac's speed. Enter a graphable equation with an n in it, such as r<n. Control-click the Play button, and the calculator will time a cycle of the slider and report the number of seconds required to graph the cycle. (The time will appear just below the equation.)

  The "standard" test for timing a Power Mac using the Calculator is to use the last equation in the Inequalities demo (press the Tab key repeatedly to advance more quickly through various demo graphs, and then click the Stop button when an inequality containing an n is shown). For the standard benchmark to test a machine's speed, delete the Calculator preferences file, run the calculator on a Mac with a 640-by-480 screen, display or type in that final inequality, and Control-click the slider Play button.
- The calculator has an "on-screen graphing mode," that allows you to watch it draw the graphs step by step. To activate it, press the Space bar to erase any displayed graph, and then Control-click the Graph button. It's kind of cool to watch the 3-D surfaces draw. Better yet, when this on-screen drawing mode is activated, copying a graph copies it as a drawing — not as a bitmap — so it can be printed at full resolution.
- The Calculator can be used as an equation editor with standard word processors. Just paste an equation picture into one of many word processors (ClarisWorks, WordPerfect, MacWrite Pro, and so on), either double-click or ⌘-double-click the equation, and the calculator will be launched and the equation entered for editing. When the calculator window is closed, the edited equation is automatically returned to the word processor!

This soon-to-be-released platform — originally called CHRP (Common Hardware Reference Platform — now known as the PowerPC Platform, or PPCP) — will have the same PowerPC and PCI-slot technology used in the Power Macs. On a PPCP machine, you'll be able to run multiple operating systems simultaneously and switch between them as the need arises.

IBM expects to release the first PPCP-based computers in 1997. Their arrival — and further development of the PowerPC — will represent another landmark step in the continual evolution of the Mac.

Chapter 14

PowerBooks Exposed

IN THIS CHAPTER:

- Working with the PowerBook screen
- Secrets of the wall outlet
- Living on battery power
- The RAM-disk, five-hour-battery trick
- Sleep mode
- Getting files in and out
- SCSI disk mode
- PowerBook Duo notes

If you own a PowerBook, you already know the secret little pleasures associated with this strain of Macintosh: the hedonism of lying in bed with the computer on your stomach; the joy of getting off the plane having done meaningful work en route; and the intoxicating pleasure of sitting someplace cool, green, and shady while word processing to the accompaniment of birdsong until you run out of battery juice.

A LITTLE HISTORY

It wasn't that it never dawned on Apple to make a laptop Macintosh. Believe us, they wanted to. The ill-fated, way-too-heavy Macintosh Portable — every ounce as heavy as the Macintosh SE — is evidence of that.

No, the complicating factor was miniaturization. A computer has lots of components inside it, and some of them are pretty chunky. (Pop off the lid of a regular Mac and you'll see what we mean.) Each PowerBook component is a fraction of the size of the equivalent desktop-Macintosh component. The hard drive is the size of a deck of cards; the main circuit board is a quarter of the size of a regular Mac's; even the RAM boards are smaller.

The most brilliant aspect of the PowerBook is that, in a thousand glorious ways, it's exactly like a regular Macintosh. The software works the same way; the interface is the same; the keyboard shortcuts are the same.

Yet life with a PowerBook is distinctly different from life with a desktop Mac, even if you never budge from your desk. In this book, you have hundreds of pages detailing the ways of everyday Macintosh life. This chapter, therefore, is dedicated to documenting the eight ways in which PowerBook computing *differs* from desktop computing:

- Working with the screens
- Working from a wall outlet
- Working from a battery
- Working off a RAM disk
- Sleep mode
- Getting information into and out of the PowerBook (printing, presentations, modem use, faxing)
- Actually traveling with the PowerBook
- Special notes on the PowerBook Duo

We'll consider these topics one by one. For specifics about particular PowerBook models, see Chapters 12 (for non-PowerPC models) and 13 (for PowerPC [four-digit model-number] models).

THE SCREEN

If you've ever seen a PowerBook Duo's screen and realized that it's about as thick as a Wheat Thin, you understand that it can't work the same way as a standard Mac monitor. The regular TV-sized CRT monitors must be a foot deep, to allow the electron gun a little perspective on its target, but a Duo's screen is only 1/4-inch thick.

PowerBook screens use a completely different technology, having nothing to do with the weight, depth, or possibly dangerous electrical emissions of its desktop relations. It's called LCD, for liquid-crystal display. That's the same technology used in digital watches.

Liquid crystal is an oily goop that's sandwiched between two pieces of plastic. This liquid is filled with crystal molecules that, under normal circumstances, naturally curl into a spiral. This twisted macaroni shell of molecules effectively blocks any light reflected from the back of the screen (from the light bulbs at the edges of the screen or from daylight). The result is a dark spot (shadow) on your screen.

But when an electric current is applied to the electrodes in front and back of this liquid sandwich, the molecules uncurl. They align themselves into a parallel pattern perpendicular to the screen. In other words, they no longer block the light, and a bright spot appears on your PowerBook screen.

If you were able to follow this description even somewhat, then you'll realize that a *light* pixel on a PowerBook screen is *on,* and a dark spot is a pixel that's *off.* That may seem backward, but that's how it goes.

All of this sandwiching and layering fits between a couple of plastic or glass plates that can be a fraction of an inch thick. That's why LCD screens are flat panels instead of deep boxes (like CRTs). These flat-panel screens also require less power — another plus for use in laptop computers.

We've actually heard it predicted that *all* computer screens will one day be flat-panel displays. In addition to their small size, weight, and thickness, they also don't emit the ultra-low frequency radiation that CRTs do (a rumored, but unproven, health hazard). You can buy flat-panel monitors for desktop Macs today, in fact, but they're pricey.

Passive-matrix screens

Passive-matrix screens adorn the lower-priced PowerBook models: the grayscale Duo 210 and 230; PowerBook 160, 190, and 5300, and the older, less expensive color models (165c, for example). Passive-matrix screens have one big advantage: They cost about $800 less than *active-matrix* screens, described later. Passive screens have a couple of downers, however: *submarining* and *ghosting.* Submarining occurs when the cursor fades out for a moment if you move it too quickly. Remember those twisted-molecule strings? It takes them 1/8 second to twist or untwist. If there's anything on the screen moving faster than 1/8 second (such as the cursor or a QuickTime movie), the passive-matrix LCD screen won't be able to keep up. The result is blurring.

Ghosting is something you'll have to see on a PowerBook to understand. It's the faint outline of window edges, or some other rectangular structures, superimposed on the screen. You can eliminate these ghosted horizontal and vertical lines by fiddling with the contrast controls, but that usually makes what you *want* to see (your text, for example) too light.

A passive-matrix screen also requires more adjustments than more-expensive technologies. Every time you start PowerBooking in new lighting or at a new temperature, you must fiddle with the contrast and brightness controls on the corner of your screen/lid.

Passive screens also have a narrower viewing angle than active ones. If you try to view the PowerBook screen when you're not seated directly in front of it, you see a sort of bluish, milky cast over the whole screen. That's good when you want privacy. That's bad when you're trying to demonstrate something to onlookers.

Active-matrix screens

The higher-priced PowerBooks (180, 540, 5300c, 1400c, Duo 280 and 2300c, and so on) feature an *active-matrix* LCD screen. *Every single pixel* on an active-matrix screen has its own private transistor. This transistor is responsible for turning its one pixel on (black) or off (white). On a passive-matrix screen, by contrast, one row of electrodes goes horizontally, and another vertically; their intersections govern the surrounding pixels — an arrangement that offers much less precision.

As a result, an active-matrix screen has none of the visual problems associated with passive-matrix ones. There's no ghosting and no submarining. As *another* result, however, these screens are expensive to create, and they drain the battery faster than passive ones.

Furthermore, if any individual transistor goes on the fritz, its corresponding pixel is simply broken. (Apple says the pixel is *voided.*) It's almost inevitable, actually; a PowerBook 1400 screen, for example, has 480,000 individual pixels! The point is that you'll be pretty lucky to get an active-matrix screen on which every single pixel works. Apple won't even give you a replacement screen unless you've got more than *five* voided pixels.

Dual-scan displays

Technically, Apple doesn't even make PowerBooks anymore with straight passive-matrix screens. Nowadays, the less-expensive PowerBooks (5300cs, 1400cs) come with a newer, hybrid technology called *dual-scan.* Dual-scan screens are still passive-matrix devices, but they look a lot better; the components that fire the electric current through the liquid crystal molecules activate *two* lines of pixels at a time, instead of one. That causes the screen to redraw faster and produces a cleaner, crisper image.

POWERBOOK SCREEN SECRETS

Passive-matrix: Angle is everything



Fiddle with the angle of your PowerBook's lid/screen just as much as you do with the contrast and brightness controls! Looking straight into the faces of those tiny pixels can make a dramatic difference in the screen's overall clarity.

Passive-matrix: Contrast is also everything

In any given lighting/temperature situation, you can definitely find one contrast setting that makes the passive-matrix screen look absolutely great. Get into the habit of adjusting that little knob, slider, or button every time you whip open the lid.

Passive-matrix: Finding the cursor

Not only is cursor submarining sometimes a problem on passive-matrix screens, but it's even possible to lose the cursor altogether!

We have two solutions. The hard way is to roll the trackball or trackpad furiously in the upper-left direction. Eventually, your cursor will have no choice but to bump into the corner where the Apple menu is — and stop. You can now start hunting for it, knowing exactly where to look and wasting no additional time.



A better solution, in our opinion, is to use special software. Some people enjoy that old shareware gem called Googol Eyes (included with this book), which puts a pair of cartoony eyes on your Desktop — and they always look at the cursor, wherever it may be. Various other shareware and commercial programs are designed more specifically for PowerBook screens, offering animated "Here I am!" cursor displays when you press a certain keystroke.

Passive or active: Make hay while the sun shines

An LCD screen of any kind (active or passive) works by reflection. That is, the light that bumps off that gray background material is either blocked (to create a dark pixel) or allowed to pass out of the glass (to create a light pixel).

It stands to reason, then, that you see the best picture in bright light, especially sunlight. In our experience, in fact, if you're sitting in nice sunshine, you can't even tell if the PowerBook's backlighting is *on*. The illumination from the sun provides more reflective power than those built-in neon tubes ever could.

And that's a useful phenomenon indeed. It turns out that the backlighting on your PowerBook is one of the major drains of your battery charge. It's nowhere close to the scary "50-percent-of-your-power" claims you may have

read — it's more like 20 percent — but turning your backlighting off will definitely gain you some more working time.

Why a PowerBook's two-page display isn't really one

If you've perused our Monitors chapter, you know the beauty of today's 16-inch monitors: With only a visit to the Monitors control panel, you can change resolutions. A 16-inch multisync monitor can show 640 by 480 largish pixels (like a 14-inch display), 800 by 600 smaller pixels (like a two-page display), and so on.

Even though PowerBooks such as the 5300ce and 1400 have a remarkable 800 by 600 display (a resolution the DOS geeks call *Super VGA),* it's not multisync; you can't switch it to any other resolution. Nor will there *ever* be such thing as a multisync laptop screen. An LCD screen is made up of individual, hardwired pixels that can never change size — unlike a desktop monitor, where an electron gun zaps a flat field full of phosphors and *creates* the pixels as it goes.

WORKING FROM A WALL OUTLET

What's great about the PowerBook is that you don't need a separate recharger, really. The battery is recharging whenever the computer is plugged into a wall outlet, whether you're working on it or not. (Recharging is faster when the computer isn't on.)

And where might the PowerBook-wielding soul find publicly available juice? It's not always easy, but it's almost always possible. Look for electrical outlets in every airport, train station, and bus terminal. When you're desperate for a charge — between legs of a flight, say — they're a godsend.

To find these cherished AC dispensers, you need to think like a janitor. These outlets, after all, are provided for the benefit of the vacuum cleaners and floor polishers that come out in the middle of the night. In various airports, we've found outlets as follows:

- At the bases of pillars
- Next to the gate agent's station, set into the floor
- In the wall, but covered with a silver spring-loaded cap to hide it
- Right next to the door you use to go onto the plane, at waist height
- In the airport's overpriced fast-food joint or bar

The problems with battery gauges

Along with your PowerBook, you received either a desk accessory called Battery or a control panel called Control Strip. Each is designed to serve several important functions, including:

- To tell you when your Mac is plugged into the wall and recharging
- To tell you how much juice remains in your battery
- To let you force the PowerBook into Sleep mode (we'll get to this)

Because the chemical changes in a battery are subtle and unpredictable, and because your work's demands on the PowerBook components change from moment to moment, software gauges of this type face an impossible task. The Control Strip, especially in conjunction with recent PowerBook models' "intelligent" batteries, does a fairly good job; and, misleading though it can be, the numerical "time remaining" display is an extremely useful gauge.

But the older Battery desk accessory is decidedly mediocre. For one thing, it's not a very good gauge of how charged the battery is. It has eight little rectangular notches (see Figure 14-1). Supposedly, all eight are black when the battery is fully charged. All eight are supposed to be white when the battery is depleted.



Figure 14-1
The lightning-bolt-on-a-battery icon is the international symbol for: "I'm charging now, thank you." It may not always be telling the truth.

As you may have noticed — let us confirm your suspicions — these indications are bogus. When you're recharging a completely dead battery, for example, all eight of the DA's notches turn black by the time the battery is, in reality, only half charged. The same thing happens in reverse: When you're working with a fully charged battery, the notches vanish alarmingly quickly as you begin the session. They blanch more slowly as the juice runs out.

ANSWER MAN

256-color games, 16-gray PowerBook

Q: ***I have a PowerBook 165. It shows only 16 grays. Is there any way for me to play games or use CD-ROMs that require 256 colors?***

A: If there weren't, would we bother devoting a sidebar to your question?

Naturally, you could always hook up a color monitor to your PowerBook (or any other PowerBook with a grayscale screen, such as the Duo 230 or 250). Although your ***PowerBook's*** screen shows only 16 grays, it can ***drive*** a 256-color external monitor. (One reader reports that he doesn't even use the VGA connector — he uses the PowerBook's video adapter cable alone.)

We know, we know — that's not what you were asking. You want to trick the PowerBook into using its 256-color smarts on its ***own*** screen. Here's how you do it.

All you need is a VGA adapter cable (about $8; the cable you'd use to attach a PC monitor to your Mac). Connect the video output cable that came with your Mac (or your Duo's dock or minidock) to that adapter. Don't actually hook up an external monitor.

Now open your PowerBook Display control panel. Turn Video Mirroring ***on***. Next stop: your Monitors control panel, where you should click the nonexistent external monitor's icon and set it to 256 colors. When you restart the Mac, programs that require 256 colors will indeed run — you'll see, on your PowerBook screen, a grayscale image that mirrors the nonexistent color image.

Of course, you'll still be stuck with a shorter-than-usual image on PowerBook models with 640-by-400-pixel screens (the grayscale screens on PowerBook 100-somethings and Duos); some games are designed to work only on standard 640-by-480-pixel screens. Otherwise, this trick should work fine.

POWER-OUTLET SECRETS

A safety plug for the PowerBook Duo

The power adapter for the Duos and the PowerBook 500 models is certainly a masterpiece of design. Those two little prongs flip up for you to wrap the cord around. And on *all* PowerBook models, the adapter, instead of having a permanently attached cord, has a male three-pronged socket. Into it you can plug a regular long Mac power cord or a short "duckhead" plug that keeps the adapter snug against the wall.

However, these adapters have one feature we *don't* like — they're three-prongers instead of two-prongers. The 100-series PowerBook models' adapter cords had only two prongs, making them compatible with twice as many American wall plugs.

Still, there's a cheap and easy way around this problem: Get a three-to-two-prong adapter from a hardware store. Carry *that* in your case, too. Or buy a replacement adapter/cable from Battery Technologies — a $70 marvel that's only 1/3 the size and weight of Apple's adapter *and* has only two prongs.

One more trip to the hardware store



While you're at the hardware store, buy an outlet extender. Usually, this thing looks like a multi-plug cube or something, with the male prongs on one end and receptacles on all the other sides.

This gadget lets you plug any PowerBook AC adapter into a wall outlet or power strip without blocking all the *other* outlets. It acts as stilts, pushing the PowerBook's power cube far enough out of the way of the power strip (or wall) that you can use the adjacent sockets.

Nothing to fear when overseas

Your PowerBook is smarter than you think. It can automatically convert foreign countries' currents into the correct voltage for the PowerBook, be it 110V or 220V.

Before you go abroad, however, you still need to buy a *plug adapter* for the country you'll be in. It doesn't affect the current — we're talking about a simple prong adapter that lets you plug the PowerBook in to a differently shaped outlet. (The outlets in most of Europe and Australia, for example, look like Figure 14-2.)

You'll discover that it's much easier to find the appropriate converter plug *here,* before you travel — at a Radio Shack store, for example — than to find one in the foreign country itself.

Figure 14-2
Outlets around the world. Get the appropriate plug converter here before you travel. (Japan uses the same outlets as the U.S. two-prong variety.)



Parts of Africa, Europe, Greenland, Iceland, former USSR countries, Middle East, etc.



England, Hong Kong, Parts of Africa



Australia, New Zealand, South Pacific, China

Juice in the air

There used to be a little *razor outlet* in every plane's bathroom. Pathetic though it feels to sit there on the little toilet just for the sake of eking out some work while drawing juice from that razor outlet, it's an emergency measure that's worth remembering.

We're mixing our tenses in this paragraph deliberately, because over the last ten years, airplane designers have stopped putting razor outlets in those bathrooms. (Obviously, they've never owned PowerBooks.) About a third of the planes we've traveled on in the last couple of years still have outlets on board. But the newer planes have no outlets, nowhere, nohow. If your last PowerBook battery dies, your hope dies with it.

We've heard a rumor that a very few, very new planes are actually going to have outlets built into the floors or even on the *armrests,* which would be, to PowerBook owners, like a gift from the gods. But given the recent headlines about laptop computers' possible interference with cockpit navigational equipment, we won't hold our breath.

Of plugs and batteries

Whenever your PowerBook is plugged in, it's getting power from the wall outlet. If you unplug the PowerBook from its cord, it seamlessly and immediately switches to getting power from the battery.

This is an excellent reason never to work with the battery removed from the machine. You can work just fine with such a gutted PowerBook, as long as it's plugged in. But if the power cord comes out, whatever's in memory vanishes. (And furthermore, the battery's sliding panel protects the laptop's innards from wayward dust.)

Tales of the Trackpad

What does the inexpensive PowerBook 190 have that the mighty PowerBook 5300 lacks? A double-clickable trackpad! On the 5300 models, as with the PowerBook 500's, you can only *move* the pointer using the trackpad. On the Duo 2300, the 190, the 1400, and all subsequent models, however, the Trackpad control panel (see Chapter 4) offers three additional checkbox options:

- **Clicking:** When this option is on, you can tap the trackpad surface itself (instead of clicking the big thumb button) to "click the mouse button," and even double-click on the pad to "double-click."
- **Dragging:** This option lets you "drag the mouse" by tapping down-up-down (and moving your finger once it's down for the second time); you can even continue a long drag after lifting your finger briefly.

  Not having a good feel for the length of time you're allowed to lift your finger (intending to put it back down and continue) can have some interesting results; for example, suppose you're choosing a menu item. Once the menu is pulled down, it remains down even if you take your finger away — but only for one second. If your finger doesn't return to the trackpad promptly, the Mac "releases the mouse button" and executes whenever menu command you were pointing to!
- **Drag lock:** The little animated demonstrations in the Trackpad control panel don't make quite clear the function of this third option. In fact, this option is by far the most useful on a PowerBook trackpad, which otherwise makes dragging icons across the screen and pulling down menus very difficult. When this third check box option is on, you can double-click the trackpad. But if you begin moving your finger after the second click, the Mac *won't* "release the mouse button" when you lift your finger — even if you lift it forever. You must tap the trackpad again to release the drag lock.

TRACKPAD SECRETS

The importance of dry fingers

In general, we actually prefer the trackpad (which never needs cleaning and never sticks) to the previous PowerBook models' trackball (which needed constant cleaning). However, the trackpad's value plummets if your hands are damp, sweaty, or lotioned . . . the electronic sensors inside the pad get confused.

Anyway, several easy solutions await. For example, if you have just washed your hands and are in a hurry to use the PowerBook, just put a piece of paper over the trackpad as a temporary measure. Alternatively, you could always tape some plastic food wrap over the pad surface — or buy a Teflon appliqué from a mail-order company. Finally, there's Apple's Trackpad Climate Control extension, introduced with the PowerBook 1400; it makes the trackpad less susceptible to inadvertent cursor jumps because of damp fingers or high humidity.

Trackpad tricks



Place your fingers on the trackpad about a half inch apart, and move them, very slightly, in opposite directions. Interestingly, the cursor will jump from one side of the screen to the other. It's a useful trick for moving the cursor long distances quickly and accurately — especially if you've hooked up a larger external monitor to your laptop.

Here's a related tip, useful for leaping into the corners of your screen. Try moving your thumb or index finger a short distance in the direction of the corner you seek — and then tap the pad with the next finger, an inch or so from where your first finger was moving. You've just fooled the thing into thinking that your finger covered the distance between the fingers instantaneously, and it teleports the pointer directly to the corner of your screen.

WORKING FROM A BATTERY

Working with a PowerBook on battery power is a strange feeling. Even if you're not trying to beat a deadline, the battery's imminent demise can leave you *feeling* as though you are. Unless you have extra batteries ready to go, you feel the continuous tick of the clock at your back. Every time you hear the hard drive whir into action, you wince, because you know it's draining precious battery power. You fiddle with the backlighting to the lowest readable level, hoping you'll be granted a few extra working minutes.

If you *want* to study our battery-conservation Secrets, please do; we're quite confident that the Secrets to follow include every suggestion ever made for conserving juice. Every now and then, though, remember that a new PowerBook battery doesn't cost more than a couple of nice dinners for two. If you ask us, a second or a third PowerBook battery is a better investment than worrying yourself sick over whether or not you've tweaked your backlighting to battery-saving perfection.

Meet your battery

Apple, fortunately, never stops fiddling around with the design for PowerBook batteries. Each new generation of battery can power your laptop for yet another 30 minutes or so.

The batteries have been based on three basic chemical energy-cell types. There was the *nickel-cadmium* batteries (or NiCad, as on PowerBooks 140 through 180); the *nickel and metal hydride* ones (NiMHs or NiHy — the Duo and PowerBook 500 lines); and, more recently, the *lithium ion* (LiIon) batteries designed for the PowerBook 5000 line (but, because two batteries exploded in testing, were ultimately replaced by the older NiMHs).

All these batteries have one thing in common, both with each other and with batteries in PC laptops: They don't deliver nearly the amount of power advertised. The original NiCads (advertised to last 2-3 hours per charge) typically ran a PowerBook for about an hour; the state-of-the-art LiIons, when they finally make it into a PowerBook model, will deliver three hours of actual use. Of course, your mileage will vary depending on how much you use your hard drive and backlighting — but we'll get to that.

Charging batteries

Newer battery types don't just last longer than older ones; they also recharge faster. A PowerBook 140 through 180 battery, for example, recharges at full throttle for about two or three hours, up until the point where it's 80 percent charged. Then, so as not to fry the battery, the recharging slows to a trickle, taking *another* three or four hours to complete the full charge. A Duo, PowerBook 500-, 5000-, or 1400-series battery, on the other hand, doesn't have this wimping-out phase at the end of the recharging cycle; it recharges fully in about three hours.

In most cases, the only way to gauge for yourself whether or not the battery is fully charged is to determine *how long* it's been charging. As we've mentioned, you can't trust the Control Strip. The best solution is the one proposed for the LiIon batteries: four tiny LED lights that serve as a "fuel gauge," shutting off in series as the battery runs out.

PowerBook batteries are good for about 500 chargings. That, as well as common sense, should be your cue to use the PowerBook plugged into the wall whenever possible. You'll know when it's time to retire a battery when it just won't hold a charge anymore (see the next section for details). At that point, don't chuck this lethal chunk of toxic chemicals into the garbage; return it to an Apple dealer, who will send it back to Apple's battery-recycling program.

Consider affixing a label to each of your batteries that gives a battery number (1, 2, or 3, say) and the date you first started using it. Keeping track of the numbers will make it easier to rotate your batteries evenly. And if a battery doesn't seem to be able to charge anymore, the date will help you decide whether or not old age is the problem.

The memory effect

The memory effect is a problem unique to the NiCad and NiHy batteries (and, to a lesser extent, in NiMH ones). Here's the *symptom*: Your battery suddenly loses half its capacity, and you find that it now gives up the ghost after, say, 45 minutes.

The *problem* is the memory effect. If you repeatedly discharge a battery only to its halfway point, eventually the battery "remembers" that point, and decides that that halfway point is the *full* point. Thereafter, it quits recharging itself when it reaches that halfway point, thinking that it's full.

This effect — which happens to camcorder batteries too, by the way — has been seriously overpublicized. Actually, avoiding the problem is simply a matter of letting each battery run down completely every couple of months. That's also how you cure a battery that does exhibit the memory effect — just leave the Mac on, even past the low-battery error messages, until it shuts itself off. (They call this "deep discharging." Today's PowerBook models include a program called Battery Recondition that does this reconditioning for you.)

Then plug it in. The battery will have forgotten its halfway-recharging point and will recharge fully.

Battery-swapping notes

When you swap batteries on a PowerBook, start by putting the machine to sleep (except on 100-series models, which you must shut down or plug in). You don't have to be frantic. You have four minutes. Everything in memory, everything on the RAM disk, any programs you were running, will all remain exactly as they were, even with no battery or power cord in the machine.

Conserving battery power

As we've mentioned, the best experience using a PowerBook is when you don't have to worry about battery power at all. That's why PowerBooking in a hotel room is a completely different experience than PowerBooking on the plane.

Still, we've got dozens of techniques for saving juice. We'll pile them into one section — the Secrets coming up. In the meantime, remember that the biggest consumers of your battery power are:

- The hard drive spinning
- The neon light bulbs that illuminate the screen
- The built-in modem, if you have one
- AppleTalk

We, like all Mac gurus, will dwell on these items and ways to reduce their appetites.

The most dramatic trick of all, however, is the RAM-disk trick. This is a powerful method for doubling or tripling your battery charge's life span, and we've provided step-by-step instructions on how to do it. In fact, we've devoted a separate section to it, following this more general discussion of battery-saving tips.

CASE HISTORY

THE STICKY TRACKBALL SOLUTION

Reader Jay Lindell sent us the following Secret. Not only is it a good one, but his e-mail was so hilarious that we decided to reprint it here just as he sent it:

"After a Whopper or a handful of Cheez Doodles, your trackball is going to respond about as nimbly as Bob Dole to a telephone call from Hillary Clinton. The reason? Oil and particles transferred onto the ball then form a slippery gook when they're transferred to the roller pins under the trackball."

"Apple's fix: take an Exacto blade and GENTLY SCRAPE THE GUNK OFF THE ROLLER!!! Scrape . . . slash . . . shades of the shower scene from *Psycho!* If you sneeze during the process, you better start thinking of a good one you can tell 800-SOS-APPL!"

"Here's what I told Apple Tech they should be telling 'the rest of us' instead: Take a 2-inch piece of magic Scotch tape (better than the shiny/yellowy kind). Remove the trackball's retaining ring and the ball itself. Hold the tape between your thumb and index finger at the top of one of the long ends, sticky side down. Place the tape inside the hole with the area closest to your fingers directly over (but not yet touching) one of the rollers. Take the index finger from your other hand and gently press the tape against the roller. Now, just pull up on the tape. Take a look . . . isn't that amazing?! The tape lifts the gunk off just like magic!!"

"Repeat the process a few more times, being sure to use (and, therefore, make) a different 'lane' on the tape. Repeat this procedure, with a new piece of tape, if necessary, on the other roller. Scotch tape also works great for cleaning that saturated-fat film festival sitting invisibly on the trackball itself. How's that for non-invasive?"

"Apple must have liked it . . . they sent me a FREE locking ring. I'm guessing they gave it to me because of how easy it is to clean the trackball assembly this way . . . OK, and because of my refusal to stop working and eating lunch at the same time."

BATTERY SECRETS

Cut down on the backlighting

The screen is a big consumer of your battery juice. When you're desperate to conserve power, dim the backlighting.

Along the same lines, consider not using the backlighting *at all.* This is feasible under two conditions: first, when you're sitting in sunlight (see "The Screen," earlier in this chapter, for the rationale). Second, if you're sitting in a meeting and typing notes, it sometimes works well to type blind, even when you can't see what you're typing.

Finally, you can use the PowerBook control panel (see Chapter 4) to control automatic dimming of the backlighting. You can set the dimming to take place after a specified period of inactivity on your part. After the lighting blinks off, it comes back on when you move the mouse or touch any key.

Avoid the hard drive I: Minimize usage

The hard drive is the #1 power drain on your PowerBook. When it's not actually *spinning,* however, it hardly drains anything at all. It drains the most energy when it's just *beginning* to spin. Your goal, therefore, should be to make the drive stop spinning whenever you won't be needing its services for a minute or so, but to let it continue if you'll be needing it shortly.

Obviously, this presents a question: How can you tell if it *is* spinning? If you're in a quiet place, you can *hear* it grind into gear. If the environment is noisy, you can get a program, such as the Control Strip, that gives you a visual indicator.

The *best* way to avoid using the hard drive is to load your entire work session onto a RAM disk, as described in the next section.

The next best way is to use programs that don't need to read information from the hard drive very often. If there's no need to read from the hard drive, then the drive can sit idle. Unfortunately, Microsoft programs, among the most popular, are also among the most disk-intensive. Word, for example, seems to make the disk spin all the time.

ANSWER MAN

The little slider on the Duo battery

Q: ***On the side of my Duo's Type I battery, there's some kind of sliding, two-position switch. One position is marked by a white battery icon, the other by a black one. What does this switch do?***

A: There's not a word about this switch in the manuals, as you may have noticed. As a result, there hasn't been a word in any book or magazine about it. It took some very persistent phone calls to Apple for us to finally find out the mystery of the Duo's battery switch.

Guess what? It doesn't do ***anything.*** It's designed to be a handy indicator for you, so that you'll know whether or not this battery is charged up.

When the battery conks out, you're supposed to take it out of the Duo and flip the switch so that the black battery icon shows (meaning: this is uncharged). Then, when you've charged it up, you flip the switch so that the white battery icon shows (meaning: ready to go). It's for human use, not computer use.

Actually, it's a nice idea; we're sorry Apple retired it. You might consider creating a homemade edition of the same switch for use on your non-Duo-Type-1 batteries. Use a red sticker when it's charged up, for example, and then take the sticker off when the battery is depleted.

Of course, using the Save command from *any* program makes the disk spin, but that's a little juice worth expending.

Avoid the hard drive II: Control its spin-down moment

The PowerBook control panel lets you specify *when* you want the hard drive to "spin down" (stop spinning) — between 30 seconds and 15 minutes after the last time its services were called for. Better yet, with the help of some utility software, you can make the drive spin down *on command!*



For example, PowerBook Assistant Toolbox extension, included with System 7.5 and later, lets you make the hard drive stop spinning when you press ⌘-Shift-Control-zero. Likewise, the Control Strip (also introduced with System 7.5) gives you a pop-up Spin Down command. In either case, at your command, at any time, the hard drive will stop spinning.

Suppose, for example, that you've been merrily typing away into ClarisWorks for 20 minutes. The hard drive has been peacefully still. But now you want to save your work. The drive spins into action, and your file is saved. Now, as far as you're concerned, the drive's work is done. If left unattended, the drive continues to spin needlessly for another 15 minutes (or whatever period you've specified using the PowerBook control panel). That's 15 minutes of hard-drive juice you can save yourself by pressing the predefined keystroke instantly after saving.

Rest mode (processor cycling)

The PowerBook's brain, as on any Macintosh, is its CPU (its Motorola 680x0 or PowerPC chip). As with a human being, the more alert and lively it's asked to be, the more energy it uses up.

Therefore, PowerBooks have a clever battery-saving feature that kicks in without your even knowing about it. When you're not actually doing something with the keyboard or mouse (when you're just reading something, for example), the laptop goes into *processor rest.* That is, the CPU quits worrying about doing calculations and more or less dozes off, requiring less energy and producing less heat. In fact, the PowerPC processor of the PowerBook 5000 series can kick into additional levels of chip-sleep, known as nap and doze modes, to conserve power.

Then, upon the least indication that you're at it again (such as a touch on the trackball or keyboard), the CPU springs to full alertness.

All of this happens behind the scenes. You'll probably never even notice this on/off CPU cycling unless you're running, say, a screen saver and it seems to be acting sluggish.

You *will* notice it, however, if you're trying to play QuickTime movies. Turn Processor Cycling off for a huge movie-playback smoothness improvement. To do so, open your PowerBook control panel (System 7.1 or later), as shown in Chapter 4. If you have System 7.0.1 and its Portable control panel, the processor-cycling control is hidden. Option-click the *words* "Minutes until automatic sleep." A special dialog box will appear, displaying the Rest and Don't Rest buttons.

Battery shelf lives

Different kinds of PowerBook batteries have different shelf lives. The old PowerBook 100's lead-acid battery retains its charge for several months. More-recent batteries, according to Apple, lose their charge much faster; after about two weeks on the shelf, their charge is half gone. (Presumably they would be completely depleted after a month or so.) Batteries are extremely temperature-sensitive, though, and high or low temperatures can affect shelf life dramatically.

Juice-saver on older laptops: Processor speed

One of the primary differences between Mac models is the *clock speed* — in essence, the blood pressure of the informational arteries. PowerBooks 145, 180, and 160, for example, have the same Motorola '030 chip for a brain. But the clock speeds of their chips are 16, 33, and 25 MHz, respectively. As with a human being, the more cranking that goes on, the more energy it takes.

The faster '030 PowerBooks (models 160-180, Duo 230-250) offer an additional battery-saving feature. Using this option, you essentially rein in the horses, slowing the CPU to the speed of the slowest PowerBooks, which is 16 MHz.

This Reduced Processor Speed control is usually in the PowerBook control panel in plain sight (see "PowerBook" in Chapter 4) — unless you're using the older PowerBook control panel, in which case you have to click Options to find it (see the display shown in Figure 14-3). On the '040-chip and PowerPC PowerBooks (190, 500, 5000, 1400, 3400 series), this control isn't available at all.

(On the old PowerBook 170, you trigger this slow-processor feature by opening its Battery desk accessory. You'll see an on/off switch for something called Power-Saver. That's the CPU slowdown thing we're describing here.)

ANSWER MAN

Why are there all those warnings?

Q: ***When my battery is running down, the Mac starts displaying warning messages about finishing my work and putting the PowerBook to sleep. Why does it show three? Which one should I believe?***

A: Actually, each message is more dire than the previous.

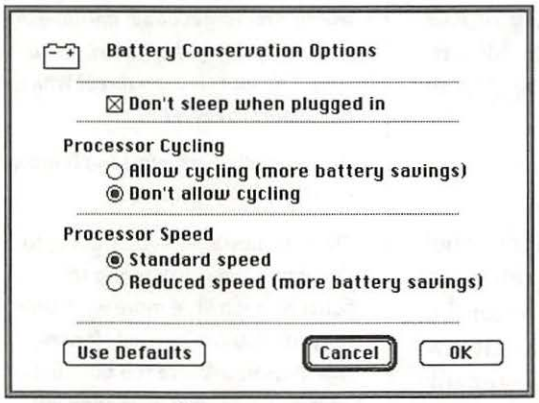
The first message says it's going to dim your screen. (It's trying to squeeze out a little more work time for you.) You can basically ignore this message. You've still got about 12 minutes of solid work time left.

The second warning says: "Very little of the battery's reserve power remains." Now it's serious. At this point, you've got about five minutes of power left. You should, as the message suggests, save your work and prepare to change batteries (or stop working).

The last warning, one of our favorites, announces: "The Macintosh will go to sleep within 10 seconds. Good Night." (We *love* that.) This message is serious, too. It does *not* mean you'll lose any work, however. It simply means that the machine is going into sleep mode. All your work will remain frozen in RAM, just as it was when it went to sleep.

After this, you have two days in which to find a power outlet and plug the machine in. When you do, you can wake up the PowerBook to find everything just as you left it. (Or, if you have a Duo, 500, or more recent model, you can insert a fresh battery while it's sleeping, if you prefer.)

Figure 14-3
In the lower half of the box, you see the Processor Speed control. It helps you scrape out a few more minutes' worth of worktime from any charged battery.

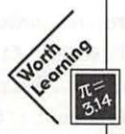


If all you're doing is reading and you're trying to save battery juice, turn on this feature. Otherwise, using a PowerBook in Reduced Processor Speed mode is frustratingly slow.

A word about AppleTalk . . . and MIDI

When one of your cheerful authors first purchased his PowerBook, he was truly appalled at the short life of each battery charge: about an hour and ten minutes. *This* was three hours!?

At last a friend alerted him to the problem: AppleTalk. This feature's purpose in life is to monitor your printer port for signs of network activity — which requires electricity. Fortunately, AppleTalk may be switched on and off from the Chooser desk accessory — or with the Control Strip.



So when you want the most out of each battery charge, turn AppleTalk *off!* It saps nearly 30 minutes out of any battery charge.

Then again, if you're a musician, a PowerBook can only send MIDI information if AppleTalk is *on!* (We've seen more than one musical demonstration ruined by a seemingly MIDI-broken PowerBook — where, actually, the only problem was that AppleTalk had been turned off.)

A word about AppleTalk . . . and Remote Access

If you're using Apple Remote Access (ARA — see Chapter 32), don't follow the advice of the previous Secret. To make ARA (and some other kinds of network software) work, you *need* AppleTalk to be on. Yet, you *don't* need your Mac to expend power by monitoring your printer port.

The handy solution: Open your Network or AppleTalk control panel and select Remote Only. You've just turned on the *software* features of AppleTalk, thus permitting ARA to work, without turning on the *hardware* features that drain your battery.

Another power user: The modem port

If your PowerBook has a built-in modem, keep in mind that it's drawing battery power whenever a terminal-style program (such as Zterm or MicroPhone) is open. When you finish reading messages on your favorite BBS, for heaven's sake, quit Zterm (or whatever front-end program you use) when you log off. (Fortunately, graphics-based programs — such as America Online, eWorld,

MacCIM, and so on — do *not* present this concern. They access your modem port only when you're actually connected to those services.)

A few more battery-sappers

A few other PowerBook items use up battery power. They're all fairly negligible, but here they are:

First, there's the speaker. Use the Control Strip (or the Sound control panel) to set the volume to zero if you're absolutely maniacal about conserving juice. Then there's the ADB port, better known as the keyboard/mouse jack. It, too, sucks its life-giving power from your Mac's battery when something's plugged into it.

And don't forget the monitor jack. Actually, only Duo dock or minidock owners need to think about this, because the full-sized PowerBooks can't even drive an external monitor *unless* they're plugged into the wall. Duo owners may simply want to note that an external monitor draws some power from the battery, even if it (the monitor) is plugged into a wall outlet.

Battery savings and virtual memory: Mutually exclusive

The PowerBook manual is pretty clear on this topic. So is the software; if you try to turn on virtual memory in the Memory control panel, a message appears *warning* you that this isn't a great idea.

The point is that (as you can read in Chapter 9) virtual memory is a scheme that treats the hard drive as extra RAM. It requires the hard drive to spin continuously. As a result, your battery is likely to drain *very* fast.

However, we pooh-pooh the notion that you shouldn't use virtual memory on a PowerBook! Virtual memory is *great* on a PowerBook: when you're at your desk at home and trying to run three big programs; when you're in the hotel room, touching up a giant presentation; and so on.

It's *only* to be avoided when you're running on battery power. After you're plugged in, turn on virtual memory, by all means! This is especially true with PowerPC-based PowerBooks such as the 5300, which run faster when virtual memory is on.

Of course, the best solution of all is RAM Doubler, which provides the memory-adding features without the battery-using downside.

When a battery is depleted

Recharge your battery as soon as possible. If you leave a battery empty for longer than two weeks, especially in a hot place like a car trunk, it may never be rechargeable again.

THE FIVE-HOUR CHARGE (RAM-DISK) TRICK

If you learn nothing else from this chapter, learn the following technique. It's a time-saving, money-saving, easy-to-use gadget that you already own.

As you discovered in Chapter 8, a RAM disk is a portion of memory that's treated like an additional floppy disk in some imaginary drive. It shows up on your Desktop like any other disk icon (see Figure 14-4).



Figure 14-4
A RAM disk is, as far as the Mac is concerned, just another disk. But there's a big difference.

However, a RAM disk is made of RAM. It delivers information to the Mac's brain with immense speed (when compared with real disks). RAM disks were invented, then, for the purpose of speeding up Mac computing.

But the RAM disk, while still speedy, is useful on the PowerBook for a completely different reason: It's a disk that requires no additional electricity. Because the largest consumer of PowerBook battery power is the hard drive, the less you make the hard drive work, the longer a battery charge will last. When you let your RAM disk do the work of a hard drive, you render the hard drive completely redundant, and it *never* needs to spin. A fresh PowerBook battery will last a *minimum* of five hours per charge using this secret — much more if you have one of the newer batteries.

Here, step by step, is how the RAM-disk trick works. If you have more than 6MB of RAM, then you won't have to make as many sacrifices as we propose here.

Choosing the right size for the RAM disk

First, you need to figure out how much disk space your RAM disk contents will require. In other words, how many files are there on your hard drive that you want to use?

You're *always* using the System Folder, whether you like it or not. You'll probably also want to use a word-processing program. Finally, there's the document you're working on.

Look at those files on your hard drive and add up their sizes on disk. (Do a Get Info on each.) If your PowerBook has 4MB of RAM — as many older ones do — then you won't be able to fit a *full-sized* System Folder, word processor, and document onto a RAM disk.

You can, however, create a stripped-down System Folder that *will* fit. Use the System Folder on your Disk Tools disk, for example. It has no control panels, no fonts to speak of, and few frills, but it's tiny; a System Folder from the System 7.1 Disk Tools disk takes up only 1,200K. Of course, System 7.5 takes up much more disk space — so if you *can* use an older system on your PowerBook model, do so.

As software goes, Microsoft programs are terrible choices for use on PowerBook RAM disks. They're huge, and they need to read information from the hard drive a lot. Still, if you're strapped, Word 5.1 is OK; if you really want to get serious, consider WriteNow (WordStar, 415-382-8000), which is only 290K on the disk.

To help you compute the size of your RAM disk, here are three typical scenarios. We'll assume your document is 50K.

PowerBook 180 with 4MB of RAM

Stripped-down System 7.1 folder =	1,200K
WriteNow =	290K
A document =	50K
Grand total =	1,540K; make a **1,600K RAM disk**

Duo 250 with 8MB of RAM

Pleasantly outfitted System 7.1 folder =	2,200K
Microsoft Word 5.1 =	880K
A document =	100K
Grand total =	3,180K; make a **3,500K RAM disk**

PowerBook 1400 with 12MB of RAM

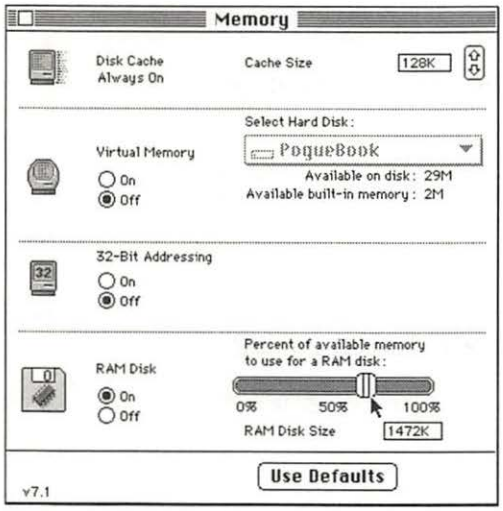
Very basic System 7.5.3 folder =	3,800K
ClarisWorks 4.0, no support files =	2,000K
A document =	100K
Grand total =	5,900K; make a **6,200K RAM disk**

In each of those scenarios, you'll note that we've allotted *some* extra disk space — but not a lot. The RAM disk, even though it's actually a piece of memory, behaves as though it's a *disk*. Your Mac still has to have enough free memory left over to *run* the programs on that disk.

In the previous 4MB example, then, it's going to be a tight squeeze. You start with 4MB of memory. Of that, System 7.1 itself requires 1,500K (memory, not disk space); then there's your 1,600K RAM disk; thankfully, WriteNow runs in only 325K of memory, so that you still come in under your 4,096K total. But even an extension or two more — or any attempt to open a *second* program — will surely put you over the top, and you'll be out of memory.

The 8MB and 12MB setups described earlier, on the other hand, leave plenty of RAM available for use by your word processor.

Figure 14-5
The little RAM disk size slider slides toward its target size, 1600K, which is the utter minimum you should use in a 4MB PowerBook.



Creating the RAM disk

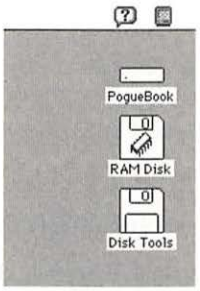
Open your Memory control panel and click the RAM Disk On button. Move the slider to the right, and then drag the little handle to the right (see Figure 14-5) until it shows the size you calculated.

If you have RAM to spare, make the RAM disk slightly bigger; a little extra space is always good to have. After you set the slider to the size you want, close the control panel and restart the Mac.

Loading up the RAM disk

When you restart the Mac, you see the RAM disk at the right side of the screen (see Figure 14-6). Wild, isn't it? Now you're ready to copy your files onto it. For best results, we're going to suggest that you put five items there:

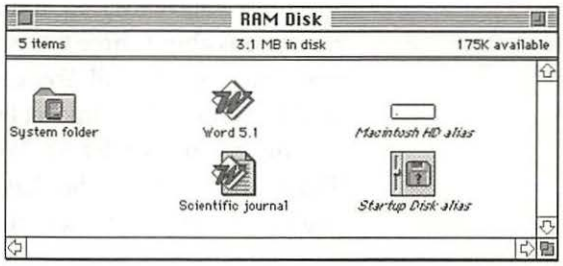
Figure 14-6
Your Desktop after the RAM disk has been created (middle icon). In this figure, you can also see the Disk Tools disk in the floppy drive, ready for System Folder-copying.



1. Drag your specially prepared, stripped-down System Folder onto the RAM disk (from your Disk Tools floppy, for example). *Be sure to include any system enabler your PowerBook needs to run!* You'll notice that things copy very quickly onto a RAM disk; memory is a much faster medium than any disk. (Alternately, you can use the normal System Installer to install a Minimal System onto the RAM disk. Apple recommends this method, but we find it to be a great deal of effort.)
2. and 3. Then copy your word processing program and your documents onto the RAM disk.
4. Make an alias of your hard drive. Copy the alias onto your RAM disk. You'll use this later to bring your hard drive *back* onto the screen; details to come.
5. Finally, for added convenience, choose Control Panels from your menu. Make an alias of the Startup Disk control panel, and put *that* alias onto your RAM disk, too. Your finished RAM disk should look something like Figure 14-7.

If everything doesn't fit, then you may have to do some further stripping down; ditch some fonts, trash your Preferences. Double-click the RAM disk's System *file* and throw away some sounds.

Figure 14-7
Your PowerBook RAM disk, ready to fly.



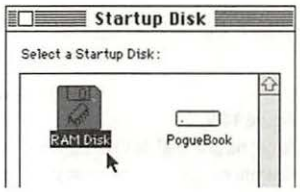
If everything fits, though, be smart: Drag the RAM disk icon to your hard drive, where it gets copied as a RAM disk *folder.* Name it "RAM disk 3500K," or whatever its size is, so that you'll remember its size the next time you need to create it. (Some people even compress that RAM disk folder, using a compression program like StuffIt or DiskDoubler.) Afterward, re-creating your RAM disk will be a snap: Just open this folder and drag its contents to a fresh RAM disk. (Or use Apple's PowerBook Assistant, included with System 7.5, whose Toolbox extension can do this loading up automatically.)

Putting the RAM disk in charge

After the RAM disk is set up, you still have to tell the Mac that you want *its* System Folder, and not the one on the hard drive, to be the System Folder in charge.

Open the Startup Disk control panel (see Figure 14-8). Click RAM Disk and close the window.

Figure 14-8
How you put the RAM disk in charge.



Then restart the Mac. You'll be shocked at how fast your Mac starts up from a RAM disk. When you reach the Desktop, the RAM disk is in the top right corner of the screen. At this moment, however, your hard drive is still spinning; you aren't, in fact, getting any extra battery mileage at all. That's where the really wild technique comes in.

Trashing your hard drive

Drag your hard-drive icon *to the Trash!* (The File menu's Put Away command also works.) The Mac will warn you that you're doing something kind of nutty; click OK. But if the hard drive is off the screen completely, there's no chance that it can spin up unbidden and deplete additional power.

Yet, even after your hard drive's icon is gone, you may *still* hear it spinning. If you're patient, it will stop on its own after a few minutes (depending on your settings in the PowerBook control panel). If you're not patient, make it

stop spinning using any of the techniques described in "Battery Secrets," earlier in this chapter.

At last you've arrived at an amazing point. Your PowerBook is absolutely *silent*, runs about three times faster than it ever did before, and is barely using any battery juice at all. You can type and scroll and save and trash things, and you'll never get that sinking feeling of hearing your hard drive spin up.

Now you're wondering: Well, great, but how do I get my hard drive *back?* That's why you made the alias of it. At any time after the real drive icon is gone, you can summon it back to the screen simply by double-clicking the alias.

POWERBOOK RAM-DISK SECRETS

Saving and being safe

The usual warning about using a RAM disk is this: Never put a document on a RAM disk because a RAM disk is a fleeting, fragile thing. If the power goes out on the Mac, so the scare-tactic goes, then your document disappears into the ether.

This is *not* true on a PowerBook. Anything on a PowerBook RAM disk *stays* there, even if (a) you restart the computer; or (b) the battery dies and you leave it in the machine, dead, for up to two days; or even (c) you have a system crash.

All you have to do is remember this critical phrase: *Never shut down the PowerBook — only restart it!*

If you have a system crash, press the computer's Reset switch (which restarts it). On most PowerBook models, that means pressing ⌘, Control, and the power button simultaneously.

When you return to the Desktop, your RAM disk will still be safe.

All of this is not to say, however, that you can be reckless. Every hour or so, save your document; double-click your hard-drive alias (to bring your hard drive back onto the screen); and drag-copy your RAM disk-based document back onto the hard drive. Paranoia pays in the computer world.

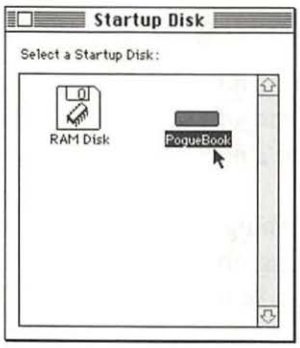


Figure 14-9
To get rid of a RAM disk start-up disk, first you must select a different start-up disk.

Removing or resizing the RAM disk

Getting rid of the RAM disk is a little tricky. For starters, you can't very well kill the RAM disk while it's the start-up disk. The first step, then, is to double-click that Startup Disk alias (which we instructed you to copy onto your RAM disk). You'll see the image in Figure 14-9. Click the name of your hard drive and close the window.

Then restart the Mac. When it awakens, the RAM disk will no longer be the disk on top.

Next, you have to get *everything* off the RAM disk. Click the RAM disk and choose Erase Disk from the Special menu. Confirm your decision by pressing Return. Wipe that disk clean. Only then may you open your Memory control panel and turn the RAM Disk option off — or resize it.

Finally, you have to restart *again*.

Conserving RAM: Use At Ease

When you're using a PowerBook from a RAM disk, memory, as you know, can get pretty tight. You may spend considerable effort trying to shave off a few K here and there, and we can help.

Install At Ease, for example (see Chapter 15). It uses over 200K less RAM than the Finder and is just as good at launching files. Of course, you can't rename or trash files while it's running. But when memory is tight, and you have a long flight, you might not mind.

A word of warning, however. At Ease offers a convenient Go to Finder command. (It's in the File menu.) *Don't use it* when memory is in short supply! If you do, you'll launch the Finder. At this point, you have *more* than undone the advantage of running At Ease — you're running both it *and* the Finder, which uses up more RAM than running the Finder alone.

Upgrading the RAM

Eventually, after all this fussing over a few K of RAM, it may dawn on you to simply install more.

But PowerBook RAM is much more expensive than regular Mac RAM. And it's not just the RAM cards (they don't call them SIMMs on a PowerBook) — you've got to hire some technician to install them for you, which is an additional expense. It's also complicated because each family of PowerBooks uses a different *kind* of RAM chips.

The point is that upgrading a PowerBook's RAM is a more expensive and convoluted prospect than upgrading a desktop Mac's. But once it's over — oh, what joy!

SLEEP MODE

When a PowerBook is sleeping, nothing moves. The hard drive and all other components are still and dark. The only thing that lives, in fact, is whatever was in the computer's memory.

TRUE FACT

THE BATTERY NOBODY KNOWS

Your PowerBook has another, much less-discussed battery. It's the lithium backup battery that keeps your clock going even when the computer is off, just like the lithium backup battery on desktop Macs.

All PowerBooks except the 100 model require an Apple dealer or a knowledgeable technician to change this battery.

That's a great thing. It means that the next time you want to use your computer, there's no five-minute start-up period, no start-up chime, no parade of icons across the bottom of the screen. You press a single key — any key except Caps Lock — and your entire work world springs to life, exactly as you left it.

Sleep versus restart

This is going to sound radical. But we advise you to leave the PowerBook in Sleep mode *all the time.* We can think of only a few instances when you actually have to shut down a PowerBook:

- When you want to start up with a different assortment of extensions and control panels
- When you want to make it part of the SCSI chain of a desktop computer
- When you want to attach or remove an external monitor
- When it's a Duo, and you want to insert it into a Duo Dock
- When you want to ship the PowerBook

Otherwise, there's no practical reason to restart the Mac, ever. It's even OK to connect keyboards, mice, modems, printers, PC cards, the 1400's built-in CD-ROM drive, and floppy drives to PowerBooks while they're sleeping. They don't have to be off.

It's perfectly all right to travel while sleeping (the PowerBook, not you). Even ultra-conservative Apple, in a recent Tech Note, admitted that it's OK to carry the PowerBook with you when it's asleep.

How much time you have

After your PowerBook is asleep, a tiny trickle of battery power keeps the contents of memory intact. The computer can sleep for as long as there's any battery power remaining. On a fully charged battery, that's about a month. In fact, even if your battery has gone dead while you were using it, saying that no "reserve power" remained, you'll still have two days of trickle-juice left in the battery.

SLEEP SECRETS

50 ways to sleep your PowerBook

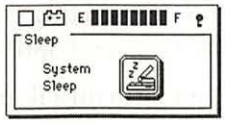
You're probably familiar with the most common method of putting a PowerBook to sleep: choosing Sleep from the Special menu.

That involves returning to the Finder, though, which is an extra (and, given the crankiness of the trackball/trackpad, difficult) step, requiring you to choose Finder from the application menu.

You can make the PowerBook sleep on command, though, without leaving the program you're in. System 7.5 offers two ways: using the ⌘-Shift-Control-0 keystroke (if you have the PowerBook Assistant Toolbox extension installed), and using the Control Strip and its one-click Sleep command (see Chapter 4).

If you don't have System 7.5, the Apple-sanctioned method is to open the Battery desk accessory. Click the tiny lever on the right so that the panel expands (see Figure 14-10). To make the machine sleep, click the System Sleep icon. (If the Battery DA isn't in its expanded, lever-clicked position, Option-click the tiny battery icon in the top strip.)

Figure 14-10
The Battery desk accessory in its expanded condition.



Other programs can put your PowerBook to sleep, too. QuicKeys and commercial PowerBook utility-program kits offer key combinations that get that Mac snoring.

Yet another approach: Control-click your menu-bar clock (created by the Date & Time control panel).

Waking the thing up smart

To wake up a sleeping PowerBook, the best key to press is the *Shift* key. Pressing a letter key does the trick, too, but you risk *typing* that letter into whatever document you left open on the screen.

ANSWER MAN

Shut up and go to sleep

Q: ***I absolutely hate the way the PowerBook always gives me that stupid warning box about network services, whatever they are, when I try to put it to sleep. Isn't there any way to make it stop?***

A: First of all, ***network services*** basically means (a) your connection to other Macs, and (b) your laser printer. It's just warning you that if you put the Mac to sleep, and later awaken it, the laser printer might need to be reselected in the Chooser. Or you might need to re-establish your hookup with the other Macs.

In the meantime, there ***is*** a way to make this box stop appearing. Several ways, really.

First, if you ***never*** want the message to appear, open your Chooser and turn off AppleTalk. Of course, then you'll ***really*** lose network services — you won't be able to laser print or hook up to other Macs at ***all*** — but at least you won't get this message. You'll also get another half-hour out of each battery charge. (If you have Apple Remote Access, you can instead open your Network control panel and choose Remote Only, as described earlier.)

Another trick: Install AutoRemounter, an extension described in Chapter 4. Among other functions, it lets you keep AppleTalk on without making you suffer through that "network services" message every time you put the laptop to sleep.

GETTING INFO IN AND OUT

When Apple designs a PowerBook, one of its objectives clearly seems to be to give it as many ports and connectors as a desktop Mac. True, a Duo has only a single printer/modem jack, but its MiniDock or Duo Dock gives it all the jacks of any other Mac. And the back of a full-sized PowerBook looks almost exactly like the back of a desktop Mac.

This is critical for several reasons. For one thing, suppose that you own both a PowerBook and a desktop Mac. Every time you return from a trip with your laptop, you'll probably want to copy your files back to the larger Mac.

Furthermore, one of the huge selling points of a PowerBook is that it's an ideal portable presentation machine. Hook it up to a projector, a large monitor, or even a TV, and suddenly you can give color presentations for large groups, driven only by this diminutive machine.

Another of the laptop's most important features is its capability to send information over the phone lines — dialing into the home office, for example. We'll cover this capability, called *Apple Remote Access,* in the Networking chapter.

Transferring files from a PowerBook to another Mac

When it comes to transferring information between a PowerBook and another Mac, you have several options:

- Pass files back and forth on a floppy disk — a very, *very* slow procedure.
- Attach the two computers as though they're a little network. Transferring files this way is rather slow, too, but it's certainly easy. We'll show you how to set up a mini-network between them, step by step, in Chapter 32.
- Recent models (5300 and 1400, for example) only: Use your infrared transmitter, a Farallon AirDock (about $70), and the IR File Exchange program that came with your Mac. Fast, simple, and much easier to work than using regular LocalTalk file sharing — no passwords, privileges, or setup.
- Attach a SCSI hard drive to the PowerBook. Copy files onto the external drive, then shut everything down, and then attach the drive to a desktop Mac and copy files onto it from the disk. This is way too much trouble.
- Plug the PowerBook directly into a desktop Mac as a SCSI device itself. It's fast, cheap, and convenient.

We'll cover these two SCSI methods one by one.

SCSI: When the PowerBook is the computer

Connecting SCSI devices (see Chapter 30) to a regular PowerBook isn't tough. You do, however, need a special cable; Apple's is called the HDI-30 SCSI System Cable. (A better idea is the SCSI Doc connector from APS.) If you look at the back of a PowerBook or a MiniDock, you'll see why: The standard, wide SCSI connector has been replaced by a smaller, nonstandard square jack.

If you, like millions before you, can't tell this cable apart from the identical-looking HDI-30 SCSI *Disk* Adapter cable, described below, the trick is this: the SCSI cable's smaller end appears to be missing one pin. This cable is light gray, too, whereas the Disk Adapter cable is dark gray.

With this cable attached, the PowerBook behaves just like a desktop Mac. The SCSI address of its internal hard drive (see Chapter 30 for details) is 0, as it is for any Mac. As always with SCSI devices, turn on the external devices before you turn on the PowerBook.

There's one dramatic difference between PowerBooks (not Duos) and desktop Macs when it comes to *terminating* interconnected SCSI devices. The normal method of attaching terminator plugs is to fasten one to each end of the chain of SCSI devices. But because the internal hard drive of any Mac is self-terminating, you normally only have to worry about the *far* end of the chain.

But the non-Duo PowerBook, for all practical purposes, *has* no internal terminator. Therefore, despite the complicated-looking series of rules in the PowerBook manual, the PowerBook difference actually boils down to this:

Put a terminator plug at the far end of the HDI-30 cable, where it attaches to the first SCSI device.

You still need a second terminator plug at the far end of the chain of SCSI devices, as detailed in Chapter 30. It doesn't matter if there's one device or several.

For a PowerBook Duo, on the other hand, follow the rules of termination exactly as we've stated them in Chapter 30 — no funny business.

SCSI: When the PowerBook is the SCSI device

This arrangement, where the laptop acts as an external hard drive for another Mac, is called *SCSI Disk Mode.* Older, less expensive PowerBook models — such as the 140, 170, and so on — didn't offer this feature.

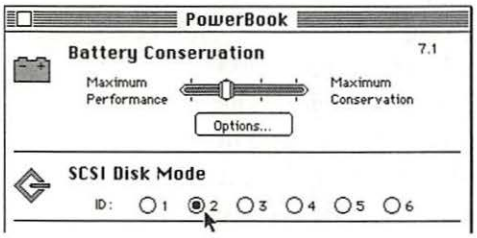
Because SCSI is a very fast method of transferring files, it's the only way to go when you have a lot of stuff to transfer to or from your PowerBook. After you've mastered this technique, you'll absolutely love it. Getting going,

though, requires crossing some oddball technical terrain. Here's the step-by-step guide. Keep in mind that the PowerBook must be the *last* device in the chain of SCSI machines (if you have any others).

1. Buy an HDI-30 SCSI *Disk* Adapter cable.

   This is *not* the same as the HDI-30 SCSI *System* Cable we mentioned earlier, despite the similarity of name, catalog number, price, and appearance. Don't use the wrong cable in the wrong configuration. Nothing will blow up, but nothing will work, either. (Once again, the little adapter called the SCSI Doc, from APS, is a better alternative. It can serve as *either* a normal SCSI adapter *or* a SCSI Disk Mode adapter — you just flip a switch.)

Figure 14-11
Choose a SCSI address for your PowerBook.



2. Open the PowerBook control panel (older models) or the PowerBook *Setup* control panel (newer ones; see Figure 14-11). Select a SCSI address for the PowerBook.

   You've probably assumed that a Mac's SCSI address was always seven and its internal drive's address was always zero. In SCSI Disk Mode, though, this Mac is *not* going to be a Mac; it's going to be an external hard drive! So choose an ID number between one and six. If you plan to daisy-chain other SCSI devices with the PowerBook, make sure that their numbers are different.

3. Shut down both Macs and turn off any other SCSI equipment.

4. Connect the PowerBook to the SCSI Disk Adapter cable you bought. Put a terminator at the free (fat) end of it.

   (Omit the terminator if you're attaching the PowerBook directly to a Macintosh Portable or to a Mac Plus with no internal drive.)

5. Connect the terminated end of the SCSI Disk Adapter cable either to the desktop Mac or to the last SCSI device on the chain.

   If you need a walk around the block at this point, please indulge. Then:

6. Turn on the PowerBook!

   This has to be the *weirdest* thing you've ever seen a Mac do. Across the face of the otherwise completely blank PowerBook screen marches a *huge* SCSI logo (recent models' screens may remain blank instead). Inside it is a large digit, representing the SCSI address you selected. And we mean it *marches.* It actually moves across the screen, bouncing off the edges like some kind of Neanderthal screen saver.

7. Turn on any other SCSI devices. Finally, turn on the desktop Mac.

It works like magic — the PowerBook's hard drive icon shows up on the desktop Mac's screen just as though it were an external hard drive. You can drag huge amounts of files back and forth and revel in the speed of the copying.

To reverse the procedure, turn off the desktop Mac first, then the PowerBook, and then the other SCSI devices, if any.

Note, by the way, that the PowerBook still needs power when it's in SCSI disk mode. If it's not plugged in, the battery will gradually run down, just as when you're using the PowerBook unattached to any SCSI chain. (Apple also warns you not to *change* the PowerBook battery in SCSI disk mode.)

If you plan to connect and disconnect your PowerBook from the SCSI chain regularly, you can actually leave the special dark gray SCSI cable dangling, unattached, from the end of your SCSI chain. Your desktop Mac will work fine.

Whenever you need to transfer files, just shut off all the Macs, hook up the PowerBook to the dangling cable, switch it on first, and you're rolling.

Keeping track of which files are current

As you toss files back and forth from PowerBook to main Mac, keeping track of which copy of which file is the most recent can get to be a headache. The truly nightmarish scenario unfolds when you realize you've done *some* editing to a certain document on *each* machine, and you no longer remember which sections of the document are the most current!

The only way to avoid these situations is to practice safe *file synchronization* techniques. A zillion programs on the market are designed expressly for this purpose — such as Apple's own PowerBook Assistant, which comes with System 7.5 and later. Such a program compares the contents of two folders (one on each Mac). Then it replaces older files with newer ones, regardless of which Mac contains each. When it's done, both Macs contain the newest versions of all files.

Making presentations

Except for our multimedia tips in Chapter 23, we're going to leave the headache of *creating* your presentations up to you.

We can, however, advise you as to how to *project* your presentation. The more-expensive PowerBooks — such as the 160, 180, 500, and 5000 series, and the Duos with MiniDocks — have built-in video-output connectors. (The PowerBook 1400 requires an add-on card for this purpose.)

You can hook up a few things to this video port. Of course, you can always plug in a regular Mac monitor. Even if you have a black-and-white or grayscale screen on the PowerBook, the external monitor can show color.

You can also hook up an LCD projection pad. This item looks like a metal-framed, two-inch-thick slab of glass. You plug it into the Mac's video output jack, and then you set the slab atop an ordinary overhead projector (yes, the same overhead projector they've used to show transparencies in sixth-grade biology class since time immemorial).

We're not sure if you've seen these projectors recently, but they look *great.* The black-and-white ones cost about $1,400; the nice color ones cost $3,000 or more.

Video mirroring

Video mirroring is yet another great feature of video-output-equipped PowerBooks. When an external monitor or projector is connected to the Mac, the PowerBook Display control panel lets you choose one of these two options:

- View the same image on the PowerBook screen and on the external monitor.
- Treat the external monitor as an extension of the PowerBook's monitor, exactly as though you're working with a multiple-monitor setup (see Chapter 11 for details).

Interestingly, a PowerBook has two different chunks of VRAM (video RAM, as described in Chapter 11) — one for its own built-in screen and any external monitor you connect. The standard PowerBook's external VRAM is 512K, exactly enough to create a 256-color, 640 by 480-pixel image on the external monitor.

Unfortunately, 256 colors mean splotchy, ugly photographs or QuickTime movies. Victims of the PowerBook's limited external-monitor VRAM have three choices:

- Turn the photographs into graphics files in *indexed-color mode,* as described in our Photoshop Secrets in Chapter 20 — period.
- Buy a video card for your 5000-series (or later) PowerBook. It boosts your PowerBook's VRAM to 1MB or more, making it possible to display more colors on larger monitors.
- If you have a Duo, you can insert it into a Dock with upgraded VRAM. (See Chapter 11 for details on VRAM.)

If you don't have any particular reason to upgrade your PowerBook's external-monitor VRAM, keep these special cases in mind:

- If you're using an older PowerBook, when mirroring is on, it may alarm you that the image on the external monitor is much smaller than it usually is. That's because older PowerBook screens are 80 pixels *shorter* (vertically) than the usual 14-inch Mac monitor. Video mirroring, of course, is designed to mirror on the external monitor *exactly* what you see on the PowerBook screen — which means the external monitor will display an extra 1.1 inches of black at the top and bottom.
- Conversely, if you're using a PowerBook 5300ce, 1400, or another model with an 800 by 600-pixel screen, you'll probably see a fat black border around the *PowerBook's* screen. Once again, video mirroring ensures that the built-in screen and external monitor show the same image — 640 pixels wide and 480 pixels tall. The PowerBook will, therefore, crop its own display to those dimensions.

Mandatory Monitors visit

Finally, whenever you hook up an external monitor of any kind, remember that you *must* open the Monitors & Sound control panel (or Monitors) and make the usual adjustments. (These, too, are described in Chapter 11.) If you don't, the external monitor may remain dark, and you'll wonder if something is broken. Furthermore, after you have made those adjustments (main monitor, start-up monitor, and so on), you usually have to restart the PowerBook to make the changes work.

ANSWER MAN

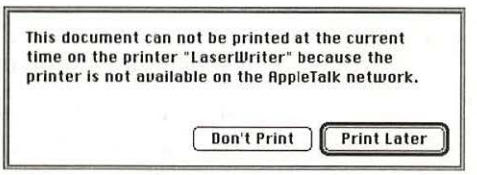
Assistant Toolbox and its many wonders

Q: *What does the Assistant Toolbox extension do?*

A: Where do we begin?

The Assistant Toolbox extension adds a delightful cornucopia of special features to your PowerBook, including:

- **Persistent RAM disk** — If you've created a RAM disk, as described earlier in this counter, Assistant Toolbox can automatically copy its contents onto your hard drive when you shut down the machine — and copy it back onto the RAM disk when you start up again. (Otherwise, you'd have to set up the RAM disk manually with every startup.)
- **Sleep FKey** — You can put the PowerBook to sleep by pressing ⌘-Shift-0 (that's a zero).
- **Later Laser** — Later Laser gives you the option of storing your printouts when you're not connected to your network; when you reconnect, the documents print when the printer is available. Later Laser is only active when a laser printer is selected in the Chooser.



- **SCSI Sleep** — If you were on a network, and had brought other Macs' hard drives to your screen and then put the PowerBook to sleep, this feature brings those networked drives back onto the screen when the PowerBook wakes up.
- **Anti-Submarining Cursor** — The Anti-Submarining Cursor feature is a software fix for the "submarining" cursor effect on PowerBooks with grayscale passive-matrix screens. ("Submarining" is when the cursor disappears as it is moved quickly.)
- **Always AppleTalk** — This feature lets you turn on AppleTalk (in the Chooser or from your Control Strip) without having to restart the computer.

All of these features work automatically if Assistant Toolbox is installed.

Using the fax/modem

Chapter 27 will discuss the *general* aspects of using modems and fax/modems. PowerBook fax and modem techniques are only slightly different. For one thing, this add-on appliance is usually built (or inserted) *into* the PowerBook.

The only problem you may encounter traveling with your telecom-ready PowerBook is the phone jacks. As you may know, the most recent style of American wall phone jacks — those installed in the last 15 years — are called *RJ-11 jacks.* The end of a typical phone cable has a male RJ-11 plug. It's usually a clear, plastic, rectangular plug with a clip that clicks when inserted into the proper outlet.

Unfortunately, far too many of the world's (and even America's) hotels haven't quite caught up to the technology. Their phone lines are fastened to the wall with one of the older, four-screw faceplate systems, making it tough for you to hook up your modem.

In this situation, many articles advise you to travel with a "phone jack survival kit," a messy-looking assortment of alligator clips and screwdrivers, along with a manual instructing you to remove the wall plate, attach the clips to the live terminals, and so on. Fortunately, we have three far simpler solutions.

1. Call ahead. Yes, we actually intend to suggest that you select a lodging facility based on its *phone jacks.* If you're going to be doing business via modem or fax, you may as well be businesslike.

2. Buy an *acoustic coupler,* a device that fastens to any telephone handset anywhere with Velcro. Instead of connecting your modem directly to the phone line, an acoustic coupler uses the ear- and mouthpiece of the telephone to broadcast, and listen to, the modem signals. While that may seem like a silly way to go, today's acoustic couplers are really something — they work like a charm, without the speed penalty of their clunky ancestors.

   Konexx and Teledapt sell the identical coupler for about $150. It has the advantage of working on any telephone in the world, even pay phones, even in other countries. One of your cheerful authors merrily used his coupler at 14.4 Kbps on telephones in Indonesia and Thailand with great success.

3. This final solution is pricey, but it will earn you the admiration of your coworkers: Get yourself a *cellular* modem. With this kind of modem, you won't care if the hotel room's jacks are clip-style, four-screw-style, or coated in cement. (Of course, this solution only works in America. So far.)

A word or two about printing

Naturally, the PowerBook prints just as well as any other Mac, and to just as wide a variety of printers. The question here, though, is portability. In the following Secrets, we'll outline a few strategies.

POWERBOOK PRINTING SECRETS

The ol' fax-it-to-yourself Secret



We're rather taken with this trick, actually. If your PowerBook has a built-in fax/modem and you're staying at a hotel, you can fax a document to the hotel's own fax machine. It's a little strange — faxing from your room down to the front desk, for heaven's sake — but it's a good, cheap, quick way to get something on paper. (This technique also works in offices, of course.)

Compared with the expense, weight, and hassle of most other printing options, we find the fax-it-to-yourself thing a clever and effective, spur-of-the-moment printing option.

Portable printers

These devices are out there, for sure, but they're not exactly wonderful. Citizen, GCC, and Mannesman-Tally make portable PowerBook printers, but the speed, ribbon life, and battery life leave a lot to be desired.

There's also an Apple Portable StyleWriter, a five-pound, slimline adaptation of the StyleWriter 1200, and the Color Portable StyleWriter 2200, which provides the same color printing capabilities of the Color StyleWriter 2400 in a super-compact design. In fact, the 2200 weighs *less* than the smallest Duo.

Printer-conversion kits

For about $100, you can buy a disk/cable kit designed to make your PowerBook work with any of the zillion *IBM*-compatible printers on the market, including color inkjets, laser printers, and even antiquated dot-matrix models. (The best of these disk/cable packages is PowerPrint, from GDT, 604-291-9121). In a way, this option makes a lot of sense. It's cheap, it's lightweight and very portable, and chances are good that you'll find *some* IBM printer no matter where you go!

StyleWriter printing caution

Most PowerBook models have only a single modem/printer jack on the back. Yet when you open the Chooser and click the StyleWriter II icon, you're

supposed to choose one of the *two* icons shown there: either the little telephone or the little printer.

Big secret: Click the *telephone* or your StyleWriter won't work. And, of course, make sure AppleTalk is turned off.

Delayed printing, old and new

The extension called PowerBook Assistant Toolbox (version 1.1 or later) gives your PowerBook a neat feature: It can do the time-consuming dirty work of printing (converting the document into instructions for the printer) even when it's not convenient to print. (We'd say that typing at 39,000 feet is one example of an inconvenient time.) That is, if you try to print when no laser printer is attached, you're offered a Print Later button. When you finally arrive at an available printer, all those stored printouts are automatically dumped onto paper.

If you're missing that extension, however, or if you generally print to a non-laser printer, here's how you can use PrintMonitor to accomplish the same thing.

Make an alias of your PrintMonitor icon (which is in the Extensions folder of your System Folder). Put the alias somewhere handy: on the Desktop or in your menu.

When you're on the plane and ready to print, launch PrintMonitor, and choose Stop Printing from the File menu. Nonsensical though it may seem, now start printing your documents! Obviously, nothing actually prints, but Print Monitor preserves the printouts in disk form in your PrintMonitor Documents folder.

When you finally *are* hooked up to a printer, launch PrintMonitor again. From the File menu, choose Resume Printing. Your suspended printouts will start spewing forth. (They'll also start printing automatically the next time you turn on the PowerBook.)

You can use this same technique on *non*-PowerBooks, of course — to prepare printouts while your printer is busy or turned off, for example.

TRAVELING WITH THE POWERBOOK

After you've gotten your PowerBook out of the computer store, you're going to start going places with it (we hope). There's more to it, however, than simply remembering to keep it in your carryon luggage instead of checking it.

In the Airport

The classic locale for PowerBook-spotting is the airport. We've had considerable experience toting PowerBooks through these teeming public spaces.

Let's make this perfectly clear: The X-ray machine *cannot* hurt your PowerBook. Don't waste a single minute's sleep worrying about it.

If you travel with your PowerBook while it's asleep, then the much-derided security check — whereby somebody in a uniform who understands nothing about computers except their capacity to screw up a paycheck requires that you turn on your computer long enough to view *text* on the screen (yes, that's the criterion) — will mean nothing to you. You'll breeze through, tap a key to wake the PowerBook up (where the menus suffice as text), put it back to sleep, and be on your way.

Security on the road

Security is a hot topic when it comes to PowerBooks. Even undereducated thugs, who probably don't know the meaning of the word *double-click*, recognize a PowerBook (and even a PowerBook *carrying case)* when they see one.

You can find all kinds of clunky devices designed to lock your laptop down to something heavy. There are also all kinds of *software* protection programs that protect your screen, or certain files, or your entire hard drive, from anyone who doesn't know the correct password. For information on both of these product types, we'll refer you to the ads in *Macworld* and *MacUser.*

Our security secret is much simpler, and much more effective. Our advice: Keep the PowerBook attached to you in public places. Don't set it down.

We know exactly two people whose PowerBooks have been stolen. Neither was stolen from a hotel room. Neither had secret documents swiped from the hard drive. Both were in public places (at a rent-a-car counter and an airport waiting lounge), and both put down the PowerBook in its case. In both cases, somebody grabbed the bag and disappeared into the crowd.

We don't mean to say that you have to *carry* it at all times; just keep in contact. Loop the shoulder strap around your foot if you're going to set the thing on the ground. Or wrap it around your wrist if it's in the waiting-lounge chair next to you.

Inflight silliness

Once aboard the airplane, you'll be asked to turn off your PowerBook for the first and last 15 minutes of each flight. If you blinked during the three-day period in 1991 when the newspapers explained why, you might have missed it.

Apparently, there was a rash of mass hysteria about laptop computers confusing the cockpit navigational equipment. When *PC World* magazine investigated, however, they found out how shaky the evidence was. Out of 19,000 reports of

DIALOGUE

Through the X-ray machine

JS: *What* did you just type?

DP: I'll reread it, but I believe it was "the X-ray machine *cannot* hurt your PowerBook."

JS: Are you nuts? What about all those — those *rays* bombarding your computer? Are you forgetting that there are people's *files* on that hard drive in there?

DP: No, of course not. I'm sorry, Joe, but the whole point of this chapter is to *dispel* myths about PowerBooks, not perpetuate unsubstantiated hearsay . . .

JS: Harmful X rays are no myth.

DP: X rays have *no effect whatsoever* on a Power-Book. Or any other computer, for that matter.

JS: Except that if they happen to penetrate the hard drive, your data can be scrambled into *meaningless hieroglyphics.*

DP: Joe, you're confusing X rays with magnetism. It's a common mistake. If you had opted to take even one physics class when we were at Yale instead of focusing almost exclusively on courses like "Skepticism among Soviet Jewry in the Middle Ages," you would realize that X rays have nothing to do with magnetism . . .

JS: *What's wrong with studying Skepticism?*

DP: And I would appreciate it if you would stop putting everything in italics.

JS: Listen, Mr. Physics, I'm not talking about the X rays. I'm talking about the *conveyor belt* itself. What do you think powers that? Hamsters on treadmills?

TRUE FACT

POWERBOOK PILLOWCASES

Free book winner Peter Silver couldn't have put it better:

PowerBook carrying cases — *especially* the beautiful ones that have little Apple logos on them — are for saps! They absolutely and totally single you out instantaneously for theft. Highly developed PowerBook theft operations are a feature of most university cities now.

Instead, people should use backpacks and book bags as ordinary-looking as they can find, with the PowerBook wrapped in something for padding from the other stuff in the bag. And what is the perfect such padding? An everyday *flannel* pillowcase, folded in half, then in half again, with the computer tucked into one of the little pockets these folds make — the one that has about the same number of layers of flannel on either side of it. I'm not describing this well, but the Mac fits in there like it was born to. And I guess you could kind of sew the pillow case a little to make it more pouch-like.

navigational equipment acting up that had been reported to the FAA, *three* featured pilots who had learned, after the event, that a laptop user had been aboard. That's as solid a link as has ever been established.

We don't know about you, but that's a half-hour per flight that we could really use.

DUO NOTES

The PowerBook Duo is the smallest, sexiest Macintosh ever made. It has the pleasing heft, size, and shape of a nice hardbound book, yet it packs some serious horsepower.

Duo advantages

Duos have other advantages over the full-sized, boxy-by-comparison PowerBooks: Duo batteries tend to last longer. The Duo battery recharges faster. But most of all, the Duo is small and light. At 4.2 pounds (or 4.8 for the color models), the Duo approaches half the weight of the original PowerBooks, and it's an amazing 1.4 inches thick.

TRUE FACT

A FRIEND OF BOB W

As Apple was developing the Duo computer, its internal code name was BOB W.

Only when the advertisements for the new tiny Macintosh appeared did the significance of this code name, which was based on a popular *Star Trek: the Next Generation* episode's title, become clear.

"The PowerBook Duo: Best of Both Worlds."

To achieve the Duo's impressive weight loss, Apple had to take out a few computing necessities. The floppy-disk drive is probably the most dramatic example. If you want to use floppy disks, you have to buy the $100 external floppy drive *and* an adapter (either the $90 floppy adapter or a $400 MiniDock). The Duo is also missing jacks for a microphone, speaker, SCSI, keyboard, video, or floppy drive. Instead, hidden by a flip-up panel, there's a slim, three-inch wide connector.

This connector mates with any of three peripherals: that external floppy-disk drive; a MiniDock (a foot-long bar crammed with the full contingent of ports); or a full-sized, expandable, two-NuBus-slotted Duo Dock or Duo Dock II. The Dock, half light gray and half dark, looks like a set piece from *Star Wars*. It's the size of a Power Macintosh 7600 or something, with a big rectangular slot in the front. That's where you insert your closed laptop, which gets sucked in the last half inch like it's a videocassette. Various other companies, such as Newer Technologies, make competing dock contraptions.

The point of all this — and the derivation of the name Duo — is that this Macintosh does double duty. In the plane or the meeting, when you probably won't *need* a floppy drive, you've got a beautiful purebred typing machine. Back at your office, you can attach the Duo to its dock, where the amenities of a desktop computer (big color monitor, full-sized keyboard, floppy drive, and so on) are waiting in instant readiness. In effect (goes the marketing wisdom), you get two computers for the price of one.

DP: Well, at least that's a little more valid than your previous wild claims. I suppose if you're really worried, you can take the trouble to place the Mac as close as possible to the entrance of the X-ray machine, so that it'll spend as little time as possible on the conveyor belt —

JS: He admits it!

DP: ...but I *still* say that I've run PowerBooks of all kinds through those machines. And so have pilots aplenty — people who travel more than I do — and I've never, *never* heard of any problems.

JS: My philosophy is simple: why take risks? If you own a PowerBook, obviously your life is going pretty well. So play it safe. Pass your PowerBook *around* the X-ray machine and then get it visually inspected.

DP: Obviously you're one of these people who shows up at the airport an hour ahead of time.

JS: You're reckless.

DP: And you're paranoid. Listen, I take my PowerBook everywhere. I have run it through *countless* airport security devices. *Nothing* has ever gone wrong. All of my files remain fjhd[asdlf d¢— fdf;2231kX°°°° _87§.

JS: Ah-hah! See? *See that?!* And where do you suppose all those garbled characters just came from, Mr. Basic-Laws-of-Physics?

DP: Joe...

JS: Mr. Don't-you-know-the-difference-between-X-rays-and-magnetism!?

DP: Hello...

JS: Mr. Garbage-Characters-Spewing-Uncontrollably-From-His-Now-Radioactive-PowerBook...?!

DP: ***I dropped a box of Fig Newtons on the keyboard.***

JS: Oh.

ANSWER MAN

Beating the password system

Q: ***I was fooling around with the Password Security control panel, and now I forgot my password. Is there a way to bypass it?***

A: Well, as you probably discovered, you can't bypass the system by booting with extensions off or booting from the Disk Tools disk. The password is encoded directly onto your drive.

But get this — we've discovered that on several PowerBook models we tested, such as the 150, 5300cs, and 190, you can break through by typing a string of bullets (• • • •) into the password blank! (You create a • by pressing Option-8.) That's got to be the most hilarious loophole ever discovered — bullets are what appear when you type your *real* password into the blank (to prevent people from reading over your shoulder).

Apple did fix this bug, however, in recent versions of the control panel. If it doesn't work on your model, the only option, believe it or not, is to take your PowerBook with your proof of purchase to an Apple service center where a technician has the means to bypass the password. (The 800-SOS-APPL help line can't help you.)

What you can attach when

The rules for connecting various devices to your Duo are a little involved. For reference, here's the list.

- *Shut down the Duo before:* inserting or removing it from a Duo Dock; connecting it to a SCSI cable; or attaching an external monitor.
- *Put the Duo to sleep before:* connecting it to a MiniDock; plugging in the floppy-disk drive; or attaching keyboard or mouse.
- *You can leave the Duo on to connect or disconnect:* a printer cable; an external modem; the AC power cable; microphone; speaker; or phone cord (if you have an internal modem).

MACINTOSH SECRET

THE COMPLEAT NEWTON SECRETS

OK, the Newton isn't a Mac. But Apple's palmtop, keyboard-less, handwriting-recognizing, quick-faxing, phone-dialing, day-scheduling, Etch-A-Sketch-descended, snazzy corporate showoff computer is a fave of ours. We wanted to be the first to reveal a few Newton Secrets. (Not all of these work on all models of the MessagePad.)

Tip #1: Hold the pen tip steadily on the clock icon at the bottom-left of the Note Pad screen (Model 100 only). You'll see the internal temperature of the Newton!

Tip #2: With the Newton turned on, open the battery compartment. Use the stylus to push the Reset button; after a moment, the Newton will restart. Tap Undo. You'll get an error message that says there's nothing to undo. Now tap the overview dot between the two arrows at the bottom of the screen.

You'll see a little window listing "Newton" twice. Tap the top one to get a "Welcome to Newton" screen. On that screen, hold down the pen tip on the circled I (for Information). You'll be shown, of all things, the date July 20, 1969, 2:35 am — the moment a human first landed on the moon! (In the German Newton, you get the time and date of the fall of the Berlin Wall — 10/17/89 5:04 pm.)

Tip #3: Write *About Newton* and tap Assist. Surprise! (Ko Isono, whose name appears on the final credits screen, was a young Newton programmer who, during the intense preproduction phase of the Newton, took his own life.)

Tip #4: Tap Find. Enter *Elvis*. Tap All. The Newton will tell you and show you (on the Map!) where the King was last seen!

Tip #5: Tap Extras, then Preferences, then Personal. Change your home country to Graceland (it's not in the dictionary, so you'll have to type it). The next time you turn on the Newton, you'll see a running *Newt* (scary thought) instead of the usual light-bulb logo!

Actually, the Personal screen offers additional startup screen fun, too. Add the appropriate number of blank spaces after your name to change the next startup's screen image, as follows:

Model 100: One space — a cat on a chair playing with a Newton. Two spaces — a crow holding a Newton.

Model 110: One space — a cat on a chair playing with a Newton. Two spaces — a newt in a cage.

Model 120: Two spaces — the cat on chair. Three spaces: a newt in the Garden of Eden.

Chapter 15

A Puny Performa Chapter

IN THIS CHAPTER:

- The baffling history of Performas
- What's different about the Performa
- All about At Ease
- How to use Apple Backup

WHAT'S A PERFORMA?

What is a Performa? At one time, you could have said it's "a Macintosh sold only through consumer stores such as Sears (and not computer stores)." But then Apple began selling them through computer stores, too.

OK, so then you might have said, "It's a Macintosh with specialized system software that makes it easier to use." But then Apple made the special Performa features standard across *all* Macs (in System 7.5).

At this point, you might have defined a Performa as "a Mac that comes with free software already on the hard drive, such as ClarisWorks, Quicken, America Online, and clip art." But then Apple introduced products such as the "Quadra 605 bundle" and the PowerBook 190 and 1400 series — you guessed it, non-Performas with that same software pre-installed.

So, finally you might have mentioned the last remaining defining characteristic of the Performa line: "A Performa is a Mac sold with everything — even a monitor — in one box, for one price."

Until Apple introduced the Performa 6220 and 6400, which are sold without monitors.

That's why this is a *puny* Performa chapter — because there are scarcely any differences left between Performa models and those described in the bulk of this book.

In the early days, Performa models essentially corresponded to mainstream Mac models. In other words, Performa 6115 = Power Macintosh 6100; Performa 6200 = LC 6200; and so on. Today, not every Performa has its standard Mac equivalent, nor does every Mac match up with a corresponding Performa. For example, there is no Performa version of the Power Mac 5400 or 5260. Conversely, the Performa 6290 and the 6300- and 6400-series models exist *only* as Performas — Apple doesn't make non-Performa versions of those machines.

So, what's left to define Performas?

- They still *generally* come complete with monitor, and nearly all models include a Global Village fax modem (either as an internal card or as an external Teleport unit).
- Today, all Performas include a generous helping of commercial software (*good* software, too): Quicken, ClarisWorks, America Online, a handful of CD-ROMs, and many others. They also come with Megaphone, the software that lets the Mac be an answering machine and speakerphone, plus the Apple Internet Connection Kit, which is certainly the easiest way on Earth to sign up for an Internet account.
- Every Performa comes with a CD-ROM disc that holds all system software (and the included commercial software), finally ending the cries of "Cheapskate Apple!" that rang out in the days when Performas included no system-software backup at all. However, the installer provided doesn't offer a "custom install" option; it lets you install only a complete System folder (or a complete hard drive-full).
- The Performa system-software CD doesn't let you do a "clean reinstall" using the ⌘-Shift-K trick described in Chapter 33. You must use the "hide the Finder" method (also described in that chapter).
- The very latest, such as the 6400 models, include an elaborately produced multimedia tutorial. An overly energetic woman in her 20s jumps around on your screen, actually walking around in there like a four-inch pixie escaped from a screen saver, pointing out various elements on the screen and jumping around on the Launcher window. Subsequent tutorials walk you through the various special Performa features — the answering machine, CD-ROM, and so on.

Incidentally: For information about specific Performa models, see Chapters 12 and 13. This chapter covers the Performa as Concept.

CASE HISTORY
PERFORMA STORES

Neither one of your cheerful authors actually owns a Performa. Yet, we needed to take screen shots of the Performa screen in order to illustrate this chapter. Off we ventured, floppy disk in hand, to our nearest Performa-selling office-supply store.

Now, Apple is perfectly aware that the worker whose normal job is selling three-ring binders and electric hole-punches is not, right off the bat, necessarily good at selling computers. This might be the reason why Macs have hitherto been sold at computer stores, where there are supposedly some knowledgeable people. You can ask questions. You can call up when something goes wrong.

Therefore, Apple has made sure that the Performa buyer is going to be okay with his or her purchase. First of all, because there's no salesperson to call up with questions, Apple provides Performa owners with a toll-free telephone hot line, staffed by smart people who can answer Mac questions. Second, because the office-supply store is not about to do Mac *repairs,* Apple gives Performa owners a second toll-free number — this one to summon a technician to come *to your house* (or wherever the Performa happens to be) and fix the thing, for free, on the spot.

This being said, we must echo the sentiments of many appliance-store Mac buyers: Yikes! On the day we went questing for screen shots, we approached the three Performas on display. All three were mouseless. We're not sure what kind of thug would steal a mouse, but, in any case, the clerk we asked shrugged and didn't know anything about it.

So we went to a second Performa dealership. We saw two Performas on display — each had a mouse. But the clerk-person went ballistic on us when he heard what we were up to. He eyed the blank floppy disk in my hand. "I'm afraid I can't let you do that," he said, putting his hand in front of the floppy-disk drive.

We assured him that we were fully competent Mac users and guaranteed him we wouldn't harm the machine. We finally offered him $20. He took it gingerly, waved us toward the machines, and muttered another warning not to mess things up.

But our problems were just beginning. We couldn't take our screen shot on the first Mac because its System software was deeply troubled. (The *three* complete System Folders we counted may have been responsible.) We finally took our screen shot on the other Performa. We even cleaned out some superfluous junk (A/ROSE, DAL, Caps Lock) from its System Folder as our way of saying thanks for the use of the machine.

We felt sorry for the poor little machines — manhandled by the public and misunderstood by the sales staff. But it was, nonetheless, a thrill to see a real Mac in mainstream America, nestled among the pencil sharpeners and staples.

The three original Performa features

Until 1994, when Performas and other Macs began to resemble each other more and more, the specialized "p" versions of Performa system software (see Chapter 6) offered three unique Performa features:

- One-click launching of programs from the Launcher window
- Auto-filing of new documents into a Documents folder on the Desktop
- Automatic hiding of background programs — even the Finder

Today, of course, these features are available on any Mac. For details on these features, see "Launcher" and "General Controls" in Chapter 4.

Historical Performa principles

In addition to those Big Three features, Performas had a few other distinctive features.

The General Controls control panel

For a reason that's no doubt tied in to Apple's user studies, the non-System 7.5 Performa's General Controls control panel (see Figure 15-1) doesn't let you edit your Desktop pattern. If you like making the backdrop to your Macintosh environment a teeming mass of little letter *J*s, as your friendly author Joe did before System 7.5, you're out of luck.

At least the patterns you do get are in a handy pop-up menu. Furthermore, using ResEdit, you *can* edit the Performa patterns, as shown in Figure 15-2. (Hint: Open the General Controls control panel and double-click the *ppt#* icon.)

Figure 15-1
The Performa's General Controls control panel — before System 7.5 — had a different Desktop pattern control than the one found on other Macs.

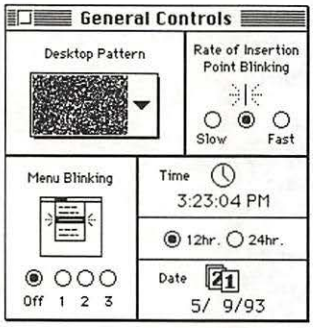
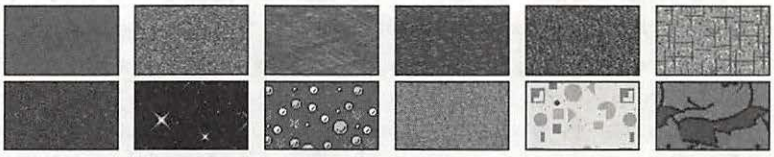


Figure 15-2
The original Performa patterns, represented here in shades of gray.



The old Performa Control Panel

Every Performa model made between October 1993 and the release of System 7.5 (the 550, 475, 476, 460, 466, and 467, for example) came with a unique feature: the Performa control panel.

TRUE FACT

THE MAC/PERFORMA EQUIVALENCE TABLE

Exactly how much Mac meat have you got there in that Performa? Here it is: the ultimate Performa-to-Mainstream-Mac Equivalence Table.

Performa	Equivalent Mac	Processor
Performa 200	Classic II	68030, 16 MHz
Performa 400, 405, 410, 430	LC II	68030, 16 MHz
Performa 450	LC III	68030, 25 MHz
Performa 460, 466, 467	LC III	68030, 33 MHz
Performa 475, 476	LC 475	68LC040, 25 MHz
Performa 520	LC 520	68030, 33 MHz
Performa 550, 560	LC 550	68030, 33 MHz
Performa 575, 577, 578	LC 575 CD	68LC040, 33 MHz
Performa 600	IIvx	68030, 32 MHz
Performa 630*	LC 630	68LC040, 66 MHz
Performa 640DOS	LC 630 DOS	68LC040, 66 MHz
Performa 5200**	Macintosh 5200/75 LC	PowerPC 603
Performa 5300CD	Power Mac 5300/100 LC	PowerPC603e, 100 Mhz
Performa 6110†	Power Mac 6100/60	PowerPC 601
Performa 6200††	Power Mac 6200/75	PowerPC 603
Performa 6290	N/A	PowerPC603e, 100 MHz
Performa 6320	N/A	PowerPC 603e, 120 Mhz
Performa 6400/180	N/A	PowerPC 603e, 180 MHz
Performa 6400/200	N/A	PowerPC603e, 200 MHz

* ...and the Performa 635, 636, 637, and 638.
** ...and the Performa 5210, 5215, and 5220.
†...and the Performa 6112, 6115, 6117, and 6118.
††...and the Performa 6214CD, 6216, 6218, 6220, and 6230.
Note: Almost all Performas also come with keyboard, monitor, fax/modem, and about ten commercial software programs pre-installed; today, all Performa models have a CD-ROM drive.

This control panel was responsible for several of the features originally created by the first Launcher (Finder hiding, Launcher opening, Documents folder-handling). But unlike the old Launcher, the Performa control panel let you turn these features off individually (see Figure 15-3).

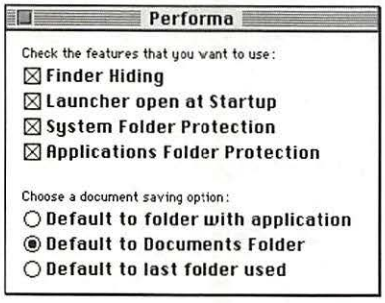


Figure 15-3
The Performa control panel gives you feature-by-feature control over you Mac's Performa-like behavior.

In fact, the Performa control panel introduced a pair of additional features: System Folder Protection and Applications Folder Protection. These options simply prevent anyone from dragging icons out of the System Folder or Applications folder. If you try, you get a strange message about not having "enough access privileges" to move those icons. (Only the "root level" items — loose in the folder — are protected; you're still free to drag individual control panels out of the Control Panels folder, for example.)

This feature, too, wound up incorporated into System 7.5's General Controls panel — although the bizarre and misleading message about "not enough access privileges" wasn't rewritten until System 7.5.3.

AT EASE

At Ease is a Finder-hiding gadget designed for those in control (a parent, a teacher, a service-bureau owner). It protects the Mac from those who are *out* of control (a kid, a student, a customer).

At Ease comes free with the Performa, or can be purchased from Apple or a mail-order place. It has certain aspects in common with the Launcher, in that it creates a palette of jumbo icons that one click, not two, will open. But At Ease fills up the entire screen. Control Panels, the Trash can, and your disk icons are all hidden from view, making it impossible for accidental renaming, deleting, or setting changes to occur without the grown-up's knowledge.

In its place, you see something like Figure 15-4. When you launch a program, the At Ease window itself disappears, only to reappear when you quit that program.

In current versions of At Ease, each student/child/customer can have his/her/its own selection of icons installed on these screens. When the Mac starts up, it presents a list of all such setups (the list might say Timmy, Mom, Dad, Sissie, and so on), and you double-click to tell the program which configuration to use.

You can even set up a "restricted Finder" environment for certain users, in which the regular world of movable icons, folders, and menus is available — but only designated ones. You, the administrator, decide which folders and files are visible and usable, using the At Ease Setup program.



Figure 15-4
What you see instead of the Finder when you're in At Ease.

At Ease and the death of your hard drive

The manual makes a big deal about the specific way to remove At Ease. It tells you that you must open the At Ease control panel and *click the Off button* before removing At Ease. It specifically warns you *not* to drag the At Ease files to the Trash. The manual doesn't, however, specify exactly what will happen if you *don't* remove At Ease in the officially sanctioned manner.

Well, basically, you *trash your hard drive.*

At Ease does something rather un-kosher when it installs itself: It modifies the *boot blocks* of your hard drive (the very first instructions that get processed when the Mac is turned on) to ignore the Finder and launch At Ease instead. Of course, if you've *thrown away* At Ease, the Mac goes on a wild-goose chase, and throws up its electronic hands in frustration. It gives you a flickering system-bomb icon in an empty dialog box — and, after a while, the blinking question-mark Icon of Doom.

You can restart, hold down the Shift key, do whatever you want, and the hard drive won't come back. Sometimes, running the Disk Tools program can repair the damage. Other times, doing a clean system reinstall (see Chapter 33) does the trick.

Much better, though, to avoid the problem in the first place: *Turn off* At Ease before removing any of its components. Or, remove it using its original Installer program's Remove option. Otherwise, you're asking for trouble.

PERFORMA SECRETS

Fixing the Performa Plus monitor



These days, Performa monitors are pretty terrific — certainly on par with non-Performa Apple monitors. But in past years, every Performa came with something called the Performa Plus monitor, which had a muddy and washed-out picture (compared with the Apple 14" color monitor). But as reader Geoff Alexander pointed out, if you aren't afraid to adjust the contrast and brightness controls, you can do much better.

Turn the brightness all the way down, and the contrast all the way up. Surprise: You get a better image than the Apple 14" color monitor. Better color rendition, too.

The forgotten-At-Ease-password trick

It could happen to you: You forget your own At Ease password. Holding down the Shift key at startup, of course, doesn't bypass At Ease. How can you get back to your Finder?

Restart the Mac from your Disk Tools disk. Now just open your hard drive's System Folder, open the Preferences folder, and throw away At Ease Preferences. Now At Ease can't remember your password, either!

Restart the Mac and you're back in business.

A little At Ease surprise

With At Ease running, hold down the Option key while choosing About At Ease from the menu; you'll uncover a picture of the At Ease programmers.

The secret CD System folder



Ever wonder how a Performa's CD-ROM can actually start up the Mac? After all, there's no System folder on it. Look around — see for yourself!

Perhaps to discourage novices from installing incomplete pieces of the System folder, Apple went to a great deal of trouble to *hide* the CD's actual System folder. It's *not* the one whose components seem to be in the System Folder Files folder (in the Hard Disk Files folder).

The real one lurks in the Restore All Software folder, nestled among the hundreds of blank document icons called Data File 43, Data File 44, and so on. On various models, we've seen it disguised as Data File 46, 80, or 96. In all cases, some Apple programmer actually pasted a bogus custom "blank document" icon onto the System folder to make sure nobody recognizes it! (But view the window as a list, and you'll see the unmistakable folder icon return.)

CASE HISTORY

THE TROUBLE WITH THE PERFORMA CD-ROM

Nobody ever said that Apple's approach to system software on the Performa was perfect. Here are reader David Converse's particular complaints, to which we add, "Yeah — what HE said!"

First on the hit list: Apple's cursed Performa CD (for the 6000-series models, for example).

The included CD, with System software and bundled third-party programs, is an improvement over the nothing supplied with many earlier Performas. Unfortunately, it isn't a great improvement. To reinstall any software, the following steps are required: Boot from the CD (hold down the C key at startup). Run either the Restore All Software or Restore System Software program on the CD. Watch as everything is reloaded to your internal hard drive. Easy, right?

Not so fast. Pity the poor Performa user who has replaced the internal drive with a non-Apple model . . . or who has reformatted the drive with a third-party driver . . . or whose internal drive is simply full. In the first two cases, the installer won't find the hard drive at all; in the latter case, it will show error messages and end up crashing.

Furthermore, although the included booklet says you can reinstall individual programs from the CD-ROM, that isn't the case — it's all or nothing. Loading to a drive partitioned with HD SC Setup is OK, except that the installer will load to the highest partition (in terms of disk addresses) and, if that partition is too small, oh well.

Apple should get a clue. Selling machines aimed at the non-computer-savvy public with crippled backup disks is sheer foolishness.

Part III:

Application Secrets

Chapter 16: Multitasking, Multi-Platforms
Chapter 17: Word Processing
Chapter 18: Page Design
Chapter 19: Number and Data Crunching
Chapter 20: Graphics and 3-D
Chapter 21: The ResEdit Chapter
Chapter 22: Public Utilities
Chapter 23: Speech, Movies, and Sound

Chapter 16

Multitasking, Multiplatforms

IN THIS CHAPTER:

- How multitasking works
- Handling memory and multiple programs
- Publish and Subscribe
- Type and creator codes
- Taking your work to PCs and back

For years, the idea of running more than one program at a time on the Mac was a strange and alien concept. It even seemed to betray the Mac's professed simplicity. You did one thing at a time. Either you shuffled floppies in and out (in the Finder), or you typed and printed (in MacWrite). Multitasking was something fancy UNIX programmers did.

The first time anyone saw more than one program running on a Mac was when Switcher came along. This little software program put a little double-headed arrow on the menu bar. Click the arrow and the next program's window rotated into view, like a new slide in a projector. You didn't see the programs' windows simultaneously, cluttering up your screen. And those were the days when the fattest Mac was the 512K model; we're not talking about running *dozens* of programs at once. Nonetheless, Switcher was the precursor to MultiFinder and, eventually, System 7. In retrospect, we're amazed that Switcher went essentially unheralded and unannounced; it never made the cover of a Mac magazine.

HOW THE MAC MULTITASKS

The goal of early programs like Switcher was simple: to run more than one program simultaneously. With more than one application in RAM, you would be spared the frustrating 60-second wait as you quit MacPaint (from which you copied a logo) and launched MacWrite (in which you wanted to paste it). If both programs were in memory at once, jumping between them would be instantaneous.

Furthermore, allowing more than one program to run at a time opened the door to *background tasks.* These are jobs that take the *computer* a long time to do (such as printing or downloading files by modem), but which don't involve any input from you. The dream was to let you, the user, continue to do something useful with the Mac — word processing, say — while part of the computer's attention was focused on this background task. In other words, people wished the Mac could do *multitasking.*

When a computer is multitasking, it doesn't really do more than one thing at a time. Millisecond by millisecond, it's actually doing only *one* thing at a time — but changing its job description extremely fast. It might spend a few milliseconds handling a printout you're doing, then a few receiving a fax, then back to the printout, and so on.

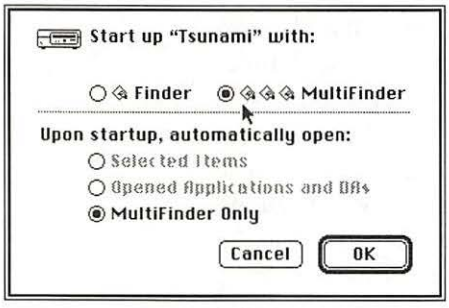
All of these background tasks happen when *you're* not doing anything. It takes place, for example, during the fractions of a second between letters you're typing (although that doesn't mean that you never *notice* background activity, especially when you're trying to type).

MultiFinder

Of course, multitasking really broke into the big time with the invention of *MultiFinder,* which first saw the light of day in System 4.2. This descendant of Switcher was still an option in System 6. To turn it on or off, you chose Set Startup from the Special menu (see Figure 16-1, provided as a public service for history buffs).

Under MultiFinder, when you launched a program, the Finder didn't disappear. Instead, its icons and windows continued to lurk in the background. So, to launch a second program, you switched to the Finder and then double-clicked a program or document icon normally.

Figure 16-1
The Set Startup dialog box. In System 6, this is the key to turning the Mac into a multitasking machine.



Multitasking in System 7

In System 7, multitasking is no longer optional. You can always launch more than one program and keep them — and the Finder — in memory at the same time.

System 7's list of running applications is called the Application menu (or the *process menu,* if you're a programmer). The Application menu is marked at the right end of the menu bar by a small-scale icon. To switch from one running program to another, you choose its name from this menu.

Actually, after multiple programs are running, there are three other ways to jump from one to another: click anywhere in a visible application's window; in the Finder, double-click the dimmed icon of a program that's running; or double-click a document icon. (Even those aren't the most convenient possible methods of program switching, however, as fans of the shareware Program Switcher attest; we've included it with this book.)

HAZARDS OF MULTITASKING

Multitasking isn't just a more complicated task for the computer; it's a more complicated task for you, too.

Memory management

Your immediate concern when running several programs is memory. Your Mac has a finite amount of it. You must worry not just about how much RAM your Mac has, but also about how much each program needs, *and* how much you decide to give it. You must also worry about memory fragmentation.

To change how much RAM each of your programs uses, use the Get Info command on its icon, and type a new number into the box at the lower right of the Get Info window. (Or, with AppSizer, provided with this book, you can change the program's memory appetite as it's launching; see Chapter 34.) See Chapter 9 for guidelines in setting this number correctly.

As for memory fragmentation, again, as we suggested in Chapter 9, the trick is to *first* launch programs you plan to use all day. Launch *last* the programs you'll be starting and quitting. Otherwise, you'll wind up fragmenting your Mac's memory. You may be prevented from loading a new program you want to open, even though, technically, there's enough memory left. (You can always defragment your memory by quitting *all* programs and relaunching them. But that's time-consuming, to say the least.)

ANSWER MAN

Multitasking vs. Multithreading

Q: ***What's the Thread Manager? Sewing software?***

A: The Thread Manager is an extension — built into System 7.5.3 and later — that gives your Mac multithreading.

Apple explains multithreading as follows:

"Multithreading allows an application process to be broken into simple subprocesses that proceed concurrently in the same overall application context. A thread consists of a register set, a program counter, and a stack. Threads have a fast context switch time due to their minimal context state requirement. Since threads are hosted by an application, threads within a given application share the address space, file access paths, and other system resources associated with that application...."

"The Thread Manager will provide both cooperative and preemptive threads. Cooperative threads explicitly indicate when they are giving up the CPU. Preemptive threads can be interrupted and gain control at any time...."

Sure. Whatever.

What all that means in real life is that, when the Mac is fully multithreading, more kinds of computational tasks will be "background" tasks — meaning that you can continue working. The usual examples are formatting a floppy

Chapter 9 also mentions two Macintosh tools that are absolutely ideal for multitasking: virtual memory (built into your Memory control panel) and RAM Doubler (from Connectix). Each lets you run more programs at once without sacrificing significant speed.

Not knowing which program is open

Another complication of multitasking on the Mac is losing track of which program you're actually *in*. Think about it: If there's any screen space not filled by a program's window, the Finder desktop shines through, right? If *no* program window is open, then your screen looks *exactly* like you're in the Finder!

This can cause frustrating side effects for the novice. You may, for example, want to shut down for the day. But you'll scan the menus endlessly, and the Shut Down command simply isn't there! In fact, it only *looks* like you're in the Finder; actually, you're in some program that has no open windows.

Savvy Mac users know of three visual cues to determine which program is in front:

- Look at the Application menu (see Figure 16-2). Though small, it shows the icon of the program that's currently in front.
- The frontmost program has a check mark beside its name in the Application menu (see Figure 16-2).
- The first command in the menu always provides the name of the active program ("About Quark XPress," for example).



Figure 16-2
Two visual clues as to which program is really in front: the icon atop the Application menu and the check mark next to the program name.

When you're running multiple programs in System 7 through 7.1, the familiar Finder desktop is always shining through from behind any the windows of other programs. In fact, even if you're smart enough to choose Hide Finder from the Application menu, the Finder desktop and icons *still* don't disappear! Worse, one accidental mouse click *outside* of an application's window instantly deposits you back in the Finder, whether you want to be there or not. Ask any novice how many times he or she's seen an entire word processor window full of text completely *disappear* (behind some Finder windows), and you'll understand the extent of the problem.

Given all of this confusion, it's no wonder that System 7.5 introduced the option of auto-hiding the Finder *completely* whenever you launch another program. (This feature's on/off switch, borrowed from the Performa system software of old, is in the General Controls control panel.) And we mean *really* hiding it, icons and all. No wayward click will send you back into the Finder. There's never any doubt as to whether you're in the Finder or not, and there's no Hide Finder command to only half-work.

Of course, there are disadvantages to the fully self-hiding feature, too: To go *back* to the Finder without quitting, you *must* choose its name from the Application menu. Furthermore, if the Finder is hidden, it's impossible to create clipping files on the Desktop using Macintosh Drag-and-Drop — or to insert the contents of a clipping file into an open document by dragging it from the Desktop — as described in Chapter 1.

disk, doing a database search, or applying a Photoshop filter. Today, you sit and twiddle your thumbs while those processes go on; multithreading would permit you to continue working while those activities go on in the background.

To make multithreading work, you need System 7.5 or later — or System 7 and the Thread Manager extension. Of course, you also need programs that have been written to take advantage of multithreading — and that's the problem. There aren't many programs that do. Stay tuned for Copland (OS 8), however.

MULTITASKING SECRETS

Hide one program en route to another

Of the four ways you can switch from one program to another in System 7, two of them let you hide program A as you switch from it to program B. If you press Option while either (1) choosing a program's name from the Application menu or (2) clicking in a background window to bring it forward, the program you're working in hides itself. The Option key is an important tool in keeping a bunch of overlapping, confusing windows under control.

The most prominent example of this technique's usefulness is switching to the Finder. In this case, hiding other program windows is almost essential, because they may be concealing the icon you need access to (the Trash and

ANSWER MAN

Diamonds in the bar

Q: ***What are those diamonds and flashing icons all about? Sometimes they're at the top of my menu. Sometimes they're on my Application menu. What's happening?***

A: We've been discussing the ins and outs of multitasking for several pages now. Generally, we've conveyed the impression that only the frontmost program — the active one — gets much attention from you. Programs in the background are permitted to use only the grains of time in which you and the foreground program aren't doing anything. That leaves them available to do tedious, computerish tasks such as printing or receiving a fax.

When we were kids, whenever our parents had a fancy dinner party, we were supposed to have fun upstairs all evening and not disturb the grown-ups in the living room. But that always presented a quandary: What should we do if something really important happened (like a sister getting her tongue caught in the faucet opening or something)?

Background programs face the same challenge: Having been told firmly not to intrude on the main event, they are content to huddle in the background, waiting for the Real Work to get done. Yet, sometimes there's a crisis. The background program doesn't want to interrupt you — it has too much respect for you to do that. So, it timidly starts blinking.

In System 7, this blinking usually happens on the Application menu

your disk icons, for example). Therefore, if you're in (for example) ClarisWorks, Option-clicking whichever patch of the Desktop you can see is a common power-user habit.

Switch with a keystroke

One of the most efficient ways to jump from one program to another is to use QuicKeys, Tempo, or KeyQuencer (versions of which are included with this book). By all means, assign your favorite programs to the function keys across the top of the keyboard. Most people are already aware that these programs let you launch any program on your hard drive with a single keystroke.

Fewer realize, however, that the *same* macro can be used to bring that program to the front even *after* it's running. Allowing your macro to launch programs lets you worry less about what's running; you learn to associate Control-W, say, with Microsoft Word, without having to remember whether or not it's already running.

And if don't want to have to memorize keystrokes, use Program Switcher, also included with this book.

The Finder-in-a-window trick

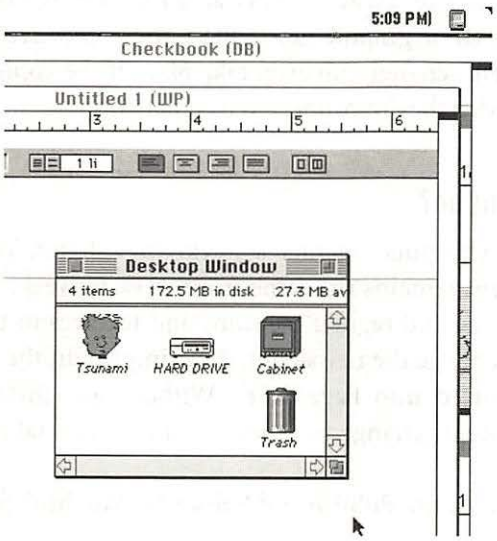
As mentioned in a preceding Secret, one way to get around the Trash-is-covered-up problem is to Option-click the desktop when you switch from a program to the Finder.

That solution isn't ideal, however, if you're running *several* programs. In that event, you must switch to the Finder and then choose Hide Others from the Application menu.

Here's a trick that reduces that one step down to zero. Create a folder called "Desktop Window." Make aliases of your disks, both attached and networked. Also make an alias of your Trash can. Put them all into this window (see Figure 16-3).

Now, whenever you switch to the Finder, you see the desktop landscape that would otherwise be covered up by the windows of other programs. Double-click a disk icon to open it. Drag anything onto the Trash alias to delete it.

Figure 16-3
The Finder-in-a-window trick provides access to the icons that are usually covered up by the windows of other programs — the Trash and your disk icons. Now you don't have to bother hiding all your other applications when all you want to do is jump to the Finder and open a disk.



Opening Desktop items without closing windows

Here's a neat way to select and open Desktop icons, even if they're covered up by open windows: Press ⌘-Shift-up arrow. This instantly jumps you to the Desktop level, regardless of how many windows are open. Then type the first letter or letters of the name of the disk icon or file you want to select. If you want to open the Trash, for example, press T. If the Trash happens to be behind an open window, you won't be able to see that you've really selected it — but you have. Just press either ⌘-O or ⌘-down arrow, and the Trash window will open. You've selected and opened an item on the Desktop without seeing it, without closing a single window, and without lifting your fingers from the keyboard.

icon. Your foreground program's icon starts alternating with that of the background application that's in trouble. If you then put your cursor on the Application menu icon, the distressed background program's name appears with a diamond beside it (in case you didn't recognize the blinking icon).



When you finally have a moment to respond to the background program's tactful signal, you choose its name from the Application menu, and you're finally told what the trouble is.

By far the most common programs that present these Notifications, as they're called, are PrintMonitor (see Chapter 25), the Finder, e-mail programs, and telecom programs (including online services such as America Online). The Finder is generally trying to tell you that it has run out of memory for keeping busy windows open. PrintMonitor usually wants to say that your printer is (a) off, (b) out of paper, or (c) ready for the next sheet of hand-fed paper (if you've used the Manual Feed option). E-mail programs are usually trying to say that a message has come in, and online services warn you that you haven't touched your keyboard for several minutes, but you're still running up a bill.

PUBLISH AND SUBSCRIBE

Remember Copy and Paste? You select information from one document or program. Then you paste it into a different (or the same) document or program.

System 7's Publish and Subscribe is almost exactly the same, but there's one critical difference: The "pasted" material is *linked* to the original. When the original chart, text, or graphic gets edited, the copies are automatically changed to match. This change can even take place if the copies exist as files on *other Macs,* provided they're connected by a network.

Why hasn't it caught on?

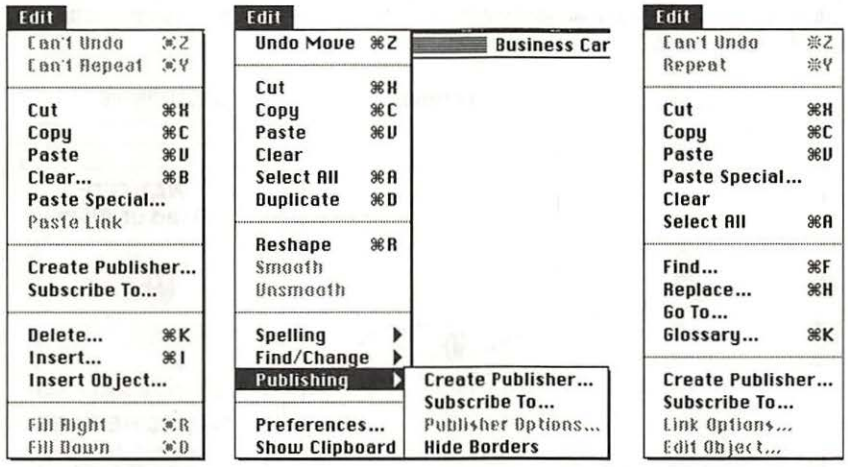
We know a couple who puts together a weekly newsletter. The PageMaker page-layout document remains the same from week to week, filled with ads that don't often change and regular columns and features in the same positions each week. To change the newsletter, they simply edit the original Word files that were imported into PageMaker. Without any further effort, the PageMaker file's contents change to reflect the new material from the word processor.

Yet most people *don't* use Publish and Subscribe. We think four factors are responsible:

- If you're not either on a network, collaborating on documents with others, or embedding one kind of data (such as PostScript graphics) inside another (such as a word processor), you simply don't need Publish and Subscribe.
- Not all programs offer Publish and Subscribe features. In fact, only programs that deal with the layout and manipulation of text, graphics, and charts have Publish and Subscribe features. We couldn't find any music programs, for example, that had Publish and Subscribe.
- Of the programs that do have Publish and Subscribe, few work just alike. Copy and Paste made it big because everyone always knows where to find these commands and how they're going to work. But Figure 16-4 shows that few programs have Publish and Subscribe features laid out quite the same way.
- But most of all, we feel that Publish and Subscribe hasn't quite become universal because it's just too darned hard.

This last item we hope to do something about. We encourage you to walk through it just this once, if only so you'll know what Apple had in mind.

Figure 16-4
No two programs offer Publish and Subscribe features the same way and in the same places. Here are three examples from Excel, ClarisWorks, and Word.



The basics of Publish and Subscribe

Copy and Paste takes place in two spots. You copy a selection (location A) and put it down somewhere else (location B).

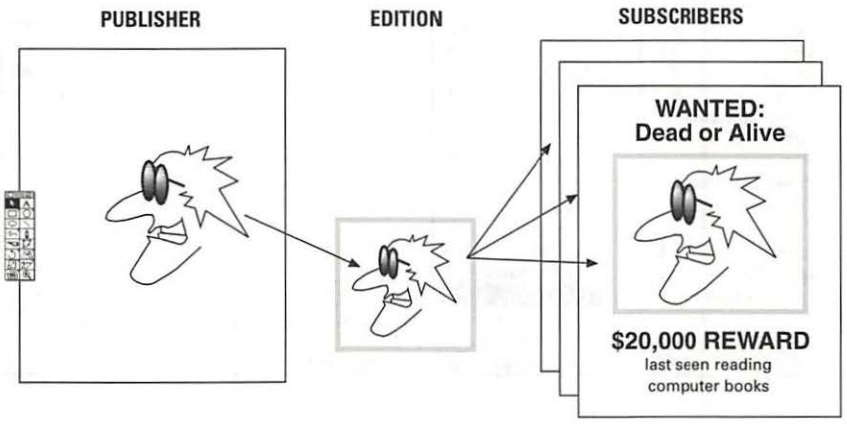
Publish and Subscribe, however, involves *three* locations. You copy a selection (location A). When you use the Publish command, the Mac saves that selected paragraph or picture in a new file (location B) on the hard drive. You must name it and place it into a folder, just as you would any ordinary document. Sticking with this magazine analogy, the saved text or graphics file is called an *edition.*

At this point, you've achieved nothing useful. You've copied some material and saved it into its own file on the disk.

Now, however, you go to another document (location C). It can be created by the same program that created the edition, or it can be a totally different program. Into this document, you import the edition file on the hard drive, using the Subscribe To command. The contents of the edition file appear in the new document, just as though they had been pasted there (see Figure 16-5).

This may seem to be several steps more complicated than Copy and Paste. But if you now open the original document, *change* what you published, and use the Save command, then the edition file — and all subscriber documents — are instantly updated to reflect the change you made.

Figure 16-5
The *publisher* is the material in the original document. (There can be several publishers in one document.) Using the Create Publisher command, you save the graphic into a disk file of its own, called an *edition*. Finally, you can import the graphic into any number of documents, whereupon each imported edition file is called a *subscriber*. The beauty of this system: If you ever reopen the publisher document and change the graphic, it automatically changes in all the subscriber documents, too.



Publish and Subscribe step-by-step

Get a program that has Publish and Subscribe features. Almost any word processor, spreadsheet, page-layout program, or graphics program does. (The current versions of Word, Excel, FreeHand, PageMaker, Canvas, ClarisWorks, MacWrite Pro, WordPerfect, and Photoshop are some examples.) If you have two different programs, terrific; you can publish from one to another. But if you have only one, that's useful, too.

Create a graphic, chart, or block of text (from one typed character to many pages long) and select it. From the Edit menu, find the program's Create Publisher command (see Figure 16-6).

You're asked to give this edition a title and to save it on your hard drive. Do that (see Figure 16-7). Repeat this process with as many other selections of *source* material as you want. In most programs, a gray, nonprinting border appears around the published material.

Figure 16-6
First, select or highlight the material you want to be linked. Find the Create Publisher command and choose it.

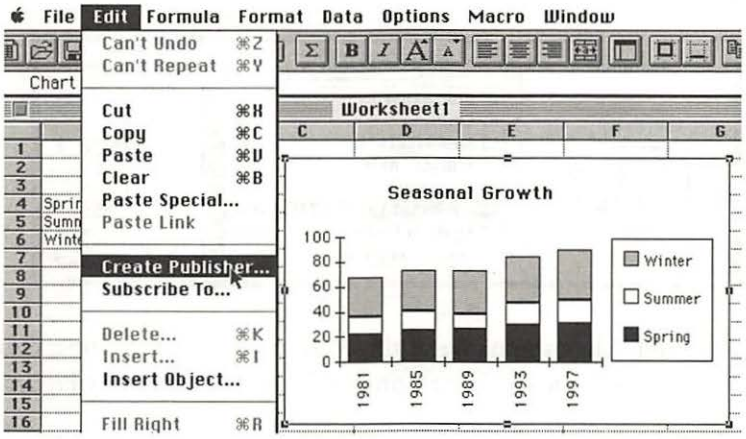
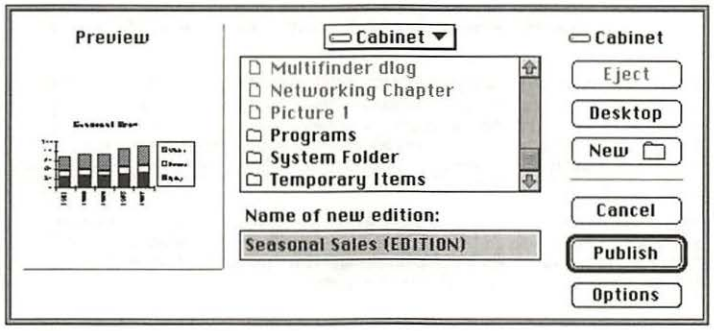


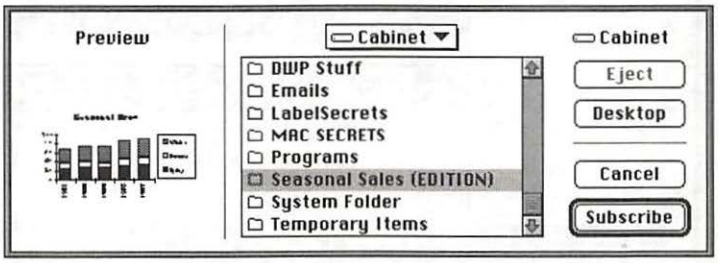
Figure 16-7
Name and publish the edition file. Depending on the program you use, the Publish button may say Save.



Before you quit the first program, *you must save the document* that contains the published material! If you don't, your magical linking of material evaporates. You are left with the lonely edition file on your hard drive, not tied in to anything at all.

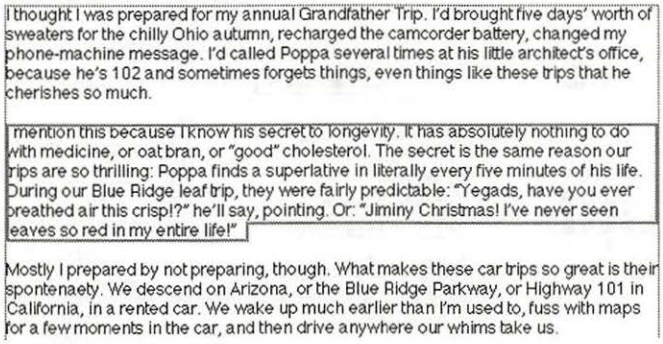
Now go to the program, document, or *part* of a document where you ultimately want to integrate what you just published. Find the Subscribe To command. Choose it; a box appears in which you can locate the edition you created earlier (see Figure 16-8). The Mac automatically highlights the last edition you created, regardless of the program that created it.

Figure 16-8
Now you're fetching the edition file from within the target document. Note the Preview; this handy feature helps you figure out if you're opening the correct edition file. (If you published text, you see the first few lines in the Preview.)



Double-click the name of the edition you want. It appears in your document, usually enclosed by a nonprinting gray border (see Figure 16-9.)

Figure 16-9
A gray outline appears around any published or subscribed material. It does in most programs, anyway; in Word and Excel it doesn't, although Word shows brackets when you have the Show ¶ command turned on.


I thought I was prepared for my annual Grandfather Trip. I'd brought five days' worth of sweaters for the chilly Ohio autumn, recharged the camcorder battery, changed my phone-machine message. I'd called Poppa several times at his little architect's office, because he's 102 and sometimes forgets things, even things like these trips that he cherishes so much.

I mention this because I know his secret to longevity. It has absolutely nothing to do with medicine, or oat bran, or "good" cholesterol. The secret is the same reason our trips are so thrilling: Poppa finds a superlative in literally every five minutes of his life. During our Blue Ridge leaf trip, they were fairly predictable: "Yegads, have you ever breathed air this crisp!?" he'll say, pointing. Or: "Jiminy Christmas! I've never seen leaves so red in my entire life!"

Mostly I prepared by not preparing, though. What makes these car trips so great is their spontenaety. We descend on Arizona, or the Blue Ridge Parkway, or Highway 101 in California, in a rented car. We wake up much earlier than I'm used to, fuss with maps for a few moments in the car, and then drive anywhere our whims take us.

Editing the subscriber

After you subscribe to an edition file, you can't do much with the imported material. If it's a graphic, you can move or resize it. If it's text, you might be able to make overall formatting changes.

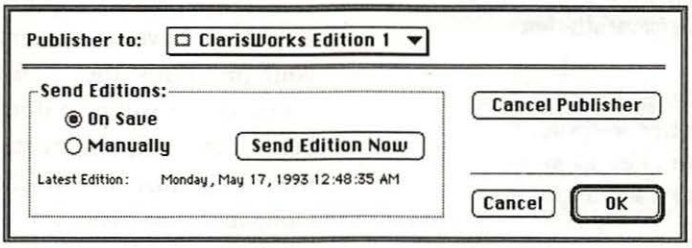
But to make any serious editing changes — or any changes to individual words in subscribed text or individual elements of a graphic — you must reopen the original publisher document. Make some changes to it and then *save* the publisher document. The edition file on disk — and, therefore, the subscriber document — is automatically updated.

Controlling when editions are updated

We mentioned that an edition file is updated when you save the publisher document. Actually, there's more to it than that. You can also elect to have the editions updated on command. You can even permanently destroy the link between the original and the copies.

Most programs have a Publisher Options command and a corresponding dialog box (see Figure 16-10). Note well, to avoid confusion: This command is available only when something that you published is *selected* in the publisher document.

Figure 16-10
Get more control over when the Mac updates the subscribed copies.



In the dialog box, you see a Send Editions control. Generally, it's set to "On Save," meaning that you have to save the publisher document to update the edition files. But using the controls in this dialog box, you can have more flexible control over when the edition is changed.

- To halt all edition-updating until you are ready, choose Manually.
- To stop all edition-updating *forever* (break the link), click Cancel Publisher.
- To send an edition update right now, before you save the publisher document, click Send Edition Now.

Subscriber options

Most programs generally include a *Subscriber* Options command and dialog box, too. In this dialog box, you see familiar controls for changing the frequency of the updating. If you leave the Automatically button selected, then the selected subscriber changes whenever the original (publisher) document is saved (or you click its Save Edition Now button). You can create the same three variations on that theme as you can with publishers.

CASE HISTORY

WHEN TYPES AND CREATORS SAVED THE DAY

It was August 1988. Skinner Chavez was a church organist we know who had been assigned the job of preparing a new hymnal. He'd been working long hours on preparing the lyrics for this hymnal when his hard drive crashed.

His first instinct was to use Symantec Utilities for the Macintosh, a hard-drive recovery program. Sure enough, SUM's main window showed that it had successfully recovered several hundred files from the dead disk. Unfortunately, none of them were Word files (the file format of his lyric documents).

He was *sure* that his documents had been there. But the files SUM recovered were called RecoveredFile1, RecoveredFile2, and so on — and SUM claimed that one and all were FileMaker documents!

So, Skinner grabbed DiskTop, a program that can change a file's type and creator codes. Painstakingly, one at a time, he changed the type and creator codes of each recovered file to MSWD and WDBN (the codes for Word). Then he tried to open each. Most crashed the computer. No wonder — many of the files he redubbed as Word files were, most likely, originally System files, desk accessories, and so on.

But, late in the night, as he opened file number 63 or so, he hit paydirt: He found his lyrics. The next 12 files he opened also contained recoverable text.

The files hadn't actually been damaged in the hard drive crash. But their type and creator codes had been wiped out. By restoring them, Skinner restored their file integrity and was able to open them and salvage his work.

(Today, of course, escaping his nightmare would have been far simpler. He'd have used CanOpener, included with this book, to quickly and easily scrape the useful text out of any of his files!)

TYPES, CREATORS, AND DOUBLE-CLICKING

In previous incarnations of the personal computer — DOS machines, for example — you didn't have any of this double-click-to-open business. In the world of DOS, you have to type the name of the program you want to open, a space, and then the exact name of the *document* you want to open with it. If you don't remember the name of the document precisely, you're out of luck.

The Mac makes all of this much simpler. You don't have to remember the names of your programs; they're listed for you at all times. Better still, you don't have to remember which program *created* a certain document. You just double-click the document icon, and the program that created it — whatever or wherever it may be — opens automatically.

The mechanism that gives the Mac this intelligence is worth examining because it also accounts for a number of other Mac behaviors. That mechanism is *type and creator codes.*

Creator codes

The creator codes are generally hidden from you, the user. But every program ever written has its own customized four-letter code: the *creator code.* No two creator codes are alike. For FileMaker Pro, the creator code is **FMPR.** For Now Up-to-Date, it's **cal***; for Word 5, it's **WDBN**, and so on. (When it comes to type and creator codes, capitalization counts, as do spaces.)

Because every *document* you create is also stamped with this creator code, it always

knows who its parent is. When you double-click a document icon whose behind-the-scenes creator code is FMPR, FileMaker Pro opens automatically.

Type codes

Every icon on your disk also has an invisible *type* code. This piece of information specifies which *kind* of file it is: text, graphic, and so on. For example, depending on the options you choose in Excel's Save As dialog box, this single program can create text files (type code: TEXT), normal Excel files (XLS6), Lotus 1-2-3-exchangeable files (SYLK), Microsoft Works format (LWKS), and so on.

Every one of these documents has the same Excel *creator* code, however — XCEL. Therefore, regardless of what the icon looks like or what file type it is, if it's double-clicked, then it opens in Excel.

How type and creator codes affect you

These codes are the *sole* explanation for the famous "application could not be found" error message.

This message appears all too frequently when you double-click an icon. It means that, in consulting the file's creator code, the Mac didn't find a match among the applications on your hard drive. If you double-click a document icon whose creator is SQGP, and there's no *application* on your disk with such a code, then you get the error message.

Suppose that your SQGP file was sent to you by a friend from America Online. The message says, "Here's an EPS file of me with my dog Bullwinkle." Now you're on to something. If you check the file's *type* code using Drop•Info (see the next section), you see that, indeed, the type for this document was EPSF. (EPSF is the four-letter type code for the standard Mac PostScript graphics file format.)

Plenty of programs can open EPS files: Photoshop, Word, FreeHand, PageMaker — you name it. But as long as the file's *creator* code refers to a program you don't own, then you'll never be able to open it by double-clicking (unless you're using Macintosh Easy Open; see Chapter 4).

If you were to change the creator code to match an application you *do* own, then a simple double-click would open that EPSF file! In fact, the file would even inherit the appropriate icon identifying it with that application; the Mac uses a file's creator and type codes to assign icons for files in Finder windows.

Changing type and creator codes

In the standard system software, Apple doesn't provide any way for you to change a file's type or creator code. (There's a secret way to *see* codes using Find File, as you'll see in the first Secret below, but no way to *change* them.)

You, however, are fortunate. Included on the disc with this book is Drop•Info (see Chapter 34), one of whose talents is the capability to change type and creator codes with ease. Here's how to do it.

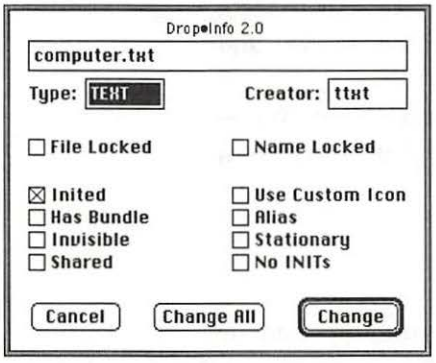


Figure 16-11
The Drop•Info window showing the Type and Creator Code text boxes.

Drag the file you want to change onto Drop•Info's icon in the Finder. The dialog box in Figure 16-11 appears.

All you have to do is type a new type or creator into the text boxes. Be careful: The code must be exactly four characters long. And capitalization counts; if you change a file's creator to Fmpr instead of FMPR, it will *not* become a FileMaker Pro file.

When you're finished changing the code, click Change. It's over.

TYPE AND CREATOR CODE SECRETS

Determining a file's codes instantly

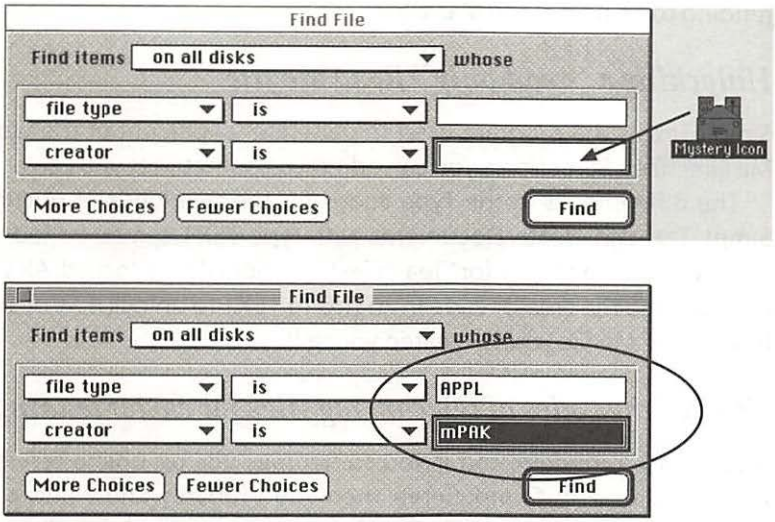
We said earlier that the Finder provides no way to peek at a file's type or creator codes. But in System 7.5 and later, you can use the Find File program in a sneaky, undocumented way to learn just such info. From the pop-up menu, choose *creator code* or *type code,* as appropriate. (Or use the More Choices button to reveal a second pop-up menu, and choose *both* codes.)

Now drag the icon of the mystery file *on top of the blank,* as shown in Figure 16-12. The Find File program instantly reveals the hidden codes in the blanks.

Changing codes to frustrate snoopers #1

Since type and creator codes tell the Macintosh what kind of file a particular icon is, it follows that changing a file's codes can prevent it from opening in the usual way. Changing a type or creator code, therefore, is one of the fastest and simplest ways to prevent an important document from being viewed by unauthorized eyes while you aren't at your Mac.

Figure 16-12
Set up Find File's pop-up menus to say *type* and *creator*, as shown at top. Drag an icon onto either blank, and lo! — you get to see its secret codes (bottom).



Let's assume you want to lock a Microsoft Word document. Using Drop•Info, as pictured in Figure 16-11, you'll discover that a Word document's Type code is WDBN and its Creator code is MSWD. You can change each of the codes to any four-character string you want, but the easiest is simply to change the uppercase characters to lower-case and vice versa; that's enough to get the Mac adequately confused. After you've changed "MSWD" to "mswd" and "WDBN" to "wdbn," save and close the file.

When you try double-clicking on the altered file, it won't open. Instead, you'll get an error message. Word won't even recognize the file as one of its own. Of course, to "unlock" the file, all you have to do is restore the original type and creator codes.

Changing codes to frustrate snoopers # 2

Here's a more devious variation on the preceding trick: Instead of changing the Type and Creator codes randomly, replace them with those codes from another file. For example, if you replace a file's Type code with the letters INIT, your file — be it a Word document, FileMaker database, Excel spreadsheet, or whatever — will appear in the Finder as a bona fide system extension. It will inherit the usual jigsaw puzzle-shaped icon and, if you double-click on it, you'll see the familiar dialog box telling you to place the file in the Extensions folder and restart.



To complete the disguise, rename the file something like *AppLibTPC Enabler* and put it in your Extensions folder. Nobody will ever suspect that your confidential documents are quietly hidden within the System Folder, safely pretending to be part of the Mac OS.

Unlocking a "read-only" Read Me file

SimpleText is the program used to generate 99 percent of the world's "Read Me First" files. Sometimes you can edit these; sometimes you can't.



The difference is in the Type codes for the two kinds of documents that SimpleText can create. Documents with type **TEXT** can be edited; those with type **ttro** (which stands for "TeachText, read-only") are locked. All you have to do is change the creator code from **ttro** to **TEXT** to unlock it — or vice versa to lock a Read Me file you've created yourself.

Change the codes of telecom log files for easier reading

If you have a modem, and if you sometimes dial up online services such as America Online or CompuServe, then you probably know how to save text from your online discussions. They're usually saved on your disk as text files (type code: TEXT) with the *creator* code of your telecom program (such as AOqc for America Online files).

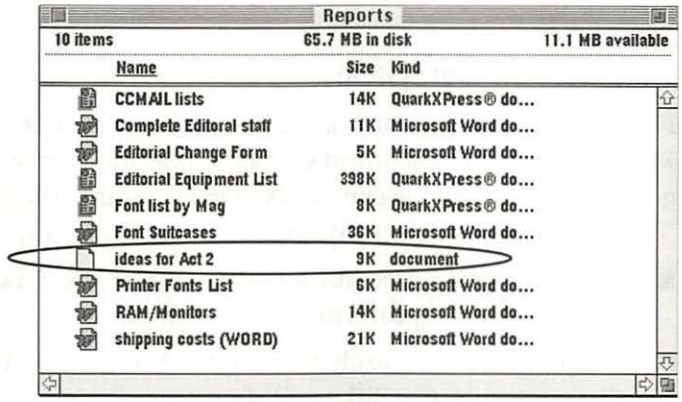
Consider changing these creator codes of the log files to match your word processor. That way, when you double-click one such file, it opens up in a more user-friendly environment.

Telltale signs of creator and type code problems

As we mentioned earlier, a file's icon is determined by its creator and type codes. When your Mac encounters a file and sees that its creator code is MSWD and its type is WDBN, it immediately throws an icon of a Microsoft Word document up onscreen to represent that file; the codes tell it which icon to use.

Which brings us to this Secret: If you try to open a file, and you get a message saying the application that created it can't be found — and you know perfectly well that you do, in fact, have that application — take a look at the file's icon. If it has turned into a "generic" document, it could be that the icon has simply forgotten its type and creator codes (see Figure 16-13). Without those codes, it loses its identity and forgets which application it belongs to. Restoring the proper codes with Drop•Info or ResEdit usually solves the problem. Just type the right codes back in, using the method described earlier in this chapter, and the icon will take on its application-specific appearance and open right up.

Figure 16-13
When a file gets its type and creator codes zapped, its icon becomes generic and its kind in Finder list views defaults to "document."



In the Finder's list views, there is yet another indicator that a file has lost its creator and type codes. Instead of being listed as a Microsoft Word document or a FileMaker Pro document, the file will be listed simply as a "document." Once again, the coding that tells the Mac which application created the program has been obliterated (see Figure 16-13).

Extracting fonts and sounds — the easy way



Here's an incredibly easy way to crack open any application and peruse its internal collection of fonts and sounds (suggested by free book winner David H. Sholkoff). Make a copy of the program you want to peek into, then drag its icon onto Drop•Info's icon (provided with this book). As directed earlier in this chapter, change the four-character Type code to *zsys* and the four-character Creator code to *MACS* (capitalization counts), then close the window.

When you close Drop•Info, the program you just altered will have been transformed into a *suitcase* — the same kind used to hold fonts. Double-click the suitcase to open it and you'll see all the program's fonts and sounds in the window. All you have to do is drag the icons to move or copy them! (This is a great way to harvest new system alert sounds, especially if you try it on games and children's programs.)

WHICH COPY WILL LAUNCH?

Suppose, as is often the case, that you have more than one copy of the same program on your hard drive. You might have Word 5.1 and Word 6, or

ClarisWorks 3.0 and 4.0, or several copies of SimpleText. Now, suppose that you double-click a document icon. Which version of the program will launch?

Which copy on your system

From the preceding discussion of type and creator codes, you know that the Mac will check the document's creator code and launch the matching program. But if you have several copies of the program, *which* copy will open?

The Finder checks the following sources, in this order:

- It checks to see if a program with the matching creator code is *already* running. If so, that program pops to the front.
- If the program isn't already running, the Mac searches for a copy of the program on the same disk as the *document.*

  This is probably the most useful quirk to know when it comes to arranging your applications. For example, PowerBook users who use our ingenious RAM-disk trick (see Chapter 14) can rest easy knowing that double-clicking a RAM disk-based document will launch the RAM disk-based application — not the hard drive-based copy, which would force the hard drive to start spinning (and use battery power).
- If it's had no luck yet, the Mac next searches the startup disk for a copy of the program.
- Finally, the Mac searches your other drives on its quest for a matching program to launch.

Which version of the program

Now you know which copy of the *identical* program will open. But, what if you have different *versions* of a program? After all, the creator code of a program doesn't usually change when the program is upgraded; ClarisWorks versions 3.0 and 4.0 both have the creator code BOBO.

The answer is enlightening — and useful. If you have multiple versions of the same program, the Mac launches the one you've *most recently installed.* (Technically speaking, it opens the program whose Desktop-file entry was most recently updated; see Chapter 1.)

That's true even if the most recently *installed* copy isn't the most *recent* version. For example, if you want ClarisWorks 3.0 to launch whenever you double-click a ClarisWorks document's icon, install ClarisWorks 3.0 *after* ClarisWorks 4.0.

Here's a quick experiment to show you how weird this all gets. Locate a copy of SimpleText. Using the Finder's Duplicate command, make a copy of SimpleText (so that you now have a *more recently created* copy). Put the new copy into the Trash, but don't empty the Trash.

Now, if you double-click a SimpleText document, you'll get an error message to the effect that SimpleText can't be launched because it's in the Trash. Yet, a perfectly good copy of SimpleText — the *original* copy — is still sitting right there on the hard drive! But because the most recent copy is in the Trash, the Mac becomes completely oblivious to any other copies.

MULTITASKING PRO: OPENDOC

Imagine buying software by the *feature,* not by the program. You'd buy a spelling checker from Claris, a graphics editor from Deneba, and type-manipulation controls from Adobe, and pow — you've got a customized program. You wouldn't pay for features you didn't want, and you wouldn't be stuck with using one word processor even though the spelling checker is better in another.

That's the promise of OpenDoc, a new software architecture developed by Apple and being adopted by software companies, both Mac and non-Mac. You buy a *container* program (such as ClarisWorks 5) — a master shell — and then you buy only the feature components you want. As you click the appropriate data type in your document, the menus and tool palettes of the master program change instantly to reflect the features of the components you've purchased. Click a graphic, and the menus show those Deneba commands for graphics; highlight some text, and those Adobe type commands appear. (See Figure 16-14.)

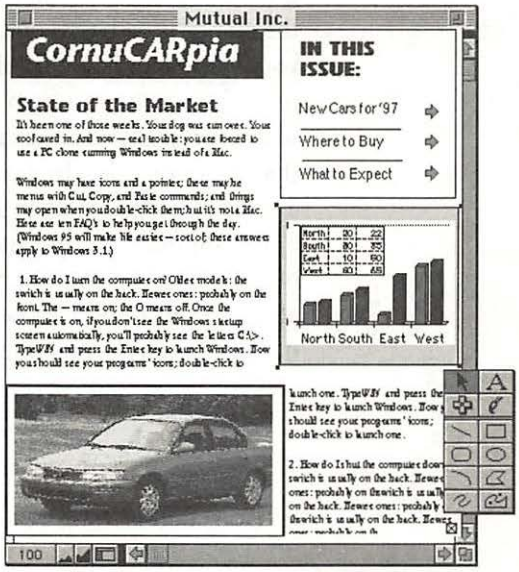


Figure 16-14
OpenDoc at work. This container program has a number of OpenDoc modules — called *parts* — installed: a text editor, a graphics editor, a page-layout editor, and so on. You don't need multiple programs to work on each aspect of this document; just click an area to edit it. As you click another object, its own menu bar and tool palette appear. If you drag the Grammar Checker icon into the document, you check the grammar for the entire document.

What it's good for

This new concept of mix-and-match software components has plenty of advantages for you, the Mac user. You no longer wind up with *five* spelling dictionaries cluttering up your hard drive, one for each program you own, as you do

now. You spend much less time switching between programs (and buying RAM to keep them all open at once), because you can do it all inside a single container program.

Furthermore, OpenDoc is a brilliant extension of the feature we know today as Macintosh Drag and Drop; you can drag *any* selected data out of your document and onto the Desktop — where it becomes an icon — and vice versa, as you can today with text, sounds, and graphics in System 7.5 (see Chapter 1). Finally, OpenDoc supports live links — that is, you can clone some data from one place to another in your documents, and the copies will update automatically when the original changes. It's like a grown-up Publish and Subscribe.

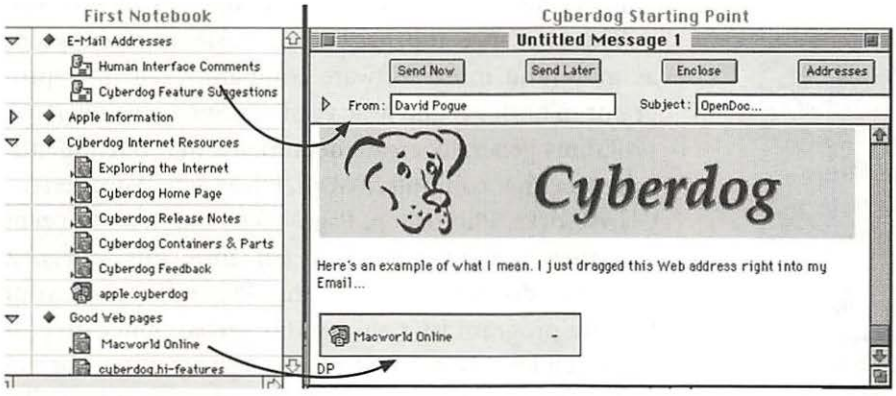
OpenDoc has plenty of advantages for software companies, too. They can write a software component for the Mac, and then sell it for Windows, OS/2, and UNIX systems, too. (Your OpenDoc documents will therefore be cross-platform, too.)

ClarisWorks, WordPerfect, and Nisus Writer are available as OpenDoc container programs. Several dozen other companies are writing Live Objects (the official name for *parts*).

Proof of concept: Cyberdog

The first OpenDoc program to make it to prime time, however, was Cyberdog, Apple's integrated Internet program. You'll read more about Cyberdog in Chapter 28; for now, suffice it to say that Cyberdog is a complete Internet program — it does e-mail, FTP, Web browsing, Telnet, newsgroups, Gopher, and the rest of it — based on the concept of Drag-and-Drop on steroids. See a file you want in an FTP list? Simply drag it to your Desktop to download. Want to tell a friend about a Web site you like? Drag it into an e-mail you're writing, where it turns into a clickable icon that automatically transports your friend to that page. You can drag e-mail addresses, URLs, pictures, text, FTP addresses, and just about any other form of Internet data . . . anywhere you like. Into the Trash, for example, or onto the Desktop, into a ClarisWorks document, into a Notebook (a catch-all list) — the beauty of this OpenDoc example is that almost everything can be dragged almost anywhere, and almost everything does something when double-clicked (see Figure 16-15).

Figure 16-15
An Open Doc program, like Cyberdog, is Drag-and-Drop heaven. Here, an e-mail has been addressed by dragging somebody's name out of the notebook and into the address area — and a Web-page "button" has been dragged directly into the message itself (from the notebook's collection of Web addresses).



MAC TO PC AND BACK

In a world where 80 percent of the computers are IBM PCs and clones, the Mac's ability to exchange files and programs isn't a trivial issue. Apple has made enormous strides toward making the Mac PC-friendly in recent years. Yet today, as in the past, the advertising outruns reality by a considerable margin.

Part of the problem is terminology. When someone asks, "Is the Mac PC compatible?", we're not sure what's really being asked. There are actually three different questions, each with its own answer: (a) Can the Mac use *disks* from PCs?, (b) Can the Mac use *files* from PCs?, and (c) Can the Mac run *programs* from PCs? We'll tackle these issues one by one.

PC disks

Mechanically speaking, the Mac has been able to accept 3.5-inch floppy disks from PC clones for years — ever since the appearance of the SuperDrive floppy-disk drive way back in 1989. And yet, as you may have discovered, inserting a PC floppy into most Macs produces nothing but an error message. That's because you need *software*, too, to read PC disks — the PC Exchange control panel, originally sold separately by Apple, and now included with System 7.5 and later. With PC Exchange, when you insert a PC disk, its icon shows up on your Desktop, exactly as though it were a Mac disk. See Chapter 4 for a few PC Exchange Secrets.

TRUE FACT

THOSE 5¼-INCH OLD-STYLE FLOPPY DISKS

All of this discussion about making your Mac read DOS disks assumes that you're dealing with normal 3.5-inch, hard-shell disks, the ones used by all Macs and modern IBM compatibles. We're not talking about those old, obsolete, 5¼-inch floppy IBM disks.

But a huge percentage of the world's data is, in fact, stored on those old, giant, floppy, plastic disks. When the moment comes where you must get data off of one, you have a couple of choices.

First, you can actually buy a disk drive for the Mac that reads those things ($600, Dayna Communications, 801-531-0600). Second, you can find a PC that has drives that can read both kinds of disks and transfer the data from the big disk to the smaller one. (Most cities have a service bureau that can do this for you.)

PC documents

But just getting a PC disk to show up on your Mac screen is only half the battle — or less. The next compatibility hurdle is getting your Mac to open PC *documents.*

This challenge, too, has become easier in recent years, as more and more software companies sell their programs in both PC and Mac versions. Such *cross-platform* programs generally create documents that open identically on either computer; Word, FileMaker, WordPerfect, ClarisWorks, Photoshop, PageMaker, Excel, and dozens of other leading programs fall into this category. Opening documents from the PC edition of your favorite program isn't always 100 percent glitch-free — you often lose the formatting of special features, such as tables in word processors — but most standard files translate just fine.

If you and the PC person with whom you're swapping documents *don't* have the same program, you may still be in luck if you're trafficking in the meat-and-potatoes data types: word-processing documents, graphics files, spreadsheets, or databases. For example, most Mac word processors can automatically translate documents from many PC word processors: Microsoft Word can open WordPerfect PC documents, WordPerfect Mac can open documents from dozens of both Mac and PC word processors, and so on. (This automatic file conversion only works if your program's set of translator files is correctly installed — usually somewhere in the System Folder or in the program's own folder.)

To make this kind of cross-platform conversion work, you can't generally double-click the PC document's icon to open it (unless you're using Macintosh Easy Open, described in Chapter 4). Instead, you must either (a) drag the PC document's icon onto your Mac word processor's icon, or (b) launch your Mac word processor and use its Open command to locate the PC file.

If you and your PC-using friend can't find a file format in common, ask the friend to save the PC manuscript in Rich Text Format (RTF), a special conversion type that preserves most of the formatting — bold,

italic, font, or type-size information, for example. Most self-respecting word processors can open and create RTF files.

Finally, if even that idea fails, you can always ask for the PC file saved as a plain text file. This kind of file has no formatting at all — it's just pure typing. But your word processor will be able to open it, guaranteed.

PC programs and CD-ROMs

Now that using PC disks and PC documents has become child's play, some Mac users are getting greedy — they want to run PC *programs.* This is a more ambitious, more expensive proposition. You can't run a PC program without running a PC operating system — namely, DOS (optionally with Windows). And everything they say about DOS is true: It's hopelessly outdated, extremely complex, and nearly impossible to troubleshoot unless you're a true DOS expert.

If you really want to go for it, your options fall into two basic categories:

- **Use SoftPC or SoftWindows.** These programs (from Insignia Solutions) are *software DOS emulators.* SoftPC, which runs on almost any Mac, lets you run DOS programs — not Windows — slowly. To run Windows (the Microsoft program that's supposed to make a PC look more like a Mac), you need SoftWindows, which has the speed of a standard 486 PC clone. See the sidebar, "The Power Mac does Windows," in Chapter 13 for details on SoftWindows.
- **Install a PC-emulation board into your Mac.** This may be a more expensive proposition, but it gives you better speed and more complete compatibility. Apple sells such "DOS compatible cards" for such models as the 630 series, certain LC models, and certain Power Macs. For other Mac models, Reply and Orange Micro make similar cards (NuBus, PCI, or PDS card formats are all available).

  These cards add an actual PC, complete with Intel 486DX, 586 or Pentium processor, to your Mac. Press ⌘-Return, and your screen fades — to be replaced by the traditional black screen of DOS. At this point, you can launch Windows or run any program you'd run if you owned an actual PC.

The advantages of these two solutions seem clear-cut: They save money (over buying a whole PC), and they extend your investment in RAM, the monitor, and other equipment. But these days, shop first; buying an *actual* PC may not actually cost more than, say, a PC card for your Mac. Furthermore, both of the solutions above require your dedicating a wide swath of your hard drive as a PC partition; your Mac stuff lives on one side, and your PC stuff lives on the other.

CASE HISTORY

MAC TO PC AND BACK . . . VIA HELL

The PR mavens may crow about how compatible Macs are with PCs today. But this true story from one of our readers sheds some light on what multiplatform life is really like in the trenches.

"I am a graphic artist for a software development company. Although I own and have always used the Mac, my current employment status dictates that I work on a Windows-based PC. It has been bearable. I use a 66 MHz PC, primarily with PageMaker 5.0 and Photoshop 3.0 for Windows."

"Before I arrived at my office, an artist was commissioned to design the cover for a software manual. The artist created the elements in Photoshop, and composed the document in QuarkXPress. All files originated from a Mac and were saved to a 44MB SyQuest cartridge. The bottom line: We had files in an incompatible format, on a storage device we couldn't access."

"My company wanted to have their own copy, so we had a typesetting house segment and transfer the files to multiple floppies via PKZip (the standard compression utility for the PC world), then returned the cartridge to the artist. Basically, this made matters somewhat worse; we now had Mac files segmented on PC floppies. Hold on — it gets better."

"I figured I'd take these floppies home to see if I could do anything with them on my Centris 650 running System 7.5. The control panel, PC Exchange, allowed me to access the floppies, but the Mac version of PKUnzip (the standard *de*compression utility for the PC world) is unable to handle a segmented file. I broke out an old version of Insignia's SoftPC and downloaded the PC version of PKZip 2.04g from America Online. Thanks to my recent PC experience, I was able to get PKUnzip running in the DOS emulation program and successfully decompress the required files. Unfortunately, anything that comes from SoftPC is flagged as a PC Exchange document. I then had to open these files in my versions of Photoshop and Quark, respectively, then resave them in the appropriate format. So far, so good."

"I guess the typesetting house figured they would do us an unannounced favor and converted the Mac fonts to PC fonts. Great. Again the problem was that the fonts were now PC Exchange documents, and my version of Altsys's Fontographer could not even read the files. My solution was to create a quick PC font in Fontographer, open it in ResEdit to get the file type and creation code, then assign that flag to the real PC font I wanted to convert. Once saved, Fontographer was able to read and convert the PC font to a Macintosh TrueType font. Onward and upward."

"Now that all the files were converted, the next issue was that I had a Quark document, and needed a PageMaker document. I acquired a utility to convert Quark to PageMaker, available on America Online from Aldus Corp. Almost done? Not quite. Apparently, the conversion utility is not equipped to handle QuarkXPress version 3.3.1. I had to reinstall version 3.2, extract the file again from the PC floppies (I had already resaved it as a 3.3.1 document), open and save it in version 3.2 format, then convert the file with Aldus's utility."

"Finally, I used the Mac version of PKZip to compress and segment the files back to PC floppies. Both native PageMaker and Photoshop files are transparent, so I could now decompress and have a version of the cover design in PageMaker for Windows."

"Easy."

And now for the most frequently asked question of the modern age: *Can I run PC CD-ROM titles on my Mac?*

The answer is yes, but only if you have SoftWindows 2 or a DOS card, as described previously. The odds of your hearing the sound from those PC discs are much lower using earlier versions of SoftWindows before 3.0 (which don't emulate the SoundBlaster sound card that's standard in the PC world). And remember — even with a real PC on your desk, let alone a PC emulation card, glitches in the sound and video of PC CD-ROMs are a fact of life.

PC-TO-MAC SECRETS

Translating file names

One difference between a Mac and an IBM is the way that the two machines name files. A DOS (or Windows 3.1) file's name can only be eight characters long, and it's followed by a period and a three-letter "extension" that identifies the type of file it is. A text file might be called MAJRMEMO.TXT, for example.

You're not allowed to have any spaces in a DOS file's name. So, be prepared to eliminate any spaces when you copy a Mac file to a IBM disk.

Of course, Windows 95 revolutionized the planet by allowing longer file names on PCs — hey, just like the Mac! However, behind the scenes, every Windows 95 document still has an "eight-dot-three" (MAJRMEMO.TXT-type) file name. When you bring a Windows 95 document to the Mac, you'll get, yet again, an eight-dot-three file name (the first six letters of the Windows 95 long name, followed by a tilde symbol and a number). In other words, *My Dog Has Fleas* on the Windows 95 machine will become MYDOGH~1.DOC on the Mac.



Stripping the little boxes

Often, when you convert word processing or text files from a DOS disk, you get more than plain English — you get a bunch of alien-looking squares or symbols, as shown in Figure 16-16. These are the normally invisible codes that are responsible for *line feeds* used by IBM word processors. (Behind the scenes, an IBM word processor inserts a line-feed character [a cousin of our Return character] at the end of every line. These line-feed characters are usually what show up on the Mac as little squares.)

If you want to nuke these symbols, you have three choices. First, if you do a lot of nuking, use Tex-Edit, included with this book; it offers a Strip LF's (line feeds) command. It does exactly what you'd hope.

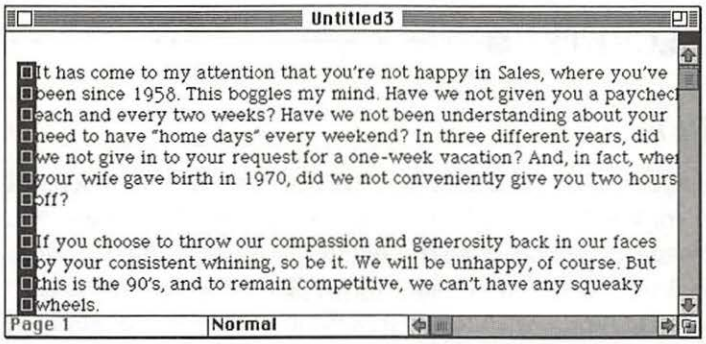


Second, you might try using your word processor's search-and-replace command (in Word, it's the Replace command). Search for Control-J and

replace with nothing. Or *paste* one of the little squares into the Find What blank, and replace *that* with nothing. Either way, you get rid of the annoying squares.

Finally, Microsoft Word has a highly functional, but little-known, rectangular-selection feature. You can select a vertical strip of text, which is exactly what you'd want to do if the control-character squares fall, as they often do, at the left edge of the text (see Figure 16-16).

Figure 16-16
Use Word to highlight only the offending characters.

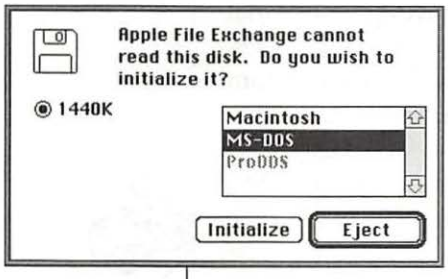


The Secret: Press the Option key as you drag. Drag straight down through the thin left-margin column of squares and then press Delete.

Formatting a DOS disk

A Mac disk and a DOS disk, as far as a disk manufacturer is concerned, are physically identical. The only difference between a Mac and a DOS disk is the way each is formatted. Fortunately, PC Exchange (or Apple File Exchange) can format a new blank disk either way. It can even convert one kind of disk to the other.

Figure 16-17
You can format or erase a disk into your choice of IBM, Mac, or even Apple II formats using Apple File Exchange.



To format a brand new, never-been-touched disk, insert it while PC Exchange (or Apple File Exchange) is running. You'll be asked how you want to format the disk: as a Mac disk or a DOS disk (see Figure 16-17). If it's a double-sided disk (not high-density), you'll also be offered a choice of capacities: 400K, 800K, and so on.

To convert one kind of disk to another, insert a Mac or DOS disk. Then use the Erase Disk command from the Special menu (if you have PC Exchange) or the File menu (Apple File Exchange). You see the same set of options as those shown in Figure 16-17.

Chapter 17

Word Processing

IN THIS CHAPTER

- Basic word processing power tricks
- The Mother of All Microsoft Word Sections
- WordPerfect and ClarisWorks tricks
- Unleashing the thundering raw power of SimpleText

A FEW WORDS ABOUT WORD PROCESSING

It's the Number One use of a Mac. It's the Number One use of any personal computer, actually. The lure of being able to rearrange text and replace pieces of it without involving eraser crumbs or white-out is enough to draw even card-carrying technophobes into the world of personal computing.

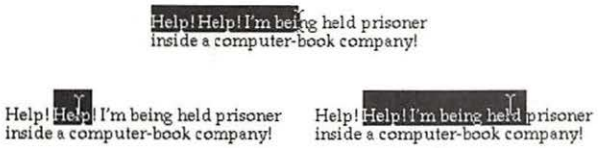
The Mac marketplace isn't as riddled with competing word processors as the IBM marketplace is. But there are more than enough choices, from the simple and easy (programs such as ClarisWorks and Microsoft Works) to the mega-wordcrunchers (such as Word and WordPerfect). (We actually know one woman who runs her entire office using TeachText, for Heaven's sake. She's in absolute Heaven.)

UNIVERSAL WORD PROCESSING SECRETS

Double-click/drag and much more

You don't get the most out of a word processor until you know its text-selecting shortcuts. Dragging through text, letter by letter, is fine, but you have to be too precise. Our favorite text-selection Secret, therefore, is to double-click/drag, as shown in Figure 17-1.

Figure 17-1
The normal method of drag-selecting text (top) is too slow because you have to be letter-accurate when you drag. Here's a famous shortcut that lets you select one word by double-clicking (lower left). For extra efficiency, combine these two techniques into a double-click/drag (lower right).



You know, of course, that you can highlight a single word by double-clicking it. You probably know that you can drag to highlight a stretch of text.

But you can combine the best aspects of these two methods: Point to the first word you want included in the selection. Double-click, but *keep the button down* on the second click. With the button still down, drag sideways (or diagonally) to select text in complete-word increments.

You should probably get used to this trick; in real life, you use it more often than you use simple dragging. After all, how many times are you trying to select only *part* of a word?

Every program has its own additional text-selecting shortcuts. In Word, you can triple-click a paragraph to select it. You can ⌘-click a sentence to select *it*. Learn your word processor's shortcuts and apply them!

High-speed Delete

How often do you really stop to think about the ergonomics and interface design aspects of your everyday work? Not as much as we interface nerds do, we bet.

It occurs to us that, on a Mac keyboard used by a right-handed person, the Delete (Backspace) key is in an *incredibly* dumb place! Think about it for a minute: It's at the upper-right corner of the keyboard. And where, nine times out of ten, is your right hand located just before pressing the Delete key? It's on the *mouse*. (At least it is if you're editing previous work.) That means that your right hand is traveling back, forth, back, forth, mouse, Delete, mouse, Delete — and your *left* hand sits there twiddling its thumb, so to speak.

Our suggestion is to install a Delete key on the *other* side of your keyboard. This doesn't require a soldering iron. You already have a key there that you rarely use — a couple of them — the tilde key (~) and Esc.

Teach your Esc key to be the Delete key. We *guarantee* that you'll love this the minute you start editing a document. For the first time, you'll be two-

handed: mouse with one hand, position the cursor, delete with your left hand. It's sheer joy.

If you use Microsoft Word 4 or 5, teaching this key to be Delete (in *addition* to your regular Delete key, of course) is easy; see our Microsoft Word Secrets, later in this chapter, for full instructions. In Word 6, you can't reassign the Backspace command — one of the many reasons we're not really fond of Microsoft's upgrade — but you *can* assign the *Delete Word* command to any key you want, which is almost as handy.

If your word processor doesn't let you retrain your keys, use KeyQuencer, included with this book. Teach *it* to "press" the Delete key when you hit Esc or the tilde key.



Comparing manuscripts



Suppose that you have a printout of some report. An editor has marked it up with corrections, additions, and deletions. You are supposed to compare it to the copy that you have on the screen, updating the electronic copy to match the edited printout.

If you proceed from page one, as your instinct tells you, then you'll have a harder and harder time finding a spot in the on-screen document that corresponds to the printout. As soon as you add some material to page one, for example, then no phrase in the entire following ten-page document will be in the same visual spot on-screen as it is on the printout.

Here's the solution: Edit *backward* from the last page. As you work toward the front, the changes your editing makes to the layout of the text won't matter because only the part you already *covered* actually changes. This system makes it much easier to find on the screen what you see on the printout — they'll always be at exactly the same spot.

Master fractional character widths

If you want to look good in print, learn about *fractional character widths.*

The Macintosh screen, regardless of the make or model, uses 72 dots (pixels) for every actual-size inch. As it turns out, 1/72 inch is a large enough distance to be visible, especially in a beautiful laser printout.

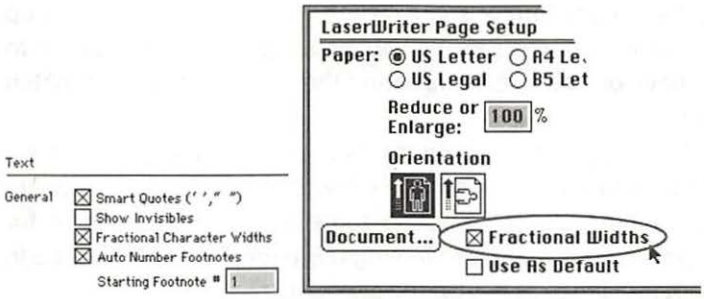
On the screen, the position of every character is rounded off to the nearest 1/72 inch (because that's the closest the Macintosh can come to putting it where it really belongs). For a year or two in Macintosh history, the world was filled with awkwardly (loosely) spaced words in laser printouts, as every character's position was nudged into 1/72 inch slots.

Finally, one program after another introduced the Fractional Character Widths option. When text is printed using fractional widths, the printer is allowed to place each character at its typographically correct position, which

isn't necessarily in a multiple of 1/72 inch. The second letter of a word may be, for example, 1/100 inch closer to the first letter than it would have been allowed. As a result, the printout is slightly tighter, looks much more professional, and no longer has those funny extra-wide spaces between words.

Each program has its fractional character widths on/off switch in a different place. In Word 6, you must choose Options from the Tools menu, then click the Print tab to find the Fractional Widths check box. In Word 5 and WriteNow, it's in the Page Setup dialog box. And in ClarisWorks, it's a check box in the Preferences dialog box (see Figure 17-2).

Figure 17-2
The Fractional Character Widths option is buried in different spots. It's usually in Preferences (left) or the Page Setup box (right), depending on your word processor.



So why doesn't everyone leave the fractional character widths feature turned on all the time? Because the screen display, limited as it is to 1/72 inch increments, suffers when Fractional Character Widths is on. The Mac has no choice but to overlap the characters, which makes them harder to read (see Figure 17-3). As a result, many people do their editing with this feature *off*, and then they turn it on just before printing. (You could easily create a QuicKeys, KeyQuencer, or Tempo macro to do this for you; see Chapter 22.)

Figure 17-3
This is the trouble with fractional character widths: They make text look harder to read on the screen. Some people, therefore, do their word processing with fractional widths turned off (left). They turn it on for printing (right) so that the printer will give the pages that nicely typeset look.

We didn't have much to go on: only his memory of where each road led. The sky, as my grandfather naturally observed, was "the durndest shade of blue I ever did see."

We didn't have much to go on: only his memory of where each road led. The sky, as my grandfather naturally observed, was "the durndest shade of blue I ever did see."

Fewer fonts = faster word processing



If you crave fast word processing speed, go easy on the fonts you load into your system. Every time you launch your word processor, the program first has to peek into your Fonts folder and load up every one of the fonts it finds there into its own font menu. Every time you choose the pop-up font menu (or, in Microsoft Word, open the Character dialog box), all those font choices must be loaded into the menu before it's displayed. It all takes time; in Word 6, it takes a *huge* amount of time.

Having 500 fonts to choose from may be fun, but, frankly, most people can word process everything they need with just a handful. (In fact, limiting the number of fonts you use in a document makes good page design sense; see Chapter 18 for details.) If you keep your set of active fonts small, you'll probably find that your word processor will launch faster and that formatting text won't take as long.

Of course, installing and removing fonts each time you want to do some word processing can be a headache. But if you have a font-management utility such as Suitcase, ATM Deluxe, or MasterJuggler, you can load a particular set of fonts with a few button clicks (see Chapter 24 for more on font management).

Add drag-and-drop to any program

Being able to drag and drop chunks of text within a document — and between documents — is an editor's dream. But unfortunately, drag-and-drop still isn't quite as universal as cut-and-paste. WordPerfect offers great drag-and-drop support, as does ClarisWorks 4.0v4. But there are still plenty of programs with little or no drag-and-drop smarts (QuickDex, America Online before version 3, WriteNow, and so on). Some (such as Word 6) let you drag within a given document or program, but not *between* programs and not to the Desktop (to create text clippings).



However, as free book winner Stefan Anthony discovered, you can endow almost any program with full drag-and-drop capabilities by installing a free extension called DragClick. DragClick works with any program that taps into TextEdit, the built-in, behind-the-scenes, text-handling core of the Mac OS. Amazingly, with DragClick installed, you can drag text between just about any two programs you can think of.



See Chapter 1 for details on Macintosh Drag-and-Drop; see the CD-ROM that comes with this book to get DragClick installed for yourself.

MICROSOFT WORD

Oh, yes, we *know* this section is hugely out of proportion to our coverage of other programs. But we figure if you do any serious writing at all on your Macintosh, chances are you do it with Microsoft Word. True, with the release of the absurdly bloated, lumbering Word 6, many people are switching over to leaner, faster programs — or they're sticking with Word 5.1. Microsoft put so much effort into making this version of Word identical to the Windows version that the program is actually *slower* than previous versions, something we view as unpardonable. When we're on deadline and every second counts, we prefer Word 5 (or ClarisWorks!).

But Word is still the most popular Mac word processor, and there's a lot you can do to get the most out of it, regardless of which version you have. In fact, using Word straight out of the box without modifications is like buying an expensive suit straight off the rack and then refusing the free alterations provided by the shop's tailor. Word is *made* to be customized. You can assign a keyboard shortcut to virtually *any* Word command, option, or feature. You can also doctor up the menus however you please. And so on.

Our purpose here isn't to provide a primer on Word. We're going to focus on some of Word's most powerful (but lesser-known) features. And, because so many people are contentedly sticking with Word 5, we've included our favorite Word 5 secrets, too.

Customizing menus

Ever notice that there are Word commands you almost never use? Yet, there they are, taking up space on your menus. On the other hand, there are probably plenty of other commands, buried deep within one of Word's many dialog boxes, that you use all the time. Why not doctor up the menus, getting rid of the commands you don't use and adding the ones you really need?

Adding an item to a Word menu (Word 5 or 6)

To add a command to a Word menu, first bring onto the screen the particular option you want to add. If the option is on one of the toolbars — centered text, for example — make sure the toolbar is visible. If the option appears in a dialog box, open the dialog box.

Then activate the Add to Menu command by pressing ⌘-Option-plus sign (the plus sign on the *keyboard,* not the numeric keypad). The pointer changes into a boldface plus sign (see Figure 17-4).

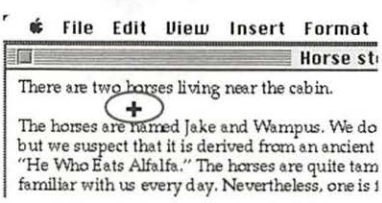
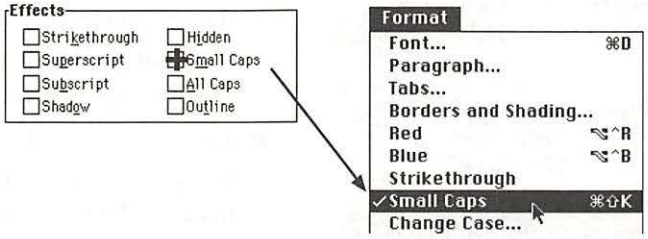


Figure 17-4
The pointer changes to a bold plus sign, indicating that you're in Add to Menu mode.

After the Add to Menu plus sign appears, all you have to do is click the option you want to install on a menu. The plus sign changes back to the standard pointer, and the item is added to the appropriate menu (see Figure 17-5).

Figure 17-5
You can turn any of the Font dialog box formatting options into a menu command. Open the dialog box, position the cursor directly over the check box of the option you want to add — in this case, Small Caps. Then activate the Add to Menu command by pressing ⌘-Option-plus sign, and click. The option instantly appears on the Format menu as a new command.



Unfortunately, in Word 6, this quick Add to Menu method doesn't work on *every* command. In some cases, you have to use Word's Customize command to add new menu items. Here's how you do it. From the Tools menu, choose Customize. In the Customize dialog box, click the Menu tab. Now select a category from the Categories list on the left and select the command you want from the scrolling Commands list on the right. (If you're not sure what category a particular command falls under, choose All Commands from the list on the left.) Click the command you want to add, click the Add button (or just Press Return), and close the dialog box.

Scrolling through the list of commands in the Customize dialog box, you may notice that *most* of the commands available in Word — there are *hundreds* of them — are not installed on the menus by default. *You* have to put them there, using the method described earlier. (If you're using Word 4 or 5, you can also put commands under any menu you want using the Commands dialog box, which you open by choosing Commands from the Tools menu.) Indeed, there are a number of commands you *should* install on your menus. Here are a few we think are worthwhile. Note how many of these useful features Microsoft *removed* from menu-addability to Word 6!

- *Allow Fast Saves:* See our "Deflating bloated files" Secret, later in this chapter. (Word 5 only.)
- *Fractional Character Widths:* See "Master fractional character widths," earlier in this chapter. (Word 5 only.)

CASE HISTORY

WORD MENUS OF THE RICH AND FAMOUS

We know a very, very famous movie actor who's writing a book. (He's a client, so we're not going to name him. But trust us: His name-in-*People*-magazine quotient is among the top ten in the nation.)

He's a little bit intimidated by computers. When we told him about the Remove From Menu command we're discussing in this section, he asked for us to trim down the superfluous options from his Word 5 menus.

Open Mail and Send Mail, of course, were the first to go (why on Earth did Microsoft insist on putting them there by default?). Our client said he'd be writing a manuscript to turn in to a publisher — so out went Table of Contents, Index, Hyphenation, and all the page-layout commands. Insulted, he also had us take out the spelling checker, grammar checker, and thesaurus.

Before long, we were in a frenzy of menu-shortening. Down the hatches went Character, Paragraph, Section, Document, and other fancy formatting commands. Renumber, Calculate, Repaginate Now — "If I don't even know what that *means,*" we were told, "I certainly won't ever use it."

Then we came to Find and Replace. We explained why one might like controls like these: "Suppose you misspelled somebody's name all the way through your manuscript — " we began. We should have known. "I won't misspell any names. Take it out," he said.

When we were finished cleaning the useless and extraneous commands out of our client's Word menus, there were exactly three commands left he considered worth having: Bold, Save, and Print.

Hey, what do we know? Maybe there's an untapped market here.

- *Sentence Case:* Invaluable when you get an e-mail or other document that's been typed in all capital letters. This command converts text to normal upper/lowercase instantly. (Word 5 only.)
- *Small Caps:* This is a priceless, good-looking style variation for subheads and titles.
- *View Page Width:* Automatically zooms the screen to the maximum magnification that still lets you read the full width of your page (Word 6 only).
- *Insert Date Field:* Plugs the current date into your document. This is different from the Date and Time command, already on the Insert menu, which opens a dialog box from which you then pick a date format (Word 6 only).
- *List Commands:* See our "Print a list of every Word command (Word 6)" Secret, later in this chapter.

Actually, you can do more with the Customize dialog box than add commands to menus. You can *move* a command from one menu to another, rename a command, rename a menu, or create a new menu. We'll get to all that in a moment.

Removing an item from a Word menu (Word 5 and 6)

Removing items from menus is even easier than adding them — and it works the same way in Word 5 and 6. After you zap unneeded items from view, you're left with shorter menus containing only those commands you want.

To delete commands from menus, press ⌘-Option-minus sign (again, use the main keyboard and not the numeric keypad). The pointer becomes a boldface minus sign. When you select a command, the menu bar flashes, and the item you selected disappears from the list (see Figure 17-6).

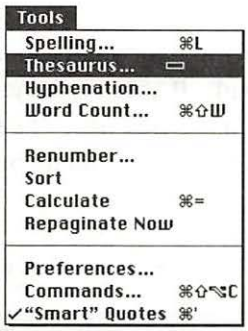


Figure 17-6
Selecting an item after activating the Remove From Menu command strikes it from the menu. You know you are in Remove From Menu mode when the pointer appears as a boldface minus sign.

Removing commands from *menus* doesn't delete them from *Word*. To restore a command you've removed from a menu, reinstall it using the Add to Menu command described earlier. Or, use the Customize dialog box (or Commands dialog box, in Word 5) explained in the following section.

Creating new menus (Word 6)

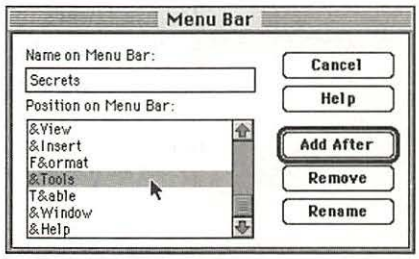
Word 6 lets you do more than add items to *existing* menus. It lets you create completely new ones, name them whatever you please, and fill them with any of the commands available in the program. In essence, you can design your *own* version of Word, scrapping the default menus completely. For example, if you do a lot of mail merges in Word, you can make your own Mail Merge menu, grouping all the merge-related commands you need in one place (see Figure 17-7). Or, you can set up an Open menu that lists just the files you open frequently.



Figure 17-7
A Mail Merge menu in Word? Sure, if you want one. With Word 6, you can add any new menu you dream up.

To create a new menu, choose Customize from the Tools menu, click the Menu tab to open the menu-editing options, and then click the Menu Bar button. A dialog box appears, prompting you to name your new menu and indicate where you want it to appear on the menu bar (see Figure 17-8).

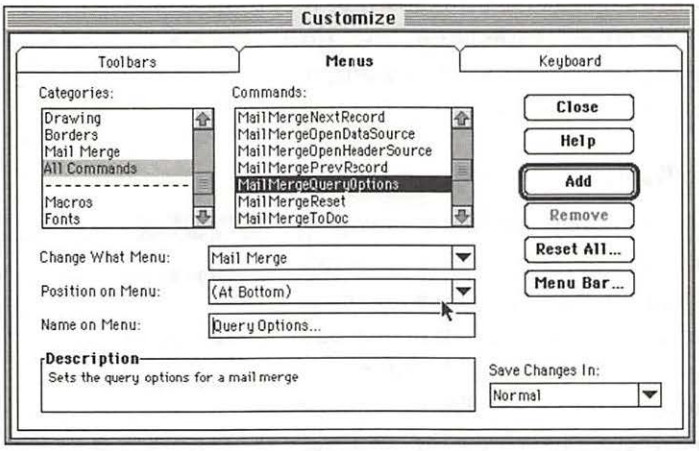
Figure 17-8
Give your menu a name and plant it anywhere you want along the menu bar.



The next step is to add commands to this new menu. In the Customize dialog box, first choose the name of your new menu from the Change What Menu pop-up menu (see Figure 17-9). Now, select any command from the scrolling Commands field and click the Add button to install it on the menu. (We suggest setting the Categories field to All Commands, as this gives you access to every command available in Word.) Notice that each time you add a new command to your menu, you also have the option of indicating *where* on the

menu it should be placed (using the Position on Menu pop-up menu) and giving it any name you want (by typing a new name in the Name on Menu field). If you want a group of commands to be set off with a separator line, you can add one. The separator is the first item in the Commands field; you can add it to a menu just as you would any other item.

Figure 17-9
Use the Customize dialog box to slip any commands you want into your custom menus.

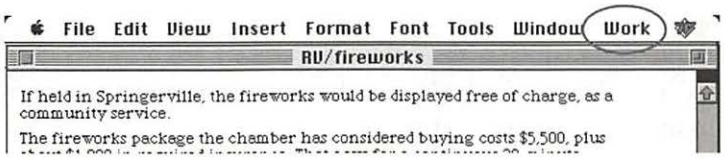


By the way, if you don't have Word 6 but would still like to rename menus and menu commands in your word processor — or any other program, for that matter — check out Chapter 21, where we show you how to do this using ResEdit.

Creating new menus (Word 5.1 and earlier)

Actually, earlier versions of Word allow you to create only *one* new menu — the Work menu. The Work menu doesn't appear at all until you add something to it. Then it shows up on the far right side of the menu bar (see Figure 17-10). You can't rename this menu and you can't place it anywhere else on the menu bar, but you *can* add any of Word's commands to it. In fact, whenever you use the

Figure 17-10
The Work menu, where you can list styles, glossary entries, or files you access frequently.



Add to Menu command on styles, glossary entries, or document names in Word 5, those items get added to the Work menu by default.

One of the handiest uses of the Work menu is to list files you open frequently. To add a file to the Work menu, press ⌘-Option-plus sign (on the main keyboard, not the numeric keypad) to activate the Add to Menu command. After the cursor becomes a plus sign, choose Open from the File menu. Select the file you want. The menu bar flashes, and the file you picked is listed in the Work menu. To open that file next time, just select it from the menu.

Using the Commands dialog box, you can move virtually any menu items you want to the Work menu. Conversely, you can shift items that normally appear on the Work menu to any menu you prefer.

Adding keyboard shortcuts (Word 5 and 6)

Many of the frequently used Word commands already have preset keyboard equivalents, but plenty don't. On a standard Apple keyboard, for example, you have a key combination for the Spelling and Thesaurus commands under the Tools menu, but none for Word Count. Fortunately, you can create your own key assignment for it by using the Assign to Key command.

Adding a new key assignment is similar to adding a menu command. Again, you press ⌘-Option-plus sign. But this time, use the plus sign on the *numeric keypad* and not on the keyboard. The pointer changes into a boldface ⌘ symbol, as shown in Figure 17-11.



Figure 17-11
The pointer appears as a boldface ⌘ symbol when in Add to Key mode. Selecting a style with the pointer, as shown in this example, allows you to set up a key combination for that style.

After the ⌘ symbol appears, select the menu item or other option to which you want to add a keyboard equivalent. In Word 6, the Customize dialog box opens; click in the field called Press New Shortcut Key, press the key combination you want, and press Return. In versions 5.1 and earlier, a dialog box appears, asking you to strike the keys you want to assign.

If you choose a key combination that's already used by another Word command, Word shows you, in the Customize dialog box, the command to which that keystroke is currently assigned. If you want to reassign that keystroke to the new command anyway, just click the Assign button. To keep the current setting, press Delete, and then try another keystroke. (Earlier versions of Word present a dialog box giving you the option of replacing the existing command, or canceling the request and trying another keystroke.)

Obviously, you can't have two commands linked to a single keystroke. However, you *can* create more than one keyboard shortcut for a single command.

ANSWER MAN

The Unpastables

Q: ***What's going on? I take a screen shot with Flash-It, I try to paste it into Word — nothing. Or maybe it pastes in whatever I used to have on the Clipboard. But when I open the Scrapbook, my screen shot pastes just fine!***

A: Word, to the annoyance of thousands, has its own private Clipboard, separate from the usual Mac Clipboard. Every now and then, Word correctly converts the real Clipboard to its internal format. But not, as you've discovered, when you haven't ever left Word.

The solution is to force Word to acknowledge the new material on the real Clipboard. Just skip out of Word to another program for a moment. In System 7, we just click the Desktop to bring the Finder forward; then we jump right back into Word. Presto: We can now paste what we wanted to paste.

If our Finder trick doesn't work, open the Scrapbook. Paste into, and copy right back out of, it. That's more trouble, but it's guaranteed to work.

Customizing Word 6 Toolbars

Microsoft introduced toolbars in Word 5.1 and added even more of them in version 6. However, we find the program's ten default toolbars visually overwhelming; all those little 3-D buttons everywhere make us feel like we're staring into the cockpit of the Space Shuttle. We've never yet been able to remember what those little icons mean, and the darned thing takes up too much screen space.

We turn most of our toolbars off. Frankly, we prefer firing off commands from the keyboard to clicking teeny buttons scattered all over the place. We purposely configure the program so that it looks and works more like Word 5.0 for fast, clean, uncluttered word processing.

If you *do* like using toolbars, however, it makes sense to display only those buttons that you really use. Fortunately, Word lets you add and remove toolbars, and group buttons on them in any combination.

Moving and removing buttons

Suppose you often use the Table button on the Formatting toolbar, but rarely use the other buttons on that toolbar. It doesn't make sense to display a whole toolbar just to access one button. So why not *move* the button to a toolbar you use a lot, like the Formatting toolbar?

To move a button, just hold down the ⌘ key while dragging the button to another toolbar. Drop the button where you want it. You can also use this same method to *rearrange* the buttons within the toolbar, placing them in any order that seems logical to you (see Figure 17-12).

To get rid of a button completely, ⌘-drag it *off* the toolbar, dropping it anywhere else in the document window. Don't worry; eliminating a button doesn't delete any features from Word, just the button itself. You can always access all the program's commands via the Customize dialog box (or, in Word 5, the Commands dialog box).

Figure 17-12
You can move buttons around on a toolbar by holding down the ⌘ key while dragging them.

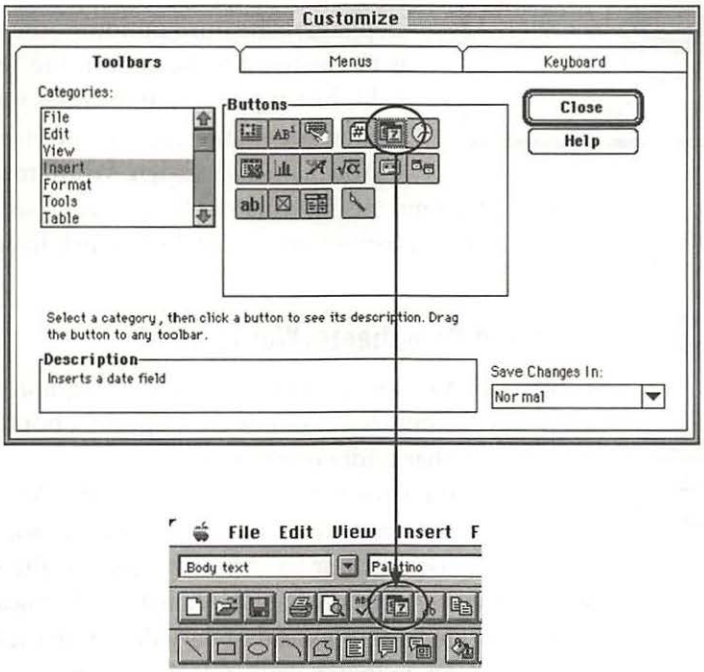


Adding new buttons

If you don't like Microsoft's collection of buttons, you can make your own. Any command in Word 6 can be turned into a button. Let's say you want to make a new button that will automatically insert the current date into your document — a command that Word supports but *isn't* on any of the default toolbars.

Choose Customize from the Tools menu to open the Customize dialog box. Click the Toolbars tab, and then choose Insert from the Categories menu. You'll see all the ready-made buttons Word has available under this category. When you click a button, Word displays the command associated with it. Sure enough, there's an Insert Date button; it's the one with the tiny calendar pages displayed on it (see Figure 17-13). Just drag the button *right out of the dialog box* and onto the toolbar of your choice — and it's installed.

Figure 17-13
Add a new button to any toolbar by dragging it from the Customize dialog box and dropping it on the toolbar of your choice.



OK, so what if there is no button for the particular command you want added to the toolbar? You can design such buttons from scratch. Follow the same steps outlined earlier, but choose All Commands from the Categories

Figure 17-14
A command turns into a new button when you drag it to a toolbar.

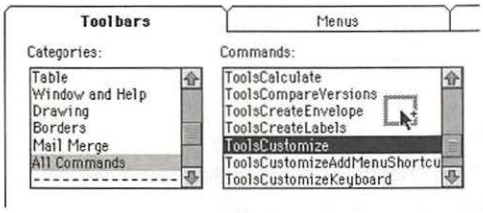


Figure 17-15
The nice thing about text buttons is that you don't have to remember what the icons mean.

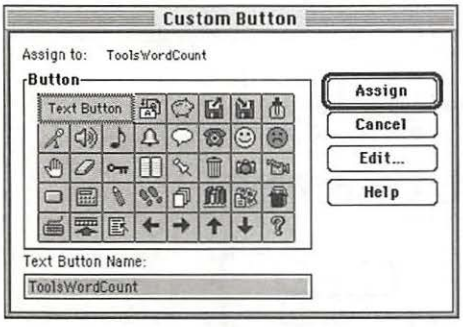
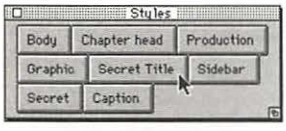


Figure 17-16
Make a toolbar containing text buttons for all the fonts or styles you use most. Then, to apply a style, all you'll have to do is click on a button instead of pulling down the style pop-up menu.



list in the Customize dialog box. Now you can turn *any* item in the Commands list into a button — by dragging *it* onto a toolbar.

For example, to create a button that opens the Customize dialog box itself (which is a pretty good idea), click All Commands on the Categories list. Then scroll down to ToolsCustomize on the Commands list. Drag that menu item — ToolsCustomize — to a toolbar and drop it into place. As soon as you start dragging, you'll see the outline of a button with a tiny plus sign (see Figure 17-14).

When you drop the new button into place, the Custom Button dialog box opens, allowing you to design the actual look of the new button. You have three options. You can use one of the 37 ready-to-use button images. You can edit an existing button (select it, click Edit, and use the painting tools — although they are about as easy to paint with as an elephant). The third option — the most practical — is to create a text button. In the Text Button Name field, just type the name you'll want to appear on the toolbar — and click Assign (see Figure 17-15).

You can also assign Word macros, styles, and fonts to buttons, using this same process (see Figure 17-16). Accessing your favorite fonts and styles is much handier this way.

Styles and style sheets (Word 5 and 6)

A *style* is a set of specific character- and paragraph-formatting characteristics — font, size, margins, line spacing, borders, and so on — all saved together under one name.

Suppose you're formatting a business report. You decide to set the first section subhead in 18-point Helvetica bold, centered on the page, with a 1-point border. After you format the text the way you want it, save all those settings as one style, called, say, Subhead. Subsequently, any paragraph assigned the Subhead style will automatically change font, size, margins, and so on, to match your style definition.

Here are two key advantages to formatting paragraphs by using styles:

- *Consistency.* After you've defined a style, every paragraph to which it is applied will be formatted identically. Because you can transfer styles from one file to another, you can also assure consistency between documents. (This paragraph, for example, is set in our *Bullet* style. It's used anywhere in this book where there's a bulleted, indented block like this.)
- *Speed.* Applying styles is much, much faster than individually applying each formatting option to a paragraph. By using a style sheet, you can change numerous paragraphs in a single bound.

Sad to say, we actually know people who completely ignore Word's style features. They painstakingly format each paragraph in a long document from scratch, wading through layers of dialog boxes — when all they had to do was create a handful of styles that would have reduced the formatting to a few keystrokes.

Creating a style

The fastest way to create a style is by example. Format a paragraph the way you want it. Click within the paragraph and then click once in the style box on the Formatting toolbar, or, in Word 5, in the Ruler (see Figure 17-17). The current style name will be highlighted. Type in a name for the new style and press Return. (In Word 5.1 or earlier, a dialog box appears, confirming your intention to create a new style. Press Return again and the new style is saved.)

Applying a style

To apply a saved style to one paragraph, click within the paragraph. If you want to apply the style to more than one paragraph, select all the paragraphs you want formatted. Then use the Style pop-up menu on the Formatting toolbar (or on the Ruler in Word 5.1 or earlier) to pick the style you want.

ANSWER MAN

Microsoft Weird 5.1

Q: ***I'm puzzled by an entry in Word 5's thesaurus; maybe you can shed some light on it. What's the bizarre hyphenated word that pops up when you look up "common"?***

A: The word that comes up when you look up "common" is coaybtete-leranous.

Q: ***Yes, obviously. I mean what does it mean?***

A: We have no idea. It's not even a word.

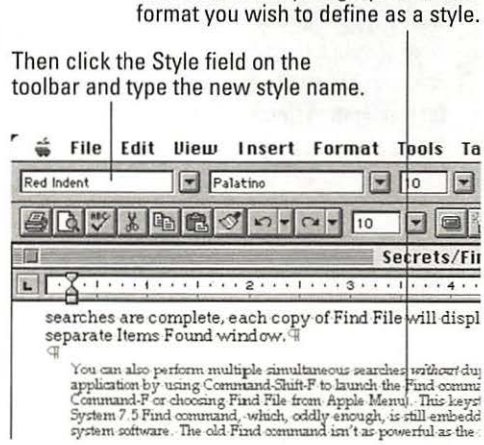
Q: ***OK, then what about the disgusting synonym for "matter"?***

A: The synonym for "matter" to which you refer is ***discharge pus.***

Now, if you're asking ***why*** those words appear, we have no idea.

Just be glad you're not still using Word 3 or 4, whose spellchecker flagged the word ***childcare*** as incorrect — and proposed, as its replacement, ***kidnapper.***

Figure 17-17
The making of a new style.



MACINTOSH SECRET

KEYSTROKES 1, FUNCTIONS 3

In Word 5.1 and earlier, the keyboard command (⌘-D) that you use to *rename* a style (Define) in the New Style dialog box is the *same* keystroke you use to delete it! If you click in the style name field *before* pressing ⌘-D, you rename the style; it you press ⌘-D *without* clicking in the name field, you trigger the delete function. (To make matters worse, ⌘-D performs still *another* function when you're not in the New Style dialog box — it's the keyboard shortcut that brings up the Character dialog box. That's right, folks — one program uses the same key combination for three radically different commands.)

In Word 6, the New Style dialog box is also where you go to define *character*-level styles. Character-level styles are sets of formatting characteristics (font, color, size, underlining, and so on) that can be applied to selected text without affecting a whole paragraph. Character-level styles can be applied on a word-by-word or even a character-by-character basis, so they're useful for highlighting chunks of text *within* a paragraph.

Remember, though, you can use the methods outlined earlier in this chapter to assign a style to a keystroke or turn it into a toolbar button, making it even easier to apply a style once it has been defined.

The Style dialog box

What happens if you need to change some characteristics of a style you've created? How do you rename or delete a style? For this purpose, you use the Style dialog box. The Style dialog box also lets you transfer a document's complete set of styles — called a *style sheet* — to another document.

You open the Style dialog box by choosing Style from the Format menu. If you're using a version of Word prior to 6.0, there's a shortcut: double-click the style name in the status bar at the bottom of a document's window.

- *To rename a style:* In the Word 6 Style dialog box, click Organizer, select the style you want to rename from the list on the left, click Rename, type the new name, and click OK.

  In earlier versions of Word, select the style you want to rename from the list in the New Style dialog box. Then click in the style name field to edit the name. Press ⌘-D (or click the Define button); you're asked if you want to rename the style. Click OK or press Return.

- *To delete a style:* In the New Style dialog box, select the style you want to delete. Press ⌘-D (or click the Delete button). You're asked if you want to delete the style. Click OK or press Return.

Style sheets

A style sheet isn't really a sheet; it's the full collection of styles you've defined in a particular document.

If you want several documents to share the same styles, you can transfer the style sheet of one document to another, using one of these methods:

- Copy and paste the contents of an existing document into a new document. The entire style sheet of the first document is carried to the new one. Even if you immediately delete all the pasted text, the styles from the original document remain.
- In Word 6, you can use the Organizer to poke into any existing file and pull any (or all) styles from it directly into your current document. Conversely, you can move styles from your current document into any other Word document. To access the Organizer, open the Style dialog box and click the Organizer button. Use the Organizer's Close File and Open File buttons to open the two documents between which you want to exchange styles, then use the Copy button to transfer the styles. (You can ⌘-click to select several styles at once and move them all into the other document as a group.)
- In Word 5, you can import a style sheet from one document into the one you have open at the moment. Here's how: Open the Style dialog box. With the Style dialog box still open, choose the Open command from the File menu. A dialog box appears, asking you to select a style sheet document. Open the document with the styles you want to import.

If the incoming styles have the same names as styles in the open document, the new styles replace the old.

MACINTOSH SECRET

WORD'S SECRET KEYBOARD SHORTCUTS

In many Word dialog boxes, you can "click" buttons by pressing only the first letter of the button's name — *without* any modifier keys. For example, in Yes/No dialog boxes, instead of clicking the Yes, No, or Cancel buttons, type a **Y**, **N**, or **C**. This delightful shortcut works in both Word 5 and 6.

But here's our wildest keyboard secret: Press ⌘-Tab in Word 6. Suddenly, underlines appear in every menu — meaning that you can control them from the keyboard. Use the underlined letter along with the ⌘ key to drop the menu down — Windows style. Then just type the underlined menu-command letter to trigger that command. To open the Customize dialog box, for example, you can press T to activate the Tools menu, then press C to open the Customize dialog box.

(In Word 5, ⌘-Tab makes your menu bar turn black. The same trick goes, even though you don't see the little underlines: Type the first letter of a menu name to make the menu drop. Then navigate the menu with the first initials of the commands — or use the arrow keys — and finally press Return to execute the command.)

In fact, honestly, every button, check box, and pop-up menu in Word 6's dialog boxes can be triggered from the keyboard using a ⌘-key combination. To figure out which keys to press, hold down the ⌘ key after opening any dialog box, such as Options, Customize, Font, Paragraph or Spelling — it works on all of them. After a moment, one character in each command or option in the dialog box will appear underlined. The underlined character is the one to press in combination with the ⌘ key in order to trigger the option.

In the Font dialog box, for example, you can press ⌘-L to make the Color pop-up menu pop up, then use the arrow keys (up/down or left/right) to select a color. Check boxes such as Small Caps and Hidden Text also can be toggled on and off with ⌘-key shortcuts. In the Customize dialog box, you can switch between the Toolbar, Menu, and Keyboard tabs by pressing ⌘-T, ⌘-M, and ⌘-K.

AutoCorrect, AutoText, and the Glossary

Two of Word's best labor-saving features are AutoText and AutoCorrect. Both are typing shortcuts; they let you store frequently used words, phrases, graphics, or table formats, and then retrieve them with a couple of keystrokes. These features can shave hundreds of keystrokes off your work day.

AutoCorrect (Word 6)

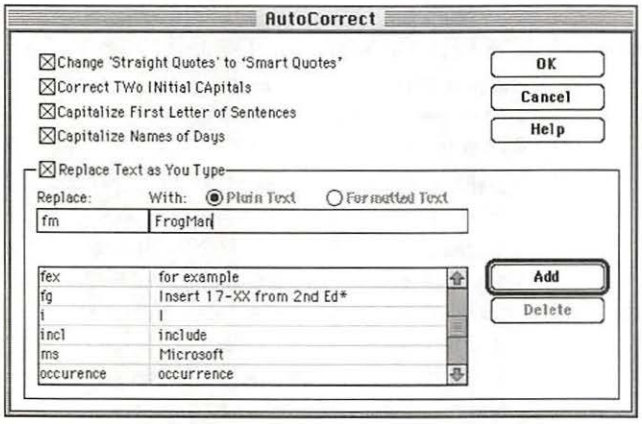
With AutoCorrect, you teach Word abbreviations for frequently used words, phrases, even whole paragraphs. Then, whenever you type the abbreviations, Word automatically expands what you typed into the complete entry. For example, when writing this book, we had to type phrases like "Power Macintosh 8500/120" over and over again. To save time, we saved that phrase as an AutoCorrect entry. Now, we just type **p85**, press the spacebar, and Word does the rest.

If you have a *graphic* you often use as a logo or letterhead, you can save the picture as a AutoCorrect entry, too. Call it, say, "logo1." To add the graphic to a document, type **logo1** and press the spacebar.

AutoCorrect entries have no fixed length limit; the only limit is the amount of memory available on your computer. Therefore, you can create AutoCorrect entries for entire form letters, invoices, address lists, and so on, and add them to your documents with just a keystroke or two.

To create an AutoCorrect entry, select the text or graphic for which you want to record an abbreviation. Then choose AutoCorrect from the Tools menu. When the AutoCorrect dialog box opens, type the new abbreviation, click the Add button, and then press Return (see Figure 17-18).

Figure 17-18
Teach Word to type frequently used words and phrases using the AutoCorrect dialog box.



As you create AutoCorrect entries, sometimes you'll want to preserve an entry's format (the fonts used in your letterhead, say), and sometimes you won't (*boilerplate text* — words or phrases you insert into a variety of documents).

If you want formatting preserved with an entry, be sure to click the Formatted Text radio button in the AutoCorrect dialog box. If you want AutoCorrect entries to take on the style and formatting of the paragraphs into

which they are inserted, click the Plain Text radio button. (Plain text entries *do* have a size limit — 255 characters.)

So why is it called *AutoCorrect?* Because the real purpose of this feature is to correct common typos and misspellings. With AutoCorrect, you can have Word automatically replace *teh* with *the* as you type. You can have it automatically fix double caps at the beginning of words — LIke THis — and turn your straight quotes ("") into curly quotation marks (“”), too.

Don't forget, however, that you have TypeIt4Me, a spectacular typing-shortcut utility (it came with this book). It does exactly what AutoCorrect does, but it works in *every* program, including Word 6. Check Chapter 34 for details.

AutoText and the Glossary

Word 6's AutoText command — called the Glossary in previous versions — also stores frequently-used text and graphics. But, although AutoCorrect expands your abbreviations on-the-fly, AutoText requires you to trigger a special command to expand the phrase (the default is ⌘-Option-V, but you can change it) after typing the abbreviation. Frankly, we can't think of many reasons why you'd use AutoText instead of AutoCorrect, but here are a few:

- You can link an AutoText entry to a keyboard shortcut, turn it into a toolbar button, or put it on a menu. AutoCorrect entries can only be inserted by actually *typing* an abbreviation into the text of your document.
- With AutoCorrect, you must decide when *creating* the entry whether you want to save it as plain text or with formatting. AutoText entries are *always* saved with formatting, but you have the option of inserting a plain-text version of an entry when *recalling* it from the AutoText dialog box.
- AutoText entries can be stored either globally (for use in all your Word documents) or in one specific template. And they can be moved from template to template using the Organizer command. AutoCorrect entries, on the other hand, are always global, saved into your default Normal template.

To save an AutoText entry, select text or graphics, then choose AutoText from the Edit menu. In the AutoText dialog box, type a name for the entry, and click Add.

To recall an entry, type its name, then press ⌘-Option-V (or click the AutoText button on the Standard toolbar). As mentioned, you can also use the Customize dialog box to make a button that triggers an AutoText entry, or put the entry into a menu.

ANSWER MAN

Where to keep your various Word support files

Q: ***Hey, how come my Microsoft Word spelling checker stopped working? And how come it doesn't remember my preferences?***

A: Clearly, you've moved some of Word's 10,000 little support files since installing it. Some features of Word won't work if the program doesn't find these files exactly where it left them.

Word 5: Word, the program, must be inside a folder that also contains a Word Commands folder. Inside Word Commands should be all the files that make your spelling checker work (***Spelling*** and ***U.S. English Dictionary***), your thesaurus operate (***Thesaurus, U.S. English Thesaurus***), and the little filter that lets Word 5 read Word 6 files (***Word 6.0 for Windows & Macintosh***). Move Word itself out of the folder that contains Word Commands, and none of these features will work. Meanwhile, your preferences are in your System folder's Preferences folder, exactly where they belong, in a file called Word Settings (5).

Word 6: Fortunately, this program is more forgiving about file locations. You're actually allowed to move Word, the program, out of its original folder. Meanwhile, the spelling dictionaries, thesaurus files, and translators are in a separate Microsoft folder on your hard drive. (The Templates folder, Word Extensions folder — which contains the hyphenation dictionaries — and help files are all within the Word 6 folder itself.) Your preferences are once again stored in the Preferences folder in your System folder.

(For details on Word 5's Glossary feature, see the Mac Secrets Outtakes folder on your Secrets CD-ROM.)

Templates and Settings files

Okay, so you've read and digested all of these Word-customizing features. You added keyboard shortcuts to your favorite styles and Glossary entries. You created a custom menu of the files you use most. You wreaked havoc with your menus, adding, subtracting, rearranging, and renaming commands until no one but you can possibly use the program.

So where do all those painstakingly created customized settings live? It depends on which version of Word you're using.

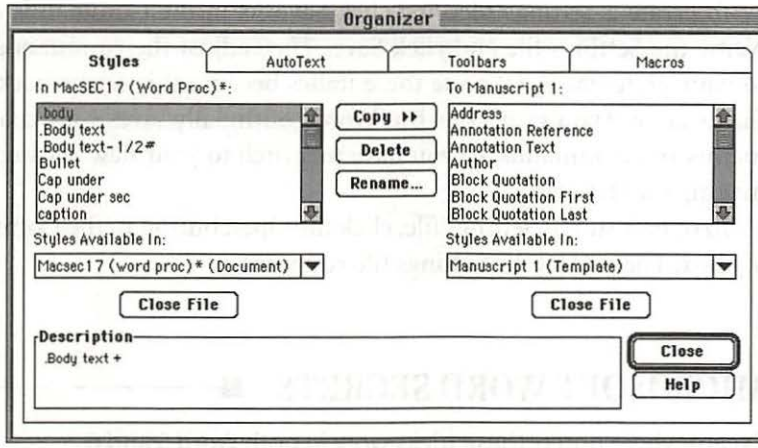
The Normal template (Word 6)

With Word 6, every new document you create is based on a *document template* — a prepared, preformatted blank document, complete with its own interface-customization settings. You'll usually use the Normal template, but you can create as many different templates as you want. All your customized menus, toolbars, and so on are linked to a specific template document.

Every time you customize Word's interface (using any of the methods described earlier in this chapter), you have the option of deciding which template adopts your custom settings. In the Customize dialog box, you choose the target template with the Save Changes In menu. By saving different sets of customized options into different templates, you can easily switch between different settings for Word — all you have to do is attach the template containing the options you want.

You can move your customized settings from template to template using the Organizer (choose Templates from the File menu and click Organizer). Once you're in the Organizer dialog box, use the Open File and Close File commands to select the two documents between which you wish to exchange options (see Figure 17-19). Then, use the Copy button to move the items from document to document.

Figure 17-19
Is it our imagination, or does this look a little like the old Font/DA Mover? It's the Organizer, which lets you move settings from one Word document into another.



Frankly, we think Word's document template system is way too confusing — hardly an improvement over the old settings files of previous versions (see the next section). The important thing to remember is that your customized settings are, in fact, saved in a template — usually the Normal template — and *that's* the file you want to back up for safe-keeping, or move to another machine if you want to transfer your custom settings to another copy of Word.

Settings files (Word 5.1 or earlier)

If you're using Word 5.1 or earlier, all your custom changes are stored in a Word Settings file in your System folder (within the Preferences folder). Each time you launch Word, it consults the Settings file and configures the menus and keyboard commands accordingly.

This is a critically important file! Like the Word 6 Normal template, it's just as worthy of backing up as *any* document you put time into because it represents a considerable amount of cumulative effort on your part. Also, you can instantly customize copies of Word on any other Mac — all the Macs at the office, for example — simply by replacing their Word Settings files with the one you create.

Using the Commands dialog box, you can create *multiple* Settings files, each with its own menu and keyboard command configurations. By loading the appropriate Settings file when you use Word, you can have menus and keyboard commands instantly customized for a specific task. You can create one configuration of menus for general word processing, for example. Then,

at any time while you're working, you can open a Page Layout Settings file that adds all of Word's kerning and paragraph formatting options to the menus!

To create a Settings file, *first* click Save As in the Commands dialog box. Name the Settings file and click Save. *Then* adjust the commands according to your preferences. (We use these italics because this seems backward from the usual way you save a file. But Word continually saves your changes to the menus and commands, so you have to switch to your new Settings file *before* making the changes.)

To open a stored Settings file, click the Open button in the Commands dialog box. Then select the Settings file you want.

MICROSOFT WORD SECRETS

Except where noted, these tricks work in both Word 5 and 6.

Faster font selection

You can choose a new font from the keyboard by pressing ⌘-Shift-F (in Word 6) or ⌘-Shift-E (in Word 5.1 or earlier).

When you issue this command, the Font field on the Formatting toolbar appears highlighted. Type in the name of the font you want and press Enter. (In earlier versions of Word, the word *Font* appears highlighted in the lower-left corner of the document window instead, but the shortcut works the same way.)

You only have to type enough of the font name for Word to recognize it. For example, you can type just **pa** to select Palatino, provided, of course, that there are no other fonts in your system that begin with the letters *pa*.

We encourage you to use the feature, but, if you have an earlier version of Word, change the ⌘-Shift-E into something easier to remember, such as Control-F for *font*. Remember, no matter what version of Word you have, *you* get to define the keyboard shortcuts. See "Adding keyboard shortcuts," earlier in this chapter.

Print a list of every Word command (Word 6)

Word is loaded with hidden commands — dozens of powerful commands for which there are no keystrokes, no menu items, and no toolbar buttons. Of course, any of these commands *can* be on a menu or a toolbar and *can* have a keyboard shortcut, but it's up to *you* to assign those, using the Customize dialog box, as described earlier in this chapter.

So how do you even know what these commands are? And how do you keep track of which keystrokes are assigned to which commands? Use the ListCommands command, which is itself a hidden command (of course). To access it, choose Customize from the Tools menu. Select All Commands from the Categories field and scroll down to *ListCommands* in the Commands field. Now you can assign a keyboard shortcut to this command or stick it on a menu.



Once you do, this command produces a lengthy Word table listing every command in the program, along with its keyboard and menu assignments. Alternatively, you can have it list only those Word commands that are actually active in your current configuration (see Figure 17-20).



Figure 17-20
When you use the List Commands command, you have the option of listing all commands, or only ones you currently have set.

Changing typewriter quotes to typographer's quotes

Here's a one-step method for changing typewriter quotes into typographer's (curly) quotes in a document that's already been typed. First, select the Change Straight quotes to Smart Quotes option in the AutoCorrect dialog box (or Preferences in earlier Word versions). Then use the Replace command (⌘-H) to find and replace each quotation mark with another seemingly identical quotation mark (see Figure 17-21). As the Replace command inserts the new quotation marks, they're changed into typographer's quotes.

P.S. — Using the Add to Menu command we discussed earlier, here's a great quote tip for users of Word 5.1 or earlier: Put the Smart Quotes command *in your menu!* Then, whenever you need to type a " or ' mark (for inches or feet), which *aren't* supposed to be curly, you can just turn off the curliness, type the marks, and then turn the curliness back on again!

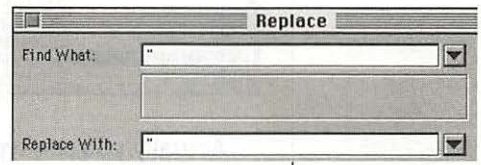


Figure 17-21
This may feel silly: It looks as if you're just replacing a quotation mark with itself, but if Smart Quotes is turned on, all the straight quotes turn curly after you click Replace All. This works with apostrophes, too. And it also works in reverse: If you turn Smart Quotes off, then the setup in this figure will render all quotes non-curly.

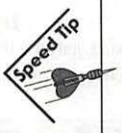
Too bad for Word 6 users — Microsoft designed the Smart Quotes command so that you *can't* put it into a menu. See "The Mac Secrets Word 6 Menu-Changer's Workaround," later in this chapter.

Instant pop-up menus — anywhere (Word 6)

Here's a secret that can save you countless trips to the menu bar. Wherever you happen to be in Word 6, you can access some of the most frequently used menu commands simply by pressing the Control key and clicking anywhere in the document window. When you do, a pop-up menu appears right under the pointer.

If you Control-click within the main document window, the pop-up menu contains the commands for font and paragraph formatting, bullets and numbering, as well as the standard Copy, Cut, and Paste commands.

Control-clicking a *table* produces a similar pop-up menu, with added commands for inserting and deleting cells and access to Word's Table AutoFormat command to apply a style to the whole table.



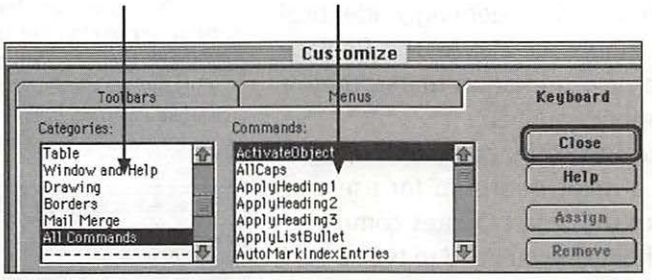
You can also Control-click anywhere on a toolbar for a menu of all *toolbars* — as well as the Customize and Toolbars commands for making your own toolbars. Using this pop-up menu is the easiest way to open and close toolbars on-the-fly.

Big time-saver in the Customize box (Word 6)



If you want to get any mileage out of Word 6, you'll have to spend a lot of time in the horribly designed Customize dialog box. Word 5 users, in particular, will cry out to discover that you can't navigate these ridiculously tiny lists by typing the first few letters of the commands' names — you *must*, apparently, use the microscopic scroll bar (see Figure 17-22).

Figure 17-22
You can type to select — but you have to click to indicate which list first, as shown by the arrows.



Actually, you *can* type to select, but you first have to *click* to select a list (the Categories list at left, or the Commands list at right). In typical Microsoft style, there's absolutely no visual indication that one list or the other is selected for typing — but at least it can be done.

Why your number keypad doesn't work



As you no doubt discovered the first time you tried to type numbers, Word does something weird with the numeric keypad of your keyboard. Instead of typing numbers, those keys act as navigation keys (8 = up arrow, 6= right arrow, etc.).

Fortunately, you can make them type numbers after all. In Word 5, press the Clear key on that keypad; in Word 6, to the consternation of thousands, the keystroke was changed to *Shift*-Clear. Either way, press the keystroke once for numbers, or again for navigation.

Changing font sizes from the keyboard

Word provides two different sets of commands that let you change the size of selected text from the keyboard. These commands are particularly helpful if you use Word for page-layout tasks that require you to fit titles into a certain space.

Pressing ⌘-] increases the size of selected text by one point size. Pressing ⌘-[decreases the size of selected text by one point size.

MACINTOSH SECRET

THE ULTIMATE "SPEED UP WORD 6" GUIDE

Sick of Word 6's lethargic speed? Microsoft offers no apologies — only the following advice. First, avoid using fonts and extensions. (Great. Thanks a lot.)

Microsoft further suggests that you give Word 6 more memory (using its Get Info box, as described in Chapter 9). Finally, try these memory tweaks.

If your Mac has 4MB of RAM:

1. Launch Word 6. From the Tools menu, choose Customize. Click the Menu tab.
2. Under Categories, select Tools. Under Commands, select ToolsAdvancedSettings. Click Add; click Close.
3. If you don't work with graphics much, from the Tools menu, choose Advanced Settings. In the Categories box, choose Microsoft Word.
4. In the Option box, type **BitMapMemory**. In the Setting box, type 512. Click Set and then OK.

   If these steps *don't* seem to help the speed problem, repeat Step 3; then, in the Options box, click the BitMapMemory setting, and then click the Delete button. Click OK.
5. Repeat Step 3. In the Option box, type **CacheSize**. In Setting, type 128. Click Set and then OK.

If your Mac has 8MB or more RAM:

If your documents use a lot of graphics, do Steps 1, 2, 3, and 4 — but type in a higher number in step 4. If you have 8 megs of RAM, you can set the BitMapMemory as high as 2,048K.

If you work with large documents, do Steps 1, 2, 3, and 5 — but in 5, change the CacheSize setting to 256K. If that doesn't help, increase it even more — all the way up to 1,024K.

Be aware that both of these steps sap even more memory from your Mac. Don't do *both* of the two steps above, either; just one or the other, depending on which works.

For even faster speed, get a Power Mac — or a different program.

DIALOGUE

The Big Upgrade Question

DP: OK, I'll grant you that this chapter contains a fairly impressive collection of Word Secrets, but we really need to — you know — warn people.

JS: Warn . . . ?

DP: About Word 6.

JS: *Warn* them . . . ?

DP: Not to buy it. We need to send up a big red flag. Danger. Mayday. Red Alert. One of the all-time worst upgrades in the history of Macintosh computing. Do not buy!

JS: Ah, yes, you're absolutely right. We have to emphasize the point that they *must* get version 6.0.1, which is much faster than the original 6.0 release.

DP: No, not 6.0, not 6.0.1. The program slogs along like a lame hippopotamus under heavy sedation.

JS: Excuse me, but have you taken a look at Word's cool features? This is the word processor to end all word processors. AutoText! AutoCorrect! Total cross-platform compatibility . . .

DP: Yes, but —

JS: Borders! Shading! Forms!

DP: True, but if you —

JS: And character-level styles. You know how long we've been waiting for that!

DP: Ah, yes, waiting. Exactly my point.

JS: Pardon?

DP: Waiting. That's what you do when you launch Word 6 — you wait. It's inexcusably slow. Microsoft has overstuffed the program with so many extraneous memory-hogging features, and worked so hard to make the code Windows-compatible, that they crippled it. This program makes it feel as if someone has slathered your motherboard with molasses.

JS: Look, I'll admit that the program was slow when released. But the 6.0.1 upgrade fixed all that.

To change the point size in larger leaps than one point at a time, press ⌘-Shift-> (greater than) and ⌘-Shift-< (less than). These commands jump from one point size to another as they are listed in the Font menu (9, 10, 12, 14, 18, and so on).

Custom point sizes in the Font menu

Having read the previous Secret, the truly obsessive mind is racing at this point. "Wait a minute! The ⌘-Shift-> shortcut goes from one *menu-listed* point size to another — yet *I* control what point sizes are listed there!"

Well, that's half true. In Word 5.1 or earlier, you can, indeed, add any bizarre point sizes you want to the Font menu. Just open up the Character dialog box (⌘-D). Type a point size into the Size box. Then press ⌘-Shift-plus sign, the Add to Menu keystroke, and click squarely on the number you typed. When you're finished adding sizes, click Cancel. Then look at your Font menu.

In Word 6, font sizes don't *appear* on the Font menu; there *is* no Font menu. You *always* have to type in custom font sizes in the Font dialog box. The ⌘-Shift-plus sign command simply enlarges the font by two points each time.

Turning toolbars in palettes and vice versa (Word 6)

You can turn any of Word's toolbars into a movable, floating palette by double-clicking it (or by simply dragging it anywhere into the document window). Conversely, you can transform a palette back into a toolbar by double-clicking it or dragging it to *any* edge of the screen. Keep this in mind if you have too many toolbars stacked up at the top of your screen; you can always anchor some of them to the bottom and sides of the screen instead.

Quick access to Symbol font

Every now and then you need to insert a special symbol into a Word document — something like a ♠ or a ♦. That's just what the Symbol font is for; it's a whole collection of special symbols that can be typed right into a document.

But changing fonts in the middle of your work to type a single symbol character is a hassle. Fortunately, Word is equipped with a special feature that lets you jump right into the Symbol font *temporarily*. Pressing ⌘-Shift-Q switches to the Symbol font for *the next typed character.* After you type it, Word automatically returns to your previous font.

Styles can have more than one name

You can give a style two different names. You might create one that adequately describes the use of the style, such as *Chapter Subheading 3*, and another abbreviated name to use when changing styles from the keyboard (using the ⌘-Shift-S command described below), such as *3*.

To double-name a style, either as you're creating it or later, type both names into the name field of the Style dialog box, separating them with a comma, as shown in Figure 17-23.

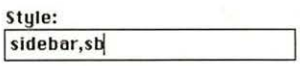


Figure 17-23 Giving a style a second name, or even more names, is easy if you separate the names with commas.

Applying styles from the keyboard

If you're working with a lot of styles, repeatedly pulling down the Style menu on the Formatting toolbar or the Ruler can be pretty tedious. We prefer the keyboard shortcut that lets you select any one of your defined styles with just a few keystrokes — no mouse, no menus.

DP: So they sped up the word count command and made a couple of minor tweaks. Look, this program still requires a Power Mac at least.

JS: But if you have a fast enough Mac, you ***do*** get incredible features.

DP: Right, in a pathetically bloated program that takes up 24MB of your hard drive.

JS: That's the beauty of it. You don't ***have*** to load up everything that comes with the program. If you already have a graphics program, you can scrap the drawing tools. If you don't want the clip art, you can trash it.

DP: In other words, get rid of the things that you just paid to get in the upgrade.

JS: Yes, and if you — now, wait a minute ...

DP: Drag 'em straight into the Trash ...

JS: Well, when you say it like ***that*** ...

DP: How would you prefer I say it?

JS: Look, you may have to leave off some of the extras, but you get tons of other cool built-in features.

DP: Including a cluttered, busy interface. I'm sure you noticed the ten toolbars. With all those buttons everywhere, you get about 2 inches square to type into.

JS: You can turn all those buttons off.

DP: You mean so it looks like 5.0 ...?

JS: I prefer not to think of it that way.

DP: There's still that ridiculous Windows look. All those gray, 9-point Geneva dialog boxes.

JS: You can turn ***that*** off, too.

DP: Let me get this straight: You're saying Word 6 is a great upgrade, as long as you're willing to buy a Power Mac to run it and turn off every new feature so that the whole program acts and runs exactly like the copy of Word 5 that you've owned since 1992 — only ***slower.*** Is that it?

JS: Let's talk about Excel.



Press ⌘-Shift-S. The Style field on the Formatting toolbar gets highlighted. (In Word 5, the word Style appears highlighted in the lower-left corner of the document window.) Then just type the name of the style you want to apply, and press Return. (In Word 6, you *can't* type just the first few letters of a style's name to select it, as you can in Word 5; you wind up defining a whole new style whose name is that abbreviation!)

Now you see the vital importance of our previous secret — the shorter the style name, the faster you can apply it from the keyboard.

Of course, using the methods described earlier in this chapter, you can also assign each style its *own* keyboard shortcut, reducing your keystrokes even further.

Word help, or not

You can access Word's online help from the keyboard. On the Apple Extended keyboard, you press the Help key. On the standard keyboard, you press ⌘-?.

In either case, the pointer changes into a question mark. Move the question mark to whatever feature or command you want explained, and click once. The appropriate help entry will be opened.



On the other hand, your cheerful authors, at times, have had quite enough of Word's Help window popping up. You see, the Help key (which we rarely use) is right next to the Delete key (which we use often) on the extended keyboard. Miss by half an inch, and you bring up the Help window instead of deleting a character.

You can solve this one by using the Customize command (or the Commands command in Word 5.1 or earlier). In Word 6, open Customize, click the Keyboard tab, and choose All Commands from the Categories list. In the scrolling Commands list, you'll find a command called Help; click it. In the Current Keys field you'll see the word Help (meaning the Help *key*). Select it and click Remove. (In earlier versions of Word, look for the command "Help [context sensitive]" and remove the Help keyboard shortcut.)

Window zooming

To zoom windows in Word, you don't have to click the Zoom box; double-clicking *anywhere* on the title bar accomplishes the same thing. (Of course, this is exactly how you trigger WindowShade, described in Chapter 4 — but that's why WindowShade lets you change its trigger to, for example, *three* clicks.)

Split-screen shortcut

Word gives you three different ways to split a window in half horizontally, providing two independent views of the same document.

You can double-click the split box in the upper-right corner of the window (see Figure 17-24). You can move the pointer to the split box and then drag down to a convenient spot. Or, easiest of all, you can press ⌘-Option-S.

To return to a single window view, either double-click the split box again, or press ⌘-Option-S again.

In Word 6, there's actually a *fourth* route to split-window mode: Install a window-splitting button on a toolbar and click it.

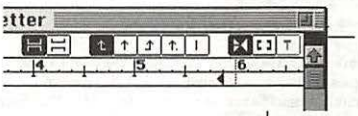


Figure 17-24
Split a window by double-clicking the split box, or just press ⌘-Option-S. Unsplit the window by double-clicking the small black split box.

In Word 5, whichever pane contains the cursor is the one that fills the window when it *unsplits.* That's important to learn; if your cursor is on page 1 in the top pane and you've been editing page 100, you have a lot of scrolling to do after the window unsplits. (In Word 6, stupidly, it's just the opposite — the pane that *doesn't* contain the cursor fills the window when you unsplit.)



Indents from the keyboard

You can set indents without dragging indent marks on the Ruler. Instead, press ⌘-M (or ⌘-Shift-N in Word 5) to indent a paragraph to the right by the default indent setting. To move the indent-level back to the left, press ⌘-Shift-M.

You can also create *hanging indents* from the keyboard (see Figure 17-25). The shortcut is ⌘-T (or ⌘-Shift-T in Word 5). In Word 6, you can also un-hang an indent — creating a paragraph in which only the first line is indented — by pressing ⌘-Shift-T.

Figure 17-25
The hanging indent. Do it from the keyboard.

Crest has been shown to be an effective decay-preventive dentifrice that can be of significant value when used in a conscientiously applied program of oral hygiene and regular professional care.

Selecting odd-shaped regions

When you drag your cursor in Word, you're probably used to the highlighted part beginning at the first character and stretching through all the text to your current position (see Figure 17-26).

If you *Option*-drag, however, you select a region that only includes text in the diagonal line from your initial click. This is a great shortcut for italicizing one column of text (in a play program, for example). It's also great for removing those annoying little squares that sometimes appear at the left margin of a document that was created on an IBM computer.

Figure 17-26
If you try to drag normally (top), you only succeed in selecting everything. But if you Option-drag (bottom), you can select text in any rectangular area — such as a column of text.

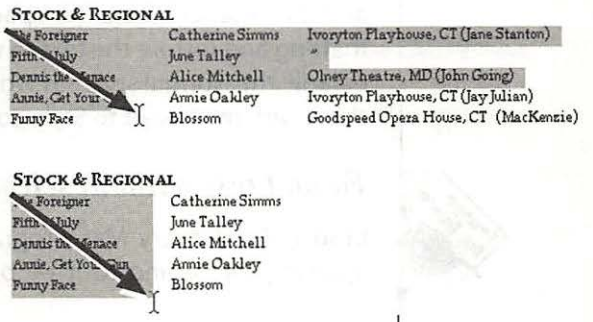
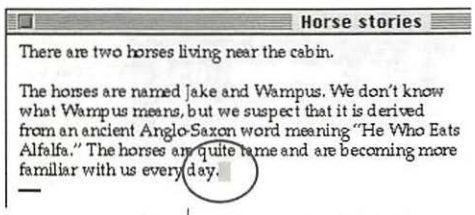


Figure 17-27
Double-click the space right after a paragraph to select the Paragraph mark.



Picking the paragraph

You can select the invisible, nonprinting paragraph mark (¶) at the end of a Word paragraph quickly — and without having to turn on the Show ¶ command — by pointing to the end of the paragraph and *double-clicking* in the white space right after the last word of the paragraph (see Figure 17-27).

Why bother? Here's one good reason: Word stores each paragraph's formatting — style, margins, font, and so on — in that little paragraph mark. By simply dragging a paragraph mark (or cutting and pasting it) to the end of *another* paragraph, you transfer all of the first paragraph's formatting to any other.

The mighty Go Back command



If you edit long documents, you'll appreciate the Go Back command. No matter where you are in a document, the Go Back command, which you trigger by pressing ⌘-Option-Z (or zero on your number pad), scrolls you back (or forward) to the last spot in which you did any editing. This command will even jump you back to another *document,* if that document is open and it contains the location of your most recent editing action. Press the command repeatedly and you can find up to the last *three* spots where you were editing.

(Big suggestion: change the keystroke to something simpler, like F1 or ⌘-G.)

Returning to Normal style

After you've tried formatting a paragraph in right-justified 18-point Monaco Bold Shadow, you'll probably want to change your mind and return to Normal style. You can undo all that formatting in one fell swoop by selecting the paragraph and pressing ⌘-Shift-N (or ⌘-Shift-P in earlier versions of Word). No matter which formatting options were applied, this always returns the text to the style you defined as Normal.

This isn't quite the same thing as Word 6's Reset Paragraph (⌘-Option-Q) and the Reset Character (⌘-spacebar) commands, which strip out all extra formatting and restore the text to whatever the style is supposed to be (not necessarily the Normal style). In Word 5.1 or earlier, you can accomplish the same thing with the Revert to Style command (⌘-Shift-spacebar).

Format text without selecting it (Word 6)



In just about every Mac program on Earth, you must *select* a word before applying formatting to it — but not in Word 6. You can apply formatting

attributes such as font, size, style, and color to a whole word by simply positioning the insertion point anywhere within the word; Word assumes you want the attribute applied to the *whole* word (which, in most cases, you do). (You can turn this option on and off by choosing Options from the Tools menu, and then clicking the Editing tab to access the Automatic Word Selection check box.)

Of course, if you want to apply an attribute to more than a single word — a whole sentence, for instance — you still must select the text.

Customized spacing

Word doesn't contain any tools for precisely adjusting the spacing between individual words. But you can rig up some custom-sized spaces using the following method. Select a character with the width of the custom space you want to create. Then, using the Color pop-up menu in the Character dialog box (⌘-D), pick White as the color of the character.

The character becomes invisible and can be used as a space. Use large characters to make wide spaces; use tiny characters, such as punctuation marks, to make narrow spaces.

To make the whited-out characters readily available for spacing, save them as Glossary entries, add them to your Work menu, and assign them keyboard equivalents. When you save the spacing characters in the Glossary, all the formatting, including the White color, are preserved.

Alternatively, you can add White as an option in the Format menu or create a keyboard shortcut for applying.

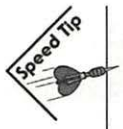
Merging graphics into a Word document

Most people use Word's Print Merge feature to merge text data from other programs (such as databases) into Word documents. But you can also merge a Word *table* into a document, with the table serving as your data document. Because Word table cells hold graphics as well as text, this lets you merge graphics into a document.

Place your letterhead, for example, in a table cell and then merge that table into a regular document to automatically insert your letterhead. You'll save disk space — you only have to create your letterhead once, in the original data document.

Mail merge made easy

Creating a mail merge with each piece of data in a separate field — name, address, city, state, and so on — can get time-consuming. This is especially true in Word, which requires any fields containing punctuation to be enclosed in quotation marks.



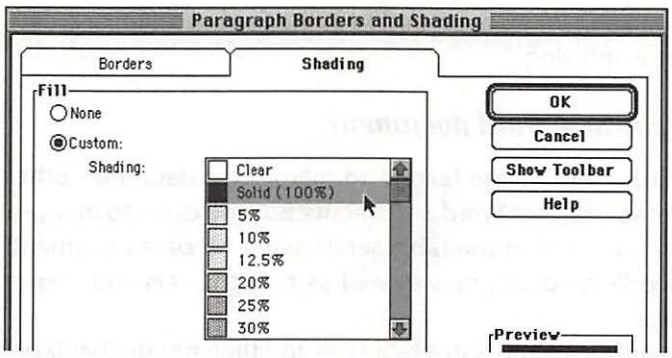
However, if you don't need to sort your data by field, you can simplify this process. Put each *whole* address in one cell of a Word table, complete with punctuation, carriage returns, and other formatting. Then, when it's time to do the mail merge, you only have to work with a single address field.

Creating inverted text

Inverted text — white lettering against a black background — gives titles and headings a bold, dramatic look. Here's how to create the reversed lettering in Word.

1. Select some centered text to invert. Choose White as the text color (from the Color pop-up menu in the Font or Character dialog box). The text becomes invisible; don't worry, it's still there. Don't deselect the text yet.
2. From the Borders toolbar, change the Shading pop-up menu to Solid (100%). If you don't use toolbars, choose Borders and Shading from the Format menu and select Solid (100%) from the scrolling list of shading options, as shown in Figure 17-28. (In earlier versions of Word, choose Paragraph from the Format menu and click Border in the Paragraph dialog box to select the level of shading.)

Figure 17-28
Add shading to white type for easy reversed text effects.



3. To tighten the border around the title, use the Ruler. Drag the margins in toward the center until the title is framed the way you want. You'll end up with something like this:

Fun With Yeast

4. Save the inverted format as a new style. This way, you can apply the reversed-text style again whenever you need it without going through all the formatting steps again.

You can create a host of other slick effects using some slight variations. Try using a different level of border shading, say 50 percent. Use a different text color background. Try aligning the text to the right margin or changing the spacing between the text and the border.

Document security (Word 5)



Here's one of our absolute favorites. Everyone has text that's best kept private. Yet whose Mac is completely free from casual inspection by other family members or coworkers?

In Word 6, you can give any document a password. But for Word 5, here's a sneaky trick to keep your prose protected. Select the text you want to hide. Open the Character dialog box. From the Color pop-up menu, choose White and click OK.

Your text appears to have disappeared (see Figure 17-29).



Now, for an added sneakiness, install Flash-It (included with this book). Take a screen shot of the thick "end of document" bar at the end of your text and *paste* it at the *beginning* of your document (again, see Figure 17-36). You have now removed the only clue a savvy Word user has that there's already some text in place.

Caution: Spell-checking the document or doing a word count will reveal the presence of the hidden text. Also, if you turn on the Show ¶ command, your white text reappears. If this concerns you, *remove* the Show ¶ command from the toolbar (as described earlier) *and* change its keyboard equivalent (using the Commands command). Now there's no chance that somebody can turn on Show ¶ by accident.

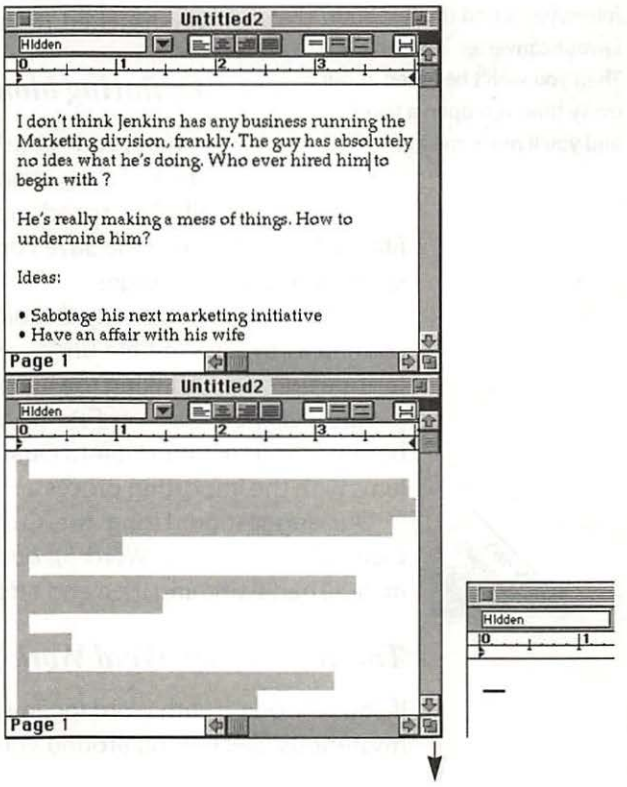


Figure 17-29
The awesome invisible-text trick. Highlight the text you'd rather keep private (top). Change its color to White (bottom left). To convince people that there's really nothing there, paste in a phony end-of-document mark (bottom right).

Adding a new row to a table

Here's the absolute easiest way to add a new row to a Word table, without messing with any Table commands or dialog boxes: Click in the last cell of the last row and press the Tab key once. Word will automatically insert a new row at the bottom of the table.

ANSWER MAN

That darned Word 5 Summary box and more

Q: ***Is there a way to delete the Summary box? I find it useless and annoying. It pops up every time I save a new document from Word 5.***

A: Yes, it's annoying. And yes, you can turn it off. Choose Preferences from the Tools menu. Click the Save and Open icon to open the Save Options window. Turn off Prompt for Summary Info.

Q: ***Okay, how about this one? Every time I open a text file — just a text file, for Heaven's sake! — Word gives me some stupid dialog box asking if I mean a text file, or Text With Layout, whatever that is.***

A: Yes, you can shut this one up, too. Go to the Finder and open your Word folder. In the Word Commands folder, you'll find the Text With Layout converter. Throw it away. Then you won't be asked about it every time you open a text file — and you'll never miss it.

And if you want the new row in the *middle* of the table and not the end? Easy. Click at the far left edge to highlight the entire new row. Then drag and drop it to wherever in the table you want it to go!

Exporting Word tables

Got a table in Word? If you try to export it to a graphics or page-layout program using the standard Copy command, you'll be in trouble. When you paste the table into the new program, you lose the table's formatting, gridlines, and cell spacing.

To export tables successfully, use the Copy as Picture command (⌘-Option-D). That copies the entire table as one graphic, as a PICT file with all the formatting intact.

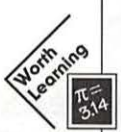
Here's a really neat twist: If you paste a Word table into a drawing program after copying it with the Copy as Picture command, you can still edit it. Each element of the table — including all the text entries and the individual grid lines — becomes a separate object that can be moved, deleted, or altered independently. Fonts can be changed, text can be retyped, gridlines can be thickened, and the whole table can be stretched, resized, or distorted.

Deflating bloated files

When you enable Word's Allow Fast Saves option, Word keeps track of your changes by appending them to the end of the file. This speeds up saving a large document, but it bloats the file. Each time you use the Save command, the file grows larger as Word tacks on the latest set of changes.

The solution: Periodically disable the Fast Saves option or use the Save As command to save the file under a new name. In either case, Word then performs a full save, shrinking the file back down to its actual size.

And *definitely* turn off Fast Saves the last time you save your document before trying to import it into Quark or PageMaker. You'll have far fewer problems with the importing process.



Our suggestion: Using the Customize command (the Commands command if you're using Word 5), *add* the Allow Fast Saves command to your *menu!* Then switching it on and off is simply a matter of selecting it.

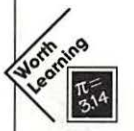
The WordTemp/Word Work files old wives' tale

If you've worked with Word for any length of time, you've probably seen some mysterious files lurking around your system called either WordTemp or Word

Work. The files are usually followed by a number — WordTemp-1, WordTemp-2, and so on (if you're using Word 5), or Word Work File A 1270, Word Work File D 2678, and so on (if you have Word 6).

What exactly *are* these files and what are you supposed to do with them?

Word Work files (or WordTemps) are temporary files that Word uses to store unsaved data while you work. When you save your files and quit the program, Word automatically deletes these temporary files, which are no longer needed. Under ideal circumstances, you'd never encounter a Word Work file — because you always exit Word the right way, using the Quit command.



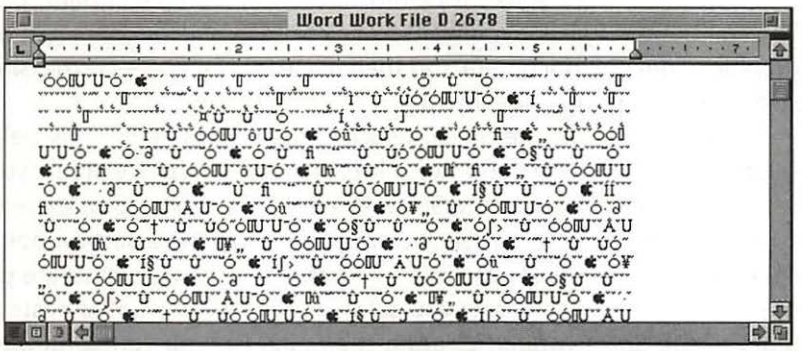
But, more realistically, you'll trip over the power cord, or your system will crash, and you'll unwillingly abandon Word with files still open and unsaved. In such cases, the temporary files remain. You can throw them away without a second thought. Or, if a few Mac gurus-in-print are to be believed, you can use them to recover work that you lost in the crash.

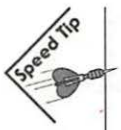
Here's the recovery process: Move the Word Work or WordTemp files out of the System folder (sometimes they show up in the Trash, in a Rescued Items folder) and give them new names. Launch Word and choose the Open command. In the List Files of Type pop-up menu, select All Files, navigate to the renamed temp files, and open one.

Some of your lost work may be in the temporary document. In that case, copy the text into a new file.

But don't count on such happy endings. In all likelihood, you'll see something like the document shown in Figure 17-30. Cumulatively, your not-so-cheerful authors have weathered *hundreds* of Word crashes. *Only twice* were we able to salvage anything we really needed from a WordTemp file. (We even called Microsoft on this topic; it conceded that the recovering-data-from-temp-files trick is essentially bogus.)

Figure 17-30
Just when you think you've lost your work, you can open a salvaged Word Work file and — find pages of gibberish.





Shortcut to the Paragraph dialog box

You don't have to choose the Paragraph command from the Format menu to open the Paragraph dialog box. Instead, just double-click the left or right indent marker on the Ruler.



Erasing the name on the startup screen

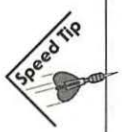
Got divorced — and your ex's name still comes up on the Word startup screen every morning? You can change it — with DFErase, a $5 shareware program included with this book; the author is David Hirsch.

Copying section formatting

Word stores all the formatting for a section in the *section mark,* the double-dotted line that runs across the screen at the end of a section. You can copy the formatting — columns, page numbering, and so on — for an entire section by simply copying the section mark. When you paste the mark at a new location, all the text preceding it takes on the formatting stored in the mark.

Incidentally, you can double-click any section mark to open the Page Layout dialog box. (In Word 5, this opens the Section dialog box.)

Speedier spell checking



Unless you begin spell checking with the insertion point placed at the very beginning of the document, you inevitably get a "Continue checking from beginning of document?" message. To avoid this, use the Select All command *first,* and *then* activate the spell checker. (That is, get into the habit of pressing ⌘-A, ⌘-L in rapid succession.) Regardless of where the insertion point is in the document, every word gets checked, without any additional dialog boxes appearing.

Introducing the Spike (Word 6)

What on Earth is the Spike? It's Word 6's built-in multiple cut-and-paste tool. You can use the Spike if you want to delete several *different* pieces of text or graphics from one document and then paste *all* of them — with a single keystroke — into another document.

To put an item in the Spike, select it, then press ⌘-F3. This deletes the selected text or graphics and stores it. Each additional piece of text you delete with ⌘-F3 gets added to the Spike. When you're ready to paste everything you've collected into another document, position the insertion point at the spot you want and press ⌘-Shift-F3. All the items you deleted are pasted in the new location, in the order you deleted them. If you want to paste the contents of the Spike *without* clearing the Spike (so you can continue adding deleted items to it), press ⌘-Option-V instead.

WORD 5.1 (OR EARLIER) SECRETS

Screen Test screen saver

You *do* know about Word's built-in screen saver, yes? It comes on whenever you choose Screen Test from your menu.

Of course, it helps if you *put it* in your menu first. Use the Commands command to scroll to Screen Test, and click the Add button. It appears in the Tools menu (see Figure 17-31).

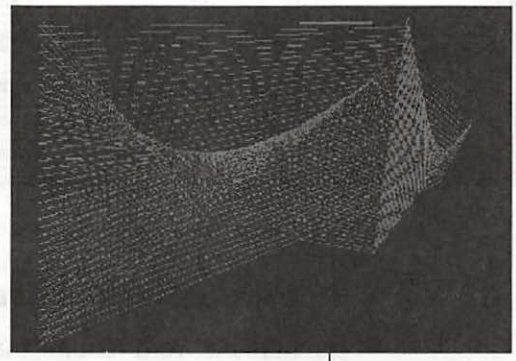


Figure 17-31
The screen saver nobody knows.

This screen saver darkens your screen and draws dazzling designs ostensibly to protect your monitor's phosphor, until you click the mouse. (When you do click it, you get a dialog box listing the many different, fascinating, and colorful settings for this SpiroGraph-like screen dimmer.) For Screen Test to run, you must have at least one Word document open.

Alas, Microsoft's No Fun Committee took Screen Test out of Word 6.0.

Overriding the Next Style option (Word 5.1 or earlier)

Word's Next Style feature lets you specify the style that's automatically applied when you start a new paragraph. (You teach one style to follow another in the Style dialog box.)

But to *override* the automatic style change and continue typing in the same style as your current paragraph, press ⌘-Return at the end of the paragraph (instead of a Return by itself). (They took this one out of Word 6, too.)

Line spacing with superscripts or subscripts

Adding superscripts or subscripts to a line in Word automatically increases the spacing between adjacent lines, making a paragraph look irregularly spaced — and ugly. Inserting characters from symbol or music fonts, or using two different fonts within the same line, also can throw off spacing (see Figure 17-32).

Figure 17-32
Superscript and subscript characters can throw off a paragraph's line spacing, as the silly example on the left shows. In the paragraph on the right, the line spacing in the Paragraph dialog box has been changed from Auto to Exactly 13.75 points between each pair of lines.

Some environmentalists argue fervently that large infusions of sodium sulfate, used heavily in the manufacture of detergents and also known as Na^2SO^4, is having a devastating effect on the population of Pacific sockeye salmon. Nevertheless, the evidence shows that allow large amounts of this sulfate have been consumed by laboratory rats without producing any adverse effects.

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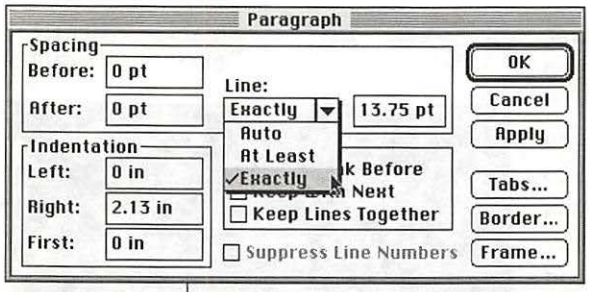
Figure 17-33
Use the Paragraph dialog box to change line spacing from Auto to Exactly for evenly spaced lines in paragraphs.



To keep spacing uniform in such situations, open the Paragraph dialog box. Under the Line options, choose Exactly from the pop-up menu. Enter a spacing measurement, in points, in the field next to the pop-up menu (see Figure 17-33).

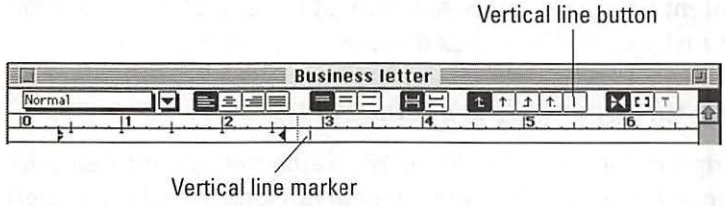
This forces the paragraph's lines to be spaced evenly regardless of superscripts, subscripts, or any other odd-sized characters.

In Word 6, there's no need to make such an adjustment; the size of superscripts and subscripts is automatically adjusted to fit perfectly into the line spacing.

Creating vertical lines in Word

Here's a Word feature that's often overlooked: You can insert vertical lines down a page to separate columns of text. To do this, select a paragraph and click the vertical line button on the Ruler (see Figure 17-34). Then click the spot on the Ruler where you want the vertical line to appear. (In Word 6.0, of course, you have full-fledged drawing and page layout tools that let you insert vertical lines anywhere you want them.)

Figure 17-34
To add a vertical line to a page, click the vertical line button and then click a spot on the Ruler to insert a vertical line marker.



Key combination reminder (Word 5.1 or earlier)

If you forget which command is associated with a particular key combination, you can find out using the Commands dialog box. Open the Commands dialog box by choosing Commands from the Tools menu (or press ⌘-Shift-Option-C). Then press the key combination in question. The Commands list will instantly scroll to the command that corresponds to the key combination you pressed.

Roll credits (Word 5 only)

To see Word's programming credits, press ⌘-Shift while selecting the Preferences command. When the Preferences window opens, a new icon called Credits appears at the bottom of the scrollable list of preference icons. (It appears just *above* the Toolbar icon, if you have one.) Click the icon to see the credits.

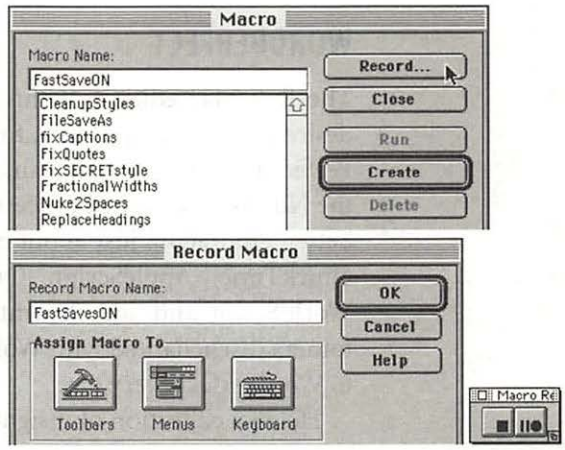
The *Mac Secrets* Word 6 Menu-Changer's Workaround

We've mentioned numerous useful features Microsoft, in its questionable wisdom, *removed* from Word 5. Among them is the ability to put any command you want into your menus. Think of all the useful options you could easily pop into your Word 5 menus that are no longer even *listed* in Word 6's Customize dialog box: Fractional Widths; Allow Fast Saves; Smart Quotes; Background Pagina-tion; Show Picture Placeholders; and much more. If you complain to Microsoft, they'll inevitably tell you to *write a macro* that simulates the missing feature.

Of course, writing a macro means having to learn Word 6's macro language, which is no fun at all. Here, therefore, for the purposes up adding some of Word's missing features to your menus, keystrokes, or toolbars, is the quickest way to create a macro. Fortunately, you have to do this only once per feature.

- Choose Macro from the Tools menu. In the dialog box that appears, type a name for the command you're about to add — "FractionalWidthsOff," for example. In typical stupid Microsoft style, you're not allowed to use spaces or punctuation of any kind (see Figure 17-35).
- Don't click the default Create button, as you might guess; instead, click Record. In the next dialog box, you'll see three square buttons: Menu, Toolbar, or Keyboard. Click the one that represents how you'd like to trigger your new command when this is all over. For example, click Menu if you'll want the Smart Quotes feature to be a menu command. (See Figure 17-35.)

Figure 17-35
To create a macro, you first encounter the Macro dialog box (top). In the next box (bottom left), you'll see three buttons. If they're dimmed, it's because you use a space or punctuation mark in your macro name. When you're finished doing your macro's steps manually, click the square button on the floating Macro palette (lower right).



- What happens next depends on which of the three buttons you clicked. If you clicked Menu, you should now click Add and then Close (after first specifying to which menu you want your new command added). If you clicked Toolbar, drag your new macro's name from the right side of the dialog box onto any open toolbar on the screen. And if you selected Keyboard, now press the keystroke you want to trigger this macro, and then click Close.
- And now you're actually recording. *Do* whatever it is. For example, to create a Fractional Widths Off command, choose Options from the Tools menu, click the Print tab, click the Fractional Widths check box, and click OK. (Unfortunately, you must create two macros for this example: one that's FractionalWidthsOn, and another for FractionalWidthsOff.)

  Other examples of things to do at this stage are performing a search-and-replace, turning other Options items on or off, and doing a repetitious editing process (deleting the little Internet box in front of each line, for example).

When it's all over, click the square Stop button on the floating Macro palette.

Now you're in business. Your macro should always work when you trigger it from your menu, keyboard, or toolbar. Despite the ridiculous complexity of setting up one of these macros, we must admit that, when they actually run, they're fast and efficient. Our final suggestion, however, is to *quit* Word promptly after creating your macros, because that's how they get saved into your Normal template. If your Mac should crash before you do so, you'll lose all of the macros you just created.

WORDPERFECT

The first Mac edition of this popular IBM word processor left a lot to be desired — a Mac interface, for starters. But with version 3 and later, WordPerfect became a mean, lean, high-powered Microsoft Word killer that was the Number Two word processor in the Mac marketplace. Version 3.5 is even better, embracing just about every relevant technology developed by Apple: QuickTime, AppleScript, QuickDraw GX printing, Macintosh Guide, WorldScript and speech synthesis. With so many faithful Microsoft customers disenchanted with Word 6's slogging performance, more people turn to WordPerfect every day.

Here's a collection of insightful tidbits.

WORDPERFECT SECRETS

Kerning from the keyboard

You can, if you want, perform kerning numerically, by typing numbers into the Line dialog box (Layout menu). It's faster (if less precise) to do it by eye, though.

Just click between the letters you want to kern ,and press Shift-F1 (to move the letters one point closer) or Shift-F2 (farther apart).

Setting up your default style



If you're a power user, you know this. If you're sick of having to reselect Palatino 10-point and .75-inch margins every darned time you start a new document, you'll appreciate this. It's the instructions for changing the default (Normal) style.

Make sure the Layout ruler is visible (we're talking about version 3 here). Click the Styles button and then the Edit button. Scroll so that you can see the Normal style name. Double-click it.

Use the regular menus to specify a type size, font, column setup, and so on. You'll see WordPerfect storing this information in the styles-editing window at the bottom of the screen.

Startup macros

WordPerfect has a *macro language* — a set of commands you string together to perform powerful text-manipulation stunts. For example, one such macro may sweep through the document, changing all your straight quotes to curly ones, eliminating double spaces after periods, and turning double hyphens into em dashes.

If you create a macro called OnStartUp and (using the Librarian feature) stick it into your USA Private Library, it runs every time you launch the program. Or, if a macro is called OnOpenDocument and saved with a particular document, it runs each time you open that document. (It does if you use WordPerfect's Open command, anyway — not if you double-click the file's icon in the Finder to open it.)

Character-level styles in WordPerfect



WordPerfect offers character-level styles — you can apply your styles only to selected words or phrases, not entire paragraphs — but the feature is completely undocumented.

To apply character styles, create and run the following one-line macro: *Formatting (Character)*. Choose that new macro from your Tools menu. Now, whenever you apply a style, it will affect only the selected text, not the entire

paragraph. A character style otherwise works just like a regular style sheet — every occurrence changes when you update the style. For best results, create a second macro — *Formatting (Paragraph)* — to switch back to regular paragraph-at-a-time style-applying.

Pop text into your style sheets

In most word processors, a style sheet consists of character and paragraph *formatting*. But, in WordPerfect, *text* can be a part of a style. For example, every paragraph in your Legal style could begin with the word *ITEM:*, automatically typed; another style could have automatic bullets or check marks, and so on. To set this up, click New or Edit on the Styles button bar, click Edit, and then simply type whatever text you want as a prefix.

To crop a graphic

Press the Option key as you drag the handle of a graphics box. The frame chops off (or reveals more of) your graphic, depending on which way you drag.

Search backward

If you press Shift while clicking the Find button in WordPerfect's Find/Change dialog box, WordPerfect will search your document in the direction opposite what's indicated.

The world's best Find Next command

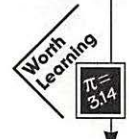


To find the next occurrence of a word in a WordPerfect document, free book winner Scott Rothstein discovered that you don't even have to visit the Find/Change dialog box. Instead, just highlight the word, then press ⌘-G to jump instantly to the next occurrence of that word.

Do a little horizontal math

You probably already know that when you have part of a table highlighted, you can click the Sum button on the Table/Math Bar to add up the individual columns. Here's the secret that's almost universally ignored: If you press the Option key while clicking the Sum button, WordPerfect totals the horizontal *rows*.

Ready-to-print cheat sheet



WordPerfect is crammed with shortcuts that use the function keys on a Mac extended keyboard — F1, F2, F3, and so on. But how are you supposed to remember all those ⌘-Option-function key combinations? Inside your WordPerfect folder, inside the Documentation folder, is a Function Keys

Template document — a cheat sheet that's meant to be taped right on to your keyboard. Print it, cut it on the dotted lines, and slap it on your keyboard for quick reference.

Taming WordPerfect's style sheets

WordPerfect's style sheets function a little differently than those found in other word processors and page layout programs. By default, WordPerfect's applies a new paragraph format not only to the text you have selected, but to the remainder of your document. To make WordPerfect work like other programs, choose Preferences from the Edit menu, click Environment, and choose Single Paragraph from the Format menu in the dialog box. Now you can apply styles on a paragraph-by-paragraph basis.

WordPerfect's built-in multi-Clipboard



Normally, when you use the Copy command, the text you're copying replaces the previous contents of the Clipboard. WordPerfect, however, has a secret *cumulative* Clipboard. If you highlight some text and press ⌘-Shift-A instead of it ⌘-C, your selection gets added to a *cumulative* Clipboard. After copying with ⌘-Shift-A repeatedly, you can choose the Paste command — and paste *everything* you've copied at once.

NISUS, WRITENOW, MACWRITE PRO

Each of these word processors has a small, but fiercely passionate, following. Nisus is a high-horsepower, multiple-Undo, programming-languaged word processor. MacWrite Pro is marked by Claris Corp.'s usual elegant, clean design — not nearly as overwhelming as Word or WordPerfect, yet it has many of the same features.

WriteNow has been repeatedly demonstrated to be the *fastest* (and smallest — a tiny 267K) word processor ever written for the Mac. Unfortunately, its publisher has announced that WriteNow is washed up. No more versions will be developed. (Turns out WriteNow's speed stems from its having been written especially for the Motorola 68000 processor series; with the advent of the PowerPC chip, WriteNow would have to be rewritten as a completely new program.)

We have a few secrets for each of these programs, but you won't find them here. We put them in the Mac Secrets Outtakes folder on your CD-ROM, in the hopes of making room for more general-purpose Secrets. (Many of the ClarisWorks Secrets later in this chapter work in MacWrite, too, as noted.)

CLARISWORKS

ClarisWorks, especially 4.0 and later, has a surprisingly good word processor: Clean, well designed, and extremely fast. It even has a quick and polished style-sheet feature: Click a style's name (such as Heading 1), and the selected text is instantly reformatted. Better yet, there are also Table styles (various shadings and line-thickness schemes); Outline styles (Roman numerals, diamonds, and so on); even styles for objects you create in the drawing and painting modes (for example, particular colors and line thicknesses).

And because ClarisWorks can open and save Microsoft Word documents (or any of a dozen other Mac and IBM file formats), you can have the joy of writing in ClarisWorks — and turn in finished Word files, so your correspondents and editors will never know the difference.

CLARISWORKS WORD PROCESSOR SECRETS

Get it from the Library

Don't pooh-pooh the Library — a floating palette that shows thumbnail representations of frequently used material (clip art, text, spreadsheet cells — almost anything). You can drag one of these thumbnails into your document to place the material there. Although you may suppose, at first, that they're for kids to store little clip-art pictures in, the Library is also extremely useful for such hardcore business elements as your logo, your scanned signature, return address, boilerplate text, and so on.

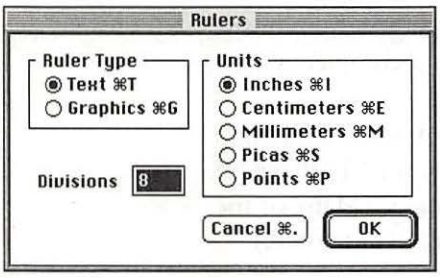
Quick access to Preferences (MacWrite Pro, too)

Option-click the page number indicator (lower-left corner of the screen) to open the Preferences dialog box — with the relevant section (such as text or spreadsheet) already scrolled into view.

Keyboard shortcuts revealed

ClarisWorks 4.0 provides plenty of keyboard shortcuts that can be used to trigger commands within dialog boxes. To find out which keystrokes provide shortcuts, press the ⌘ key while in a dialog box (such as Open or Save) — the ⌘-key shortcuts corresponding to each command will be displayed right on screen. (See Figure 17-36.)

Figure 17-36
Who would suspect that ClarisWorks' dialog boxes are every bit as keyboard-controllable as, say, Word's? Just press the ⌘ key to reveal the secret keystrokes.



Open a document directly on startup (MacWrite Pro, too)

Under normal circumstances, when you double-click the ClarisWorks application icon, you get a dialog box offering a choice of ClarisWorks document types: Word processing, painting, and so on. If you want instead to open an existing document, press ⌘ as the program is launching. You are presented with the usual Open File box, from which you can select the existing document you want to open.

Cursor manipulation keys (MacWrite Pro, too)



Here, for your reference, are the key combos for making the cursor jump around:

Jump by one word: Option-arrow key (left/right)
Jump to the start or end of the line: ⌘-arrow key (left/right)
Jump up or down a paragraph: Option-arrow key (up/down)
Jump to the beginning or end of the document: ⌘-arrow key (up or down) — or just use the Home and End keys

Add the Shift key to any of these combos to *select* the text as you move the cursor.

Selection shortcut guide (MacWrite Pro, too)

Here are the click-tricks for selecting text quickly:

Double-click . . . to select a word.
Triple-click . . . to select a line.
Quadruple-click . . . to select a paragraph.
MacWrite only: *Quintuple*-click . . . to select the entire document (except headers and footers).

ClarisWorks Drag-and-Drop

ClarisWorks is one of the few full-fledged word processors on the market that works superbly with System 7.5-or-later's Macintosh Drag-and-Drop feature. With ClarisWorks, you can do more than drag text around within a word processing document; you can drag text *between* documents — even documents belonging to different modules. You can, for example, drag text from a word processing document and drop it into a drawing. You can also drag text and pictures to the Desktop (to create text and picture clippings) and, if you have other Drag-and-Drop-aware programs, you can drag text and pictures from ClarisWorks directly into those programs — and vice versa.

Here' s the catch. You only get all these slick drag-and-drop features with ClarisWorks 4.0v4 — earlier versions (including the unrevised 4.0) only offer

partial drag-and-drop support. With the earlier versions, you can drag graphics or text *into* a ClarisWorks window (from a Drag-and-Drop-savvy program). But you *can't* drag anything *out* of a ClarisWorks window, even into another ClarisWorks window. Weird.



The wonderfulness of ClarisWorks Click-and-Drop

Perhaps even more useful than ClarisWorks' drag-and-drop editing it its "click-and-drop" feature for moving text around.

It works like this. You highlight some text. You move the cursor to a new spot — and you ⌘-Option-click. The highlighted text instantly jumps to the new location (see Figure 17-37).

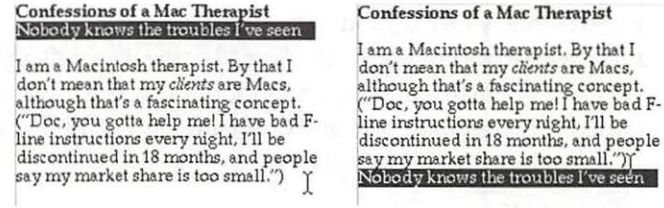


Figure 17-37
ClarisWorks bypasses the cut-and-paste routine with its secret text-moving click trick. Highlight text (left), then ⌘-Option-click. The text moves (right).

Claris argues that this shortcut is actually even more useful than Drag-and-Drop because it's easier to move text long distances. For example, you wouldn't want to move some text from page 1 to page 35 by dragging — but it's easy to scroll and then click.

That amazing Font menu

One thing that's cool about ClarisWorks is its Font menu, which displays each font name in the actual typeface. One thing that isn't cool is that, therefore, you can't read the names of symbol fonts like Symbol, Zeal, or Zapf Dingbats — you see only a string of symbols in your menu!

The trick: Just press Option as you pull down the menu. Every font name will appear in the usual Chicago font, as they would in any other program.



But wait — there's more! Free book winner Chris Tiee Chochoni Boboni stumbled onto what Claris says isn't a bug, but a feature. If you press Option *after* pulling down the menu, each font in the menu your mouse touches instantly converts back to Chicago, leaving the others alone.

For example, if you open the Font menu and move your cursor to what looks like the Symbol font, press the Option key — the font's name, Symbol, appears instantly in normal Chicago.



In fact, the same trick works in reverse. When you pull down the Font menu with the Option key pressed, every font's name appears in the Chicago font. But, when you *release* the Option key, every font your cursor touches changes

back into its WYSIWYG, own-typeface mode. Press Option again, and the font's name switches back to Chicago yet again!

(Clearly this is part of Claris' core programming — FileMaker Pro and ClarisImpact 2.0 exhibit the same behaviors.)

How to set up your default fonts



If you're still manually selecting your favorite font every time you begin a new document in ClarisWorks, it's time to create your ClarisWorks WP Options document.

In other words, create a new word processor document. Change the font to something you like. (Change everything else while you're at it — the margins, the line spacing, and so on.) Choose Save from the File menu. In the next window, click the Stationery button. Give your new document the name "ClarisWorks WP Options," and save it into the Claris folder (inside the System folder).

From now on, every time you create a new word processing document, it will have the font you want.

By the way, you can also create stationery default documents for the other ClarisWorks document types. Follow the same steps; but in place of the WP (for word processing), type **GP** for graphics, **DB** for database, **SS** for spreadsheet, and so on — for example, **ClarisWorks GP Options**.

(A related trick: Put a macro file named ClarisWorks Macros in the Claris folder inside your System folder. ClarisWorks will automatically load these macros when it's first opened.)

SIMPLETEXT: AMERICA'S README MACHINE

Don't give us grief: SimpleText is a word processor, and it was probably the *first* Mac word processor you ever used. It comes with every Mac — heck, it comes with every *program* you can buy. It was originally called TeachText, because its primary purpose was to let you read Read Me files (text files containing last-minute information about a piece of software), which, we gather, are meant to *teach* you a few critical lessons.

TeachText, the older program, shows only one font: Geneva 12. It can open only one document at a time. But it only takes up 39K on the disk, it can print, and you can actually word process in it (as long as you can contain your thoughts to the 32K document length). Remember *that,* PowerBook fans, when you're up against the memory wall en route to Cincinnati.

And then there's SimpleText, heir to TeachText. This program serves the same purpose as TeachText. However, it's been substantially enhanced (and tripled in size). In SimpleText, multiple fonts and sizes can appear in the same document; you can open more than one document at once; it can read back

text to you in a variety of voices (see Chapter 23); it offers Macintosh Drag-and-Drop (see Chapter 1); and you can record (and store) one sound with each document, if you have a microphone.

Unless we state otherwise, all of the following tricks apply to SimpleText as well as to TeachText.

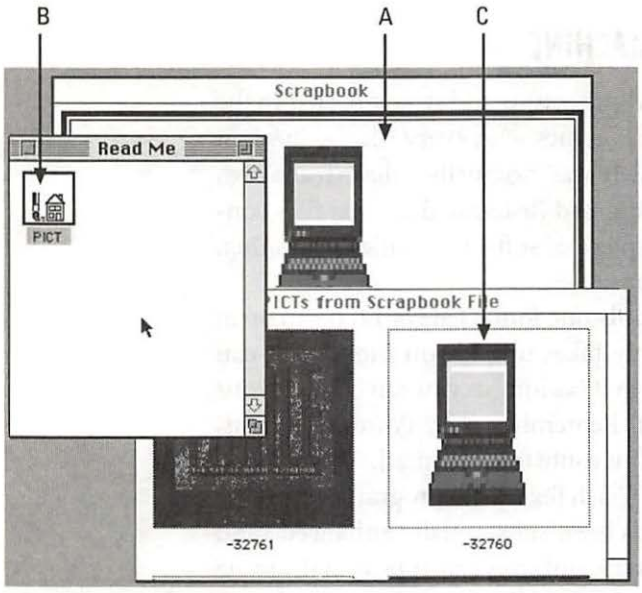
SIMPLETEXT SECRETS

Graphics? In SimpleText!?

Yes, indeed! Of course, you can't *paste* anything into a SimpleText document. (A beep is all you get.) It takes a few extra steps, but you *can* embed graphics into a SimpleText document. (This works with TeachText, too.) Keep this in mind when you decide to start your own software company.

1. Type your SimpleText text. At each point where you want a graphic to appear, type an Option-space. Save the file when you're finished.
2. Create your graphics. Paste them into the Scrapbook.
3. Launch ResEdit (see Chapter 21). Open your SimpleText document. You may be asked if you want to create a *resource fork* for the document; click OK.
4. Open the Scrapbook (from the menu). Copy the first graphic you want to put into the SimpleText file. Click the SimpleText file's window and paste your graphic (see Figure 17-38). A new icon appears in the SimpleText window, called PICT. Double-click this PICT icon.
5. From the Scrapbook, copy the next graphic. Paste it, too, into the "PICTs from ..." window — repeat until you've transferred all your graphics (see Figure 17-38).
6. Click, once, the graphic in the "PICTs from ..." window that will be the first one to appear in the Read Me file. From the Resource menu,

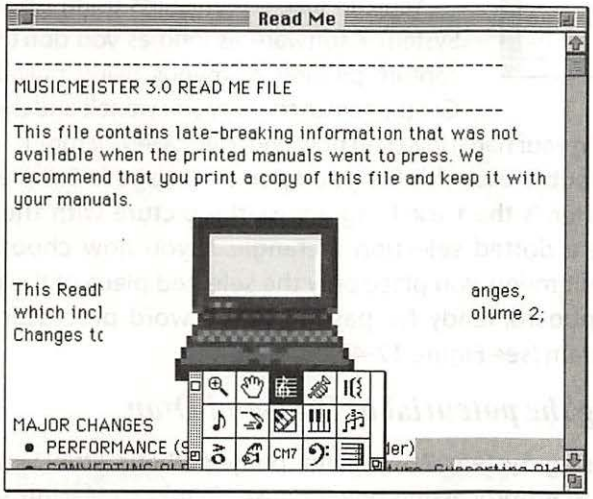
Figure 17-38
(A) Copy each graphic out of the Scrapbook. Then double-click the PICT-resource icon from the TeachText document (B) and paste each copied graphic into the "PICTS from" window (C).



choose Get Resource Info (⌘-I). Type **1000** and close the Get Info window.

7. Repeat Step 6 for each remaining graphic — but increase the ID number each time. The second graphic should be 1001; the third, 1002; and so on.
8. Choose Save from the File menu. Quit ResEdit. Open your doctored SimpleText file. You'll see that the graphics are piled right on top of the text (Figure 17-39).

Figure 17-39
Now you have to make space for the graphic manually by pressing Return a number of times.



9. Push the text that's *after* the graphic (that is, that came just after your Option-space) downward by pressing Return enough times to make room (Figure 17-40). Save your SimpleText document. You did it!

Edit the uneditable documents

Ever noticed this? When you double-click SimpleText, it opens a new blank document and lets you word process as though it's a very mini-Word, or something. You can drag through text, cut, copy, paste, and so on.

But when you open a Read Me file that comes with a program you buy, you're usually not allowed to edit it or copy from it! You can only read or print it.

The Secret lies in the four-letter *type* code for the document (see Chapter 16). There are two kinds of SimpleText documents: one that can't be edited and one that can. All you have to do is change the non-editable type code to the one that can be edited.

TRUE FACT

GOT A PROBLEM?
CALL C-E-S-S-P-O-O-L

Today's spell-checking software is certainly more sophisticated than it was five years ago, but it's still far from perfect. Even the best spelling programs choke when they encounter certain proper names and technical terms. Still, the erroneous suggestions spit out by a word processor's spell checker sometimes seem downright suspicious. Case in point: Free book winner Tom Johnson was proofing a ClarisWorks document when his spell checker paused on the phrase "800-SOS-APPL" — Apple's toll-free technical support phone number. ClarisWorks flagged the phone number as having a questionable spelling and suggested, as an alternative, only one other word: *Cesspool.*

Figure 17-40
Making vertical room for your graphic the low-tech way.

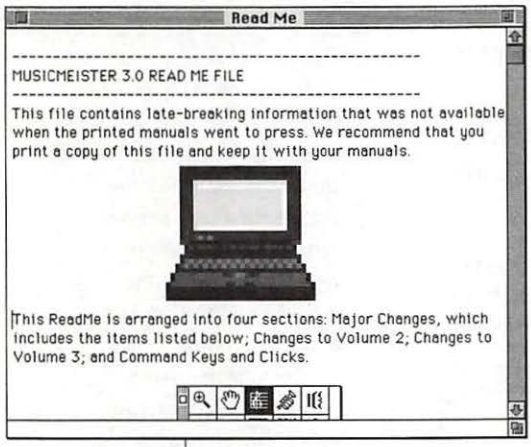
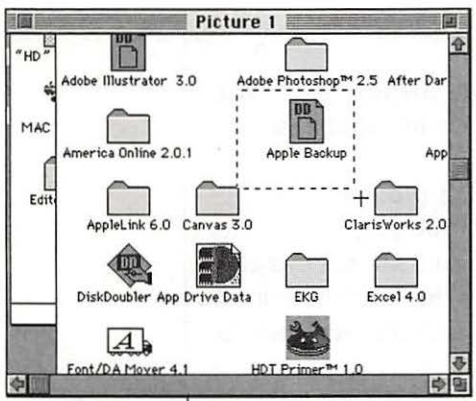


Figure 17-41
On the left: The familiar Read Me-style "Extra!" newspaper icon. This is a file whose type has been changed to ttro. (Stands for TeachText, read only, get it?) On the right, a normal TeachText document, like the one you'd create yourself. This one you can edit. Its type is TEXT.



Figure 17-42
After you're in SimpleText, drag across a portion of the graphic and then copy it.



You can do this with Drop•Info (included with this book). Drag the Read Me file's icon onto Drop•Info; in the dialog box that appears, change the file's type code to *ttro* (to make an uneditable document) or TEXT (to make it editable). (Capitals count.) When you close the window, you'll see your document's new icon (see Figure 17-41).

Cropping graphics in SimpleText

The best way to take screen shots (PICT graphics files of the things you see on the screen) is to use Flash-It, included with this book.

You *can* take screen shots using Apple's own System 7 software, as long as you don't want to capture pictures of menus being pulled down. Get the screen the way you want it and then press ⌘-Shift-3. On your hard drive, you now find a file called Picture 1.

If you double-click this file, you open the image in SimpleText, of all things. Here's the trick: Drag across the picture with the cursor. You create a dotted selection rectangle. If you now choose Copy from the Edit menu, you place only the selected piece of the graphic on the Clipboard, ready for pasting into a word processor or any other program (see Figure 17-42).

Realizing the potential of Drag-and-Drop

If you're using System 7.5 or later, puny, pathetic little SimpleText becomes a word-processing powerhouse. Thanks to Macintosh Drag-and-Drop, the following powerful text-manipulation features are at your command:

- Drag highlighted text elsewhere in a sentence, paragraph, or document to move it.
- Open a second SimpleText window. Drag chunks of text from one window to another, using the second window as a scratch pad.
- Press the Option key as you drag to make a *copy* of the highlighted text.

Roll credits! (SimpleText only)

While pressing ⌘ and Option, choose About SimpleText from the menu. You get to see some additional credits.

Chapter 18

Page Design

IN THIS CHAPTER:

- The basic principles of attractive page design
- Hints and tricks for PageMaker
- Quark Power-User Secrets
- Transforming your layouts into Web pages

Actually, page-layout programs and word processors aren't as drastically different from each other as they once were. Word processors can easily field the kinds of tasks that once demanded a PageMaker-type program: wrapping text around a graphic on the page, laying out text in multiple columns, creating reverse type (white lettering on black), and so on.

But as word processors have grown up, so have the page-layout programs: PageMaker and QuarkXPress, the most popular pair, as well as high-end multiple-platform powerhouses like FrameMaker. Anyone who wants to design and publish professional magazines, books, advertising materials, and other documents on the Mac still needs one of these page-design workhorses. Only page-layout programs, for example, can turn your magazine pages into *color separations,* which are needed to create plates for full-color printing on a printing press. Only page-layout programs are equipped to provide your documents with multiple underlying design layouts (master-page templates).

Every week we hear of another famous publication finally embracing the Mac and scrapping its age-old page-makeup routines — pasting wax-backed,

PAGEMAKER VERSUS QUARK

DP: Ohhhh, no you don't. We are not going to take up valuable page space rehashing this old PageMaker-versus-Quark argument. End of Dialogue.

JS: C'mon, c'mon. It's a classic confrontation! What are you, a wuss?

DP: Look, I've read the equivalent of this discussion in every Mac book and magazine ever printed. It's meaningless. No sooner have you finished a sentence than either PageMaker or Quark has a new version out. And your whole debate is obsolete.

JS: No way! Look, it's not about ***features.*** It's about ***philosophy*** —

DP: Well, I'm not going to get sucked into any PM-versus-Quark debate with you. Period.

JS: — and PageMaker's philosophy is: Make it easy and powerful. Quark's philosophy is to bury every feature, and then come up with a bad manual that doesn't tell you where they are. And if there's a more customer-hostile company than Quark anywhere —

DP: You're living in the past! Quark is ***light years*** more elegant than PageMaker. In PageMaker, you can't even do ***basic*** page design stuff, like group and lock objects on a page, or move them forward or backward a layer at a time. And in PageMaker, you can't set up master pages. I don't want to talk about this.

column-width vinyl strips onto page-sized cardboard sheets on which the designer's blue pencil lines indicate where each slab of type is to go.

PAGE-LAYOUT PRINCIPLES

Because much of page layout involves typography (and good editing), we encourage you to read ahead to "The Non-Typographer's Guide to Type" in Chapter 24.

Those Chapter 24 guidelines (kerning, type tips, hyphenation, and so on) should carry just as much weight in page layout. More, really. As for page *design*, here are some additional hints that can go a long way toward ensuring that your documents look good.

Two font families, three at most

With 10,000 fonts at your disposal in the Macintosh world, we can understand the temptation to go type crazy. But the best page designs rein in those madcap font instincts. One possible guideline: Choose one *serif* typeface for the main body text, and one *sans serif* font for headlines, captions, and pull quotes.

A serif font, like the one you're reading, has tiny ledges at the edges of the letters; Times, Palatino, and New York are some examples. A sans serif font, as shown in Figure 18-1, has no such *serifs*, as they're called. Helvetica and Avant Garde are sans serif fonts.



Figure 18-1
The top font shows the little serifs on the ends of each stroke. The lower font is without serifs — or, in French, sans serif.

This doesn't mean that you can't use variations. For example, if you choose Futura (a great-looking sans serif face) as one of your two families, you may find that Futura Extra Bold looks good as a headline and Futura Light is perfect for little captions. That's all within the realm of good taste.

The point is that a little consistency gives your self-published documents the appearance — or just the illu-

sion — of having been thoughtfully designed and having some thematic tie-ins in its look.

Page grid

Look at a newspaper or a magazine. You'll discover that behind the articles on every page, almost every publication has an invisible set of columns that determines where text flows (see Figure 18-2).

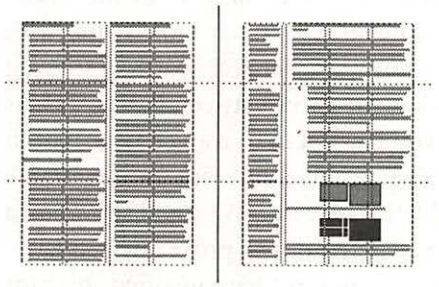


Figure 18-2
In PageMaker, you can add guides to the master page by dragging them "out of" the rulers at the edges of the screen. They form the basis of the underlying page grid. In this example, the four underlying columns are combined in different ways to create different page effects without losing a feeling of consistency.

But, if a magazine has a *page grid* of five very thin, invisible columns, that doesn't mean that every page will have text in five thin columns. The designer is allowed to combine column widths and still remain within a tasteful framework. An editorial page may have two columns, for example: one that's *two* invisible columns wide, and another that's *three* invisible columns wide. A Letters to the Editor section, on the other hand, may flow its text in all five thin columns per page.

In any Mac page-layout program, you create these invisible background columns using nonprinting *guide lines*. Generally, you place these guide lines on a master page — a special electronic page whose elements underlie the contents of every *actual* page in your document (see Figure 18-2).

In defense of the ragged-right margin

One trademark feature of professionally typeset publications is a justified right margin — where the right mar-

JS: Got news for you: PageMaker 6.0 nuked ***all*** of those old drawbacks. You can create up to 256 master pages in a PageMaker document. And it's still easier to use.

DP: Well, Quark's got Xtensions. Little plug-in miniprograms that add some pretty incredible features.

JS: PageMaker's got Plug-ins. Same thing, but they're ***free***. You don't have to fork over hundreds or even thousands of bucks for them.

DP: They're ***not*** the same thing. Xtensions add qualitative, brand-new features; PageMaker's things are just macros.

JS: You've been writing too many "...For Dummies" books.

DP: Now what's ***that*** supposed to mean?

JS: Look, the newest PageMaker Plug-ins add all kinds of additional features. Have you seen the HTML Author plug-in? It allows you to export PageMaker documents as HTML-tagged text for publishing on the World Wide Web. Try doing ***that*** with QuarkXPress.

DP: OK, I will! I'll get one of the Xtensions that do that. Besides, Quark is still way better for high-end color work; it's much better than PageMaker for separations and trapping.

JS: Was. PageMaker 6.0 has automatic trapping and virtually matches Quark's high-end color capabilities.

gin is a clean, crisp vertical line. Take a look at magazine and newspaper columns and you'll see what we mean. And in virtually all word-processing and page-layout programs, turning on justification is as simple as clicking a button.

Our advice: Don't turn on justification thinking it will make your document look more like *Time* magazine. Actually, forced justification can make your document harder to read and make it look less professional.

You see, unless text is hand-tweaked to fit into those nice clean columns, justified text can look awful, with gaping stretches of white space between words or — even worse — goofy, awkward spaces between letters. This is particularly true if you happen to be using a large font in narrow columns. The justified line breaks can wreak havoc on word and letter spacing. (We could show you a PC-produced club newsletter or two prove our point.)

So our rule is this: If you must have justified columns of text, be prepared to adjust the kerning (the spacing between individual letters) to get an eye-pleasing fit. (Programs such as QuarkXPress and PageMaker allow you to adjust overall letter and word spacing, called *tracking*, as well as the space between individual characters.) You may even need to change or omit a word here and there to make everything fit properly.

Frankly, we think there's too much ugly justified text in this world.

DP: Did you say high-end? PageMaker doesn't even support two-color gradient fills! Not exactly a high-end feature. We're talking ClarisWorks-level stuff here!

JS: I can't believe we're discussing these minute differences. ***Basically,*** these programs have become almost identical. Whatever Quark had, precision, the Measurements floating palette, drag-and-drop libraries — PageMaker 6.0 can finally do all the good stuff Quark 3.32 does.

DP: Ah, but you haven't seen Quark ***4.0.***

JS: Yeah, but ***you*** haven't seen PageMaker ***7.***

DP: ***Now*** do you see why I didn't want to get into this?

Break up the text

Our definition of a boring page design is one that, if you squint at it, the page seems to be a wash of unbroken gray. Do what you can to break up vast, dull stretches of body text. Use headlines. Use *pull quotes* (the striking large-type quotations from text that are often set in their own boxes in the middle of pages — you've seen them in innumerable magazine articles). Use subheads. You can check out this very book for some examples of these devices. We've done our best to keep the pages interesting by using sidebars, graphics, and headings — such as the one that follows this sentence.

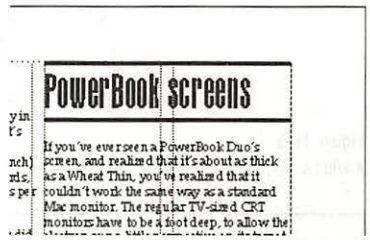
Use rules

A rule, in this case, doesn't mean a law: It means a straight line. Every page-layout program lets you draw lines on your electronic pages: thick, thin, horizontal, vertical, even in parallel sets.

Here again, look at the Sunday magazine section of your city's newspaper. You'll see how a horizontal rule is used to set the masthead apart from the articles; another may be used between columns of an article; a fat one may separate the title of the article from the body (see Figure 18-3).

Not every publication needs to have rules. But there's no question that rules are one of the page designer's most fundamental design elements.

Figure 18-3
Judicious use of horizontal or vertical rules helps break up a page and makes certain elements stand out.



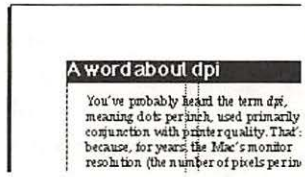
Reverse type

Okay, maybe reverse type (white lettering on black) has been a little overused recently. And reverse type uses more ink than black-on-white, and on cheap paper, it sometimes bleeds a little. But we still run across striking uses, and it's almost always a refreshing break from whatever normal type surrounds it.

In most programs, setting up reverse type is a two-step process. First you make the text itself white. Then you have to draw a black box behind it.

Here's a useful trick: In both PageMaker and Quark, you can set up a very fat *rule* for use as the black box. Set the rule to be very fat — 40 points, for example — and to be drawn above the paragraph. (In PageMaker versions before 5.0, your thickest rule can only be 12 points, so you may have to define rules both above and below the text, each set to the maximum.) Then define the whole thing as a style that you can apply to any headline with a single click (see Figure 18-4).

Figure 18-4
Set up a style that automatically reverses text. Instead of having to draw a black box by hand, let the program create fat rules for you.



Widows and orphans

A *widow* is a line of text all by itself, separated from the rest of its paragraph. On the other hand, an *orphan* is a line of text all by itself, separated from the rest of its paragraph.

If it sounds like there's some confusion among terms, you're right. We looked up these terms in several prominent style books, and guess what? The

authors can't even agree on how they disagree! Several use the terms synonymously. Several think that a widow is a solo line of type at the *top* of the page, separated from the previous page; several think that's an *orphan.* On the other hand, some people call an orphan a lone *last* line on the page, split apart from the remainder of the paragraph at the top of the next page.

We vote for the following distinction (which nonetheless doesn't make it right): A widow is a stray line of type at the top of a column or a page — the last line of a preceding paragraph. It's best avoided, either by editing the text before it or by manipulating the type or line spacing.

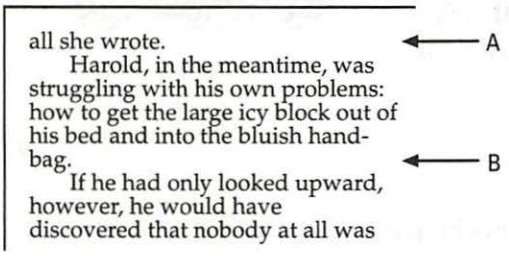


Figure 18-5
A widow (A) and an orphan (B). Or quite possibly, vice versa.

An orphan, on the other hand, is a single *word* on a line by itself. (We mean on the same page; if it were on a different page, it would *also* be a widow!) An orphan, by this definition, isn't necessarily objectionable. Still, some layout pros try to avoid orphans if they are very short or only the last syllable of a hyphenated word. (Figure 18-5 makes this clearer, or maybe not.)

Indents

Now that you've graduated beyond the manual typewriter, using five spacebar clacks to represent a first-line paragraph indent doesn't quite cut it. First of all, as you'll find out in Chapter 24, the spacebar does a terrible job of lining up text (it looks fine on the screen but never works in the printout). Second, five spaces isn't even an appropriate amount of space.

Most people we know are in the habit of using the Tab key to indent the first line of a paragraph. And that's fine, although we find the half-inch default tab stops in most word processors to be a tad large. It's better to use your word-processor or page-layout program's automatic first-line indent feature. (Actually, *most* people we know are in the habit of using *open spacing* — see the next item — and don't indent at all.)

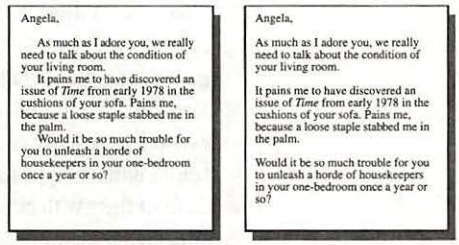
Actual publishers measure the first-line indent based on a unit of measurement called the *em space* (the horizontal width of a capital M in the font and size you're using). They set the indent to be a certain number of em spaces.

How to start a paragraph

This pointer has less to do with page layout than it does with basic business-writing protocol. You have essentially two choices when you type a business

letter (or a Macintosh computer book): You can either begin each paragraph with an indented first line, or you can skip a blank line. This latter system is called *open spacing* (see Figure 18-6).

Figure 18-6
A tale of two spacing methods. At left: indenting each paragraph. At right: open spacing. Each denotes a new thought. Neither should be combined with the other.



Our suggestion here: If you decide to use open spacing, use your word processor's built-in feature for this. (It may be hiding in a paragraph-formatting command, called Space Before or something.) It's so much easier to edit a document where the program *automatically* inserts space between paragraphs — that *weren't* created with an extra press of the Return key — than to have to deal with 10 million double-Returns.

On the other hand, don't forget to turn those blank lines *back* into double-Returns (it's search-and-replace time) if you plan to e-mail such a document. In cyberspace, all paragraphs lose the "blank line before" status they may have had in your word processor.

Watch those line lengths

Pages with long lines of text and narrow margins are simply more difficult to read. Think about it: The wider you make a block of text, the further your eyes have to travel back and forth across each line and the more information your reader must take in with each sweep of the page. So, as a rule, keep your margins generous and your columns narrow.

How narrow? Well, the page designer's rule of thumb is that no column of text should be more than three alphabets wide. In other words, regardless of what font you choose for your text, you should not be able to type the whole alphabet more than three times in that font on a single line. If you can fit three alphabets or more on one line within a column of text, your column is too wide.

(Astute readers who've owned previous editions of this book may, at this moment, be smiling to themselves. They're realizing that this very book's previous edition violated the two-and-a-half-alphabets rule — a violation that has mercifully been remedied in this new edition.)

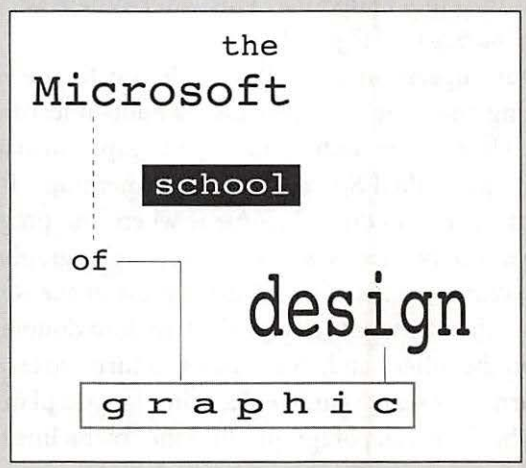
Keep your eyes open

For additional lessons in page layout and typography, we refer you to the world of printed materials all around you. Most of this stuff was designed by the pros (maybe you, O reader, *are* a pro, in which case we aren't addressing you) and can probably suggest some interesting ideas to you.

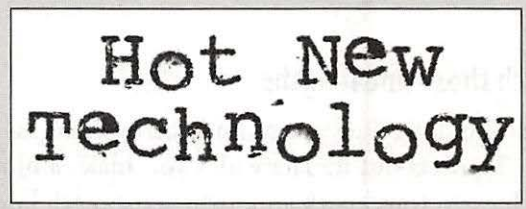
MACINTOSH SECRET

THE SECRET OF PAGE-LAYOUT FAILURE

Want to design a truly hideous ad or flyer? It's all the rage! Use an ugly, monospaced font (Courier or Monaco). Scatter words all over the page. Make each word a different type size. Connect them with bizarre straight lines. The effect should be something like the figure on the right.



Looking for an even trendier, high-tech effect? Take it a step further: Make each word look like it was typed on a really old, poorly-maintained Smith-Corona manual typewriter, as in the other example shown below. Make sure there are lots of broken, uneven characters and ink smears, making it look as if you are a poor slob who knows nothing about desktop publishing. The more high-tech your company, the cruder, sloppier and more poorly aligned the type should be.



So why would anyone create such disasters? You got us there — we have no idea. But as we write this, in the mid-'90s, these concepts of page layout are trendy. We see them everywhere in advertising — notably Microsoft's.

Then again, Microsoft was never exactly famous for its good taste. We just can't wait for this particular trend to fade away.

PAGEMAKER

PageMaker was the first significant page-layout program for the Mac. In conjunction with the Apple LaserWriter, it took the world by storm and put the Macintosh on the map. For the first time, designers who had always pasted up their pages manually could have an electronic pasteboard, striking, immediate printouts, and much greater design flexibility.

For a year or two, Aldus, the company that owned PageMaker before Adobe bought it in 1994, reigned supreme. Meanwhile, a rival upstart, QuarkXPress, appeared on the horizon and started gobbling away at

PageMaker's market share. Recently, however, Adobe has revved up PageMaker and has pretty much brought it back up to par with Quark.

Here are a few of our favorite PageMaker 6.0 Secrets. Most of them work with any version of the program from 4.2 onward, unless otherwise indicated.

PAGEMAKER SECRETS

Create evenly spaced duplicates of an object

Using the Multiple Paste command in the Edit menu, it's easy to create several evenly spaced copies of something. But you must know the exact horizontal and vertical distances by which you want to space the copies.

If you prefer to specify the amount of separation by eye instead, try this: Copy the object you want to duplicate (a horizontal rule, for example). Press Option and then choose Paste from the Edit menu. (Option-Paste puts a duplicate directly on top of the original.) Drag the new copy where you want it.

Then, each time you Option-Paste again, another copy appears, the same distance from the previous one as the first copy is from the original.

Make notes to yourself

Sometimes it's handy to leave notes to yourself: revision dates, client feedback, whatever. It's easy to do. Define a style for this text called, say, Reminder. Anytime you want to create a note to yourself, assign it to this style. Define a point size large enough that you can still read it when you zoom out to Fit in Window view.

Then, before printing, simply change the color of the style to Paper — that is, invisible — so that it doesn't print. (In PageMaker 6.0, the easiest way to do this is to ⌘-click the name of the style on the Style palette, which automatically opens the Edit Style dialog box. Then click Type and change the color to Paper in the Type Specifications dialog box.)

Old versions of PageMaker

PageMaker is notorious for making life difficult for your existing documents when you upgrade to a new version of the program. You can't open a 2.0 document with Version 4, and you can't open a 3.0 document with Version 5. The point is: You can't skip a generation.

To open a 2.0 document with Version 4.2, you must *first* open it in the intervening version — 3.0 — and save it under a different name. The situation is slightly better with PageMaker 6.0, which can open files created with versions 4.0, 4.2, and 5.0.g

In all cases, however, after you save a document from a newer version of PageMaker, its format is permanently converted. If you ever want to open it in its original version of the program, open the original that's still in the older format.

Default page setup

If you're working on a number of documents that have a similar nonstandard page setup, you can save yourself a lot of time by teaching PageMaker what its default page setup should be.

Close all documents and then choose Document Setup from the File menu (or Page Setup in versions earlier than 6.0). In the Page Setup dialog box, specify your preferred page size, orientation, and so on. Click OK.

From now on, each time you create a new document, its page setup matches your preferences.

Jumping views



Here's an incredibly useful tip that saves all kinds of trips to the menu.

If you ⌘-Option-click the page window, you jump to actual size. Then you can ⌘-Option-click a second time to zoom into Fit in Window view. (Add Shift to the mix to jump to 200 percent.)

Using this shortcut, you can stay in Fit in Window mode as necessary to get an overview of your document. Whenever you want to read some actual text, you can instantly zoom any page to actual size.

You may find it even faster to use PageMaker's keyboard shortcuts to accomplish all of the above — ⌘-1 for Actual Size, ⌘-0 (that's a zero) for Fit in Window, and ⌘-2 for 200 percent.

Speaking of Fit in Window, here's a quick-click shortcut for doing just that. Point to the page icon (at the bottom of the window) of the page that you want and Shift-click. You'll jump to that page in Fit in Window view (even if it's the one you're on).

Keyboard tool shortcuts

Here's how you can switch tools in PageMaker 6.0 without having to use the mouse. (You need a keyboard with function keys for these.)

Pointer Tool: Control-Shift-F1. (Then again, ⌘-Space *also* selects the pointer, and it's certainly easier to remember.)

Text Tool: Control-Shift-F2.

Ellipse Tool: Control-Shift-F3.

Rectangle Tool: Control-Shift-F4.

Line Tool: Control-Shift-F5.

Horizontal/Vertical Line Tool: Control-Shift-F6.

Polygon Tool: Control-Shift-F7.

Magnifier Tool: Control-Shift-F8.

Rotate Tool: Control-Shift-F9

Cropping Tool: Control-Shift-F10

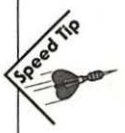
(Some earlier versions of PageMaker also allow you to switch tools using Control-Shift-F-key combinations, but the shortcuts aren't exactly the same as the ones listed here.)

Set the default font

Before you begin working on a new document, you can set the default font and paragraph information for all new text blocks you create.

With the Pointer Tool selected, choose Type Specs from the Type menu (or just press ⌘-T). Change the settings in the dialog box to your tastes and click OK. Then choose Paragraph (also in the Type menu) to preset your preferred paragraph settings.

Keyboard navigation keys



Don't bother with that mouse! Try these page-navigation shortcuts: ⌘-Tab moves to the next page and ⌘-Shift-Tab moves back a page.

To slide the page around without having to use the scroll bars, press Option. When you hold down the mouse button, the cursor changes to a hand-grabber tool. Drag it across the page window to shift the page on your screen.

Drag the object, not the outline

Normally, when you drag a graphic or text block, PageMaker shows you only the outline of the block while you drag. If you prefer, you can see the actual text or the actual detailed graphic: After you first click the box, hold the mouse button down, still, until the screen blinks. That's your cue that you can now move the object, whose detail will be visible as you drag.

Auto-positioning from the Scrapbook

When you ⌘-Option-Paste a page element from the Scrapbook back into a PageMaker document, the object jumps exactly into the original position from which it was copied or cut.

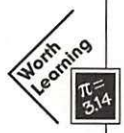
Keep this in mind whenever you cut or copy text or graphics for pasting into the Scrapbook for later use. If the item is correctly positioned when you cut or copy it, it will be correctly positioned when you ⌘-Option-Paste it.

Quick style selection

When you name your most frequently used styles, precede the name with a bullet (•, which you produce by pressing Option-8). That bullet character will force the style names to the end of the style list, where they're easy to find. (Example: •Body Times 10, or •Futura 18 Heading.)

You can also force a style name to the *top* of the list if you precede it with an Option-space (type a space while pressing Option).

A quick way to spot expensive mistakes



Before you send your finished document file off to be printed on an expensive Linotronic, here's a good way to get an overview (and to spot potential problems).

First, switch the view to Entire Pasteboard. Then, with the Pointer Tool selected, press ⌘-A to see all the page elements at once, even those you may have dragged off the page.

In this condition, you can easily spot remaining blocks of white text, which appear as empty text blocks; empty text lines, which show up as gray blocks; and any other wayward and unnecessary Pasteboard clutter. Every object takes time to image when printing day comes, so the less extraneous stuff there is, the smoother printing will go.

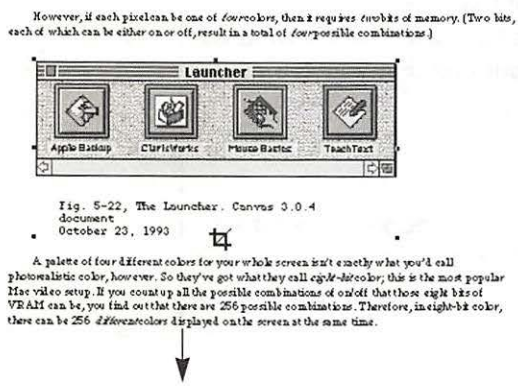
Graphics information panels

When you create your graphics, use a basic font like Courier to add some information at the bottom edge. For example, include the name and figure number of the graphic; its date, perhaps; and the name of the program that created it.

Then, when placing it into PageMaker, simply trim off this information from the bottom of the graphic using the Cropping Tool (see Figure 18-7).

When confusion over figure numbers arises or when a graphic needs to be revised, it's a simple matter to peek at this helpful information, saving you a good deal of otherwise-complicated record-keeping.

Figure 18-7
If you take the trouble to embed graphics information as part of the graphic, you'll be amply rewarded when deadlines and confusion descend. Just use the Cropping Tool to bring the lower panel into view when necessary.



Instant empty space, vertically or horizontally

Purists will snort at this technique. But then again, we suspect more people under deadline are pragmatists than purists.

PageMaker does something immensely clever if you've defined a paragraph style to leave blank space above it. If that paragraph appears at the top of a column, PageMaker *omits* the blank space. Usually, that's what you want (and it's one reason to use a page-layout program instead of word processors, which dumbly put the white space above the paragraph even if it's at the top of a page).

But suppose that you *want* a little white space there. Or suppose that you want to pop a little white space *anywhere,* maybe above or below a photo. Create a paper-colored rectangle. Copy it with the Pointer Tool, switch to the Text Tool, position it in a text block on an empty line, and paste it.

The rectangle will push down the text that follows it. To adjust it, set its leading to Auto (either in the Story Editor or by choosing Type Specs). Then, using the Pointer Tool, drag the rectangle's handle and size it as you like.

Notes on entering and exiting the Story Editor

You can open the Story Editor by pressing ⌘-E, of course, but it might be faster to triple-click anywhere in your document.

To *exit* the Story Editor, you have two ways to go back to your layout. If you press ⌘-E again, you're teleported to the page that corresponds to your cursor's last location in the Story Editor.

But what if you want to remain where you were before you ever *entered* the Story Editor? In that case, just close the Story Editor window. You'll be back where you started, even if you scrolled in the Story Editor.

Grab an object that's underneath another



It's frustrating to try to grab a rule, for example, that's covered up by a graphic object. At least it is until you know the Secret for selecting overlapping objects: ⌘-click. Each time you ⌘-click, you select the object another layer down.

The fabulous automatic scrolling trick

Here's a great trick for getting an overview of a document.

While pressing Shift, choose Go to Page from the Layout menu (the Page menu in earlier versions of PageMaker). The program begins to flash through your pages, one after another. When it gets to the end, it begins again with page one. To stop the slide show, click the mouse.

Bonus hint: You may want to change all the pages to Fit in Window view before you begin (see the next Secret).

Change the zoom levels of all pages at once

PageMaker has this famous quirk: When you zoom in or zoom out, you're only changing the size of the *current* page or spread. If you move on to the next page, you have to change its degree of magnification all over again.

But if you press *Option* as you choose the new zoom level from the View submenu in the Layout menu, you do, in fact, change the magnification levels of all the pages at once.

Define styles by example

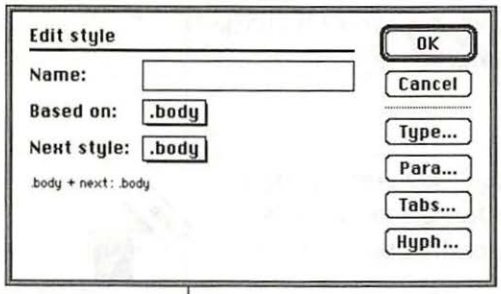


One nice aspect of Word and other word processors is that you can format a paragraph *first*, and then define it as a style simply by giving it a name. Afterward, you can apply all of that formatting to any paragraph just by calling up that style name.

You can accomplish the same fast-and-easy style-creation in PageMaker. Select the text you want to format. Then format the heck out of it: font, tracking, paragraph specs, whatever. When it's all ready to go, open the Style palette (⌘-Y) and then ⌘-click the words No Style.

Instantly PageMaker displays a dialog box in which you can name the new style (see Figure 18-8). All the type and formatting characteristics you set up are already entered for you.

Figure 18-8
Define a style by example. This is where you're finally asked to give the new style a name of its own.



Super-nudge keys

When an object or text block is selected, you can press the arrow keys to nudge it one point at a time in any direction.

But you knew that. Our Secret here is that if you press ⌘ while nudging, you nudge faster (*ten* points at a time).

Automatic TIFF compression

Here's a great way to reduce the size of PageMaker files containing large TIFF images: You can automatically compress the TIFF files as you import them into PageMaker 5.0 or 6.0. To trigger the compression, import the TIFF files using the standard Place command, but press the ⌘ and Option keys while clicking the OK button in the Place dialog box. For an even higher level of compression, hold down ⌘-Option-Shift while importing the TIFF files.

When you do this, PageMaker creates a new, compressed copy of the TIFF file and leaves the original untouched.

Automatic TIFF decompression



Suppose you use the preceding secret to compress the TIFF files you use in a PageMaker document, And suppose you throw away the original uncompressed versions of those TIFF files to save space. No problem — until you find you need to use those same TIFF files in a program that *doesn't* support compressed TIFF images. Now what do you do?

The answer: Reimport the images into PageMaker, this time holding down the ⌘ key. PageMaker will save a new, uncompressed version of the TIFF file.

QUARKXPRESS

We're not exactly sure why, but everybody calls this program *Quark*. That's the company name, not the product name.

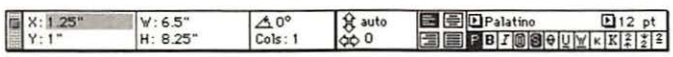
Anyway, Quark is about precision. It's also about the capability to design text boxes and links without having to actually have any text to play with. In other words, you can design a newsletter's fundamental shape in an empty Quark document. Then, as the stories come in each month or each week, you can just import them directly into the waiting text-box chains.

Measurements palette

One of the interface elements that first put Quark on the map (and that was soon imitated by PageMaker's programmers) is its floating palettes. The Measurements palette is a good example: With a couple of clicks, you can change the size, position, rotation angle, leading, or type style of any selected object.

You don't have to use the mouse to select anything on the Measurements palette. You can, for example, press ⌘-Option-M (for Measurements) to highlight the first field (the horizontal size measurement) in the palette (see Figure 18-9).

Figure 18-9
One keystroke takes you to the first field on the Measurements palette. Add the Shift key to the mix, and you jump directly to the font name.



From there, you can press Tab to highlight successive fields in the palette or Shift-Tab to go backward.

Our favorite, though, is to throw the Shift key in *with* the ⌘-Option-M keystroke. If you do that, you jump directly to the *font name* field. When you're there, you can change the font of the selected text by typing only a letter or two of the new font name. (Quark automatically expands what you typed; if you type *He*, the program will add *lvetica* for you.)

We hit upon this keystroke after much consternation; we were trying to teach a QuicKeys macro how to change a selection to a certain font automatically. Trouble was, QuicKeys can never *find* the Measurements palette. If the palette is moved, QuicKeys clicks blindly and futilely where it *used* to be.

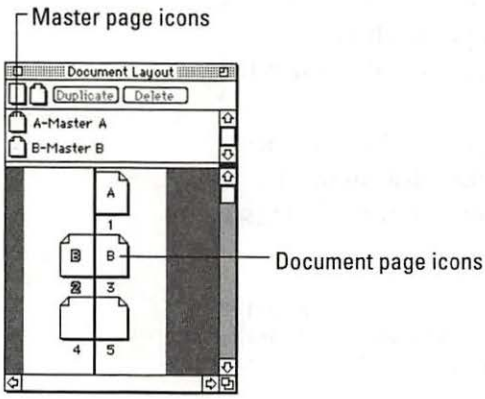
Then we taught QuicKeys how to type Shift-⌘-Option-M, plus the first letters of the desired font name. It was smooth sailing after that.

In fact, the Measurement palette is a natural for QuicKeys; any setting you make more than once — for example, rotating a certain kind of text block 30 degrees — is something that's much more easily and quickly typed by a macro than by you.

Document palette

Another of Quark's floating palettes is the handy Document Layout palette, where each page of your publication is represented by a page icon (see Figure 18-10).

Figure 18-10
The Document palette gives you a constant overview of the pages in your document. The Master Pages are indicated by icons at the top.



Here are a few things you can do with this palette:

- Double-click a page icon to make the document window jump to that page.
- Drag a page icon into a new position to rearrange your pages.
- Double-click a Master Page icon to edit that Master Page.
- Drag a blank page (top left of the palette) or a Master Page icon in between two existing document-page icons to insert a new page.
- *Option*-drag a page or master page into place to insert *multiple* new pages. The Insert Pages dialog box appears, where you can specify how many you want.

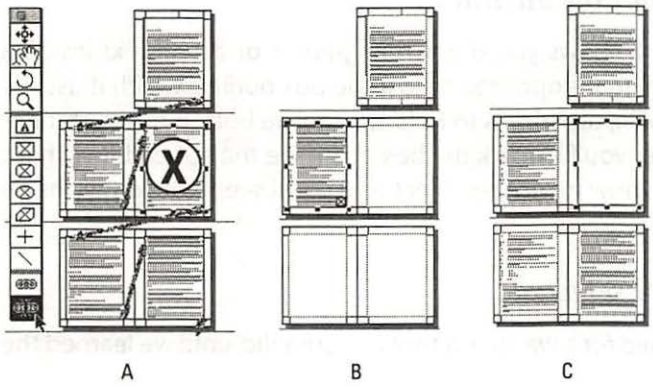
- Select any master or document page and click the Delete button to delete it. (In version 3.1, the palette has a Trash can instead of a Delete button, and in version 3.3, the button has been replaced by a page icon with an "X" through it. To delete pages, you select them and click the icon.)

QUARKXPRESS SECRETS

Take one text box out of the chain

Linked text boxes can be tricky if you're not familiar with Quark's quirks. Suppose that you want to take one page's text block out of the chain, for instance. If you do what you'd expect you ought to do — click that text block with the Unlinking Tool — you'll destroy the entire chain for the rest of the document (see Figure 18-11). And there's no Undo.

Figure 18-11
Here's a document set up with linked text boxes. If you want to take page 3 out of the chain (figure A), you may think to click the page with the Unlinking Tool (marked by the X). But what you'll get is figure B: a broken fragment of a chain. If you use our Secret, though, you'll get figure C, which is what you wanted all along.



To take just one text block out of the chain, *Shift*-click it with the Unlinking Tool. The rest of the chain will remain — it just will leave out the text block you clicked.

MACINTOSH SECRET
TYPING MEASUREMENTS INTO THE MEASUREMENTS PALETTE

When you're changing an item's size or position by typing new numbers into the Measurements palette, you don't have to type out inches. You can't exactly go wild with abbreviations and expect Quark to know what you mean, either.

Here's a table of exactly what Quark understands, measurement-wise:

You can type:	*and Quark will know you mean:*
"	Inches
p	Picas
pt	Points
cm	Centimeters
mm	Millimeters
c	Ciceros

You're *not* allowed to type *in* for inches or *pts* for points.

One more note: you can (and should) combine points and picas in the same measurement. To indicate 10 picas and 4 points, you can type *10p4*. (Remember: 12 points in a pica and 6 picas per inch.)

Multiple clicks to select text

As in any program, a double-click in text highlights one word. As in some word processors, Quark lets you *triple*-click to highlight a line.

There's more: A *quadruple* click highlights an entire paragraph, and five clicks selects the entire story.

Change the first page number

If you don't want to start numbering your document's pages with one, here's a quick way to access the Section dialog box to change this setting:

Click the page in the Document Layout palette whose numbering you want to change. Then click the words "Page 3" (or whatever it says) at the bottom of the palette (or the top of the Document Layout palette if you have version 3.1) as shown in Figure 18-12.

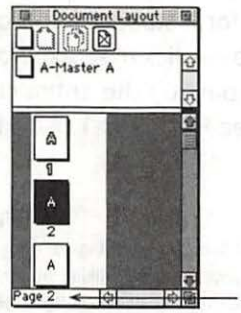


Figure 18-12
After a page is selected, you can change its starting page number by clicking in the strip indicated in this figure.

Drag the object, not the outline

Like PageMaker, Quark shows you the actual graphic or actual text inside a box that you're dragging (as opposed to just the box outline, which it usually shows). As in PageMaker, the trick is to hold the mouse button down, stationary, for a moment after you first click the box. You'll see the screen blink; that's your cue that you can now move the object, and you'll see all the detail inside as you drag.

How to keep a tool selected



We know you've wished for a way to do this! (We sure did, until we learned the secret.)

Normally, every time you use a tool that creates, links, or unlinks something, Quark switches you back to the Item Tool the instant your finger is off the mouse button. But, if you *Option*-click a tool, it stays selected until you click another tool.

Instant switch to the Item Tool

Regardless of which tool is selected, pressing ⌘ switches to the Item Tool for as long as you press the key. That's a handy shortcut when you just imported a graphic, for example, and now want to move it slightly.

Automatic "Continued on page 4" notices

Quark lets you create this kind of *jump line* automatically. It's smart, too. If the continuation of the article is moved to a *different* continuation page, the jump line that refers to it is updated automatically.

To create a jump line at the end of a column or page, create a new text block that overlaps the main text of a story. Type **Continued on page** and then press ⌘-4. Quark automatically fills in the correct page number (if you have, indeed, linked the story to a text block on another page).

On that continuation page, you can easily create a "Continued from" notice. Again, create a small text block overlapping the main story. But this time, type **Continued from page** and then press ⌘-2 (see Figure 18-13).

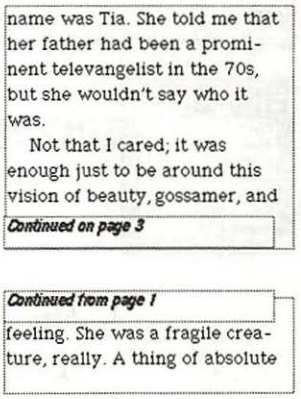


Figure 18-13
Let Quark fill in the page numbers automatically. Type the text you want at the end of one column (top) into a separate little text box. Do the same thing where the story continues (bottom).

One-shot Symbol-character typing

Quark has a handy keyboard shortcut (only one keystroke) that switches you to the Symbol font for one moment, which is ideal for popping in a single character in that font. It's ⌘-Shift-Q. The next character you type will be from the Symbol font. The next character after *that* will be in your original font.

You can switch from one character to the Zapf Dingbats font, too. That keystroke is ⌘-Shift-Z.

How the heck to turn off Facing Pages

It's easy to turn a single-sided document into one with two-page spreads: Open the Document Setup dialog box (File menu) and turn on Facing Pages.

To turn *off* Facing Pages after you turned it on, however, is trickier. Quark dims the check box so that you can't get to it. The solution is to delete all the facing *master pages* first. Then you can turn off the check box.

Quick access to reverse type

Exactly as we pointed out in our general page-layout Secrets, the easiest way to create white-on-black (reverse) type is to define a style. In Quark's case, however, you have even more control over the result. We thought we'd spell out the process here.

Figure 18-14
The first step to creating easy reverse type in Quark.

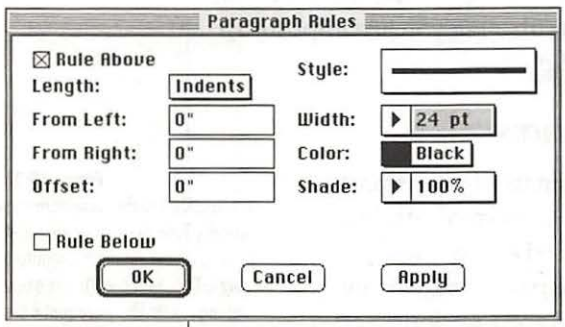


Figure 18-15
Using the Colors palette, turn the text white so that you can see it.



Chapter 3:
The Pre-Nixon Years

Start by choosing the type style you want for the text. Now choose Rules from the Style menu. Click the Rule Above check box in the resulting dialog box. The box expands to look like Figure 18-14. Choose an appropriate Width (they actually mean height for the rule).

If you leave the Offset at zero, you get the baseline-hugging effect shown in Figure 18-15. (An Offset of, say, -2 points better centers this text in the rule.) Click OK.

Then open the Color palette (View menu). Click the Text icon (the little A in a box) and click White. The text is white on the dark rule (see Figure 18-15).

Finally, to define this setup as a style, just choose Style Sheets from the Edit menu. Click New, give the style a name, and click Save. Next time you need this nice-looking reverse-type effect, just select the paragraph and select the style you defined from the Styles palette.

Finer nudging

Exactly as in PageMaker and other graphics programs, pressing an arrow key moves any selected object one pixel in the corresponding direction. In Quark, however, pressing Option and the arrow key makes the movement much finer — tenths of a point. (The Item Tool must be selected, of course.)

Page navigation from the keyboard



This is a *great* trick. You probably already know that you can press the Page Up and Page Down keys on your keyboard (if yours has these keys) to jump one *screenful* backward or forward in your document.

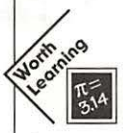
But if you press Shift, too, you move by *pages.* That is, Shift-Page Up shows you the top of the previous page. Shift-Page Down jumps to the top of the next page. These are excellent shortcuts for skimming through your document (when you're looking for the beginning of a new section, for example).

Grab an object that's underneath another

We mentioned this one in our PageMaker Secrets, too, but the keystroke is different here. This is the trick to select an object that's covered up by other

objects. The Secret: Hold down ⌘, Shift, and Option as you click. With each click, you select the object another layer down.

Notes on dialog boxes . . . and Apply



Most of Quark's dialog boxes aren't actually dialog boxes — they're windows! They have title bars, which means you can move them anywhere on the screen by dragging the title bar.

The buttons in these dialog boxes are special, too. You can usually press them without using the mouse: press ⌘-A for Apply, for example.

This keyboard button-pressing isn't nearly as full-fledged a feature as it is in the Microsoft programs; you can't activate radio buttons or check boxes from the keyboard, for example. It only works with actual buttons.

In fact, ⌘-A is a particularly useful tool to learn. In the Formats dialog box, you can make a change and then "click" the Apply button to see its effect on the document before committing to it. When you press *Option* and click Apply, you enter "continuous apply" mode. That means that every time you change a number in the dialog box, you see its effect on the text in the document immediately. You don't even have to click Apply.

Oh, and one more thing: Use ⌘-Z while a dialog box is still open to undo all the changes you've made since opening the box. Now *that's* something they should do in all programs!

Secret message

Here's the smallest Quark Secret of all: Open the Quark Help window. Turn on Balloon Help and point to the word Quark. You find out that it's "a fundamental particle."

Buried treasures



Highlight any object in your layout. Press either ⌘-Option-*Shift*-K or ⌘-Option-Shift-Delete. (In versions before 3.3, it was ⌘-Option-K.)

Out walks Quark the Alien, antennae focused, making clomping footsteps as he invades your document. He takes careful aim with his ray gun and blasts your picture or text box into oblivion. (We know some editors who greatly enjoy importing a photo of their boss into a Quark picture box and then using the spaceman to vaporize the picture.)

Also, press Option and choose About QuarkXPress from the menu. Then ⌘-Option-Shift-click the window. Presto: a picture of the programmers!

Instant paragraph format copying



After you format a paragraph, you can instantly transfer that same formatting to any other paragraph with one click.

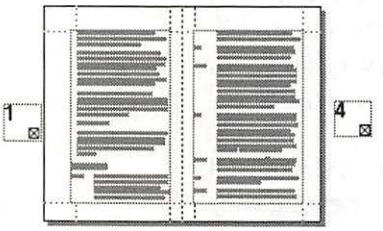
First, select the unformatted paragraphs. Then Option-Shift-click a paragraph that *has* been formatted. That's it!

Keep your page numbers straight

When you're designing a document that will ultimately be folded into shape, keeping track of the page numbers can be a mathematical nightmare.

It's much easier if you create tiny annotative text blocks, each showing what the page number *really* is, and pop them out on the pasteboard. Figure 18-16, we hope, makes this trick clearer.

Figure 18-16
Put floating text blocks out on the pasteboard. They help you figure out which page will be which when the document is finally printed and folded.



Zoom to your satisfaction

You don't have to make do with the standard degrees of magnification. With this shortcut, you can specify a *region* of the display to fill your screen, regardless of what amount of magnification is required.

Press the Control key. (This switches you to the Magnifying Glass, regardless of which tool is currently selected.) Then just drag diagonally across the area you want to see more clearly. When you release the mouse, the area you selected will fill your monitor. Quark's zooming capabilities max out at 400 percent. However, a number of companies (such as Extensis and A Lowly Apprentice Production) offer plug-in Xtensions that can boost magnification to 1,200 percent.

Faster EPS drawings



This is a neat Secret — but it got us into deep trouble.

An *EPS* (encapsulated PostScript) graphic has two parts. First, there's the invisible part, which consists of complex PostScript-language instructions to the printer. And, for the benefit of us humans, there's a PICT file (a graphic image) that appears on the screen.

The reason EPS graphics take so long to draw in Quark is that the program is attempting to interpret the PostScript instructions for the most accurate possible display. Here's a trick: Use the Measurements palette to rotate each EPS graphic some minuscule amount — .01 percent, for example. Quark is forced to display the PICT file instead of worrying about the EPS instructions. The graphic will always redraw much more quickly — especially if it's a complex one.

However, rotate the graphics *back* into position when you're ready to print. Otherwise, the PostScript interpreter aboard your laser printer or imagesetter will spend extra time performing all the recalculations necessary to render the image with the minute rotation. We forgot to mention this in earlier editions of this book and heard from more than a few furious readers who tried this little trick — and had to wait hours for their rotated graphics to print.

PAGE DESIGN AND THE WORLD WIDE WEB

Programs such as QuarkXPress and PageMaker are primarily designed to create documents that eventually get printed on paper — newsletters, magazines, books, and so on. In recent years, however, the growing popularity of the Internet has given rise to a whole new kind of publishing — online publishing. Log onto the Internet and you'll find hundreds of online journals, magazines, and newsletters published exclusively on the World Wide Web (see Chapter 28). And many traditional print publications (such as *Time*, *Sports Illustrated*, and *Macworld*) now have Web-based counterparts as well.

Of course, designing and laying out pages for a printed magazine is quite different from designing Web pages, which must be transmitted over telephone lines and viewed on a computer screen. While page-layout programs provide a relatively simple WYSIWYG interface for designing pages, Web publications must be encoded using *HTML* (Hypertext Markup Language), the standard language of the Web. (For more on using HTML and the Web, see Chapter 28.)

The good news for users of PageMaker and QuarkXPress is that the market is crawling with tools that convert existing PageMaker and Quark documents into HTML documents, ready for publishing on the Web. PageMaker, for example, comes with a plug-in called HTML Author, which lets you export formatted text as HTML. In the Quark world, Xtension programs such as BeyondPress (Astrobyte) and HexWeb XT (HexMac) let you turn Quark pages into Web pages without having to reformat every bit of text from scratch. These programs preserve much of the styling in your original documents and even convert the EPS and TIFF graphics in your layouts into GIF and JPEG files — the graphics formats most commonly encountered on the Web.

As Web publishing grows more popular, expect to see even better plug-ins that allow you to convert traditional layouts into Web pages.

Chapter 19

Number and Data Crunching

IN THIS CHAPTER:

- Spreadsheet design fundamentals
- Secrets of Excel
- Secrets of Quicken
- Secrets of FileMaker Pro and ClarisWorks

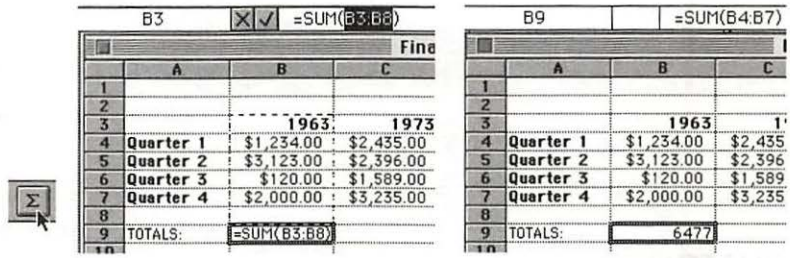
By this chapter title, we mean two things: spreadsheets and databases. More specifically, we pretty much mean Excel and FileMaker (and the ClarisWorks equivalents thereof). For more than 95 percent of spreadsheet buyers, Excel is the choice. As for databases, FileMaker is not only the best seller, but it's one we, frankly, can understand. For information on programmable relational databases such as Fourth Dimension, Helix, and Omnis, we merrily refer you back to your bookstore's Mac book section.

SPREADSHEET BASICS

We won't waste pages showing you the basics of setting up a spreadsheet. We assume you already know that you let the program do the math for you. Click in any cell in the spreadsheet; type either a number or a formula that adds up numbers in other cells.

You probably already know the value of the Sum button in Excel, which saves hours of picky typing. Adding a column or a row of numbers is as easy as one click, as shown in Figure 19-1.

Figure 19-1
You no longer add up figures by typing = **SUM( )**. Excel does this for you now. Click the cell at the bottom of a column and click the Sum button (left). Excel proposes adding up the entire column (middle). If it inadvertently selects the column head, as shown in the middle here, you must drag through the numbers you *do* want added (right) and then press Enter.



We're going to trust that you already know that when you copy and paste selected cells, Excel does a weird thing. Even after you paste, the shimmering outline *still* runs around the selected cells. It can be a little unnerving if you're used to Mac programs in which selected material gets *deselected* as soon as you click elsewhere. The point is, we suppose, to indicate that you can paste this same material again elsewhere. But, as you probably know, you can't get *rid* of that shimmering selection outline until you press ⌘-period (or make another selection, for example).

Naturally, you know how to create a chart: Highlight some cells; then click the Chart Wizard button. Then drag diagonally across the spreadsheet to indicate where you want the new chart to appear. The Chart Wizard dialog boxes appear.

If you want to customize the chart, keep clicking the Next button in the resulting dialog box. If you need something quick-and-dirty, and don't need to fuss with all the options, click the >> button. Excel fast-forwards through all those options and plops the finished chart into your spreadsheet.

The last thing we're sure that you already know is how to enter a batch of numbers into specific cells in an efficient manner. Highlight them *first*. Then, after you enter each number, press Enter, and Excel will select the next cell in the selection for editing, whether it's to the right of or below the first one. (If you don't preselect the cells, then pressing Enter leaves the first cell selected instead of advancing to the next.)

EXCEL SECRETS (AND SOMETIMES CLARISWORKS)

Instant completion of a row or column

The latest Excel is exceptionally bright about doing your typing for you. If you have *any* kind of sequence — Jan, Feb, Mar; 1960, 1965, 1970; 1, 3, 5, 7, 9 — you only need to put in the first two and let the program do the rest.

Here's how it works. First, type the beginning entry of the series (Jan, for example), as shown in Figure 19-2.

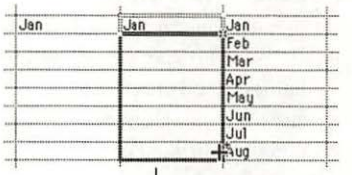


Figure 19-2
Type the beginning one or two entries in the series (left) and then click the cell. Grab the little square at the lower-right corner of the highlighting rectangle, and drag it down or across (middle). When you let go, Excel automatically generates the next items in the list.

Select these one or two cells. Then grab the tiny square handle at the lower-right corner of the selection rectangle. Drag it downward or rightward into new empty cells. Excel automatically fills in the logical next values!

If you enter 1:00 p.m. and 1:30 p.m., Excel will generate 2:00 p.m., 2:30 p.m., 3:00 p.m., and so on. If you enter 1st Street and 2nd Street, Excel will fill in 3rd Street, 4th Street, and so on. Type in Apartment 3 and Apartment 6, and you'll get Apartment 9, Apartment 12, and Apartment 15. This is one *smart* program.

For even more options when dragging out a series, try holding down the Control key while dragging the Fill handle, as described previously. Excel will present a pop-up menu of options that provide even greater control over how the cells are filled. For example, if you type *Mon* and *Tues* in the first few cells and then Control-drag downward, the pop-up menu that appears will let you choose between filling the remaining cells with all the days of the week or just weekdays, without Saturday and Sunday!



(ClarisWorks' Calculate menu offers a *somewhat* similar feature: the Fill Special command. Take a look — you'll see what we mean.)

Memory shenanigans

Excel thinks in *rows*, not in columns. Therefore, if you're trying to conserve memory, expand your spreadsheet downward instead of across.

Each additional cell you format takes up a little more memory, too. Don't bother to include blank cells when you apply fonts, sizes, and number formatting. Furthermore, don't get into the habit of clicking a row header to select the entire row for formatting; instead, drag-select only the 30 cells (or whatever) that actually contain data.

Along the same lines, if you need more white space between areas of numbers, consider widening a row or column *instead* of adding blank lines. Those blank lines take up extra memory.

TRUE FACT
INTRODUCING MR. SPREADSHEET

Ever wonder why Excel appears in the Application menu as *Microsoft* Excel?

It's the law, that's why.

Back in 1985, Microsoft personnel were strongly divided over what to call the new Macintosh spreadsheet program they had under development. The working name was Odyssey. But several other names were also under consideration, including Microsoft Plansheet, Number Buddy, and — believe it or not — Mr. Spreadsheet.

When the program was finally rolled out in May 1985 (at a press conference in Central Park's Tavern on the Green), it bore an altogether different name, one dreamed up by a Microsoft district manager: Excel.

This almost immediately resulted in a lawsuit. Manufacturers Hanover Trust operated an automated banking service also called Excel. Microsoft was accused of stealing the name. The outcome of the case: The program's official name had to be changed from Excel to Microsoft Excel.

And so, in harmony with that decision, the Application menu lists the program by its full name: Microsoft Excel.

The two personalities of the arrow keys

Spreadsheet-software designers have always faced a tough decision. When you press a left-arrow or right-arrow key, what should happen? Should the insertion point walk through the different characters in a cell exactly as it does in a word processor? Or, should it leap from cell to cell so that you can navigate through the spreadsheet?

In ClarisWorks, you specify which behavior you want in the Preferences dialog box. Excel, on the other hand, gives it to you both ways. It starts up in the latter mode (Enter mode), where the arrow keys select adjacent cells. If you press ⌘-U, however, you're in Edit mode. In this mode, the arrow keys move the cursor from side to side within *one* cell.

Keep in mind, though, that you don't *stay* in Edit mode; as soon as you edit another cell, you're back in Enter mode again.

In fact, here's another tip: When you're in Edit mode (where the arrow keys move the cursor one character at a time within a cell), press ⌘-arrow to make the insertion point jump one *word* per keypress, instead of one letter.

Several lines of type in one cell

Here's something we bet you didn't know that you could do: Type multiple lines of text into one cell (see Figure 19-3)!

Figure 19-3
Excel lets you wrap text within a single cell!

11			
12	Citibank CD (matures 2/96)	Citizen stock purchase, 12/90	Dad's pension plan benefits
13	2123	100	0
14	2145	102	0
15	2166	103	0

Here's the secret. Select the cells in which you'll want text to wrap. From the Format menu, choose Alignment (version 4) or Cells (and then click Alignment; version 5). A dialog box appears. Select Wrap Text and click OK. Now you can type into those cells; when you press Enter, the row height will change to accommodate the new text as necessary. (If you want to force a line break, press ⌘-Option-Return.)

That's *almost* all there is to it. There's a caveat: If you change the type style, the row height won't increase or decrease to accommodate the different font or size. You must cue it to do so. Do that by double-clicking the line below the row heading, as shown in Figure 19-4.

Figure 19-4
If you change the size of text, the row height won't change. To fix the situation, place the cursor on the line below the row heading (at left, just below row 12) and double-click. The row height changes as needed (right).

		(matures 2/96)	purchase, 12/90
12			
13		2123	100
14		2145	102

	Citibank CD (matures 2/96)	Citizen stock purchase, 12/90	Dad's pension plan benefits
12			
13	2123	100	0

The hidden Revert command

If you examine Excel's File menu, you may be disappointed to find that it has no Revert command, for use when you've made a mess of a file and want to restore the last saved version. Ah, but there *is* a Revert command — it's just hidden.



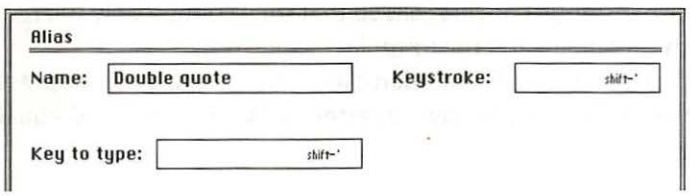
Simply use the Open command in the File menu and reopen the very same document that's already on the screen. You'll get a little alert box asking if you want to revert to the last saved version; you know what to do.

A word about curly quotes

Our advice on curly quotes: *Don't* use 'em in a spreadsheet. Even super-advanced spreadsheets such as Excel aren't smart enough to recognize typographically correct "smart quotes" in formulas. Anytime you use quotes in a cell (to designate a text entry instead of numbers, for example), Excel will choke on them.

If you have a program like QuicKeys that's set to convert regular uses of the quote key into curly quotes, define two QuicKeys within Excel's own keyset that *reverse* the effects of the Universal keyset. (Use an Alias-type QuicKey. Define a single quote to *type* a single quote.) See Figure 19-5.

Figure 19-5
This is the QuicKeys window where you define a QuicKeys Alias. It looks pretty silly here — you're asking it to type just what you've typed — but it's the right way to prevent curly quotes within a single program.



Or, don't use QuicKeys at all; use SmartKeys, included with this book, instead. Just click the control panel's application button to exclude Excel from the "quotification" feature.

Auto-size columns (ClarisWorks, too)



This is a great feature of both Excel and ClarisWorks, but it's hidden. If you double-click a column header line at the top of the window, the column will neatly snap to the exact size to contain the longest entry in the column (see Figure 19-6).

Here's a remarkable feature: If you've selected *multiple* columns, double-click any *one* of their header lines. Excel/ClarisWorks will resize *all* the columns to exactly contain their contents.

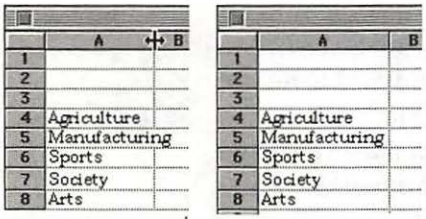


Figure 19-6
A double-click on the right-hand column header line (left) automatically resizes the column so that it just fits the text in it (right).

How to see where the page will be cut off

Unfortunately, under normal circumstances, you can't see where your spreadsheet's page breaks will be in Excel. You may be the victim of a rude surprise when you print out a large sheet and find that the last column didn't fit onto page one.

But here's a quick solution. In version 4, choose Display from the Options menu. (In version 5, choose Options from the Tools menu, and click View.) Now click Automatic Page Breaks and click OK. Then the page breaks will appear as dotted lines.

Paste only the values (ClarisWorks, too)

Here's an old chestnut that bears repeating. Normally, when you copy and paste cells, you simply create a new copy of the originals — formulas and all. It's often handy to ditch the formulas and just keep the results. To divorce the two, copy the cells and click where you want to paste them. Instead of choosing Paste from the Edit menu, choose Paste Special. In the resulting dialog box, click Values and click OK.

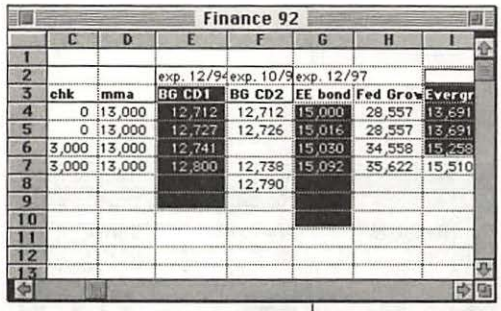
Instantly convert to values

Instead of using the Paste technique in the previous Secret, in Excel, you can also instantly convert cells so that they contain only the *result* of the formulas they contain (and the formula is wiped out).

Select the cells and then click in the formula bar (or press ⌘-U). Then press your F9 key (if you have an extended keyboard); or ⌘-equal sign (=) does the trick.

Select nonadjacent cells

Figure 19-7
Select nonadjacent cells.



You may already know that you can press the ⌘ key to select physically separate (noncontiguous) cells in Excel. This technique is great when you want to format a bunch of different columns at once — make them all bold, for example (see Figure 19-7).

The real secret, though, is that you can use this feature to create *charts* that only use certain lines of data. Remember, the Chart Wizard only bothers to plot the points whose cells you have selected.

Prevent Excel from turning 3-12 into March 12

Excel, in an effort to be helpful, automatically turns anything you type into a cell that can possibly be construed as a date *as* a date. If you type 3-12 into a cell, as soon as you press Enter, Excel displays *12-Mar.* That's all fine, until the day comes when you really *want* the cell to say 3-12.

The solution, discovered by free book winner Greg Brume, is quick and simple: Enter it as a *text string.* To do so, all you have to do is prefix the entry with an apostrophe (in other words, *'3-12*). The apostrophe doesn't actually appear in the cell — it does its magic behind the scenes.



Excel and fractions: Some nontrivial trivia

Here's an extension of the previous Secret. If you type 2/3 into a cell, Excel immediately reformats it as 3-Feb because it thinks you intended to type a date. Unless, of course, what you type *can't* be a date, such as 18/3; in that case, Excel leaves 18/3 in the cell as a text string.

But if you type a *zero* and a space in front (for example, **0 2/3**), then Excel realizes that you really mean a fraction. If you type **0 18/3,** therefore, Excel puts a 6 in the cell.

Excel's toolbar/palette continuum

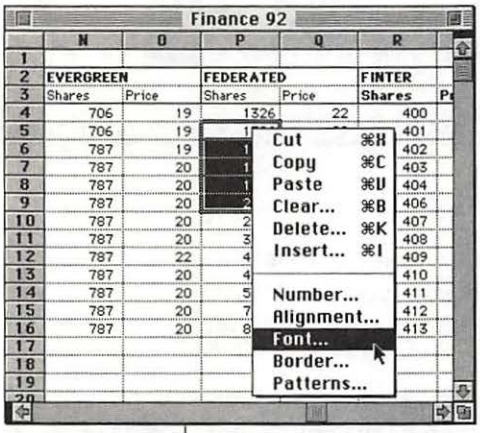
Excel has nine toolbars, and opening them all can make you feel downright claustrophobic. Fortunately, you can turn any one of those toolbars into a floating palette by double-clicking it. Drag any of the palettes to the edges of the screen and they become toolbars, anchored to the top, bottom, or sides of your monitor.

You can also press Control while clicking any Excel toolbar or palette to open a hidden Toolbar menu. This menu lets you selectively open and close

the toolbars you need — or jump directly to the Customize dialog box to create your own toolbars containing only those buttons you really use.

Instant access to the invisible menu bar

Figure 19-8
The Edit menu that springs out of nowhere.



If you press ⌘-Option and click a cell or selected region, you get a powerful, handy, pop-up version of the Edit menu springing out of your cursor (see Figure 19-8). Depending on what you click (a chart, a line, and so on), a different magical menu appears, listing appropriate editing commands. (In version 5, the Control key also makes the secret menu appear.)

In fact, we *prefer* these hidden menus to the actual menu-bar menus. First, one of these menus can appear anywhere you click, which is a godsend when you're editing a huge spreadsheet and you're miles from the top of the screen. Second, this isn't *really* the Edit menu. Its commands are gathered from several different menus, all the most useful commands stacked together into one handy place.

Save time: Don't bother finishing the parentheses!

Excel automatically adds a closing parentheses if you've typed an open parentheses as part of a formula. All you have to do is press Enter and Excel does the rest.

Use the F8 key for selecting regions

By F8, we mean "function-key 8" at the top of an extended Mac keyboard. (If you have a keyboard without function keys, such as the one on the PowerBook, you'll have to skip these shortcuts.)

When you press F8, you'll see the word EXT appear in the right half of the Excel status bar. This means you're in Extend mode. Wherever you click the mouse or however you use the arrow keys (or navigation keys such as Home or End), Excel will behave as though you're pressing the Shift key. What *that* means is that you're now selecting everything between the originally selected cell and the cell to which you're moving.

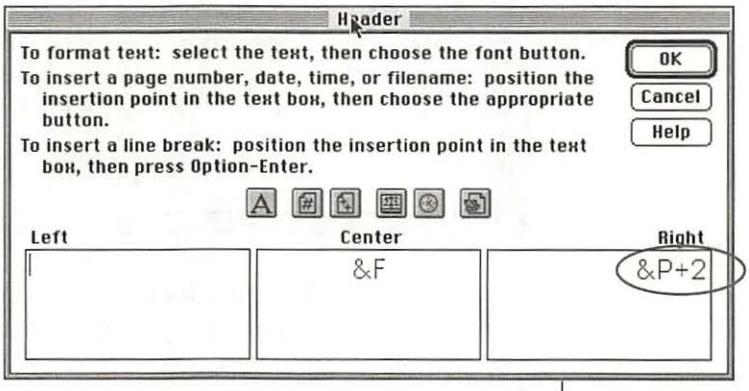
If you press *Shift*-F8, on the other hand, the word ADD appears in the status bar. Then you can drag across various regions of your spreadsheet. With each drag, you add new, noncontiguous regions to the selection, exactly as though you were pressing the ⌘ key.

Page-numbering tricks

Excel 4's method of numbering pages has never been a model of intuitiveness. You choose Page Setup from the File menu and then click Header. Then you click in the right, center, or left text boxes. Then you click the page-number icon (with the # symbol on it). The notation *&p* appears in the text box. This represents the page number. (This same interface is used in version 5 if you choose the Custom option.)

If you add a plus or minus symbol and an additional number (such as *+2* in Figure 19-9), then you can create a *page number offset.* That means you can force Excel to start numbering the pages with a number other than 1. (That's handy if you need to print out an insert for an existing report, for example.)

Figure 19-9
The circled notation means: "Start numbering my pages with the number 3, even though it's the first page."



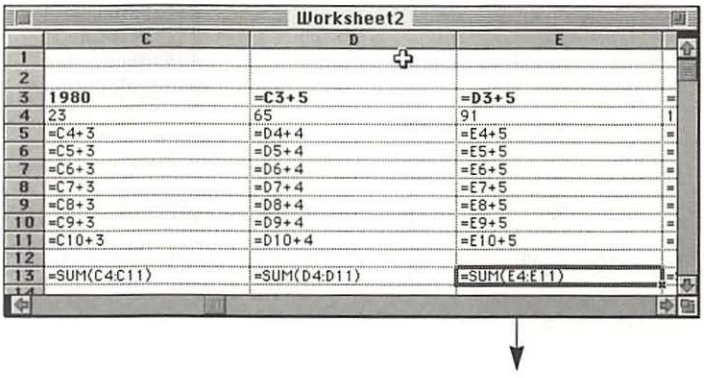
Whichever number you type here gets added to 1. So to start numbering with page 5, you put **&P+4** in this box. To start numbering with zero, use **&P-1**.

Show the formula in the cell

After you have typed a formula into an Excel cell and pressed Enter, you normally see only the result in the cell. If you'd rather have your entire spreadsheet display the formulas themselves, press ⌘-tilde (~). In a blink, every cell will show the actual formula instead of the result (see Figure 19-10).

Don't be alarmed: Excel widens the columns substantially to make room for viewing the longer formulas. Press the same keystroke again to restore your spreadsheet to its usual state.

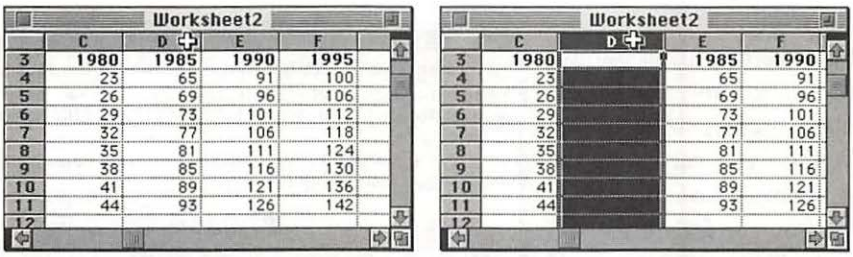
Figure 19-10
With one keystroke, you can make your spreadsheet show the formulas in their cells instead of the results.



Insert rows and columns

You may already know the Option-key trick for adding a row or a column: Just Option-click the Excel row or column *header* to introduce a new blank row or column (see Figure 19-11).

Figure 19-11
If you Option-click the header of column D, you insert a new blank column. All existing columns get shoved off to the right.

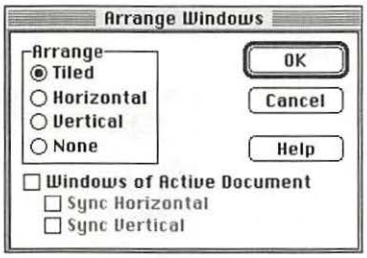


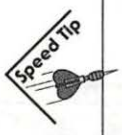
You can extrapolate this trick to perform some very useful stunts. The key is that Excel will insert a blank region identical to *any* group of selected cells. To insert a square of four cells, *select* a square of four cells while pressing Option. The four you select will be pushed to the right to accommodate the four new ones.

Select in Microsoft dialog boxes

Microsoft dialog boxes are especially handy because you don't have to use the mouse. You can usually type the letter — you don't even have to use the ⌘ key — that begins the choice you want (see Figure 19-12).

Figure 19-12
Type one letter of a button or box to activate it.





In the dialog box pictured in Figure 19-12, for example, you can see why T activates Tiled. But why is O the trigger for Horizontal? Because H is tied up by the Help button, of course!

Going on: V is Vertical, N is None. In the next case, we give up on the logic: The A turns on Windows of Active Document and they haven't used up W yet!

One corollary: In dialog boxes that have fields where you can type in information (such as the Print dialog box), you can't just type the individual keys. In those dialog boxes, you have to use the ⌘ key, too (⌘-O for Options, ⌘-C for Cancel, and so on).

Instant window resize

As in all Microsoft programs, you can double-click the title bar of a window to make it fit neatly on your monitor. That's a lucky shortcut if you've just opened a spreadsheet that was created on a much bigger screen. (If you've got System 7.5's WindowShade control panel, consider setting it to require *three* clicks to collapse a window so that it won't conflict with Microsoft's *two*.)

Stop Excel from stopping leading zeros

If you type a number that begins with a zero, Excel automatically lops it off. Type in ZIP code 06520 (New Haven, Connecticut), and Excel stubbornly displays it as 6,520.

Here's the solution. Select the row or column containing these numbers. From the Format menu, choose Number. In the text box, type **00000** (all zeros) and click OK. You've just forced Excel to display a minimum of five digits for every number in the selected row or column. (Alternatively, you can format these cells as text — probably a better idea for ZIP codes anyway, given the complexities of ZIP + 4 and Canadian formats.)

Use the formula bar from the keyboard

As all power users know, the less you have to use the mouse, the more efficient you can be. In Excel's case, you almost never have to use the mouse.

One seemingly prominent exception: To edit a formula, you have to click on the formula bar, right? Nope. Use the handy shortcut ⌘-U to jump up there. Then use the arrow keys to tiptoe through individual characters, or use the ⌘-arrow key to jump through words or cell names. Press Shift as you use the arrow keys to highlight text, and then press Enter when you're finished editing.

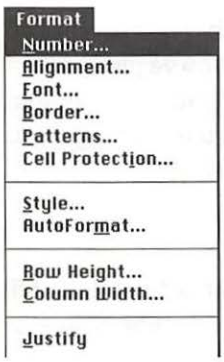
Turn Excel into Excel for Windows

We think this is one of the wildest Excel Secrets of all time: Press the slash key (/) with an Excel 4.0 (or later) spreadsheet open and suddenly, without warning, you're catapulted into — Windows!



More precisely, the program switches to emulating Lotus 1-2-3, the ancient but popular DOS spreadsheet. You get menus and dialog boxes with keyboard shortcuts indicated by a single underscored letter in the name of each menu and command. Instead of using the mouse, you can open a menu by typing the appropriate one-letter shortcut, á la Windows. Each command on each menu also has a one-letter shortcut (see Figure 19-13). The 1-2-3 emulation disappears as soon as you actually perform a command.

Figure 19-13
What's this? Excel for Windows? No. It's Excel 4.0 after you've popped it into Alternate Menu mode.

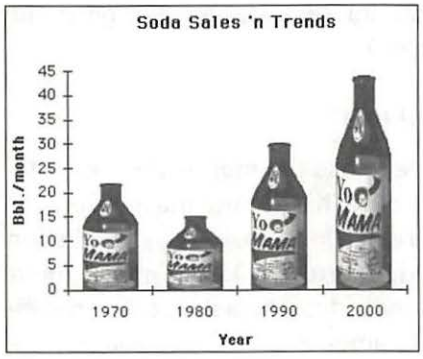


By the way, you don't have to use the slash key to jump into this Windows mode. The slash is Excel's default setting, but you can change it. Just choose Workspace from the Options menu, and, in the resulting dialog box, type a new key into the Alternate Menu Key field.

How to make those cool picture charts

You can use Excel to make charts that use icons as the bars of a graph, just like the pictographs you see in *USA Today* (see Figure 19-14).

Figure 19-14
Dress up your charts — just find a good graphic, select a bar, and paste away.



All you have to do is copy your chosen bar-graph picture; double-click your Excel chart; select the column you want (which, in version 4, requires a ⌘-click); and paste! Who knew?

Furthermore, just double-click a column to access a secret options box, where you can specify whether you want each picture to be *stretched* or repeated inside each bar.

Drag more data into a chart

So you've completed a slick-looking chart for a presentation — and then realize you have another series of data you need to include in the chart. You don't have to start over. With Excel 5, you can add a new data series to an existing chart by selecting the cells containing the series and dragging them *onto* the chart. The new data gets plugged into your chart automatically.

Lock out unused cells

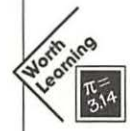


When you think about it, you usually use only a fraction of the cells that appear in a spreadsheet. You may have extra rows placed under the title of a chart, or extra columns between groups of data. So why not lock out all the unused cells? This way, you can use the Tab key to move between only those cells that are actually used in your document.

To do this, select the cells you want to keep editable. Choose Cells from the Format menu, click the Protection tab to open the protection options dialog box, and deselect the Locked check box. Then, choose Protect Sheet from the Protection submenu of the Tools menu to lock out all the *other* cells. When you return to your worksheet, the Tab key will take you only to the cells you left unlocked.

(You can add a password when you activate protection, if you want.)

The miraculous Forms command



If you use Excel to manage database-style lists, organized by columns, you can save yourself hours of scrolling by editing data using the Form command. When you choose Form from the Tools menu, all the fields in your database are displayed in a single dialog box, making it much easier to enter data. You can use this dialog box to search your data, too. Click the Criteria button, type the item you're looking for into one of the fields in the dialog box, and click Find Next.

Two great ClarisWorks spreadsheet shortcuts

No, the ClarisWorks spreadsheet isn't Excel — but then, it doesn't require 11MB of RAM and 70MB of hard drive space, either. And it certainly has charms of its own. For example, adding graphics or text to your spreadsheet is far easier than it is in Excel. Just click the appropriate tool, drag to create a text or picture for example, and away you go. That's the beauty of integrated software.

ClarisWorks offers a couple of neat navigation/cell management shortcuts, too:

- Once you've highlighted some cells, Option-drag to duplicate them (or regular drag to move them). In other words, Macintosh Drag-and-Drop works great.

- After highlighting some cells, ⌘-Option-click anywhere else on the spreadsheet. The highlighted cells move — instantly — to the new click location. Claris correctly points out that this trick (which works in the ClarisWorks word processor, too) is actually better than Drag-and-Drop because you don't have to keep the starting and ending locations close together. You can scroll for miles before ⌘-Option-clicking, and the highlighted material (wherever it is now) will jump dutifully to your cursor.

QUICKEN

We'll make no bones about it: We *love* Quicken. This is one of the fastest, slickest, best-designed programs we've ever seen — and it's dirt cheap.

It's a phenomenal checkbook/finance program, of course. And its supercharged report facilities are critical at tax time. With one command, you get an exportable or printable list of every expenditure you made in any particular category (home repair, auto expenses, and so on). When your monthly statement comes from the bank, you're one cool cucumber: Type in the new balance, click off the checks you see reported, and Quicken practically reconciles your checkbook for you. You do absolutely no math.

QUICKEN SECRETS

Make your own keyboard shortcuts

Is there a Quicken command that doesn't have a keyboard shortcut? While pressing the ⌘ key, choose that command from its menu. You get a little dialog box in which you can specify a keyboard shortcut of your own choosing.

You can use the same trick to *change* the keyboard equivalent for a command that *does* have one preassigned, or even delete the keyboard equivalent altogether!

Smaller, faster files



Every few months, use Quicken's "Save a Copy as" command (in the File menu). The resulting copy of your file will be much smaller, faster to open, and less prone to corruption.

Scrollbar indicator

When you're hunting for a transaction by its date, don't waste time scrolling through all your transactions and scanning the date blank. Instead, drag the box in the vertical scrollbar at the right side of the window. You'll see a little pop-out date indicator that rapidly changes as you slide up the scroll bar. It's a much quicker way to hone in on a certain date (see Figure 19-15).

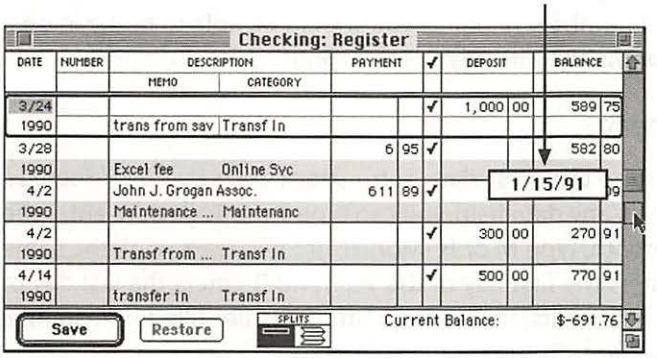


Figure 19-15
As you drag the scroll box, a handy counter sprouts out of nowhere. It shows where you'll be when you let go of the mouse.

Type to select

The various Quicken lists work just like lists of files in the Finder. That is, if you type the first letter or letters of the items you're looking for, the window scrolls directly to it. Try it, for example, in the Category, Memorized Transaction, or Account lists.

Let Quicken finish your transfer typing

To indicate a transfer of funds from one account to another, you're supposed to put the name of the other account in the first one's Category blank in [brackets].

If you have only two different accounts (or not very many, anyway), you can get by with just one *left* bracket and the first letter or two of the other account's name.

If you're transferring $100 from Savings into the Checking account that's open on the screen, for example, you put 100 in the Deposit blank. Then, in the Category blank, just type **[s** and Quicken will expand it to the full *[Savings]*.

Fast incrementing

Here's the feature that shows how much the Quicken programmers pay attention to details. When you click in a field to type the date or the check number, press the + or – key (either on your numeric keypad or the regular keyboard) to increase or decrease the number that's already there. If you *hold* down the + or – key, the number starts to increase or decrease more rapidly the longer you hold the key. When you learn how naturally and conveniently Quicken increases the speed of number changing, you should be able to home in on a date that's several months away in only a few seconds.

Date entry shortcuts

Quicken has some of the cleverest data-entry shortcuts we've ever seen. To enter the current date in any date field, you can type **T** (for Today). To enter the first or last day of a month, type **M** or **H** (MontH, get it?). Years work the same way — pressing **Y** enters the first day of the year, and **R** enters the last day of the year. Using these shortcuts, the appropriate dates are filled in instantly; you don't even have to press Return or Tab.

Neat stuff to type into the Check Number blank

When your cursor is in the Check Number field for a particular transaction, you can type the letter **N** to automatically input the next higher check number. Or type an asterisk (*) to fill in the blank with the word PRINT (meaning that the check has yet to be printed). You can also type the letter **P**; that, too, enters the word PRINT, but only if the QuickFill feature is on.

FILEMAKER AND CLARISWORKS

Now we move on to *data* crunching. FileMaker is the leading Mac database program. It strikes the ultimate balance between flexibility and simplicity. Its built-in, MacDraw-like mode lets you design elaborate graphic front ends for your data screens. Its lookup feature lets one file consult another file (one that's not even open) to retrieve a piece of information; in version 3, the program even lets you set up live ("relational") two-way links to other files. You can even share a file among computers on a network, even if some are Macs and some are PCs.

The classic, magnificent aspect of FileMaker, however, is its layouts. You can rearrange the same information into as many different graphic arrange-

ments as you want. Figure 19-16, for example, shows three different ways to organize the same set of mailing information. Yet, the list was typed in only once. And you can flip instantly between any of the three views.

Here are our favorite FileMaker Secrets. We trust you know that a *field* is one blank for information (such as First Name) and that a *record* is a complete "card" of information (such as the entire mailing address).

Oh, and by the way, if you've ever used ClarisWorks, you know that its database mode is modeled very much on FileMaker. (Same company, same interface . . . no wonder!) Therefore, plenty of these tips apply equally well to both FileMaker and ClarisWorks. We've marked the ones that work with ClarisWorks, too.

Figure 19-16
Multiple views, same data.



TRUE FACT

THE BEAUTY OF CHECKFREE (WELL, OK, CHECK$9.95)

One of our least-favorite aspects of adulthood is paying bills. As it turns out, one of our favorite aspects of the Mac is paying bills *automatically* — using Quicken and a companion service such as CheckFree. For this service, you pay $9.95 per month. In return, you gain a remarkable feature: When you enter a check in your Quicken registry, it's automatically a reality! Quicken, at the end of your session, dials a phone number, transmits your check information, and instructs the CheckFree corporation to issue a check to the payee (or, if you're paying a company, it'll make an electronic transfer), without any further effort on your part.

There are no envelopes, no stamps, and much less record-keeping. You won't make up your $10 each month in postage savings; no, what you're really paying for is the convenience.

There are really only two little drawbacks to CheckFree. First, in our experience, it occasionally messes up — about once a year, someone doesn't get the check on time. Second, CheckFree is becoming less and less relevant, as more and more banks either offer similar services or join forces with Intuit (the Quicken company). One of your cheerful authors, for example, recently dropped CheckFree in favor of Citibank's superb bank-at-home system. Not only is it free, but it offers far more flexibility than CheckFree. You can transfer funds, stop payments, check to see which checks have cleared, and so on . . . it does everything but let you withdraw cash from your Mac's floppy drive. (They're working on it.)

FILEMAKER/CLARISWORKS SECRETS

Record switching from the keyboard



You wouldn't believe how often we get asked this question: Is there any way to move from record to record without having to use the mouse to click on the flipbook?

And you wouldn't believe how many times we give the same answer: yes. Press ⌘-Tab or ⌘-Shift-Tab to move forward or backward, respectively. (Control-up arrow and Control-down arrow work equally well.)

Keep records permanently sorted (ClarisWorks, too)

One frustrating aspect of FileMaker has remained through infinite incarnations of the program, right down to its present-day FileMaker Pro form: its maddening refusal to keep records sorted!

You can sort records in any number of ways. But if you reopen a file, or you return to a layout, chances are good that the records have all sprung back into their original out-of-order order. You can use the Sort command over again, but that's time-consuming.

Here's how to freeze your records into their sorted order. First, sort the file. Choose "Save a Copy as" from the File menu. Choose "clone (no records)" from the pop-up menu at the bottom of the Save File dialog box. Name the new, empty file something — Sorted List, for example.

Next, open that empty file you just created. From the File menu, choose Import/Export; from the submenu, choose Import Records. Select the original file. A dialog box appears, listing all the field names; just click OK.

You end up with an identical file, in which the fields are finally sorted for good. As you add new records, of course, they'll get out of order again (unless you read the pertinent Secret that follows). But this cloning business is so quick that you can afford to repeat it every so often to keep things in shape.

How to make records go into sorted position

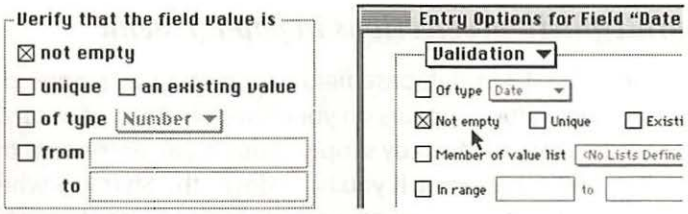
Of course, another way to keep records in sorted order is to *add* them in sorted order. The following technique only works on a freshly sorted database.

Suppose that you have three records called Cat, Dog, and Frog. If you want to insert a record called Elephant, click the *Dog* record to select it. Then choose New Record. On a sorted database, the New Record command always inserts the new blank record immediately *below* the currently *selected* record.

How to prevent a field from being left blank (ClarisWorks, too)

Choose Define Fields from the Select menu and double-click the field's name. In the next dialog box, select "not empty" (see Figure 19-17). Click OK and then click Done.

Figure 19-17
FileMaker will insist that every field be filled if you click this checkbox. If you have FileMaker 3 (right), you first need to choose Validation from the pop-up menu.



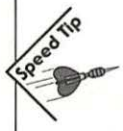
How to find completely empty records

Choose Find from the Select menu. Type an equal sign into every field. (You're searching for a match in which every field is equal to *nothing*.) Click Find. Only completely empty records will appear.

The amazing instant import trick



This jaw-dropping shortcut is found only in FileMaker Pro 3.0: You can turn a tab-delimited text file — or any other file in a format that FileMaker can understand — into a new FileMaker database without defining a single field or importing the data into an existing file.



To pull this trick off, launch FileMaker and choose the Open command. Then open a file that's in any format FileMaker supports for import: tab- or comma-delimited text, SYLK, DIF, ClarisWorks, and so on. When you open the file, FileMaker will automatically create a new database, import all the records and define a new field to hold each piece of data. The new fields will be named f1, f2, f3, and so on. Sure, you'll still have to format the fields and you'll probably want to rename them once the data has all been imported. But with virtually no setup time, you've moved your data into FileMaker format, ready to sort and search.

Sort a value list (ClarisWorks, too)

FileMaker and ClarisWorks 4 help speed data entry along by letting you set up a *value list* for a particular field: a list of possible entries. For a state field, for

example, the value list might show all 50 states, so a double-click enters the state name and no typing is required.

Neither program gives you a way to sort the entries in a value list, however. In ClarisWorks, in the Options box (within the Define Fields box) for the field in question, you can drag the entries up or down the list. In FileMaker, you'll have to copy them into a word processor that has a Sort command, such as Microsoft Word. Sort them and then paste them back into the Define Fields dialog box's Options box (FileMaker 2) or Value List (FileMaker 3).

Multiple-item selections in pop-up menu

When a FileMaker database field is formatted as a pop-up menu, a menu of predefined values appears on your layout instead of a standard text field. You enter data into the field by simply choosing an entry from the pop-up menu.

But here's the secret: If you hold down the Shift key when making a selection from the pop-up menu, you can enter more than one choice from the menu into the field. Each time you hold down the Shift key and choose an item from the pop-up menu, your selection is added to your previous entries. You won't see your multiple entries; FileMaker will only display the most recent item selected in the pop-up menu — but all your other responses will be recorded by the database just the same.

Index tips

FileMaker's speed is primarily because of its indexing system. Internally, the program keeps a high-speed list of the contents of each field: an index.

To see the index for a certain field, select it in Browse mode and press ⌘-I. A list window appears, showing every value you ever entered for this field (see Figure 19-18). The index, however, is composed of only the *first* word (in this field) in every record. That means that in a list of city names, you'll see New instead of New York, Las instead of Las Vegas, and so on.

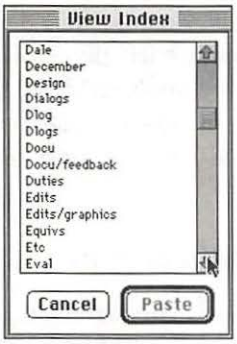


Figure 19-18
The index for a field. You can slap any one of these items into the current field by double-clicking it or selecting it and then clicking Paste.

But if, when entering this information, you put an *Option-space* between words, the index will correctly show the entire two-word "word." (Of course, you'll have to remember that you've done so when you perform searches thereafter — and type Option-space then, too!)

Avoid the "Are you sure?" message (ClarisWorks, too)

Here's a handy trick that works in most Claris products (FileMaker, ClarisWorks, and so on).

Whenever you do something that throws away data — such as deleting some records — FileMaker displays a warning message. You have to physically click OK (you can't just press Return or Enter) before proceeding. But if you're deleting dozens of records from a file, one by one, those warning messages can get plenty annoying.

The trick: Press *Option* as you choose the Delete command (or in addition to the keyboard equivalent of Delete). You'll get no confirmation message.

Remember, though, that FileMaker is one of the Mac universe's few *auto-saving* programs. It has no Save command at all. If you delete a record, therefore, *nothing* will bring it back. Undo does *not* work after you delete records, and you can't revert to an unsaved version of the file, as you can with most other programs.

Turn an entire record into a graphic



This is so weird: You can copy/paste an entire FileMaker record in one fell swoop. Just go to Preview mode and choose Copy from the Edit menu. You can now paste that record into a word processor, page-layout program, whatever. You'll get a huge graphic object with everything intact: your fonts, field labels, the works. When ungrouped, this graphic is editable — sort of; each line of text will be in its own little text block.

Paste an entire record's text (ClarisWorks, too)



Using the previous Secret, you can copy the contents of a record into another program as a *graphic*. But here's an even more practical maneuver: You can copy a whole record into another program as tab-delimited, editable *text*.

In FileMaker, go to the record you want to copy in Browse mode, deselect all the fields (by clicking in an empty part of the layout) and choose the Copy command. (In ClarisWorks, just click any empty part of the layout to make the entire record black before you copy.)

When you paste what you've copied into another program, you end up with a tab-separated chunk of text containing all the data displayed in the current layout for that particular record. This is an easy way to transfer the

contents of an entire record to another program, without having to use the Export command — or copy information one field at a time.

Copy/paste an entire database (ClarisWorks, too)



This is unquestionably one of the most mind-blowing FileMaker secrets around: You can copy the data from an entire database into another program — with one command.

The secret is to hold down the Option key while choosing the Copy command (or press ⌘-Option-C). This copies the data not just from the one record (as described in the previous Secret), but from *all* the records you currently have selected in FileMaker. Just paste what you copy into a word processor and you've produced a tab-delimited text version of your entire database! Paste what you copy into Excel, for example, and you've instantly turned your FileMaker database into a spreadsheet.

(Once again, the trick works in ClarisWorks, but isn't as complicated. Just click a blank part of your layout, then choose Select All from the Edit menu to highlight all visible records — then copy.)

Extra screen space (ClarisWorks, too)

If you're working on a small-screen Mac, or if you're making large layouts, screen space is at a premium. Get into the habit of hiding the entire panel at the left side of the screen (see Figure 19-19).

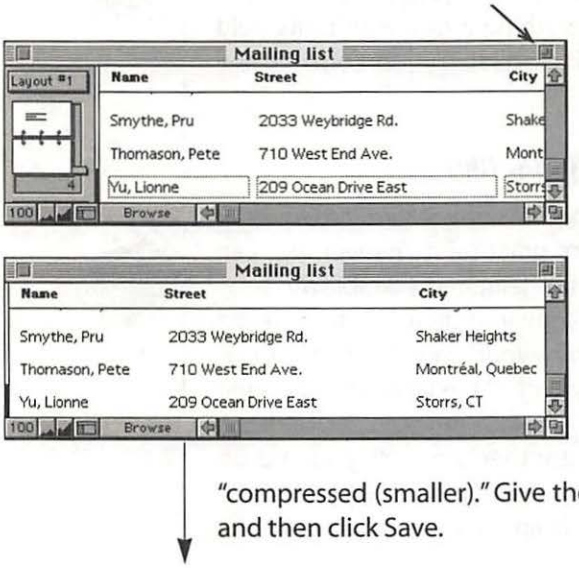


Figure 19-19
Click the icon indicated by the arrow (top) to hide the entire control panel (bottom).

The control for hiding and revealing FileMaker/ClarisWorks's left-side panel is the tiny icon at the bottom-left of the window (to the right of the zoom controls). Click once to hide the panel. Click again to make it reappear.

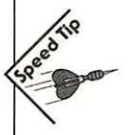
Make files smaller

As your database gets huge, consider taking a moment to save it as a *compressed* form. You can sometimes shave a sizable percentage off the file's size on disk using this procedure.

Just choose Save a Copy As from the File menu. From the pop-up menu at the bottom of the Save File dialog box, choose "compressed (smaller)." Give the compressed version of your file a new name and then click Save.

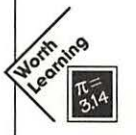
This process can take time, but you can bring a different program to the front and let FileMaker run in the background. The result is a copy of your file that's often much smaller.

Better drag-selecting



To select a group of objects on a FileMaker layout, you normally have to drag-enclose them; only objects completely enclosed by your dragging rectangle get selected. But here is a simple and wondrous shortcut: If you hold down the ⌘ key while dragging, you can select objects by dragging over *any part* of them.

Instant, on-demand format menus



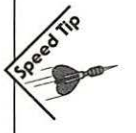
FileMaker 3.0 provides two express routes to the program's key formatting commands. In Layout mode, Control-click any object and a menu containing all the appropriate formatting commands pops up right under your mouse.

You can also Option-double-click any object on a layout to go directly to the text, date, number, or graphic formatting dialog boxes (depending on the type of object you've double-clicked.)

Selective Selecting

When you're working in FileMaker's layout mode, choosing the Select All command normally selects every object on the layout. But suppose you want to select *only* the text labels or *only* the horizontal rules you inserted between fields?

The secret is to click first on the tool that corresponds to the type of object you want to grab and *then* choose Select All. If you want to change the font of your field labels, for example, click on the text tool before choosing Select All. Instead of selecting all the objects in the layout, FileMaker will select only the text items. The same technique works with portals, lines, shapes, and text objects.



Alternatively, try this: simply highlight one example of the object you want to select — one field label, for example. Now press ⌘-Option-A to highlight all similar objects on the layout. That's a fantastic time-saver when you want to change the font all at once for your fields, for example, or your field labels.

Change a field's identity without disturbing its format

When you're designing a layout, you may find it tedious to repeatedly use the font, size, and style submenus to customize the formatting for each field. You can cut down on the amount of field formatting if you keep the following three tricks in mind.



First, format *one* field to the hilt. Then ⌘-click it. From now on, any new fields you place on the layout will share the formatting of the first.

Second, remember that you can Option-drag a field that's already been formatted. When you release the mouse, a list box appears in which you can choose a new field identity for the formatted copy you created.

Finally, if you double-click an *existing* field, the same little list box appears; from it you can select a field to *replace* the one you clicked. The replacement field remains exactly *where* the old one was, and it retains exactly the same formatting; only its identity changes.

Ignore the grid

In an earlier chapter, we pointed out that you can drag icons in the Finder so that they snap to an invisible grid if you press the ⌘ key while dragging (if the grid, in the Views control panel, is *not* turned on). If the grid *is* on, then ⌘-dragging has the opposite effect — it lets your icon dragging ignore the grid.

In FileMaker's Layout window, it's the same story. Press ⌘ as you drag an object or a field; you can position it freely, without being affected by the grid or the T-square lines.

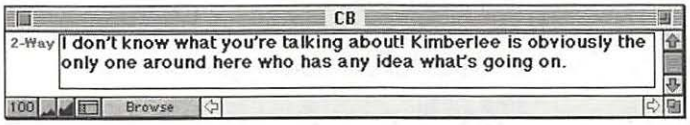
Online chatter over the network

A FileMaker file can be shared over a network. You can use this feature to clever advantage by setting up an on-screen two-way (or more-way) CB radio.

Create a new FileMaker file. Create one field, called something like "Two-Way." Make sure that the file is shared on the network.

That's all there is to it! Type a message to your coworkers into this field and press Enter. Instantly, the message appears on all their screens. They can respond either by deleting what you typed there — or adding to it (see Figure 19-20).

Figure 19-20
The instant CB network in your office. Type back and forth; the messages are updated in real time!



Get rid of a part

In the Layout view, you can get rid of a Part completely. (How often do you really use the Footer Part?) Simply click on the tab displaying the name of the part and press the Delete key.

See the fonts without their faces (ClarisWorks, too)

When FileMaker Pro shows you its font menu, each font is displayed in its own typeface. That's usually useful — except when you're trying to distinguish among more than one all-symbol font, such as Zapf Dingbats or Symbol.

To see the font list in good old Chicago 12-point, press ⌘ as you pull down the menu.

Define a default font and style

If you consider the order of events in creating a FileMaker database, it may appear that there's no way to establish a default font for the fields as you create them. After all, you first go to the Define Fields dialog box, where you type their names, and then click Done. Only then are you allowed to go to the Layout mode, where the Font commands are located. But by then it's too late; FileMaker has already assigned them a default font.

Here's the trick: When the Define Fields dialog box first appears, click *Cancel*. Then go to the Layout view. Of course, it's completely empty. Use the Format menu to choose a type size and style — with nothing selected.

Then after you choose Define Fields from the Select menu, create your fields and click Done. Your new fields will be born with your favorite typeface, all ready to go to work for you.

One-click shaded backgrounds (FileMaker 3)

To create a neat-looking shaded background — the kind you often see in professionally prepared FileMaker layouts — you no longer have to draw an enormous rectangle object, shade it, and send it to the back. Instead, just click the Part tab in your layout, such as Body, then choose a new color from the Fill pop-up menu!

TRUE FACT

FILEMAKER'S VERY NEW MATH

Here's one of the odder bugs we've spotted in a major best-selling program. If you set up a serial number for your records, keep it under ten digits. Here's what FileMaker does if you establish a ten-digit serial number and tell it to increase the number by 1 with each new field:

Serial	3456789999
Serial	-838177296
Serial	-838177297
Serial	-838177298

In fact, any number over 21111111111 or so will come out garbled when FileMaker tries to increment it automatically.

Then again, by the time your company's mailing list hits 2 billion names, it's time for a more powerful database anyway.



Avoiding and eliminating duplicate names

Using FileMaker's calculation powers, you can set up your mailing-list database with the same duplicate-avoidance scheme used by magazines and mail-order companies worldwide.

Set up a *match code* field. Define it to be a calculation field. The calculation looks like this:

```
Match Code = Left(Last Name,3) & Left(Street,3) & Zipcode
```

Specify that you want a Text Result. The match code produced for an address such as Alison Panico, Box 2234, Chesterton, NY 10299 would be *Panbox10299*. The chances of there being another address that produces this exact match code are infinitesimal.

When the day comes that you want to ferret out duplicate names, use the Find command and type a ! into the Match Code field. FileMaker will immediately display all duplicated records. Sort them and start weeding out the ones that you don't want. (If you set up FileMaker to auto-enter each record's date of creation, by the way, figuring out which address version to keep could be easier.)

Incidentally, match codes aren't foolproof. You can certainly tell that by the fact that, despite them, you *do* get duplicate junk mail. Still, they're a great way to get a running start on controlling duplicate records.

Locking and toggling tools (ClarisWorks, too)

If you've ever had to draw a series of objects on a form in Layout view, you know how irritating it can be that your tool selection keeps defaulting back to the arrow tool after you draw each object. If you want to draw a series of boxes, for example, you have to keep reselecting the rectangle tool after you draw each box.



There's an easy way to avoid this: *Double-click* the tool when you select it. That tool will stay selected (and turn black) until you click another tool. What's especially great is that one press of the Enter key switches you back to the Arrow tool; a second press returns to the drawing tool you originally double-clicked.

In FileMaker only, there's a more permanent, alternative solution. Choose Preferences from the File menu and select the "Always lock layout tools" option. (That great Enter-key stuff still applies.)

Escaping from the Define Fields dialog box

When you're setting up fields in the Define Fields dialog box, it may seem natural to select the Enter key to dismiss the dialog box when you're finished — but that doesn't work. Instead of closing the window (as it does in the dialog

boxes for setting up entry options, values lists, and lookups), the Enter key opens the Options dialog box. There is, however, a keyboard shortcut that will dismiss the Define Fields dialog box — press the Esc key.

Escaping from pop-up lists

What happens when you tab into a field that displays a predefined set of values as a pop-up list, but you don't want to use one of the entries in the list? Typically, you have to click the field again to get rid of the list so you can type in your own response. But you can dismiss those pop-up lists even more quickly by hitting the Esc key when they appear. Pressing Esc jumps you right into typing mode without having to click on the field to dismiss the pop-up list.

And if you decide you *do* want to choose an entry from the pop-up list after making it disappear, pressing Esc again makes it pop right back up.

ANSWER MAN

Sorting by last name from a first+last field

Q: ***Oh, great. I typed 15,345 names in my Full Name blank (in the form "John Sculley") in ClarisWorks. But now I want to sort my list alphabetically by last name! What do I do?***

A: Oh, boy, now you've done it.

ClarisWorks/FileMaker ***can't*** sort by the second word in a field. You ***should*** have set up ***two*** fields, First Name and Last Name, to begin with, so that you could now sort by last name.

In your situation, you'll have to cleverly split your Full Name field into two pieces. Create two new fields, First Name and Last Name. Create them as Calculation fields (but formatted to display a Text result) that refer to your Full Name field as follows:

First Name = LEFT('Full Name', FIND(" ", 'Full Name',1)-1)

Last Name = RIGHT('Full Name', LEN('Full Name')-FIND(" ",'Full Name',1))

(There's a single space between each pair of double quotes above.)

Once you've created these calculation fields, clicked Done, and double-checked to see if everything looks good, you can change the calculation fields into Text fields and delete the original Full Name field. Then . . . sort away!

Chapter 20

Graphics and 3-D

IN THIS CHAPTER:

- The three kinds of Mac graphics programs
- Painting, drawing, and PostScript-graphics tricks
- Insights on ClarisWorks, Photoshop, MacDraw, and Canvas
- Tricks for FreeHand and Illustrator
- PICT, TIFF, EPS, GIF, and startup screens

Macintosh graphics — that's almost redundant. Yes, Macintosh *is* graphics. Images put the Mac on the map. And with every passing day, more of the artwork that you see around you — ads, posters, album covers, product packages in the grocery store, book covers (including ours), World Wide Web pages — is being designed on the Macintosh. Furthermore, with the recent explosion of cheap color printers, more and more homemade art will look even more professional.

TYPES OF GRAPHICS PROGRAMS

There are three kinds of Macintosh graphics tools: *painting, drawing,* or *PostScript* tools. In the olden days, each graphics program was designed to create exactly one of these types of art. Today, graphics programs often steal from each other's territory: FreeHand, a PostScript drawing program, now has some painting tools; Fractal's Expressionist uses PostScript tools to create paint-like images; Canvas handles all three kinds of graphics; and so on.

But you won't stand a chance of understanding these modern hybrid graphics programs unless you first understand the three graphics modes from which they are descended.

PAINTING

The three different art types have to do with how the *computer* thinks of your art. In the case of painting programs, the Mac thinks in one-dot units. To display a zebra in Photoshop, the Mac memorizes the exact status — black or white — of each of 484,704 pixels (screen dots). That's how many are in an 81/2-by-11 painting at a screen resolution of 72 dots per inch.

In other words, the Mac stores what amounts to a *map* of your screen. It remembers the precise locations of all the colored dots. Painting programs, it's therefore said, generate *bitmapped* graphics.



Figure 20-1
Here are two graphics that can be created in a painting program. First, the crack in the left figure is drawn with a pencil tool, which turns individual pixels black. On the right, a chunk of the painting is being pulled away after having been selected by the Lasso tool. Drawing programs, by contrast, don't have Lasso tools.

When you lay down some "paint," you turn white pixels some other color. You can erase them, but you can't change the original shape you painted — a circle, say, or a letter of the alphabet — because the Mac no longer thinks of them as a circle or a letter of the alphabet. On the other hand, you have control over each individual dot. You also have special pixel-manipulation tools such as the Spray Can and the Lasso (see Figure 20-1).

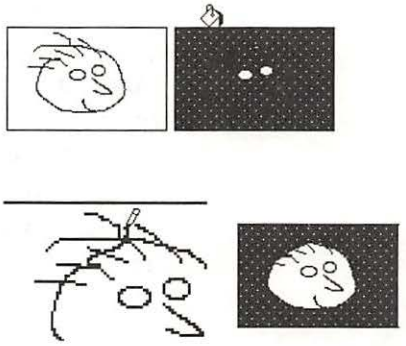
The original painting programs all had the word *paint* in the title — MacPaint, SuperPaint, UltraPaint, and so on. HyperCard's art tools are also painting tools. ClarisWorks has a painting window. Believe it or not, the most expensive and powerful graphics program of all, Adobe Photoshop, is a painting program, too — a very, very, very sophisticated version of MacPaint. Color It, included with this book, is also very powerful — it's just not nearly as expensive.

Painting pointers

Paint programs have been around for so long, and they're essentially so simple, that few unpublicized features remain. But here, for reference, are key paint-program tips, in case you don't know them. These work in any program whose name ends with "Paint," in HyperCard, in the bitmapped modes of Canvas and ClarisWorks, and in Photoshop and Color It.

- Option-drag a selected region to peel off a copy.
- If your Paint-bucket Tool unexpectedly fills in the entire screen with your selected pattern, immediately choose Undo. Zoom in on the outline of what you're trying to fill in, find the gap in the outline (through which the "paint" is spilling), and close it up before trying again (see Figure 20-2).
- Choose a pattern and line thickness (from the corresponding palettes or menus) *before* you paint a new shape. You can't change your mind after drawing the new element, unless you Undo the whole thing.
- Press the Shift key as you drag across the painting area to constrain your mouse movement to a perfect horizontal or vertical line. (In Photoshop, press the Shift key just *after* the first click. In most other programs, press Shift *before* you click.)

Figure 20-2
If you try to fill in the background of the first drawing (top left), your paint will spill through the open outline of the face (top right). Undo it. Then zoom in (bottom left) and, with the pencil tool, close up the gap. Now the paint will stay where it belongs (bottom right).



- In most paint programs, you can double-click the Paintbrush tool icon to access a palette of brush shapes.
- Look for a built-in shortcut to enlarge the entire painting window: either double-click the Pencil tool (ClarisWorks, for example) or, with the Pencil selected, ⌘-click the artwork (MacPaint, for example). In Photoshop and Color It, ⌘-plus and ⌘-minus enlarge or reduce the artwork.
- For detail work, you must enlarge the painting. No painting program on Earth lacks keystrokes for zooming in or out.
- If you're painting using a pressure-sensitive digitizing tablet (such as a Wacom pad), how hard you bear down on the stylus generally determines the thickness (or sometimes the opacity) of the line you're drawing.

Editing high-resolution bitmaps

In the olden days, paintings suffered from low resolution — the same 72 dpi of the screen. Though today's paint programs (such as ClarisWorks, Canvas, Color It, and Photoshop) are not confined to the usual 72 dots-per-inch resolution. You can change the painting to any resolution. If you set your painting to 300 or 600 dpi, for example, you can actually edit *every dot* a standard laser printer is capable of putting on the page.

Of course, since the screen's resolution can't be changed to that degree (even on multisync monitors), you face a tradeoff: In order to view or edit every pixel (screen dot) of a high-resolution painting, you must blow up the

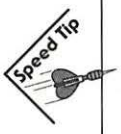
image so much that it becomes many times larger than the window you're working in. That's why another critical tool in today's painting programs is the hand grabber tool, which lets you shift the hugely enlarged image within the comparatively small window. (Usually you can change your cursor into the grabber tool by pressing a key — the spacebar or Option key, for example — to make this kind of shifting more natural when you're working with a large or high-resolution painting.)

Another warning: High-resolution paintings, such as scans, take up many megabytes of memory and disk space. (Remember, a bitmap is nothing more than a database of the pixels on the page and a record of the color of each. The more dots the Mac must track, the larger the memory requirement.) For example, a six-inch, 256-color, 300 dpi ClarisWorks painting requires *13MB* of memory.

GENERAL PAINTING SECRETS

Instant Eyedropper selection

The Eyedropper tool is used for color matching. If you've already used a color in a painting, and you want to use it again, click the painted color with the Eyedropper. The fill-color palette changes to match the color you click.



Since you use this tool often in color painting work, each painting program generally offers a keyboard shortcut. In ClarisWorks, press Tab. (Press it again to switch back to your previous tool.) In Photoshop, it's Option. In Color It, it's Control.

Multiple magnifications at once

Use the New View or New Window command to open a duplicate window of your work. You can zoom in or out in this new window independently of your original window, making it easy to do detail work (at 400 percent, say) and keeping your eye on the piece as a whole at the same time.

Secret powers of the ClarisWorks Lasso

ClarisWorks includes a pretty decent paint program. It handles color, grays, and resolutions up to 360 dpi. With that much power, it could almost be called a cousin of photo-retouching powerhouses such as Photoshop.

If you either double-click the Lasso or ⌘-double-click the selection rectangle tool (Marquee) on the tool palette, you select all dark areas of your painting at once.

Adobe Photoshop (and Color It)

Photoshop is a huge, expensive ($800), professional-level masterpiece of a color paint program. It's a fantastic accompaniment to a scanner; it lets you retouch a photo, combine elements of *different* photos, or forget about photos and simply use it as a potent electronic illustration canvas.

With all of its heavy-duty image-processing capabilities, Photoshop can make tremendous demands on the Mac. Even on a faster Macintosh, applying some of the program's image processing filters can mean lots of waiting. Fortunately, Photoshop was one of the first programs to be upgraded for optimal performance on a Power Macintosh — a quantum leap in the speed with which Photoshop can manipulate high-resolution images.

Even so, Photoshop's horsepower demands account for the sales of Mac models that would seem hopelessly over-the-top for the average person — for example, the Daystar multiple-processor Macs that cost $10,000 or more. If you're a graphic designer trying to work with a 600 dpi movie poster that occupies a gigabyte of disk space in Photoshop, the concept of speed takes on a whole new importance.

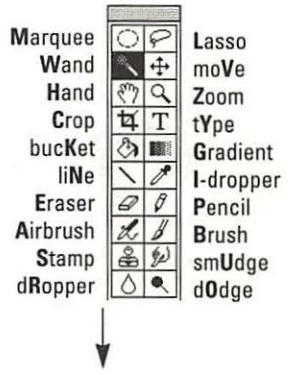
Color It, included with this book, offers most of Photoshop's features, needs half the RAM, has multiple Undos, and even the latest version costs about one-sixth of what Photoshop does. We'll indicate which of our Photoshop secrets below work equally well in Color It. (For more online info about Photoshop, visit *http://www.duke.edu/~ac10/photoshop.*)

PHOTOSHOP SECRETS

Letter keys for power tool-choosing

Because every Photoshop tool is mapped to a keyboard key, you can keep one can on the keyboard and the other on your mouse, saving all kinds of time — and even screen space, since the tool keystrokes work even if you have closed the main tool palette. See Figure 20-3 for the breakdown.

Figure 20-3
Press the capitalized letter to choose the corresponding tool without having to use the mouse.



24-bit color on an 8-bit monitor (Color It, too)

If you read Chapter 11, you know that the title of this Secret is an impossibility. After all, an 8-bit monitor — the kind the vast majority of Mac owners have — can only show 256 colors at a time. If you try to open up something you scanned in 24-bit color, or a 24-bit PICT file, it will show up looking *dithered* (the

Mac tries to re-create colors it can't show by alternating dots of colors it *can* show).

Still, you can convert any 24-bit color image to a dazzling 8-bit one for those times when a photo has to look as good as possible. Just choose Indexed Color from the Mode menu and click OK. As Figure 20-4 shows, the result is pretty close to looking like full-fledged 24-bit color, even on an 8-bit monitor! (The Optimize Colors command in Color It does the same thing.) This technique is ideal for (a) preparing photos that will be distributed to people whose Macs' color depths you can't predict, or (b) preparing GIF files for posting on the Web. (GIF files *can't* contain more than 256 colors.)



Figure 20-4
Is it live or is it fake 24-bit color? The first grayscale image is what you see if you open up a 24-bit picture when using an 8-bit monitor. The rightmost image is genuine 24-bit grayscale. The middle image — which looks very similar to 24-bit — is the same 8-bit monitor, but uses Photoshop's Indexed Color mode. (We used grayscale here, but the principle is the same for color.)

Palette management for the big-screen impaired

As Photoshop matures, its quota of floating palettes seems continually to grow. All the better, then, to use the following not-so-secret trick for managing screen space: Click the tiny zoom box in the upper-right corner of a palette's little title bar to collapse it, Windowshade-like, hiding everything but the title bar itself.

Less obvious: Shift-clicking a palette's title bar makes the palette leap to the edge of your monitor — a good way to get the thing out of your way as you work on the image in the center of the screen.

Crosshair cursors

Each painting tool has its own icon: The Pencil is a pencil, the Paintbrush is a brush, and so on. Press the Caps Lock key to turn the cursor into a crosshair if it helps you work with more precision. (Press it again to restore the original cursor. And if, in the Preferences dialog box, you opt for the crosshair cursor *all* the time, Caps Lock turns it *back* into the default cursor shapes.)

Press arrows, don't type numbers



Much of your work in Photoshop involves typing numbers into little dialog box blanks; for example, when creating a new document, there are fields where you're supposed to specify the size of the document in pixels, points, inches, and so on. Instead of typing numbers, consider free book winner Jason Darvick's discovery.

When the number is highlighted, pressing the up-arrow or down-arrow keys will increase the value in appropriate increments. For example, if the

number already in the box is displayed in inches, pressing the up-arrow key repeatedly changes the number in thousandth-of-an-inch increments. If you press Shift as you tap those arrow keys, you increase the increments by a factor of 10 (increasing a number by tenths of an inch instead of hundredths, for example).

Zooming shortcuts (Color It, too)

Photoshop is filled with shortcuts for enlarging or reducing the image you're working on — not surprising, since many people use the program to edit enormous high-resolution images that must be enlarged many times before the individual pixels can be edited. Here are a few pointers:

- In most normal situations, you'll want to press ⌘-plus or minus to zoom in or out. If so, the *window* gets resized, too, saving you the hassle of resizing it after each zoom.
- You can zoom in or out of the artwork *even* if there's a dialog box open on the screen! Press ⌘-space bar and click on whichever portion of the illustration you can see. (Press Option-space bar and click to zoom *out*.)

  Those shortcuts also work when a dialog box *isn't* on the screen, by the way (in Color It, too).
- Double-click the Hand-grabber tool to make the illustration fill the window. (It's the equivalent of PageMaker's Fit in Window command.) Double-click the *Zoom* tool, on the other hand, to make the artwork jump to actual size, whatever that may be.
- You can zoom all the way in (a 16:1 screen-to-image ratio) or all the way out (a 1:16 ratio) by pressing ⌘-Option-plus and ⌘- Option-minus — and, as always, double-clicking the Zoom Tool restores the image to actual size.

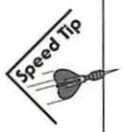
Selection Secrets

To an extent, Photoshop's Lasso and Rectangular-selection tools work as they do in any other painting program, but you can do much more with these. After you select something, for example, you can ⌘-drag inside the selection to *deselect* a portion of it.

If you Shift-drag, you can *add* more selected material, even if it's in a different part of the window.

After you select a region (or several), drag inside the selected region to move the region. But if you ⌘-Option-drag, you can move just the selection outline (the shimmering border) and *not* disturb the artwork.

Quicker access to tool options



Instead of double-clicking a tool to access its options palette, consider clicking the tool once and then pressing Return. The advantage is that the palette, in the latter case, opens up with its first dialog-box number already highlighted, ready for you to change by typing.

Change opacity while painting

This Secret's title says it all. After the Brush tool is selected, you can change its degree of opacity without having to use the Brushes palette — just press a number key on your keyboard, from 0 (solid black) to 1 (barely perceivable — 10 percent black).

Comet tails

Here's a really cool trick from John Knoll, one of the original Photoshop programmers.

Double-click the Brush tool and set the Fadeout to, say 40. Click OK. Then click to create a comet head; Shift-click a few inches away to mark the tail point. Photoshop draws a terrific comet. Repeat the process with a lighter color inside the first comet to give a fiery look (see Figure 20-5).

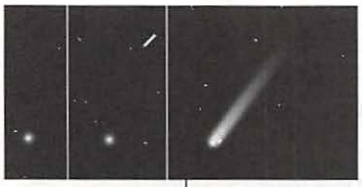


Figure 20-5
First, click to create the comet head (left). Position the cursor where you want the tail to be (middle) and Shift-click. Instant comet!

Hide the palettes, fill the screen (Color It, too)

Press Tab to hide all the on-screen palettes for a better view of your work. Press Tab again to bring them back.

Another trick for maximizing your work/view area: click one of the two rightmost icons at the bottom of the palette. (In Color It, the Window Mode command offers the same options.) The center one hides the usual Mac window paraphernalia (scroll bars, and so on) so that your work fills more of your monitor; the rightmost one also hides the *menu bar.* At that point, the only way to get the menus *back* is to click one of the *leftmost* two bottom-palette icons — that's why it's a good idea to remember the Tab keystroke (to bring *back* the palette if it's been hidden).

Secret Text lasso and kerning

In Photoshop, as in any bitmapped program, text isn't really text; it's just a collection of pixels arranged to represent text. That fact makes editing text difficult. (That's why Adobe promotes using Photoshop in conjunction with Illustrator, which has astounding text-manipulation features, and which can export to Photoshop.)

Photoshop has a couple of tricks, though, to make working with text easier. After you create some text, but with the text tool still selected, you can press ⌘ to turn the cursor into a lasso (see Figure 20-6).

Figure 20-6
The secret Lasso: use it to kern.



Using this text lasso, you can *deselect* any of the letters in the text. Then use the arrow keys (or the mouse) to push the remaining letters closer to, or farther from, the ones you just deselected. This is *kerning*, folks. (See Chapter 24 for more on kerning.)

Remembering the last values

It may disappoint you to discover that each time you open a color-correction dialog box — Brightness, Levels, Curves, and so on — Photoshop appears to have forgotten the settings you used the last time you accessed the command. But if you press Option while choosing the menu command (or pressing its equivalent keystroke), the dialog box will appear with your last set of settings intact.

Power selecting

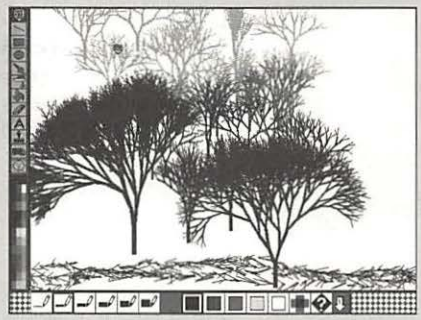
Newcomers to Photoshop may feel dismayed that the Lasso tool doesn't shrink to enclose what's inside it, as the Lasso tool does in any other painting program. Furthermore, there doesn't seem to be any way to make polygonal selections. (Even SuperPaint lets you make polygonal selections!)

TRUE FACT

THE GREATEST PAINT PROGRAM OF ALL?

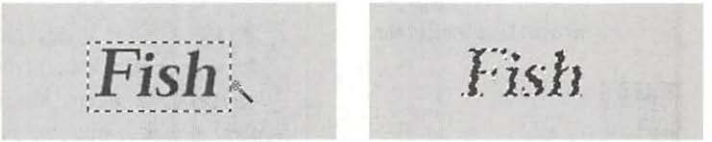
Ask any grizzled, tanned Mac veteran to name the five greatest Mac programs of them all. If this person knows his or her salt, one of the five is bound to be...Kid Pix.

Kid Pix? Yes. This $30 kids' color paint program from Broderbund is one of the most inspired and perfectly executed Mac programs ever written. Each painting tool makes a sound — once when you click it, and continuously while you paint with it. The Kid Pix canvas fills your screen, so you can't accidentally lurch back into the Finder because of a wayward click outside the document window. Even the menu commands have little icons to indicate their functions. Did we mention the Tree Tool? One click and you have a fabulous fractal-generated tree — different every time.



Actually, both features are at your command. For the shrinking lasso, first select the general region containing the object you want (see Figure 20-7) using the Lasso or Marquee tool.

Figure 20-7
The snapping-lasso trick, adapted to Photoshop.



Then select the Magic-wand tool. Place it inside the selected region. It turns into an ordinary arrow cursor, which doesn't do you much good — unless you press the ⌘ key! Then it turns back into a magic wand. Click the background (still inside the original selection). You just selected the solid objects inside the original selection, exactly as though you had lassoed them.

As for the straight-sided lasso trick we mentioned, it's easy. Just press Option as you click at the corners of the polygonal area you want to grab (see Figure 20-8).

Figure 20-8
You may have to look closely at this image to see the straight-sided marquee being created by the lasso. By pressing Option, you can create any kind of straight-sided selection, no matter how odd-looking.



All of this is much simpler in Color It; just choose Selection Tools from the tool palette for a full arsenal of selection tools.

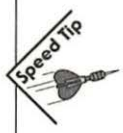
Magic eraser

With all its power and might, Photoshop may not seem as though it has any features in common with the lowly MacPaint. But here's one.



When the eraser is selected, Option-dragging it across the image doesn't erase it; instead, it reverts the dragged-over portion to the way it was the last time you *saved* the document. This is an excellent way to recover from a half-hour of image doctoring you decide was a bad idea after all — for *some* of the image.

Faster filling (Color It, too)



Much of the time, you use the Edit menu's Fill command simply to fill in the selected region with the foreground color. Instead of using the menu for this purpose — including OK'ing a dialog box — just press Option-Delete. That fills the selected region with 100 percent of the foreground color. (Delete alone fills the selection with the *background* color.)

Matchmaking Hollywood style

This must be the *weirdest* buried message we've ever encountered. Alas, it only works if you're using Photoshop 2.5.1 (not the PowerPC-accelerated edition) with the PowerPC Accelerator Plug-In (on a Power Mac). Hold down the Option key, choose About Plug-In from the menu, select "PowerPC Accelerator...", and you get a message telling you to look at your Desktop! Sure enough, soon after, a new SimpleText document with an interesting icon appears on your Desktop. Open it for a short, sweet message from the starstruck programmer to — of all people — Uma Thurman.

Roll credits . . . twice

Adobe may *think* it owns Photoshop. But if you press Option while choosing About Photoshop from the menu, you'll find out what the programmers really think. Furthermore, if (in Version 2.5 or 3) you press ⌘ while choosing About Photoshop, you get to see the *double*-secret About box.

Adobe Transient Witticisms ™



Choose About Photoshop from the menu and wait patiently, suggests free book winner W. Johnston. After a moment, credits will begin to scroll up the screen. (Press the Option key to make them go by faster.) They get funnier as the list goes on; at the very end of the list, *your* name appears, and you get thanked for being "one of our favorite customers."



When the credits end, watch the space just below the Photoshop graphic. In this space you'll see a virtual stand-up routine typed out, joke after joke — a total of 130 hilarious Generation X pop-culture one-liners. There are references to David Letterman ("Hey, everybody! I'm not wearing pants!"), the Simpsons ("'A tense work environment is a productive work environment' — M. Burns"), Star Trek ("Ensign — pursue that vessel at Ludicrous Speed!"), and much more.

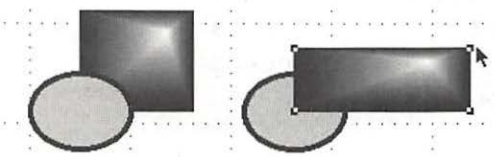
DRAWING

Painting programs create bitmapped graphics. Drawing programs, on the other hand, create what are called *object-oriented* graphics (sometimes called *vector* drawings). When you draw a circle in one of *these* programs, the Mac doesn't store it as a map of black dots. It remembers that you drew a *circle* of a fixed shading and size. That means that you can never speckle it, and you can certainly never erase (or remove) a chunk of it.

Drawing program advantages

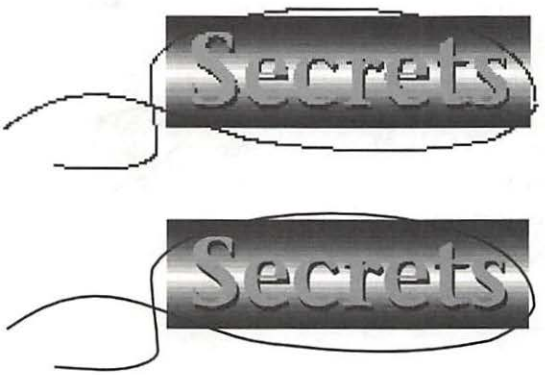
But there are two powerful advantages to drawing programs. First, objects remain objects. After you draw a circle, you can return to it later and move it by dragging it. You can overlap another object on top of it — and later change your mind. You can change a circle's shading long after you drew it. Or, as shown in Figure 20-9, you can tug a shape's handles to stretch it.

Figure 20-9
In an object-oriented (drawing) program, objects remain distinct after you draw them. You can bring one object in front of another (note how the circle has been sent behind the rectangle in the second figure), and you can reshape or resize objects.



The other gigantic advantage of drawing programs over painting programs is the printouts. As you probably know, the resolution (number of dots per inch, and, therefore, clarity) of every Mac printer sold today is *greater* than what you see on the screen. So, every printout looks smoother and sharper than its on-screen counterpart.

Figure 20-10
The identical graphic, done as a bitmap (top) and as object-oriented art (bottom).



Every one, that is, except bitmapped artwork. A printout from a painting program looks every bit as jagged on paper as it did on the screen. But when the Mac prints from a drawing program, it doesn't tell the printer "three black dots, then a white one . . . ." Instead it says, "A square, one inch tall." The printer can now put on the page a square, one inch tall, at its (the printer's) much higher image quality. Figure 20-10 shows identical artwork. One piece was drawn in ClarisWorks' painting window, and the other was done in its drawing window.

Selecting and grouping multiple objects

In the Finder, after you click one icon, you can select additional icons by Shift-clicking them. It works the same way in drawing programs: click to select one object, Shift-click to select others.

After you have selected several objects, you can *group* them — combine them into a single new object — using the Group command. You can even group groups. Of course, you can *un*group a group, or even ungroup a grouped group of groups. Drawing programs ungroup objects in the reverse order in which they were grouped.

Another advantage of groups is that when you stretch the handles of a grouped object, the entire thing stretches together (except for text, in most programs).

UNIVERSAL DRAWING PROGRAM SECRETS

Publish and subscribe to yourself

Don't scoff at this title; we're mighty proud of this trick.

We refer, of course, to using the Publish-and-Subscribe feature (see Chapter 16) to create intelligently linked copies within the same document. A classic case is the business card. Design one in the upper-left corner of your document. Then publish it, and subscribe to it 11 times, enough to fill a letter-sized page. Then, if you have to make a change, you just change the first one, and all the copies change, too. Try it with tickets, invitations, houses in a development, and so on.

ClarisDraw, ClarisWorks, Canvas, and most other modern drawing programs have Publish-and-Subscribe features. (A note from our tech editor: The native format of Publish and Subscribe is the PICT file, described later in this chapter. Proof your final printout carefully to make sure the translation to PICT didn't wipe out any subtle nuances in your graphic.)

ANSWER MAN

Color lookup tables

Q: ***What's a CLUT? Why do my title bars, menu bar, and desktop patterns go wacky when I open a color file in Photoshop?***

A: If you have an 8-bit monitor (see Chapter 11), your screen can only show a total of 256 different colors.

Your Mac starts out life with a certain specific rainbow set of 256 colors. These are the colors used in your icons, in the colored Apple menu apple, and in the Label menu. These factory-set colors are called the system palette. (Want to see them all at once? Open your Monitors [or Monitors & Sound] control panel. There they are, displayed in the lower-left corner.)

But what if there's a picture you scanned of a stunning sunset? If that file had its choice of which 256 colors to use, it would use 256 variations of red and orange. It wouldn't waste one single one of its precious 256 colors on useless hues such as blue and green.

Thus, this one image has its own private set of 256 colors — a color lookup table for the Mac's benefit. (Color lookup table: CLUT.) When Photoshop or some other paint programs first open a document with its own CLUT, the paint program must jettison the system palette — your Mac's basic set of 256 rainbow colors — from its little head. For one fleeting moment, you see the system palette (the colors used in your menu bar and Desktop) being purged by the influx of new colors.

TRUE FACT
DOUBLE-CLICK ACCESS TO THE TEXT TOOL

Canvas (Deneba Software) is one of the most comprehensive and richly conceived drawing programs in the world. Among the many time-saving touches: When you double-click on a text block, the program immediately (and correctly) assumes that you mean to edit that text. Accordingly, it switches to the text tool, regardless of which tool was previously selected. You have no idea how simple, logical, and useful this idea is until you try it!

We're pleased to note that this concept is catching on: FreeHand, the draw module in ClarisWorks, and other programs offer this feature, too.

What the Shift and Option keys do

Press the Shift key when you drag something to keep your mouse movements confined to perfectly horizontal, vertical, or (sometimes) diagonal lines. That's handy when you draw a line (keep it flat), make a copy of something (keep it aligned with the original), or draw a geometrical figure (keep it perfectly square or circular).

We noticed one inconsistency among drawing programs. In some, you must press Shift *before* you begin the mouse movement. In others, you must press Shift *after* clicking, but before starting to move.

Oh, then there's the Option key: In most (non-Claris) drawing programs, pressing the Option key as you draw a circle, square, or regular polygon draws it from the center instead of the edge (see Figure 20-11).



Figure 20-11
Normally, you create an enclosed geometrical figure by dragging from diagonal corner to corner (left). But with the Option key pressed (right), you start drawing from the center and the shape billows outward from there.

Add an arrowhead to anything

Here's a classic cheat. Some drawing programs have an option that lets you finish any straight line you draw with an arrowhead.

Unfortunately, you can't add an arrowhead to a line that's not straight. Our workaround is shown in Figure 20-12.

Stretchy text

All those wild, super-skinny and super-fat text effects you see in Macintosh magazine ads are easy to do — if you know the Secret. Type up the text in a drawing program. Copy the text block and paste it into your word processor or page-layout program. Then you can grab its handles and stretch it in any direction (see Figure 20-13).

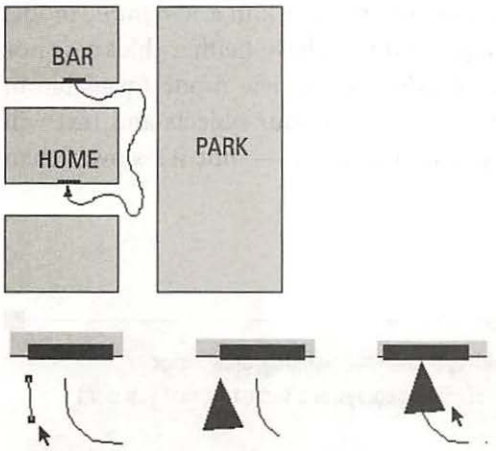


Figure 20-12
Suppose you want to add an arrowhead to a curvy line, as shown at top. First, zoom way in; blow the detail up to, say, 800 percent. Draw a very short straight line (bottom left). Tell the drawing to put an arrowhead on the line (bottom middle). Then drag the arrowhead onto the end of the curved line and group them together (bottom right).

Selecting tiny objects

Here's an oldie but goodie: When you're trying, with no success, to move some tiny object in your drawing, draw a nice fat line. Select both it and the small object, and use the line as a handle to move the smaller one. Deselect and delete the line after the move is over.

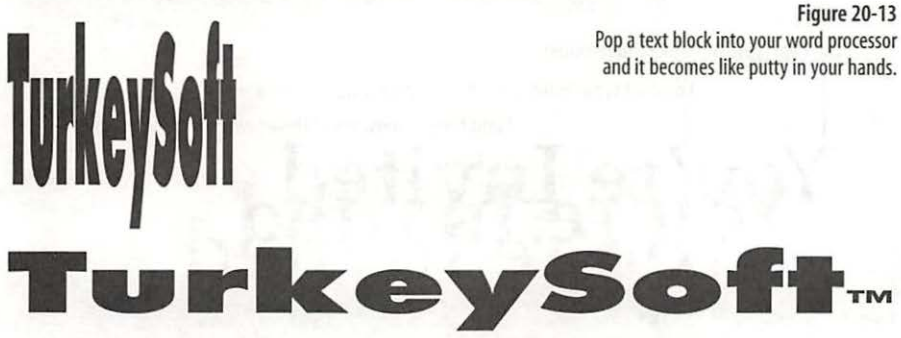


Figure 20-13
Pop a text block into your word processor and it becomes like putty in your hands.

POSTSCRIPT DRAWING PROGRAMS

PostScript drawing programs (such as FreeHand and Illustrator) are high-end, expensive, and tough to learn. But their astonishing output shows some of the most striking work the Mac can do. This is the kind of work you see in package designs, line art, album covers, and technical drawings.

Paths and wireframes

In these programs, you work with lines on the screen called *paths* (see Figure 20-14). As in object-oriented drawing programs, you manipulate objects in a PostScript drawing program after they are drawn. But unlike in an object-

oriented drawing program, you do most of your work in a *wireframe* mode, where none of your objects are opaque and lines have neither thickness nor color. You see only their outlines. An editable Preview mode (available in both FreeHand and Illustrator) shows you what your objects and text will look like when printed — with opacity and color — but it's slower than working in wireframe mode.

MACINTOSH SECRET
THAT COOL EMBOSSED LOOK

This clever Secret works in *any* kind of graphics program — painting, drawing, or PostScript. The only requirement is a choice of colors or grays, and some text that you want to make classier.

Create the text block. Make two copies, so that there are three in all: one dark, one light, and one the color the background will ultimately be.

The tricky part is positioning these three blocks of text in three dimensions simultaneously. The blocks are staggered diagonally from left to right — but they're *not* stacked back-to-front as you may think. Instead, the center text (the background color) is in *front* of the others, even though it's not the rightmost block. The following figure, we hope, darifies the situation.



The background-colored type should overlap the others — it's on top — but it's not the lower-rightmost text block.

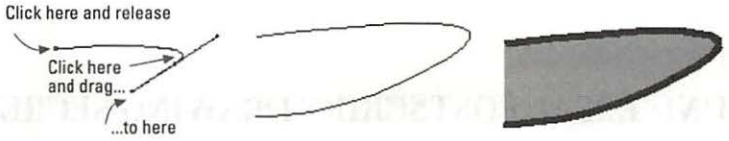
After you figure out this situation, drag them closer and closer to each other until they're separated by only a pixel or two.

When the three text blocks are nearly superimposed, group them, and then put them against the colored background (which matches the center text), and you're finished.

When you put this text sandwich on top of a background color that matches the center (frontmost) text, you have that embossed look that makes the lettering seem to pop right out of the screen.



Figure 20-14
Drawing in a PostScript program is a tad tricky. Click to plant a starting point. Release the mouse. To create a curve, click elsewhere and drag, shaping the curve as you go (middle). When you switch to Preview mode, you see what you have actually drawn, depending on your Fill and Stroke settings (right).



Because PostScript line drawings of this type are so gorgeous when printed on laser printers and (in particular) professional publishing equipment, other kinds of graphics programs have begun adopting features from PostScript programs. For example, ClarisWorks, Canvas, and other drawing programs now include a "freehand tool" of some kind (in other words, one that works like the pen tool in FreeHand or Illustrator).

Faster, more reliable printing

Delays, out-of-memory messages, and PostScript errors are almost inevitable when you print complex PostScript documents. Here are some tricks for not overwhelming your printer (both the machine and the person).

- Where possible, use blends instead of graduated fills. The effect is similar: a smooth, gradual change in shading from one side of an object to another. Graduated fills tax a printer much more than a blend (which is actually a series of adjacent copies of the object, each a different shade). As an added bonus, blends also give you more control over the rate of shading change and look better on the screen.
- Don't make your page size any larger than it has to be. Even if the extra space is completely blank, it still uses up some of the printer's memory.
- Every line (path) you draw has an associated *flatness*, a PostScript accuracy setting. You can edit this setting; in FreeHand, for example, you select the path and open the Element Info dialog box (⌘-I). By setting this PostScript variable to, say, 3 instead of 0, you can speed up printing by up to four times and save precious printer memory, without sacrificing image quality, even on very high-dpi printers. (Just don't set it higher than 4 or so, or you'll start seeing some strange shapes.)
- Eliminate superfluous points from your paths. Especially troublesome are complex paths that result from autotracing images; when the number of points defining a path approaches 100, it's time to simplify the path or

split it. (Both FreeHand and Illustrator have a "Split long paths on save/print" preference that can handle the splitting for you, if you like.)

- Be aware that imported EPS files drastically increase the printing time of a FreeHand or Illustrator document.

UNIVERSAL POSTSCRIPT DRAWING SECRETS

Better-behaved EPS files in page-layout programs

If you import an EPS file that contains *type* into a page-layout program, you're practically asking for trouble printing. EPS files that contain downloadable-font information can give PageMaker or Quark fits.

We suggest converting the text into outlines (see the next Secret). That step eliminates downloadable fonts from the file altogether, resulting in faster and smoother printing.

Convert text to outlines



FreeHand and Illustrator let you convert type into editable outlines. In FreeHand, for example, you select the text block and choose Convert to Paths from the Type menu (see Figure 20-15). Then, in FreeHand, Option-click the outlines to make the individual paths editable. In Illustrator, use the hollow-arrow tool.

Figure 20-15
If you convert your type (top) to outlines (bottom), you can twist it like taffy — and print faster, too.



There are some incredible advantages to converting your type to outlines, by the way, even if you have no intention of twisting it like taffy. For example, you can send the resultant file to anybody (or any printer) without worrying whether or not they have the proper fonts. Furthermore, your graphic will print much faster, since it has no fonts to download to the printer!

Pasting into your word processor

Ever try to paste FreeHand graphics into Word (or any other program)? The Mac just beeps at you.

Here's the Secret: When you're still in FreeHand or Illustrator, select the object and press *Option* as you choose Cut or Copy from the Edit menu. You create a PICT "front end" for the invisible PostScript coding, which your word processor can accept as pasted material.

Text on a path

There are two ways in which FreeHand's and Illustrator's capability to bind text to a path are useful. First, it's handy to be able to do it at all (see Figure 20-16).

Figure 20-16
Binding text to a path gives you a few unique possibilities.



Second, you can create interesting borders this way. Use a symbol font such as Zapf Dingbats to create the type. When you bind that type around, say, a rectangle, you have a decorative border that looks like it took much more effort than it did!

In FreeHand, to bind text to a path, select both the text and the path and then choose Join Elements from the Element menu. In Illustrator, draw the path first. Then Choose the text-on-a-path icon from the Text tool's pop-out palette (see Figure 20-17). Finally, click the path you drew and start typing!



Figure 20-17
To type text on an Illustrator path, select the proper variant of the text tool.

One more note: In FreeHand, you must *group* the text to its path if you want the text to get resized when you resize the path.

The receding hairlines

In almost every PostScript and MacDraw-style drawing program, you have complete freedom over the thickness of the lines you draw. Be careful with the Hairline option, though — it's treacherous. What that setting tells your Mac is, "draw the *thinnest possible* line." On the *screen*, and on an ordinary 300 dpi laser printer, a hairline looks satisfyingly fine and crisp. But if you print that illustration on a professional printer, such as a 2400 dpi imagesetter, you'll get a line that's 1/2400th inch thick — for all practical purposes, invisible. (You'll find this vanishing-hairline syndrome even in expensive, professional clip art, too!) For best results, specify a line thickness of, say, 0.5 points, instead.

FreeHand/Illustrator default file

You can customize your FreeHand or Illustrator working environment and avoid having to re-establish all your favorite settings each time you start a new document.

Begin with a new document. Make all your menu settings, choices of line weights, fills, shades, measurement unit selections, and so on. (In Illustrator, add the fonts to the menu and *format one character* in each font, or the font-menu changes won't "take.")

Then save the document. If it's FreeHand, call it Aldus FreeHand Defaults and save it into your FreeHand Folder. If it's Illustrator, call it Adobe Illustrator Startup. From now on, each new document will adopt these settings.

FREEHAND SECRETS

Bizarre FreeHand snakes



Here's a strange little buried treasure: choose About FreeHand from FreeHand's menu. Each time you Option-click the graphic, another colorful snake is born to zoom around your screen (up to 16 of them).

Selecting through overlapping objects

If you're trying to select an object that's lying behind something else, remember that pressing the Control key while you click lets you select right through whatever's on top. A similar trick: If you group a bunch of objects, you don't have to ungroup them just to change or move one part. Just Option-click to select something without removing it from its group. (By the way, you can combine these techniques: Control-Option-click selects one item in a group that's hidden by other objects.)

The unknown cropping tool

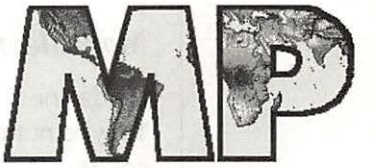
You can crop imported TIFF files (or any other graphics) just as easily as you can in PageMaker after you know how to access FreeHand's secret cropping tool. Draw a rectangle (or an ellipse or text outlines or any other enclosed shape) around the part of the TIFF image you want. Select the image and cut it to the Clipboard. Now, select the rectangle and choose Paste Inside from the Edit menu. To adjust the cropping, drag the handles of the rectangle (see Figure 20-18).

Use Option for greater precision

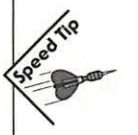
When you want to scale, rotate, or skew an object, most people are in the habit of using the mouse and making the adjustment by eye.

If you prefer making the change with more precision, Option-click the object. A dialog box appears in which you can specify the exact amount by which you want to skew, rotate, or scale the object you clicked.

Figure 20-18
You can fill an outline with a TIFF graphic using the Paste Inside command.



Power keys



You can change tools on the palette by pressing the number keys on your keyboard. They are numbered numerically from 1 to 0, starting with (1) the rectangle tool, (2) the rounded-rectangle tool, and so on.

What's handy, especially on small-screen Macs, is that these shortcuts work even if you hide the tool palette to reclaim more screen space.

ILLUSTRATOR SECRETS

Adjustable nudge keys

As in most graphics programs, you can nudge a selected Illustrator object a small distance (one point) at a time by pressing the arrow keys on your keyboard.

Unlike most programs, though, you can change the effect an arrow key has on the object's movement: make it move 2 points, for example, or 10. Make the change in the Preferences dialog box (in the Cursor Key Distance blank).

Zooming shortcuts

Double-click the Zoom (magnifying glass) tool to double the magnification; Option-double-click to halve it.

Press ⌘-spacebar to activate the Zoom tool, regardless of which tool is currently selected. (Press Option-⌘-spacebar to activate the tool in "zoom out" mode.)

If you keep the mouse button pressed after clicking the screen with the magnifying-glass cursor, it instantly changes to the hand grabber so that you can conveniently slide the image area in any direction without having to change tools.

Here are a couple more Secrets. Double-click the Hand-grabber tool to resize the entire document so that it fits on your monitor. Option-double-click the same tool to zoom to actual size.

Movable, manipulable guide lines

Guide lines in Illustrator work much like guide lines in a page-layout program: They're nonprinting rules that help you align and position objects and text columns.

To move a guide, Control-Shift-drag it. Here's a handy side effect: After the guide line is selected (albeit invisibly), you can use Illustrator's tools to rotate or skew it.

Multiple buried treasures

In Illustrator 5.0 and later, if you click the status-line bar, you get a pop-up menu listing several practical data. But if you press Option while doing so, you get a choice of seven extremely hilarious displays: shopping days left to Christmas, the current national debt, and more!



There are several secret Easter eggs in Illustrator 6, too, as discovered by free book winner S.D. Lewis. If you choose About Adobe Illustrator from the menu, you get the about box. If you click the Adobe logo in the upper-left corner of this box, you'll be treated to an unbelievable, 15-minute, colorful, animated fireworks/laser show that features dancing logos, the Cod Squad (whatever that is), and ultimately photos of the programmers themselves.

Furthermore, if you open the About box normally and wait for 30 seconds, the credits will begin to scroll — you can accelerate them by holding down the Option key. And finally, if you press Option while choosing About Illustrator from the menu, you'll see a final secret credits screen ("Perpetrated by:").

FILE FORMATS

In the Mac universe, the most common graphics formats are TIFF, PICT, GIF, JPEG, and EPS. As you'll see, each file type came into being for a reason, and each has its limitations. Fortunately, most graphics programs can open and save more than one kind of graphics format.

PICT files

A PICT file is the one you're most accustomed to using. Mac file icons are little PICT files; so are the snapshots of the screen you take by pressing ⌘-Shift-3.

At one time, PICT was also the native format for most drawing programs, because a PICT file stores all the relationships between grouped objects. Open a MacDraw-saved PICT file in Canvas, for example, and you can ungroup it and continue to work on the art without missing a beat.

There are two significant problems with PICT files. First, their precision isn't great. A PICT file may know that a line is supposed to be very thin, for example. But it will round that line off to its nearest approximation of its original width value — half a point, for instance. As a result of the PICT format's lack of precision, you may find slight misalignments and changed line thicknesses when you transfer a PICT file to another program.

Alas, PICT is the *Clipboard's* natural graphics mode. If you draw a nice precise diagram in Canvas and then copy it, your fine hairlines and careful alignments are already gone before they're even pasted into the Scrapbook.

The second major problem with PICT files, at least in professional work, is that they have constant quarrels with professional publishing equipment (imagesetters). Your service bureau operators are likely to groan if they spot PICT graphics in your page design (as opposed to EPS or TIFF files, for example), because the potential for printer errors, graphic glitches, and other problems is much greater.

TIFF files

The TIFF file format, originally developed by Microsoft and Aldus, is something like a very high-density bitmap (painting). (TIFF stands for *tagged-image file format;* the "tags" are encoded "hints" that accompany the graphic data to enhance its appearance.) Most TIFF files start out life as the product of a scanner (see Figure 20-19). Like any bitmap, a TIFF file takes up a lot of disk space. And, like a bitmap, you enlarge such a graphic at your own risk; in doing so, you spread out the dots that make it up, running the risk of producing a bitmapped-looking graphic.

Unfortunately, some programmers endowed their graphics software with various TIFF compression schemes and other digital baggage in an effort to reduce the size of their files. As a

Figure 20-19
If it looks like a photo, it probably entered the computer in the form of a TIFF file from a scanner. But if it looks really good, and you found it online, it's probably been converted to a JPEG image to save space.



result, today's TIFF files are notoriously troublesome to exchange between programs. The standard has been corrupted so often that it's no longer a standard. Program A may still recognize a TIFF file from program B as *being* a TIFF file. Only when it attempts to display the image does it choke on program B's special riff on the TIFF theme. You get a beep, a stopwatch cursor — and a blank screen.

Here again, if your goal is to transfer the graphic to another program, your only resort is to try saving into another format. (For what it's worth, we found Photoshop capable of opening virtually anything.)

What's JPEG?

As you probably know, graphics files get pretty big. One letter-sized, full-color image can take several megabytes of disk space.

A bunch of computer-graphics experts, calling themselves the Joint Photographic Experts Group, sat around a few years ago and tried to come up with some formula for compressing graphics files so they took less disk space. (The files would also take less time to send over the modem, which was probably the more pressing concern for these Experts at the Photographic Joint, whose job it probably was to send photos back to *Time Magazine* via modem.)

They came up with a scheme that succeeded impressively at reducing the size of graphics files. They named it *JPEG compression.* When a computer stores one of your files this way, it actually discards much of the color information (that's what makes the file smaller). If it throws away *too* much, you get a crummy-looking, computery-looking picture when you open the file back up. Even so, it turns out you can throw out more than *half* of the color information from a typical photo and, upon reopening it, not notice that anything is different.

The JPEG compression format is different from any other Mac file format because of this information-discarding aspect. They call this *lossy* compression because there's some data loss; thus you can't run a file through a JPEG compressor more than once. Other compression schemes — such as those used by DiskDoubler and StuffIt, for example — are *lossless,* because when you decompress a file, it's an exact, data-full duplicate of the original.

(We think the computer world, so good at coming up with terminology, really wimped out on this one. *Lossy?* We suppose this word was someone's attempt to come up with a cute antonym to *lossless.* But that's like saying the opposite of clueless is *cluey,* or that the opposite of hopeless is *hopi.*)

Anyway, JPEG files are a hot, up-and-coming format, thanks to the World Wide Web. On the Web, JPEG files are the format of choice for high-quality

artwork. You'll also see JPEG files by the hundred on America Online and other services, ready for downloading and enjoying at very high quality and resolution.

EPS files

The *Encapsulated PostScript* file format, developed by Adobe, is so called because it contains Post-Script-language image-description codes. PostScript is the language your Mac speaks to PostScript laser printers (and high-end Linotronic printers).

In other words, when your Mac prints an EPS file, it's speaking your printer's language. The program containing the EPS file doesn't say to the printer: "Pixel number 1 is dark. Pixel number 2 is white." Instead, it sends a stream of mathematical descriptions: "Draw a 0.33-inch-thick line starting halfway across the page" and so on. EPS printouts, therefore, are among the highest quality the Mac can produce (see Figure 20-20).



Figure 20-20
EPS files are generally created by programs like Illustrator and Freehand. As a general rule, they are composed of extremely precise-looking, smooth, sharp lines.

Because printing EPS files involves this transmission of computer code, the potential for foul-ups is much greater. Documents that contain EPS files are among the most likely to give you printing problems. As we noted earlier, an EPS file may contain references to fonts that are no longer in the Mac. An EPS file's instructions may fill up (and overwhelm) the printer's memory. See Chapter 25 for more about printing. In the meantime, remember that EPS files look great when printed — *if* they print.

One more note about EPS files: They come in two parts. The critical part, actually, is invisible to you. It's a stream of PostScript instructions (see Chapter 25 for a primer on PostScript language codes). These are for the printer's benefit.

For *your* benefit, most EPS files include a second component: our friend, the PICT file. This is the on-screen stand-in for the printer instructions.

Where things get odd is that the PICT-file portion of an EPS file is actually optional. In the course of your computing days, you may run across an EPS file that's represented on-screen simply by a big X in a box — but that prints out beautifully. (That's why, when you save an Illustrator file as EPS, you're given the option of including a PICT Preview.) Conversely, many a QuarkXpress-based publisher is zapped by the old "missing PostScript" file. That's when the PICT representation of the graphic looks fine in the on-screen layout, but prints as a jagged PICT file because the actual EPS file (containing the PostScript printer instructions) has been moved or lost.

TRUE FACT

OPENING A TIFF FILE FROM AN IBM

Despite the different strains of TIFF files circulating in the Mac world, there's one more variety that *ought* to be openable by a typical Mac graphics program: TIFFs from the DOS world.

Use PC Exchange, described in Chapter 4, to bring the TIFF file onto the Mac. You still won't be able to open it, however, until you change its *type code* (see Chapter 16 for more on type codes).

Using Drop • Info, included with this book, change the file's type code from *.TIF* to *TIFF*. Now you can open the file with Photoshop, MacDraw Pro, or other Mac graphics programs.

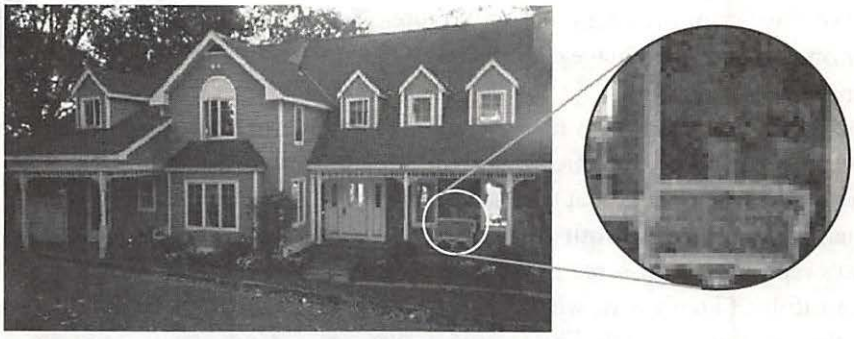
GIF files

GIF stands for *graphics interchange format.* It began on CompuServe, as a means of making graphics available to users of any computer model. Indeed, today, GIF files are used almost exclusively for sending through cyberspace — on the Web, especially, and also on regular online services. Unfortunately, its "any-computer-can-open-me" quality means that GIF files must be the lowest common technical denominator; a GIF file can have a maximum of 256 colors, which is not even close to the photorealism of, say, JPEG (see Figure 20-21).

If you don't do much modem-roaming to the Web and on-line services, you'll probably never encounter a GIF file. If you *do* visit those services, however, you'll find thousands of these graphics images. And you'll wonder why none of your graphics programs can open them!

Because GIF files have such a specialized purpose, not all graphics programs can open them. GIFConverter and GIF Watcher are two GIF-opening shareware programs. Photoshop and ClarisWorks 4 can also open them.

Figure 20-21
You can spot a GIF file fairly easily in your Internet and other online wandering: you'll see a photo or other graphic that isn't really photo-realistic. You can see the individual pixels that compose the image, and they're limited to a palette of 256 colors.



SCRN (Startup screens)

A startup screen is essentially a PICT file that's been doctored using ResEdit, or saved as such out of Color It (included on the disks with this book). Thus prepared, the Mac displays this PICT file when it starts up, in lieu of the usual "Welcome to Macintosh" message. We've included a few startup screens with this book. For instructions on making your own, see Chapter 21.

3-D GRAPHICS

Until now, the world of 3-D graphics has been a relatively rarefied one. Creating three-dimensional scenes on a two-dimensional screen requires a serious commitment of time, training, and money that only people such as architects, industrial designers, and movie makers are willing to make.

When you create a 3-D graphic, you use a program like StrataVision or Infini-D. You work with wireframe graphics on the screen, shaping and combining the rudimentary shapes provided by each program (spheres, cubes, cones, and so on) into the solid objects you want to depict. You can then overlay these objects with *texture maps* (flat, wrappable designs such as bricks or wood grain) or *bump maps* (to give your 3-D objects some degree of real-world roughness). Using a series of dialog boxes, you also must establish the angle, reflectiveness, and transparency of the objects in your 3-D scene. You then set up the "lights" in the room — their placement, color, intensity, and so on.

You do all of this work in wireframe or highly simplified views — 3-D modeling is definitely not WYSIWYG. Once you've input all of the various technical parameters, the Mac creates a finished graphic — in technical terms, it *renders* the scene. Rendering is a fantastically slow, complex, computationally intensive task, taking hours or days for a single file. That fact easily explains why there are people happy to pay $5,000 for the very latest, fastest Power Mac when it comes out. (You can also now understand why a movie like *Toy Story*, whose every frame was created as an individually rendered 3-D computer graphic, took several years to create.)

QuickDraw 3D

Fortunately, the cost of enjoying the 3-D graphics world — measured in time, money, and technical expertise — is about to drop dramatically. Apple has created QuickDraw 3D, a technology that creates a standard, easy-to-use inter-

DIALOGUE

The GIF of the Magi

DP: Good thing this is a book.

JS: What?

DP: Instead of a radio show or something.

JS: What are you talking about?

DP: I'm just glad we don't have to ***pronounce*** these things out loud. We can just ***type*** them.

JS: What's wrong with pronouncing graphic formats?!

DP: Well, I mean, we say PICT like "picked," and TIFF like "tiff," but what about the others?

JS: What's so difficult? EPS, you spell out the letters. JPEG, you say "***Jay*** peg."

DP: Yeah, but ....

JS: Come on, what's really on your mind?

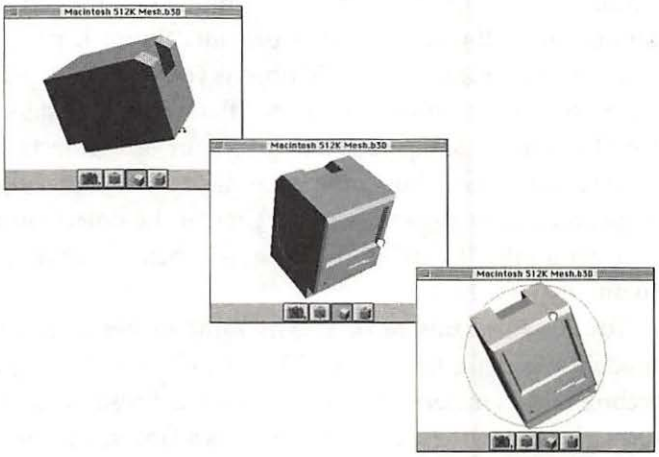
DP: I just don't want to say that other one.

JS: What other one?

DP: Every time I say it, somebody says I'm pronouncing it wrong.

face and file format (3DMF). QuickDraw 3D adds 3-D graphics capabilities to the standard Mac operating system in exactly the way that QuickTime added digital movies. Exactly as with QuickTime, the suite of tools includes a system extension, a new Scrapbook (see Figure 20-22), a new version of SimpleText, and tools for software companies to write programs that take advantage of the new technology. These software components come pre-installed on most new Macs, are part of System 7.6, or can be downloaded from America Online (keyword: *Applecomputer*) or the Web *http://www.apple.com*).

Figure 20-22
The Scrapbook of things to come. By clicking and dragging, you can rotate this Scrapbook item (a QuickDraw 3D object) in any dimension; zoom in or out; move it across the screen; or apply a texture map to it.



Once you've installed QuickDraw 3D, you can, for example, drag and drop a 3-D object file between SimpleText and the Scrapbook. Once in the Scrapbook, you just drag your mouse around inside the picture window to rotate or tumble the object you're looking at. Better still, you can drag a 2-D (regular) graphics file on top of such an object — instantly, that object is plastered with the graphic image. In other words, drag a scanned photo of bricks onto a QuickDraw 3D model of a car, and suddenly you've got a brick car.

QuickDraw 3D won't be *quite* the hit that QuickTime was — partly because 3-D modeling isn't as popular as moviemaking, and partly because 3-D requires serious computing horsepower: a Power Mac, mucho megs of RAM, and, preferably, a 24-bit color monitor. Still, new programs are already being released that use QuickDraw 3D technology. They're the beginning of a computerized 3-D explosion: cheaper, easier modeling programs; more realistic games; and even "virtual worlds" that you can visit on the World Wide Web.

And if you're already on the Web, visit *http://quickdraw3d.apple.com/* for the latest on QuickDraw 3D.

JS: Pronouncing ***what*** wrong?

DP: No, I don't think —

JS: Just say it!

DP: GIF.

JS: Oh, that.

DP: Satisfied?

JS: By the way, you pronounced it wrong.

DP: Oi!

JS: ***You*** pronounced it like Jiff, the peanut butter.

DP: Doesn't everyone?

JS: No, it's GIF, with a hard G. Because it stands for ***Graphic*** Interchange Format. Get it?

DP: Well, the last time I said it your way, some user-group guy corrected me.

JS: Well, at least you're not as bad as this woman at my office ....

DP: Yeah? Why? How does she say it?

JS: She keeps referring to them as ***gift*** files.

DP: Stick with me, kid.

Chapter 21

The ResEdit Chapter

IN THIS CHAPTER:

- What ResEdit is
- Fundamentals of using ResEdit
- Customizing menus, buttons, and dialog boxes
- Secret messages in your system software
- Ten great ResEdit pranks

This book could not live up to its name without a chapter on ResEdit. ResEdit isn't just another application; it's the key that unlocks some of the Mac's strangest and most elusive secrets.

And we're talking *real* secrets here — not just undocumented features, obscure ⌘-key combinations, or cute hidden messages. We're talking about the nuts-and-bolts stuff of which programs are made, stuff that's completely invisible to the average user.

ResEdit lets you poke into any application's *resources*, its most basic components, and rebuild them the way you want. If you don't like the name of a menu command, you can change it. If you're running short on hard drive space, you can rip unneeded sounds and pictures right out of your applications. You can totally redesign menus, dialog boxes, icons — all without knowing the first thing about programming.

Veteran *Mac Secrets* owners are no doubt rifling through their CDs, exclaiming, "Hey — where the heck's ResEdit?" It's true: for the first time, this edition of *Mac SECRETS* doesn't come with ResEdit. Apple increased the

amount it charges us to license ResEdit tenfold — a weird and goofy move, we think, since ResEdit is available for *free* from about 11,000 sources. For example, it's on America Online (use the Search Software Libraries command in the Go To menu). It's also available from Apple's Internet software site, *ftp://ftp.support.apple.com/apple_sw_updates/US/Macintosh/Utilities;* our own Web site, *http://www.idgbooks.com/idgbooksonline/macsecrets,* has a link to Apple's ResEdit download page.

And if you have no modem, a local Mac user group can provide ResEdit; as a last resort, you could call IDG Books at 800-434-3422 and request the floppy-disk set from the *third* edition of this book.

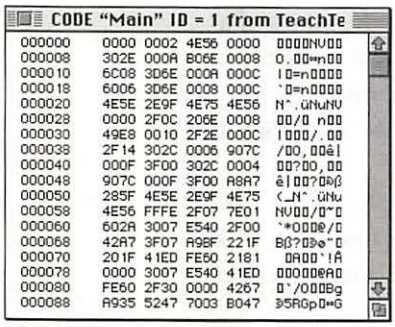
WHAT IS RESEDIT?

Every recognizable Mac element of a program — icons, menus, dialog boxes, cursors, background patterns, sounds, graphics — are called *resources.* ResEdit stands for *resource editor,* and that's just what it is: Apple's own utility for changing a file's resources. Apple created ResEdit early in the Mac's history so that programmers could easily manipulate the basic elements of the Macintosh interface. Over the years, successive versions of ResEdit have become safer and more user-friendly. Today, it's accessible enough even for an advanced beginner to use.

ResEdit lets you edit many different kinds of resources. System 7.5.5's System file alone contains 178 different types. Some are easier to edit than others. To work with icons, for example, ResEdit provides basic painting tools. For windows and dialog boxes, there are tools for changing the color, size, and arrangement of the window elements; these tools closely resemble those you might find in a drawing program.

Other types of resources aren't quite so easy to handle. If you try to edit a resource for which ResEdit has no special editing tools, the program opens the resource in a *hex editor.* A hex editor is a window that displays the resource's code in raw hexadecimal form.

Figure 21-1
The unfriendly looking hex editor displays a resource's code in hexadecimal form.



The first time you open a hex editor (see Figure 21-1), you may momentarily think you're working with something very foreign and incomprehensible — like DOS.

Nonetheless, you *can* edit a resource using a hex editor; you just have to know which part of the code to change. Several of the Secrets described in this section require you to work with a hex editor. But don't worry, we'll tell you precisely which part of the code to select and how to change it. All in all, it's pretty painless.

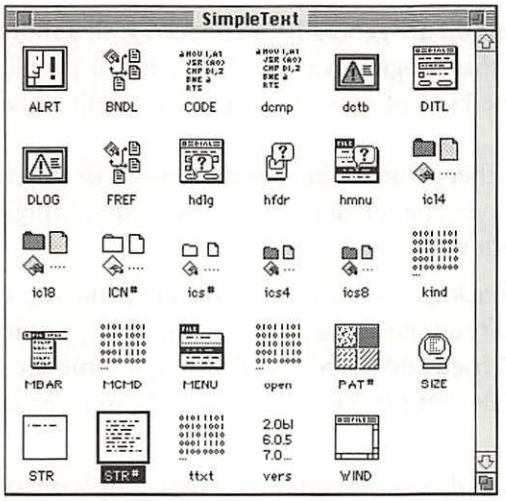
HOW TO USE RESEDIT

Editing a resource is simple: Drop the icon of the file you want to examine or edit onto the ResEdit icon. (Actually, drop a *copy* of that file, for safety; more on this topic later.)

Alternatively, or in System 6, launch ResEdit. An Open File dialog box presents itself; open the file you want to change.

You can open any kind of file: applications, control panels, system extensions, or any other file. (Most *documents* don't have resources, however.) Doing so reveals a window filled with icons representing all the different types of resources used in the file, as shown in Figure 21-2.

Figure 21-2
SimpleText, as seen through the eyes of ResEdit. Each resource type is represented by an icon.



As you can see, each resource type is identified not only by an icon, but by a four-character code, such as FOND, DLOG, or STR#. (Some resource names like "snd" or "STR" appear to be only three characters long, but they actually consist of three characters and one space.) Often these codes hint at their contents. The ICON resource is where you can change the shape of your icons (the *real* icons, not the kind you can paste into the Get Info box in System 7); the DLOG is how you change a dialog box; and CURS is where the cursor shape lives.

ANSWER MAN

A hex on both your houses

Q: ***Not so fast there, Answer Men. You're not going to lob a term like* hexadecimal *at us without defining it, are you?***

A: No.

Because it's a binary machine, the Mac has 16 "fingers" to count on instead of 10, like humans. Therefore, it has to count beyond 15 before advancing into two-digit numbers.

As a consequence, we humans have invented a bizarre numbering system called hexadecimal, in which you can count all the way up to 15 with a single digit. You count in hex like this: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F. The next number, in our notation, would be 16. In hex, the next number is written 10!

Here are some basic equations in hexadecimal notation: 2 + 2 = 4. Next, we have 4 + 4 = 8. But 8 + 7 = F. And F + 1, as we've said, is 10 (in hex).

Get it? (We admit that this sort of plays with your head.)

ANSWER MAN

It don't work!

Q: ***I tried one of your ResEdit hacks, and it didn't work!***

A: Hey. We tried. We tested every trick on almost every System version we could find, but there are some incarnations of the Mac's System software we simply couldn't get our hands on. We *are* sorry if something doesn't work on your system, or with your particular set of extensions. But frankly, this is hacking; you do your deed and then see if it flies.

If you operate only on a *backup* of the target file, you've lost nothing by trying.

Look for the type of resource you want to edit. Then open its icon by double-clicking. This introduces a new window listing all the individual resources of that particular type (for example, all the sounds in a program). Each resource is tagged with an ID number. Double-click the resource you want to modify and the appropriate editing window will open. (We'll walk you through all this, step by step, in the following Secrets.)

Occasionally, when you try to open resources in the System file, you'll encounter a dialog box warning you that the resource is compressed and asking if you want to edit it anyway. Click Yes and the resource will automatically be decompressed.

That's really all you need to know to pull off any of the tricks listed in this section. But before you go hacking away at your System file, we need to discuss the Peril Factor.

The Peril Factor

Articles and books on ResEdit are generally introduced with a morose warning about how perilous this program can be. We've heard people describe ResEdit as if it were some kind of poisonous snake, difficult to handle and potentially hazardous.

Actually, ResEdit is neither intimidating nor dangerous. In fact, we're confident that using it will never result in any kind of fatal computing disaster if you follow these sensible guidelines:

- Make sure you have a backup, somewhere, of whichever file you try to edit with ResEdit. (You *can't* edit the active Finder — only a copy of it.) The procedures here are all tried and tested. But if, through some slip-up, you end up with a System file that behaves oddly, the backups make it easy to recover.
- To make a quick backup of your System file, Option-drag it out of your System Folder — to, say, the Desktop. Make your ResEdit changes to this copy. After saving your changes to the copy, put your *original,* untouched System file (until now, still in the System Folder) into a safety folder of its own. Finally, put the edited copy — sitting out on the Desktop — into the System Folder. You've just swapped them. Now restart the Mac. (Keep your still-virginal copy around for handy replacing access.)

- Nothing you do in ResEdit "takes" until you save your changes using the Save command. You can fiddle around with a file in ResEdit all you want with virtually no danger of ruining it — just don't save your changes before quitting.
- After you've made one change to a program with ResEdit, save your work, quit, and examine the results before making the next change. This way, if something *does* go wrong, it'll be much easier to hunt down the problem.

A primer in customizing menus

ResEdit is the Mac's premiere menu-customizing tool. Not only can you use it to add a ⌘-key equivalent to any command on any menu in any program, you can also *rename* menus and the items on them. You can even change the *color* and *style* of menu items, enabling you, for example, to make your most frequently used commands stand out in bright red italics. You can assign a color to the menu background and to each of the separator lines that appear between menu items. And perhaps wildest of all, you can add your own *icons* to any menu command!

To add a keyboard command to a menu item

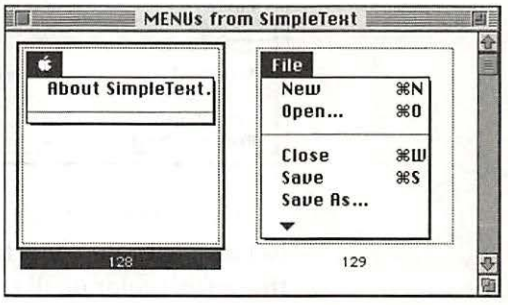
Open the application you wish to customize with ResEdit. Then, with a double-click, open its MENU resource icon (see Figure 21-3). (You won't find a MENU resource in the Finder, though — only in normal programs. Instead, you have to open and edit the *fmnu* resource; we'll get to that in the next section.



Figure 21-3
The MENU resource.

When you open the MENU resource, you see each of the program's menus displayed in a separate box within a window. For example, if you opened SimpleText's MENU resource, you'd see the window shown in Figure 21-4. Scroll to the particular menu you want to edit and double-click it to open up the menu-editing window.

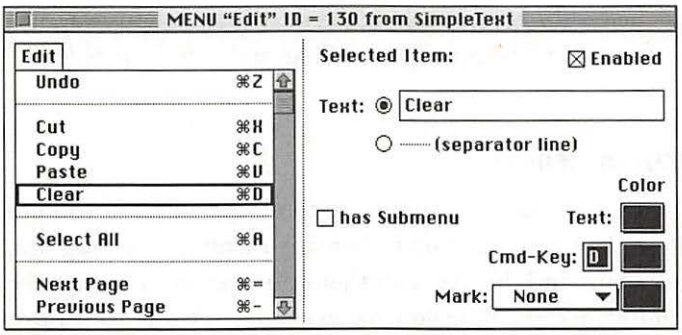
Figure 21-4
The opened MENU resource, with each menu displayed.



Suppose you want to add a keyboard equivalent for the Clear command on SimpleText's Edit menu. Just select the command (or press Return to cycle through the menu items one by one) and then press Tab twice. This selects the ⌘-key field in the lower-right portion of the window. Type in the letter you want for the command (in this example, we chose "D"), and it's automatically

added to the menu (see Figure 21-5). Save the changes using the Save command before quitting ResEdit.

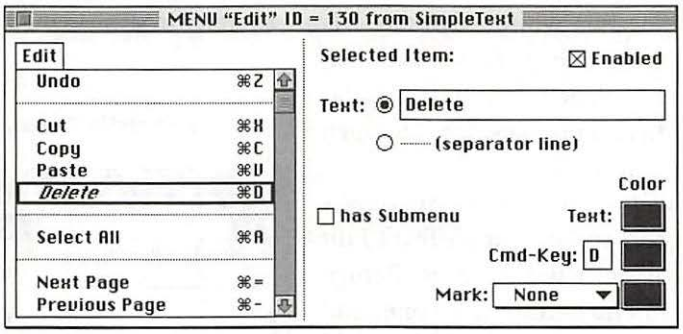
Figure 21-5
Adding a ⌘-key equivalent to a menu.



To change the names, colors, and styles of menu items

Select a menu item (or the menu title itself). Its name appears in the Text field. You can rename the command or title by pressing Tab (to select the Text field) and then typing in a new name. To change the style of the text — adding italics or underlining, for example — use the Style menu on ResEdit's menu bar. Figure 21-6 shows how the Clear command has been renamed Delete and set in italics.

Figure 21-6
In this example, a menu item has been renamed, assigned a keyboard equivalent, and set in italics.



When the menu *title* is selected, the three color pop-up palettes allow you to pick a custom color for the title of the menu, the menu background, and the default color of all text in the menu commands. When a menu *command* is selected, the same three palettes let you choose new colors for the text of the

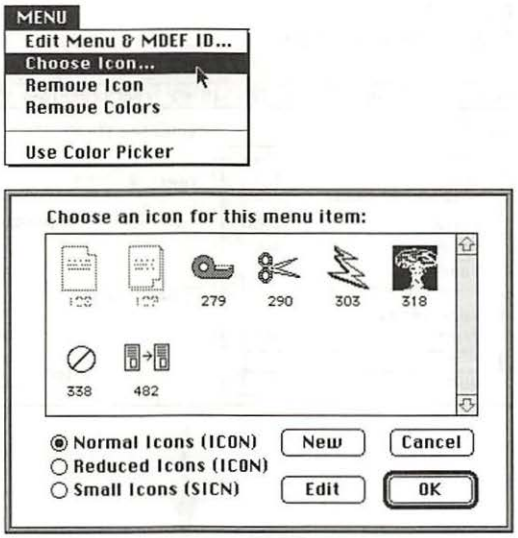
selected command, its associated ⌘-key, and any mark or symbol selected to appear next to the command.

Renaming a menu or menu item can make it easier to locate an obscure-but-needed command. For example, when using the telecommunications program MicroPhone II, we can never remember which Settings-menu command you're supposed to use to change the baud rate. Is it the Communications or Terminal command? We ended the confusion by changing the name of the Communications command to Baud Rate. We've never opened the wrong menu item since.

Adding icons to menu commands

After opening a MENU resource, select the menu command to which you'd like to add an icon and choose the Choose Icon command from ResEdit's Menu menu (see Figure 21-7).

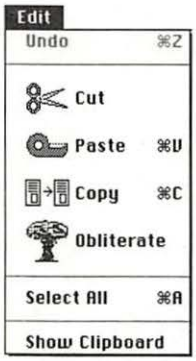
Figure 21-7
The Choose Icon command lets you create icons and stick them next to any menu command.



In the Choose Icon window, select one of the three size options: Normal, Reduced, or Small. (The smallest icon size can't be used if you've added a Command-key shortcut to the selected command, too.) Now, click the New button. You'll see a simple icon-editing window. All you have to do is paste in a graphic from another program, or draw one from scratch. (To doctor up an existing icon, select it and click the Edit button.) When you're finished,

close the editing window and double-click your new icon to apply it (see Figure 21-8).

Figure 21-8
A TeachText edit menu dressed up with a set of custom icons and one renamed menu command.

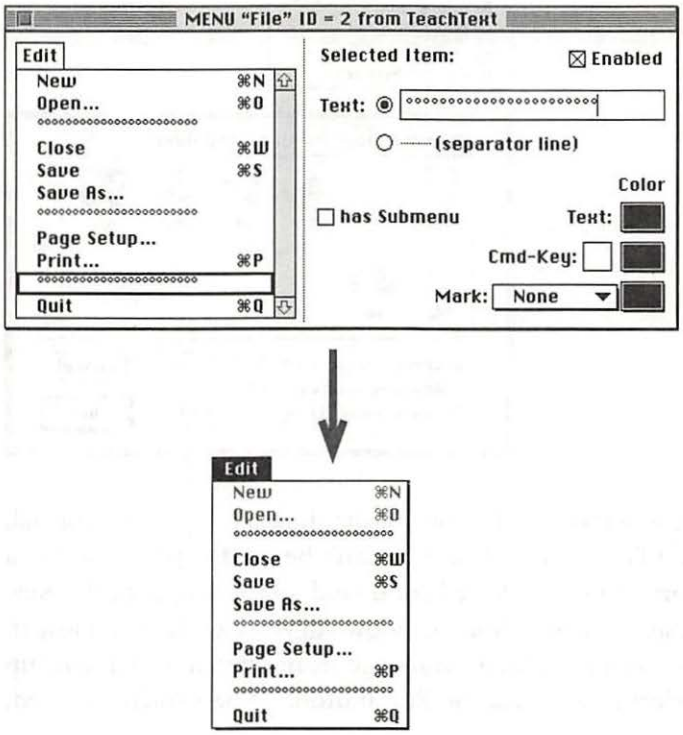


Customizing separator lines

You can select any separator line that appears in a menu and, using the pop-up color palette, change its color. To completely eliminate a separator, select it and click the Text radio button without typing *anything* in the text field.

Here's another neat variation: Select a separator line, click the Text radio button, and then type in a string of characters — dashes, bullets, asterisks, or whatever — to make a *custom* separator. You can assign these characters a color and style to create some interesting effects, as shown in Figure 21-9. In this example, a standard separator line was replaced with a string of tiny circular degree characters (produced by pressing Option-Shift-8). The condensed font style and a custom color were applied to give the separator its unique look. (Type a left parenthesis somewhere in the string, however, if you want to make this command unselectable.)

Figure 21-9
Creating custom separator lines.



Combining all these techniques, you can also create some wild-looking reversed-color menus, as shown in Figure 21-10. Choose a dark color, or black, for the background, and set the menu text to white or a light color.

Figure 21-10
A reversed-color menu.



Adding a keyboard equivalent in Finder 7

The Finder doesn't have a MENU resource. Instead, information about menu items is stored in the *fmnu* resource, which is a bit harder to edit. Nevertheless, you can still add keyboard commands to Finder menus by inserting information into the *fmnu* resources. Here are some tricks worth trying.

Adding an Empty Trash keyboard equivalent

Perhaps to protect the novice, there's no keyboard equivalent for the Empty Trash command. But, suppose you want one.

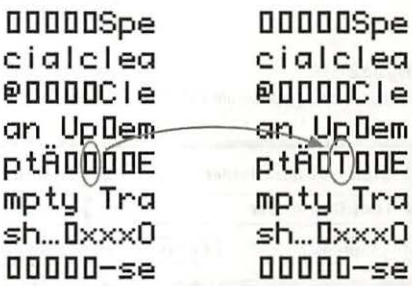
Open a copy of the Finder (not the one in the active System Folder) using ResEdit. Double-click the *fmnu* resource icon. You see a long list of numbered resources. Near the top of the window, the resources numbered 1252 though 1256 contain information about the contents of the Finder menus, according to the following scheme:

Resource ID number	Finder menu
#1252	File
#1253	Edit
#1254	View
#1255	Special
#1256	Labels

Open the resource corresponding to the menu you want to edit — in this case, 1255 for the Special menu. Use the Find ASCII command (⌘-G), type **Empty Trash** (capitals count), and press Return to find that text in the narrow column of text on the right side of the window. Or, you can just scroll down until you find the words "Empty Trash" in the column (it's split over two lines).

Just *before* the phrase "Empty Trash," you see four box-like characters (which we've heard called both *hex bits* and *nybbles*). Select the second hex bit character on the line, exactly as shown in Figure 21-11, and change it to whichever letter you want to use as the ⌘-key shortcut (T, for Trash, is the logical choice).

Figure 21-11
Adding an Empty Trash keyboard shortcut in fmnu resource 1255.



When you insert the T character as shown, choose Save, and quit ResEdit. Now drag the Finder you just modified into the System Folder, so that it replaces the active Finder. When you restart the Mac, you'll see that ⌘-T has been added next to the Empty Trash command on the Special menu (see Figure 21-12).

Figure 21-12
The Special menu, with an added Empty Trash keyboard shortcut.

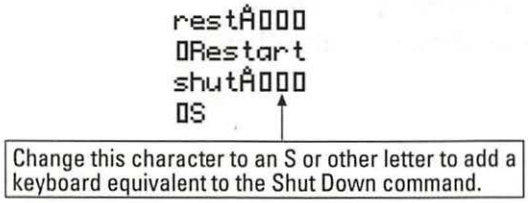


Using this same method, you can add a keyboard equivalent to almost any Finder command that doesn't already have one. Always add the character in the *third space before* the name of the command, replacing the hex bit character that appears in that spot.

Adding a Shut Down shortcut

The method just described *doesn't* apply to the Shut Down command in the Special menu. Of course, with System 7.5.1 or later, you already have a built-in keyboard shortcut for the Shut Down command — just press the power key on your keyboard. But, if your Mac doesn't support shutting down with the power key, here's how you can add a Shut Down keyboard command of your own. Open resource 1255 and find the word *shut* (not Shut Down) in the second-to-last line of the rightmost column. Change the third character *after* the word *shut* to an *S*, or any other character you want to use, to add the keyboard equivalent (see Figure 21-13).

Figure 21-13
A closeup of resource 1255, where you can add a keyboard equivalent to the Shut Down command.

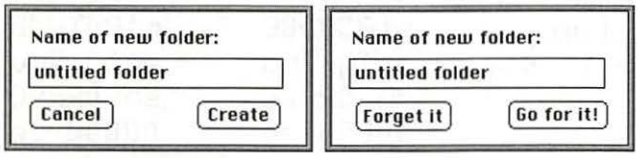


Customizing dialog boxes

You can customize dialog and alert boxes in any program by editing the program's DLOG, ALRT, and DITL resources. Opening a DLOG or ALRT resource enables you to change the size, window type, position, and color of a dialog or alert box. The DITL resources contain the actual *contents* of the dialog boxes — buttons, text, and icons, all of which can be edited or replaced.

Suppose you want to customize the dialog box that appears when you create a new folder from within a Save File dialog box in System 7.5, as shown in Figure 21-14. This involves resizing the dialog box, as well as resizing, moving, and renaming the two buttons.

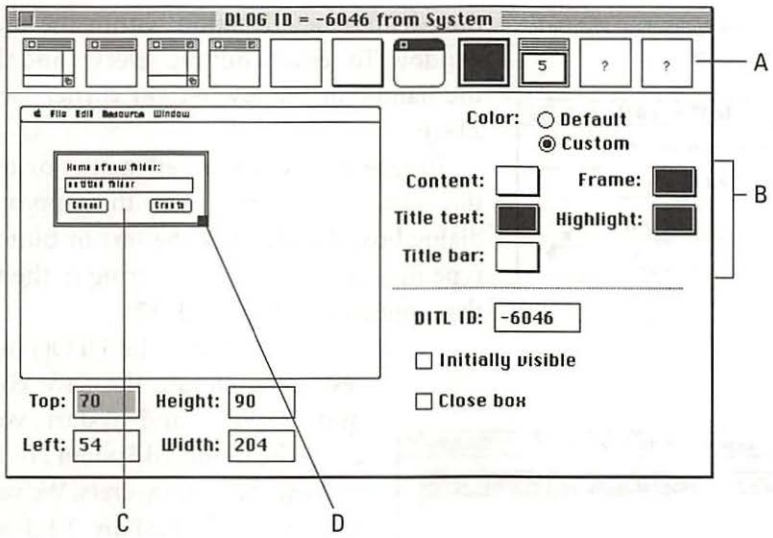
Figure 21-14
A typical dialog box, before and after ResEdit hacking.



Open a copy of the System file using ResEdit. Double-click the DLOG resource icon; then double-click resource number -6046. You see the dialog editing window (see Figure

21-15), which displays a shrunken-down version of the "create new folder" dialog box against a mini-Mac screen.

Figure 21-15
The DLOG editing window.



Here's a guide to the dialog-editing controls that appear in this window:

A Click one of the icons across the top to change the window type. You can put the dialog box in a window with or without a zoom box, resize box, title bar, drop shadow, and so on. To preview your choice, use the Show Dialog at Full Size command from the DLOG menu.

B To change the color of a dialog box, select the Custom radio button, and then use the pop-up color palettes to pick a new color for the title text, frame, and highlighting.

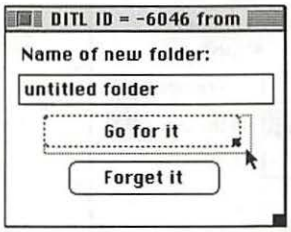
C Drag the whole dialog box across the miniscreen to change the location where it will appear on the real screen. (You can see how the dialog will look on the actual screen by using the Show Dialog at Full Size command from the DLOG menu.) *Double-clicking* anywhere on the minidialog box automatically opens the corresponding DITL resource, which contains information about each button, text string, field, and icon in the dialog box.

D Resize the dialog box as you would any window, by dragging the handle at the lower-right corner.

Editing individual dialog-box elements

After you adjust the size, color, and type of the dialog box, double-click it to open DITL resource -6046. The DITL resource allows you to edit any element *within* the dialog box.

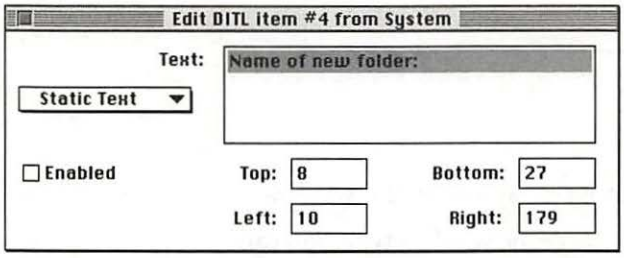
Figure 21-16
Drag the resize handle of a button to change its size.



To move a button, text string, or icon, simply drag it to a new location within the dialog box window. To resize a button, select it and then drag the handle in the lower-right corner (see Figure 21-16).

To give the button a new name, or to change the *static* (unchanging) text that appears in the dialog box, double-click the text or button. Then type in a new name or text string in the text field that appears (see Figure 21-17).

Figure 21-17
Editing text in the DITL editing window.



After you edit the DLOG and DITL resources, choose the Save command, quit ResEdit, and restart your Mac using the modified System Folder.

Now then: the Secrets. We've tried all of these with ResEdit 2.1.3 and performed our surgeries with various incarnations of System 7; some may not work in System 6 or 7.6.

RESEDIT SECRETS

Getting rid of the jack-in-the-box once and for all

We guarantee the first thing you'll want to do after you start using ResEdit is get rid of its irritating splash screen, which features an insipid jack-in-the-box. Fortunately, this doesn't require any hacking. Choose Preferences from ResEdit's File menu and deselect the check box next to Show Splash Screen. You'll be glad you did.



ResEdit navigation shortcuts

You can use a number of keyboard shortcuts to locate resources quickly in ResEdit, rather than scrolling through lengthy windows to find a particular

item. Many ResEdit hacks can be accomplished without a single mouse-click. Here's the rundown:

- As in Finder windows, you can jump to any resource icon simply by typing its name, or just the first letter of its name. If you open the System file and want to select the *ppat* resource, for example, type **pp**.
- Use the arrow keys to highlight any resource icon in a window.
- Pressing the Tab key moves you to the first icon at the top of a window.
- Instead of double-clicking a selected resource icon, you can open it by pressing Return or Enter.
- After you open a resource icon, you can navigate through the various resources listed using the up-arrow and down-arrow keys. Open a numbered resource by again pressing Return.
- Pressing ⌘-up arrow or ⌘-down arrow jumps you to the top or bottom of the window.

Quicker window picker-upper

As you'll no doubt soon discover, working in ResEdit means poking through a series of windows within windows. Fortunately, you needn't spend the remainder of your adult years chasing down successive close boxes. Just close the outermost window; all windows you've opened from it close automatically.

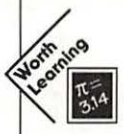
ResEdit painting shortcuts

There's a hidden Change Color command in ResEdit's painting tools, which appear whenever you edit an icon or a pattern (such as the Desktop or scroll bar patterns).

Press ⌘ and select a color from the colors palette. Instantly, all pixels of the current foreground (or background) color change to match the color you just selected.

Eliminating the "alias" suffix

When you make an alias of a file, System 7.5/7.6 automatically appends the word *alias* to the end of the file's name — and most normal people promptly hack it off. You can teach the Finder to stop adding the suffix in the first place.



After opening a copy of the Finder with ResEdit, find the STR# resource icon. Open it, and then open resource number 20500. This resource window contains a series of fields filled with pieces of text (*text strings*) used by the Finder (see Figure 21-18).

TRUE FACT

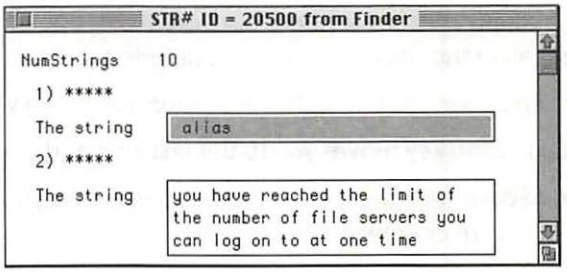
HOW WE WROTE THIS CHAPTER

We'll be honest — we've written and revised this chapter through four editions of this book and it just about drives us crazy every time. To test all of our Secrets, you see, we have to doctor up one System or Finder file after another, swap it into the System Folder, and then restart, again and again and again.

To ease the pain, however, we start by putting copies of our pristine, non-hacked System and Finder files into separate folders on the Desktop. Then, every time we want to test another secret, we just Option-drag one of these files to the Desktop and start operating. This way, we always have a clean, ready-to-use System or Finder available, without having to repeatedly dig into the System Folder.

We also begin our testing sessions by visiting the Extensions Manager control panel and turning off all but the most essential control panels and extensions, dramatically speeding up the Mac's startup sequence. We suggest you do the same.

Figure 21-18
Get rid of the "alias" suffix on newly created aliases by editing the first text string in STR# resource 20500.



The first field contains the text string that gets added to alias file names: the word *alias* itself. All you have to do is replace the word *alias* with a single blank space, close the resource, save the change, and quit ResEdit.

Restart your Mac using the modified Finder. Now, when you create a new alias, only the one blank space is added to the file's name — not the word *alias*.

Give the Finder more memory

The Finder's memory is supposed to be self-adjusting, grabbing as much RAM as it needs, at startup, to be ready for its hard day of work. Sometimes, though, it underguesses; at some point in your work, you get a message saying, "There is not enough memory to keep this window open."

You *can't* allocate more memory using the Finder's Get Info window, as you would any normal program; its Get Info box doesn't have any memory-size boxes. However, you can give it more memory — with ResEdit.

Open a copy of the Finder with ResEdit, double-click the SIZE resource icon. You'll see a resource called ID -1. Open it and scroll down to the bottom of the window. You'll see two fields — Size and Min size. The Size field shows the amount of memory currently allocated to the Finder (in *bytes*, not kilobytes). In System 7.5.5, the number is 189440 (that is, 185K). To increase the memory allocation, just type in a higher number. (Typing in 512000, for example, would give the Finder a memory allocation of 500K.) When you're finished, save the changes, then restart your Mac using the altered Finder.

Make a program Stationery-stupid

In Chapter 16, we mentioned that "Stationery-savvy" programs can create Stationery documents that, when double-clicked, produce an untitled document on the screen, a copy of the original.

We actually prefer the approach of nonsavvy programs, whose Stationery documents prompt you for a name and folder for the document copy. Here's how to make a program that does Stationery the correct way behave as though it doesn't, so you'll always be prompted for a name and folder location when you double-click a Stationery document.

Open the application in ResEdit. Open its SIZE resource, and double-click the item labeled -1. Scroll down until you see the Stationery Aware option. If the 1 radio button is selected, the program handles Stationery "correctly" (that is, it *doesn't* ask you for a file name when you double-click a Stationery document). Just click the 0 button. The program is now Stationery "unsavvy." Save and quit. (However, you *can't* make an older program Stationery-aware by selecting 1 if the *0* button is selected when you first open it. That's up to its programmers.)

The Keyboard menu revealed

Have you ever seen the Finder's Keyboard menu? It's right there in the Finder, nestled between the Balloon Help and Application menu icons, but most Mac users never spot it. That's because the Keyboard menu appears only if you've installed a WorldScript foreign-language *script system* on your Mac. A script system modifies your Mac so that it can handle text according to the rules of a specific language. If you install the Japanese script system, for example, your existing Mac keyboard is mapped to the Japanese character set. The Keyboard menu lets you easily toggle between the various international keyboard layouts.

With the help of ResEdit, you can reveal the hidden Keyboard menu on your Mac — without buying and installing the Swiss German WorldScript kit. Here's how:

Open a copy of the System File — System 7.1 or later — and open the *itlc* resource icon. It contains only one resource, with an ID of 0. Open it. Scroll down until you see an option called "Always Show Keybd. Icon" listed with two radio buttons. Change the radio button setting from 0 to 1 to make your Keyboard menu spring to life. Save and close the file, and then restart using the altered System file.

When the Finder appears on your screen, you'll see a tiny American flag icon next to the Application menu on the menu bar. That's the Keyboard menu. If you have any other international keyboard layouts installed in your System file,

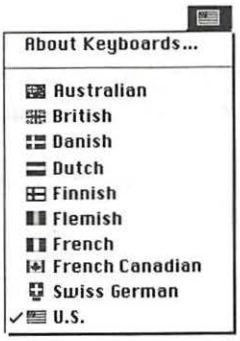


Figure 21-19
The international Keyboard menu appears on the menu bar once activated via ResEdit.

they'll appear under the Keyboard menu, each with its own flag icon (see Figure 21-19).

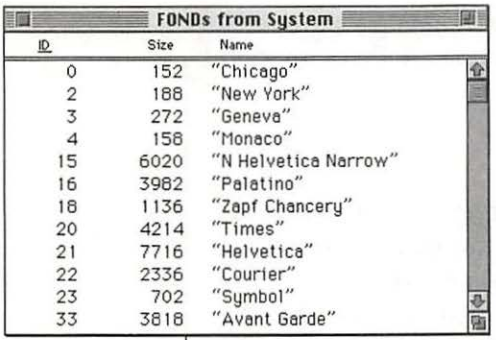
You, the owner of this book, *do* have an alternate keyboard layout, the Dvorak keyboard (see Chapter 34 for details). Drop this Dvorak keyboard onto your System Folder and you'll be able to use the Keyboard menu to switch between the standard U.S. keyboard layout and the Dvorak layout whenever you want.

Changing the system's default font

The Mac's default system font, 12-point Chicago, shows up just about everywhere you look in the Macintosh interface: menu titles, menu commands, title bars, dialog boxes, and so on. If you're not crazy about Chicago (or if you just feel it's time to change the font you've been staring at since 1984), you can change this default to any other font in the system by following these steps.

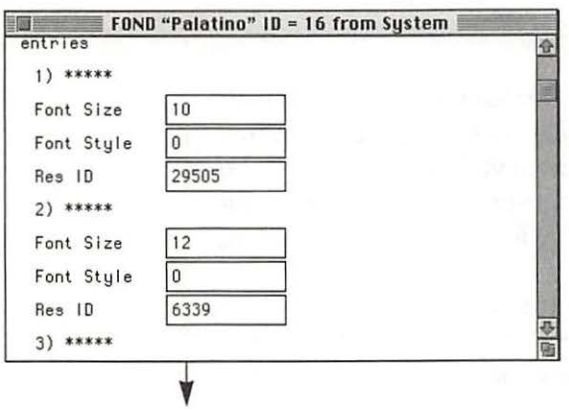
If you're using System 7.0, open a copy of the System file with ResEdit. Open the FOND resource icon. In the FOND window, you see each of the fonts listed by name, size, and resource ID number (see Figure 21-20). In System 7.1 or later, you use ResEdit to open the *suitcase* of the actual font you want to turn into the default font. Double-click the FOND resource icon to see the list of fonts.

Figure 21-20
The FOND resource lists all available fonts.



Your first task is to learn the Res ID number of the font you want to designate as the new default system font. Scroll to your font of choice — let's use Palatino in this example — and open the resource. Scroll down a bit and you'll find a series of fields set off by asterisks, as shown in Figure 21-21.

Figure 21-21
The Palatino FOND resource, showing the style and Res ID number for each font size.



These fields show the Res ID and style codes for each size of the font. In our example, we want to use 12-point Palatino, which has a Res ID number of 6339. Remember that number and close up the Palatino FOND resource.

Now open a copy of the System file with ResEdit. Double-click the FOND resource icon in the System and open the FOND resource for Chicago from the list of fonts. Scroll down to the Font Size, Font Style, and Res ID fields, and find the Res ID number for 12-point Chicago.

As you can see in Figure 21-22, this number is 12. Simply replace that number with 6339 (Palatino's Res ID number) and you're done. (The exact Res ID numbers may vary, depending on which version of the system software you're using. At any rate, just replace Chicago's ID number with the ID number of the font you want to make the default and this will work.) Don't change the 12 in the Font Size field, even if the font you're using is a different size. Save the changes, quit ResEdit, and restart with the modified system.

Your Mac may not take graciously to this kind of surgery at first. On restarting, you may be greeted with a blinking question mark or experience an immediate crash. Not to worry; just restart again and you'll find the Mac has come to accept this fundamental change to its system (see Figure 21-23).

One other point: If the new font you choose doesn't have a ⌘-key character in its font set, the ⌘ character will be missing next to menu items that have ⌘-key shortcuts. Don't worry, though; the shortcuts still work just fine.

Changing the Launcher's font

If you don't feel brave enough to alter the Mac's default system font, you might want to at least change the font in the Launcher; it looks much better when you replace the humdrum Geneva font (see Figure 21-24).

Figure 21-22
Replace the Chicago font's Res ID number with that of another font to pick a new default system font.

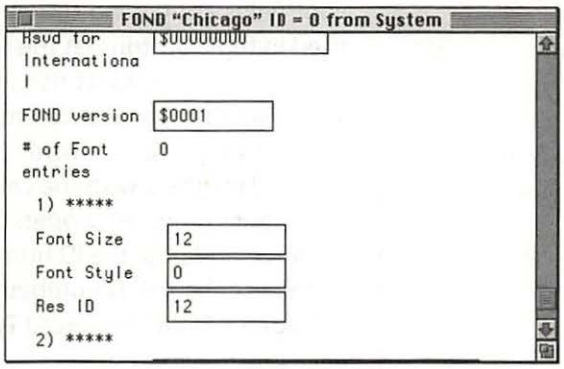


Figure 21-23
A typical dialog box, after you've changed the default system font from Chicago to Palatino.

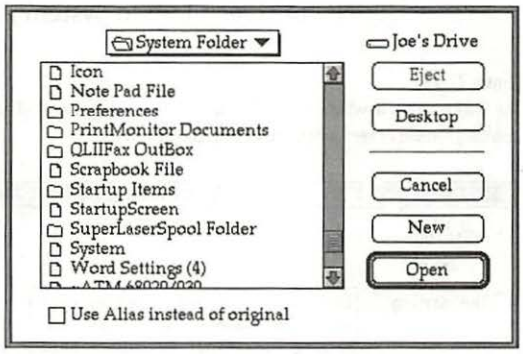




Figure 21-24
A redesigned Launcher with category labels in 16-point Helvetica and Launcher buttons in 12-point Palatino.

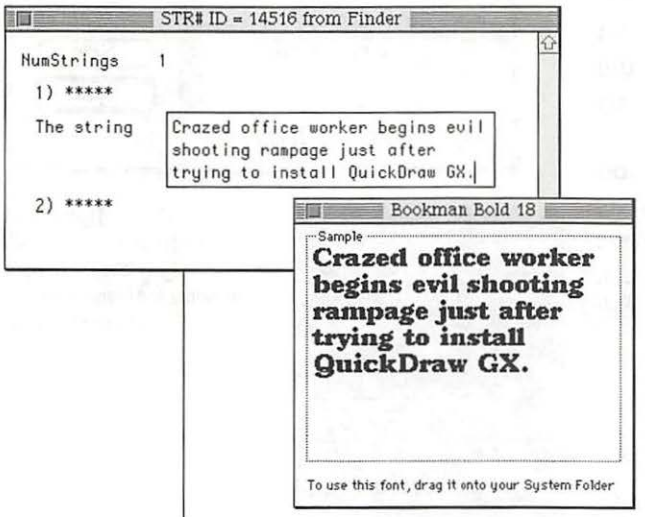
Open a copy of the Launcher with ResEdit, and double-click the *fnin* resource icon to open it. Open resource -4033. As you scroll through the resource, you'll see ten Font Name fields containing the name Geneva, and ten Font fields containing the number 3. The first set of fields controls the font used in topic buttons (at the top of the Launcher window; see Chapter 4). The next nine are the fonts used for Launcher buttons in various sizes, to correspond with the three different-sized Launcher buttons you can create.

Simply replace the word "Geneva" with name of the font you want to use and replace the 3 with the corresponding appropriate font number. To figure out a font's number ID, open that font's suitcase with ResEdit, open the FOND resource, and note the ID number associated with the font in the resource list. (Don't use the *Res ID* number that appears in the Res ID field when you actually open a FOND resource.) Type a point size in the Size fields to set a size for each font.

Changing sample font text

By now you've probably learned you can view a sample of any TrueType font or screen font in System 7. You just double-click its icon in the System Folder or Fonts folder and examine the odd sentence in the sample window: *How razorback-jumping frogs can level six piqued gymnasts.*

Figure 21-25
The STR# resource in which System 7.5's sample font string is located, and the resulting sample as seen when you double-click a font file.



You can change the text to anything you want. In System 7.5, the sample text string is an STR# resource, with the ID number 14516. Just open the STR# resource icon, find number 14516, open it, and edit the text in the first field (see Figure 21-25).

In earlier System 7 versions, this sample text string is buried in a different location; it's an STR resource, with the ID number 14512. Once you open the STR icon and open resource 14512, you can edit the text in the same way described earlier.

If you insist on replacing Apple's sentence with another that uses every letter of the alphabet, you'll have to come up with a fitting alternative, such as *We heard five obnoxious jet-black lizards quietly gulping milk.* Or, our favorite, as shown in Figure 21-25.

Change the Shut Down message

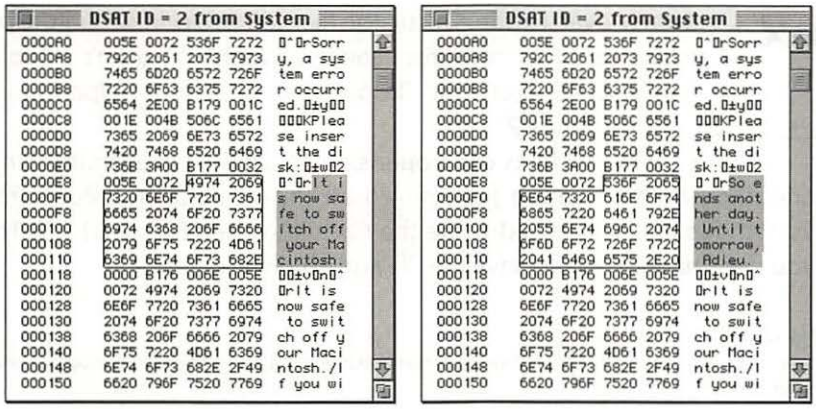
This Secret is only for compact Macs, LC I-II-IIIs, or 610/6100-class machines. If that message you get before shutting down — "It is now safe to switch off your Macintosh." — strikes you as stale, not to mention ungrammatical, you can replace it with a message of your choice, provided that the message is exactly 44 characters long.

Here's the method: Open a copy of the System file, find the DSAT resource icon, and open it up.

You'll find two resource files listed. Open the one with the ID of 2. Use the Find ASCII command (⌘-G) to search for *safe* in the narrow column of text on the right side. When you find it, close the Find ASCII window.

The Shut Down message appears twice in this column of text. You want the first occurrence of the message. Drag over the message to select it and then type in the message you want to replace it with (see Figure 21-26).

Figure 21-26
Drag carefully over the old message (left). Type in a more poetic replacement (right).



Your message must fill in the exact 44 spaces taken up by the old message. (You can always pad your message with spaces.) After you type in the full message, choose Save, quit ResEdit, and restart your Mac using the modified system. Your new message appears in place of the old message when you shut down your Mac.

Return of the secret game

System 7.5 had one secret About Box that everyone loved; if you typed the words **secret about box** in the Note Pad, then selected those words and dragged them to the Desktop, an actual game of Breakout appeared on

screen (see Chapter 6). You could use the mouse to drag the paddle back and forth, causing the ball to break through layers of bricks, each bearing the name of a System 7.5 developer. In all, three new screens full of programmer names would appear.



In 7.5.1, this secret About Box disappeared. Fortunately, it's not gone — only its trigger was removed, and we know a way to resurrect the secret game so that you can access it whenever you want. Follow these instructions.

Make a copy of the Calculator — that's right, the Calculator — and rename it something like "Secret Game." Don't use the original Calculator file; this trick will disable all the Calculator features. Make a copy and then open the copy with ResEdit.

Next, open a copy of your System file with ResEdit, too. Open the System's *timd* resource icon. If there's a resource with the ID of 12, double-click to open it. Then select all the hexadecimal code in the resource (by pressing ⌘-A) and copy it (using ⌘-C). (If there isn't one with an ID of 12, your experiment has just derailed; we can't figure out why some system files lack this ID. You can still enjoy the secret game, however; read the final paragraph of this Secret.)

Figure 21-27
The Open Using Hex Editor command is required to access the code contained in the DRVR resource.

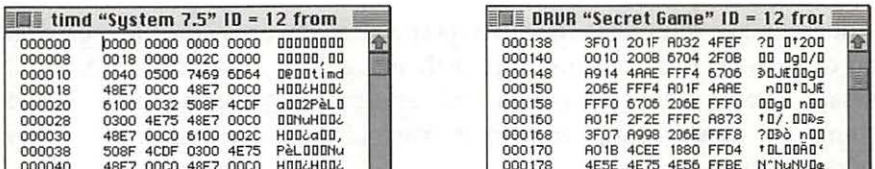


Switch over to the Calculator file, still open in ResEdit. Open the Calculator's *DRVR* resource icon and highlight (*don't* double-click) resource ID 12. From the Resource menu, choose Open Using Hex Editor (see Figure 21-27).



A window of hex code opens. Select all the code (again using ⌘-A) and choose Paste. You've just moved all the game-related code from the System file into what used to be the Calculator (see Figure 21-28). That's all you need to do. Now just save the file and quit ResEdit.

Figure 21-28
Copy and paste all the code from the System's *timd* resource to the Calculator's *DRVR* resource to unlock System 7.5's secret game.



What once was the Calculator is now a double-clickable version of the Breakout game. (For those of you squeamish about hacking files with ResEdit, we've included the finished product on the SECRETS CD-ROM. See Chapter 34 for details.) **Techie note:** You can do this same trick with any desk accessory — the Chooser, the •Shut Down DA, and so on — but if there isn't a DRVR resource with the ID of 12, you'll have to create one (use the Create New Resource command to create it, and the Get Resource Info command to change the ID). You'll also have to delete any DRVR resources whose ID numbers aren't 12.

Rename the Trash

If you ever tried assigning a new name to the Trash icon on the Desktop, you probably noticed that you *can't*. You can rename the Trash, however, using ResEdit. Open a copy of the Finder; open its STR# resource icon. Open resource number 11750. In the first field in the resource window you see the word Trash (see Figure 21-29). Just replace that with a new name, save the change, and quit ResEdit.

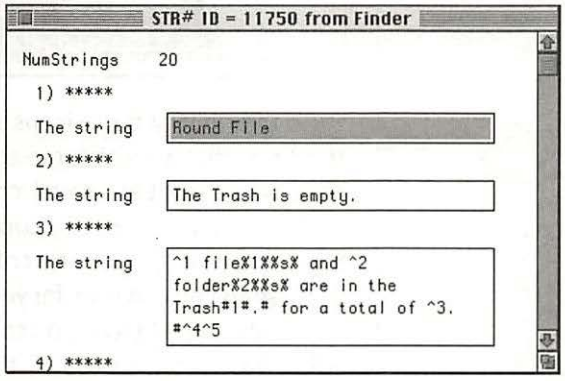


Figure 21-29
Renaming the Trash.

How to change the Trash icon

The Trash is represented on the Desktop by two different icons. When you drag items into the Trash, the standard Trash icon is automatically switched to the bulging Trash icon.

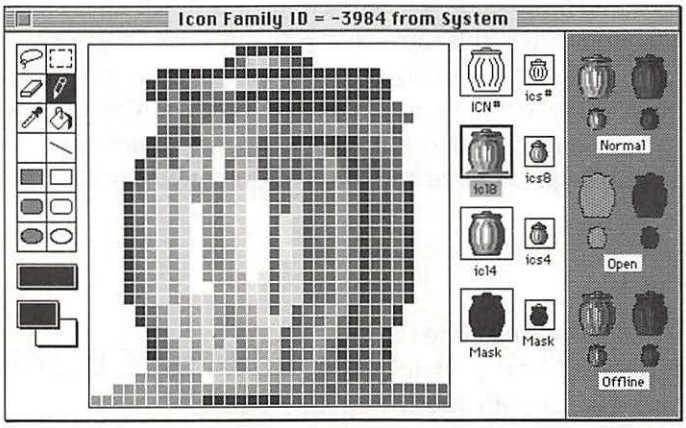


Both Trash icons are stored as ICN# resources in the System file. We personally can't resist editing the bulging Trash icon so that when our Trash is full, it overflows with all kinds of hideous-looking garbage. We even added brown sludge streaming down the can and collecting in a puddle below.

We're confident that you'll want to do this, too. So, here's how: Double-click the ICN# resource icon in the System file and open resource number -3984, the bulging Trash icon (see Figure 21-30). Use the editing tools provided in the window to draw in food scraps and other refuse of your choice.

To the immediate right of the drawing area, you see eight icons. These are the icons the Mac uses in black-and-white, 16-color, and 256-color views; at the bottom is the *mask,* which is the "icon" used to lend opacity to the actual icon. Any area of the actual icon that's not "backed up" by some black portion of the mask won't show up on your Desktop.

Figure 21-30
The new, improved Trash can icon.



To the right of these icons are smaller versions of the same thing; these are the icons that appear, for example, if you list the Trash in your Apple menu or otherwise view it as a small icon.

Fortunately, you're not compelled to draw every one of these eight icons individually. Just draw one color one (or, on a black-and-white Mac, even skip that). Then you can transfer your work into another icon "slot" just by dragging one of these eight icons on top of another. For example, you can drag the full-color Trash icon on top of the Mask, and the Mask immediately takes the shape of the icon. Likewise, you can drag a large icon onto the smaller one, and ResEdit automatically generates the small icon for you.



Using the method described here, you can turn your Trash into just about anything you want. But as the owner of this book, you have some really first-class Trash design options waiting for you. Check out the Zonkers Sampler, part of the Mac *SECRETS* software collection, for some irresistible Trash makeovers.

Change the "Copying files" message, and more

Here's an easy one. Open a copy of the Finder. Open the STR# resource. Scroll down to the one called 8750 and double-click it.

In the resulting window, you'll find a number of pieces of text that you can change, such as the various messages the Finder displays when it's copying files (Copying, Writing, Verifying, and so on). Change these to your heart's content! Then put the Finder into the System Folder and restart.

Customize your Desktop patterns

System 7.5/7.6's Desktop Patterns control panel lets you choose from 64 different jumbo-size patterns to decorate your Desktop. Adding to those patterns is easy enough — you just paste new graphics into the Desktop Patterns

control panel (see Chapter 3 for details) — but ResEdit also lets you actually *edit* the patterns themselves, changing the colors, adding new design elements, and so on.

To do this, open the Desktop Patterns application (in your Control Panels folder) with ResEdit, double-click the *ppat* resource icon. A window opens revealing the 64 standard patterns that come with System 7.5. To edit one of the patterns, double-click it. This opens ResEdit's built-in pattern editor — actually, a tiny paint program unto itself (see Figure 21-31). Select a color palette from the Color menu; flip selected portions of your pattern horizontally and vertically using the Transform menu. You can also nudge a selected part of your pattern up, down, or sideways by pressing the arrow keys or by using commands on the Transform menu. You can even paste in a picture from the Clipboard. (If it's too big, you'll only paste the upper-left corner. If you select the entire pattern area [press ⌘-A] before pasting, on the other hand, ResEdit will scale the pasted image to fit the selected area.)

Figure 21-31
ResEdit's built-in pattern editor features all the standard paint tools and a 256-color palette to create custom Desktop patterns.

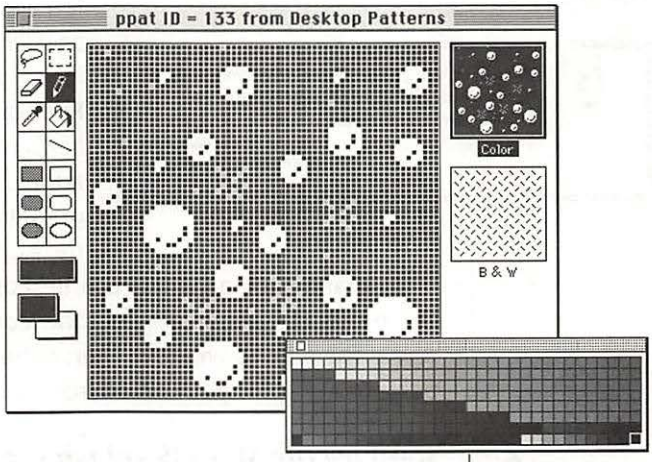
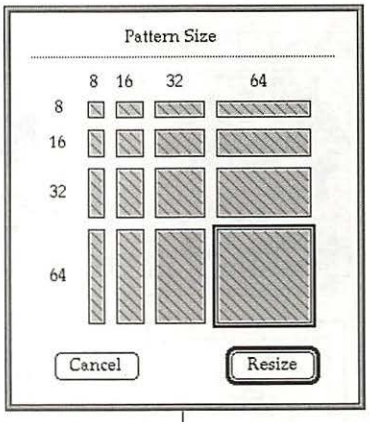


Figure 21-32
ResEdit's built-in pattern editor features all the standard paint tools and a 256-color palette to create custom Desktop patterns.

You can preview how your new pattern will look on the actual Mac Desktop by choosing Try Pattern from the *ppat* menu. When you're finished, choose Save, and quit ResEdit. Your new designs will appear the next time you launch Desktop Patterns.

If you have System 7.1 or an earlier system, you can still beef up your Desktop patterns and break beyond the 8-by-8-pixel limit for patterns. Open a copy of the System file using ResEdit, open the ppat resource and open resource 16. You'll be in the editor window as described earlier. If you want to create a pattern larger than 8-by-8 pixels, choose Pattern Size from the ppat menu. A window opens, presenting you with a choice of 16 pattern sizes ranging from 8-by-8 to 64-by-64 pixels (see Figure 21-32). Select a pattern size and click the Resize button (or press Return).

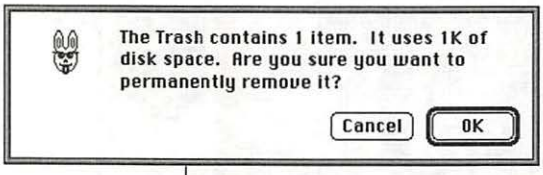


When you're finished editing, choose Save, quit ResEdit, and restart your Mac using your newly modified System file. (On pre-System 7.5 Macs, this trick

messes up the pattern editors in your General Controls panel, which can't handle large patterns. To restore it, reinstall a clean copy of your System file.)

Change the boring Alert icon

Figure 21-33
A dialog box in which the standard alert icon has been replaced.



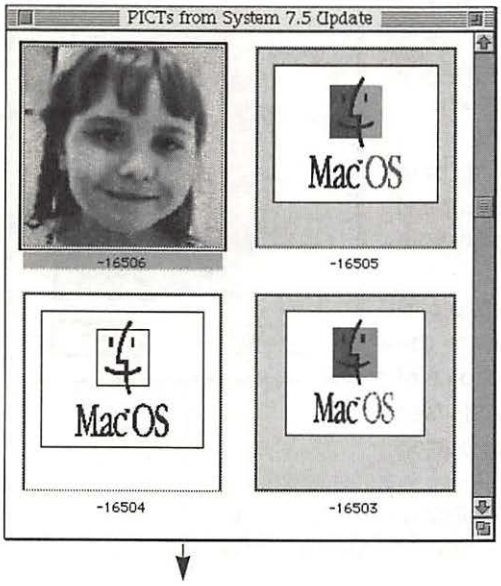
All the icons displayed in the Mac's standard dialog and alert boxes are stored in the System file as ICON resources. You can edit or replace these icons to spice up run-of-the mill alert messages. For example, you can replace the plain triangular-framed exclamation point that typically adorns an alert box with something more eye-grabbing, such as the wild rabbit icon hidden in the AppleShare PDS file (see Figure 21-33).

To make such a switch, use ResEdit to open the copy of the System file. Open its ICON resource. Select the icon you want to change and open it up to reveal the editing window. Then either doctor it up with the painting tools or paste in a graphic you copied from another program.

Replace the Mac OS splash screen

Starting with System 7.5.1, the traditional "Welcome to Macintosh" message you see when you start up your Mac is immediately followed by a splash screen featuring Apple's new Picasso-esque Mac OS logo. Because this splash screen is simply a PICT graphic buried in the System file (or in the System 7.5 Update file, if you have System 7.5.1), it's easy to replace it with any other picture you like.

Figure 21-34
Just replace the Mac OS graphic with any other PICT file to get a custom splash screen at startup.



To swap your own graphic in for the Mac OS picture, open a copy of the System file (or System 7.5 Update file) with ResEdit. Open the PICT resource icon. You'll see that there are actually six separate PICT images of the Mac OS logo stored there — one for monitors set to show full color, one for 4-bit color, another in grayscale, and so on. The PICTs are in resources 16501 through 16506.

Double-click one of the resources to open it. Copy a graphic from another program, and then paste it into the opened PICT resource, replacing the Mac OS picture with your own (see Fig. 21-34). If you want your picture to appear no matter what monitor color depth, paste your picture into all six

of the resources, replacing all of the original logo art. When you're finished, save your work and quit ResEdit.

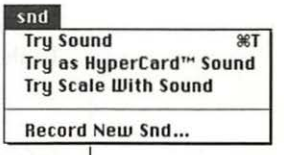
When you restart, just after the "Welcome to Macintosh" message, you'll see your new picture at center screen.

Opening and playing sound resources

If you use ResEdit to open any program containing digitized sounds — including the System file — you'll find the program's sound resources by opening the *snd* icon.

When you select a sound resource, a new menu appears in ResEdit's menu bar — the snd menu (see Figure 21-35). To listen to a sound, select the sound (don't actually open it) and choose the Try Sound command, or just press ⌘-T. The sound will play once. The Try Scale With Sound command lets you hear the sound played on each of the different pitches in a C Major scale. The Try as HyperCard Sound command lets you hear how the sound would play if converted into HyperCard's sound format.

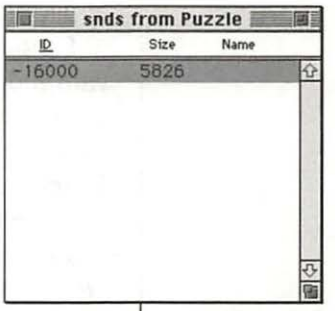
Figure 21-35
ResEdit's snd menu.



If you find a sound you like, you can select it and copy it using the Copy command. You can then paste the sound into the Sound control panel (and make it the default alert sound for your Mac), or paste it into the Scrapbook for future use.

To illustrate: The pre-System 7.5 Puzzle desk accessory contains one digitized sound, a metallic, deadpan "Ta-da," which plays only when you successfully complete the puzzle. Suppose you want to grab this "Ta-da" and make it your system beep. Here's what you do. Open the Puzzle using ResEdit and open the snd resource icon. You see one sound, ID number -16000, listed in the window, as shown in Figure 21-36.

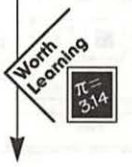
Figure 21-36
The single snd resource in the Puzzle desk accessory.



With this sound's ID number and Size still selected, press ⌘-C or use the Copy command in the Edit window. Then close the Puzzle and quit ResEdit. Open the Sound control panel and choose Paste. A dialog appears, asking you to name the sound. After giving the sound a name, click OK and the sound from the Puzzle is added to your collection of system sounds.

Replacing a sound resource by pasting

Anyone who's ever logged on to America Online is familiar with the hearty "Welcome!" you hear when you connect successfully. But, suppose you want to replace that "Welcome" with something a little more dramatic. You can easily alter that sound, or almost any other sound in any program, with ResEdit.



Actually, there are two ways to *replace* a sound resource in an application. You can paste in a sound from another source using standard Cut and Paste commands. Or, you can record a new sound using ResEdit's built-in recording features.

Copy a sound from the Scrapbook or another application using the method described in the previous Secret. Then use ResEdit to open the application containing the sound you want to replace. After opening the application's snd resource icon, choose the Paste command. Your new sound is installed into the application.

The next step is to figure out which of the application's sounds you want to replace. Use the Try Sound command to determine which sound is which. When you find the one you want to replace, make note of its ID number listed in the window. Then delete the sound by choosing the Clear command (unless you think you'll want to restore the sound someday, in which case you should copy it to the Scrapbook before deleting it).

Then select the new sound you just pasted in and choose Get Resource Info from the Resource menu (or press ⌘-I). In the ID field, type in the exact ID number of the sound you just deleted and click OK. Choose Save and quit ResEdit.

The application now plays your pasted-in sound in place of the one you deleted.

Replace a sound by recording directly into ResEdit

If your Mac has a microphone, you can record new sounds directly into an application.

Suppose you want to replace America Online's "Welcome" announcement with a digitized recording of your *own* voice, saying "I'm back!" In America Online 3, the sound is embedded in the program itself, just as you'd expect; in 2.7 and earlier, it's in the Online Sounds file, which is kept in the Online Files folder (within your America Online folder).

Open the appropriate file (America Online or Online Sounds). Double-click its *snd* resource. You see the list of the familiar America Online sounds, such as "You've got mail!" and "Goodbye!"

Choose Record New Sound from the snd menu. A recording control panel appears, as shown in Figure 21-37. Record your new sound using the controls provided. Then follow the same steps outlined in the previous Secret. That is, note the ID of the sound you want to replace (the "Welcome!" message is number 256). Delete the old sound, and assign its ID number (256) to the sound you just recorded.

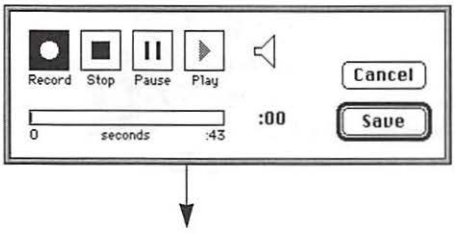


Figure 21-37
ResEdit has its own recording controls for adding new sounds to an application.

Now, whenever America Online has the impulse to shout "Welcome!", you'll hear your own voice instead.

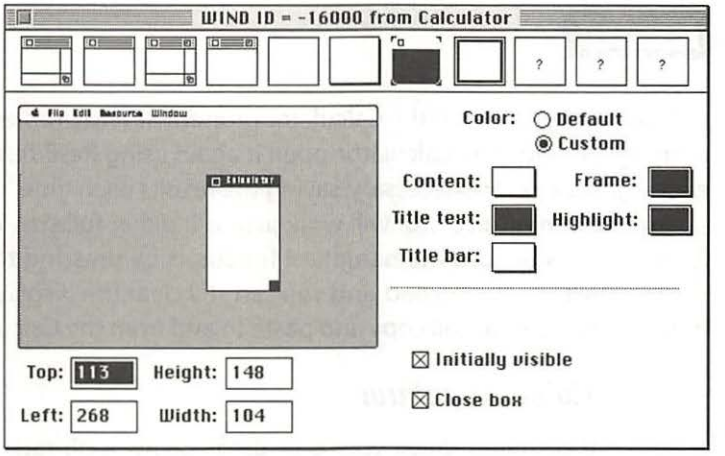
Creating a minicalculator



Virtually everyone we know operates the Calculator desk accessory using the numeric keypad and *not* by clicking the on-screen buttons. So, we figured, why not just *eliminate* the buttons — and the title bar and close box, for that matter — to create a tiny, but fully functional calculator that takes up much less space on your monitor?

Here's how we did it. Open the Calculator using ResEdit and open the WIND icon. This contains only one resource, number -16000. Open it and you see a window such as the one in Figure 21-38. This controls the size and type of the Calculator window and its location on the screen.

Figure 21-38
The Calculator's WIND resource.

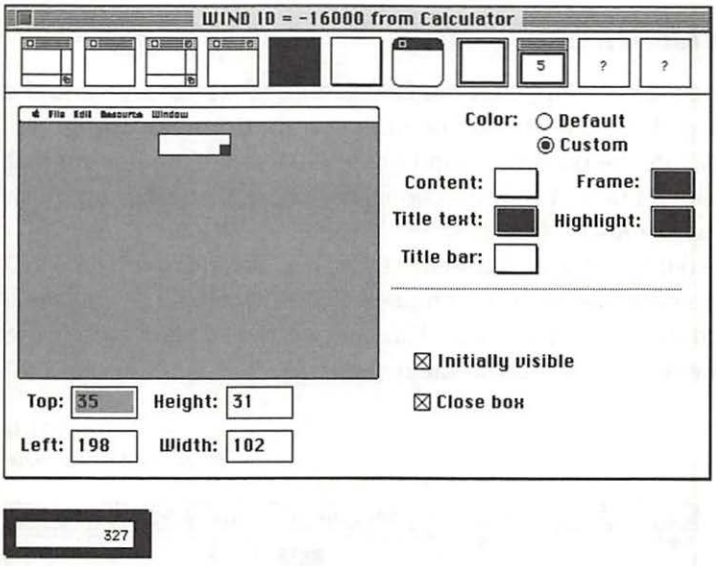


After this window is open, you can change the appearance of the Calculator window. Change the window type by clicking one of the icons across the top of the window. In this example, we picked the plain rectangular shadowed window that lacks a close box and title bar.

Then, by dragging the handle at the bottom right of the window that appears on the miniscreen, resize the calculator window. It takes a little trial and error to size the window properly, so that the readout screen is visible but the buttons aren't. Move the entire window to the location on the screen that you want the Calculator to appear whenever you open it (see Figure 21-39).

Choose Save and close all the windows. Before quitting ResEdit, try opening the Calculator. If you sized the window properly, it should look as it does in Figure 21-39.

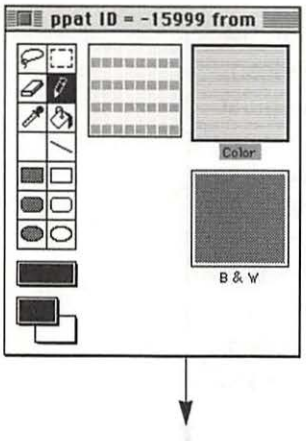
Figure 21-39
The modified Calculator resource.



If you haven't framed the Calculator properly, it's no problem; ResEdit is still running. Just Quit the Calculator, open it again using ResEdit, and make whatever adjustments are necessary, saving the results each time.

Your new minicalculator will work just as it did at full size. You can still perform all four standard mathematical functions by pressing the /, *, +, and — keys on the numeric keypad, and you can still clear the display using the Clear button. And you can still copy and paste to and from the Calculator.

Figure 21-40
Editing the Calculator's background.



Color Calculator

If stripping down your Calculator seems a bit radical, consider just colorizing it. Just open the Calculator using ResEdit and open the *ppat* icon. Open the only resource listed, number -15999. Using the basic editing tools provided, change the color and pattern that appear as the background (see Figure 21-40).

Changing the creator of system snapshots

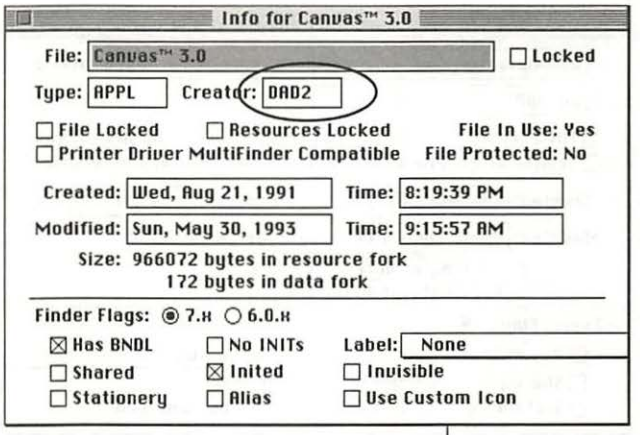
When you take screen snapshots using System 7's ⌘-Shift-3 keystroke, the resulting graphic files are saved on disk as SimpleText documents. If you make a practice of editing these screen shots, it gets annoying that you can't simply double-click one to edit it. (A double-click launches SimpleText.)



It's much more convenient if you teach the System to save the files automatically in the format of your graphics program instead. This way, when you double-click a Picture 0 or Picture 1 file, it opens your graphics program (Photoshop, Color It, or ClarisWorks, for example) and you're ready to edit. ResEdit makes this easy.

The first thing you must do is find out the four-letter *creator code* of your graphics program. To do this, open the graphics application file with ResEdit and choose Get Info from ResEdit's File menu. In the Creator field, note the four-letter code. In the example shown in Figure 21-41, the application is Canvas 3.0 and the code is DAD2. (Codes are case-sensitive, by the way; you must use DAD2 and not dad2.) To be sure you use the proper code, select the four characters in the Creator field and copy them using ⌘-C. (See Chapter 16 for details on Type and Creator codes.)

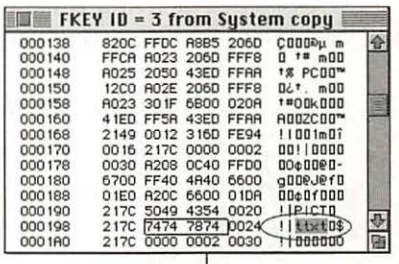
Figure 21-41
A peek into any file using ResEdit's Get Info command reveals its four-letter creator code.



Then, open a copy of the System file. Open the FKEY resource icon. It contains only one resource (with the number 3). Open this resource. You see a dialog box informing you that this is a compressed file and asking if you want to open it anyway. Click Yes (or just type **Y**).

To find the string you need to edit in this window, press ⌘-G to bring up the Find ASCII window. Type **PICT** (all caps) into the text field and press Return. Then close the Find ASCII window. On the line just below the word PICT (which will be selected as a result of the Find command), you see the four-letter code for Simple Text (or TeachText) — *ttxt*.

Figure 21-42
Select the four-letter code for TeachText and replace it with the creator code of your favorite graphics program.



Select these four characters and replace them with the creator code for your graphics program, either by typing the code or by pasting it in (if you copied the code from the creator field). So, in our example, "ttxt" becomes "DAD2" (see Figure 21-42).

Use the Save command to save the changes and quit ResEdit. After you restart, using the modified System file, your ⌘-Shift-3 screen shots will always be saved in the format of Canvas (in this example) — and not SimpleText documents.

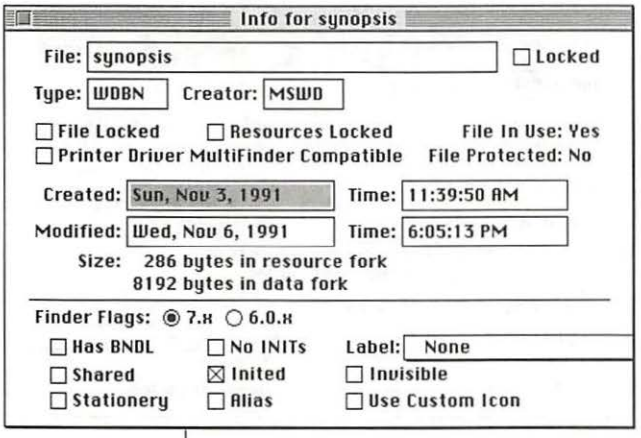
Changing modification and creation dates



Here's a fascinating, though somewhat disturbing, ResEdit hack: You can easily change the creation and modification dates of any file! What's more, you can *post date* the creation of a file. That's right: You can create a Word memo and change its creation date to sometime next week.

To do this, launch ResEdit. Choose Get File/Folder Info from the File menu and select the file whose dates you want to change. In the Info window that appears, you see the creation and modification dates (see Figure 21-43). Edit the dates (and times) as you please, and then choose the Save command *before* closing the Info window. The new dates are reflected in the Finder.

Figure 21-43
You can tamper with a file's creation and modification dates in the Get Info window.



With this knowledge, you know how to turn in a report late, but can point to the last modification date and prove that you actually *finished* the work on time. Of course, you should realize that a computer's time stamp will never hold up in court, or even in a debate. Your ability to tinker with the time/space continuum in this way is actually a bit sobering.

Meet rANdY and Maura

Three Finder menus have icons instead of names: the Apple menu, Help menu, and Application menu. But the latter two menus actually *do* have names, as you can see by opening them in ResEdit; they're just not displayed in the Finder. The Help menu is called rANdY and the Application menu is named Maura, as seen in Figure 21-44. You can see them for yourself by opening a copy of the System file with ResEdit, then double-clicking the MENU resource icon.

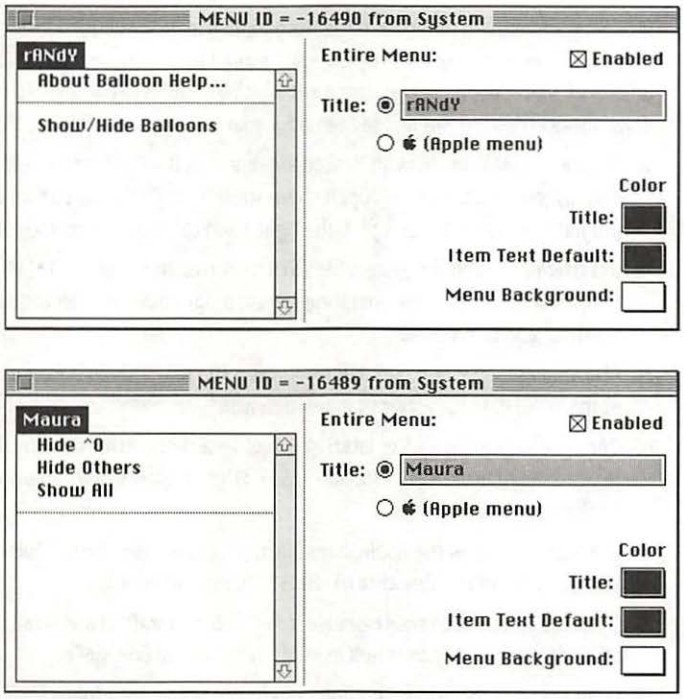
And while we're on the subject of Maura, check out the next Secret, which involves the menu bearing her name.

Hide and show programs with a keystroke



Earlier in this chapter, we showed you how to add a keyboard shortcut to any menu command. Here's a really practical application of that advice: Add keystrokes to the Application menu's Hide and Show commands. That way, when you want to hide all the applications you have running in the background, you'll be able to do it with a single keystroke.

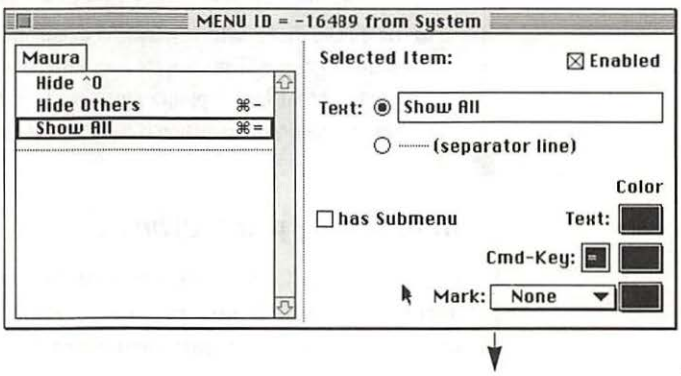
Figure 21-44
The hidden names of graphic menus.



To add the commands, open a copy of the System file with ResEdit. (If you have System 7.5.1, open the System 7.5 Update file instead.) Open the MENU resource icon and open the menu resource called Maura — the secret name of the Application menu, as revealed in the previous Secret. Now, following the directions given earlier in this chapter, select each item on the menu and type a character in the Cmd-Key field (see Figure 21-45). You can assign one keystroke to hide the current application (the top command), one to hide all other programs, and one to *show* all other programs. While you're at it, after you select the command you want to edit, choose Remove Icon from the Menu menu (if it's not dimmed out).

When you're finished adding the keystrokes to the menu, save the file and restart with your doctored-up System.

Figure 21-45
Type a character into the Cmd-Key field to assign a keyboard shortcut to each command on the Application menu.



MACINTOSH SECRET

A HIDDEN-MESSAGE TREASURE HUNT

Mac programmers are notorious for leaving hidden messages buried inside program resources. These messages — some cryptic, some funny, some just plain bizarre — go unseen by most people. But equipped with ResEdit, you have the tools you need to hunt down these little surprises and see them for yourself. Here are a few worth tracking down:

- Open a copy of Find File with ResEdit; double-click the DATA resource icon. Inside, you'll find just one resource, ID #0. Open it and scroll through the hexadecimal code to find the programmer's secret message in the right-hand column: "I liked vacuum tubes better."
- In System 7.5, open the System file's STR resources. In resources -16569 and -6580, you'll find out what parts of the operating system programmer Jim Reekes refers to as the "spatula" and the "fridge."
- Also among the System file's STR resources is ID -16579. Open it for a detailed description of the audio data converter's capabilities, which evidently include dicing and slicing.
- Open the System file (7.5 or later) and double-click the ICON resource. Have a gander at resource numbers -16561, -16560, -16557. What *is* Apple's thing about kitchen appliances?!
- Use ResEdit to open the AppleShare file in your Extensions folder. Open the STR# resource icon and double-click ID -2003. "Oh, most heinous!"



- Open the System file's *timd* resource icon. Double-click ID 30 and scroll to the bottom for this intriguing tip: "Secrets lurk in ROM." Free book to Erik Hjelle.
- Open a copy of the Stickies program (it's in the Apple Menu Items folder), and check out the program's solitary WDEF resource. The programmers have left us the following mysterious message: DEAD BEEF.
- Open any of the *ntrb* resources in the System file. These are in hexadecimal code, but pay heed to the *first word* in each string of code in the ASCII text column on the right. Apple programmers obviously love their work.



- Use Using ResEdit, open Eric's Solitaire Sample, the game demo that comes Apple Extras folder on most Macs. Open the STR# resource icon and double-click the one with the name "really secret stuff." You'll find out what Eric really thinks of himself. (Free book to Thornblow.)
- In the System 7.5.5 System file, open the left icon, if you have one. Open resource ID 0 to examine the hex code: Lefty's Magic Gibbly-Duplicating Resource.
- Here's one that requires System 7.1 or earlier: Open the System file using ResEdit and double-click the STR# resource icon. Open the resource with the ID number -16415 and you'll see that Apple's programmers really do have your best interests at heart. Sad to say, this hidden benediction is *not* a part of System 7.5.

Remapping your keyboard

The System's KCHR resource controls *keyboard mapping* — in other words, it determines which key on the keyboard produces which character on the screen. For the most part, you want to keep your keyboard mapped as origi-

nally programmed — so that pressing the A key produces an A on screen, pressing B produces a B, and so on.

But sometimes remapping the keys makes great sense. Here's a classic example: In its default configuration, the Mac's keyboard produces the > and < characters on screen when you press the period and comma keys with the Shift key down. This often results in typos such as *P>O>Box 1568* or *3:45 P>M>*, with the > inserted where a period was intended. (We'll pretend, for the moment, that you don't have SmartKeys, included with this book, which solves that problem much more easily.)



You can head off such problems by remapping the standard U.S. keyboard. You can make the period and comma keys produce periods and commas whether or not the Shift key is pressed.

Open a copy of the System file using ResEdit. Find the KCHR resource icon and open it. In the list of keyboard layouts, find the standard U.S. keyboard layout. Open this resource to open the full keyboard display.

The bottom portion of the keyboard display window represents the actual keyboard; press any of the modifier keys (such as Shift or Option) and you'll see the characters on the keys change accordingly. The upper portion of the window is a palette of every character that can be displayed on screen. You can map keys to characters by dragging a character from the palette on top to a key on the bottom (see Figure 21-46).

To change the > to a period, press Shift to display the > character on the keyboard display. Then drag the period character from the top portion of the window down and drop it on the > key, as shown in Figure 21-46.

Follow the same procedure to replace the < with the comma; drag the comma character down and drop it on the < sign.

When you've replaced the characters, choose Save and quit ResEdit. You'll have to restart your Mac with the modified System file to see the results of the remapping.

Using this same method, consider remapping your little- or never-used bracket keys, [and], to create parentheses or curly quotes.

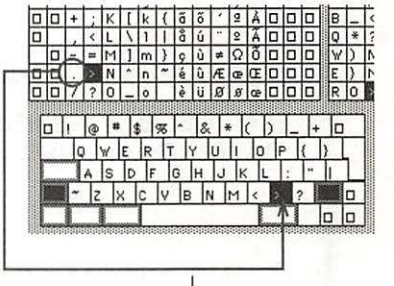


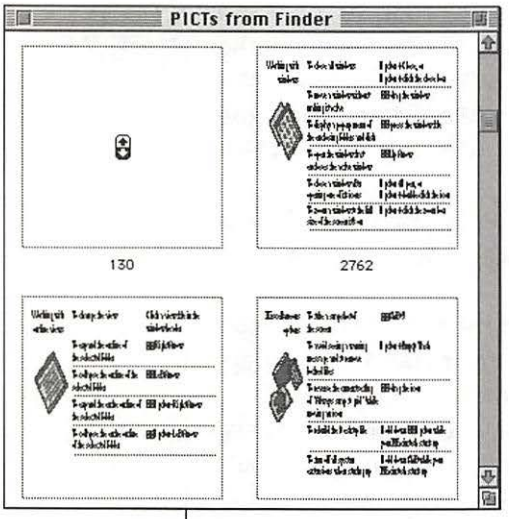
Figure 21-46
The KCHR display window. The lower portion represents the keyboard, while the upper portion provides a palette of all available characters. Drag the period character from the upper portion of the window and drop it on the > sign to replace it.

Ripping out stuff you don't really need

ResEdit is a great tool for stripping applications of unnecessary heft so that they take up less room on your hard drive. Many programs include elaborate graphics or sound effects that are completely dispensable — so why not get rid of them?



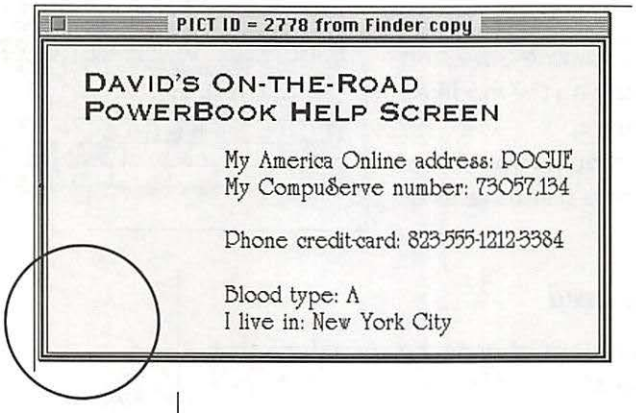
Figure 21-47
The Finder Shortcut screens are PICT resources that can be painlessly deleted to conserve space.



A good example is the Finder itself, which contains several PICT resources you don't really need (see Figure 21-47). You know all those Finder Shortcut screens you can access from the Balloon Help window in System 7.0 through 7.1? Each one is a separate PICT resource. You can find them by opening the Finder with ResEdit and opening the PICT resource icon. To clean out the unneeded PICT resources, select each one and choose Clear from the Edit menu. When you're through, you'll have a Finder that's leaner — by 12K.

Here's another reason to master this PICT-removal technique: Ever use an application that has a really irritating splash screen, one that you're forced to stare at every time you launch the program? Chances are, that splash screen is a PICT resource. Rip it out and you'll never have to look at it again! In fact, some programs that came with this book may be rigged with promotional splash screens. Well, you now have the knowledge to eliminate such built-in sales pitches forever. Enough said.

Figure 21-48
The new Finder Help screen. Design your screen to avoid the area indicated by the circle, where the Finder overlays its artistically designed folder drawing/logo. (Look at the existing Finder Help screen to see what we mean.)



Create a secret, personalized help screen

We just had a great idea: You can use the information from the last Secret to *replace* the Finder help screens.

Go to your favorite graphics program. Create a screen of your own that contains, for example, your long-distance phone card, credit card, and frequent phone numbers. (Nobody would ever think to look under the Help menu for this information!)

Then open a copy of the Finder. Double-click the PICT resource. Scroll down to the one with ID number 2778 (that's the first of the Finder help screens). Double-click it. The window opens up. Paste the copied new graphic into the window (see Figure 21-48).

Put the modified Finder back into the System Folder to replace the old one and restart. To see your handiwork, choose Finder Shortcuts from the Guide (question-mark) menu.

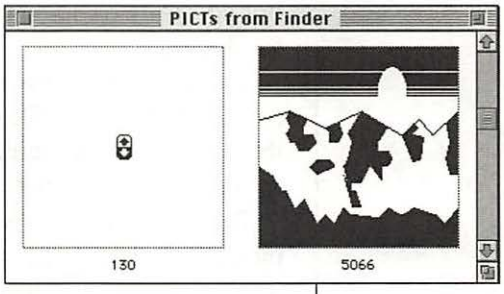
On second thought, perhaps the more secure method of storing your credit-card numbers is to replace the About the Finder PICT graphic, as described in the next Secret. *That* way, nobody can stumble onto those numbers of yours, because you have to press the Option key when you choose the first command in the menu to *get* the About the Finder command.

Change the About the Finder picture

By now, you've probably discovered the famous About the Finder command hidden in the menu; it appears if you hold down the Option key while pulling down the Apple menu.

Not surprisingly, you can replace that mountain landscape with any picture you want. Open a copy of the Finder with ResEdit and then open the PICT resource icon. Scroll down until you find the About the Finder mountain picture — it's PICT resource number 5066 (see Figure 21-49). To replace it with another graphic, select the picture, and then choose the Paste command to paste in any picture you copied to the Clipboard.

Figure 21-49
The About the Finder mountain, which you can edit or replace as you see fit.



If you want to edit the picture — add colors to it or draw a house on the mountaintop — select the picture and copy and paste it into a graphics program. Then, when you're finished editing, paste it back in right over the original picture.

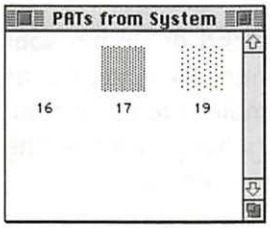
While you're at it, you may want to change the *name* of the About the Finder menu command to match your picture. For example, if you replaced the mountain picture with a scanned photo of your mother-in-law, you can rename the menu command My Mother-in-Law. To do this, open the Finder's STR# resource icon; then open resource number 5000, where you'll find the two fields (numbered 56 and 57) containing the text strings for the About this Macintosh and About the Finder menu items. Type in new command names and save your results.



Changing the scroll bar pattern

Yes, you can change the scroll bar pattern that appears in every window on your Mac's screen by probing into the System's PAT resources. Don't these Secrets just make life worth living?

Figure 21-50
The System's PAT resources.



Open a copy of the System file using ResEdit. After opening the PAT resource icon, find the resource with ID number 17 and open it (see Figure 21-50).

After you open resource 17, you can use the basic painting tools to change the scroll bar pattern. When you come up with a pattern you like, choose Save and quit ResEdit.

As always, replace the old System Folder with your modified one, and then restart the Mac.

Mix-and-match icon sizes

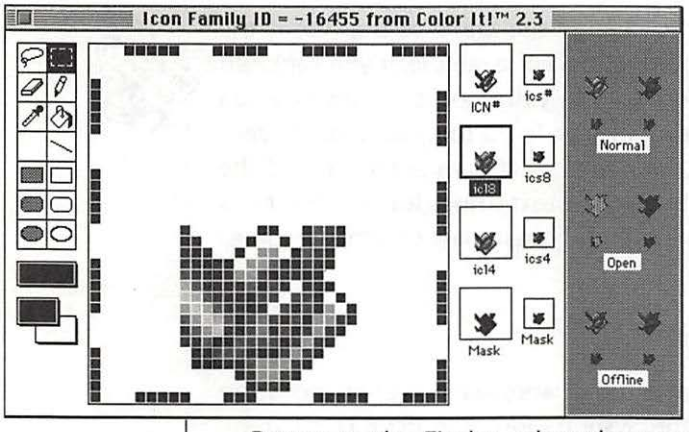


In the Finder's icon views, you have exactly two size choices — large and small. You can switch between these options using the Views menu, of course, but you can't *combine* the two sizes in a single window — unless you know this secret.

Using ResEdit, open a file that you would like to endow with a permanent small icon. Open the file's *ics8* resources (the set of smaller-sized icons used by the program), then double-click the first *ics8* resource in the window (the one containing the icon that represents the application itself).

The small icon opens in an editing window. Press ⌘-A to select the whole picture, choose Copy, then close the resource. Next, open the file's *icl8* resources (the large icons), and again open the first icon so you can edit it. Press ⌘-A again to select the whole picture, then press Delete. Now choose Paste from the Edit menu, placing the small icon you copied from the *ics8* window into the large icon's window. Use the Selection tool to drag the small icon to the bottom of the window. Then, deselect the icon (by clicking anywhere in the white space within the window) and press ⌘-A *again*, this time to select the tiny icon *and* all the white space around it (see Figure 21-51). Choose Copy, then close the file, without saving any of the changes you made.

Figure 21-51
Paste a small icon into the large icon resource window, then select the whole thing to create a permanent small icon view.



Return to the Finder, select the program icon you want to "shrink," and choose Get Info from the File menu. Click the program's icon in the upper-left portion of the window to select it, then choose Paste. Then full-size icon will be replaced with the small-icon version.

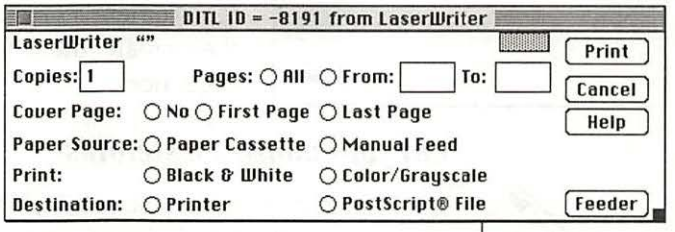
Now, no matter what icon view you pick in the Finder, the file will always display the small icon. With this trick, you can actually put small icons on the *Desktop*.

Changing the default number of copies



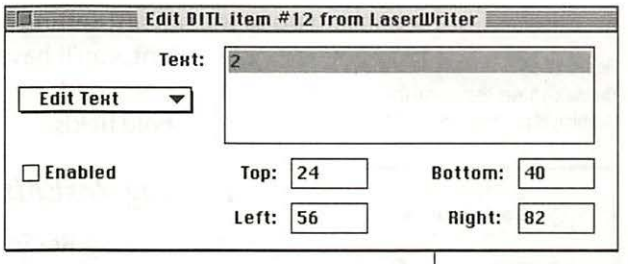
When you use the Print command, your printer driver always plugs a "1" into the Copies field of the Print dialog box, assuming you want only one copy of what you are about to print. You can, of course, type any number into this field to output multiple copies of your print job. But suppose you always want your jobs printed in triplicate. You can change this default, so that the Print dialog box always comes up with a "3" in the Copies field.

Figure 21-52
A DITL resource in the LaserWriter 7 printer driver.



Here's how: Use ResEdit to open a copy of your printer driver. This is the file in your Extensions folder that bears the name of the icon you select when choosing a printer in the Chooser (LaserWriter, StyleWriter II, and so on). Open the DITL icon and then open resource -8191, which contains the Print dialog box layout (see Figure 21-52). (This is true for the LaserWriter 7.1.2 and LaserWriter 8, StyleWriter II and StyleWriter 1200 drivers. You may have to poke around for the right DITL resource in other versions.)

Figure 21-53
Any number you plug in the Text field will show up as the Copies default in the Print dialog.



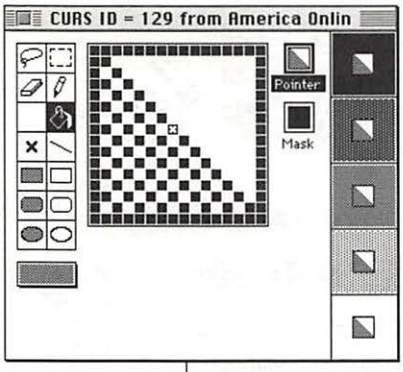
Double-click the Copies field. This will open a window in which you can edit the number that appears in that field (See Figure 21-53). Just type in a **3** — or any number you want to use as a default. Then close it all up and save the file.

Build a better beachball



Every program has a series of animated cursor icons that get displayed whenever you're waiting for the Mac to do something. There's the standard wristwatch icon you see in the Finder, of course, but some programs use "counting fingers," and others, like America Online, use the "spinning beachball."

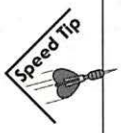
Figure 21-54
Designing a custom cursor in AOL. After creating a new cursor, be sure to drag the small picture of the icon to the right of the editing window onto the mask icon, so that the mask matches the icon.



Since you must *stare* at these animated icons, waiting for the Mac to finish its business, free book winner German Velasquez thinks you might as well make them look interesting. You can change them to whatever you want by editing a program's CURS resources using ResEdit.

To illustrate: Here's how you can jazz up the AOL beachball: Open a copy of the American Online program with ResEdit, then double-click the CURS resource icon. You'll see the four resources, numbered 128 through 131, that make up the beachball animation. Double-click each one to edit it, drawing or pasting in a replacement icon (see Figure 21-54). Of course, if you want an animated look, your replacement icons should be designed in such a way that they create the effect of motion when played back in sequence.

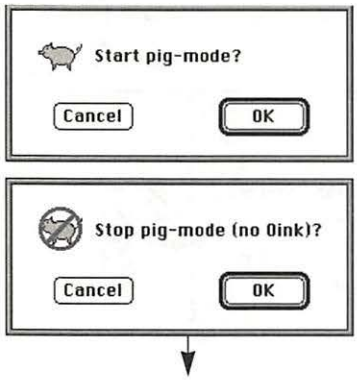
Put your mouse on steroids



If the fastest mouse-tracking setting in the Mouse control panel doesn't move the mouse fast enough for your taste, you can turbocharge your mouse's tracking speed with a simple ResEdit hack:

Open a copy of the System file using ResEdit and then open the *mcky* resource. Find the *mcky* resource with ID 6 and open it up. Now change the eight Threshold fields to 1, 2, 3, 4, 5, 6, 7, 15. (These numbers correspond to the eight Control Panel speed settings. They control how far and fast you have to move the mouse before it *starts* speeding up.) Now save your work and restart your Mac with your newly edited System file installed. Bump your mouse tracking up to the highest setting and see what you think. If the speed doesn't feel right, you'll have to do some experimentation. Repeat the steps outlined earlier, but try different numbers in the Threshold fields.

Figure 21-55
The dialog boxes that signal the starting and stopping of pig-mode in ResEdit.



Putting ResEdit in pig-mode

Those wacky ResEdit programmers have buried a wonderful, offbeat little surprise for you in the About ResEdit dialog box.

To uncover the surprise, hold down the ⌘, Option, and Shift keys while selecting About ResEdit from the Apple menu. Your Mac will start oinking — yes, *oinking* — and you'll see a dialog box asking if you want to "start pig-mode." If you click OK and try this again, you'll once again hear the oink and see the dialog box shown in Figure 21-55.

Pig-mode, as it turns out, actually does have a function. It puts ResEdit into a special mode in which it constantly purges memory and compacts resources. However, it makes the program run slower and is designed primarily for programmers who are testing custom editors. So, we recommend keeping ResEdit in its no-Oink mode at all times.

The oink, however, is delightful, and we heartily recommend using ResEdit on itself to copy this sound out of the program so you can add it to your collection of system alert sounds. (See "Opening and playing sound resources," earlier in this chapter, for instructions.)

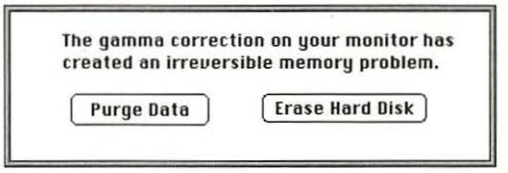
TOP TEN RESEDIT PRANKS

You can't spend more than a few minutes working with ResEdit without at least *thinking* about the havoc you can wreak by editing program resources in sick, twisted ways. At least *we* can't.

Of course, we are in no way suggesting that you *actually* pull any of the following pranks — but we won't tell anyone if you do.

1. Switch the empty and bulging Trash icons, so that the Trash looks empty when it contains files and bulges when empty.
2. Edit the Balloon Help text strings (most of them are in easy-to-access STR# resources) so that pointing to a window's Close box produces a help balloon that says "Clicking this box will cause irreparable damage to the motherboard."
3. Edit the MENU resource to turn a separator line in a menu into an alluring new menu command (like "Double Processing Speed") that doesn't work.
4. Alter dialog boxes (using the DITL resource editor) so that the Cancel and OK buttons in a standard dialog box instead say Purge Data and Erase Hard Disk (see Figure 21-56).
5. Use ResEdit's MENU editor to change all text in menus to white, rendering the commands completely invisible. (They will still work, if you can find them.)
6. Replace the standard alert box icon with the System Bomb icon.
7. Remap the keyboard so that pressing any key produces a semicolon.

Figure 21-56
Imagine your coworker's expression when he tries to empty the Trash and sees *this* dialog box.



8. Change the names of an application's menus so that the File menu contains the Format commands and vice versa.
9. Install a Desktop pattern consisting entirely of Trash can icons.
10. Create a startup screen that features a realistic System bomb message, urging the user to restart the Mac immediately.

Chapter 22

Public Utilities

IN THIS CHAPTER:

- Hard-disk repair and backup software
- Tempo, KeyQuencer, and QuicKeys macros
- AppleScript, Screen savers, Now Utilities
- File-compression software
- Extension managers

Instead of modifying documents, as most software does, a utility program is designed to modify your *computing environment.* It affects what you see on the screen, how your hard disk handles data, and other aspects of the computer itself. Utilities aren't work processors, in other words: they're *Mac* processors.

We are, we'll confess, utility junkies. Maybe it's part of that male technology thing, that we love tinkering with our computer almost as much as we love using it. In the Mac world, there's an unspoken social hierarchy: The person who has the most little startup icons appearing across the bottom of the screen is the coolest.

The Mac has hundreds of utilities. Many are sold by established software companies; many more are shareware, and some are free. Here are a few of the major utility categories:

- Hard disk defragmenters and file-recovery programs
- Antivirus software

- Macro software
- Screen savers
- File-management utilities
- File-compression programs
- Font/DA managers
- Screen-capture programs
- Colorizer/customizers

Once you have all this stuff going, there's one more utility you'll need — an extension *manager*, just to manage all your other utilities!

We've included an example of most of these utilities with this book (see Chapter 34).

HARD DISK REPAIR AND RECOVERY SOFTWARE

Let's get this straight: Preventive action on your part is much better than any hard drive repair or file-recovery software. Check out our preventive-maintenance schedule in Chapter 8, which we guarantee will reduce the likelihood of disaster. Chapter 8 also contains our thoughts on hard disk formatting, defragmenting, and partitioning software.

What we haven't yet discussed is what to do when your drive crashes. In that event, if you had no backup, get a hard drive recovery program like Norton Utilities. These programs typically include an extension that, if you were smart, you installed when you got the program. If this software watchdog was installed at the time of the crash (and if it *survived* the crash), recovering files is a cinch; you have a very good chance of getting most of your data back intact by clicking a single button. (Unfortunately, this watchdog extension — such as Norton FileSaver — adds a minute or more to the shutdown process every time you're done for the day.)

If you didn't install the extension (for example, if you bought the program *because* your hard disk crashed), then you can try recovering files by their *file headers* (using one of these disk-recovery programs). In this method, the program scours the disk looking for the "footprints" of specific programs.

If the file-type method fails, you can try File-Recovery Method Number Three: A complete scan of the hard disk surface in search of anything that looks like a file. After a long time, you see a list of hundreds of files.

Now you're in for an emotional roller-coaster ride. You'll discover that not every listed file is marked "recoverable." Sometimes unimportant files are

recoverable, but your vital ones aren't. Worse, sometimes you recover a "recoverable" file, only to find out that, when opened, it contains a screenful of gibberish.

Still, having hard drive health software on hand is a terrific thing.

DISK UTILITY SECRETS

The dancing Norton programmers

There's a dancing programming staff hiding in the Norton Utilities application's About box. Click in all the obvious places. You'll find it.

When 1,400K isn't enough

Ever try to use one of those disk-recovery programs (Norton, et al.) and discover that you can't create an "emergency floppy" from which to operate on your dead hard drive? Even the tiniest System 7.1 folder and your Mac's Enabler and the recovery program won't all fit onto a high-density floppy. The enormous System 7.5/7.6, needless to say, presents ten times the problem.

Here's the sure-fire, brilliant solution. Create a *RAM disk* (as described in Chapter 14). Because you can make the RAM disk any size you want, make it large enough to hold the System Folder *and* the recovery program — and start up from that! (See Chapter 14 for step-by-step instructions.)

Retrospect secrets

All this talk of disk-recovery software is fine, but it would be nearly unnecessary if you maintain a good backup of your hard drive. That's a good argument for owning *backup software* before you buy recovery software.

Fortunately, you have the world's easiest backup program included with this book: DiskFit, provided by Dantz Development. You just put it onto your hard drive, double-click, and start shoving in backup disks.



For more control, automated backups, or other special features, upgrade to the same company's Retrospect program. And while you're enjoying it, enjoy these secret features:

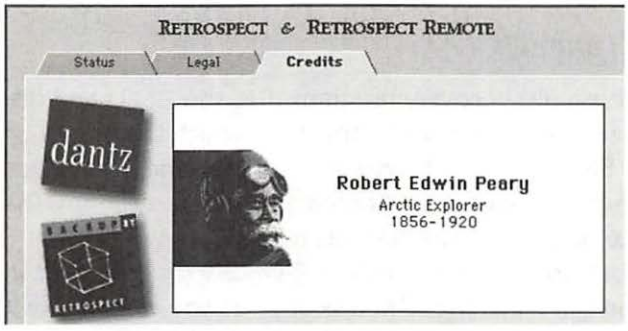
- As with FileMaker and ClarisWorks, you can prevent the program from asking, "Are you sure?" when you're deleting or duplicating something if you press Option while clicking the Delete or Duplicate button.
- Every button in Retrospect's main Directory window can be triggered by pressing a two-letter combination. For example, in the Immediate operations panel, type **I-B** ("immediate backup") instead of clicking the Backup button.



■ Retrospect 3 was code-named "Peary;" in it, a history lesson lurks — if you know how to find it. First, choose About Retrospect from the menu. In the resulting window, click the Credits "tab" to see the three-minute display of scrolling programmers' names.

But if you Option-click the Credits tab, instead of credits, you see the handsome mug of Sir Robert Edwin Peary, Arctic explorer. His head will eventually scroll off the screen, to be replaced by a complete scrolling history book chapter about his life and accomplishments (see Figure 22-1).

Figure 22-1
Explore your copy of Retrospect, and you'll be rewarded with another explorer.



VIRUS PROTECTION

We'll be straight with you here: We don't use virus protection. Oh, we have Disinfectant on hand to check out things when things get suspicious. (So do you — it came with this book.)

But we can count on zero fingers the number of people we know who have actually *lost data* to a virus. Oh, sure — we know people who've *had* computer viruses. According to a *Macworld* poll, about 8 percent of Mac users have had infections. There have been about ten widespread Mac viruses. But almost all of these have been harmless, just gumming up the works without destroying data.

Where viruses live

You may not have realized it, but *you can't get a virus from a document.* Except for a couple of benign HyperCard viruses, and an easy-to-eradicate Word 6

virus that infects Word macros, all viruses can do their dirty work only by infecting an *application* — and can't spread unless you launch that program.

And guess what else? A disk can't be infected if it's locked. No way, no how. That's nice to remember when you're taking a floppy disk to somebody else's Mac to give them a file from *your* Mac: If your floppy is locked, the other person can copy stuff off of it, but no virus can invade your floppy.

You don't have to be concerned about files you download over the modem from America Online or other online services (not including the Internet, though). Every single file is meticulously checked for viruses before it's posted for your use. Nor should you worry about being infected by a commercial program. Ever since Aldus discovered a virus aboard its shipping FreeHand disks in 1989, software companies have become duly paranoid about viruses and have scrubbed their disks clean before sending them to be duplicated.

Therefore, there are only a couple of ways left that a virus can travel to your Mac:

- Aboard a floppy disk or cartridge brought to you by a friend
- From a local, noncommercial electronic bulletin board, or from an Internet site not run by a commercial entity

MACINTOSH SECRET

TWO ANTI-VIRAL ABOUT BOXES

Disinfectant, the terrific anti-virus program, has one of the most entertaining hidden surprises of all. Just choose About Disinfectant from the Apple menu and wait.

Bonus Secret: If you'd like to hear the *entire* song, without being rudely interrupted by the foot, keep the mouse button pressed in the menu bar.

SAM can't quite beat that, but it does offer one little entertainment feature. When you press the Option key while examining the About SAM dialog box, the names scroll by at lightning speed.

Software protection

The numerous commercial packages, such as Virex and Symantec Anti-Virus for Macintosh (SAM), have three functions. First, they can determine whether your disk is infected by any known virus. If you type in the correct numbers you get from a telephone hotline, they can detect any *new* viruses that appear. Second, they can cure your disk of most of these viruses, putting you back in business with no side effects. And third, Virex and SAM can be told to scan every floppy disk you insert, so that you're essentially protected against getting viruses through the floppy drive. (*Man,* do we find that floppy-disk scanning annoying.)

But guess what? John Norstad's superlative Disinfectant does all of that, too (except for the telephone hotline part). It's free. It has a virus-watchdog

INIT and a seek-and-destroy application, just like Virex or SAM. And you already own it. See Chapter 34 for instructions.

For much more detailed and superbly written information on viruses, read the online instructions that come with Disinfectant.

QUICKEYS, KEYQUENCER, AND TEMPO II

Now we're talking. We consider a macro program absolutely *essential* on the Mac!

QuicKeys, Tempo II, and KeyQuencer are System 7-savvy macro programs. Macros let you be lazy. By performing tedious, repetitive, boring tasks you usually have to do yourself, a macro lets you sit back while it types the date, sorts your database, or backs up your hard disk. This puts some workload back where it belongs: in the hands of your computer. All you have to do is press a keystroke of your choice, and the macro program takes over. If you're not already using macros, you'll be amazed at how much effort you can save.

Here, for example, are 30 of the tasks for which we have macros. Remember, we press one key to trigger each of the following:

1. Apply a certain System 7 label to every file modified in the last week
2. Empty the Trash
3. Arrange palettes the way we like them
4. Change tools (PageMaker, Fontographer, Canvas . . .)
5. Choose common font/size combinations
6. Convert database formats ("Smith, J." to "J. Smith")
7. Convert folder full of PICT files to TIFF files in Photoshop
8. Drag top application window to bottom of screen
9. Eject a floppy disk
10. Eliminate extra spaces between the sentences of a document
11. Go to end of a word-processing file
12. Hide all other application windows
13. Jump to a specified folder when we Open or Save
14. Launch Excel
15. Make the Esc key work like a left-handed Delete key
16. Make the PowerBook's hard drive stop spinning
17. Mount an AppleShare volume (disk)

18. Open a control panel
19. Print only page 1 of something
20. Restart the Mac
21. Save every ten minutes
22. Select a specific style sheet (word processor or page layout)
23. Select Text Offset for a graphic (PageMaker)
24. Separate the area codes of phone numbers into two database fields
25. Strip linefeeds and funny characters from downloaded text
26. Turn off AutoGrid when launching ClarisWorks
27. Turn off the Mac's sound
28. Type "SUM()" in Excel and put the cursor between the ()s
29. Type out today's date
30. Type an e-mail signature ("David Pogue, contributing editor")

The key to using a macro is this: Whenever you find yourself doing *anything* for the second or third time, and you anticipate doing it a few more times, make a macro to do it. You certainly have enough keys to go around. When you consider that Shift, Option, Control, and ⌘ can be mixed in any combination with any keys, that gives you just about 2,000 possible keystrokes that can trigger macros — *per application!*

MACRO SOFTWARE SECRETS

Universal versus local (Tempo, QuicKeys)

You have one set of macros that works no matter which program you are in. They constitute the Universal keyset. These are the macros that shut the Mac down, convert your straight quotes to curly ones, and type today's date.

You have another set of macros in each individual application. These "local" macros *override* any Universal ones that you have assigned to the same keystrokes. When you define an application-specific keystroke, macros warn you that you're using the same key combination as a Universal macro. You can just click OK and continue on your way.

This override feature can be useful in a number of instances. The primary example is smart quotes. Use Universal macros (the predefined QuicKeys called QuickQuotes and Double QuickQuotes) to give you curly quotes everywhere you can type: In file names, in your Note Pad, everywhere.

But there are some programs where you *don't* want those QuickQuotes macros to do their thing. You don't want to use any curly quotes when you're sending e-mail, because curly quotes get converted to *U*s and *R*s when they're received by non-Mac computers (including the mainframes that run CompuServe, GEnie, and the Internet). You also don't want QuicKeys to do your curly quotes in Word because Word's *own* smart quotes are *smarter* than the QuicKeys quotes. (See "Curly quotes" in Chapter 24 for our logic.)

Use your launch macro to make a program active





You can launch any program on your hard drive by pressing its macro key. But that key's usefulness doesn't stop there. When you're running several programs at once, pressing that same key will also *bring forward* the program it originally launched. This trick works in QuicKeys, Tempo, and KeyQuencer.

(Of course, if a convenient way to switch open programs is all you're after, the terrific Program Switcher, provided with this book, is all you need.)

Quick transposed-letters fix

When inspiration is flowing and you're typing madly, you may inadvertently transpose two typed letters, resulting in a word such as "adn" instead of "and." A macro program is ideal for fixing such a goof.



Place the insertion point just after the scrambled pair. Start QuicKeys or Tempo recording the following sequence: Shift-left arrow (to select the second letter) and ⌘-X (to cut it). Use the left-arrow key (to move the insertion point before the first letter) and ⌘-V (to paste it). Then use right-arrow key, spacebar (to be ready for subsequent typing). (You can get KeyQuencer, included with this book, to do the same thing — just create each step manually.)

When you fire off this macro, fixing those transposed-letter typos becomes second nature.

The left-handed Delete key

As we've mentioned elsewhere, one of the most powerful efficiency advances you can make on your Mac is to change the Esc key on your keyboard to be a Delete key. You'll quickly discover that editing — for a right-handed person — is far quicker and easier if you can keep one hand on the mouse and use the other to press your new Delete key.



Mapping the Esc key to the delete function is easy with QuicKeys or KeyQuencer (included with this book). In QuicKeys, use an alias keystroke; in KeyQuencer, use the Type command. See Chapter 34 and the online help for details.

Intro to QuicKeys

QuicKeys, of course, is by far the best-selling macro software. To understand it, you should understand that there are, in essence, three kinds of QuicKeys. There's a one-shot QuicKey: Pull down a menu, click a button, or open a file. Then there are *real-time* macros, which re-create *exactly* a series of steps you take, including hesitations, false starts, and so on. Finally, there's the kind you probably use most of all, the multistep *sequence.* In a sequence, the macro program performs each step of the macro — launch Word, set margins, paste logo, type today's date, press Return a couple of times — at extremely high speed. (If you've never seen a macro in action, you're in for an amazing and even unsettling sight. You'll think your Mac's been taken over by a poltergeist on caffeine.)

You can create sequences in one of two ways: Either by composing them manually in the Sequence Editor or by *doing* whatever it is while QuicKeys watches. Usually, you do a combination of the two. You record a sequence while QuicKeys watches, and then you edit it to fix any bugs.

Debugging I: When circumstances change

Asking a macro to do some of your work is like asking someone who's brand new at the office to take over for you. Sometimes they're too dumb to get it, even when you're the essence of clarity. To be a successful macro user, you must do just the tiniest bit of debugging.

When a QuicKey goes wrong, it's usually because (a) circumstances have changed since you recorded it (such as the position of an icon or menu command), or (b) the QuicKey goes too fast for the Mac. (By the way: Don Brown, the author of QuicKeys, pronounces it "quickies," not "Quick Keys.")

We have power Secrets for each situation. Here's an example of the first. You write a macro to close one document and open another. Performer, for example, is a MIDI music recording program. It's one of those applications that can only open one document at a time. It has no keyboard shortcut for Close; instead, its Close command always includes the name of the open file. It may say Close "Overture" or Close "If I Were a Rich Man." If you teach QuicKeys to choose a particular menu item by *name,* which is its default, then guess what? Your new Close Document QuicKey won't work (except on the file you used to teach it).

MACINTOSH SECRET

MACROS FOR MAC VIRGINS

You may think that QuicKeys, KeyQuencer, and Tempo are the domain of advanced users. Technically, you're right.

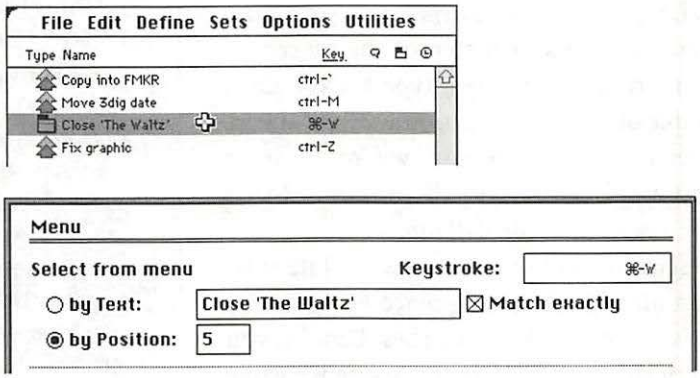
But they're also great for a wide-eyed beginners, because macros can reduce the number of steps you must remember.

One woman we know is a book author who's absolutely stricken whenever she contemplates using a computer. Yet, at her publisher's urging, she got herself a PowerBook. We set up a macro for her: When she presses Control-S, the macro saves her work, automatically copies her manuscript folder onto the floppy disk (which lives, permanently, inside the floppy drive), and then puts the laptop to sleep.

Her data is safe, and she doesn't even know it.

The solution: Teach QuicKeys to hunt for that menu command by its *position* in the menu, instead of by its wording. Open the QuicKeys window and double-click the Menu QuicKey name to open the Sequence Editor (see Figure 22-2).

Figure 22-2
To edit a QuicKey, double-click its name (top). In this case, telling the macro to choose a menu command by its position in the menu rather than by its name is the way to make it smarter (bottom).

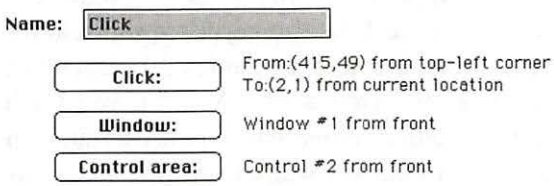


Now it's a simple matter of clicking "by Position" and then clicking OK.

Debugging II: Fixing a click

Along the same lines, you can also get into trouble when you use a QuicKey to click something on the screen. Sometimes the programmers of the application you're using have defined what's called a *control area* in a dialog box: An invisible region that contains user controls (such as buttons). Trouble is, this region may be larger than the button itself (or whatever you want the macro to click). If your QuicKey doesn't seem to be successful at clicking a button, open the QuicKey window for that click. As shown in Figure 22-3, you see a Control Area button in the Click editing window.

Figure 22-3
The Control area option can occasionally confuse a macro.



Just click the Control area button and set it to None. Then your QuicKey should work more smoothly.

While we're talking about the Click editing options: CE Software told us that a simple adjustment in this Click Options dialog box can often make the difference between a macro that works and one that doesn't. If you click the Click button, for example, you see that you can specify how QuicKeys measures the *position* of this mouse click: A certain distance from the corner of the screen, from the corner of the *window*, and so on — and from *which* corner. Experiment with these controls until you find the setting that works every time.

Debugging III: When the QuicKey runs too fast

It's not that the macro runs too fast, actually. More often, a multistep macro doesn't work because, at *one spot* in the process, it must wait for the Mac to catch up.

You can introduce a pause into your macro, of course. When you edit your sequence, choose the User Timed Pause command (from the Define menu). This is how you create a pause that stops the macro for a *fixed* period of time, however. In most cases, you want something a little more intelligent.

Here's a perfect example: When writing this book, we created a number of illustrations and screen shots. Each had to be pasted into the Word manuscript. Then the style for the picture had to be changed to Graphic style. Then we had to press Return (to go to the next line) and type the caption. But the caption always begins with the figure number ("Figure 22-1," for example). So, we wanted a macro that pasted the graphic, changed the style to Graphic, pressed Return, and typed "Figure 22-."

But we ran into a problem. If your Clipboard contains a *large* graphic, Word takes a while to paste it. But without teaching QuicKeys to wait for this process, it does the rest of the macro — changing the style, pressing Return, typing the figure number — blindly, futilely, while the Mac isn't ready!

Here's the solution: Use one of QuicKeys's various, intelligent waiting commands (see Figure 22-4).

For us, the solution was to choose the Window Wait option. (In QuicKeys 3, you get to this by choosing Extensions from the Define menu; then choosing Sequence Tools from that submenu; then Wait . . . from that submenu.) See Figure 22-5 for an annotated explanation.

Figure 22-4
A few creative ways to make your QuicKey pause intelligently. Wait until Cursor Action can pause the macro until the cursor resumes its normal pointer shape. Wait until Menu Action pauses until a particular menu command becomes available (or checked or unchecked). Wait until Window Action suspends the macro until a particular window is (or isn't) on screen.

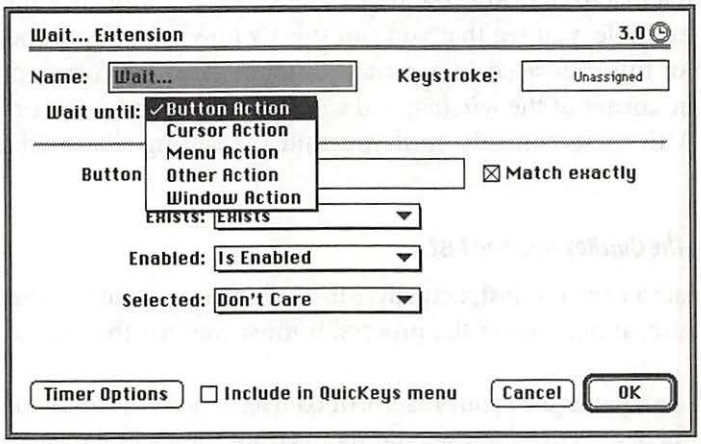
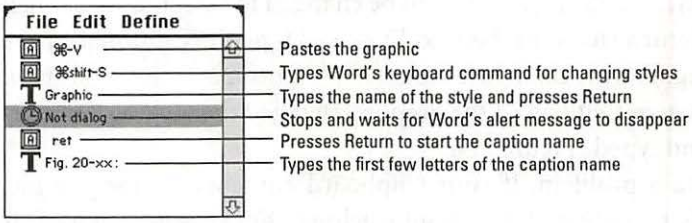


Figure 22-5
By inserting a Wait Extension set to "Not dialog" (meaning: "Wait until there's no dialog box on the screen before proceeding"), we made the macro intelligent.



Debugging IV: Mark your place with a beep

Here's one other tip: If you're having trouble figuring out where a macro is going wrong, you can mark each step of the sequence by inserting a Sound extension — in other words, get your QuicKey to *beep* as it proceeds. As you watch the macro run, you can judge where the problem occurs by seeing if it takes place before or after the beep you inserted.

QUICKEYS SECRETS

The hidden bunny (QuicKeys 2 or 3)

Open the QuicKeys window. Click the large QuicKeys logo at the bottom-left corner of the window. (If you have QuicKeys 3, then click the Credits button.) Sit there patiently for nearly a minute. Your reward will be an amusing little animated display that makes blatant reference to a certain battery commercial that just keeps going and going ....

Make sure that the sound isn't turned off on your Mac speaker, or you'll miss the drum beats. (We couldn't find the bunny in version 3.5.)

How to make Delete, Enter, Tab, or Return do something

When you define a keystroke, you can type almost any crazy key combination in the world. Figure 22-6 shows one particularly zany combination.



Figure 22-6
Almost any keystroke you can (or can't) remember can be a QuicKeys trigger.

But you can't use the Return, Enter, Tab, or Delete keys as QuicKeys keystrokes. Well, not unless you know the Secret.

Hold down the mouse button *first* and *then* press one of these forbidden keys. QuicKeys dutifully assigns that key to the macro. (We suspect they make it so difficult because you can wreak havoc if you *accidentally* assign one of these critical keys to a complicated macro!)



Get around the 255-character typing limit

The Text QuicKey type is handy because it can type out any predefined bunch of text at the touch of a key. But its handiness is limited by its 255 characters. You won't get very far if you want the macro to type a boilerplate contract; there are more than that many characters in this paragraph alone!

What you *can* do, however, is string multiple Text macros together into a sequence! Voilà: No more limit.

For *really* long text sequences, it's actually faster to save the text in, say, a SimpleText document. Make a QuicKey that launches that file, selects all, copies, quits SimpleText, and pastes.

Auto-empty the Trash

If you, as a System 7 user, miss the days of System 6, whereby the Trash gets emptied automatically, QuicKeys can take care of you.

Go to the Finder and open the QuicKeys window. From the Define menu, choose Menu/DA. Then choose Empty Trash from the Special menu. In the Menu/DA dialog box, click the Timer Options button. When the Timer dialog box appears, indicate that you want the macro to run, say, one second after the Macintosh starts. That's all it takes to creating a self-emptying Trash can.

Your personalized macro tally

Open the QuicKeys editor. Click the memory-graph bar. You'll be shown a secret statistics screen that reveals how many of each kind of macro are currently loaded and how much RAM they're taking up.

Tempo II

Tempo II Plus does almost everything QuicKeys does, with two dramatic differences: It's smarter and it's more complex. The most famous features of Tempo II Plus are its *conditional branching* capabilities. That means you can teach it to choose between two courses of action, depending on the circumstances: Make some text boldface if it's preceded by an asterisk; otherwise, italicize it. If it's past midnight, automatically sign onto CompuServe; otherwise, wait another half hour; and so on. Our favorite is the BitMatch feature, in which Tempo II actually *looks at the screen* and acts according to what it sees there.

You can make Tempo II do absolutely incredible things: reformat databases containing thousands of records; download, format, save, and print your e-mail in the middle of the night; and so on. It can even take a set of data through an exhaustive conversion process involving several programs and lots of copying and pasting.

We've included, with this book, an especially easy-to-use version of Tempo called TempoEZ. On one hand, it doesn't have quite as much of the programmable smarts as the full-fledged Tempo II Plus. On the other hand, it's much easier to use; it still does the intelligent branching stuff; it comes loaded with some useful macros already (you've got to see the included Photoshop macros to believe them); and it's cheap to order the full version (see the coupons at the back of the book). See Chapter 34 for instructions.

Here are a few Tempo II-specific Secrets. You may want to read the QuicKeys section for some additional ideas, because Tempo II can perform most of the same tricks.

TEMPO II SECRETS

Don't print without spell checking first

We're touch typists who stare right at the words on the screen as we type. Yet, even though we read over our work before we turn it in, our spelling checker *still* finds typos, almost every single time, that our eyes missed.

Of course, it's easy to create a macro that spell checks a document and then prints. Much better, though, is to set up one to *ask* you whether you want to check the spelling. Therefore, set up Tempo II to present a simple dialog box whenever you press ⌘-P. You get a message like the one in Figure 22-7.

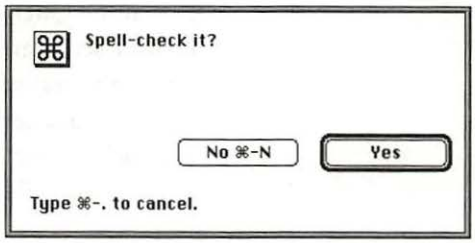


Figure 22-7
Tempo II can ask you, at print time, whether or not you want to check spelling.

If you press Return, the macro starts the spelling checker and then prints the document. If you click No, the document gets printed immediately.

You can create the check-spelling macro (let's call it Spell Check) and the print-now macro (called Print) easily, using the standard macro-recording sequence. Here's how you create the dialog box macro: Use a Tempo II Plus Button external. Set it up to look like this:

```
Button(Spell-check it?,Yes=Spell Check then Print,No/N=Print)
```

If you click the Yes button, the "Spell check then Print" macro runs the spell-checker and then pauses until you tell it to resume. Then it runs the Print macro. If you click the "No" button, it simply plays the Print macro directly.

KeyQuencer: The Other White Meat

Imagine a macro program that requires only $^1/_3$ the RAM of QuicKeys and does its business much faster. It's the polished, cleverly named KeyQuencer, a shareware control panel that comes with several dozen ready-to-play macros. One keystroke flips your monitor to a different color setting. Another lets you take a screen shot of anything you rope off with the selection rectangle. Others do things such as type the date, move a window, adjust the speaker volume, or switch to the next open program. KeyQuencer (which comes with this book) can also empty the Trash, jump to the Finder, put quotes around selected text, open the Calculator, find a lost PowerBook cursor, and so on.

Unfortunately, KeyQuencer has no watch-me mode. In other words, you must build every KeyQuencer macro manually — program it — by typing a coded command. To make a macro that chooses Palatino from the Font

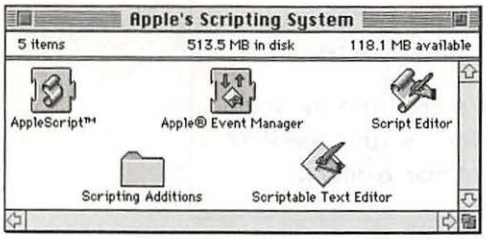
menu, you type **Menu "Font" Item "Palatino"**. To make KeyQuencer type your name, you create the command **Type "Jennifer L. O'Sullivan"** (or whatever).

This is all made much simpler by the control panel's scrolling list of verbs (**Type, Menu, Click, Drag,** and so on); you don't have to remember what order the words go in, what their spellings are, or even what they do (an explanation appears when you click in the verb list).

Note that KeyQuencer, unlike QuicKeys and Tempo II, doesn't let you create a separate set of macros for each program. Still, KeyQuencer is a fast, powerful macro alternative that's certainly worth trying out.

We've created a terrific set of ready-to-run macros, pre-installed in the control panel — including the famous "small icon view on the Desktop" macro that's impossible to achieve any other way. See Chapter 34 for details.

Figure 22-8
The contents of the AppleScript installer disk: The AppleScript extension, a special extension to make AppleScript work with Apple Events, the Script Editor, and a sample AppleScript-capable application.



APPLESCRIPT

AppleScript is the Apple technology that lets you automate certain Mac activities much more directly than standard macro software can. AppleScript is a system extension (or several) and a program called, appropriately enough, Script Editor (see Figure 22-8). AppleScript comes with System 7.5.

Like QuicKeys and Tempo II, AppleScript can record your actions and play them later. But AppleScript can also do something more — *scripting.*

Scripting and recording

A *script* is a series of text lines containing instructions for the Mac to perform. As with programming, you, the script author, can't assume anything; every little detail must be spelled out (see Figure 22-9).

If you use the auto-recording feature of the Script Editor program, AppleScript writes the script *for* you (you can even see the lines of instructions appearing in the Script Editor as you perform the steps). You can edit the recorded script when you stop the recording function. When you then execute the script, your Macintosh performs your recorded actions automatically. You can save the scripts either as documents to edit later or as double-clickable, self-running applications (called *applets*).

A script is much more powerful than a standard macro because (once programs are upgraded to offer AppleScript features) it can be much more specific.

A certain script can grab specific text from a specific field of a database, or highlight and chart a specific range of database cells, and so on — automatically.

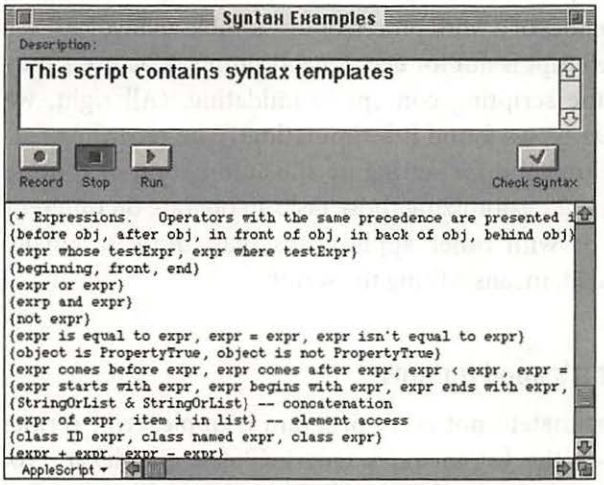


Figure 22-9
The business end of AppleScript: The Script Editor. In this window, you record your Mac's operation for later playback, or compose your own script by typing commands into the script window. Here we see some Apple examples of proper command structure.

Apple Events

AppleScript, like the commercial utilities Frontier and QuicKeys, works only with Mac applications that were written with Apple's *Open scripting architecture (OSA)* in mind. When Apple released System 7, the OSA rules described the necessary changes that programmers would need to make if they wanted their applications to understand behind-the-scenes, program-to-program signals called *Apple Events*. Apple dictated a minimum set of instructions — Open, Print, Quit, and Run — called the Required Suite. Applications that understand the Required Suite of Apple Events can be launched, and minimally manipulated, by AppleScript.

You'll see the real power of AppleScript when applications implement additional program functions into the Apple Events suite. AppleScript can control StuffIt Deluxe, for example, to the extent that you don't actually have to use your mouse or keyboard.

What to do with AppleScript

Using the Program Linking features of System 7, you can tell other Macs on your network to run StuffIt, or any Apple Events-aware applications, thus freeing your computer for other uses. Because you're essentially running a program on some *other* Mac, and because your Mac is only sending short instruction sequences to the remote machines, you get back the time you would have otherwise spent waiting for your Mac.

MACINTOSH SECRET
APPLESCRIPT SURPRISE

It's only natural that a program intended for novice programmers should have Apple programmer humor embedded in it. You'll see: Launch the Script Editor (which comes with System 7.5 and later). Choose About Script Editor from the menu. Then, while pressing the Control key, click the icon (or the words "The Script Editor") to see the words *Guava Surprise.* Then click the Credits button for a secret panel of musical credits — in fact, the Toy Surprise Alternate Credits.

Our personal favorite is, as "Mister Blobbo Sez:"

Remember, kids: Time is just Nature's way of keeping everything from happening at once.

If you return to the menu, repeat all of the above with the About AppleScript command. As they say in Cupertino, "Pure Guava."

You can also use AppleScript to *combine* features of application programs. For example, a script may use the calculation capabilities of a spreadsheet and the formatting capabilities of a word processor to assemble an invoice.

AppleScript is not for everyone; beginner Mac users may find the scripting concept intimidating. (All right, we confess — *we* found it intimidating!) The recording features are good for setting up the automation of routine tasks, but customizing those tasks to operate on different files, or with other applications than those originally recorded, means editing the script.

What it's good for now

Unfortunately, not every program is AppleScript-scriptable — the list includes QuarkXPress, FileMaker Pro, MacProject, Cyberdog, StuffIt Deluxe, BBEdit, Symantec C, and Metrowerks CodeWarrior (though many programs are Apple Events-aware). Fortunately, beginning with System 7.5, the Finder itself is AppleScript-able. In other words, you can easily automate sequences of Finder tasks — empty Trash, back up your Documents folder, and Shut Down, for example. And if you use the System 7.5 Installer to install AppleScript, you'll see a handful of useful scripts listed in your menu (Get Info, Put Alias in Apple Menu, and so on); see Chapter 5 for descriptions.

Another easy way to get into AppleScripting is to get QuicKeys, version 3.0 or later, which has built-in features for manipulating AppleScript scripts. For example, QuicKeys offers some general abilities to manipulate the Finder and files, and to insert text in several ways.

AppleScript has great potential, but you have to do a lot of learning before the scripting becomes easier than the task it was meant to automate.

SCREEN SAVERS AND SCREEN GRABBERS

Thousands of people live long, happy lives without using either screen savers or screen-capture utilities. The rest, however, can't get along without such programs. Here's what you need to know.

Screen savers

A screen saver blanks the screen after a few minutes of inactivity on your part. To signal you that the computer is still on, however, a screen saver must bounce some moving image around the screen. The programmers figure: If you must display some "I'm still on!" signal on the monitor, you may as well make it entertaining. That's why After Dark, Pyro, the shareware Darkside, and other programs let you choose from dozens of different displays: fireworks, random patterns, swirling lines, and, in After Dark, the now famous Flying Toasters.

Of course, these days, the term "screen saver" is poorly chosen — screen savers are actually *worse* for your monitor than (a) turning the monitor off when you're not using it, or (b) setting it up to go to sleep (on Macs so equipped, such as PCI-slot Power Mac models and clones); screen savers continue to exercise the phosphors on your screen, whereas making the screen completely dark will extend the phosphors' life. Furthermore, PowerBooks don't benefit *at all* from running screen savers. Even today's *desktop* monitors wouldn't burn in unless you left them on continuously — unused — for *two years,* according to monitor engineers.

But screen savers are *fun!*

Screen grabbers

In the early days, ⌘-Shift-3 was one of those hidden surprises built into the Mac by crafty Apple engineers. It takes a snapshot of whatever is on the screen, creating a PICT file called Picture 1 on your disk, even making a satisfying camera-esque *kachunk* sound. This kind of graphic is known as a *screen dump,* or, more pleasantly, a *screen shot.* As magazine and Mac book writers, we *live and breathe* screen shots.

But you need a graphics program to edit the results. You must erase (or use SimpleText to crop out) unwanted parts of the image; and you still can't use the key combination when a menu is pulled down.

That's why, if you have any interest in capturing what's on your screen, we heartily recommend that you get an actual, specialized screen-grabber program. Our recommendations are Captivate, Screenshot (commercial programs), or Flash-It, which we used for this book. (As a matter of fact, Flash-It comes *with* this book.)

They're fast, slick, and simple. Press the key combo of your choice, and select a destination for the captured image — the printer, the Clipboard, a PICT file, or the Scrapbook. These programs let you capture the whole screen, just a window, just a menu (even with submenus), or a region you drag across.

DIALOGUE

Screen burn-in syndrome

DP: You're not actually going to propagate that old myth, are you?

JS: Which myth would that be?

DP: That old saw about your screen getting burned-in if you leave the Mac on too long.

JS: It happens to be a fact. If you're not using your Mac, whatever image you left on the screen — the Finder windows, for example — will just sit there, static. The phosphor on the inside of your monitor glass gets bombarded with electrons for hours upon hours, in an unchanging pattern, until finally a ghost of that Finder image is permanently etched into the phosphorus. There's no recovering. You have to throw out your monitor.

DP: That is the *biggest* slab of baloney ever foisted. Have you *ever* known anyone to buy a new monitor because of screen burn-in?

JS: Well, no.

DP: Have you ever known any screen even to *get* this burn-in?

JS: Yes. Cash machines.

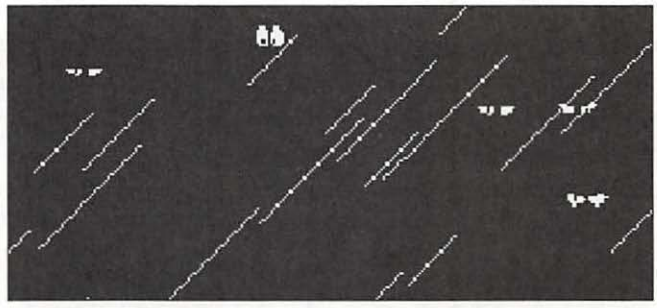
DP: Oh, come on. That's a completely different story. A cash machine only *has* one image to show: "Welcome to Chemical Bank" or whatever. And it's *on* 24 hours a day. Nobody uses a Mac like that. Except maybe file-servers.

SCREEN SAVER/SCREEN GRABBER SECRETS

More After Dark fun

After Dark's MultiModule makes things especially lively because it lets you combine any set of other modules. A few of our favorites: Night Lines and String Theory superimposed (if you're into straight lines); Nocturne and Rainstorm (see Figure 22-10); and super Zot.

Figure 22-10
Q: What can be scarier than strange, hostile animals howling at you in the dark?
A: Strange, hostile animals howling at you in the dark in a *storm!*



This last one is a stormy multiple-dose of lightning. You make it by duplicating the Zot module in the After Dark Files folder — more than once, if you're really up for it. Then, in the MultiModule editor, select them from the list on the left; adjust their display areas; make them transparent; and let 'er rip. Now *that's* a dark and stormy night!

The "Please wake up!" message

For years, your cheerful authors have been baffled by messages that streamed across the top of an After Dark-darkened screen. There was a little application icon and the words "Please wake up!" What kind of application was so smart that it actually broke through After Dark's dusky domination of the screen to display this message?

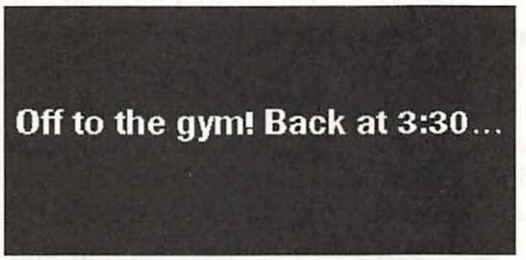
We had it all wrong. It's not the *application* saying "Please wake up." It's After Dark! Here's what happens. When a program (PrintMonitor, America Online, QuickMail, and so on) displays a dialog box or alert message on the screen, that message is handled by the Mac OS's *Notification Manager* (one of the behind-the-scenes, built-in system-software routines). Whenever After Dark kicks in, it consults the Notification Manager; if there's a message waiting for you, the screen saver sends that wake-up message across the top of the screen.

The world's most effective In/Out board

Our clients have absolutely loved this Secret, even though it's not very secret.

If your Mac is in a house or office where other people may come looking for you, use the Messages module of After Dark. (Write a QuicKey macro to open it up for you.) Before you take off for lunch or errands, let people know what's become of you, as shown in Figure 22-11. Your message will scroll across (or bounce, at your option) the screen until you return.

Figure 22-11
Your personal Times Square scrolling light board.



For an even more Times Square-esque effect, try this: Make duplicate copies of the Message module, calling them Message copy, Message copy 2, or whatever. Then plug a different message into each module. Set up the screen saver to cycle through those modules. You'll get a scrolling effect, with the message changing from one to the next automatically.

JS: I know a guy who leaves his Mac on all the time, and *it's* got screen burn-in.

DP: You saw this?

JS: He's got an old, old Mac Plus, and it's got the Finder menu bar faintly, permanently visible at all times.

DP: Well, it's hardly an imminent threat. If you turn off your Mac at night, you certainly don't need a screen saver.

JS: I think I can settle this right now. Loud and clear, for all of America to hear, I want you to answer this one question.

DP: Go ahead, worrywart.

JS: Does *your* Mac have a screen saver program?

DP: Oh, that's not releva —

JS: Does it?

DP: Well, sure, but only because —

JS: Okay then.

DP: But not because of burn-in. I use it 'cause it's fun, 'cause it's cool —

JS: — and because, somewhere deep down there's a niggling fear that one day you might run out and come back a week later to find permanent burn-in. Right?

DP: —

JS: Hmm? Right?

DP: Oh, I guess.

Cancel a Flash-It shot



If you're using Flash-It, the screen-capture program included with this book, you can change your mind in midsnapshot. Just press the Esc key as you release the mouse (after dragging to select a region).

Capturing the uncapturable



Some software bypasses the usual Mac graphics machinery, blasting images directly onto your screen: Screen savers, certain games, and the startup process itself, for example. These situations are difficult to capture using an ordinary screen-capture program. That's why we've included yet another screen-capture program on the CD-ROM with this book. It's called Snapz, and its most notable talent is capturing screen images when no other capture program can work.

COMPRESSION SOFTWARE

You want to back up a file, but it's too big to fit on a floppy. Or, you finally got a PowerBook, but you're out of space on the drive in a week. Or, you have to send a file to someone on America Online, but you're afraid it will take forever.

What you need is a file-compression program. These programs toy with one of life's great equations: Time = Money. In other words, you trade away the time it takes for a compression program to encode your files into a more compact form. In return, your expensive hard drive now holds twice as much. You can postpone having to buy another drive.

Different files get smaller, when compressed, to different degrees. Graphics files (particularly paintings, such as TIFF and PICT files) are among the most compressible files. A typical, otherwise uncompressed, scanned TIFF file may take up 1,000K before compression, but only 120K after compression. Word-processing documents also get much smaller.

Printer fonts and sounds are among the kinds of files that don't compress much. They're *already* in an encoded form, so the compression programs can't find much redundancy to eliminate. (Screen fonts scrunch down just fine, however.)

TRUE FACT
WHERE THE FLYING TOASTERS' WING SOUNDS CAME FROM

When it came time to add sound to the Flying Toasters (one of the After Dark screen-saver modules), the programmers had a dilemma. Nobody knew what kind of sound toasters' wings made.

In the end, the gang settled for the sound of tagboard file folders being waffled back and forth.

With a little editing and "sweetening," the now-familiar "floomphing" sound was born.

Kinds of compression programs

Version after version of these miraculous programs have been flooding the market recently. They've ballooned into three categories of file compressors:

- *One-at-a-time file-compression programs.* DiskDoubler, Now QuickFiler, and MagicMenu (part of the StuffIt Deluxe package) are examples. You highlight a folder, or an icon, in the Finder. You choose Compress from a new menu on the menu bar. The files get smaller. Then you just double-click to decompress *and* open any file. DiskDoubler and StuffIt Deluxe 4 can even turn multiple files or folders into a single compressed file called an *archive* without even leaving the Finder — and you can then add to or remove files from it individually.
- *Background compression programs.* AutoDoubler, StuffIt SpaceSaver, and another Now Compress component are some examples. These control panels lurk in the background all day long, quietly compressing *everything* on your disk (except the System Folder and other folders you designate as off-limits). They generally use a special method that takes a long time to compress a file, but very little time to expand it again. (A simple double-click expands them; no trip to a decompression program is required.)
- *Disk driver-level compressors.* TimesTwo, eDisk, and Stacker — all but Stacker have been discontinued — were among these. These programs, common on the Windows platform, replace or modify your invisible *disk drivers* (see Chapter 8 for details). As the Mac writes data onto the drive, everything is compressed without the System's even knowing about it. As a result, your hard disk slows down because of the delay involved in expanding and compressing information (50 percent or more in many cases). Finally, if something goes wrong at the driver level, you don't just lose a file, you lose the entire disk.

CASE HISTORY

BATTLE OF THE AIRBORNE APPLIANCES

Berkeley Systems made flying toasters famous. Or did it? Cut to 1994, when Delrina began selling a screen-saver program of its own, based on the characters from the *Outland* cartoon strip. One of these modules featured everybody's favorite penguin, Opus, shooting with a rifle at — could it be? — *flying toasters*. Berkeley sued; Delrina gave in, changed the toasters to microwaves, and got a lot of free press.

Berkeley didn't have the last laugh, however; as a result of the publicity from the suit, *it* was sued, in turn, by the Jefferson Airplane rock group. The group's lawyers claimed that a 1971 album cover introduced the concept of airborne toasters.

This could go on forever. Let's see: Did they have intellectual-rights lawyers in the Renaissance?

We're partial to the first form of file compression. We like to have some control over what's happening on those disks of ours. Those automatic background file-compressors slow down your Mac in general, and we've heard frightening things about the safety record of driver-level compression programs. When you get right down to it, disk space is like memory and PowerBook battery juice: There comes a point when all your conservation contortions aren't worth the price of buying more, especially in this age where a Zip drive doesn't cost much more than one of these compression programs.

MACINTOSH SECRET

ALL THOSE NAMES AND SUFFIXES

When you get a new compressed file from a friend or an online service, how are you supposed to know which program is required to unstuff it?

Here's a rundown.

- ***.sit*** **— To open this kind of archive, you need any one of the following: The commercial StuffIt Deluxe, the shareware StuffIt Lite, StuffIt Expander (included with this book), or the America Online program itself.**
- ***.dd*** **— To open it, you need either DiskDoubler (from Symantec) or the free DD Expand program. (DiskDoubler also opens old-format StuffIt 1.5.1 files.)**
- ***.cpt*** **— Files compressed with Compact Pro have this suffix. Compact Pro is known to be slow, but it compresses very tightly, sometimes reducing the size of files by 50 percent or more.**
- ***.sea*** **— If a file's name ends in *.sea*, it's a *self-extracting archive.* It may have been created by any of the other compression programs. The .sea suffix tells you that you don't even need to worry about which program created it. A simple double-click will automatically expand the file. (A self-extracting archive is always about 15K larger than a *non*-self-expanding compressed file. That extra bit of code is what turns a regular compressed file into a double-clickable program.)**
- ***.hqx*** **— You got this file from the Internet, didn't you? Anyway, it's a *binhex* file. You can open it with StuffIt Expander, included with this book.**
- ***.uu*** **or *.uue* — Another Internet scheme for sending files through the Internet as a bunch of encoded *text* (because actual *files* often can't cross from one online service to another). To open it, use, once again, StuffIt Expander.**

Segmenting files

Compression programs such as DiskDoubler and StuffIt solve an age-old (well, ten-year-old) dilemma: How do you give somebody a file that's too big to fit on a floppy disk?

Your first thought should be: "I know! I'll compress it!"

If, after being compressed, the file is *still* too big, you have to break the compressed file into floppy disk-sized chunks. All the compression programs we discussed have *Segment* and *Join* commands that do just that. The Segment commands break up a large file so that the pieces will fit on separate floppies — and the Join commands sew them back together on the recipient's hard drive.

If you're asked to choose how large the individual chunks (segments) should be, though, be careful. Remember that an 800K floppy doesn't hold 800K, and a 1.4MB floppy doesn't hold 1.4MB. In fact, more realistic sizes for your segments are about 760K and 1,350K for double-sided and high-density disks, respectively.

Macintosh Secret

How to outsmart the hard drive at its own game

In Chapter 8, we explained the frustrating inefficiencies of the Mac's hard drive design: The individual *blocks* on your hard drive are probably 16K or 32K in size, yet only one file may occupy a storage block. As a result, each file smaller than a block wastes the remainder of that space. A 2K SimpleText document, for example, wastes 30K of space on a hard drive that has 32K blocks. We said that there's no way to resolve the problem except by partitioning your hard drive into multiple volumes (Desktop icons), each of which will have smaller block sizes, thus wasting less space.

Unfortunately, partitioning is a hassle, and it requires erasing the entire hard drive. Fortunately, we have a much better suggestion: Install StuffIt Deluxe 4.0 or later. Its True Finder Integration feature lets you manipulate StuffIt archives in the Finder, exactly as though they were ordinary folders. For example, you can double-click a compressed StuffIt file called Little Files.sit — it opens into a window, exactly as a folder would, displaying all the compressed files inside. Again, exactly as with a folder, you can now double-click one of those compressed files to decompress and open it automatically.

So what's the significance? Block size! The Finder considers each StuffIt archive to be a single file. By stuffing lots of little files — e-mail messages, Read Me files, and so on — into a single StuffIt file, you effectively cram multiple files into a single Finder file, confident that you're filling the blocks completely. Using that 2K SimpleText document as an example, you'd be able to fit about 25 of them into a StuffIt archive (because StuffIt also compresses them) that takes up only a single block — only 32K — instead of leaving them loose on your hard drive, where, with all the wasted block space, they'd occupy a total of 800K!

NOW UTILITIES

We're not devoting a section to Now Utilities just because you get Now Utilities with this book (see Chapter 34). No, we're including it because Now Utilities offer some delightful little secrets of their own.

NOW UTILITIES SECRETS

Ferret out duplicate files and disconnected aliases

We're not sure how much anyone uses Now Profile. We didn't use it much, anyway, until we discovered this housecleaning trick.

Double-click the Now Profile icon. You get a Preferences screen, in which you can select which aspects of your Mac will be described in the report. Choose Omit for everything except Aliases and Duplicate Files. Select "All local HFS volumes" so that the program will inspect all your drives (if you have more than one). Finally, click OK.



When the program is finished analyzing your system, it shows you a list of all aliases whose original items have been thrown away. These remaining aliases are doing you no good, and you should trash them.

Similarly, Now Profile lists all the duplicate files it found on your disks, and where the copies are located. This is a great way to get rid of the 47 copies of SimpleText that, no doubt, are currently residing on your hard drive.

Three stunts with the launch menu

The launch menus for Now Menus appear at either end of your menu bar, in the farthest possible corners. They list recently opened applications and documents, making them easy to launch again.

Figure 22-12
Make an item permanent (spacebar), take an item off the list (Delete key), or find out where something's hiding (P key).

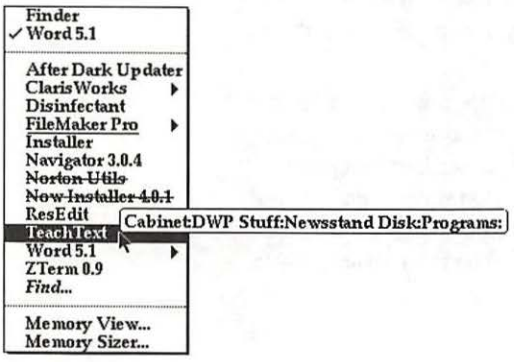


Figure 22-12 shows three different on-the-fly techniques you can use to modify your launch menus.

If something appears in the list that you want to remove, highlight it and press the Delete key. A horizontal line appears, striking it out; the next time you open the menu, that item is gone.

If there's something in this list you want to be listed there *permanently* (instead of being displaced eventually by a more recently opened item), highlight it with the cursor and press the spacebar. The item appears underlined, meaning that it's permanent.

Finally, if you highlight an item and hold down the P key, a pop-up display appears. It shows you the *path name* of that item — that is, where it is on your disk (the drive name appears first, then the outer folder, then the folder inside that, and so on).

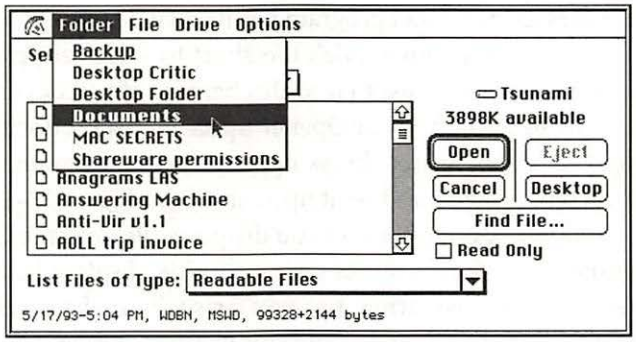
Specify a default folder for each application

System 7.5/7.6 and Performa users, as we mentioned in Chapter 4, have a delightful feature: a Documents folder. Every time you use the Open or Save As command of a program, you're not lost. You're always looking at the same folder, and your usual set of documents is always there.

Super Boomerang does better: It lets you specify a default folder for *each* application on your disk, so you can have one Word Documents folder, one Photoshop Documents folder, and so on.

To designate a default folder, launch the program in question. Choose Open from the File menu. Pull down Super Boomerang's Folders menu, as shown in Figure 22-13. (If the default folder you want isn't already listed in this menu, navigate to it. Then choose Add Permanent Folder from Super Boomerang's Options menu. Then it appears in the Folder list.)

Figure 22-13
With one keystroke, you can specify a default folder for a certain program (Word, in this example).



Using the Folder menu, highlight the name of the folder you want to set as this program's default and press D. You see its name become bold. Then back out of the Open dialog box by clicking Cancel.

The next time you launch this program and choose Open or Save, this folder automatically opens for you.

CANOPENER: THE GREAT RETRIEVER

You can't claim to be a utilities nut without owning CanOpener. Most people think of it as the world's greatest emergency retrieval system — it can open and retrieve text, sounds, icons, or graphics from any file on Earth, no matter how corrupted or what alien computer it came from. For example, it immediately and easily reads BMP, CGM, CUT, EPS, GIF, ICON, IFF, IMG, Lotus BIT/RLE, Lotus PIC, MacDraw, MacPaint, PC Paint, PCX, Photoshop, PICT, Pixel Paint, QuickTime movies, RAW, RIFF, RIX, Silicon Graphics RGB, Sun, Targa, TIFF, XBM, and XWD files.

Best of all, you already have it — on the CD-ROM that came with this book.

But in our experience, CanOpener's abilities as an emergency tool are only half its value. The rest is its resource-sucking ability; we love extracting icons, palettes, sounds, and pictures out of every piece of software that crosses our desks. There's no better way to learn how a program is put together; without the risks involved with ResEdit, you can grab the sounds out of America Online and games; the hidden pictures in commercial software; the secret icon families of any application; and so on.

Furthermore, if you're like us, you're constantly in word processor-document hell. People e-mail you with attached ClarisWorks documents, Word documents, documents you don't even recognize. Programs come with Read Me files; every e-mail program has its own document format; Web pages have a format of their own. Life's too short to waste launching and wedding programs all the time just to read this barrage of text documents.

Our solution: Set CanOpener up as an instant document reader. Put it on your Desktop. To set things up, launch the program. Choose File from the Preferences menu and set it up as shown in Figure 22-14.

From now on, whenever you drop any file onto the CanOpener icon, you'll immediately see whenever text was inside, displayed automatically. You won't see any text formatting, but you'll usually make up the difference in sheer happiness from the speed and simplicity of the entire operation.

EXTENSION MANAGERS

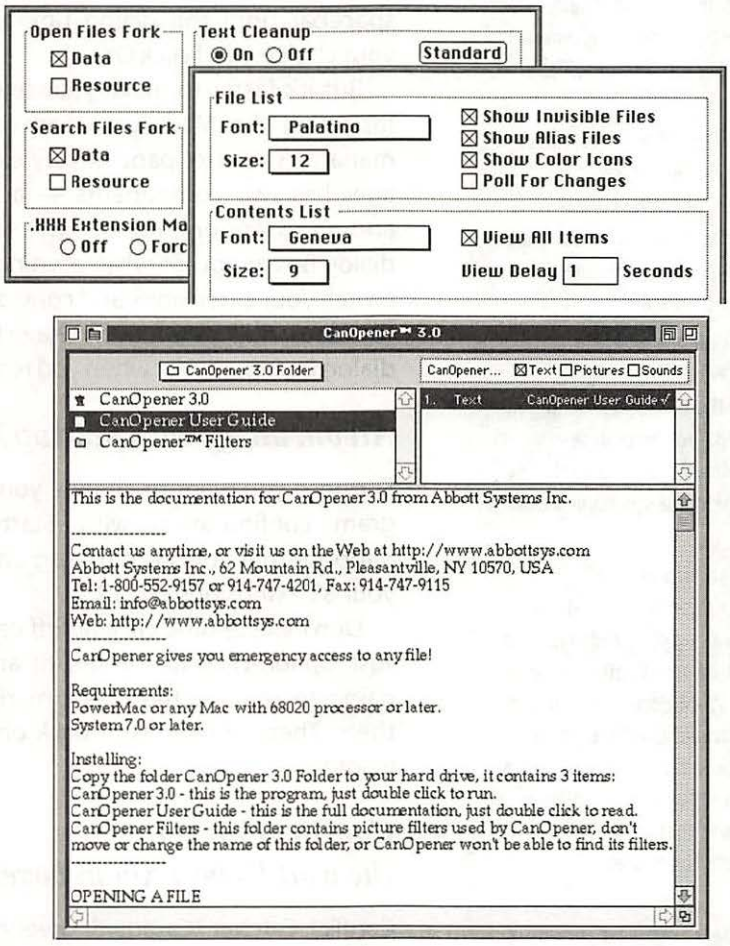
So, now you have your hard drive utilities, virus protectors, macro software, screen saver, file launcher, file-compression utilities, and customization software installed. Terrific! Now you need one more: a utility to *manage* those utilities! Enter the extension manager.

So why do you need a manager for these startup programs? Because, as is often the case with utilities, extensions and control panels can conflict. They

may argue over the same piece of memory real estate, for example, and the result is almost always a system crash. You need a way to turn your various startup programs on and off, particularly when you try to ferret out what the conflict is. (See Chapter 33 for more on troubleshooting.)

Figure 22-14

If you make the settings shown here, CanOpener will immediately display the text of any file you drop onto it, regardless of the computer or the program that created the document. Clockwise from upper left: The File preferences window, View preferences, and the main CanOpener window (note that only the "text" checkbox is selected at the top of the window).



The Big Three of extension managers — Apple's Extensions Manager, Now Startup Manager, and Conflict Catcher — let you specify *sets* of extensions and control panels. You may have a bare-minimum set to use when memory is at a premium and a full-fledged set for normal use.

CASE HISTORY

THE DAY CANOPENER WAS WORTH 500 TIMES ITS PRICE

If you know anything about Microsoft Word, you know all about its "fast save" feature. When this option is turned on, saving your documents is much quicker; the program saves time by simply tacking on the latest text at the end of your file — without bothering to rewrite the entire document on your hard drive, in sequence, neatly tidied up, in compact form, the way it would when "fast saves" is turned off.

Normally, you can't tell the difference; when you open a fast-saved document, Word automatically displays it with the correct pieces in the correct places; your only clue that the document was fast-saved is that the document file is larger on the disk.

CanOpener, however, changes everything; with it, you can examine a Word fast-saved document and see all the pieces in the order in which they were typed. You can even see sections that were deleted that, in the interest of time, Word hasn't permanently purged from the document.

Imagine, then, the shock of a lawyer negotiating a contract recently — we'll call him Lawyer A — when Lawyer B called him on the phone. Lawyer B had used CanOpener to examine the lawyer's Word-document contract proposal — and discovered that in its earlier drafts, its terms had been far more generous to Lawyer B's client! There they were, in all their glory: All the paragraphs that Lawyer A had written and later deleted or revised — in order.

Lawyer B therefore knew exactly what Lawyer A's bottom line was, and — it's safe to say — negotiated a contract worth many times the price of the CanOpener software!

EXTENSION MANAGER SECRETS

Extension manager time-saver

If you use Startup Manager, Extensions Manager, or Conflict Catcher, you probably change your extension/control panel lineup as the Mac is starting up. You know that you can press the spacebar until the dialog box appears, make your choices, and click OK.

But it's faster to make your selections *before* restarting the Mac. Just open your extension manager's control panel (every extension manager has two components — a control panel and an extension). You see the same selection dialog box as you do when starting up. But if you switch your extensions and control panels while the Mac is still on, you won't have to wait for the dialog box to appear when you restart.

All on, all off with Startup Manager

Suppose you want to change your startup-program configuration with Startup Manager. Suppose that you want to turn off every one of your 83 extensions except 1.

Don't waste time clicking off each extension. Just *Option*-click to the left of any extension's name to remove the check marks from *all* of them. Then you can turn back on the one you wanted.

Conflict Catcher: the world's best About boxes

Conflict Catcher (Casady & Greene) is a remarkable startup manager, for several reasons. It *automatically* finds out which two (or several) of your extensions are conflicting with each other. It's

something to behold: You just sit there and restart your Mac over and over again, as Conflict Catcher experiments with mathematically selected combinations of extensions, until finally it figures out which ones are fighting. Note that this book comes with a three-day demo version of Conflict Catcher. Three days isn't forever, but it's enough to get you out of some frustrating extension conflicts.

Conflict Catcher *2* had one of the most unusual hidden surprises we've ever seen. Open the control panel in the Finder. Shift-Option-⌘-click the title screen. You'll find out how much the U.S. national debt has increased in the time it took your Mac to start up! (We're not sure we'll have the courage to try this trick in, say, Conflict Catcher 8.)



Conflict Catcher 3, meanwhile, has its own amazing secret, which we're proud to reveal. Open the control panel in the Finder (not during startup). Click the version number in the lower-right corner. You'll get the hidden About box, complete with scrolling credits. Free book winner Fred Smith even noticed that if you press Option while the credits are rolling, they'll reverse direction and scroll downward.

But the fun has only just begun!

Now type the word **play**. No period, no Return . . . just the word. The screen changes — now you're playing Extension Invaders! Press the spacebar to fire your missiles, and use the arrow keys to dodge left and right.

Five more Conflict Catcher secrets



You can try these handy shortcuts even in the three-day version of Conflict Catcher you got with this book:

- If only Apple would adopt this idea for the system software itself: If you have Conflict Catcher installed, you can interrupt the startup process by pressing ⌘-period at any time during the extension-loading process. You'll jump right to the Finder, running with only the extensions that loaded before your keystroke.
- Other cool keys you can hold down during the extension-loading process (if you have Conflict Catcher): ⌘-R will restart the Mac immediately, and ⌘-S will shut down. And if you engage the Caps Lock key at the very beginning of the Mac's startup process, Conflict Catcher's main window will automatically appear — saving you the trouble of leaning on your spacebar for 30 seconds.
- You can even hold down the Tab key while extensions are loading to make the startup process pause after the last extension has loaded — and stay frozen until you release the key. We suppose this is a handy way to (a) review what has just loaded, in your search for a particular extension icon, or (b) admire how many extensions you have, you amazing person, you.

CASE HISTORY

ONE STRESSFUL TECH-SUPPORT CALL

This e-mail reached us via the Internet ... from three different readers, which makes us wonder about its accuracy. Still, it makes a great story:

A friend of mine is a chief engineer at SuperMac, and he related this story to me. SuperMac records a certain number of technical support calls at random, to keep tabs on customer satisfaction. By wild "luck," it managed to catch the following conversation on tape.

Some poor SuperMac tech-support agent got a call from some middle-level official ... from the legitimate government of Trinidad. The fellow spoke very good English and fairly calmly described the problem. It seemed that a coup attempt was in progress at that moment. However, the national armory for that city was kept in the same building as the legislature, and there was a combination lock on the door to the armory. Of the people in the capital city that day, only the Chief of the Capitol Guard and the Chief Armorer knew the combination to the lock, and they had already been killed.

So, this officer of the government of Trinidad continued, the problem is this. The combination to the lock is stored in a file on the Macintosh, but the file has been encrypted with the SuperMac product called Sentinel. Was there any chance, he asked, that there was a "back door" to the application, so that they could get the combination, open the armory door, and defend the Capitol Building and the legitimately elected government of Trinidad against the insurgents?

While he is asking this in a very calm voice, there is the sound of gunfire in the background. The Technical Support guy put the person on hold. A phone call to the phone company verified that the origin of the call was, in fact, Trinidad. Meanwhile, there was this mad scramble to see if anybody knew of any "back doors" in the Sentinel program.

As it turned out, Sentinel uses DES to encrypt the files, and there was no known back door. The Tech Support fellow told the customer that aside from trying to guess the password, there was no way through Sentinel, and that they'd be better off trying to physically destroy the lock. The official was very polite, thanked him for the effort, and hung up.

That night, the legitimate government of Trinidad fell. One of the BBC reporters mentioned that the casualties seemed heaviest in the capitol, where, for some reason, there seemed to be little return fire from the government forces.

OK, so they shouldn't have kept the combination in so precarious a fashion. But it does place "I can't see my Microsoft Mail server" complaints in a different sort of perspective, does it not?

A FEW UTILITIES YOU ALREADY OWN

If you can believe it, all the utilities we've mentioned so far are only the tip of the iceberg. In fact, if you get yourself a modem and membership to an online service or the Internet (see Chapter 28), you'll have access to *thousands* more of these programs.

Of course, you may prefer to trust our judgment. We slogged through hundreds of commercial and shareware programs in the process of selecting the best possible stuff — and we packed them onto the disks with this book. Here are some of the Mac-enhancers we included:

- *AppDisk.* An outstanding System 7 RAM disk. It's safe, easy to use, and handy.
- *Color Coordinator.* From Casady & Greene. It automatically switches your monitor to black-and-white when you open your word processor, then back to 24-bit color when you're in Photoshop, and then into 16 colors for Kid Pix, and so on — or however you've set it up.
- *Square One.* A commercial program from Binary Software and a launch pad *par excellence.*
- *GURU.* It stands for GUide to Ram Upgrades, and it's an amazing reference/utility. Look up your Mac model, and find out your upgrade possibilities.
- *TechTool.* The safest, surest way to rebuild your Desktop, zap your PRAM, and more. Find out exactly when your exact Mac was manufactured.
- *QuickPop.* Lets you assign keystrokes for launching up to 50 applications, documents, Apple Menu Items, control panels, FKEYs, monitor depth (colors), or speaker volume settings. Or, launch them from a pop-up menu that appears whenever you hold down your choice of keys.

These are just a few of our favorites — and they are programs we haven't mentioned so far in the book. Now head for Chapter 34 to read all about 'em!

Chapter 23

Speech, Movies, and Sound

IN THIS CHAPTER:

- Recording and editing sounds and QuickTime movies
- How to get your Mac to talk — and listen
- Getting TV on the Mac screen — and vice versa
- QuickTime VR
- Making music with MIDI technology
- Presentations: tricks, tips, and techniques

The Macintosh has always been called the ultimate multimedia computer — originally by Apple alone and now by almost everybody. Experience the frustration of setting up or using any of the Mac's high-tech talents on a Windows computer — speech, movies, sound, music, or all of the above in combination — and you'll see what we mean.

A MAC DIGITIZED-SOUND PRIMER

Recording sounds onto your Mac is a blast. Your cheerful authors' Sound control panels are creaking with sounds from the world around us: our nieces and daughters, our grandparents, subway sounds. By playing these recordings through the Mac speaker, we can, in a manner of speaking, introduce somebody to our entire circle in a matter of minutes.

Your Mac records sound by *sampling* the sound waves entering the microphone. Sampling means taking thousands of tiny sound snapshots per second and converting each to a number. (That's why it's also called *digitizing*.) Most Mac sound-recording software (including recent incarnations of the Sound control panel) lets you specify how many of these samples you want to make per second: 11,000 or 22,000, for example. The more samples per second, the more realistic the playback. Needless to say, 22 kHz is the clearer of the two. (The "kHz" is short for *kilohertz*, meaning thousand samples.) In fact, most recent models can actually record at a crystal-clear 44 kHz — compact-disc quality.

But no matter what the sampling rate, sound files are big. One second of 22 kHz sound gobbles up 22K on your hard drive. You can do the math: A one-minute 22 kHz sound, therefore, takes up 1,320K on your disk. (Note that 11 kHz sounds are half as large, and 44 kHz files are twice as large. Multiply these numbers by two if you're recording in stereo.)

How to record sounds

Making new sounds of your own is extremely simple. As with most tasks in the computer world, you need only two items: hardware and software. The former is your Mac's microphone; the latter is, at minimum, your Sound control panel (or Simple Sound desk accessory, if your Mac has it). More sophisticated programs let you record longer sounds, edit them, and apply special effects to what you've recorded.

Microphones

Some Macs have microphones built right into the monitor: the LC 5000 series, recent PowerBooks, and any Mac with an AudioVision/AppleVision monitor. (The mike looks like a couple of tiny toothpick perforations in the case.) Unfortunately, there's no way to prevent this kind of mike from picking up the computer's own fan or hard drive noises, but at least you never lose it.

From 1989 to 1991, most Mac models came with the classic Apple external microphone, which looks like a gigantic vitamin C tablet. You plug the end of its very thin cord into the jack on the back of the Mac that's marked with a microphone icon.

All recent and current Macs, though require its successor, the PlainTalk mike. (It costs $20, or it comes in the box with today's Power Macs.) It looks different — it's light gray and no longer SweeTart-shaped — but it plugs into the same jack. The older Apple mikes don't work, nor do non-Mac mikes, such as those from Radio Shack.

If your Mac is *really* old — produced before 1990, say — it may not even *have* a microphone jack. To record sounds, you must buy a MacRecorder from Macromedia; it plugs into your modem port.

MICROPHONE SECRETS

Better microphones for PowerBooks

The Apple PlainTalk mike (also sold as the Apple Omnidirectional External Microphone) *doesn't* work with recent PowerBook models (the 190, 500, or 5300 series). If you want higher-quality sound input than is provided by the built-in microphone, you must buy something else.

Here are two very good, cheapo Radio Shack mikes that work great with those PowerBooks: They're both called Tie Clip Microphones, and the Radio Shack part numbers are 33-1052 and 33-3003.

Actually, any old mike will work, as long as it ends in a miniplug jack and it's a "line-level" type device, preferably "preamplified." (See the next Secret, too.)

The headphones-as-microphone secret

The following trick *doesn't* work if you have a Mac (such as a Power Macintosh) that requires a PlainTalk mike.

But if you have any earlier model, if you don't have a microphone for your Mac, plug a pair of Walkman *headphones* into the microphone jack on the back of your Mac. It works great as a microphone — which is logical, when you consider that a microphone is a vibration-transmitting diaphragm, just as a headphone is. (You may have to experiment to figure out if your headset's right or left earpiece is the one that works.)

The Sound control panel

Your Mac may have the Sound control panel; it may have the short-lived Sound & Displays control panel; or it might have the newer-yet SimpleSound desk accessory (for recording) and the Monitors & Sound control panel (for volumes and other settings). From here on, we'll just refer to "the Sound control panel" and assume you know what we're talking about.

The key to understanding the various sound recording and playback features of your Mac models is that control panel. For example, the Sound control panel included with System 7.5 and all recent Macs includes a special pop-up menu that allows access to new sound features (see "Sound" in Chapter 4).

TRUE FACT

SOUND, SPEAKERS, AND YOU

Your Mac actually sounds a lot better than it sounds, if you'll pardon the expression. That is, the sound it records and plays back is seriously hampered by the relatively cheap speaker built into the Mac. You'll be duly impressed if you bypass the speaker and listen to the Mac's sounds on better equipment.

For example, plug Walkman-style headphones into the speaker jack in the back of the computer. (Turn the sound level down, though, in the Sound control panel, or you'll fry your eardrums.)

Hooking up the Mac to your stereo is also possible. From Radio Shack, get a cord with a male miniplug on one end (for the Mac's speaker jack) and a pair of male RCA plugs on the other end. Plug these into the *line* inputs of your stereo receiver, usually marked something like Aux or Tape. (Don't plug into the Mic or Phono inputs of the stereo; the sound distorts horribly.)

Perhaps the most convenient — but expensive — proposition is to buy a pair of speakers for your Mac. These aren't ordinary bookshelf speakers. They must be *shielded, powered* speakers. "Shielded" means that their big electromagnets won't affect the Mac or the monitor; "powered" means they have a power plug and don't have to be hooked up to an amplifier.

What's wild about listening to a higher-fidelity sound source such as headphones or speakers is that you hear all kinds of *other* Mac sounds. This computer is just full of busy little whirs and hums: when the floppy drive is in use, when the hard disk is accessed, and so on.

For most people, the pop-up menu *always* says Alert Sounds when the Sound control panel opens, and the window lists your Mac's various beeps and quacks. (To see this display in the Monitors & Sound control panel, click the Alert Sounds icon at the top of the control panel.) The most recent versions of the Sound control panel *remember* whatever pop-up menu selection you had showing the last time you used the control panel.

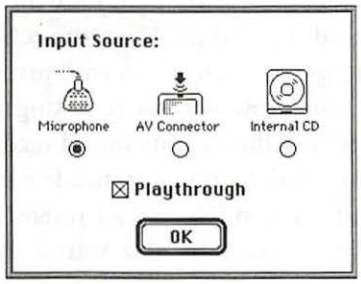
In any case, for most of the special audio tricks, start by using this pop-up menu to specify where the sound is *coming from* and where you want the sound to *go*.

Where sound can come from

When you choose Sound In from the Sound control panel, you see a "Choose a source" window. On *most* Macs, this screen lists only one option: "Built-in." If you own an AudioVision monitor, you also see a second icon. In other words, you use the first screen to indicate *which* of your two microphones you want to use (the one in your monitor or the one plugged into the back).

For the fun stuff, though, click the Options button (see Figure 23-1).

Figure 23-1
Where in the world will the sound come from? Click Options to see your choices.



This Input Source window might offer any of several additional sound-source options, depending on what other sound-producing gear you own. These options include the following:

- **Microphone.** Click this icon to select the microphone (described earlier) plugged into the microphone (Sound In) jack on the back of the computer.
- **AV Connector.** This icon represents the sounds being picked up by the AppleVision (or AudioVision) monitor, if you have one.
- **Internal CD.** If your Mac has a built-in CD-ROM drive, it can, of course, play normal audio compact discs. If you want to record a little bit of music, click this option.
- **External Audio** or **Line In.** You also can record from a tape deck, Walkman, DAT (digital audio tape) player, your TV set, and so on. Just make sure that you have the correct cables; each cable must end in a miniplug like the one on the end of Walkman headphones. You may need to visit Radio Shack and get an adapter cable; it should have male RCA plugs at one end (for your tape deck, VCR, and so on) and a stereo miniplug at the other. Make sure that the Microphone icon is selected in the Sound control panel, and you're ready to roll.

  The only trouble you may have is that AV, Power Mac, and other recent models require an *amplified* input signal. That's why the old Apple microphones and non-Apple microphones don't work.

Also in the Input Source window is the famous Playthrough check box. On older Mac models, the built-in speaker is silenced *immediately* when you plug something into the back-panel speaker jack. On recent models, such as Power Macs, however, you can turn the built-in speaker back on again — by choosing Playthrough. When this option is selected, sound flows from the Sound In source to the Mac's built-in speaker (*and* to anything plugged into the speaker jack). You'd turn this option on if, for example, you wanted to listen to an audio CD while you work.

If your microphone is plugged in *while* Playthrough is selected, you'll hear anything you say into the mike broadcast from the speaker, and you'll have yourself the world's most overpriced PA system. (You may even get that irritating squeal known as *feedback.*)

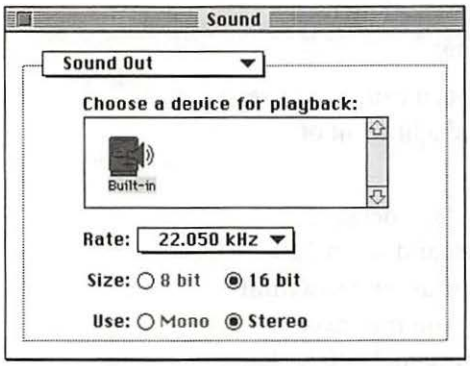
Where the sound can go

When you choose Sound Out from the pop-up menu, you get an additional set of choices. You might think that you'd be offered a choice of Built-in Mac

Speaker and External Speaker — in other words, that you'd specify where the sound should *go*.

Ironically, you're supposed to answer *that* question in the Sound *In* panel, through your Playthrough setting. The misnamed Sound Out panel, on the other hand, offers settings pertaining to sound *quality* (see Figure 23-2).

Figure 23-2
Are you a high-quality type of audiophile?



The Rate pop-up menu controls the sound quality for recording. Older Macs can record at a crummy telephone-type quality called 11 kHz and also at a better quality called 22 kHz. (This 22 kHz setting is *always* used for your alert sounds, such as Wild Eep and Sosumi). AV Macs, recent non-Duo PowerBooks, and Power Macs, however, offer a third choice: 44 kHz, which, as you've probably read, is audio-CD quality. Sounds made at higher-quality settings, also called higher *sampling rates*, take up more disk space, however.

Making the actual recording

Plug your microphone or stereo into the back of the Mac, as described earlier. Use the Sound In window (in the Sound control panel) to select the appropriate sound source: Microphone, AV Connector, Internal CD (to record from a CD-ROM drive), or whatever. You probably want Playthrough turned *off* if you're using the mike and *on* if you're using an external device or a CD. (If you're using the CD drive, use the AppleCD Audio Player desk accessory to choose the track that you want to hear.)

Now go to the Alert Sounds window (also in the Sound control panel), and click Record. You have ten seconds to record — and, unless you like a bunch of "dead air" at the end of your recording, be ready with your mouse on the Stop button. The rest should be easy.

ANSWER MAN

Bits? KHz? Huh?

Q: ***I'm afraid I don't get it. Which is better: a high kHz setting in my Sound control panel, or a high bit setting (such as 16-bit)?***

A: The sampling rate defines the frequency response of a sound — how accurately the highs and lows are reproduced. In other words, 22 kHz is twice as hi-fi as 11 kHz.

The bit depth, on the other hand, specifies the dynamic range of the sound, from very soft to very loud. Therefore, audio-CD-quality recording on an AV Mac — 44.1 kHz at 16 bits — is extremely clear recording that takes up a lot of disk space.

What to do with sounds

See "Sound" in Chapter 4 for instructions on using that control panel for recording new sounds (and copying, deleting, and renaming them).

Once you've recorded a new sound, its name shows up in your Sound control panel.

After a sound is in your System file, you can do all kinds of things with it. Double-click the System file to open it and reveal the sound files nestled within. At that point, you can trash a sound by dragging it; rename it as you would any icon; back it up; and so on. As described in Chapter 3, you can copy and paste sounds freely between the Scrapbook and the Sound control panel, too.

Once you've mastered the art of recording sounds, you can begin putting them to work for you. Here are some ideas of things to do with your new custom-made sound recordings:

- **Change your error beep.** Whichever sound is selected in the Sound control panel's list becomes your new error beep.
- **Make sounds for friends.** Record a sound using the Sound control panel. Save and name it. Double-click your System file. Drag the icon that represents your new sound out onto the Desktop. (If you want to preserve it in your System file, *Option*-drag it to the desktop.)

  You just converted the sound into an icon file that you can copy to a disk and give to a friend.
- **Annotate your word-processor documents.** Word, WordPerfect, and some other word processors let you record sounds directly into your documents. An icon appears in the text — and the sound plays when you click the icon.
- **Leave a good-morning memo.** Put a sound-file icon into the Startup Items folder of the System Folder. Next time you start up the Mac, you (or whoever next uses the Mac) will hear that cheery recording played just as the Desktop appears.
- **Use the Mac for transcription.** Using MicNotePad, you can record hours and hours of sound in a specially compressed format, making the program work like a digital tape recorder. It's great for dictation, transcription, and archiving — test flights, interviews, lectures, meetings, performances, and kids.
- **Suck sounds out of all your other programs.** Use ResEdit, as described in Chapter 21, to open all the programs and games on your hard drive. Root through them in search of *snd* resources. Open a *snd* resource and highlight one of the sounds in the list. A new menu, called snd, appears on the menu bar. It lets you play the sound or (if you have an Apple microphone) rerecord it.

  By using the Edit menu, you can cut or copy the sounds, which is great fun. Paste them into your Scrapbook or Sound control panel for easy future access. Or, replace the sounds with ones you make yourself.

To get you started, here are a few programs that contain sound resources ready for your perusal: the Puzzle desk accessory; the America Online program; Kid Pix (*tons* of them); the System file (the famous camera-shutter sound, among others); HyperCard (19 of them); and so on. Games, in particular, tend to be crammed with great sounds — check out Maelstrom, for example, included with this book.

How to edit your recorded sounds



Your Macintosh came with software for recording sounds — the Sound control panel — but no way to *edit* them. That's why we've included SndSampler with this book — a simple, flexible program for sound recording and editing. It lets you copy, paste, and rearrange the sound snippets you record (or get from other sources) and save them in several sound-file formats. Make Nixon say "I am — a crook" by editing out one word. Rearrange the phrases in your friends' utterances. It's all easy — just cut and paste to rearrange, trim, or otherwise mangle the sounds you've recorded.

SOUND SECRETS

Record at CD quality — and longer than ten seconds



Even if you have a CD-quality-ready Mac (such as a Power Mac), you can only record medium-quality 22 kHz sounds using the Sound control panel. Furthermore, your sounds are limited in length to ten seconds.

Use SndSampler, included with this book, to get around both of those limitations. (Many commercial programs can also record at higher quality: SoundEdit, Premiere, and so on.)

Stop that sound!

You can stop any sound whose playback is in progress by pressing either Esc or ⌘-period. That's nice to know when it turns out that someone selected, as your error beep in the Sound control panel, a full 10-second sound clip of Barney the Dinosaur singing — and your Mac is now trying to beep three times.

Why is my speaker sound so faint?

It seems as though every Mac owner lately complains at first that the sound coming out of the speaker is too quiet, even when the sound-level slider in the Sound control panel is all the way up.

As they say, "It's a feature, not a bug." Turns out that if your Mac has the latest Sound control panel, it has *two* volume sliders. One of them is hidden.

From the Sound control panel's pop-up menu, choose Volumes. You'll see the master volume sliders: one for your headphones and one for the speaker. When the Speaker slider is all the way up, your main-panel Sound slider will finally work as it does on other Macs.

How to listen to a CD while you work

In general, you can only listen to a music CD through the Mac speaker if it's a CD-ROM *built into* your Mac. If it's an external CD player, you'll have to use headphones or external speakers.

Use the Sound In window of your Sound control panel to select Internal CD. If you want the music to play through your Mac speaker, be sure that Playthrough is turned on; leave this option off if you have headphones or external speakers hooked up. Use the Sound Out window to select the 44.100 kHz option (for best quality).



Insert your music CD. Then use your AppleCD Audio Player desk accessory to start the music and specify the tracks to be played (see Chapter 3 for full instructions).

Alternatively, if you've installed QuickTime 2.5 (included with this book), open your QuickTime Settings control panel, and turn on the Auto Play option. Thereafter, music CDs will begin playing immediately when you insert them — no AppleCD Audio Player desk accessory required.

(Speech-recognition Mac bad news: When CD-ROM Playthrough is enabled, the Mac ignores your microphone. No more "Computer, open ClarisWorks" commands, as described later in this chapter — you must choose one deluxe AV feature or the other.)

Stashing sounds in the Fonts folder



Using your trusty pal ResEdit (or Drop•Info), you can create sound *suitcases* that the Mac happily gulps into your Fonts folder. We can think of two advantages of storing sounds there instead of in the System file (where they're normally stored). First, the Find command finds them. Second, they are preserved if your System file gets corrupted and must be replaced.

More detailed instructions for this trick are in Chapter 21. In the meantime, here's the crux: Change the file's Type to *FFIL*.

Record sounds from a CD

Of course, you can record a sound snippet of up to ten seconds long the same way you'd record an error beep: by using your Sound control panel to select your CD-ROM player as the sound-input source; use your AppleCD Audio

Player desk accessory to get the music playing; and using the normal Record button to create a new error-beep sound.

For longer clips, install QuickTime. Launch the MoviePlayer program that came with it; choose Import from the File menu; and you'll be able to directly open the tracks of a music CD that's inserted into your CD-ROM player. The result is an *audio-only* QuickTime movie containing the song you selected!



(If you want to convert that QuickTime movie into an ordinary, double-clickable, System 7 sound file — or extract sounds directly from audio CDs without the intermediate QuickTime step — use the free program Movie2Snd, included with this book.)

Record the Mac's self-speech



If you try out PlainTalk, the Mac's speech feature, as described later in this chapter, it may seem a shame that you can't capture the Mac's utterances as sound files you can distribute and cherish forever. Actually, you can. (Turn off the speech *recognition* feature for this trick — only use the Text-to-Speech feature, which runs on any Mac.)

Just run a cable (with a miniplug on each end) from your Mac's speaker jack to its microphone jack! Then launch SimpleText and start it talking; switch to the Sound control panel. The Mac continues yakking away in the background as you record the sound as usual.

(What's *really* weird is that, if you play back your newly recorded speech sound while SimpleText is *still going*, you hear both voices going at once. Strange.)

Converting sound-file formats

The standard Mac sound file's icon looks like a little triangular speaker with sound waves emerging from the right side. That's not the only sound-file format in creation, however. On the Internet, you're also likely to find AIFF files and WAVE (or .WAV) files, the predominant format on DOS/Windows computers.



Never fear: You can use and enjoy all of those formats. All you need is a program that can read and convert such sounds into standard Mac sounds — and the CD that comes with this book has just such a program. It's called SndSampler, and you can read about it in Chapter 34.

Sound stuff with this book



Mac has no microphone? No problem. We've provided with this book enough material to get you started on a promising sound-management career: professional sound clips from the Kaboom! and Graphics Essentials collections (from Nova Development and Olduvai, respectively). In the back of the book, you'll also find discount coupons for each.

MUSIC WITH MIDI

The digital sounds you just read about aren't really music, as far as the Mac is concerned. They're fixed digital recordings, *samples,* that may or may not contain music (they might just as easily be hinge squeaks or voices).

The Mac is equally famous for its second music technology: *MIDI* (rhymes with *giddy*). MIDI stands for Musical Instrument Digital Interface — computerese for *synthesizer hookup.*

We think of MIDI as something like PostScript, the printer language spoken by the Mac over a cable. But instead of sending page-description instructions to a printer, MIDI cables convey *music*-description signals to a synthesizer. One signal says, "Play middle C"; another says, "Push the sustain pedal down." The keys and pedals don't actually move, but otherwise the instrument responds by playing just as though a human were at the controls.

Sequencing

Because the Mac transmits hundreds of these MIDI signals per second, it can play some very complex music indeed. It can, for example, play the synthesizer's string, woodwind, and percussion sounds simultaneously. Using a technique called *sequencing,* you can record one instrument's musical line at a time into the Mac; then, like a multitrack tape recorder, the Mac plays all the parts back in perfect synchronization.

Unlike a tape, however, the Mac-as-a-sequencer can change the key or tempo independently; you don't get Alvin and the Chipmunks when you speed up the piece, as you do with a tape. Also, unlike a tape recorder, the Mac never makes you wait to rewind or fast-forward; a sequencer is random access, so you can jump instantly to any spot in the piece. Above all, composing with a sequencer means you can fix wrong notes, add accents or crescendos, or copy and paste parts of a song without ever having to rerecord the original performance.

What you need

All you need for MIDI sequencing are three ingredients: a synthesizer, a MIDI interface to connect it to the Mac, and a sequencing program. (To *play back* MIDI files, you don't actually need a synthesizer; you can use QuickTime, as we'll explain later in this chapter. But to *record* music, you need a real musical keyboard.)

The keyboard

The most important aspect of the synthesizer you buy for MIDI is that it should be, of course, MIDI-compatible (some of the really inexpensive ones aren't). It should also be *multitimbral* (capable of playing more than one instrument sound at a time). You can tell if a keyboard is MIDI-compatible by checking for the presence of two round, nickel-sized MIDI jacks in the back. You can't really tell if it's multitimbral by looking; get a salesperson to tell you. The most basic multitimbral MIDI keyboards cost about $150 in music stores; Casio, Yamaha, and Kawai each make several keyboards with street prices in that range. The more realistic the sounds, the more the synthesizer costs.

For multimedia work and presentations, consider getting a *sound module* (a synthesizer that has no keyboard). After you record the music, you don't *need* a keyboard; remember, the Mac plays MIDI over a cable, not by pressing keys. Therefore, a sound module, such as the cigar-box-shaped Yamaha TG100, is portable, inexpensive, and lightweight. But when hooked up to speakers, it still sounds like a fair representation of actual instruments.

The interface

You next need a MIDI *interface* to connect the synthesizer to the Mac. A MIDI interface is generally a small box. You plug one end into the modem port of your Macintosh; into the other end you attach MIDI cables from your synthesizer. There are two cables, labeled IN and OUT, because MIDI signals only run one way in each cable.

Don't let them sell you some $300 professional interface. For most people, there's no reason in the world not to get a cheap $50 Altech or Opcode interface with outputs for three musical keyboards (and no power plug to hog spaces on your surge suppressor).

The sequencer

The final element of a MIDI sequencing setup is a *sequencing program,* such as Performer, Vision, or MusicShop. In some ways a sequencer is unique in Mac software; there's no Print command. You can't paste anything from it into PageMaker. You hardly use the Mac keyboard at all. But a good sequencer can turn you into an orchestra.

All sequencers are fundamentally alike. In one window there are buttons labeled Play, Stop, Rewind, Record, and so on. You click Record, and play the synthesizer. After you click Stop, every note you played appears as a strip on a horizontal bar graph. As with a tape recorder, you press Rewind and then Play; the sequencer plays the synthesizer, recreating your performance to the

subtlest nuance. The sequencer captures and plays back an amazing amount of musical feeling from the stream of numbers that pours in from the MIDI cable (see Figure 23-3).

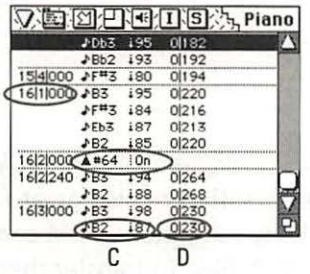


Figure 23-3
When you play your MIDI synthesizer, the sequencer program records all kinds of information, in numeric form, about the music. For every single note you play, it records (A) the measure number, musical beat, and fraction of a beat when you pressed the key; (B) when you pressed or released the foot pedal; (C) which note you struck and how hard you played it; and (D) how long you held the key down. You can, of course, edit any of this information.

- **Pedaling information.** Actually, the sequencer only stores two tiny messages: when the pedal goes down and when it comes back up.
- **Key velocity.** *Key velocity* is a numerical measurement of how hard you strike each key when you play. On a real piano, key velocity determines *volume:* The harder you strike, the louder the note. In the crazy world of synthesizers, velocity doesn't *have* to control volume. Hitting a note harder can instead make the sound have more vibrato, be brighter sounding, or have a wah-wah effect. In fact, you can even program a synthesizer to sound *softer* the harder you press a key!
- **Aftertouch.** Here's a musical quality you can't even *get* on a real piano: the ability to affect the sound *after* you strike the note. On synthesizers equipped with this feature, the concept is simple: You can adjust how hard you're pressing on a key after it's already been struck! If you think about it, how else could you get a crescendo in the middle of a long trumpet note?

After all this information — and much more — is recorded, the Mac can reproduce with uncanny accuracy your exact musical performance. The advantage is that if you play a wrong note, you can fix the *pitch* of the note without affecting any of the other musical nuances.

MIDI SECRETS

Sharing the modem port

After your MIDI interface is hooked up to your modem port, where does your modem go?

This age-old problem can be solved in two ways. The reliable, inexpensive way is to buy an A/B switch box for your modem port. (Most Mac mail-order

companies carry them.) Various products have purported to do this function switching automatically, but we've never had one work right.

You can also buy a serial port expander card (if your Mac has slots). Such a card adds *four more* "modem ports," so you can have a modem, MIDI interface, label printer, and yet another modem port-connectable peripheral all attached at the same time. You switch from one to the other using software.

Hail the power of MIDI files



MIDI files, the generic interchange format for Mac music, aren't just good for swapping music between brands of Mac sequencers. They're also great for swapping music with other brands of computers! Any computer — IBM-compatible, Atari, Amiga, whatever — can read your MIDI files. To transfer them, send them over the modem (see Chapter 27) or put them on an IBM or Apple II disk using PC Exchange (see Chapter 16). We've included a couple with this book as examples.

The real beauty of MIDI files, though, is their tiny size. In essence, MIDI files are simply text files, remarkably compact when compared with actual digitized sound files. That's why MIDI files are so popular on the Internet; they can be uploaded and downloaded quickly and easily.

Hail the power of MOD files

As you've read, there are two prevailing sound formats on the Mac: digitized sound (large files, good realism) and MIDI files (small files, requiring a synth). There's actually a third, up-and-coming format: MOD files.

These sound files are popular on the Amiga computer, and with good reason. Each file contains MIDI-like note information and one tiny recording of each instrument sound — a rim-shot sample, one piano-note sample, and so on. When played back, the note data triggers the digital recordings with split-second accuracy; the result is a superbly realistic, textured, multitimbral sound. You can speed it up or slow it down without affecting the pitch, or vice versa, just as with MIDI files. And because the MOD file's note information takes up little disk space, a small MOD file can play for several minutes.

If you have a modem, America Online's music forum (keyword: MMS) is a terrific source of MOD files — about 300 the last time we checked. That's also where you get the software you need to play MOD files: A program called Sound Trecker is one of several available.

QUICKTIME MOVIES

QuickTime is Apple's movie technology. If you haven't seen movies playing on your screen before, you're in for a treat. QuickTime movies aren't the tiny,

jittery movies they were when QuickTime 1.0 played on Macintosh LC IIs; today, with QuickTime 2.5 or later on a Power Mac, the quality is amazing.

We'll tell you how to get going in QuickTime and how to go beyond the basics. But first, we want to make sure you realize that there's some expense, a bit of terminology, and some serious hard drive space-guzzling ahead.

How to record your own movies

In theory, digital movies on your Mac shouldn't be possible at all. If you work with graphics, you know that just one full-color picture takes up a megabyte of disk space. A TV picture is composed of thousands of individual frames flashing by at 30 per second. To fill your whole screen with color, your Mac would have to be able to process 30MB per second. That's not just a lot; it's impossible for the average personal computer.

That's why QuickTime is such an achievement. To reduce the amount of information necessary to display video, its authors have pulled all kinds of clever stunts. The primary cheat is, of course, that the movie you watch *doesn't* fill the screen — in fact, most QuickTime movies play in a rectangle that's only a sixteenth or a quarter of the standard screen size. Obviously, such a tiny movie drastically cuts down the amount of data the Mac needs to handle. Next, QuickTime compresses the file, discarding redundant information as it studies the color information in your movie.

The biggest coup in QuickTime technology is the way Apple made it so that any QuickTime movie can play on any QuickTime-ready Mac. If you play a certain movie on a Power Mac, of course, it plays back very smoothly, flashing 30 frames per second in its little window. Play that same movie on an LC, and you only see eight frames per second — but you'll still *hear* everything. In other words, if a Mac is having trouble keeping up with the movie, QuickTime is smart enough to skip frames but honor the sound track.

What you need

Even so, the Mac must still process a huge amount of information every second. Therefore, QuickTime requires a fast Mac. A Mac LC barely suffices; PowerPC-based Macs, of course, are better. You also need at least 5MB of memory and System 7.1 or later.

That's what you need to *play* QuickTime movies. If you want to make your *own* movies — capturing them from a camcorder or VCR — you need *digitizing circuitry.* You can get these fancy electronics in one of three ways:

- Get it built into certain Mac models (such as the Power Mac 7500, 7600, 8100, most recent Performas with the optional Apple Video card, old Quadra or Power Mac AV-style Macs, and so on).

MACINTOSH SECRET
THE VERY, VERY SHORT *SECRETS* GAMES SECTION

It probably hasn't escaped your attention that there's no chapter in this book about Mac games. It's not that we don't think games are important, or that there's a lack of Secrets about games — it's just that your cheerful authors are so freakishly busy, for months on end, that we have absolutely no time at all to immerse ourselves in Mac games long enough to discover Secrets about them.

That didn't stop reader Sean Mahan from winning a free book with the following amazing Marathon discovery, however:

I know your book isn't a digest of video game codes, but I discovered something pretty neat on my Marathon CD. (It's the CD that comes with the extra physics models, editors, and such.)

If you use ResEdit to look in the folder called Holiday Marathon Music, you'll see an invisible folder named *old marathons*. Use ResEdit to make this file visible (you'll have to copy the Holiday Marathon Music folder to your hard drive first, since you can't edit a file on a CD), and then open it in the Finder.

You'll see three folders, each of which has a version of Marathon in it at some stage in development. On my Performa 6205, the only one that didn't crash was the one in the folder called *macworld sf (jan 94)*. The controls are pretty much the same as in the release version of Marathon, but the aliens and scenery are *very* different.

- Add it, in the form of a NuBus, PDS, or PCI card (a *digitizing card*), to a Mac with slots (see Chapters 12 and 13 for model information).
- Buy a Connectix QuickCam — a golf ball-sized camera that plugs into your Mac's modem port. (It's about $100 for the black-and-white-with-microphone model; $200 for the color-with-no-microphone version.) If your Mac doesn't already have built-in video-recording circuitry, a QuickCam is by far the least-expensive means of getting into QuickTime moviemaking. The resulting flicks are jerky, and small; but they're still great fun — and a QuickCam is the *only* way to make movies on a PowerBook.

Actually, a QuickCam can be more than fun. If you buy it with Apple's QuickTime Conferencing software (about $150), you can turn your Mac into a videotelephone via network or phone lines.

Finally, you need the QuickTime extension itself; we've included it with this book.

Recording and compressing

To make a QuickTime movie, plug your camcorder, TV, or VCR into the back of your Mac (either into its built-in Video In jacks, or into the jacks provided by your installed digitizing card). Each digitizing card (or AV-savvy Mac) comes with its own software (such as Apple Video Player) with tape-deck controls: Record, Play, Stop, and so on. All you have to do is set your camcorder, TV, or VCR playing, click the on-screen Record button, and save, and you have yourself a new QuickTime movie on the hard drive.

When you save the file, you're asked to choose a compression method. You have a choice of several compression methods (called *codecs*, short for compressor/decompressor). One codec works best for video, another for animations, another for still images, and so on. Each strikes a different balance between picture quality and the space the file takes up on your hard disk.

Of the codecs, the most useful are the **Apple Video** and **Cinepak** (Compact Video). Apple Video movies look good and compress relatively quickly (and we mean *relatively* — saving a QuickTime movie can take minutes or hours), but they take up a huge amount of disk space. Cinepak takes an *incredibly* long time to save a movie — sometimes overnight — and the resulting movie is, say, 10 percent grainier than other QuickTime movies. But people love Cinepak because the files are much smaller on the disk, and, most important of all, they play back more smoothly. Those aspects make Cinepak-compressed movies ideal for QuickTime designed for playing from CD-ROMs.

Of frame rates and tradeoffs

Smooth playback is not a point to be underestimated, either. The smoothness or jerkiness — the *frame rate* — is measured in frames per second (fps). Remember, TV smoothness is 30 fps. A QuickTime movie is visually satisfying at anything over 15 fps. Unfortunately, Mac models that come with built-in digitizing circuitry have a history of feeble frame rates. For example, if you have a Quadra AV or 630 with the Apple Video card, you probably won't get much better rates than 12 fps. Even the mighty PCI-based Power Macintosh 7500 grabbed movies at a relatively slow 15 frames per second (with a 320-by-240 pixel frame size). Only the top-of-the-line Power Macs or clones can digitize at pro-level frame rates (25 to 30 fps).

Of course, you can maximize your frame rates if you're willing to make some sacrifices. The world of QuickTime is positively *brimming* with tradeoffs you can make. Here are some examples:

If you want this . . .	You have to settle for this:
Smoother playback	Larger file on disk, or smaller playback window, or fewer colors (8-bit versus 16-bit)
Bigger playback window	Choppier playback, or a larger file on disk, or fewer colors
A smaller file on disk	Choppier playback, or a smaller playback window, or fewer colors
Richer colors (16-bit)	Choppier playback, or a smaller playback window, or a larger file on disk

Fortunately, you can safely ignore almost everything you just read if you use Movie Cleaner (the Lite version is included with this book). It simply asks you what your priorities are (smooth playback from CD-ROM, for example), and automatically processes your QuickTime movies with the correct settings. See Chapter 34 for details.

QUICKTIME DIGITIZING SECRETS

Use the best video signal

Getting a video picture squeezed down into a tiny QuickTime movie frame means compressing lots of picture information — and, therefore, *losing* lots of picture information. Therefore, the idea is to start with the highest quality you can. The better the quality of the original video, the better the final QuickTime movie.

- Professional or semiprofessional equipment (camcorders called Hi-8, S-VHS, Beta or 3/4") produces better results than VHS or 8mm gear. Use a fresh video tape. If your camcorder/VCR and your Mac's digitizing card both offer *S-video jacks,* use an S-video cable between them for a strikingly improved picture.
- If possible, put a microphone directly on the person you're recording (instead of using the built-in camcorder microphone).
- If you're recording indoors, you'll have lower contrast and more static if you just use ambient room light. Add lamps and other additional lights to avoid those problems.
- Use a tripod for much more professional results.

Get the best frame rate

The frame rate, of course, is how smoothly your movie plays back. The first factor that will affect the finished movie's rate is how smoothly your Mac can digitize the incoming video signal — if the Mac has trouble processing the incoming video quickly, you'll introduce skips into the QuickTime file from square one.

- Defragment your hard drive! (See Chapter 8 for instructions.) Actually, it's common sense — if your hard drive has plenty of space, but the hard drive head must jump around the disk surface to find it, the Mac can't possibly record the incoming QuickTime information as fast as it might.
- Turn off AppleTalk. This networking feature takes time out from the Mac's processing a few times per second to see if there's any network activity. Those interruptions will affect your QuickTime movie.
- Turn off as many extensions as you can. As with AppleTalk, many extensions use up your Mac's juice (a screen saver, for example).
- Change your monitor's setting to "Thousands of colors." QuickTime, for various technical reasons, has been designed to operate the smoothest at this

setting — even more smoothly than at the 256-color setting, contrary to what you might expect.

- Use the "None" codec during recording, if you have a choice. For example, VideoShop (Avid) and Apple's Movie Recorder programs let you specify one compression option to use during recording, and another to apply to the freshly captured material just after recording. Use the None compression setting while you're digitizing, to get the smoothest frame rate; you can always re-compress afterward (using the Video or Cinepak codec, for example).
- Record onto the fastest hard drive you can. Bigger hard drives are usually faster than smaller ones; SCSI drives are generally faster than IDE drives; hard drives are generally faster than Jaz drives, which are faster than Zip drives, which are faster than floppies. (Of course, if you're recording something small, and you have lots of RAM, the fastest disk of all is a RAM disk, described in Chapter 9.)

  Some hard drives bear the label "AV" or "AV-ready." These drives are the best drives for QuickTime digitizing. Unlike normal drives, they don't perform automatic re-calibration during the data flow, which can introduce glitches in recording.
- Keep your movie's size to a 4:3 *aspect ratio* — that is, your movie's frame size should be 160 pixels wide by 120 tall, or a multiple of those numbers. 240 by 180 is also fairly standard, as is 320 by 240. Any deviation from these portions will slow down the movie.
- Go easy on the *key frames*. You'll see a setting for key frames whenever you create or save a QuickTime movie (in the same dialog box where you choose a codec). A key frame is a "handle" for your Mac to grab onto, like the thumb indentations on a fat dictionary; it permits the Mac to quickly locate a different part of the movie, in the event that your viewer will want to skip around or play the movie backward. In that case, specify a key frame every second or so (every 15 frames, for example).

  If your movie is meant to be played from start to finish, however, key frames do nothing except slow down playback.

Remember your audience's equipment

Ironically, when it comes time to master your finished QuickTime movie, your problem may not be a QuickTime movie that's too slow — it may be a movie that's too fast. We refer, of course, to preparing a QuickTime movie that will ultimately be played from a CD-ROM. It's important to remember that a CD is

many, many times slower than a hard drive — even the so-called "quad-speed,""6x,""8x," and other-x drives. Worse, when you're creating a QuickTime movie for CD playback, you generally must gear it to the lowest common denominator equipment: a "double-speed" drive, that older but far most commonplace device.

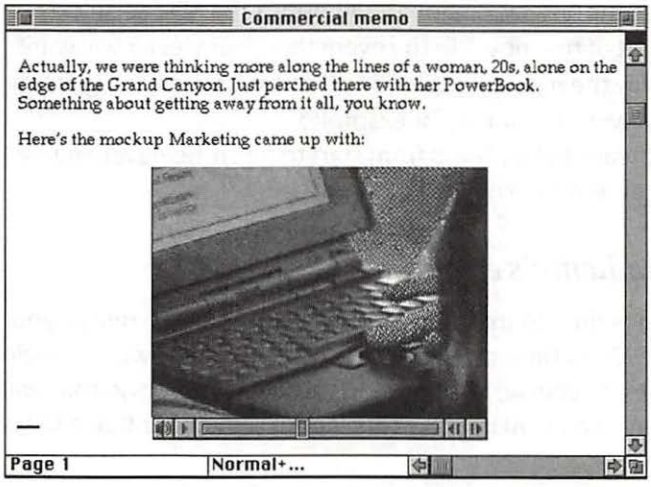
The point is that a movie whose frame rate is too high for the CD playing it will look absolutely horrible. (Example: if your CD-ROM drive can deliver a particular movie at 15 fps, a 10 fps QuickTime file will look far better playing back than a 30 fps QuickTime file.)

Use a program like Adobe Premiere's "CD-ROM movie maker" plug-in or Movie Cleaner Pro to process your movie destined for a CD-ROM; either one can intelligently limit the data rate of the finished movie to play successfully on a particular CD-ROM type. (For example, 15 fps is about the maximum for a double-speed CD player on a QuickTime movie whose frame size is 240 by 180 pixels — if the movie was compressed using the Cinepak method, the size or frame rate could improve.)

How to play back and edit movies

Once you've captured a pile of raw film clips (or grabbed them from America Online, a CD-ROM of *clip movies*, or another source), you can play them back in several ways. All kinds of software can play QuickTime movies: SimpleText, Word, Persuasion, WordPerfect, and so on. (See Figure 23-4.)

Figure 23-4
A QuickTime movie embedded in a Word file. It's a big file on the disk, but wow, does it convey more than words.



There's also Movie Player, a straightforward QuickTime movie-playback program from Apple, included with System 7.5 (or later) and this book. Using the Movie Player — or Motion Toolworks's Movie Play, also included with this book — you can perform simple editing on your QuickTime movies: cutting pieces out, rearranging clips, and anything else you can think of to do with Cut, Copy, and Paste commands. You can even paste movies (and watch them) right in the Scrapbook desk accessory. Ditto with ScrapIt Pro, included with this book. (See Chapter 34 for more on the software that accompanies this book.)

To do any fancier editing (such as creating dissolves between scenes or superimposing footage), you need Premiere (Adobe), Video Fusion (Video Lake), or VideoShop (Avid). These programs are creaking with fancy features that can duplicate almost every single one of the special video effects you see in today's TV commercials. (You generally get one of these programs with the purchase of a video card or a video-ready Mac.)

What good is it?

In our experience, making a QuickTime movie in one of these editing programs is like making a real movie: You spend *incredible* amounts of time relative to the length of the final product. We average about a day of work per minute of finished, polished movie.

Still, it's pure heart-racing fun. Suddenly *you* are Hollywood, with complete control over the look of every single frame of your masterpiece. In terms of real uses, there are promotional and training presentations, children's programs, games, the archiving of precious footage (digital movies never deteriorate), and, of course, storyboarding for actual movies or shows.

As Macs become faster and improved versions of the QuickTime extension appear, the frame rate of the average movie increases. So does the frame *size*. For example, your garden-variety LC or Performa running QuickTime 2.5 can deliver half-screen movies with all the color and smoothness of TV — a breathtaking technical achievement.

QUICKTIME SECRETS

The classic Startup Movie trick

This is the only possible way you can see a QuickTime movie without owning a single piece of extra software. Just put a movie file named Startup Movie loose in your System Folder. Each time you turn on the Mac, it plays in the center of the screen. (You can interrupt the playback by pressing the spacebar.)

Hidden Standard Controller tricks

The Standard Controller is the interface you usually see for playing QuickTime flicks. It's the funny little scroll bar shown in Figure 23-5.

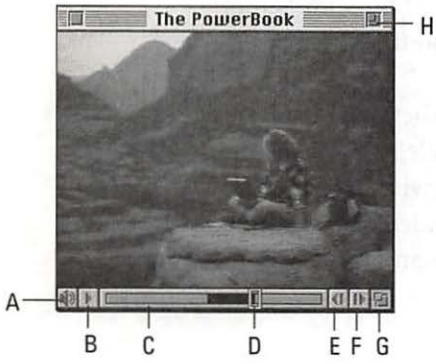


Figure 23-5
The Standard Controller for controlling QuickTime movie playback.

A. The volume control. Click this speaker icon and hold the mouse button to get a sliding volume scale. Secret: *Option*-click the speaker icon to immediately mute the sound. Option-click again to restore the sound.

B. The Play/Pause button. In most programs, you can also press the spacebar to start and stop playback.

There's an odd but useful feature buried in this button (in most movie-playing programs). If you Option-click it, you see *every single frame* of the movie shown in sequence, no matter how long it takes. On any Mac short of a Quadra, this means that it doesn't play in real time (remember, on slower Macs, QuickTime drops frames as a matter of course). In fact, it plays slower than real time and without sound.

C. The scroll bar. This strip is a map of the entire movie, no matter how long. Click anywhere in the strip to jump to the appropriate spot.

D. The slider. This little rectangular handle indicates where you are in the movie. Drag it back and forth to move through the frames.

Shift-drag to turn a portion of the strip black, as shown in Figure 23-5. That's how you *select* a chunk of movie. Anything that's black can now be cut or copied. (To paste it, move the slider to the point where you want to paste, and then paste!)

E. The step-backward button. Click to step one frame toward the beginning of the movie.

F. The step-forward button. Click to step one frame toward the end of the movie.

Secret: You can Control-click either of these step buttons to make a jog-shuttle control appear. Keep the mouse button down and drag the tiny handle left or right. Your movie plays backward or forward at a speed you dictate by the distance your mouse travels, *with* sound!

Option-click these step buttons to jump to the first or last frame of the movie.

G. The resize box. You can drag this resize box as you would any window's resize box. You can make the playback frame long and thin, if you want to. Be aware, however, that the result is an extremely slow, choppy playback. QuickTime movies like to be played back in their original shape, and preferably at even multiples of the original size — twice as big, half as big, and so on.

In fact, if you *Option*-drag this resize box, the window gets larger or smaller in those increments.

H. The zoom box. To restore a movie to its original dimensions after you stretch its window, click this zoom box.

Quick backward playback with sound

Shift-double-click the main part of the window, where the movie plays. Try it - it's weird!

Double-click the image *without* the Shift key to play forward; single click the image to stop it.



24-bit color at twice the speed

If your Mac is equipped with enough video RAM to display 24-bit color (see Chapter 11), QuickTime movies look their all-time best. Unfortunately, they also play at their all-time slowest, because of the massive amounts of color information the Mac must process every second.

If you record or save your movie in *16-bit* color, though, you notice very little degradation from 24-bit color. As a bonus, you'll get playback that's *double* the speed of 24-bit.

How is this possible? The Mac works with color in powers of two. When it's working in 24-bit color, it actually reserves *32* bits of data. (That's why 24-bit color is sometimes referred to as 32-bit color, as in *32-bit QuickDraw*. Even 32-bit color, in other words, is only 24-bit color; 8 of the bits of information, known as the alpha channel — ask a Photoshop guru — are reserved for special effects.) Dropping back to 16-bit color cuts the data stream in *half*.



In recognition of this wonderful trick, Apple endorses 16-bit color as the Official Color Depth of QuickTime.

Where's the controller?

If you see what looks like a movie but you don't see the Standard Controller, you may see a *badge* (see Figure 23-6) in the lower-left corner of the movie.

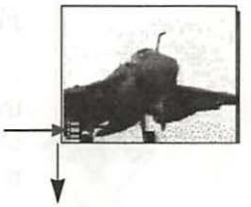


Figure 23-6
The badge.

The presence of the badge indicates that the Standard Controller bar is at the ready but tucked away out of sight. Click the badge to expand the window so that the controls spring into sight.

Keyboard shortcuts

Use the arrow keys to step through the frames of the movie one by one. Press the up-arrow or down-arrow keys to adjust the sound level.

Press the spacebar or Return to start or stop playback. If you also press Shift, you select the portion of the movie that plays.

Hidden message

If the QuickTime extension is in your System Folder, you can get a sample sense of the programmers' humor if you choose Show Balloons from the Help menu. Just point to the QuickTime icon in the Extensions folder.

Instant credits



Talk about undocumented features! Turns out that if you paste some copied text into a QuickTime movie (in Movie Player, for example), it creates text titles! You get about two seconds of white text on a black background, in 12-point Geneva, pasted at the insertion point. Cooler yet: If your credits text begins life in SimpleText or ClarisWorks, you can choose fonts and sizes for the text — all of which get preserved when you paste it into your movie!

Movie Player 2.0 and later is Drag-and-Drop savvy, too. For example, you can type your credits in SimpleText, highlight the text, and drag it directly into a QuickTime movie in Movie Player.

Instant still shots

As it is with text, so shall it be with PICT files: Once again, you can either paste or Drag and Drop *graphics* into a QuickTime movie you're working on in Movie Player. The graphic appears immediately, preset with a two-second duration.

It's best to drag in graphics that match the frame size of the movie you're doing, though. Otherwise, the entire movie's frame size will change to accommodate the size of the largest graphic you insert.

Four very secret menu commands



Depending upon which key you hold down on the keyboard, you can make the standard Movie Player Edit menu do some really weird things. For example, the Shift key turns the Paste command into a **Replace** command; anything you paste *replaces* whatever portion of the receiving movie you've selected (instead of being inserted in front).

The Option key has a trick or two of its own. When you press Option, the Edit menu now has Add and Trim commands. **Add** actually lets you *superim-*

pose whatever's on the Clipboard with what's already in the movie — an especially useful trick when you're working with text (you create subtitles this way) or sound (you add a sound track to what's already there). **Trim**, on the other hand, is nearly as destructive as the Clear command whose place it takes. Trim chops off any of the movie that isn't *selected*. Think of it as you would the Crop command in a graphics program.

And then there's the secret **Add Scaled** command. You get it in the Edit menu when you press Shift and Option together. It's like Paste, except that you're supposed to highlight a region of the movie before pasting. Whatever you're pasting gets stretched or compressed in time so that it fits the highlighted region! The sound track also gets stretched, too; in other words, you can speed up or slow down whatever you're pasting. That ability can be very powerful, very comical, or just weird.

High frame-rate QuickTime movies without a new Mac

No matter what Mac model you have, here's a clever trick that lets you create QuickTime movies with very high frame rates — as high as you want, really — to create extremely smooth video. You need two items: a VCR that can be controlled by the Mac via a cable (such as most Sony VCRs) and a "step-recording" software program, such as Apple's Grab Guy (on the Apple QuickTime CD) or VideoToolKit (from Abbate Video).

These programs don't record the video as it plays at full speed. Instead, they either grab frames from multiple passes of your videotape or they advance the VCR one frame at a time, giving your Mac, no matter how slow it is, plenty of time to capture each frame.

The secret piano key



This is the most trivial Secret in the entire book, but it's just so weird we had to mention it. If you open a MIDI file in Movie Player, as described in the sidebar "Your secret synth: QuickTime musical instruments," and you get to the instrument-assigning dialog box, there's a 1-pixel-wide extra piano key, three octaves above middle C, at the extreme right of the keyboard. (You can only reach it by sliding to the right from the rightmost visible key.) There's no indication that a key is even there — only you (and we) know about it.

Roll credits



While your Mac is starting up, press ⌘-Option-Q-T (for *QuickTime*, get it?).

As free book winner Evan Klinger discovered, you get an enormous full-screen slide show of the programmers' mug shots, complete with their names displayed beneath. As though this parade of geeks weren't entertaining enough, a happy little musical melody plays along (if your Musical Instruments file is installed in the Extensions folder).

MACINTOSH SECRET

YOUR SECRET SYNTH: QUICKTIME MUSICAL INSTRUMENTS

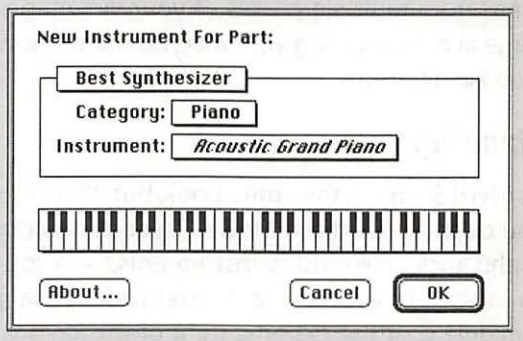
The world hasn't made nearly enough fuss about QuickTime 2. Yeah, yeah, it makes your movies play twice as smoothly; whatever. But the real news is the music.

You see, QuickTime comes with an accompanying file called QuickTime Musical Instruments. This extension contains 30 instrument sounds from a Roland synthesizer. You can create orchestrated music, completely forgetting that the previous Macintosh sound limit was four notes at a time in a cheesy Casio-organ sound. (Moreover, QuickTime 2.5 has an opening for software plug-in instruments from other companies, enhancing the promise of this cool technology.)

Start with a MIDI file. (They're available by the thousand on America Online and elsewhere, or you can use the ones we included with this book, or you can record your own if you're a MIDI jock.) Launch Apple's Movie Player, choose Open from the File menu, and select the MIDI file. Click Convert the Save As box that appears, click Options, click a musical track name, and then click Instruments.

(Depending on your QuickTime and Movie Player versions, the routine may be slightly different. You may have to import the MIDI file into MoviePlayer and then choose Get Info from the Movie menu. Choose Music Track from the left pop-up menu; from the right pop-up menu, choose Instruments.)

Either way, the result is a dialog box where you can assign each of the MIDI file's tracks to one of the 30 instrument sounds.



When you're finished assigning musical sounds, the result is a QuickTime movie, with video or not, that plays amazing, rich, realistic instrumental music. And it doesn't take up much room on the disk, as a digitized Mac-mike recording would.

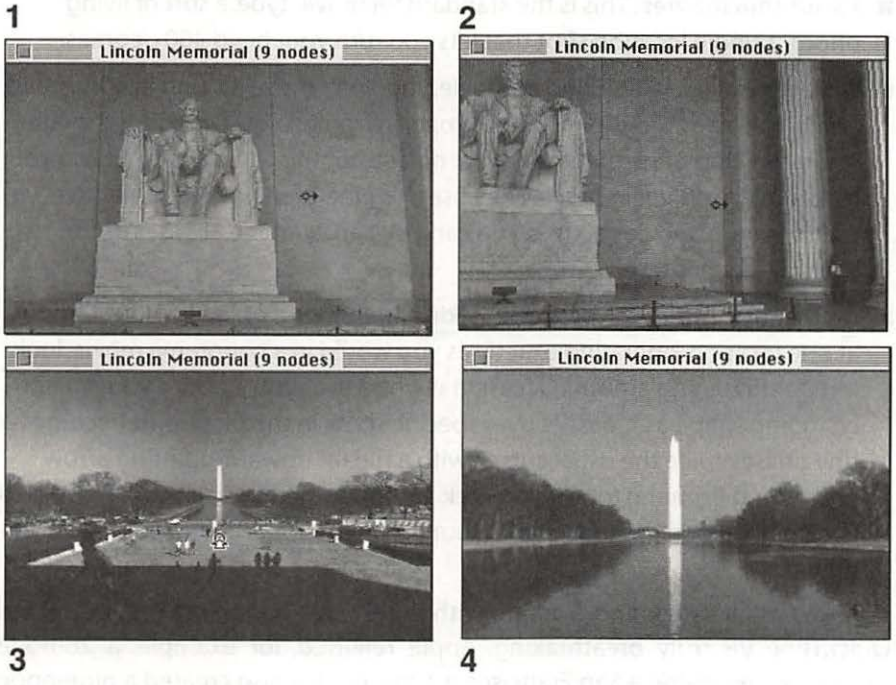
(P.S.: If you don't care about reassigning the instrument sounds, you can just drag a MIDI file's icon onto Movie Player's icon to open it as an untitled movie.)

So much synthesizer, so little time.

QuickTime VR

A QuickTime VR movie isn't really much like a regular QuickTime movie. Instead of watching a moving scene passively, you view a still photo on the screen — and *you* control the movement. If you drag your mouse around inside the photo, your camera angle changes. You can actually turn completely around, viewing your environment from every angle; you can even look up or down, zoom in or out, and get a spooky feeling that you're really there (see Figure 23-7).

Figure 23-7
As you drag your cursor inside a QuickTime VR scene, the cursor shape changes to indicate the direction it thinks you're "looking," and the entire "camera angle" changes accordingly so that you can peer in any direction (shots 1 and 2). If you turn around far enough, you'll be facing the opposite direction (shot 3) — and in a multinode VR, your cursor shape may indicate that another click will jump you to another camera position (shot 4).



It isn't easy making your own QuickTime VR movies; you have to take 360 degrees' worth of still photos using a tripod-mounted camera, and stitch them together with the Make QTVR Panorama program included with this book. (See Chapter 34.) Meanwhile, you can buy products that *incorporate* VR technology, such as Paramount's *Star Trek: The Next Generation Interactive Technical Manual* CD-ROM. QuickTime VR is also being incorporated into some World Wide Web pages (see Chapter 28), letting you "visit" distant places in a startlingly realistic way.

QUICKTIME VR SECRETS

Zoom in, zoom out

You can do more in your VR movie than just turn your head; you can also move forward or backward in any direction. The scheme is simple: press the Option key to zoom forward, and the Control key to zoom backwards. While zooming, you'll notice that the picture breaks up somewhat — but it returns to a clearer image as soon as you release the key.

Change your camera position



Technically, there are three different kinds of QuickTime VR movies. We've included samples of each on the CD with this book:

- **Panorama movies.** This is the standard VR movie type, a sort of living photo: a single location shot that lets you turn your head 360 degrees.
- **Object movies.** In this kind of movie, you don't move around at all. Instead, a single three-dimensional object floats in front of you. Dragging the cursor in this kind of picture moves the *object,* not the camera, permitting you to rotate the object in space. They use this kind of movie for interactive "virtual museum" movies, so that you can you can examine all sides of, for example, a sculpture.
- **Multi-node movies.** Now we're talking. In this kind of movie, you start out at one location, operating exactly as you would in a panorama movie, looking up, down, and around. Occasionally, however, you'll notice your cursor changing shape as it passes over specific spots in the picture. (It becomes a tiny bullseye, like the usual cursor, with a big fat upward-pointing arrow protruding from the top.) If you click at this moment, you'll actually jump to another position in the scene — your entire rotating camera apparatus will move.

Knowing this trick, and working with multi-node panorama movies, makes QuickTime VR truly breathtaking. Apple released, for example, a 26-node movie created inside a San Francisco art museum. It also created a nine-node Lincoln Memorial movie and a 12-node Monument Valley movie; no technology — not TV, not books — can come closer to letting you experience the feeling of actually being somewhere.

MAC MEETS TV

As we've mentioned in other chapters, the video signal that creates a picture on the Mac screen is utterly unlike the one in a TV set. The electron guns scan the screens at different rates *and* in different patterns.

Therefore, the fact that you can show your Mac's picture on a TV set, or vice versa, is remarkable.

Bringing TV to your Mac

It's easy enough to watch TV on your Mac — if you have the right hardware. In general, the simplest route to TV/Mac watching is to buy a Mac that offers TV inputs, such as an AV model, a Performa or LC-series Mac with the Apple TV System card, or a Power Mac 8500. You just run a cable from the video-output jack of your VCR or videodisc player (or TV, if it has output jacks) to the Video In jack on the back of the Mac. (If you're using S-VHS or Hi-8 equipment, use the S-video input port on the Mac; you'll get better color.) If you want sound as well, connect the audio output of your TV or VCR to the Mac's microphone jack.

Watching TV

After you're wired, watching TV on the Mac is as easy as launching the Video Monitor program in your Apple Extras folder (or whatever similar program your Mac came with). Feel free to resize and reposition the video window; you'll find that choosing Full Size from the Monitor menu turns your entire monitor into a glorified TV set — a sure way to get gasps from fellow Mac fans.

Unlike *recording* video (as QuickTime movies), simply *showing* video on your screen involves no decrease in picture smoothness, quality, or frame size. You may have to change your Monitors control panel to a lower color setting, however; not even a Power Mac AV with 2MB of VRAM can display live video at the millions of colors setting.

Recording TV

Recording TV, VCR, or camcorder footage on your Mac (thus turning that footage into a QuickTime movie) isn't the same thing as simply watching TV. See "How to record your own movies," earlier in this chapter.

TRUE FACT

HOW TO ADD VIDEO INPUT/OUTPUT CIRCUITRY TO YOUR MAC

Depending on your Mac model, adding one of Apple's inexpensive circuit boards can be a great way to let your Mac digitize movies, send video out to a TV, show TV on your screen, or a combination of these. Here's what you can buy:

- **Apple Video System.** A QuickTime digitizing card that lets you capture still or moving video images from a VCR, camcorder, laserdisc player, or other video source.
- **Apple Video/TV System.** Same as Apple Video System, plus a TV tuner, so you can watch TV in a window, and work on documents simultaneously. Includes video card, TV Tuner card, remote control, and software.
- **Apple Presentation System.** Lets you send your Mac's video image to a TV or VCR for showing to a larger audience or recording on tape. Can be used with any Macintosh with a video port.

Computer	Can accept these cards
LC 580	All except Video/TV
Power Mac 5200/75 LC	All
Performa 580	All except Video/TV
Performa 630 or 640 series	All
Performa 5200 or 5300 series*	All
Performa 6000 series	All

* Require an adapter — the Apple External Video Connector (M4099LL/A) — to use the Apple Presentation System.

Bringing your Mac to TV

Getting the Mac's image *to* your TV or VCR is much easier than going in the other direction. You can make this arrangement in one of two ways: (a) buy a Mac with *NTSC video-output jacks* (NTSC is techspeak for "normal TV"), such as a Power Mac 8500, or a Performa or LC with an optional Apple TV/Video System; or (b) buy a $200 add-on converter box, such as the Focus LTV.

The connections are what you'd guess: Run a cable from the Video Out jack (of your Mac or your adapter box) to your VCR's input jack. Do the same with the sound cable.

Why the picture looks crummy on the TV

Three different incompatibilities prevent the Mac's video image from looking good on a TV screen. One is the flickering of thin lines, especially the horizontal lines in a title bar or the lines in a spreadsheet. You may recall from

Chapter 11 that the Mac repaints its screen 60 times per second; a TV draws its screen picture only 30 times per second, in alternate passes — one pass draws the odd-numbered lines of the screen, and the next draws the even-numbered lines. Any thin horizontal line in the Mac image falls in just one line of the TV's interlaced image; therefore, it only gets painted during an odd or an even pass of the TV's electron gun — 15 times per second instead of the normal 30 — and so it flickers.

Fortunately, almost any converter box you can buy today — including the built-in video features in video-ready Macs — has anti-flicker circuitry.

The second and more serious problem associated with getting a Mac image on TV is *overscanning*. A TV paints its screen from edge to edge, extending past the edges of the glass. You've probably never noticed that the outer perimeter of your TV picture is chopped off, because (a) directors deliberately film their TV footage with the overscanned perimeter in mind, and (b) it's TV; who cares if you're missing the outer 3 percent?

In presentations, however, missing the outer edges definitely matters. Some of the Mac's most important elements (the menu bar, icons, and so on) tend to be at the edge of the Macintosh display, and on a TV they may wind up off the screen. Keep a generous margin, therefore, when you're designing your presentation.

The last problem with displaying the Mac image on a TV is that, frankly, a TV has poor resolution (dpi) compared to the Mac. Nothing ever looks quite as good on a TV as it does on the Mac.

As a result, you should use larger font sizes and less detail when you set up a presentation you'll be showing on TV. Use Photoshop (or another professional graphics or presentation program) to create *antialiased* (smooth-edged) text, and avoid sharp color contrast between the text and the background color.

PowerBook owners in particular should be careful with photos and other color graphics. As described in Chapter 14, most PowerBooks come equipped with only enough video RAM to send 256 colors simultaneously to an external monitor (such as a TV). Therefore, unless you carefully prepare your photos as indexed-color images (as described in Chapter 20), you'll get blotchy, crummy photos on the TV.

Shooting the screen

Computers on the nightly news *always* seem to be on the blink. Their monitors have those crazy horizontal lines rolling, rolling, rolling up the screen — but that problem only exists in the TV *picture* of the computers, not in person, and not in movies!

This is the problem you encounter in trying to record the Mac image with a video camera. The problem, once again, is the difference in scan rates. The symptom is that in the TV image of the Mac, a fat whitish line always appears to be rolling up or down your Mac screen.

There are two possible fixes. First, filming a *PowerBook* screen never presents this problem. It comes out beautifully on TV (because it's not a CRT screen). Second, of course, you can buy one of the NTSC converter boxes described earlier.

Multimedia presentation Secrets

Our thanks to Elise Dorsey of Ready to Go, Inc., for these tried-and-true Secrets.

- **Make them remember.** Begin and end your presentation with exciting music and/or eye-catching graphics. People always remember the beginning and the end the most.
- **Avoid jerky or "tearing" animated objects.** When animating objects to move across a path, remember that smaller objects move faster. If you're using a slowish Mac, avoid animating large graphics.

  And if you're using a slower Macintosh, animate one object at a time to avoid noticeable jerks when the Mac's processor is drained from having to display a second staggered animation.
- **Thwart Murphy's Multimedia Law.** Things *always* go wrong with software and equipment. Always.

  Test your presentation — *before* the presentation day — on the *exact* computer from which it will be displayed. Problems to look out for: necessary software is not installed; necessary fonts are not installed; screen displays colors differently; different Mac CPU speed affects quality of animations; different screen size is incompatible with your presentation; sound is not turned up enough; color depth (256 versus thousands of colors) is set wrong; and so on.
- **Make it tasteful.** First, pay as much attention to how your objects exit the screen as you do to how they enter the screen. Second, avoid repetitive animations, such as an animation that begins each scene. These become tedious and distracting.
- **Put controls where you can find them.** Put your buttons (for Next Slide, for example) and other presentation controls in a consistent area on the screen. *Never* put the buttons for controlling the entire presentation in different locations on different screens.

- **Advice on color selection.** Use *cool* colors for your background and *warm* colors for your foreground. Cool colors are variations of red, yellow, blue, and green that have a bluish tone; warm colors are the same hues with a reddish tone. For example, blue-green is cool; yellow-green is warm. Blue-purple is cool; magenta is warm.
- **Advice on font selection.** Use a consistent format for the titles, subtitles, body text, and so on. Text style is a key to your viewer of the structure of your content. By using a consistent visual language, your information is easier to assimilate.

TRUE FACT

PUTTING IT TOGETHER: PRESENTATION SOFTWARE

You've made your movies. You've recorded your sound effects. You've composed a throbbing, insistent beat using MIDI and your synthesizer. Now you have to *show* it all to somebody.

Fortunately, an entire Mac software category is dedicated to letting you integrate these different pieces into an attractive viewer-controlled show.

On the most basic level, you can perform media integration with slide-presentation programs such as ClarisWorks, Microsoft PowerPoint, and Aldus Persuasion. These programs let you create static slide-show presentations, although they can play QuickTime movies, too.

For more cinematic presentations, you need a program such as Gold Disk Astound, Macromedia's Action, or Vividus's Cinemation. These programs let you do more than insert pictures and movies onto a static slide; you can *animate* objects to fly along paths on screen and add a sound track that plays continuously as scenes change. Also, you can build interactivity into the presentations by creating buttons that link to other objects, sounds, or scenes. Viewers can control the flow of the presentation by clicking the various buttons.

On the high end, script-based multimedia packages are available, such as HyperCard and Macromedia Director. Don't expect to load one of these programs and turn out a polished presentation an hour later. All three employ scripting *languages* that take months to learn. The scripts permit a high level of interactivity and let you control external devices such as videodisc players from within a presentation.

Generally, integration programs are designed to *combine* sounds and pictures, not *create* them. But there are exceptions: Macromedia Director and Cinemation include a full range of painting tools so that you can create frame-by-frame animation from within the program. Gold Disk's Astound includes a sound recording feature. All the programs include a text tool, so you can create titles and headings without having to import every word.

SPEECH I: THE MAC TALKS

The voice of your computer isn't Swedish anymore.

For years, you could make a Mac speak out loud using an extension called MacinTalk — *if* you could find MacinTalk, *if* it worked on your model, and *if* you didn't mind its drunken-Scandinavian accent. (Shortly after creating Macintalk, the primary programmer left Apple, leaving the company in the lurch and the software in the "unsupported" category for several years.)

Today, though, a talking Mac is easy to set up, fun to listen to, and essentially free of that bizarre nasal inflection. Apple rewrote Macintalk, making it far more flexible and powerful.

The key is to get the software kit called PlainTalk 1.5 (or a more recent version). PlainTalk comes with System 7.5 and later, and with this book, and updates are available from Apple's sites on the Internet or online services. And the beauty of Apple's text-to-speech software is that it works on almost any System 7 Mac. (Contrast this with Apple's speech-*recognition* software, which works only on PowerPC-based Macs and AV Quadras.)

Once you've installed the various PlainTalk extensions into your System Folder, all you need is SimpleText, ClarisWorks, WordPerfect, America Online, Tex-Edit (included with this book) or one of a handful of other programs equipped with a Speak command. Type a few choice sentences and then (in SimpleText, for example) choose Speak All from the Sound menu. Using that same menu, you can choose from among the 18 different character voices that Apple provides. (If you have only one or two voices available, you probably have the floppy-disk version of System 7.5. The CD-ROM versions — and the downloadable version 1.5 — contain the full set.)

You'll discover that PlainTalk is amazingly intelligent when it reads. It can generally distinguish between the two alternate meanings of "Dr.", for example (doctor or drive) — and it's cyber-savvy enough to say "wink" for ;) . . . "grin" for :) . . . and "frown" for the :(symbol!

To interrupt the Mac's reading, press ⌘-period.

MACINTOSH SECRET

MAKE YOUR MAC SING, TOO

If you play around with PlainTalk's voices much, you'll discover that four of them are musically inclined! The voices called Bad News, Good News, Pipe Organ, and Cellos each *sing* whatever you type — to familiar melodies. Bad News is a funeral march (actually a Chopin prelude); Good News is the graduation march (*Pomp and Circumstance*); Pipe Organ is the theme music from the *Alfred Hitchcock Presents* TV show; and Cellos sings "In the Hall of the Mountain King," from *Peer Gynt*, by Edvard Grieg.

Unfortunately, you may never even realize that the Mac will sing the *entire* melody — instead of starting over after a few notes — if you let it. The trick is not to use *any* punctuation. For example, if you try to make the Mac sing the following to the graduation-march theme (the Good News voice), the melody will start from the beginning at each punctuation mark:

Hey, congratulations! You're suddenly rich! Your lottery ticket just won the big prize.

But if you type it as shown below, you'll get the whole thing sung to the correct melody, to great comic effect:

Hey congratulations you're suddenly rich your lottery ticket just won the big prize.

SPEECH II: THE MAC LISTENS

The Power Mac models' voice-command feature *seems* incredibly exciting. This is the future! This is *Star Trek!* This is James Bond! You speak; your computer obeys.

For the first years of its existence, though, Apple's speech-recognition feature was a big disappointment. First, it sucked up a *huge* amount of memory — up to 2.5MB. Second, the feature simply never worked very well. You'd spend 20 percent of your time repeating a voice instruction, getting more and more irritated that you didn't just use the mouse to begin with. Furthermore, speech recognition works only for American English speakers with no accent.

Fortunately, PlainTalk version 1.4, released at the end of 1995, was dramatically improved. The Mac's comprehensional accuracy has improved substantially because of numerous improvements — not the least of which is the "push-to-talk" feature, in which you hold down a keyboard key when you want the Mac to listen. (As a result, the Mac doesn't wind up mistakenly attempting to execute ambient sounds and conversations that weren't intended as commands.)

Unfortunately, two features were *removed* from version 1.4, too — compatibility with Quadra AV models (the new versions work only with Power Macs) and the ability to operate *menus* with your voice; the new version can only *open* things. That limitation may not be as constricting as it seems, however, as we'll discuss in a moment.

The importance of Speech

We are referring, of course, to the importance of the Speech *control panel.* This innocent-looking piece of Apple software is the heart of the Mac's English-understanding talents. Before you can start blathering away at your uncomprehending computer, you must understand its subtleties.

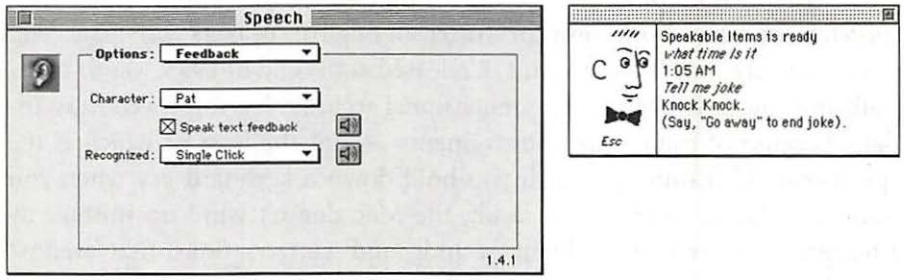
And by the way: If your control panel is called Speech *Setup,* you have the old PlainTalk software, the one that could control menu commands, but that seemed to have a lot of trouble understanding people. The following discussion will focus on PlainTalk 1.4 and later; if you're still using the older PlainTalk versions — pre-1996 — read the speech-recognition chapter from previous editions of this book. (The speech-recognition chapter is on the CD-ROM that accompanies the book.)

Anyway, Speech has a tiny pop-up menu with four commands that we'll describe individually.

Voice

The Voice pop-up menu lists the various timbres of voice that the Mac can use to talk *back* to you — to reply, for example, when you ask the computer what time it is (see Figure 23-8). You get a list of dozens of amazing voices, ranging from the crazy old Deranged guy to the chilling calm of Mr. Whispered.

Figure 23-8
Using the Speech control panel (left), you establish the visual and vocal identity of whoever you want to be your Mac's alter ego in the little feedback box on the screen.



Feedback

This panel of the Speech control panel offers a Character pop-up menu, in which you can select, by first name, a visual cartoon character. This will be the Mac's personality in responding to the things you say. If you say, "Tell me a joke," the animated character you specify here will tell a knock-knock joke — using the voice you specified with the Feedback pop-up menu.

You can combine any Voice with any Feedback character; Raymond can have a female voice, if you so desire.

MACINTOSH SECRET
QUICKTALK MAKES IT ALL TALK

We've mentioned that America Online, ClarisWorks, SimpleText, and a few other programs can speak aloud anything you've typed. Fortunately for you, however, we've also included QuickTalk on the CD with this book. This handy little software lets you make *any* program speak. See chapter 34 for details.

Listening

Using this panel, you tell PlainTalk when you want it to listen. You'll have by far the best results using the "push-to-talk" feature, with which the Mac doesn't listen at all until you're pressing a particular key (which you specify here). Apple implies that you can choose any key to be the push-key, but actually your choices are Esc, a punctuation mark or bracket, and any key on the numeric keypad except Enter.

Using the other controls, you can, if you really want to, set up the Mac to respond to your utterance only if you begin the sentence with the computer's name — which defaults to "Computer." This way, you don't have to press a key while talking. However, this system (which was the only system in

previous versions of PlainTalk) doesn't have the high degree of accuracy of the "push-to-talk" method.

Speakable Items

This final panel contains the master on/off switch for speech recognition. If you click Off, the Mac won't attempt to decipher anything you say — except possibly "OK" and "Cancel," which "click" the corresponding buttons on the screen; this feature has its own on/off switch here.

What you can say to the Mac

So, what, exactly, can you *do* when speech recognition is turned on and configured?

Well, the Mac *can't* take dictation, writing down what you say; for that you need the program called PowerSecretary, as described in Chapter 10. Nor can it execute menu commands when you speak them ("Shut down," "Restart," "18 point," and so on) — unless you first define them as AppleScripts (read on). (A few, such as "Close window" and "Empty the Trash," have been programmed already for you.)

No, what PlainTalk 1.4 and later does is *open* things — things whose icons (or aliases) you've put into the Speakable Items folder, which is inside the Apple Menu Items folder in your System Folder. You can launch programs and documents with the greatest of ease: "open ClarisWorks," "open Monitors," and so on.

If you're handy with AppleScript, you can increase PlainTalk's possibilities by writing little AppleScript "applets" (which you then put into the Speakable Items folder). That's how Apple pulls off some of the more elaborate PlainTalk responses that come preinstalled — the ones you get if you say to the Mac

"What day is it?"
"What time is it?"
"Tell me a joke."
"Is file sharing on?"
"Find original of this."
"View window by small icon."

If you have so set up the Speech control panel, the Mac also acts on OK and Cancel buttons.

TRUE FACT
VALLEY OF THE TV NERDS

The eight Feedback characters offered by the Speech control panel are designed to communicate the Mac's disposition as you use the speech-recognition feature. The characters communicate even more, however, about the Apple programmers who created them.

Think about it. There's Pat, who's the spitting image of the mystery-gendered Pat from the *Saturday Night Live* skits. There's Raymond, a dim-witted-looking guy whom you wouldn't be nuts to assume is based on Dustin Hoffman's character in the movie *Rain Man*. There also are Connie (Chung) and Sally (Jessy Raphael, of talk-show fame).

We think it's safe to say that these programmers spend quite a bit of time being influenced by pop-culture TV and movies. Our only relief is in seeing that Vincent, the severed-ear character, is a clear reference to van Gogh. At least *someone* over there has culture.

SPEECH SECRETS

The Mac talks — and it's funny

For five minutes of pure hilarity, open the Speech control panel, and choose Voices. After you select a voice from the pop-up menu and click the little speaker icon, you'll hear a sample sentence uttered in the voice style you selected. The beautiful part of this is that the Apple programmers have chosen some incredibly witty and appropriate things for their little imaginary friends to say. Here are a few of our favorites:

> Whisper: "Psssst — hey you, yeah you! Who do ya think I'm talking to, the mouse?"
> Deranged: "I need to go on a really long vacation."
> Pipe Organ (singing): "We must rejoice in this morbid voice."
> Zarvox (alien-sounding monotone): "That looks like a peaceful planet."
> Albert (you have to hear it): "I have a frog in my throat. No, I mean a real frog!"

ClarisWorks speaks out

Although you can't tell on casual inspection, ClarisWorks can actually speak — in two different ways.

Way One: Choose Edit Shortcuts from the (Shortcuts command of the) File menu. Scroll to the bottom of the Available Shortcuts display and look for the little pair of lips. Click the lips icon; click the Add button to add that icon to your Shortcuts palette.

Now, whenever you highlight some text — any text — in ClarisWorks and click the Lips icon (on your Shortcuts palette), ClarisWorks will speak! It will use whatever voice you've specified as your default voice in the Speech control panel.

Way Two: Choose Preferences from the Edit menu; click the Communication icon; and select the Speak Text option in the upper-right corner.

Now ClarisWorks will speak aloud any text that scrolls by when using the ClarisWorks communications window — your e-mail, your BBS text, and so on.

Lost treasures of PlainTalk

Apple's programmers loaded PlainTalk with hilarious secret responses. Unfortunately, most of these were edited out of existence by Apple Computer's No Fun Squad, and, thus, they don't exist in version 1.4 or later.

If you still have an older version, speak the following to see if any of these question/answer buried treasures are still around:

"Do you need help?" in SimpleText/TeachText. (The Mac says: "I'm trapped inside this computer and I can't escape!")

"I need help!" in SimpleText. (The Mac says: "I'm sorry, they did not have time to add my artificial intelligence module.")

"Tell me about Casper," with Speech Setup open. (The Mac says: "He's a friendly ghost from ATG." Casper was the code name for PlainTalk, and ATG is the advanced technologies group.)

"What about Speech Recognition?" with Speech Setup control panel open. (The Mac says: "Don't forget ATG," and displays a credit message.)

"Did anyone test you?" with Speech Setup open. (The Mac says: "Not to mention ULQ," and displays the text message, "Of course! I was tested by 'Braz' Ford and Morgan Wize.")

"Are there any Easter Eggs?" in the Finder. (The Mac says: "If there were any, do you think I would tell you?")

MACINTOSH SECRET

BE THE STAR OF YOUR OWN FEEDBACK SCREEN

As we've mentioned, you can choose from among nine different visual personalities for your Mac — representations of the computer itself when it is responding to your voice commands.

You needn't be satisfied with Apple's TV- and pop-culture derived personas, however. You can substitute any character you wish, including yourself, using ResEdit and appropriate drawings or photos. See Chapter 21 for details on using ResEdit. For now, here's what to do:

Open your Speech Recognition extension with ResEdit, and double-click the PICT resource icon. Inside, you'll find the graphics that represent Apple's default speech-recognition feedback personalities.

All you have to do is replace the images by pasting in new ones. Of course, you'll notice that the Mac uses several different expressions for each character, and you'll have to create an equivalent number of your own replacement pictures. Also, make sure that your replacement images are exactly the same size as the ones you're replacing; one way to do that is to copy each existing picture out of ResEdit and paste it into Photoshop, where a new document window will automatically appear at the correct size; doctor the picture as desired, then copy it out of Photoshop and paste back into the ResEdit resource. (If you'll be using speech recognition with the Monitors control panel set to less than 256 colors, you should also create a black-and-white version of your replacement pictures and paste them over the appropriate black-and-white character images in ResEdit.)

You can even change your new feedback character's name (as shown in the Speech control panel's pop-up menu). Open the STR resource (in ResEdit) with the same ID number as your character's lowest-numbered PICT resource — and just change the name inside.

When you're finished with your ResEdit surgery, restart the Mac. Your new character should appear happily in the Speech control panel.

Part IV:

Attachments

Chapter 24: Inside Fonts
Chapter 25: Macintosh Printing Secrets
Chapter 26: Scanning Secrets
Chapter 27: Mysteries of the Modem
Chapter 28: The Web, the Net, and Everything Online
Chapter 29: A Short CD-ROM Chapter
Chapter 30: The SCSI Chain — and IDE
Chapter 31: NuBus, PCI, and Other Slots
Chapter 32: The Networking Chapter
Chapter 33: Troubleshooting

Chapter 24

Inside Fonts

IN THIS CHAPTER:

- Making sense of the formats: Bitmapped, PostScript, TrueType, and GX
- Where to put font files
- Suitcase, ATM, ATM Deluxe
- Why text prints with jaggies
- The Non-Typographer's Guide to Type
- Solving font problems

For a term that's not even used correctly, Macintosh fonts have certainly changed the world.

For centuries, typographers used the word *font* to designate *one* typeface, size, and style. Times Bold 18-point was *one* font. Times Bold 14 was another. Even today, professional typographers (the non-Mac variety) still refer to one type style as one font: Times Italic, Times Bold, and Times Roman are *three* fonts. But in Macintosh parlance, one type family is usually called a font. Times is a font. Helvetica is a font. Monaco is a font (barely).

The only Macintosh people who still count every stylistic variation as a separate font are the manufacturers of laser printers, who can then advertise their printers as having "35 built-in fonts!"

Anyway, fonts are both a blessing and a curse on the Mac. They've always represented a technical topic. Trouble is, every time some genius gets the bright idea to improve the situation, the Mac font world gets *twice* as messy. Witness,

for example, the increasing font-management nightmares caused by the introductions of ATM, TrueType, and QuickDraw GX. And it's not over yet.

We're going to do our best to make all of these competing and overlapping technologies clear. Prepare ye, though, for some admittedly tough slogging in the pages ahead; when it comes to the programmers of font formats on the Mac, too many cooks have definitely spoiled the broth.

THE EVOLUTION OF MAC FONTS

When the Mac first appeared, fonts were extremely simple. There were ten typefaces (see Figure 24-1).

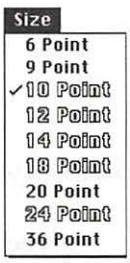
Figure 24-1
The original Mac fonts. There are some pretty clever jokes going into the names of these fonts: New York is a take-off of Times (used by that prestigious newspaper); Geneva is based on Helvetica (get the Swiss connection?); London is an Old English font; Monaco is a *monospaced* font (every letter the same width); Cairo is a picture font, like Egyptian hieroglyphics; and so on. (Anyone have any good theories about Chicago or San Francisco?)



Font format #1: bitmapped fonts

These first fonts were the original Mac fonts: *bitmapped* fonts. They were designed exactly the way you'd imagine them to have been designed: by somebody painstakingly drawing each letter, pixel by pixel, in a Photoshop-like program. Each letter was composed of a *map* of dots (or bits). And that's how the Mac understood each letter: as a predefined arrangement of pixels.

Figure 24-2
The point sizes listed in hollow type are the ones that, for this font, were created by a designer. If you choose one of the black-type fonts, the Mac will try to calculate a reasonable facsimile by extrapolating from the installed sizes.



Of course, bitmapped fonts weren't ideal. Each letter of each font had to be drawn separately in each *size*. Because it was so much work to design a font, these fonts (then as now) came only in 9-, 10-, 12-, 14-, 18-, and 24-point sizes — if that many. Venice only came in one size (14 points); London came in one size (18 points). You knew which sizes had been predefined by looking at the Font menu of your programs (see Figure 24-2).

If you chose a point size that *wasn't* predesigned by the font maker — 17-point, for example — the Mac did its best math. It examined the fonts at the sizes that *had* been custom drawn and shrunk them or enlarged them slightly, usually with hideous results.

Eventually, people learned to avoid noninstalled point sizes. The world became filled with newsletters featuring 24-point Helvetica headlines and 12-point New York body text.

Like most Mac monitors of today, the Mac screen of 1984 was composed of 72 dots (pixels) per inch. That 72 dpi resolution happened to work well for

fonts because fonts were traditionally measured in *points* — of which, happily, there are 72 per inch! A 12-point letter on the screen could be exactly 12 pixels tall.

The 72 dpi resolution also worked especially well with the Mac's printer, the ImageWriter, whose printouts in Standard mode were *also* 72 dpi. Each dot on the screen produced a corresponding dot on the page. Your printouts were WYSIWYG. (Sometimes printouts looked a *little* better than the screen — if you had a bitmapped font installed that was twice [ImageWriter], three times [ImageWriter LQ], or four times [the original LaserWriter] the size of the type displayed on the screen, the printer driver would automatically scale it down by the appropriate factor for smoothness.)

In terms of fonts, though, what you saw wasn't what you *wanted.* Text at 72 dpi may have looked OK on a computer screen, especially compared with what passed for type on the screens of other computer brands. But when it hit the page, the low quality of those 72 large square dots per inch gave the edges of each printed letter a ragged, stairstepped appearance — even with the scaling trick described in the previous paragraph. Even today, when things go wrong and text prints out jaggedly, you hear people saying, "My text printed out bitmapped."

Font format #2: PostScript fonts

The situation changed dramatically when Apple created the LaserWriter printer. Its resolution was *300* dpi, over four times as sharp as the ImageWriter's Standard mode.

The most dramatic feature of the LaserWriter, though, was a new font (and graphics) technology built into it, called Adobe PostScript. Chapter 25 has the details; in short, the result of PostScript was that text printed by a Macintosh no longer had to be crude 72 dpi bitmaps. Text still appeared on the *screen* at that resolution — and, indeed, it always will — but when printed, text printed by the LaserWriter was smooth, crisp, and fine. Furthermore, the LaserWriter could print text smoothly at *any* point size, no matter how jagged it was on the screen.

A new kind of font — in two parts

On the LaserWriter, those ten classic Apple fonts still printed out at exactly the same coarse 72 dpi resolution. To work its high-res magic, the LaserWriter required a whole new set of fonts: *PostScript* fonts (see Figure 24-3). To distinguish them from the bitmapped fonts everyone knew, these fonts had *non-city* names.

Figure 24-3
The 35 built-in LaserWriter fonts.

Times Roman
Times Bold
Times Italic
Times Bold Italic

Avant Garde Roman
Avant Garde Demi
Avant Garde Italic
Avant Garde Demi Italic

Bookman Light
Bookman Demi
Bookman Light Italic
Bookman Demi Italic

New Century Schoolbook Roman
New Century Schoolbook Bold
New Century Schoolbook Italic
New Century Schoolbook Bold Italic

Palatino Roman
Palatino Bold
Palatino Italic
Palatino Bold Italic

Courier Roman
Courier Bold
Courier Italic
Courier Bold Italic

Helvetica Roman
Helvetica Bold
Helvetica Oblique
Helvetica Bold Oblique

Helvetica Narrow
Helvetica Narrow Bold
Helvetica Narrow Oblique
Helvetica Narrow Bold Oblique

Zapf Chancery

αβχδεφγηιφκ (Symbol)
✪✪✱✱✱✱✱ (Zapf Dingbats)

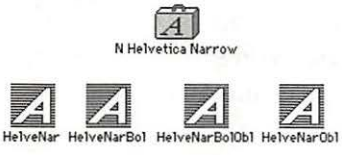
The LaserWriter meant that your screen and your printer had *different* resolutions. To solve this incompatibility, Adobe came up with a simple enough solution: Create *two* files for every font — one for the screen and one for the printer.

The screen display used the bitmapped fonts people had *always* used. In the age of laser printers, bitmapped fonts (also called *fixed-size fonts*) now took on a *third* moniker: *screen fonts.*

This was to distinguish the screen-display fonts from the PostScript half of each font: The *printer font.* This was a separate file. It was distinctive for several reasons:

- You didn't install it into your System file, as you did a screen font. You left it loose in your System Folder.
- Its name didn't match the screen font's name. Instead, it was abbreviated to signify that it was a printer font. The printer font for bold, oblique Helvetica Narrow was called HelveNarBolObl (see Figure 24-4).
- There was one file for every single style variation of a font. To create an italic *bitmapped* font, for example, the Mac simply slopes the letters (offsetting each consecutive row of pixels). Technically, that's an *oblique* typeface, not italic. But a *true* italic typeface has a completely different design. Therefore, a PostScript font required one printer font apiece for bold, italic, and bold italic styles.

Figure 24-4
The two halves of a PostScript font: The screen font (top) and the printer font files, one for each type style.

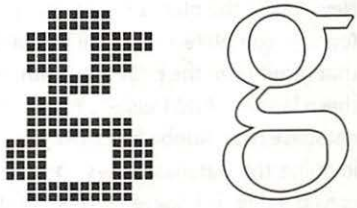


PostScript fonts did more than solve both problems (low resolution and small choice of sizes) associated with bitmapped fonts. Because PostScript was a graphics *language* and not simply a font technology, you could perform all kinds of wild text manipulations with PostScript text: Stretch it, print at an angle, distort it, and so on. (We showed you a couple of these techniques in Chapter 20.)

How it works

A PostScript font is capable of all these stunts because it *isn't* a bitmap. Each character is stored as a series of mathematical equations that describe curves forming a hollow *outline* of each letter (see Figure 24-5).

Figure 24-5
How the Mac thinks of a screen font (left) and a printer font (right).



The PostScript printer simply fills in this outline with black, regardless of how many printer dots it takes. A LaserWriter fills it in with 300 or 600 dots per inch. A PostScript imagesetter (see Chapter 25) fills it with many more dots per inch.

Because a PostScript font is a set of character *outlines,* you can see how easy it is for a printer to enlarge or reduce your text. All it must do is multiply its little equations by 0.3 or by 3 or by 33, for example, to create text that's much smaller or much larger than normal size. That's why the *screen* still needs a certain font in several installed sizes, but the *printer* doesn't.

Despite the PostScript breakthrough, Adobe's dual-font system wasn't without its drawbacks — especially the requirement to maintain two sets of fonts in the System Folder. And then there was the screen display; PostScript screen fonts worked just as badly as the original bitmapped fonts always had.

ATM

The screen-display problem was finally solved by the invention of Adobe Type Manager (ATM) in 1989. In principle, this control panel treats the screen as just another printer. That is, it interprets those same PostScript *printer fonts,* in your System Folder, for drawing on the screen. Fonts still appear at 72 dpi, of course, but they have all the other advantages of PostScript fonts: They can be stretched, angled, and — most importantly — changed to any size without sacrificing clarity (see Figure 24-6).

Figure 24-6
A 111-point Palatino letter R on the screen — both without (left) and with ATM installed.



ANSWER MAN

Close, but no Helvetica

Q: ***What exactly is font substitution?***

A: Adobe Type Manager Deluxe, Adobe's enhanced version of ATM (and a descendant of the discontinued Super ATM), goes a long way toward solving an old problem: You open a document for which you don't have all the original fonts installed.

Instead of simply showing you Courier or New York in the place of the missing fonts — complete with awful line breaks that result from the different widths of these fonts — ATM Deluxe consults a database of all Adobe fonts. (As you can imagine, this database takes up considerable disk space.) It then displays a font on the screen that looks almost like the original.

The program's success at re-creating the exact look of a missing font varies from font to font; its substituted text faces look amazingly close to the absent fonts, but its display faces (especially fancy ones) may bear little resemblance. You can, however, always count on ATM Deluxe to draw its substitute font at precisely the correct letter widths. Therefore, you can always count on line breaks, page breaks, and headlines looking exactly as they did with the original fonts.

ATM Deluxe's sole limitation is that it only works with Adobe PostScript fonts. It can't help your library of Bitstream or other PostScript fonts (and it certainly can't help with non-PostScript fonts, TrueType, or bitmapped fonts).

With ATM, then, the Mac thinks of type as outlines, both on the screen *and* when printed. Thus, ATM provides one other important benefit: smooth, resizable text printouts on *non*-PostScript printers, such as ImageWriters or StyleWriters. Suddenly, as far as *type* is concerned, those printers got the royal PostScript treatment. Because of ATM, PostScript font jaggies have been banished from both the screen and every kind of printer.

The latest version, ATM Deluxe, also offers font-management capabilities (like the old font-management standby, Suitcase), allowing you to open and close selected groups of PostScript and TrueType fonts, easily and conveniently. ATM Deluxe also performs font substitution, creating facsimiles of fonts that aren't installed, so you can still get an idea of what a document looks like even if you don't have the required fonts. For more on font substitution, see "Close, but no Helvetica."

ATM SECRETS

Versions

ATM is great, but you must stay on your toes as Adobe cranks out new versions. Old versions of ATM are a Number One suspect if you get system crashes after installing a new version of the Mac's System software.

Version 3 was the first to recognize System 7.1's Fonts folder. (Version 3.5 comes with SuperATM, 3.6 comes with Acrobat, 3.8 is required for the Power Macintosh, version 4.0 (ATM Deluxe) offers font-management capabilities ... and so on.)

Font format #3: TrueType

ATM and PostScript fonts made the world's graphic designers happy enough. Trouble was — as far as

Apple was concerned — no one was getting rich except Adobe. Adobe made the fonts. Adobe made ATM. Worst of all, Apple was paying Adobe a royalty of close to $750 *per* LaserWriter for permission to include PostScript technology. That kept prices of laser printers high, and it kept sales lower than Apple would have liked.

So Apple came up with a brilliant scheme. It would come up with its *own* version of PostScript! Apple would own it, and, therefore, wouldn't feel beholden to Adobe Systems. The font technology Apple came up with was TrueType.

A TrueType font works exactly like a PostScript font with ATM in that you can resize, reshape, and stretch the type, and it always looks smooth and sharp on the screen and when printed. As an added bonus, it has three advantages:

- There's less file mess. One single icon on your disk represents both the screen-font information *and* the printer-font information.
- You can find out what the font looks like by double-clicking its icon in System 7.
- A basic set of TrueType fonts comes with every System 7 Mac (see Figure 24-7).

For anyone who isn't a graphics or publishing professional, then, TrueType is a blessing and a hassle-saver.

Yet PostScript didn't go away when TrueType came along. Many people had invested huge amounts of money in PostScript fonts, and they weren't about to buy an entirely new library of TrueType fonts. PostScript fonts print with fewer hassles than TrueType on professional printing equipment (such as Linotronic gear), too.

Furthermore, TrueType is only a font technology. PostScript, on the other hand, is a *graphics* technology. It does much more than manipulate text, as you'll find out in Chapter 25; it does lines, shadings, and colors equally well. TrueType, which deals only with type, couldn't possibly have replaced all the flexibility of PostScript.

You do pay a small price for ATM's impressive technology — much less today than in its original incarnation, but a price nonetheless:

- ATM requires a large chunk of memory: 200K for itself, plus an additional amount that you can adjust in the ATM control panel (Adobe recommends 50K *per font*).
- ATM slows down text display somewhat (but it's not very noticeable on today's Macs).
- Most people don't have the printer-font files for the LaserWriter's built-in fonts (Times, Helvetica, Palatino, and so on).
- You have to buy ATM. ATM Deluxe — which includes 30 fonts — sells for $100. Furthermore, another smoothing-only version comes with System 7.5 — see our ATM Secrets.

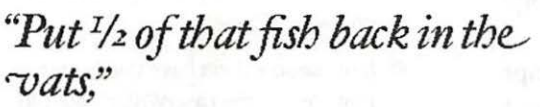
Figure 24-7
The basic set of nine TrueType fonts included with System 7. Note that some former bitmapped-only fonts — some of the "Apple Classic Fonts" — have been converted into TrueType form.

Times	Helvetica	Palatino
Courier	Σψμβολ(Symbol)	**Chicago**
Geneva	Monaco	New York

Font format #4: GX fonts

After years of behind-the-scenes programming, Apple unleashed QuickDraw GX upon the world in 1994. Chapter 25 covers GX in more detail; in brief, this new printing/color/type architecture does amazing things for fonts. A GX-savvy font has many more symbols than a standard font; some have *two or three* complete alphabets — one for small-capitals printing, one for fancy-swashed capitals, and so on. These fonts can even be typographically smart, automatically kerning themselves; creating typographically correct fractions when you type **1/2**; and, if you want, smartly putting in automatic ligatures (which we'll describe later in this chapter). See Figure 24-8 for an example.

Figure 24-8
When GX fonts are used in a GX-savvy word processor, remarkable things can happen. Here, the fraction was formed automatically; the swashes magically appeared on the letters *e* and *v*; and the ligature in the word *fish* happened all by itself.



Unfortunately, to benefit from all this magical intelligence, you must have *programs* that are GX-font savvy. We say "unfortunately" because this conversion to GX-savviness never really happened; three years after QuickDraw GX appeared, only a handful of programs have been rewritten to harness its power (ReadySetGo, Uniquorn, and Pixar Typestry).

Apparently, the problem boils down to the fact that GX is a Macintosh-only technology. Today's software companies refuse to devote programming effort to technologies that they won't be able to use in their Windows programs. And, in a classic chicken-and-egg scenario, they're particularly unwilling to expend effort for a Mac technology (GX) that only a few people have installed.

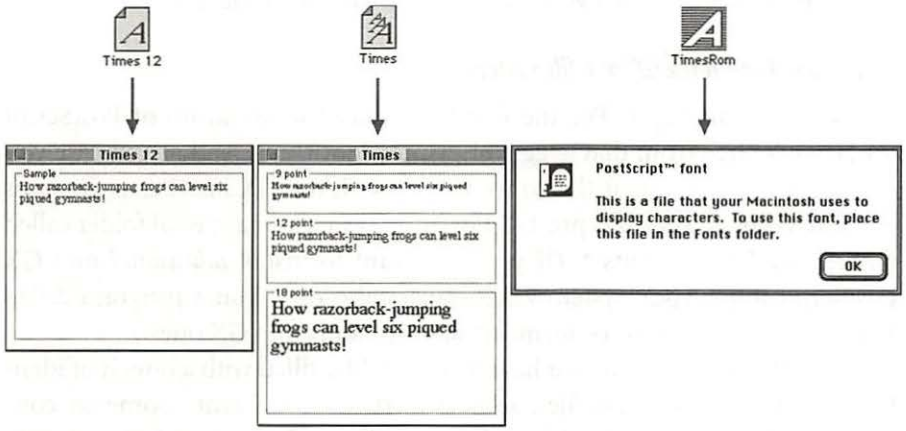
The two GX pseudo-formats

A second obstacle to world domination by GX fonts is GX fonts themselves.

Until GX, there were three kinds of font-file formats littering your System Folder, each with its own icon: screen fonts, TrueType fonts, and printer-font files. If you examine your Fonts folder, you'll see those three different kinds of icons for yourself (see Figure 24-9).

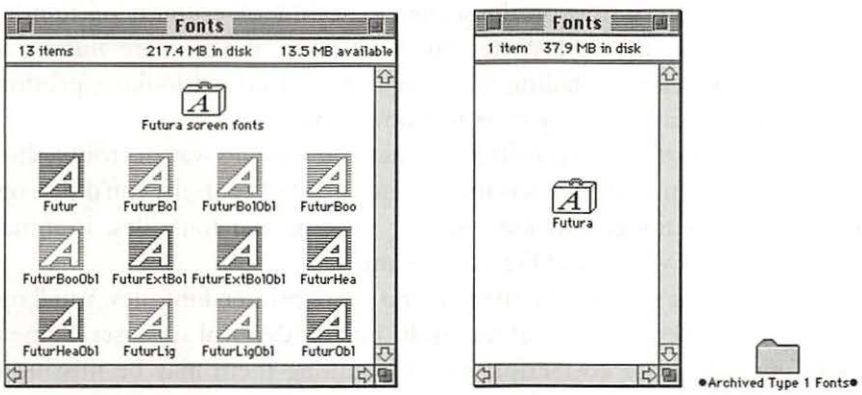
When you install QuickDraw GX onto a Mac already endowed with fonts, a most bizarre transformation occurs behind your back. All your existing font files are *converted* into GX-format suitcases, still sitting there in your Fonts folder. For TrueType fonts, that's not a big deal; you won't notice any difference in them. (Incidentally, the fact that they're now TrueType GX fonts *doesn't* mean, obviously, that they've suddenly sprouted all the extra characters and auto-kerning intelligence of TrueType GX fonts; they've just been converted so that they'll *work* with GX. For the special features, you have to buy special new fonts.)

Figure 24-9
Three kinds of fonts, three reactions to a double-click. On the left, a bitmapped (screen font) icon. Double-click it (in System 7 or later) to view a window where you see what this screen font looks like in its one size and style. Middle: a TrueType font. Double-click its icon to see the type style in three sample sizes. Right: a PostScript printer-font file. Double-click it and you just get an error/help message.



But when it comes to your existing *PostScript* fonts, a much more spectacular event takes place. You'll recall that PostScript fonts are normally split into separate screen and printer files. But when you install GX, all these splintered files, residing in separate folders, are *merged into one.* When it's all over, you see a *single font suitcase* in your Fonts folder. The printer-font files' information is absorbed directly into the *suitcase itself;* the *icons* for the printer files are gone forever (see Figure 24-10).

Figure 24-10
When you install QuickDraw GX, your existing Type 1 PostScript font files in each family, wherever they may be (left), are merged into a single GX font suitcase (right). As a courtesy, all of your pre-conversion PostScript fonts are handily tucked away for you into a backup folder.



Incidentally, these converted fonts will work just fine on your Mac, even when you *don't* have QuickDraw GX installed! Up to a point, anyhow: With ATM 3.7 or greater, they'll look great on the screen and in StyleWriter printouts. You'll have trouble printing them on a laser printer, however, unless it has more than 3MB of RAM (only the expensive ones have more).

What's good about the GX font-file system

Beautiful system, right? For the first time since the invention of PostScript fonts, you're free from that gaggle of printer-font icons. And just in case you change your mind about the conversion to GX, the GX installer is gracious enough to put all your *old,* pre-GX PostScript fonts into a special folder called • Archived Type 1 Fonts •. (If you ever want to install *additional* non-GX PostScript fonts, your System 7.5 installers also offer you a program called Type 1 Enabler. It converts normal PostScript fonts into GX ones.)

When it's all over, then, you have a Fonts folder filled with a bunch of identical-looking font-suitcase files. Some are TrueType GX fonts. Some are converted PostScript fonts. But they all look alike. And if everything goes well, they all *work* alike. And the hassle of where-to-put-what-font-files is a thing of the past.

What's not *good about the GX font-file system*

Making TrueType GX and PostScript GX files look exactly alike in your Fonts folder may seem like a useful, simplifying premise. But it poses some potential problems.

For example, even though the suitcases *look* alike, under the skin they're still two different technologies — TrueType and PostScript. The TrueType fonts still look great on the screen at any size. But the PostScript fonts *still* require ATM for smooth screen display. If you remove ATM GX from your System Folder (or turn it off), therefore, the PostScript fonts will once again look jagged and crummy on the screen. (They'll look crummy on non-laser printers such as the StyleWriter, too.) Likewise, if you were *missing* any printer fonts before installing GX, you'll just get jagged-looking printouts, even on laser printers, and you won't know why.

The worst part of this possibility is that you have no way of troubleshooting! In the olden days, if a certain typeface printed coarsely, you'd just open up your Fonts folder and look among your printer-font files. Eventually, you'd figure out which font file was missing.

But under the GX system, there *are* no more printer-font files. You'll open your Fonts folder and stare at the multitude of identical suitcases. Some are TrueType; some are PostScript; and one among them may be missing the

essential printer-font data. But you'll have absolutely no visual clue as to which is which.

Apple and Adobe have made great strides toward incorporating PostScript fonts into the regular Macintosh operating system — but, by their own admission, they haven't gone far enough. ATM should be built right *into* the system software — and one day it may be.

Or perhaps a new font technology will rear its head (whether that head is ugly, and if so, just how ugly it is, remains to be seen). Adobe and Microsoft have been talking about collaborating on a new font technology, called OpenType, that will basically merge the TrueType and PostScript font formats, allowing you to easily print either kind of font without knowing — or caring — what font format is installed. As a bonus, OpenType fonts could incorporate some of the deluxe typographic features now found in GX fonts. (Don't worry, say Adobe and Microsoft–your old PostScript and TrueType fonts will work fine under OpenType.) But until ATM is rolled into the System or OpenType is implemented, it's still not safe to forget the distinction between TrueType and PostScript fonts, even though they're starting to look exactly the same in your System Folder.

Working with multiple font formats

Today, then, you've got three essential kinds of fonts: bitmapped, TrueType (and GX), and PostScript (and GX). This can be confusing, because you're quite likely to run into fonts of the *same name* in each of these formats!

Can font formats coexist?

We're frequently asked if it's okay to have multiple font formats on the same Mac. The answer is "yes." But for the least trouble and the most safety, you *shouldn't* keep a TrueType and a PostScript font of the same name on the same Mac.

Why screen fonts still exist even with ATM

If ATM consults the printer fonts to decide how to draw the characters on the screen, then you might wonder why a PostScript font has a screen-font portion at all.

ANSWER MAN

My icons don't match yours

Q: ***I wanted to see my three different icon types, like you've been talking about. But I'm not seeing any icons like yours!***

A: Two things may be confounding you. First, you may not be able to find your font icons. For guidance, see "Where Do They All Belong?," later in this chapter.

Second, even when you discover where your font files are lurking, you may not see any icons that match what we pictured. You may



see icons like these, for example:

The first icon we've shown here is a font *suitcase* file. This icon is nothing more than a container for TrueType and screen-font files (or any kind of GX font). Think of it as a little folder. If you double-click a suitcase, it opens into a window that shows the icons we're talking about (as shown in Figure 24-9).

The second and third icons pictured here are indeed PostScript printer fonts. They're just not *Adobe* printer fonts. These fonts come from other companies, and therefore they have different printer-font icons.

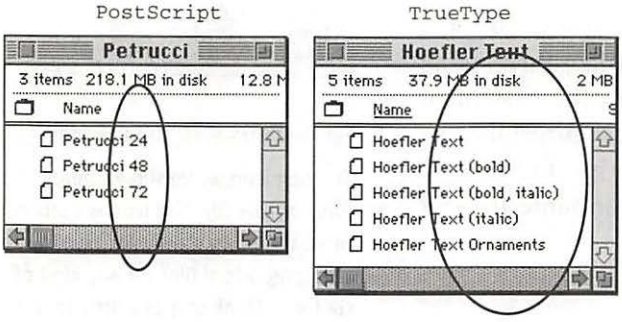
ANSWER MAN

The GX Detective: Telling font suitcases apart

Q: ***All right. You've explained that just by looking in your Fonts folder there's no way to tell TrueType GX suitcases apart from PostScript GX suitcases. But gosh darn it, I need to know! I'm having a heck of a time tracking down a jaggy-printout problem, and I want to be able to tell my suitcases apart.***

A: Actually, there are a couple of ways to know which GX suitcases are which.

The quickest way: Double-click the font-suitcase file. Inside, if ***every single icon inside*** has a point size listed, you're looking at a PostScript font. On the other hand, if there's one icon inside that bears the font's name but has ***no*** point size — or if there are no point-size files at all — it's TrueType. The following illustration should make everything clear.



In the left-hand figure, the icons inside the suitcase have point sizes. Because this is the GX world, that means it's a PostScript font (the ***printer-font*** files have been subsumed into the suitcase itself). The suitcase on the right has ***no*** point-size files, your sure clue that you've got a TrueType GX file on your hands.

And by the way: Here's another way to find out a suitcase file's secret identity. Open it with ResEdit (see Chapter 21). Double-click the SFNT icon. Look carefully at the first four letters of the hexadecimal mumbo-jumbo that appears — it'll say either **typ1** (for Type 1 PostScript) or **true** (for you-know-what).

The answer is that, without at least *one point size* of a screen font, the Mac wouldn't know that you even *have* a font. That font's name wouldn't show up in any of your Font menus. Yes, ATM can handle the display of any point size you select. But *one* point size of each PostScript font must be installed into your system just so it will turn up in the Font menus.

In fact, we can make a good argument for keeping *more* than one point size of each font installed. Whenever you display a font at a noninstalled size, ATM must kick into gear, consulting the printer-font files and drawing the text on your screen. That processing takes time — anywhere between a split second and many seconds, depending on your Mac's speed and the amount of memory you allotted to ATM using its control panel.

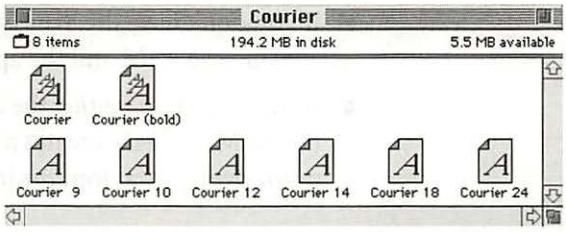
If you set some text in a point size for which the system contains a bitmapped font, however, ATM doesn't kick in at all. It simply throws the ready-made, predefined bitmap onto the screen. You get two advantages: speed and quality of display. (A hand-designed bitmapped font is almost always more attractive than the computer-generated approximation.)

Why screen fonts still exist even with TrueType

In TrueType technology, outline-font and screen-font information are both contained in the same single TrueType file. Therefore, you may wonder why pre-GX TrueType suitcases *also* contain *bitmapped* fonts for the same TrueType typefaces! (See Figure 24-11 for proof.)

We mentioned that using ATM, you *must* install each font into your system in at least one point size. With TrueType, however, you don't have to install *any* screen fonts. You can put just the TrueType file by itself into your System file or Fonts folder, and all your fonts show up correctly in your Font menus and look good at any size.

Figure 24-11
If you double-click a pre-GX font suitcase that comes with System 7, you'll discover something odd. Yes, there are TrueType font files inside; in this example, they're called Courier and Courier (bold). But there are also bitmapped screen fonts, each in one particular size!



As with ATM, the reason to keep screen fonts around even with TrueType is speed. Without installed screen fonts, both type technologies produce a delay when you change type sizes. But ATM uses a memory cache to store recently built font bitmaps. TrueType must generate font shapes afresh each time you change a font or font size, so (without screen fonts installed) it tends to be slower.

Finally, as with PostScript fonts, a bitmapped screen font on the screen generally looks better than its TrueType-computed equivalent (see Figure 24-12). Be careful, though: Installed-size screen fonts and TrueType- (or ATM-) computed fonts give different line breaks in the same document.

Figure 24-12
The same font — Palatino — in its bitmapped and TrueType-generated incarnations. Note that the line breaks in the boldface version are different when no screen font is installed.

It is better to keep your mouth shut and be thought a fool than to open your mouth and prove it.

It is better to keep your mouth shut and be thought a fool than to open your mouth and prove it.

It is better to keep your mouth shut and be thought a fool than to open your mouth and prove it.

It is better to keep your mouth shut and be thought a fool than to open your mouth and prove it.

It is better to keep your mouth shut and be thought a fool than to open your mouth and prove it.

It is better to keep your mouth shut and be thought a fool than to open your mouth and prove it.

Which font version is that?

For best results, install into your System Folder *either* the TrueType version of a certain font *or* the ATM/PostScript version. It's perfectly OK to use the TrueType Times, the PostScript Palatino, and so on; just avoid having the TrueType and the PostScript Times *both* installed.

Which font you get on the screen

If you do, however, have both formats installed, the Mac selects which type to display on the screen as follows:

- If there's an installed bitmapped screen font in the appropriate size, that's what you see.
- If there's no screen font, the Mac constructs the screen font using the TrueType version.
- If you don't have the TrueType version, you get the ATM-created version (*if* you have ATM and the appropriate PostScript printer-font files).
- And if you have *neither* the appropriately sized screen font nor TrueType nor ATM, the Mac creates a bitmapped screen font based on whichever point sizes of that font *are* installed, just as the very first 1984 Macs did.

Which font you get on a PostScript printer

Printing to a PostScript printer is another story, however. Keeping track of which type you're actually getting on paper isn't easy; in fact, we found the following information surprising:

- Regardless of the type of technology used for the screen display, you get the printer's built-in version of the font, if available, on the printout.

  Therefore, *even* if you install (and are using) TrueType Times on your Mac, you get the *PostScript* version of Times in the printout!

  This weirdness is true regardless of whether it's a built-in printer font (Times, Helvetica, Courier, and so on) or a PostScript font you've downloaded to the printer (see Chapter 25 for details on downloading fonts).
- If there's no PostScript version of the font in the printer, only then does it print the TrueType version of the type.
- If the font you're printing *isn't* a PostScript or TrueType font, then it's a regular old bitmapped screen font. It prints out at 72 dpi, exactly as it appears on the screen.

Which font you get on a non-PostScript printer

The font-preference order is *different* if you're printing on a QuickDraw printer, such as a StyleWriter, DeskWriter, ImageWriter, or non-PostScript LaserWriter.

- The Mac first tries to print using the TrueType outlines, if it's indeed a TrueType font.
- If it's not a TrueType font, the Mac attempts to use ATM. It checks to see if you're using a PostScript version of the font.
- If you're using neither a TrueType nor a PostScript/ATM font, then once again the Mac prints whatever's on the screen, as a 72 dpi bitmap.

Hinting

Earlier in the chapter, we mentioned that Adobe kept the secrets of Type 1 PostScript fonts close to its chest for years (up until the day Apple released TrueType). There was another kind of PostScript font, though — an inferior kind known as Type 3. Adobe *always* made available the technological specs for Type 3 to the world at large. There are two primary differences between the superior Type 1 fonts and Type 3 fonts: Type 3 fonts don't work with ATM, and don't offer *hinting.*

The Mac screen is composed of 72 comparatively large square dots per inch. When the Mac attempts to display a TrueType or ATM/PostScript character on the screen, it has to decide which dots to turn black. In the Mac's head, it superimposes that character's outline (as it's stored in the font file) over the grid of Mac screen dots. The usual rule is that the Mac turns each pixel black whose *center* falls inside the outline of the letter (see Figure 24-13).

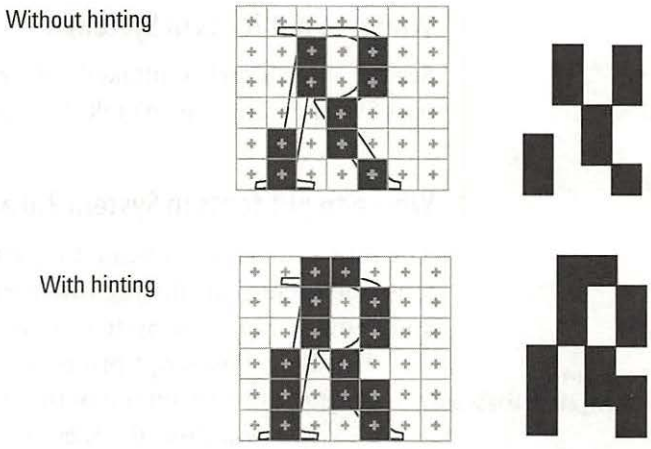


Figure 24-13
How hinting works for display in small point sizes on the screen. At top, the Mac makes a pixel black only if its *center* falls within the outline of the font. The result is barely recognizable as an italic capital R (top right). If the hints tell the Mac to fill in a couple of extra pixels (bottom left), the result (bottom right) is much more legible.

Unfortunately, this scheme can leave some holes in the letter, also as shown in Figure 24-13. Because of this, the font designer has to build in some special programming instructions for each font, telling the computer how to fill in some of those missing dots. These instructions are the *hints.*

Even at finer resolutions, such as the 300 or 600 dpi of the LaserWriter, hinting assists with legibility at very small point sizes. On the other hand, imagesetters (such as a Linotronic) have such a high resolution — 1,200 or 2,400 dpi — that hinting doesn't make any difference to the final product.

WHERE DO THEY ALL BELONG?

Now you know the techie differences between different font formats; and, we hope, you know how to identify each kind of font file. But to make them work — and print smooth letters on the screen and on paper — you must know where to stick them.

We'll assume that you know how to spot a *suitcase file* — akin to a folder for font files. You may, for example, store all the different bitmapped screen versions of a font into a single suitcase for convenience. Then there are the *printer font* files, required for each style of a pre-GX PostScript font.

Depending on which System version and font utilities you use, there are *four* places each component may be stored — in the System file, the System Folder, the Extensions folder, and some other folder of your choosing. For beginners in particular, keeping track of all these rules-of-placement is like juggling while standing on your head.

Here's the exact rundown.

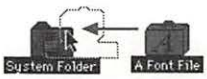
Where to put fonts in System 6

See the "Mac Secrets Outtakes" folder on your CD-ROM; almost nobody still uses System 6, so we won't take the page space up here.

Where to put fonts in System 7.0 and 7.0.1

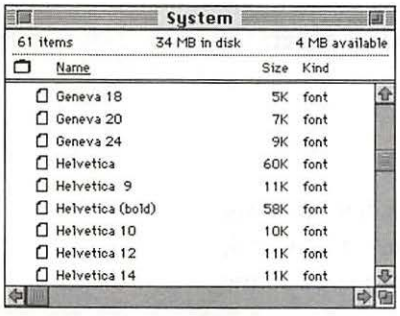
The font-installation scheme for System 7 was a breath of fresh air to Mac fans who spent years fussing with System 6's Font/DA Mover program to add and remove fonts. In System 7, you can install *any* kind of font file — TrueType, PostScript printer font, suitcase, or screen font — simply by dragging its icon on top of the System Folder *icon* (see Figure 24-14).

Figure 24-14
Installing a font file in System 7.



When you drop the files, or even a *folder* containing font files, onto the System Folder icon, the Mac asks you to confirm that you want the fonts installed properly. Click OK.

Figure 24-15
The opened System file window. Choose By Icon from the View menu to see their distinctive icons — but you can also tell TrueType fonts apart from their fixed-size counterparts by the file names: Only screen-font files have point sizes.



Screen fonts and TrueType fonts

Screen fonts and TrueType fonts get installed into the System file. If you drag a suitcase file onto the System Folder icon, the Mac strips away the suitcase itself and puts its contents (the individual font files) into the System file. You can even double-click the System file icon to open it into a window (see Figure 24-15). There, among your sound files, are all your screen and TrueType fonts.

This double-click-the-System-file trick is how you *remove* fonts. Open the System file window and then drag these fonts to the Trash. (You can't add or remove screen or TrueType fonts if any programs — besides the Finder — are running.)

PostScript fonts

The *screen-font* portion of PostScript fonts, like any screen fonts, gets stored in your System file automatically by the Mac. The *printer-font* files for a PostScript font go into the Extensions folder, of all things. Here again, the Mac will do the placing for you if you drop the printer files on top of the System Folder icon.

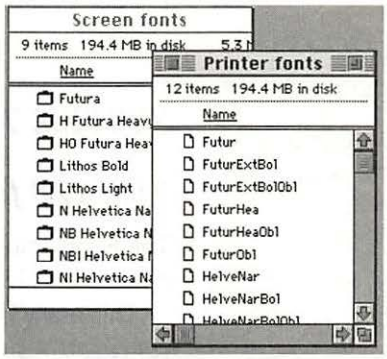
Everything still works if you leave the printer fonts loose in the System Folder, however (outside of the Extensions folder).

If you have Suitcase

With a font-management program like Suitcase or MasterJuggler installed, you can keep your fonts in *any* folder. However, if you use ATM, you must keep the screen fonts and their matching printer fonts *in the same folder together* (see Figure 24-16).

Warning: Outdated versions of Suitcase are among the most frequent causes of mysterious system crashes and other headaches. (Updates are available from online services such as America Online or from Symantec itself.)

Figure 24-16
This folder arrangement won't work with Suitcase and ATM. The printer fonts have to be in the same folder as the screen fonts, or ATM won't work.



Where to put fonts in System 7.1 and later

The juiciest new feature of System 7.1 for everyday Mac fans was the Fonts folder. It stores *all* types of font files: screen fonts, suitcases, TrueType fonts, and printer-font files alike.

This scheme is more than convenient and simple. It also offers two profound benefits:

- Incredibly, you can now add fonts to your system *while programs are running*. However, these fonts won't show up in the Font menus of those programs until you relaunch them.
- Fonts are installed or removed *instantly*. You no longer have to sit and wait while the "Now moving files" message dominates your screen. (Fonts still take a long time to get trashed, however.)

GX fonts, screen fonts, TrueType fonts, PostScript fonts

All of this stuff goes into the Fonts folder. If you drop any font-file icon on top of the System Folder icon, as with other versions of System 7, you're asked if you want the Mac to store them in the appropriate place for you. Click OK.

As in previous incarnations of System 7, however, you *can* still install screen and TrueType fonts into the System file itself. Likewise, PostScript

printer fonts can still go into the Extensions folder *or* the outer level of the System Folder.

If you have Suitcase

Yet again, Suitcase lets you keep your fonts anywhere on any drive. Our previous words apply: Keep like-named screen and printer fonts in the same folder.

But in many ways, the necessity of font utilities such as Suitcase waned with the advent of System 7.1. Two of the problems Suitcase and MasterJuggler were designed to circumvent — System Folder clutter and hassle of installation — became things of the past.

But you still need a utility to manage *sets* of fonts. For example, you can use Suitcase, MasterJuggler, or ATM Deluxe to create one set for a newsletter project, a second for a flyer, and so on. You can load or unload a set at any time.

SYSTEM 7 FONT SECRETS

That 128-font limit

The Fonts folder is all well and good, but it does have its limit. You can put no more than 128 font suitcases into the Fonts folder at a time.

This really isn't much of a limit at all, however. The operative words are "*font suitcases.*" A suitcase file can have as many TrueType fonts and screen fonts in it as you care to pack in! You could put 50 TrueType fonts in *one* font suitcase, which would only count as *one* file toward the Fonts folder's limit of 128.



To add font files to a suitcase, drag them onto it. You can even add an entire *suitcase* to a suitcase.

How to create a new font suitcase

Without a font utility such as Suitcase II, how are you supposed to create a font suitcase in System 7?

You take an *existing* font suitcase (there are plenty in your Fonts folder), duplicate it, open it, trash its contents, and rename it. Then add your own choice of individual font files.

The Font/DA Mover

The Font/DA Mover wasn't wiped off the Earth with the invention of System 7. In fact, this homely little program was actually upgraded to work *with* System 7. But the latest version, 4.1, is no longer included with each Mac. You can get it from a user group or from an online service.

And what's it good for? Believe it or not, it's *not* good for installing or removing fonts! In fact, the Mac won't *let* you use the Font/DA Mover to install or remove fonts from the active System file.



You can use Font/DA Mover, however, to transfer fonts or desk accessories to and from suitcase files (or System files that aren't currently running the Mac). You can also use it to create new, empty (or filled) suitcase files.

WHY TEXT PRINTS WITH JAGGIES

Conventional wisdom has it that jagged text is a thing of the past in Macintosh printouts. Outline fonts (courtesy of TrueType and ATM) have completely eliminated the need to put up with "jaggies," whether your printer is a PostScript laser printer or a QuickDraw printer (such as a StyleWriter or DeskWriter). Here are the only possible reasons that your printouts might contain stairstepped text.

It actually is a bitmapped font

Maybe you are, in fact, actually *using* a bitmapped font — some shareware font, for example (or a city-named font from System 6). As we mentioned at the beginning of this chapter, bitmapped fonts aren't *outline fonts* capable of looking great in any size. Get ATM and some PostScript fonts. Or, start using TrueType fonts.

It's a PostScript font and you don't have the printer files

If you *are* using a PostScript (non-city-named) font and you're getting jaggies in printouts, you may be missing the *printer-font files* that go with the font you're using. (Remember that a PostScript font has two parts: The screen font and the printer font.)

You also get jaggy printouts of PostScript fonts if you put the printer fonts in the wrong *folder*. See "Where Do They All Belong?" on the preceding pages for specific information.

You'll never have this problem with the built-in LaserWriter fonts (Times, Palatino, Helvetica, and so on). But if you're using a "downloadable" font, a PostScript font you installed yourself, then fetch the printer portion from the font's original installation disk.

It's QuickDraw GX

If you have GX, there's only one conceivable explanation for jaggy printouts: You're trying to print a PostScript font, which you already owned, that was converted to GX format — and you didn't have all the printer fonts to begin with.

ANSWER MAN

Sucking out your favorite fonts

Q: ***There's this cool font called Mishawaka, but it only shows up in my Eudora program. How can I use it in all my other programs like any normal font?***

A: Man, is this a sneaky one, devised by Eerk Hofmeester, our favorite reader in the Netherlands. This'll work *anytime* you've got a program with its own embedded, private fonts.

Make a copy of the program (we'll use this Eudora example). Use Get • Info Extreme, included with this book, to change the copy's ***type and creator codes*** to ***FFIL*** and ***DMOV,*** respectively (see Chapter 16 for instructions and explanation). Lo and behold: Eudora now turns into a font suitcase!

Open your own Fonts folder and duplicate one of the font suitcases inside. Drag the duplicate suitcase to the Desktop, open it, and trash the fonts inside, leaving a hollow suitcase shell.

Now just double-click your Eudora copy/font suitcase file to open it. You'll see the fonts there. Drag them into your suitcase shell. Close the suitcase-shell window, drop it onto your System Folder icon to install it, and throw away the Eudora copy. You've now got its font installed normally in your system!

Reinstall the entire font in all its multiple-icon glory, and then use the Type 1 Enabler program (from your GX installer disks) to convert it to GX format.

You're printing from a painting program

As explained in Chapter 20, painting programs such as Photoshop and ClarisWorks' Painting window store *everything* as a bitmap, no matter what kind of fonts or ATM you have. Text you've typed into a painting program prints out as a bitmap on any printer.

StyleWriters: You've rotated text

Even if your type — whether TrueType or PostScript with ATM — usually prints out fine, you may get jagged printouts from QuickDraw-style printers (such as StyleWriters) if you've rotated the text on the screen. For example, ClarisWorks' drawing window lets you freely rotate text — but the printout won't have smooth type unless you use a PostScript laser printer.

StyleWriters: You don't have ATM

Even if you're using PostScript fonts (that is, fonts whose names *aren't* city names), you still get jagged printouts unless you install ATM.

STYLE VARIATIONS

From the very first Macintosh model, you could create an italic or bold version of any font. In fact, you could also create a number of less-attractive variations: underlined, outlined, shadowed, or any combination of these.

Style variations for bitmapped fonts

If you were reading about this topic in 1984, there'd be nothing much to read. The Mac uses a built-in algorithm to create these so-called *derived styles.* It slants the letters a little to create italic. It adds a couple of pixels on either side of the letter to create bold. It does everything, however, at 72 dpi (see Figure 24-17).

In real typesetting, however, a completely different set of type is used to represent italic and boldface versions of fonts. Related, but different; every charac-

ter has been designed individually in each style variation, as shown in the bottom example of Figure 24-17.

Figure 24-17
At top, what 12-point Palatino Roman looks like on the screen. In the center, the Mac's version of italic — it's simply a slanted version of the Roman version. At bottom, a true Palatino italic. As you can see, it's actually a completely different typeface.

Be careful what you wish for. You might get it.

Be careful what you wish for. You might get it.

Be careful what you wish for. You might get it.

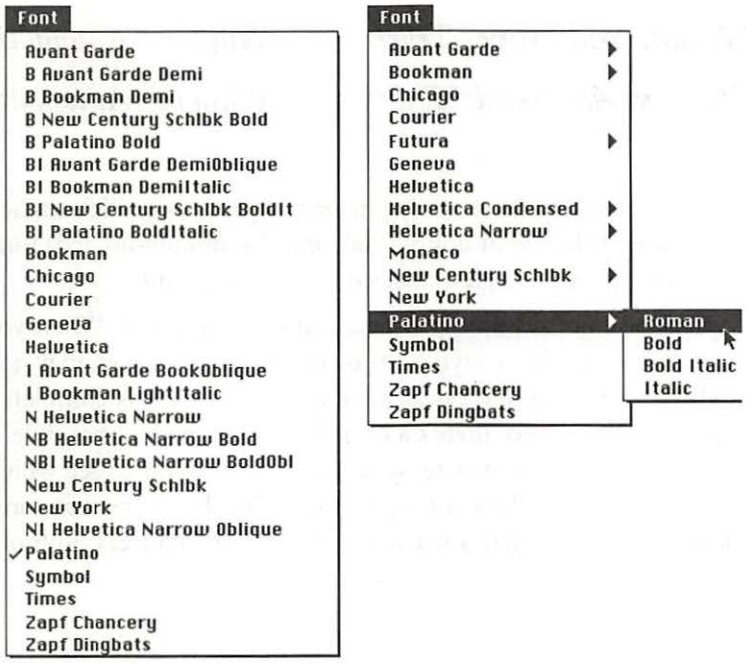
Style variations for PostScript fonts

Each PostScript font comes with several screen fonts: One each for bold, italic, bold italic, and sometimes more. If all of these styles are installed, a few interesting things happen:

- Your Font menus get long and disorganized. For some reason, font companies give horribly inconvenient names to these style variations. Adobe doesn't call it *Times Italic.* It calls it *I Times Italic!* (The I prefix, of course, stands for Italic.)

  As a result of the superfluous *I* at the beginning of the name, the italicized font's name isn't alphabetically adjacent to Times Roman, as it should be. Instead, it's up in the *I*s. Multiply the problem by *B Times Bold* and *BI Times Bold Italic,* and multiply that by 30 fonts, and you'll see what a poorly designed naming scheme this is (see Figure 24-18).

Figure 24-18
A typical font menu, as destroyed by various styles of the same PostScript fonts (left), and as repaired by WYSIWYG Menus.

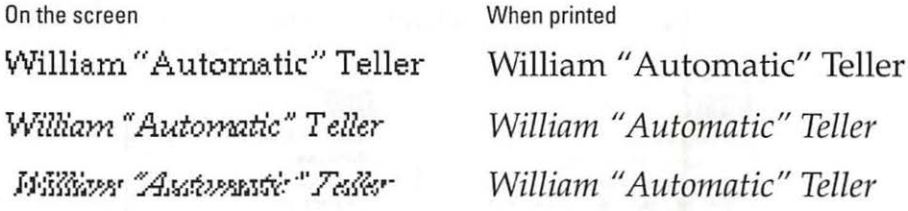


Thank goodness for WYSIWYG Menus, part of Now Utilities (included with this book). It consolidates all the separate styles into shorter, simpler Font menus, as shown in Figure 24-18. See Chapter 34 for full instructions. (Other programs, such as Adobe Type Reunion, do the same thing, but have a greater reputation for causing extension conflicts.)

- If you highlight some normal, upright Palatino (that is, Palatino Roman) and choose Italic from the Format or Style menu, the Macintosh is smart enough to use the I Palatino Italic typeface, if one is installed. In other words, it doesn't simply slant the letters of Palatino Roman. It actually substitutes *another font entirely.*

  This feature can have some unexpected results. When the Mac displays the I Palatino Italic font on the screen, for example, the *computer* doesn't think it's displaying an italic font. It just thinks it's displaying a regular, unstylized font. Therefore, you're allowed to choose the Italic command *again,* and you'll get a *double*-italicized font! (See Figure 24-19.)

Figure 24-19
The hazards of double-stylized text. On the left: from top to bottom, you see the Roman version of the font, the authentic italic font, and then the authentic italic with the Mac's Italic command applied. On the right: The resulting printout. Of course, there's no such thing as double italic, so the third line prints the same as the second.



Fortunately, there's only one *printer font* designed for italics in the typical font. When your double-italicized (or double-bolded) font prints, then you'll just get a single-italicized (or -bolded) font.

This second example proves an interesting point. When you're working with PostScript fonts, stylized text you see on the screen may not print out as stylized text. Your success at printing stylized text is completely dependent upon whether or not there's a *printer font* designed in that style.

Look in the appropriate System Folder location to see which style variations you actually *have* for a given font. But be aware that some fonts don't have *any* stylized versions. The standard Zapf Chancery built into office laser

printers, for example, comes in only one style. You *can* apply styles to it on the screen. But because there's only one printer font (in this case, built into the typical PostScript printer), you only get one style of printout, as shown in Figure 24-20.

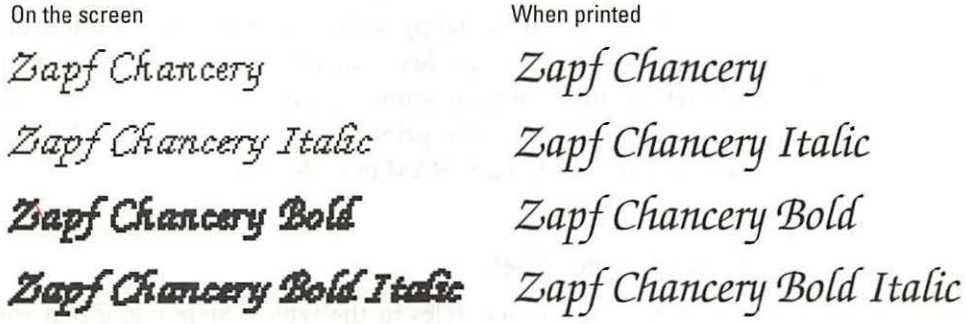
How to apply bold and italic

When it comes to PostScript fonts in a word processor, we're often asked which is the better procedure: (1) type in plain Futura (for example) and apply the *Bold* command to it, or (2) use the Futura Bold *font* instead. Answer: The printed result is generally the same.

On one hand, using plain Futura and applying the Bold command seems superior. That way, if you send your document to somebody who doesn't have your fonts, bold will still be bold. (If you had used Futura Bold instead, your recipient would have seen *everything* as nonbold.) On the other hand, if you apply bold to plain Futura, and you don't *have* the FuturBol printer font on hand, then you'll be deceived; you'll see bold on the screen, but won't get it in the printout. If you subscribe to *that* reasoning, you'll choose the Futura Bold font from the Font menu to begin with.

You only *have* that choice to make for bold and italic, by the way. If you want Futura Demi, or Futura Condensed, or whatever, you *have* to choose those as separate fonts.

Figure 24-20
What you see on the screen (left) won't print unless you have a PostScript printer font for *each* style variation you used on the screen. (There aren't *any* style variations for the Zapf Chancery font unless you purchase the full family from Adobe, so all four printouts, on the right, look the same.)



Other styles and Multiple Masters

There's more to life than bold and italic, of course. Depending on the font you're using, there may be as many as six or eight different "weights" (thicknesses). For example, Futura, an Adobe PostScript font, comes in three different shades of bold (Bold, Heavy, and Extra Bold).

Generally, you can figure out what the style names mean: Roman is the "regular," upright, normal-weight typeface. *Oblique* is a slanted face reminiscent of italic (but in this case a type designer — rather than the Mac — did the slanting), just as *demi* is a variant of bold. In fact, in order of boldness, typical fonts are named Ultra Light, Extra Light, Light, Roman, Medium, Demi, Bold, Extra, Black, and — for the really fat look — Ultra Bold.

If you're a real font nut, or a professional graphic designer, you may want to get into the expensive, but fascinating, realm of Adobe's *Multiple Masters* fonts. These are special core fonts that come with a program that you can use to fatten up, skinny down, condense, expand, or slant the characters in any way you want — and save the result as a new font. You can make as many font variations as you wish, each with different thickness and spacing; the program names your different variations with tacked-on numbers in your Font menus. (In case you're not nuts about font names such as "MyriaMMIt_658 wt 342 wd," you'll be happy to hear that the new version of Adobe Type Reunion — called Type Reunion Deluxe — lets you give your Multiple Masters creations normal-sounding names.)

Don't even think about printing one of these fonts unless your PostScript printer has 3MB or more RAM in it, though.

Other derived styles

There are a few other styles in the typical Style menu that we haven't said much about: Underline, Shadow, and Outline.

These styles aren't like the bolds and italics we've been discussing. These styles *don't* each require a printer font in your System Folder, and they *will* print just as they appear on the screen.

That's because the Mac generates these specialized styles itself (the font designer has nothing to do with it) by modifying the PostScript code that it sends to the printer. Be warned: The resulting printouts may not look much like the screen representation, especially in Shadow style. (The printed version actually creates a *second* complete set of type, slightly offset from the first, printed in a light gray.)

We encourage you not to use these font variations much. We especially urge you to forget about the Underline style (as we'll explain later in this chapter).

MACINTOSH SECRET

YOUR SECRET SYMBOL FONTS

Apple hasn't lost its sense of whimsy, even after all these years. Buried in your Geneva and New York fonts are a host of great cartoon symbols from the Mac's original 1984 fonts. Actually, it's all the same symbol; here's what it looks like at 9, 10, 12, 14, 18, 20, and 24 points:

Geneva:

New York:

That New York 10- and 20-point symbol looks neat when you run a bunch of them together:

So, how come you've never seen these symbols? Because they don't show up in Key Caps, and they can't be typed. Instead, you need a program that can show you *every* character in the font — such as the Insert Symbol command of Microsoft Word, or the shareware program PopChar, or ResEdit. Poke around enough, and you'll locate the character (which looks like Ÿ in any other font); from that point, you can copy and paste it into your important documents.

These are truly phantom symbols, by the way — if you try to print them, enlarge them, or even convert them to outlines in a PostScript drawing program, they vanish! All that's left behind is the boring Ÿ character!

Why TrueType styled text looks lousy

On the screen, the Mac creates italic and bold styles by slanting or thickening the Roman version. In PostScript fonts, it only does this crude stylizing *if* you don't have an installed PostScript font that's been custom designed for italic or boldface.

TrueType is a different story. Even if you *have* a TrueType font installed for Times (Italic), for example, you won't see a true italic Times on the screen! You see the Mac's standard, crude slanted-Roman version.

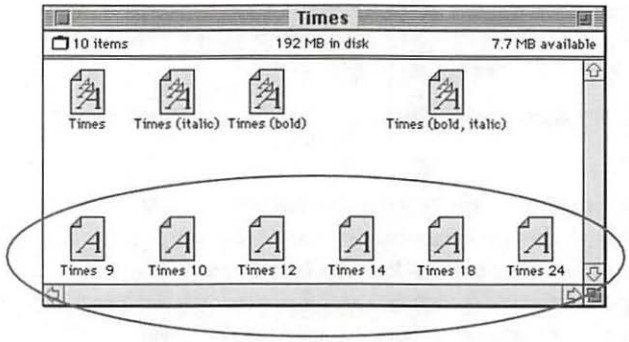
The key, it turns out, is the bitmapped screen fonts you have installed. As we described earlier, these fonts are generally desirable because they appear faster on the screen and look better (than a TrueType outline-generated font).

But it's these same screen fonts that *prevent* the Mac from displaying TrueType's true stylized variations! Remove *all* screen fonts for a certain font, leaving only the TrueType file (in your Fonts folder or System file), and you see the TrueType style's true colors (see Figure 24-21). Ah, but there's the rub: Without the screen fonts, the *unstyled* (Roman) TrueType font looks crummy. Unfortunately, you can't have this cake and eat it too.

Figure 24-21
The TrueType catch-22. Stylized text looks good only if you take out all the fixed-size fonts (bottom) from the System Folder. And yet if you do that, regular text takes longer to appear on the screen and looks worse.

Screen fonts and TrueType: *There are none so blind as those who will not see.*

TrueType only: *There are none so blind as those who will not see.*



THE NON-TYPOGRAPHER'S GUIDE TO TYPE

Typography is an art and a science. The best Mac typesetters, naturally enough, are people who used to do traditional typography and have adapted to the Mac's flexibility.

Still, almost anyone can improve the look of documents by boning up on some of the basics of typography and design. This information may be more than you want to know if you simply want to get your memos typed. On the other hand, your Mac offers you the tools to *create* great-looking, professional documents; with very little effort, you can make your documents look as though they've been published.

For additional tips on great-looking, self-published documents, see our page-layout guidelines in Chapter 18.

Proportional fonts

Here's one of the most important differences between typewriters and Macs: Most typewriters uses *monospaced* type. That is, every letter is exactly the same width, be it an *I* or a *W*.

But each letter in a Mac font is exactly as wide as it needs to be. This fact actually makes life considerably more complicated, as you'll read in some of the items below. It also, however, makes text much easier to read.

There *are* two standard Mac fonts that are monospaced like a typewriter's: Courier and Monaco. As shown in Figure 24-22, every character in such a font is the same width.

Figure 24-22
In a monospaced font (Letter Gothic used here), every symbol and letter is exactly the same width. Even when it looks goofy, as with the apostrophe.

```
Wide, wide world
Pig's-hair muffs
```

Suit yourself, but we find monospaced fonts (especially Monaco) ugly. Your documents will definitely *not* be mistaken for typeset pages if you use one of these fonts.

However, monospaced fonts have their place in the world. For instance, many of the less-graceful computers in the world (DOS systems, for example) tend to use monospaced fonts *all the time.* If you ever exchange files with one of these computers, or if you download text from an online service or the Internet, eventually you'll probably run into a file that looks like Figure 24-23 when you open it in your word processor.

Figure 24-23
When you open an IBM or modemed file in your word processor, nothing looks aligned.

Tevye.....Bill McIntosh.....AEA
Golde, his wife.....Jean Ogdenberg.....AFTRA
Chava, his daughter..Leslie Skolnik.....AEA
Perchik.....Michael R. Hausman.....Non-Equity
Grandma Tzeitel.....Tracy Ellen Puge.....AEA

What happened? Your word processor probably prefers to use a nice proportional font. So, it took what *used* to line up nicely (when it was in some monospaced font) and substituted a font in which the characters are all different widths . . . and presto, nothing lines up!

In these cases, just change the font to one of your ugly old monospaced fonts, such as Courier, and you get the nicely aligned look of Figure 24-24.

Figure 24-24
Courier makes everything line up.

```
Tevye.....Bill McIntosh.....AEA
Golde, his wife.....Jean Ogdenberg.....AFTRA
Chava, his daughter..Leslie Skolnik.....AEA
Perchik.....Michael R. Hausman.....Non-Equity
Grandma Tzeitel.....Tracy Ellen Puge.....AEA
```

A monospaced font looks better in tables of numbers, too.

Spaces between sentences

Here's a rule you actually have to unlearn from your typing classes: Type *one* space after a period (on a Mac).

This principle follows from the fact that the Mac uses proportional type. Not only is every *letter* the correct width, but so is a *space* — it's already wider than the typical letter, saving you the trouble of putting *two* spaces after a period. If you do put two, the gap between sentences will be too big. (Use SmartKeys, included with this book, to zap them for you automatically. See Chapter 34.)

Don't use underline style

There are two reasons not to use underlining in Macintosh documents. First of all, the underline tends to look thick and gawky, and it slashes right through the descenders in your font (the parts that stick down, as on a *p* or a *g*).

The more important reason: Underlining is a decrepit workaround, invented for the benefit of typewriters. It was used to denote emphasis. But real publishers, for years, have used *italics* for emphasis — with much more success. (When's the last time you saw anything *underlined* in a book or magazine?)

But your Mac can do real italics. You may also want to use **boldface** in some situations where you'd be tempted to use underlining, such as character names in a script.

As a matter of fact, here's an even better secret for getting emphasis while still being classy: Use *small caps.* This special type style uses all capital letters, but what would have been lowercase letters are set at a smaller size, as shown here:

COTTER & KIMMEST
Attorneys at Law
125 TAYLOR STREET
SAN FRANCISCO, CA 94108

Most word processors and all page layout programs offer the small caps option in their formatting menus or dialog boxes. (ClarisWorks 4 still doesn't; in a pinch, though, you can always simulate small caps by simply using all capital letters, making the initials a point or two larger.) You can also use small caps to make your publications more professional; an abbreviation such as A.D. won't stick out like a sore thumb if you set it in small caps rather than regular caps.

If you *must* use the underline style — if your art director demands it, for example — consider leaving letters with descenders *un*-underlined, as shown in Figure 24-25.

Figure 24-25
If you must use underlines, consider omitting characters with descenders from the Underline style.



Use tabs, not spaces

Having just read about monospaced and proportional fonts, you'll understand this principle: When you're trying to line up text, *don't* do it by pressing the spacebar! Text aligned using spaces to separate chunks of text *does not* look the same in printouts as it does on the screen, as shown in Figure 24-26.

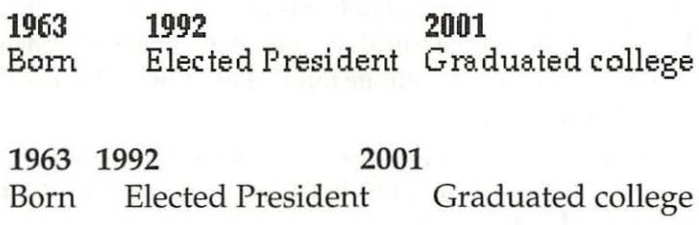
Admittedly, learning how to use tabs in your particular word processor involves $4\frac{1}{2}$ more minutes of learning than typing spaces does. But it will pay off in spades.

Em dashes

An *em dash* is a long dash — like this.

Because a typewriter can't type any shape wider than your typical letter, years of typing teachers have instructed you to imitate an em dash by typing *two* hyphens -- like this. But a double hyphen is about as good an impersonation of a proper typographical em dash as Budget Gourmet is for a wedding dinner.

Figure 24-26
If you try to align columns by typing a bunch of spaces in between phrases, you shall reap what you sow. Spaces are notoriously narrower in printouts than they are on the screen.



To produce a true em dash, type a hyphen while pressing Shift-Option. (Our little Secret: Because we use em dashes in this book a lot, we use SmartKeys, included with this book, to convert our double hyphens automatically.)

Usage: Use an em dash when there's a halt in the flow of the writing. "She ran to the edge of the cliff after him — but it was too late." Derivation: An *em* is a typographer's term (and a darned useful Scrabble word) that refers to the width of the capital letter *M* in a particular typeface.

En dashes

There's yet another kind of dash, not as short as a hyphen nor as long as an em dash. It's called an *en dash.* You produce the en dash by typing a hyphen while pressing Option.

Usage: Use an en dash to indicate a stretch of numbers or time. "See pages 79–80." Or "Reception: 7:30–9:00 P.M. Or "Years unemployed: 1988–1990."

Derivation: An *en* is another typographer's term. As you guessed, this one refers to the width of the capital letter *N* in a particular typeface.

Special spaces

Those special variants of dashes actually come from the world of typography. There are also special *spaces.*

For example, there's the *nonbreaking space.* This kind of space looks just like an ordinary space. But a nonbreaking space *doesn't end a word!* If you put a nonbreaking space between the words *New York,* these two words will always appear on the same line (and, therefore, on the same page).

To create a nonbreaking space, type a space while pressing Option.

Leading

It rhymes with sledding. *Leading* is line spacing, as in single-spaced or double-spaced. But in the world of computers, single-spaced and double-spaced text are only two of an infinite number of settings. There's 1½-spaced. Triple-spaced. And so on.

In fact, most word processors can make these adjustments in much finer increments — in *points,* just like type. (A point is a typographical measurement equal to 1/72 inch.)

Leading measurements are expressed, among professionals, as "ten on twelve." They're saying that the *font* size is 10-point, and that the *leading* is 12-point. You can do the math: There's two points' worth of blank space between the lines.

In Word 5 and 6, you control the line spacing by selecting text and choosing Paragraph from the Format menu. In ClarisWorks, MacWrite Pro, or WriteNow, there's a line-spacing control right on the ruler; by clicking, you increase the leading of the selected text in increments of half or whole points. Figure 24-27 shows a few examples of leading in action.

Figure 24-27
Four degrees of separation. These four examples show different degrees of leading, *none* of which are actually single-spaced or double-spaced. They're all in-between gradations.

A marvelous bird is the pelican.
His mouth can hold more than his belican.
He can hold in his beak
Enough food for a week
I'll be darned if I know how the helican.

A marvelous bird is the pelican.
His mouth can hold more than his belican.
He can hold in his beak
Enough food for a week
I'll be darned if I know how the helican.

A marvelous bird is the pelican.
His mouth can hold more than his belican.
He can hold in his beak
Enough food for a week
I'll be darned if I know how the helican.

A marvelous bird is the pelican.
His mouth can hold more than his belican.
He can hold in his beak
Enough food for a week
I'll be darned if I know how the helican.

As you can imagine, the leading for your text has a huge effect on the psychological impact of your text, on its readability, and (of course) on the length of the document.

Tracking

If leading is the control of *vertical* spacing of your text, then *tracking* is a measure of *horizontal* spacing. (*Kerning* is slightly different; see the next section.)

In page-layout programs, such as PageMaker, there's an actual tracking control. It's measured in plain English: Tight, Loose, and so on (referring to how closely the letters are packed in). See Figure 24-28.

Figure 24-28
Using PageMaker's Tracking command, you can create loose, normal, or tight letter spacing (from top to bottom in this figure).

"It's a little loose," he said tightly.
"It's a little loose," he said tightly.
"It's a little loose," he said tightly.

In Word, you can achieve some control over tracking; select some text, choose Character (or Font, in Word 6) from the Format menu, and use the Condensed or Expanded (or Character Spacing) controls. In MacWrite Pro, it's the Character Spacing command in the Style menu. In other word processors (such as ClarisWorks), you may not have any tracking control at all.

That's OK; tracking is a rarefied art. Except for commercial type (such as advertisements or newsletters), there's little reason to mess with the tracking of your text.

TRUE FACT

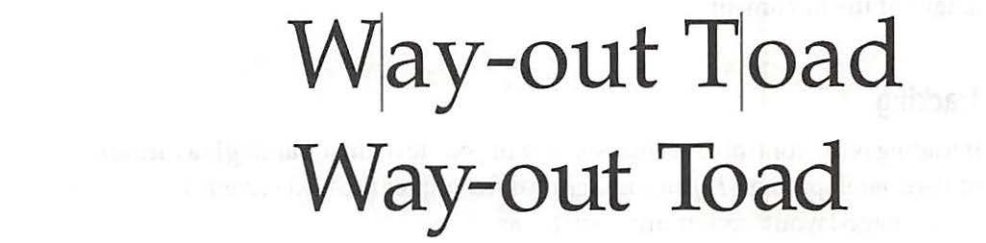
WHERE LEADING CAME FROM

Leading is so called because of its origins in the world of movable typesetting. Back when every line of text published had to be set, letter by letter, by hand, into a printing-press frame, the typesetter could increase the distance between lines of type by inserting slugs of lead. The thicker the strip of lead, the farther apart the lines. That's why it was called leading.

Kerning

Kerning also has to do with letter spacing. But where tracking affects the letter spacing of an entire block of text, kerning is the act of adjusting just *two* characters, relative to each other. People generally kern very large letters — in headlines, for example — whose shapes overhang each other (see Figure 24-29). They kern for two reasons: First, kerned, compact type is easier to read than unkerned type. Second, kerning a headline means that more can fit into the equivalent amount of page space.

Figure 24-29
Kerning at work. The top example is what you get when you type normally into a word processor. Each letter begins just to the right of the previous letter, as shown by the gray lines in the top example. After the capital letters (and the hyphen and the lowercase *"y"* and *"d"*) have been kerned (bottom), the phrase is more compact and easier to read. Note how the lowercase *"o"* now tucks under the wing of the capital *"T."*



You can turn kerning on or off in any page-layout program (Quark, PageMaker, and so on) or graphics software (Canvas, FreeHand, Illustrator). In other programs, it may either be combined with some kind of tracking control (as with MacWrite Pro) or missing entirely (Word).

Ligatures

Here's another typographical nicety that, technically speaking, you never need to consider for most everyday writing. Still, you sometimes hear people refer to *ligatures.* A ligature is when two letters are run together, as in the words æsthetics, Cœdipus, fishy, and flugelhorn. In fact, these are about the only examples we can think of: æ, œ, fi, and fl.

These two-letter pairs are each represented in most fonts by *one* symbol. If you have QuickDraw GX and a GX-savvy program (lotsa luck), you can opt to have ligatures created automatically. (SmartKeys, included with this book, can do it, too.) Otherwise, here's how you make them manually:

Symbol	Get it by pressing these keys
æ	Option-apostrophe
œ	Option-Q
fi	Shift-Option-5
fl	Shift-Option-6

A word of warning, though. If you use your word processor's spelling checker, don't type ligatures as you go. A spelling checker (except in QuarkXPress) will flag these as misspellings. Instead, type your document normally; check the spelling; then do a search-and-replace for those letter pairs, replacing each with the appropriate ligature.

Hyphenation

You hyphenate, of course, to avoid ragged-looking right margins caused by long words that aren't broken at the line break. Figure 24-30 shows a good example from a newspaper-style column.

Figure 24-30
What a difference a hyphen makes. In the first figure, the right margin looks terrible because of the long words. Judicious use of a program's auto-hyphenation feature brings the type closer to having an even right margin (right).

Dr. Elizabeth Muranski, an enthusiastic but underschooled practitioner, tells us she thinks acupuncture's time hasn't yet come in the field of broken bones.

Dr. Elizabeth Muranski, an enthusiastic but under-schooled practitioner, tells us she thinks acupuncture's time hasn't yet come in the field of broken bones.

Each program's auto-hyphenator works differently, so we'll refer you to your manuals for specific instructions. However, we can give you some basic rules for good-looking hyphenation:

- Avoid having hyphens wind up at the right margin in more than two successive lines of text.
- Avoid breaking up a word in such a way that one letter is left alone on a line. In fact, if you have a choice, it's usually preferable to break a long word in the middle, rather than leaving a two- or three-letter syllable alone on a line.

- Try not to hyphenate words that are shorter than six letters, a word that already has a hyphen (or a slash), the last word on a page, or the last word of a paragraph.
- Don't hyphenate centered text.
- Avoid hyphenation that makes a word hard to recognize, as in recre-ation (when you mean recreation), read-just (when you mean readjust), and tapes-tries (when you mean tapestries).

Most page-layout programs let you customize a document's hyphenation thresholds to take many of these guidelines into account.

Most Mac word processors have a little-known but handy feature: You can create a *discretionary* hyphen. This is, if you think about it, exactly the kind of hyphen you want: It remains invisible *unless* the word needs to break at the end of a line.

Try it in Word or MacWrite Pro, for example. Type the first half of the word. Then press ⌘-hyphen; absolutely *nothing* will happen. Then finish the word. If this specially prepared word ever needs to break at the end of a line, it will do so at the discretionary hyphen. Even more amazing: If you delete some text to the left of it so that the word no longer falls at the end of a line, the hyphen will *disappear,* and the word will be made whole again!

There's also a *nonbreaking hyphen,* which you create by pressing ⌘-equal sign; in most page-layout programs, it creates a hyphen for use between words that you *don't* want broken up across a line break.

Fractions

Despite the amazing variety of symbols and nonalphabet characters hidden behind the Mac's Option key, fractions aren't to be found anywhere. You have the yen symbol, the French cedilla, Greek symbols — but nary a proper typographic ½ symbol to be found.

Sure, you can buy an "expert" font that includes fractions and other special characters. For most of us, however, that's overkill. And, if some software company would bother to write a QuickDraw GX-savvy word processor, we could use GX fonts; our fractions would be made *automatically.*

Otherwise, you'll either have to plod along, typing the confusing-looking "1 1/2" when you mean 1.5; or type "one-and-a-half;" or use decimals; or painstakingly construct normal-looking fractions using a combination of superscript and subscript lettering. (A *superscript* character floats just above the normal horizontal baseline of text; a *subscript* character, like the 2 in H_2O, floats below the line.)

One more tip for fractions: Don't use the regular slash key. Instead, use the tighter, more elegant slash produced when you press Option-Shift-1.

Ellipses

An *ellipsis* looks like three periods in a row. It's used, for example, to indicate that some words of a quotation are missing ("This movie is this a . . . full-length . . . film"); in the Macintosh world, ellipses are used in menus to suggest that you'll be asked for further information before the command can be executed.

The trouble with typing three periods in a row is that sometimes they get separated from each other at the end of a line. Fortunately, the Mac's famous *Option-semicolon* keystroke produces a single, unseparatable character that looks like — you got it — three dots. They're even a bit more compact than periods would be.

(Don't use them in documents you plan to send by e-mail or transfer to a PC, though; the beautiful one-shot ellipsis symbol is a Macintosh-only benefit! Use three periods when you'll be sending your words online.)

Curly quotes

Our last pair of typographical tips has to do with quotation marks and apostrophes. You can spot the difference immediately in Figure 24-31.

Figure 24-31
The top line is what you get if you don't take action: awkward-looking straight quotes. Turn on your word processor's curly quote feature (bottom), and you've got yourself some classy-looking dialogue.

"Well, I'll be a jack-o'-lantern," he muttered.

“Well, I’ll be a jack-o’-lantern,” he muttered.

You can type a curly quote in any program, and in almost any font, if you *avoid* the quote key on your keyboard! Instead, press as follows:

Type this:	To produce this:
Option-[	“
Shift-Option-[	”
Option-]	‘
Shift-Option-]	’

Every Mac book ever written points out these key combinations. Few bother, however, to point out the logic behind the assignments. Your instinct would be, we'll bet, to make the *left and right* bracket keys the basis for the *open and closed* versions of the various quotes. Instead, Apple chose to make the *left* bracket always stand for *double quotes,* and the right bracket always produce *single quotes.* The Option key always makes the open version of whatever you're typing. And you add Shift to get a closed single or double quote.

All of this is moot, thank heavens, because almost any self-respecting word processor has a built-in "smart quotes" feature, usually in a Preferences command. They're called *smart quotes* because all you have to do is press the *normal* quote key at the right end of your keyboard's home row. The program examines the context — are you beginning or ending a word? — and automatically substitutes a curly quote, curled in the correct direction. (And, if you have a program that isn't smart enough, use SmartKeys, included with this book, to do curly quotes for you. See Chapter 34.)

When to use dumb quotes

Curly quotes are, typographically speaking, only for use as *quotes.* Prime-number, degree, inch marks, and feet marks are another story. They're *not* supposed to be curly. Here, in order of preference (and effort), are the four best ways to represent feet and inch marks:

- Use the Symbol font, Option-4 and Option-comma, respectively, to produce authentic, correct typographical marks.
- In System 7, use Option-Shift-Z for the single prime, and Option-Shift-G for the double prime.
- Turn off your smart-quotes feature long enough to type the feet or inch marks *straight.* Then italicize them for the finessed, correct, slanted look.
- Just turn off the smart-quotes feature and use straight single and double quotes.

See Figure 24-32 for examples of the results. In the meantime, keep in mind that after you create these markings, you can save them in your word processor's glossary or library so that you won't have to construct them the next time.

Figure 24-32
At top, the best solution: Use the correct typographical feet and inches symbols from the Symbol font. Middle: Using italicized straight quotes will do but may give you some trouble with spacing. Bottom: straight quotes. Better than nothing.

He stood 6′ 2″ tall.
He stood 6′ 2″ tall.
He stood 6' 2" tall.

By the way, there's one other great time to use dumb quotes: any time you're sending e-mail over the Internet. Macs are the only computers intelligent enough to understand curly quotes; if your e-mail travels via a non-Mac — and it will — your lucky correspondent will see either a strange symbol or nothing at all where you get indicated quotes. (This problem doesn't occur on e-mail sent *from* America Online *to* America Online.) If you use straight quotes in your Internet mail, however, they'll come through fine — yet another argument for using SmartKeys (which lets you specify which programs you want smart quotes in) to add intelligence to your quotes and apostrophes.

The Option-key character set

There's more to a typeface than the characters in the alphabet, of course. Almost every Mac font has dozens or hundreds of hidden symbols. They're tucked away behind obscure Option-, Shift-, and Control-key combinations. Of particular usefulness are the Option-key characters: ©, †, ™, ¥, and so on.

We're often impressed by the shrewdness of the placement of these hidden characters. Among the Option-key characters, for example, Y is ¥, ß is S (because ß is short for two Ss in German), √ is V, and so on. To find them, use your Key Caps desk accessory, as described in Chapter 3.

Before you go wild, however, a warning: As with curly quotes, Option-key-generated special characters get garbled if you send them via Internet e-mail. (E-mail send within America Online isn't a problem, however.)

OPTION KEY SECRETS

Remembering the dead keys

The Mac has five so-called *dead keys*. When you press one of these keys, nothing happens on the screen until you then press *another* key. To produce the ñ character, for example, you first press Option-N. (Nothing happens.) Then you type a regular *n*.

Just remember to UNItE! Those are the dead-letter keys — U, N, I, and E — plus the accent-grave key (also called the tilde key, usually in the upper-left corner of your keyboard).

(Much as we enjoy remembering EUNICE, as we've read in other sources, the C isn't actually a dead key.)

Interestingly, dead keys (except ñ) are only dead if the next character you type is a *vowel* (because these markings only affect vowels in the languages that use it). For example, when you press Option-tilde, nothing happens; if you then type a consonant, you get both markings together (such as **˜m**) instead of one atop the other (such as **ò**).

Bringing the dead (keys) back to life

Here's an undocumented System 7 feature: You can type one of the dead-key symbols (`, ¨, ˜, ˆ, or ´) and see the symbol appear immediately on the screen, without having to type an additional letter. The Secret: add Shift (or the Caps Lock key) to the Option-key combination.

WHERE TO GET FONTS

Fonts are everywhere. If you have a modem, proceed directly to a service such as America Online, where you'll find hundreds of fonts to download, in every conceivable format and style.

If you have a CD-ROM player, consider getting a CD-ROM disc with the entire library of fonts from a certain company. For example, for around $50 Adobe, Bitstream, and other font companies will sell you a CD-ROM disc that includes your choice of a handful of fonts. But the CD-ROM contains the *screen fonts* of every typeface that company makes! To unlock the printer-font files, you call them up, give your credit card number, and type in the code you're given. It's not dirt cheap, but it's quick and convenient, and you'll never be stuck waiting for a font you need.

You also have several commercial typefaces included on the disk with this book. See Chapter 34 for details.

FONT FUTURES

Today, Mac users are still stuck with three different font formats — not including the two GX flavors of outline-font technology — each of which must be handled and stored differently. It's certainly not as graceful a scheme as most other aspects of the Mac. People — even the pros — still regularly get bitmapped printouts of outline fonts that should print gorgeously. The Courier font still shows up in printouts when a nice PostScript font is what you selected. If you're like most people, you still can't receive a document file

TRUE FACT

SOME QUOTES ARE SMARTER THAN OTHERS

Plenty of programs do smart quotes — ClarisWorks, WordPerfect, SmartKeys, QuicKeys, and so on. Trouble is, all of these programs decide which way to curl your quote based on whether or not you just typed a *space.* If the keystroke before the quote was a letter (and not a space), then, obviously, you get a right-hand quote because you're probably finishing up a sentence (or putting an apostrophe into a contraction). Otherwise, the program automatically substitutes a left-hand quote mark.

They're missing one big boat: a little thing we call *editing!* Any program whose smart-quote feature simply counts on your having typed something before the quote is ignoring all the times you want to *insert* a quote or apostrophe where there wasn't one originally. You can see the problem in this example:

"It was a feel-good performance," said she.
"It was a feel-good' performance," said she.
"It was a 'feel-good' performance," said she.

As you type the first sentence, everything is fine. The program puts an open quote before the first line because it was preceded by a space. It puts a close quote after the comma because it *wasn't* preceded by a space.

What if you decide that you really wanted to put single quotes around *feel-good?* In the center example, you see that all is well so far. You click the mouse just after the *D.* The program thinks to itself: "No, they didn't just type a space. Therefore, this is a close quote."

Trouble is, it thinks that same thing when you click before the *F!* It again thinks: "Still no space has been typed. This, too, is a close quote."

All of these programs, therefore, err on the side of too many close quotes! What's much preferable are the smart quotes found in Microsoft Word and WriteNow. When you click the mouse to add a quote, the program actually *looks back at what's already* on the page! It therefore produces the correct curling quote, whether you're typing them for the first time or editing madly.

(Fortunately, SmartKeys — included with this book — offers a convenient workaround. If SmartKeys produces a close quote when you intended an open one, you just press the quote key a *second* time. SmartKeys instantly replaces the close quote with an open one.)

and view it as it was designed, unless you happen to have all the fonts installed that were used by the document's designer.

Apple and Adobe have worked for years to bring some harmony to this disorder. Both companies are well aware of the current font situation is, shall

TRUE FACT

THE BASICS OF FONT DESIGN

You sometimes hear the terms *ascenders, descenders, baseline,* and *x-height* used among Mac users. These terms refer to the various vertical components of a certain typeface, as shown here.



1. The *descent* line. This imaginary line marks the lowest point of any character in the font.
2. The *point size.* It may surprise you that the point size is actually measured from the ascent line (5) to the descent line (1). This measuring scheme explains why some fonts seem tiny at the same point sizes as other fonts. Park Avenue, Zapf Chancery, and other decorative fonts, for example, are almost too small to see at 12-point size, where 12-point Times is fine. It's because those decorative fonts have large ascenders and descenders, making the overall type seem smaller by comparison.
3. The *x-height.* It's the height of most lowercase letters.
4. The *leading.* It's measured from baseline to baseline. Typographers sometimes refer to text as being "ten-on-twelve." They mean that the font is 10-point, but the leading is 12 points, leaving a 2-point gap between lines of text.
5. The *ascent line,* which is at the height of the tallest letters.
6. The *capital line.* As you can see from this example, the capital letters in a font aren't always the tallest letters. The capital line is often below the ascent line.
7. The *mean line.* This is the imaginary line that marks the top of the x-height of the font.
8. The *baseline.* It's the imaginary line upon which all the letters sit.

we say, less than acceptable (no, we shall say downright intolerable). One way or another, something will be done. Whether it's a peaceable kingdom that includes ATM and TrueType under one System, or a new, universal font scheme such as OpenType (described earlier in this chapter) is still an open question.

COMMON FONT PROBLEMS

With several different font formats, five different System-software versions, dozens of competing font manufacturers, and tens of thousands of fonts, you're bound to encounter the occasional font problem that goes beyond the jaggy-print problem described earlier. Here are some of the classics.

Font-menu problems

Font name doesn't show up in Word's menu

One day you'll start up Word 5.1 — perhaps it's a newly installed copy — and discover that your Font menu is very, very short. The solution is Word's List All Fonts command. Choose Commands from the Tools menu. Scroll down the list of commands on the left side until you find List All Fonts. Click it. Then click Do It in the upper-right corner of the dialog box.

Your menu bar will blink frantically black and white. When the frenzy is over, you'll find your Font menu restored.

Font name shows up dimmed

Some programs, notably PostScript drawing programs (FreeHand and Illustrator), keep track of all the fonts that were installed at the time you created a particular document. If you reopen that document on another Mac (or on your Mac after removing some fonts), those original fonts still show up in your font lists, but their names are dimmed.

ANSWER MAN

Fonts from heaven

Q: ***OK, you explained where to get more fonts if I WANT them. But my problem is this: Fonts keep appearing from nowhere on my system! Where are they coming from?***

A: You mean like Espy Sans? And MTextra?

Q: ***Yeah! Them's the ones!***

A: Your application installers dumped those onto you. For example, Apple's old eWorld and current Internet Connection Kit software donate Espy Sans and Espy Bold behind your back. (Don't use them for anything you plan to print — they're pure bitmaps, and print jaggedly on any kind of printer.) And Microsoft dumps all kinds of fonts into your System Folder, most beginning with the letters MT, when you install Word.

If you want to ditch these fonts, you'll find them in your Fonts folder like any other fonts; but if you toss them, you'll never know what element will then look funny when you try to use eWorld or your Microsoft program.

CASE HISTORY

THE T-SHIRT COMPANY THAT AWAITS YOU

This is only faintly related to fonts. But when your cheerful authors were in college, we came up with a brilliant scheme to make a million dollars. (In those days, that was a great deal of money.) We'd start a T-shirt company.

We even had our first two designs figured out. You know those annoying shirts that say "I ♥ NY" or "I ♥ Rush Limbaugh"?

Well, we were going to market shirts that say *"I ♠ my cat"* and *"I ♣ my husband."*

Then we got lives. We hereby relinquish all rights. As we wrote in the previous edition: Go wild, ye entrepreneurs. (Apparently, someone did — a Mac Secrets reader spotted an actual "I ♠ my cat" T-shirt on Cape Cod in the summer of 1996!)

That's the program's way of telling you that your artwork or page layout document may require some fonts that you no longer have. Reinstall the missing fonts.

Option-key character glitches

Option-key characters don't print

This is one of the oddest problems we know, and we're proud to expose it.

In certain programs (we've seen it happen in lots of music programs, for some reason), you may be using some Option-key characters. You may use curly quotes, for example, or a © symbol. But when you print out, you get nothing! Wherever each Option-key symbol was supposed to occur, you get either a blank spot or a *comma,* of all things.

This quirk is a holdover from a very strange workaround that was set up early in the days of the Mac. The character sets of the original PostScript fonts (Times, Helvetica, and Courier, for example) didn't *contain* every single Option-key symbol — at least, not in the printer font. You'd see a © or a ™ symbol on the *screen* in Sabon 12, for example, but these symbols didn't actually exist in the printer font.

Therefore, the Mac was set up to send a little alert message to the *Symbol* font, which *does* contain all of these peculiar little symbols, to step in and handle the printing of that one character. Your printout slides from the printer with the Symbol font's rendition of that © or ™, and you usually never know the difference.

This syndrome still kicks in occasionally. But if you don't have the Symbol *screen font* installed in your Mac, the Mac assumes that you don't *have* Symbol. The hand-off won't take place. The laser printer will try to print whatever characters were mapped into the corresponding slots of your on-screen font, which is usually nothing.

The same problem occurs on non-PostScript printers if you're using ATM. Here, the problem is worse because you have to have *both* the screen *and* the printer fonts of Symbol installed. Otherwise, instead of blank characters, you'll just get jagged symbols.

The solution is easy: Install the Symbol font from your original Mac System disks. (Or don't remove it to begin with.)

The classic damaged suitcase problem

One of the worst aspects of the System 7 font-suitcase scheme is the way that your font suitcases suddenly become "damaged." Corrupted font files are a nightmare; it generally takes a day or a week before you even realize that a corrupted suitcase is the *cause* of the crashes and freezes you've been having.

What's worse is the frustration you'll encounter when you try to throw away the suitcase. The Finder won't let you remove it, open it, or trash it! You can drag till you're blue in the face, but trust us: That suitcase won't budge from the Fonts folder.

We're particularly proud to have discovered the solution. Take the *entire* Fonts folder out of the System Folder (and onto the Desktop, for example). You should now be able to drag the troublesome suitcase from the decommissioned Fonts folder into the Trash. (If not, restart; create a *new* Fonts folder in the System Folder, and drag your *good* suitcases back into it.)

Chapter 25

Macintosh Printing Secrets

IN THIS CHAPTER:

- How printing works (dot-matrix, inkjet, laser)
- Tales of dpi: 300, 600, 1200, and more
- PostScript: Levels 1, 2, and 3
- Desktop Printing
- How QuickDraw GX will (and won't) change the world
- Color printing and service bureaus
- Troubleshooting

The Macintosh has always been hailed as a radical step forward in the world of printing. For the first time in the world of personal computing, printouts matched the screen images. People called the Mac a WYSIWYG (What You See Is What You Get) computer.

But over the years, printing has become even more complicated. There's QuickDraw, GX, PostScript, TrueType, inkjets, color printing, background printing, deferred printing — and WYS is less and less WYG.

HOW PRINTING WORKS

When it comes to the look of your printouts, *dpi* — the number of printer dots per inch of paper — is king, whether it hits paper by ribbon, spraying ink, heat-fused powder, or melted crayon dots.

Dot-matrix printers

A *dot-matrix* printer composes its printed image of little dots, like the dots on your Mac's screen. Dot-matrix printers (such as Apple's ImageWriter II) are often referred to as *impact* printers — the pins actually strike a ribbon against the printed page. They're also dying out, having been supplanted by inexpensive, much higher-quality inkjet printers. In fact, it was with a great, universal, fond sigh that Apple discontinued the ImageWriter II in the fall of 1996 after the printer's 11 years of proud service.

Inkjet printers

If the price of a laser printer is still too high for you, but you want higher quality than a dot-matrix printer offers, there's an *inkjet* model calling your name. Such printers, like the Apple StyleWriters or the HP DeskWriter, use an ink-filled cartridge that slides across a moving track, back and forth, spraying narrow sheets of ink on the page. (The newer color inkjet printers use *four* separate ink cartridges that spray black, yellow, cyan, and magenta inks as they move across the page.)

In theory (or should we say "on paper"?), these printers print even *sharper* text and graphics than some laser printers. A typical inkjet printer sprays 360 or 720 very fine dots per inch, whereas a standard laser printer's resolution is only 300 or 600 dpi. In practice, however, because of the way the ink spreads when it hits the page, fine images printed by an inkjet printer tend to blur slightly, making the printouts just short of laser-quality.

Inkjet printers offer plenty to like: they're inexpensive (starting at $175) and they're small and light, making them easy to transport or store. They also offer the least expensive color printing available; color inkjets run between $280 and $400 and can turn out impressively rich, vivid color images.

Laser printers

A laser printer has more in common with a copying machine than with other printing devices. Inside the printer, the paper wraps around a cylindrical drum, just as it does in a copying machine. But instead of using a light-and-lens assembly to read an original, the laser printer uses a laser diode that beams the image of your document onto the drum. The drum uses an electrostatic process to attract toner particles, and the toner is fused to the printed page using a heated set of rollers. Some "laser printers" don't have

lasers inside at all. Instead, they use a CCD (Charge-Coupled Device) assembly to generate the image; the printed results are very similar.

The *toner* (the black powder that creates the printout) comes in a cartridge that, in Apple and HP PostScript printers, includes the drum as well. When you replace the toner, you're essentially giving the printer a stomach transplant.

Laser printers come in two types: *QuickDraw* and *PostScript*. For now, just note that a PostScript printer has its own CPU and memory, and is, therefore, faster than a QuickDraw laser.

The typical PostScript laser printer also comes with a set of *resident* fonts (fonts built into the printer's ROM chips). The basic set consists of 35 fonts that range from Avant Garde to Zapf Dingbats (illustrated in Figure 24-3). These ROM-based fonts are desirable, of course, because they print faster. They don't have to be downloaded to your printer every time you process a new file. You can use as many of them as you want, in whatever order you want, and they won't use up any precious printer RAM. Unfortunately, some of these basic fonts are, frankly, overused.

Tales of dpi

Once you've been around Macs for a while, you can instantly identify which printer produced a given printout: dot-matrix, inkjet, or laser. How? Primarily by the difference in resolution (smoothness) — measured in *dpi*, or dots per inch.

300 dpi laser printers

The very first laser printers had engines that printed 300 dots per inch — a single square inch of the printed page had 90,000 dots. Though higher-resolution printers have become standard in most offices, there are still plenty of 300 dpi printers in use. This kind of printer is fine for letters and basic desktop publishing.

Compared to a higher resolution printer or imagesetter, 300 dpi text is thicker, and, in smaller sizes, a little chunky-looking. The little holes in characters (such as the upper half of a lowercase *e*) may be partly filled in, and the fine details of a decorative typeface are often lacking. When you print a photo on a 300 dpi printer, its different shades of gray don't get very fine.

Still, even high-end production houses often have laser printers on hand to proof documents before printing on an imagesetter or color proofer, which uses very expensive media and take much longer to process files.

600 and 800 dpi laser printers

The most common laser printers in use today contain a 600 dpi "engine." These include printers such as the Apple LaserWriter Pro series and the Hewlett-Packard 4M series.

A more precise engine, coupled with extremely fine-grain toner powder, gives you ultra-sharp details. A 600 dpi printer is *not* twice as sharp as your 300 dpi printer. Think about it: The image from a 600 dpi printer contains 360,000 dots per square inch, so it's actually *four times* as sharp as a 300 dpi printer! Furthermore, these new printers cost less than half as much as a 300 dpi laser printer did just a few years ago. In the years to come, even higher-grade toner and higher-resolution print engines will become available — and commonplace.

1200 dpi laser printers

Several printers, from LaserMaster and others, are advertised to have a resolution of 800 to 1200 dpi, supposedly going head-to-head against professional imagesetters.

These printers do indeed make sharp printouts, but most don't really print 1200 dots per inch. Instead, they *vary* the size of the dots that make up the printed image; they also adjust the movement of the drum as the paper rides through the printer. Those stunts, plus the use of fine-particle toner powder, greatly improve the printouts from a conventional 300 dpi, 400 dpi, or 600 dpi engine. Only the most expensive models have true 1200 dpi engines — again, four times sharper than a 600 dpi printer — with 1,440,000 dots crammed into each square inch.

But the output from even one of these enhanced laser printers isn't quite as sharp as that of an imagesetter (described next). The limitations of toner and paper simply can't match an imagesetter's fine resolution of small text and artwork.

Imagesetters

When you seek the ultimate quality for your document, book, or magazine, you take your file to a prepress plant or service bureau, where they'll print your stuff on an *imagesetter.*

The original phototypesetting devices of the 1960s and 1970s consisted of a large spinning drum upon which film strips containing negative images of the type were placed. A lamp flashed through the type in the film strip onto a roll of light-sensitive film or paper. This paper had to be developed in a processing machine. The mid-1970s brought the beginning of digital technology

to the typesetting world, in which a TV-style picture tube (a CRT) replaced the spinning drum and light source.

Modern-day imagesetters — made by Linotronic, Agfa, VariTyper, and so on — are very similar to those CRT typesetters, except that lasers now expose the photographic media. Paper is pulled through an imagesetter by rollers, gears, and springs. When you're creating color printouts, *registration* (the precise alignment of four plates, one of each color) is critical. Therefore, high-end imagesetters are drum-based. Some imagesetters print a single sheet for each plate.

All imagesetters are driven by a computer running software called a *RIP* (short for Raster Image Processor). The RIP is essentially an extremely sophisticated version of the PostScript interpreter that's in your desktop laser printer. Many RIP computers use large hard drives to store programs and fonts. All of this sophistication, of course, costs huge amounts of money.

GENERAL PRINTING SECRETS

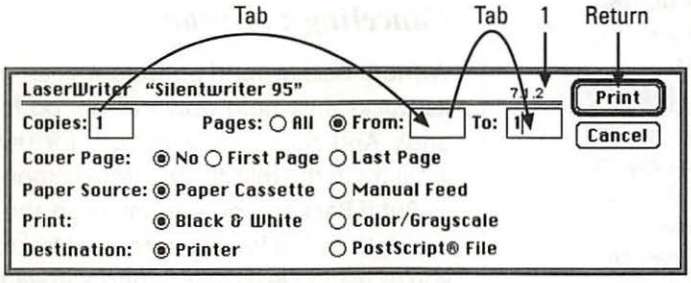
Printing page one



In our desire to be as efficient as possible, here are some keystrokes you can save in the Print dialog box when you don't want to print the entire document.

First, you know (don't you?) that you move from blank to blank in the dialog box by pressing the Tab key (see Figure 25-1).

Figure 25-1
Power printing. In four keystrokes, you can get page 1, and only page 1, on its way to the printer.



Most people figure out, therefore, that to print only page 1 of something, they press Tab (to get to the From box), type *1*, press Tab again (to get to the To box), type *1*, and then click Print.

TRUE FACT

LET'S GO TO THE LINO

Sometimes a product makes such an impact on the marketplace that its brand name becomes synonymous with the product itself. People ask if you've got a Kleenex handy, even though they couldn't care less about the actual brand of tissue. The same trademark generalization has occurred with Jell-O, Band-Aid, and Xerox.

If you're heavily involved in desktop publishing, you probably call your trip to the service bureau a visit to the Lino shop, and call all of their imagesetters Linotype machines. Yet the Lino is only one particular *brand* of imagesetter; you're just as likely to run across equipment manufactured by Agfa, VariTyper, or other firms.

The manufacturer of Linotype imagesetters, the Linotype-Hell Company, is the descendant of two companies whose lineage dates back to the early history of typesetting. The founder of the original Mergenthaler-Linotype Company, Ottmar Mergenthaler, produced the original Linotype machines in 1886. Many of the typefaces that are so familiar to laser printer owners are original Linotype-Hell designs, licensed by Adobe or Apple. These original fonts — genuine Lino fonts, if you think about it — include Helvetica, Palatino, and Times Roman.

Our Secret du jour: Don't even bother with the first number 1. Leave the From box *blank.* Just put a 1 in the *To* box, and the Mac is smart enough to figure out what you mean. Figure 25-1 should make this efficiency-nut's trick clearer. (Your print dialog box may look a little different from the one shown here, but the same rules apply.)

Likewise, if you only want to print from page 18 to the end, you can put 18 in the *From* box, and leave the To box empty.

On the other hand, remember that the page numbers in this dialog box refer to the *physical sheets of paper,* not to however they're numbered on the screen. Even if you've numbered the first page "p. 20" in your word processor, the Print dialog box still thinks of it as page 1.

Label printing

Label printing isn't quite as straightforward as printing paper, but almost. First, you have to buy the labels. If you're going to use a laser printer, you must buy special laser labels made by Avery. (Office-supply stores sell them.) Many programs (FileMaker, Word, and so on) have form setups for standard Avery label types.

These labels aren't cheap. Print a test page of your labels on regular paper and then hold that page up to the light against an unprinted page of labels to check alignment. As a matter of fact, consider removing every *other* label from a sheet of labels; when you hold *that* up to the test piece of paper, you'll be able to see much more clearly how your addresses will line up with the labels.

Canceling a printout

Without background printing, it's easy to stop a printer in its tracks. Just hold down ⌘-period for a few long seconds. And then wait a minute for the printer to finish what it's in the middle of before responding.

But if Background Printing is on, the little background program called PrintMonitor (or Desktop PrintMonitor, if you're using Desktop Printing software, described later) has now taken over the printing tasks. You can press ⌘-period from now till Doomsday, and PrintMonitor won't get the message.

Unless, that is, you pull PrintMonitor to the foreground. To do so, wait until about 10 seconds after you used the Print command. You see PrintMonitor's name appear in your Application menu. Choose it. The PrintMonitor window pops to the front, where the big, fat Cancel button is staring you right in the face. Click it.

A minute or so may elapse before PrintMonitor actually stops the printing. But if you catch it early enough, the printing operation is aborted. (We have much more to say about PrintMonitor later in the chapter.)



If you're using Apple's latest Desktop Printing software, you can double-click a desktop printer icon, click on the job-in-progress, then click the Trash button to cancel it. (For much more on desktop printing, see the section later in this chapter.)

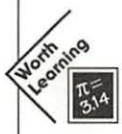
Finally, a word of friendly advice: when all else (meaning ⌘-period) fails, don't be timid about just shutting off the printer in midprint. Sure, you may have to help the page-in-progress out of the machine's innards, but no harm's done, and you may save a lot of time. (PrintMonitor will squawk in protest, of course, but a couple of judicious clicks on Cancel should shut it up.)

Actually, if it's a laser printer, this method may be even simpler: just pull out the paper tray. Once the out-of-paper light comes on, you can switch the printer off, push the paper tray back in, and turn the printer back on again — and you don't risk getting a page stuck in the guts of the machine.

Printing from the Desktop

In many cases, you don't even have to open an application to print a document. You can do it from the Desktop simply by highlighting the document icon — or several icons, even those created by different programs — and choosing Print from the Finder's File menu. The Mac automatically launches the programs that created those documents (memory permitting), asks you to confirm the Print dialog box, then quits those programs.

There's one huge benefit to using this method that's often ignored: If you select *several* files and use the Finder's Print command, you only have to confirm *one* Print dialog box. All the other jobs get spooled automatically. That's a lot better than stepping through the Print dialog box for each individual job.



QUICKDRAW PRINTING

There are two different schemes the Mac uses to tell a printer what to draw on the page: PostScript and QuickDraw.

QuickDraw versus PostScript

QuickDraw is the built-in software that the Mac uses to draw text and graphics on its own screen. It remained essentially unchanged from its invention in 1984 through the debut of QuickDraw GX (read on).

A QuickDraw printer uses that same image-drawing technology to take what you see on the screen to the printed page. When you print on a QuickDraw printer, the Mac's QuickDraw programs, built into its ROM chips, do the processing. Therefore, the speed of a QuickDraw printer is directly dependent upon the speed of your Mac. The ImageWriters, StyleWriters, and DeskWriters of the world are all QuickDraw printers. Apple also has produced a handful of inexpensive QuickDraw laser printers: three models in the Personal LaserWriter series (SC, LS and 300) and the LaserWriter Select 300, for example.

Some of today's QuickDraw printers are very high-resolution printers. The memos and newsletters printed at the StyleWriter 1200's 720 dpi resolution look great. So who needs PostScript?

The trouble with QuickDraw printers

Adobe Type Manager (like the version included with this book) and System 7's TrueType technology do magical things for printed *text* on QuickDraw printers. But graphics are another story.

Graphics drawn in QuickDraw graphics programs (otherwise known as *drawing* programs, such as ClarisWorks's Drawing window) look great when printed on QuickDraw printers. (See Chapter 20 for more on graphics programs.) But graphics from a *PostScript* drawing program, such as FreeHand or Illustrator, don't translate well into QuickDraw. Such graphics generally print as jagged, 72 dpi representations of the high-quality graphics on the screen. To print such images successfully, you need either of the following:

- A conversion program (such as GDT Softworks' StyleScript) that lets the images print well on a StyleWriter, DeskWriter, or other non-PostScript printer
- A PostScript printer (see "The Truth About PostScript" later in this chapter)

What's good about QuickDraw printers

If all you print is text, a QuickDraw printer (such as a StyleWriter) is a very attractive option. Because print quality is generally outstanding, the only drawbacks to QuickDraw printers are their slower printing speed, their inability to print PostScript graphics unaided, and (in the case of inkjet printers) the difficulty of finding a paper/ink combination that looks sharp, but doesn't smudge.

The ImageWriter series

The ImageWriter, the very first Mac printer, is a heavy, hardy, noisy, built-like-a-brick, dot-matrix QuickDraw printer. Its nine pins are fired in precise choreography as the print head slides back and forth across the page, stabbing an inked ribbon up against the paper.

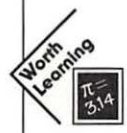
Except for people who need to print multipart forms (the ones that say "Press hard — you are making three copies"), the ImageWriter line's time has come and gone. About the only question anyone ever asks us anymore about this printer is: "How much can I sell it for?" (See the Mac Secrets Outtakes folder on your Secrets CD for a couple of ImageWriter tricks.)

The StyleWriter series

This printer has become almost everyone's best buy. For about $200, you get a machine whose printouts look very nearly laser-printed. Not only is the typical StyleWriter very compact, it weighs less than seven pounds, can print surprisingly good grays or colors, and can even be networked. A StyleWriter's speed won't make your pulse race, but it's not bad for home or small-office use.

STYLEWRITER SECRETS

The free StyleWriter upgrade Secret



Apple has produced several versions of the StyleWriter over the last six years. There was the original StyleWriter, then the StyleWriter II, the StyleWriter 1200, and so on. Frankly, the hardware on these machines hasn't changed that dramatically — but the StyleWriter *software* has. The newest StyleWriter printer driver is dramatically faster and more powerful than the original, and it's packed with all kinds of special printing features (such as watermarks and grayscale printing) that were not available in the older StyleWriter software.

The beautiful part is that each new StyleWriter driver (the icon that shows up in your Chooser) also works with all *older* StyleWriter models. For example, the StyleWriter II driver also works with the StyleWriter I; the StyleWriter 1200 driver works with all previous StyleWriters; and so on. (You can download it from Apple's Web site at *http://www.support.apple.com.*) By all means, get the latest driver, no matter what model you have. Once you install it, your old StyleWriter will suddenly have all the added features of the newest models — a free upgrade!

Paper suggestions

StyleWriter (and DeskWriter) printouts take time to dry. Especially if you're printing on shiny copier paper, be careful not to let the sheets stack up as they emerge from the printer because one outgoing page may smudge the previous one. This is especially true of transparencies.

For what it's worth, Apple recommends 25 percent cotton bond paper. As a general rule, smooth-finish (but not glossy) paper will yield far better results with an inkjet printer than rough, grainy paper, which tends to absorb and spread too much of the liquid ink.

When the cartridge doesn't work

We've heard it often: a new inkjet cartridge is installed — or you're using one that's been installed for a while — and it simply won't work. The StyleWriter tries to print, and its print head slides back and forth, but no ink emerges. (Yes, you've pulled that little piece of plastic tape off the bottom of the cartridge.)

It turns out that if a cartridge hasn't been used in a while, droplets of ink on the surface of the cartridge may dry and cake slightly.



The solution is hidden away in the printer's Print dialog box. Choose Print from the File menu. In the dialog box that appears, click Options. You see the lone option in the resulting dialog box: "Clean ink cartridge before printing."

When you select that check box and click OK, the printer attempts to blast the dried crud free. The Clean option is turned off automatically after each time you use it. (The HP DeskWriter's Prime button does the same thing.) And if that software solution doesn't do the trick, you can always rub a little alcohol or spit across the clogged inky cartridge head.

How to print envelopes and thick pages

You have to adjust *two* StyleWriter II adjustment levers when you want to print envelopes and thick paper (such as labels). If you look at the printer from the front, the levers are both on the right side.

The first lever is on the outside of the printer, on the feeder tray. Flip it to the position marked by the envelope icon. To get at the second lever, you have to open the front panel. Inside, there's a second, blue-tipped lever on the ink cartridge itself. This lever, too, must be flipped into the envelope-icon position.

Before you insert envelopes into the sheet feeder, crease the leading edge of the envelopes (where the flap is) to help it pass through the paper tray more smoothly. Be certain the paper guide is moved snugly, but not too tightly, against the paper or envelope.

When you finish printing, be sure to flip both levers back to their normal "paper" positions.

Test pages

Just as on a regular laser printer, you can print a test page on a StyleWriter. Just hold down the On button continuously until the test page begins.

StyleWriter II jams

If you're among those long-suffering souls who endure repeated StyleWriter II paper jams — where the printer pulls *two* sheets of paper through instead of one, for example — we have two nearly sure-fire solutions.

First, take note that the StyleWriter isn't a happy camper at *all* without more than 20 sheets of paper in its input slot. Forget about sticking one page of smallish stationery in there — the printer will show its disgust by pulling that page all the way through without making a mark on it.

Second, in humid weather, we've found that *fanning* the stack of paper (smooth laser-printer paper works best) before resquaring it and slipping it into the input slot prevents the pages from sticking together.

If you own a recent-model PowerBook, you may have noticed that, where most Macs have a modem jack and a printer jack, your Mac only has *one* serial port. It's a combo modem/printer jack. Obviously, it's the only place you can attach your StyleWriter.

But as far as the Mac's electronics are concerned, there are still *two* jacks to choose from, and if you don't select the correct one, your StyleWriter won't work. Open the Chooser. Click the StyleWriter icon. Make sure AppleTalk is inactive. In the upper-right corner of the Chooser, you see two jack icons — one depicting a printer, one depicting a telephone.

Click the telephone. You want your PowerBook to treat its lone jack as the modem port, because that's where the StyleWriter is supposed to go. If you click the printer instead, the StyleWriter won't operate.

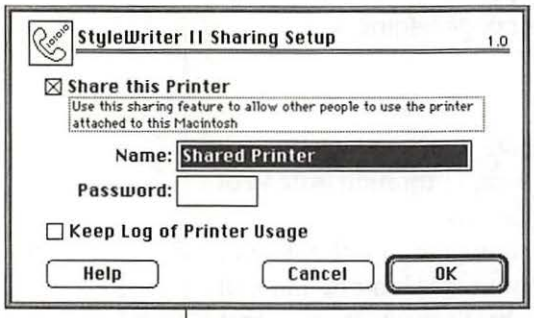
Sharing the StyleWriter on a network

The GrayShare feature (StyleWriter II and later models) not only lets you print grayscale images, it lets you share the printer across a network. (Don't ask us why these two features should go hand-in-hand.)

To activate "sharing," all of the StyleWriter's software must be installed on your Mac. Also — weirdly — the printer must be attached to the *modem* port, not the printer port as you'd expect. (And what if you have a *modem* that needs the modem port? You'll have to buy an A/B switch box. This setup is clunky, but it works.)

Open the Chooser, select the StyleWriter II icon, and click Setup. The dialog box in Figure 25-2 appears. You can give your printer a unique name. You can even set up a password to restrict access to certain users.

Figure 25-2
The StyleWriter II's unique brand of networking.



After it's set up, people sitting at other Macs on the network will be able to select *your* printer in their Choosers. They can then print documents just as though the printer were any kind of networked device (such as a PostScript laser printer).

But the StyleWriter is a QuickDraw printer. Therefore, it needs a Mac to do its processing; in this case, it's the Mac directly attached to the StyleWriter. Whoever happens to be using this "server" Mac will have to wait through bouts of mysterious computer sluggishness as other people on the network send their documents to it. Furthermore, all the fonts used in the documents sent by the network Macs must be installed on the "server" Mac, or you'll be in for some unpleasant surprises when you look at the printed pages.

Still, sharing a StyleWriter among two or three Macs is a decent and inexpensive option, as long as you can put up with the slowdown on the StyleWriter-attached Mac when other users access the printer.

The StyleWriter Ink Myth

For years, Apple marketed two separate products — ink cartridges for the original StyleWriter and ink cartridges for the StyleWriter II. The assumption was that they were *not* interchangeable; after all, if the cartridges were identical, why on Earth would Apple call them by two *different* names?



Turns out, of course, that they *are* the same, as are the cartridges for the StyleWriter 1200. Any of these three models can use exactly the same inkjet cartridge, regardless of what it's named.

Roll credits

If the StyleWriter is the selected icon in the Chooser, click (StyleWriter I) or Option-click (StyleWriter II) the version number in the Page Setup or Print dialog boxes to see a list of credits.

THE TRUTH ABOUT POSTSCRIPT

PostScript is one of those terms that you hear every two minutes in the Mac world. Most people associate it with laser printers. Yet, you can buy a laser printer that doesn't have PostScript, and you can buy a PostScript printer that

isn't a laser printer. Furthermore, people talk about PostScript as though it has something to do with text — and then you hear about a PostScript *drawing* program.

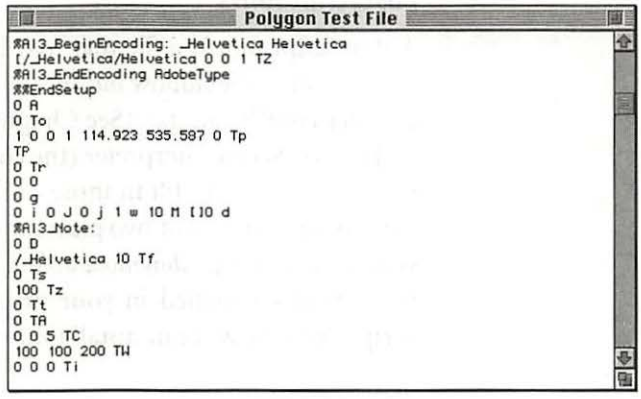
PostScript is actually a computer *language.* It's used to describe images — text, graphics, on the screen, on paper. If you know what you're doing, you can actually sit down and *type out* the PostScript codes necessary to make the computer draw, say, a triangle.

The word "PostScript" pops up in conjunction with almost everything in the Mac world: fonts, printers, graphics, commands, and so on. We'll tackle them one by one.

PostScript fundamentals

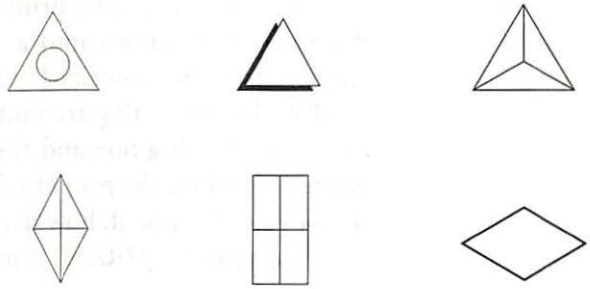
PostScript was released by Adobe Systems in 1985. It's a computer language that describes the characteristics of a page, including the text and the pictures. (The original PostScript language was later called *PostScript Level 1*, as newer versions got introduced.) The PostScript file that you create on your Mac (or IBM PC or other computer) is nothing more than a set of *instructions* to the printer: "Draw a straight line, starting an inch from the top of the page. Turn left. Draw another line." And so on. If you open an Adobe Illustrator file in a program that reads simple text, you'll see what we mean. Although the instructions that follow are rather oblique, they are, more or less, in English. The numbers describe, in points, the precise location of the various parts of the graphics file (see Figure 25-3).

Figure 25-3
Part of a typical Adobe Illustrator document file describing a series of polygon shapes.



When you actually print the file on your PostScript laser printer, you get something like Figure 25-4.

Figure 25-4
Printout of the Adobe Illustrator graphics file.



(If you want to try your luck at PostScript programming first-hand, we've included a sample or two for you to play

with. You'll find them in the Chapter 25 folder on your *SECRETS* CD-ROM.)

PostScript was designed to provide what Adobe calls *device independence:* That is, the same PostScript file comes out at 72 dpi on the screen, at 300 dpi on a PostScript laser printer, and at 2,400 dpi on a PostScript imagesetter. It prints, therefore, at the highest resolution your printer (or screen) is capable of.

PostScript gave desktop publishing the boost it needed to take over from traditional typesetting. Older professional-level printers could only use a single set of fonts provided by the manufacturer and could only work with a certain kind of computer workstation. With PostScript, you can use the same file and the same fonts on printers made by many different manufacturers — and you know that your file will print at the highest resolution that is possible on that printer.

PostScript fonts

A PostScript font is a file that may be compared to a coloring book. The file contains only the hollow *outlines* of the letters and symbols (which is why we call them outline fonts). (See Chapter 24 for details.)

The PostScript interpreter (the computer inside the printer), in effect, supplies the crayons to fill in those outlines. The outlines that describe the font may come from any of two places. It may be transferred to the printer by your system software (a *downloadable* font). Or, the font may be a *resident* font, permanently installed in your printer's ROM. (On most heavy-duty PostScript printers, you can install font *cartridges* or attach a font *hard drive*, too.)

PostScript printing

The Mac draws images on the screen using QuickDraw. When you print to a PostScript laser printer, therefore, the QuickDraw commands that compose the screen image must be *translated* into PostScript.

After the PostScript instructions are sent to the printer, yet another conversion takes place: The printer's processor (its *interpreter*) translates the PostScript instructions into a *bitmap* that describes exactly which microscopic dots on the page need to be black.

All of this translating accounts for the delay between the time you click OK in the Print dialog box and the moment the first page emerges from your printer. How long the printer takes depends on the power of its processor, the size of your document, how many fonts and graphics the document has, and how much memory (RAM) is in the printer.

THE POSTSCRIPT PRINTER DRIVER

A *driver* is a piece of software that tells your Mac how to communicate with some external piece of equipment — such as a laser printer. Every printer you use must have a corresponding driver installed on your Mac.

Printer drivers go into your Extensions folder. As every first-time Mac owner eventually discovers, you can't print a single page until you open your Chooser desk accessory; the icons you see there — StyleWriter 1200, LaserWriter, LaserWriter 8, and so on — are your printer drivers. After you select a driver, the options in your Page Setup dialog box change to reflect the features of the printer you specified.

The original PostScript printer driver was called, simply, LaserWriter (with no numbers or letters tacked on at the end). The LaserWriter driver was intended primarily for use with Apple's own line of LaserWriter printers, but it works with virtually any laser printer that uses Adobe's PostScript technology.

LaserWriter 8: Postscript Level 2

Five years after the initial release of PostScript, Adobe produced an updated version of the PostScript language called PostScript Level 2.

If your printer supports PostScript Level 2, it has features to make printing faster, more predictable, and with additional flexibility. But to take advantage of these offerings, Level 2 printers require Level 2 *software* — otherwise known as the LaserWriter 8 driver. This driver was developed and distributed jointly by Adobe and Apple.

Actually, the two companies released the same driver under different names. The Apple version is called LaserWriter 8. It comes with a set of *PPDs* (Printer Page Descriptions) strictly for Apple printers. (Apple has released several versions of its driver — most recently, version 8.4 — but its name is still officially LaserWriter 8.)

The Adobe edition, *PSPrinter,* comes on two high-density disks and includes over 200 PPDs so that you can customize the driver for almost any printer on the market. If your printer isn't included in the set of PPDs, a General version supports basic printer page sizes and screen capabilities.

What you get with LaserWriter 8

Whether you use Apple's or Adobe's Level 2 driver, the improved software offers all sorts of advantages over the original PostScript language. It offers faster background printing, improved text and graphics handling, better color printing on any color printer, and, in general, more efficient PostScript files, which means faster printing of complex documents.

The new PostScript also provides improved halftoning algorithms (see Chapter 26 for details on halftones). Level 2 uses a smarter simulation method that reduces common problems with halftone printouts — moiré patterns, for example — that even affect high-end imagesetters.

Also, the Level 2 driver software comes with a folder full of *printer-description* files, or PPDs. (Don't confuse a PPD with a *PDD*, which, in QuickDraw GX lingo, is a Portable Digital Document!) Each file tells the Mac what special features are unique to your make and model of printer: the capability to handle special paper sizes; multiple paper trays; *duplex* printing (on both sides of each page); and so on.

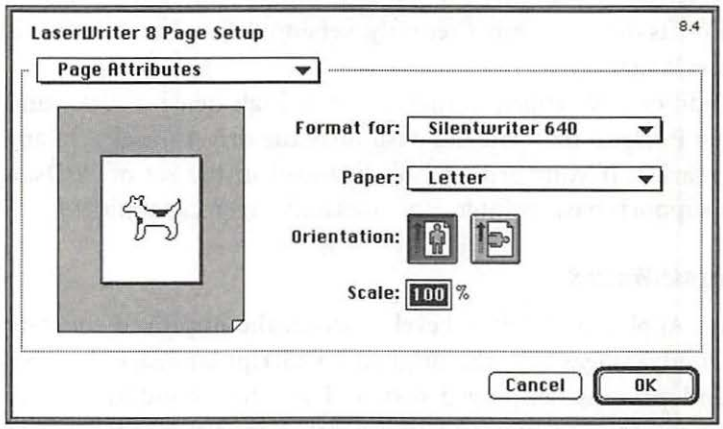
What's a PPD file?

As we've said, PPD stands for "Printer Page Description" — a small text file that describes your printer's possible page sizes, screen angles, its list of built-in fonts, whether or not it has more than one paper tray, and so on. Actually, PPDs are nothing new; professional programs such as Adobe Illustrator, Aldus FreeHand, and PageMaker have used them for years. (QuarkXPress uses them, too, but calls them PDFs and uses a proprietary format.)

The Page Setup dialog box

The PostScript printing process begins with your mandatory visit to the Page Setup dialog box, where you make a few decisions that dictate how your document prints (see Figure 25-5).

Figure 25-5
The standard LaserWriter 8.4 Page Setup box. This box may differ slightly, depending on the application and printer driver version.

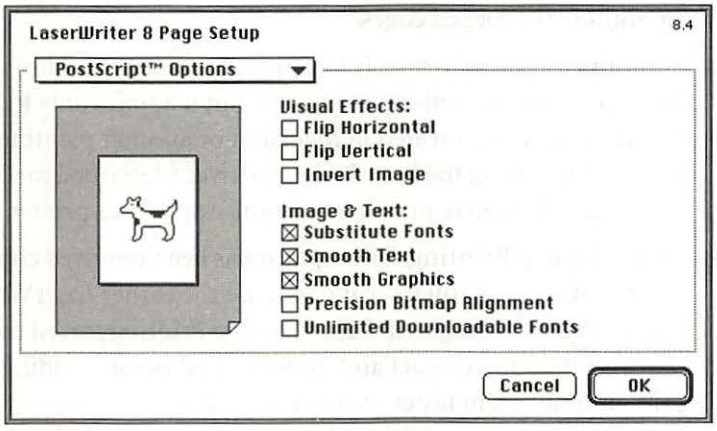


Some programs add settings to those in the Page Setup box, but the basic options are always the same. You specify the size of the paper you print on; whether or not you want the image reduced or enlarged; and whether you want the paper printed in portrait (taller than it is wide) or landscape orientation (on its side).

Ineffectual FX

Depending on which version of the LaserWriter driver you're using, the Page Setup dialog also offers a number of *other* options. In LaserWriter 8, the options appear under the heading Image & Text, and you find them by switching the Page Setup's main pop-up menu to PostScript Options (see Figure 25-6). (With the older LaserWriter driver, these options are called Printer Effects and they appear right in the Page Setup window. And in early versions of LaserWriter 8, you access them by clicking the Options button in the Page Setup window.)

Figure 25-6
The increasingly useless options of the Page Setup dialog box



In today's world of powerful, high-tech PostScript printers, the Printer Effects/Options are next to useless. Unchecking them conserves RAM, saves printing time, and leaves the printing quality unaffected.

But because they're always there, staring you in the face, we'd like to demystify them.

- **Substitute Fonts (formerly Font Substitution).** In the early days, there were only two kinds of fonts: laser fonts and ImageWriter fonts. As you learned in Chapter 24, these two categories actually corresponded to PostScript fonts and bitmapped fonts (which print jaggedly on the LaserWriter).

In those uncertain days of 1985 and 1986, people sometimes used the fonts they were accustomed to — Geneva, New York, Venice — in preparing documents. Of course, such fonts inevitably came out looking jagged, because no PostScript instructions (outline fonts) were involved.

As a helping hand, Apple offered the Font Substitution option. It automatically swapped a PostScript font for its non-PostScript equivalent. That is, wherever you used Geneva in your document, the laser printed Helvetica; wherever you used New York, you got Times; for Monaco, you got Courier. Unfortunately, the characters in each of these fonts simply aren't the same widths. As a result, your Helvetica, Monaco, and Times text had ridiculous word spacing when they finally hit paper.

Today, this option is irrelevant in terms of print quality. In TrueType-equipped systems (such as System 7 Macs), Geneva, Monaco, and New York are no longer bitmapped fonts. They're TrueType fonts, so they'll never print jaggedly on a laser printer at all. Leave this option off.

- **Smooth Text (formerly Text Smoothing).** If, by some freak of fate, you're still using bitmapped fonts (such as Venice or London), this setting supposedly makes them look better when printed by an Apple laser printer by smoothing the ragged edges.
- **Smooth Graphics (formerly Graphics Smoothing).** This option performs a similar smoothing operation, but it applies only to bitmapped pictures, those you created in MacPaint or another painting program. Except when using the LaserWriter 8 driver (described earlier), this item has no effect if you're printing to a non-Apple laser printer.
- **Faster Bitmap Printing.** This option has been removed completely from LaserWriter 8, but you'll see it if you use the earlier LaserWriter driver. When originally designed, Faster Bitmap Printing forced the Mac to preprocess bitmapped (MacPaint-style images) before sending them to the printer, resulting in faster overall printing.

  This must be one of the best jokes in the world of Mac, however. Today's laser printers are so efficient that Faster Bitmap Printing actually results in *slower* bitmap printing! Leave this option off.

Obviously, we're not the only ones who think that these options are goofy; in successive generations of printer software, Apple and Adobe have been sneaking these check boxes out of your life, burying them deeper in the Page Setup dialog box. Furthermore, in the even newer printer driver, the awe-inspiring QuickDraw GX (described later), *none* of those silly printer effects clutter up your screen. They've all gone to that great dialog box in the sky.

More Page Setup options

There are still more PostScript printing options — fortunately, these are more useful than the effects we just described. With the latest LaserWriter 8 driver, these options appear under the heading Visual Effects, after you switch the Page Setup's main pop-up menu to PostScript Options (see Figure 25-6). In older versions of the LaserWriter driver, these options are hidden in the dialog box that appears when you click the Options button.

- **Flip Horizontal** and **Flip Vertical.** These options are used for mirroring your document; as illustrated by the sample image in the dialog box, they flip the printed image right-for-left or upside down. You may occasionally need to print something flipped horizontally when you print onto film using a Linotronic imagesetter if your pages must be "emulsion side down."

  You *never* need Flip Vertical, as far as we can imagine. You can accomplish the same thing by simply selecting Flip Horizontal and then turning the page upside-down in your hand — and you get your printout much sooner!

- **Invert Image.** This choice prints a negative of your pages: black-for-white and white-for-black. You can use it, we guess, at Halloween.

- **Precision Bitmap Alignment.** Here's another obsolete feature. You're supposed to use this option when you're printing MacPaint-style documents (72 dpi bitmapped art).

  It so happens that 72 doesn't divide evenly into 300 dpi, which is the resolution of a laser printer. Precision Bitmap Alignment reduces the overall image by four percent so that each on-screen dot perfectly fills up four of your 300 dpi printer's dots.

  Ignore this option. Instead, when you go to print, simply specify that you want to print at 96 percent of full size! The effect is exactly the same, but you save the trouble of trudging through two dialog boxes to

TRUE FACT

THE INEVITABLE DOGCOW SIDEBAR

Look at Figure 25-5. In fact, look at your *own* Page Setup, Printer Options or Print dialog box. Look at that animal, the one who stands in for your actual document image, the one who obediently flips, shrinks, grows, turns black, and hangs upside down to illustrate the effects of the various printer effects as you turn them on and off.

What *is* that animal? Is it a dog? Is it a cow? No. According to anonymous sources at Apple, this animal is the Dogcow. The Dogcow has become legendary among the Mac intelligentsia. There are Dogcow T-shirts. Dogcow discussions on CompuServe. And in the newest Print dialog boxes (for the StyleWriter, for example, or the Level 2 PostScript driver), the Dogcow has been elevated to a much more prominent position.

You can predict, we'll bet, the sound he makes: *Moof!*

TRUE FACT
THE LONELY LASERWRITER SELECT 310

Poor little orphaned printer! According to Apple, neither the LaserWriter 8 driver nor the LaserWriter Utility works on the Select 310. Apple provides owners of this model of laser printer, therefore, with no easy way to download fonts or PostScript files to it.

We can offer one workaround: Use the Adobe program called PSTool to download PostScript files (it's available on the Internet at the FTP address *ftp.adobe.com* in the directory */pub/adobe/Programs/PSTool.sit.hqx*).

Otherwise, though, you're out of luck. The Select 310 doesn't work with the LaserWriter 8 driver, and so it doesn't let you: choose which paper tray you want; continue to draw paper from an additional cassette if the first cassette runs out; print multiple pages on one sheet of paper; enhance the resolution in any way.

find this option. (Come to think of it, using our 96 percent method has an additional advantage. If you use Precision Bitmap Alignment, only the bitmapped graphics are reduced 4 percent, while text and vector graphics remain at full resolution. The result: alignment and scaling differences between screen and paper.)

- **Larger Print Area.** If you're using any version of the LaserWriter driver prior to version 8.4, this is a *very* important and a *very* useful option!

  Most laser printers impose a mandatory half-inch margin upon your pages. Anything you design in your documents that comes closer to the edge of the page than that simply gets chopped off, looking extremely silly.

  With a single mouse click upon this check box, however, you can expand your printer's printing area to within a quarter-inch of the edge of the page all around. (The feature is gone from LaserWriter 8.4 and the LaserWriter GX driver. Those drivers are set, by default, to print to the larger print area when you use choose the US Letter paper size.)

- **Unlimited Downloadable Fonts.** This setting, another holdover from the days of memory-strapped laser printers, lets you print documents that contain too many fonts for your printer to handle otherwise.

  This feature works by flushing fonts from RAM as soon as they're used and then downloading the next batch. This constant downloading and flushing makes the printing take longer, of course, but it may be the answer when lack of printer memory would otherwise render your document unprintable.

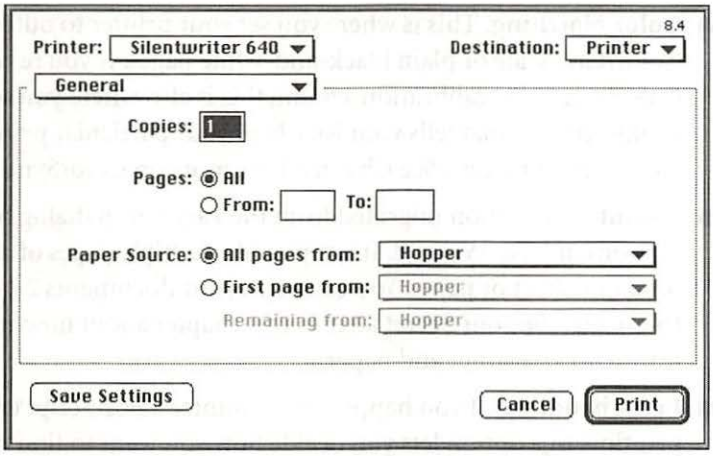
  One caveat: If you're printing an EPS graphic that contains the only instance of a certain font, this setting may not download that font correctly. The Courier font will be substituted instead. If that syndrome happens to you, you may have to turn off Unlimited Downloadable Fonts and find another solution.

The Print dialog box

The Print dialog box — the one you see when you actually choose a program's Print command — remained essentially unchanged through several successive versions of the LaserWriter printer driver.

But in LaserWriter 8.4, the Print dialog box got a major facelift (see Figure 25-7). First — and terrifically — you can now choose which printer you want to use for each printout by using the Printer pop-up menu, ignoring the Chooser altogether.

Figure 25-7
The all-new LaserWriter 8.4 Print dialog box.



Furthermore, Apple took options that used to clutter up the Print window (as shown back in Figure 25-1) and buried them deeper in the dialog box. The basic options — the number of copies you want to print, which pages, and from which paper tray — are still visible when you first open the window. To get to the other options, you use the Print window's main pop-up menu; the options in the dialog box change depending on which of the eight categories you have selected in the pop-up menu.

Here's a rundown of the available options in the pop-up menu:

- **General.** These options are displayed when you first open the Print window. Specify which pages of your document to print, the number of copies, and the paper source (manual feed, paper trays, and so on).
- **Background Printing.** This is brilliant addition to the Print dialog box, allowing you to decide *on the fly* whether or not you want each print job to be processed in the background. (For an explanation of background printing, see our discussion in the "PostScript Printer Guidebook" section,

later in this chapter.) You also have the option of scheduling a print job for a later time. You can set a large print job to run during your lunch hour, for example.

- **Cover Page.** Turning this option on forces your printer to spit out a cover page before (or after) each job you send to it. The cover page lists the your name (as defined in the Sharing Setup control panel on your Mac), the name of the document you're printing, the program you're printing from, the name of the printer, and the exact time and date the job was sent. Cover pages can be useful in large offices, where dozens of people are grabbing printouts from the same printer, but they do waste one extra sheet of paper for every printout.
- **Color Matching.** This is where you set your printer to output either Color/Grayscale or plain black-and-white pages. If you're using Apple' s ColorSync color calibration system, this is also where you set the Printer Profile, the file that tells your Mac how your particular printer handles color reproduction. (See Chapter 4 for more on ColorSync.)
- **Layout.** This option migrated from the Page Setup dialog box in earlier versions of LaserWriter 8. It lets you tile multiple pages of a document onto one sheet of paper. You can print your documents 2-, 4-, or even 16-to-a-page. (See our Secret later in this chapter about how you can use this feature to save toner and paper.)
- **Error handling.** If you happen to encounter a PostScript error when printing, this option lets you decide how you want to find out about the problem (exactly as the PrintMonitor program's Preferences command used to do). Do you want an error message to flash on your screen, or do you want the printer to spit out a detailed report? Our advice: Choose the No Special Reporting option — and read the Printing Troubleshooting section that appears later in this chapter.
- **Save as File.** Provides the options needed to save your document as a PostScript file or EPS (Encapsulated PostScript file), rather than send it directly to a printer. See the "Intro to PostScript files" and "EPS on the fly" Secrets below for details.
- **Printer Specific Options.** Here you'll find any other options specific to your particular printer, such as how many paper trays are installed, when the printer drops down into its low-power (sleep) mode, or how dark you want your printouts to be. For these options to be available, you *must* have the correct PPD installed. (See the section called "What's a PPD file?" earlier in this chapter.)

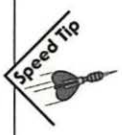
If the program you're printing from happens to have its own special printing features (as Microsoft Word does, for example), a *ninth* category may appear in Print dialog box, giving you access to those options, too.

POSTSCRIPT (LASERWRITER 8) PRINTING SECRETS

Intro to PostScript files

One of the options in a PostScript printer's Print dialog box is PostScript File. (With LaserWriter 8.4, you must switch the Print pop-up menu to "Save as File" to see this option.) Instead of actually printing your document on paper, the Mac creates a file on your hard drive that contains all the necessary printing information for that document. After you create a PostScript file, all you have to do is send it to your printer, using the LaserWriter Utility or Apple Printer Utility.

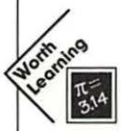
Contained in that PostScript file are all the instructions the printer needs to start spewing out pages. In other words, that time-consuming QuickDraw-to-PostScript conversion process has *already* happened. Printing a ready-made PostScript file, therefore, is much faster than printing using the Print command.



That's good to know when you're in a hurry, such as when you're printing at a service bureau or copy shop, and you're being charged by the hour. PostScript files are ideal for service-bureau visits for another reason, too — you don't have to take along the program that created them. The file by itself (and any special fonts you used) is all you need.

Read our section on service bureaus later in this chapter for details.

EPS on the fly



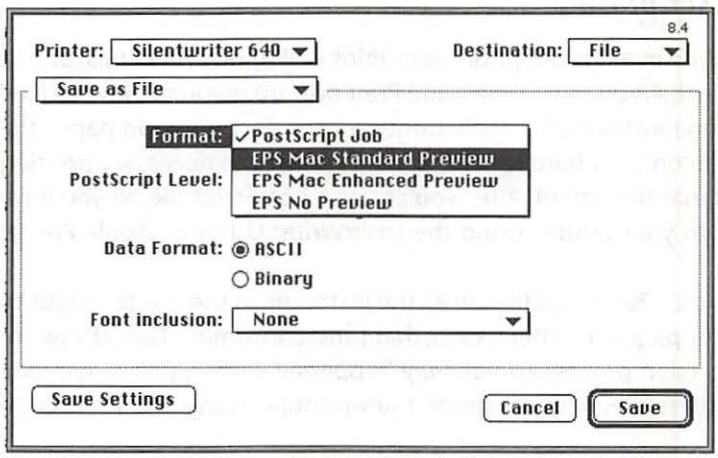
This is a *really* hot feature that appeared with the debut of LaserWriter 8. The Level 2 driver can actually create an EPS file of *any* document, even in programs that don't give you that option.

Suppose you want to create an EPS file of a ClarisWorks document. Choose Print from the File menu. Choose Save as File from the main pop-up menu in the Print dialog box, and choose File from the Destination pop-up menu. (We're assuming you're using the LaserWriter 8.4 driver; in earlier LaserWriter versions, click the Destination: File radio button instead.)

From the Format pop-up menu, choose EPS Mac Standard Preview. Next, take a look at the extremely useful Font Inclusion pop-up menu (see Figure

25-8). If you choose All, the actual PostScript fonts needed to print your graphic are embedded *directly into the EPS file!* That's an important feature that has two important effects. First, the size of your EPS file on the disk balloons, because it includes all the font information for all the fonts in the file. Second, despite its unwieldy size, you can now give this EPS file to a service bureau or a friend, confident that it will always print correctly, whether or not your recipient happens to own the fonts you used.

Figure 25-8
Creating different types of EPS files is a snap with the Level 2 driver.



Finally, click Save, and a new dialog box appears so you can name your EPS file and save it.

Note: With versions of the LaserWriter 8 driver prior to 8.4, you click Save after choosing the EPS format, and *then* set the Font Inclusion option in the Save dialog box.

How to extend toner-cartridge life

Every printer has a dial (or a software control) that adjusts the darkness of the printing. The lighter the setting, the less toner gets used up. While you're working toward the final draft of your document, consider printing at lighter settings to conserve toner.

Working Software's Toner Tuner, an extension, gives you a huge amount of control over how much toner is used for each print job (408-423-5696). In fact, you can specify that only ten percent of the normal amount be used (or any percentage you choose). At that setting, printouts are a faint gray, but your cartridge lasts ten times longer, and you can still proof the text and the graphics.

Save bucks on cables

You're supposed to connect your Mac to a PostScript laser printer with two PhoneNet or LocalTalk connectors (about $20 each) and cabling. If you're a one-Mac operation, however, we've found that a plain old $12 StyleWriter cable works just as well.

Apple endorses this technique only for recent LaserWriter models (such as the Pro 600/630/810, Select 300/310/360, and Personal LaserWriter LS/300), but we've never had trouble using other laser printer models.

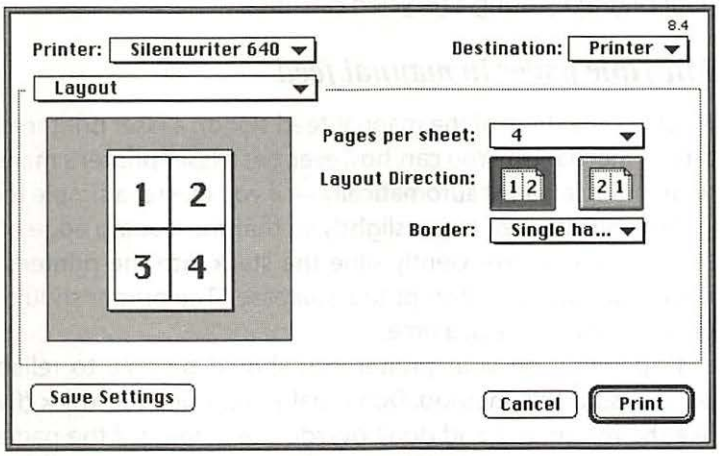


Save toner — and paper, too

This secret has saved us literally reams of paper. The LaserWriter 8 driver lets you set up layouts that tile more than one page per sheet of paper. We've found that for proofing many documents, half- or quarter-size pages are perfectly adequate. You can still read the text, catch spelling or formatting errors, and get a sense of the overall look of each page — before printing a full-size final draft. Of course, by printing two pages on each sheet of paper, you use only half the paper and toner.

To print these mini-pages, choose the Layout option from the main pop-up menu in the Print dialog box, then choose the number of pages you want printed on each sheet in the Pages Per Sheet pop-up menu (see Figure 25-9). (With versions of the LaserWriter 8 driver before 8.4, open the Page Setup dialog box, then use the Layout pop-up menu to choose 2 Up (for two document pages per sheet) or 4 Up (four per sheet).

Figure 25-9
Creating a multi-page layout using the LaserWriter 8 Print dialog box.



The printer driver automatically scales and rotates the pages of your document to make them fit properly on a sheet of paper.

Eking out a few more pages

When your printer reports that the toner cartridge is out of powder, this old trick can squeeze out a few desperate additional pages.

Remove the cartridge (remember, you're supposed to do any cartridge-removing in dim light). Tilt it gently from side to side so that you redistribute what remaining powder there is inside the container. Replace the cartridge. You should now be able to print a few dozen or even a few hundred additional pages.

Refilling cartridges

A typical laser printer toner cartridge lasts for between 2,000 and 6,000 pages, depending on the model and the type of work you do. Inevitably, though, it gives out. Copies become lighter, and you may see the dreaded amber light appear on your Apple laser printer.

Both Apple and Hewlett-Packard have joined the conservation movement and include shipping labels you can use to send your spent cartridges off to the recycling plant. Some local business supply stores even give you a few bucks for the used cartridge. (They send your used cartridge off to a recharging plant to refill it with toner.)

You can save quite a lot of money if you use refilled cartridges. However, the quality level varies considerably. The only advice we can offer is to get a recommendation from a friend or coworker, or local user group. You might ask the recharging service for some sample pages. (In any case, you can't *damage* your printer by using a recycled cartridge.)

Multiple pages in manual feed



Most people think of the manual-feed slot on a laser printer as a one-page-at-a-time mechanism. You can, however, get a laser printer's manual feed to work with multiple pages automatically — if you master a simple technique.

Fan your stack of paper slightly so that the leading edge of the stack looks like a little staircase. Gently slide the stack into the printer's manual feeder, being careful not to disrupt the "staircase." The printer should now be able to grab the pages one at a time.

Depending on your printer, you should be able to reliably feed several pages using this method. Don't make the stack too thick (five pages seems like the maximum) and don't overdo the fanning. If the pages are staggered more than a couple of millimeters, they won't feed continuously.

Manual feed part II

If you occasionally print manual-feed pages, you may be less than pleased when you print with Background Printing turned on. You're told, for *every page,* that PrintMonitor requests your attention. You have to choose PrintMonitor from the Application menu. A message appears saying that "the LaserWriter is waiting for a sheet of paper." As they say, this is a feature, not a bug.

Fortunately, you can rid yourself of this warning. Launch PrintMonitor (if it's not already running, you can double-click its icon in the Extensions folder of your System Folder). From the File menu, choose Preferences. In the dialog box that appears, choose "Give no notification" (see Figure 25-10).

Figure 25-10
PrintMonitor lets you control what degree of annoyingness it uses to get your attention when you're doing manual-feed printing.

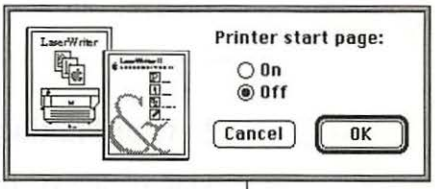


Squelching the startup page

We certainly hope that your laser printer doesn't still spit out a pointless and wasteful startup page every time you turn it on. No one knows why they set up laser printers to do this, but it annoys the heck out of most people. (It doesn't thrill the rain forests, either.) And making the laser printer stop spitting out startup pages is so easy!

Turn the printer on. Launch LaserWriter Utility (or Apple Printer Utility, whichever came with your Mac). From the menu, choose Startup Page Options. Click Off (see Figure 25-11). Wasn't that easy?

Figure 25-11
Make the start page stop!



Printing envelopes

Envelopes frequently jam when going through a laser printer; they're too stiff to bend around the mechanism of the paper path. Try these tricks:

- Before printing, "break the spine" of the envelope. Run the flap edge of the envelope between your thumb and forefinger, bending it at about a 45-degree angle as it passes through. Do this twice, bending once in each direction so that the envelope ends up flat. Avoid paper cuts by folding the flap over backward.

  For an even better pass through the printer, break the stiffness along *both* edges. This makes the envelope more flexible and the likelihood of jamming is reduced.

- Open the door at the end of the LaserWriter so that the paper path is straight. Almost every PostScript laser printer has a door or latch in the back, which makes the paper slide straight out the back of the printer instead of curling into the normal output tray.

- Stick with plain bond paper for envelope stock if possible. Thick, rag-based papers seem to fare worse when traveling through a laser printer.

Printing on letterhead paper

Letterhead creates an interesting problem: You normally use one kind of stationery for page one and blank sheets for additional pages. If you have a one-tray printer, place the first page in the manual feed slot; print it first. Then print the rest of your document (from page two to the end) in a separate pass.

Letterhead printing can be made much simpler if your printer has two different trays; its printer driver (or the LaserWriter 8 printer driver) offers a built-in option to take page one from one tray and additional pages from a different tray.

Preserving your prints

A laser printout is, after all, just a bunch of black dust that's clinging to the paper. As such, the black stuff can be prone to chipping, smearing, or peeling.

To minimize these aftereffects, our desktop-publishing friends swear by this technique: go to an art-supply store and buy a can of a spray-on fixative. Hold the can far away from the page and spray a very light coating.

Desktop Printing 2.0

One of the coolest parts of Apple's LaserWriter 8.4 software is Desktop Printing 2.0. Originally introduced as part of QuickDraw GX (discussed later in this chapter), desktop printing puts an icon representing each printer you use right on your Mac's Desktop — a blessing for Mac users who work in networked offices. To print a file on a particular printer, you don't have to go to the Chooser; instead, you simply drag the document's icon on top of the printer's icon! If you double-click a printer icon, you see a full list of the files waiting to be printed on the printer it represents. You can manipulate the printouts-to-be in all kinds of useful ways, as we'll show you in the Secrets section that follows.

The first version of Desktop Printing — the one that accompanied QuickDraw GX — was pretty limited. So was the Desktop Printing Extension, an extension Apple later released to add some desktop-printing features to non-GX Macs.

Desktop Printing 2.0, released in August 1996, is much more powerful. This version requires System 7.1 or later and a Mac with at least a 68020 processor. (You can get Desktop Printing 2.0 from Apple's web site,

http://www.support.apple.com, as part of the LaserWriter 8.4 software. It also comes with System 7.6.)

Installing Desktop Printing adds five extensions and one control panel to your system. In addition to the desktop-printing icons themselves, you get a few other goodies: a new Printing menu on the menu bar that lets you stop and start printing; another printer menu (represented by a tiny printer icon) that lets you switch between different printers (see Figure 25-12); a Control Strip module that *also* lets you change printers; and a Desktop Printers folder in your menu that lets you open any of your desktop-printer icons without actually going back to the Desktop.

Creating a desktop-printer icon still requires a visit to the Chooser. Once you've selected a printer there, the printer's icon shows up on the Desktop. You can then switch between printers, stop and start print queues, put jobs on hold, schedule them for future output, transfer them from one printer to another, and monitor all your printing activity — all without so much as a glance at the Chooser.

Figure 25-12
With Desktop Printing, you get a new menu so you can switch between printers without using the Chooser.



DESKTOP PRINTING 2.0 SECRETS

Desktop printers minus the desktop

OK, they're *called* desktop printers, but you don't have to keep them on the Desktop. With Desktop Printing 2.0, you can store the printer icons in any folder and create as many aliases of them as you want. You can put aliases of your printers in all the folders you use the most; you'll never be more than a short drag away from a print job.



A printer by any other name

You can rename desktop printer icons whatever you want, regardless of how the corresponding printers are named in the Chooser. This means you no longer have to remember which printer in the office is the HP LaserJet 4V and which is the HP LaserJet 5M. On your Mac, you can call them "Color Printer Next to Microwave" and "Big Printer Near Bob's Cubicle," if you so desire.

Remembering which printer is which

Having followed the advice of the previous secret, suppose you've renamed the four printers in your office John, Paul, George and Ringo. Problem is, now

you can't remember if Ringo is the solid-ink color printer on the second floor or the 600 dpi laser on the third floor.

There's an easy way to refresh your memory: Select a printer icon and choose Get Info from the File menu (⌘-I). The Get Info window will tell you the printer's real name.

Select a default printer

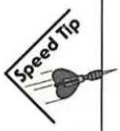
Your *default printer* is the one currently targeted in the Chooser — the one you'll end up printing to from within a program if you choose the Print command and don't switch the pop-up menu.



To designate a printer as the default printer, just select its icon and press ⌘-L; it automatically becomes the targeted printer in all your applications.

Of course, you can also choose the printer from the printer menu that gets installed when you use Desktop Printing 2.0, but we like this secret because you can do it without lifting your fingers from the keyboard. Navigate to the Desktop by pressing ⌘-Shift-up arrow. Type the first few letters of your printer's name to select its icon. Then press ⌘-L and you're finished. (You'll be able to tell which of your desktop-printer icons is the default printer by the bold black outline around its icon.)

Faster batch printing



If you have a batch of files that need to be printing, *don't* drag them to the printer icon one at a time; drag *all* of them at the same time. You'll only have to confirm your request once in the Print dialog box, and then all your documents will print.

Making extra copies

To print multiple copies of a file, you can select it in a print queue (after you've opened a desktop-printer icon by double-clicking) and choose the Duplicate command from the File menu. The file will print as many times as you dupe it.

Print while you're at lunch



Background printing is convenient, but if you're doing other processor-intensive work, having the Mac feed pages to the printer can slow you down. Instead, schedule jobs to print during your lunch hour — or even after you leave for the day.

With LaserWriter 8.4, you can schedule a job at the time you send it. In the Print dialog box, switch the main pop-up menu to Background Printing. Then click the Print At radio button and set the time/date that you want the printout to occur.

But suppose you've already sent a job to the printer — and *then* decide you'd rather schedule it to print later. To do this, put the job on hold (by clicking the Hold button in the print queue window), then click the Timer button. In the Set Print Time dialog box, click the At Time radio button, then set the date and time you want the job to print and press Return.

PostScript Level 3

In 1997, Adobe plans to release PostScript Level 3, its first major upgrade to the PostScript language since 1990.

PostScript Level 3 is designed to speed up PostScript printing routines and improve the handling of graphics, particularly in the area of color printing. It will use new shading algorithms to reduce banding, produce smoother color gradients, and improve the resolution of black-and-white printers.

Several Internet-related features will be incorporated into Level 3, too. With Level 3, you'll be able to create Portable Document Format (PDF) files directly from the printer driver. (A PDF is a document, complete with fonts, layout, color, and other graphic elements, that you can distribute to anyone without worrying what program or fonts the own — as long as they have the free Adobe Acrobat Reader.) Networked printers that are capable of connecting to the Internet will be able to grab a PDF file from a designated Web address and print it directly from the Web site.

Level 3 will also offer improved cross-platform compatibility. It will, for example, be able to handle documents in PCL 6 format, the current version of the Hewlett-Packard's printer control language.

Of course, to tap into all of these new features, printer driver software will once again have to be rewritten. So far, Apple hasn't released a Level 3 printer driver.

MACINTOSH SECRET
THE DESKTOP PRINTING BERMUDA TRIANGLE

Apple doesn't call this a bug; we do.

Under Desktop Printing 2.0, desktop printers appear on your Desktop as cute printer icons — except when you encounter them in Open or Save dialog boxes, where they appear, not as tiny pictures of LaserWriters or StyleWriters, but as plain old ordinary *folders!*

So what happens if you unwittingly open one of these "folders" and save a file into it? It becomes embedded in the desktop printer itself and *vanishes from sight*! The file won't be visible in any Finder windows, nor will it appear in print queue if you double-click the desktop-printer icon. How can you retrieve the otherwise hidden file? Launch the program you used to create the file, choose the Open command, and open the desktop-printer icon folder again; your hidden file will still be there.

At least now you can open the file and re-save it into a new location; unfortunately, the copy you saved into the printer icon is there forever.

QUICKDRAW GX

QuickDraw GX (included with System 7.5 and later) is Apple's major upgrade to QuickDraw. GX affects both PostScript and non-PostScript printers, and it has the *potential* to be a dramatic leap forward in printing on the Mac — not just printing, actually, but font handling, color, document distribution, screen display, and much more. Whereas LaserWriter 8 was only a *driver* enhancement, QuickDraw GX brings changes and enhancements to drivers *and* just about everything else related to type, printing, and graphics.

QuickDraw GX, an extension for System 7.1 or later, took Apple years to develop. On a typical Power Mac, it wolfs down 2.5MB of memory and 6MB of disk space. And it changes your computing life in a number of ways.

Features you get instantly

Some of the changes affect you the very day you install the GX extension (which we'll call Instant Features). A second category requires software companies to upgrade their programs, making them GX-savvy. We'll cover each class of enhancement separately.

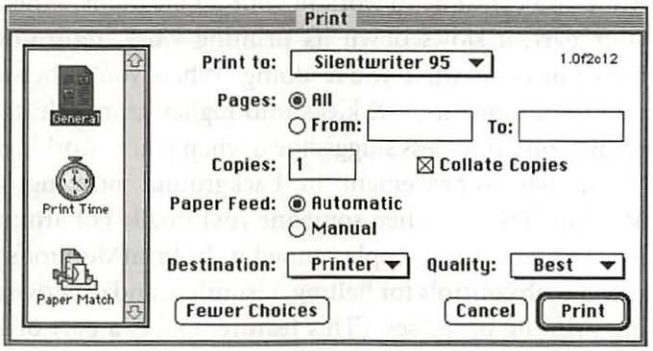
Instant Feature #1: Desktop printer icons and a better Print command

Desktop printing (described in the previous section) was originally introduced as part of QuickDraw GX. The QuickDraw GX installer replaces all the usual icons in the Chooser (StyleWriter, LaserWriter, and so on) with new ones (StyleWriter GX, LaserWriter GX, and so on). When you select one of these icons in the Chooser and click Create, an icon representing that printer appears on your Mac's Desktop.

Of course, with the release of Desktop Printing 2.0, you no longer need QuickDraw GX to get desktop-printing features — a great relief to many who considered desktop printing the only immediately useful aspect of QuickDraw GX.

QuickDraw GX also adds a pop-up menu (shown at the top of Figure 25-9) listing the printers available to your Mac, exactly as in Desktop Printing. Figure 25-13 shows a few other goodies in the standard GX Print box (click the More Choices button), which you'll recognize from our Desktop Printing discussion: the Print Time icon lets you specify when you want the printing to take place, the Paper Match icon controls multiple paper trays, and so on.

Figure 25-13
QuickDraw GX's expanded Print dialog box, showing some of the new printing options. The pop-up menu at top controls which printer will do the deed, if you do, in fact, have more than one.



Instant Feature #2: Portable Digital Documents

Another benefit conferred on you by GX on the very day you install it: It lets you create *Portable Digital Documents,* or PDDs. You choose the PDD Maker the same way you choose any printer — by using either the Chooser, the pop-up menu shown in Figure 25-9, or a desktop PDD Maker icon. (Does the Mac world really need another three-letter acronym starting with P? PPD, PDF, PPP, PDA, PGP . . .)

A Portable Digital Document is one that anyone can open, read, and print on any QuickDraw GX-equipped Mac. (Your recipients use a Viewer program to look at and print your PDD.) The document looks exactly the same on their screens as it did on yours, even if a recipient Mac has *neither the fonts nor the program* you used to create it! GX creates these PDDs by cleverly embedding into the document itself whatever fonts you used. It doesn't bother embedding the *entire* font; that would create enormous documents. Instead, it embeds only the actual *characters* you used in that document. (This is true for TrueType and GX fonts only; PostScript Type 1 fonts are embedded in their entirety.) The resulting PDD file is large, yes, but not astronomical; a one-page word-processing document with three fonts in it is about 250K.

If this sounds suspiciously similar to such portable-document programs as Acrobat, Common Ground, and Replica, you're right; it's the same idea.

Instant Feature #3: Better background printing

The third feature you'll be able to enjoy without upgrading your existing software is better background printing. QuickDraw GX is smarter about printing while you continue to work in your applications. When it detects activity on your part, it slows down its printing work, returning more of the Mac's horsepower to what you're doing. When you're between typing bursts or mouse movements, GX kicks into higher gear with its printing duties. As a result, you notice less sluggishness when you're working.

Another improvement in background printing: the death of PrintMonitor. Yes, just when someone (us) finally got around to explaining what PrintMonitor does, Apple canned it. In PrintMonitor's place is a new Finder menu with controls for halting, resuming, and otherwise managing the ongoing printing processes. (This feature, too, is a part of Desktop Printing 2.0; you don't need GX to get it.)

Instant Feature #4: Printing extensions

The QuickDraw GX driver is designed to accommodate a kind of plug-in called Printing Extensions. These sold-separately add-ons can enhance your printouts in various ways: adding an automatic name stamp on every page, printing on special paper sizes, printing two pages top-to-top so you can fold them, and so on. (One such extension, called Peirce Print Tools, comes with some copies of QuickDraw GX.)

GX features you have to wait for

The other category of GX features won't be available until you get GX-savvy *programs* and GX *fonts*. (See Chapter 24 for more on GX fonts.) Unfortunately, even three years after GX's release, there are precious few of either. Without GX-upgraded programs and fonts, some of GX's best talents will be wasted:

- **Type twisting.** If controls are available in your programs, you can skew, distort, or twist any piece of text like taffy. You can even slant or curve the baseline — and the text always remains editable.
- **Complex graphics.** In today's QuickDraw-and-PostScript world, you never know what you'll get when you print a PostScript graphic on a QuickDraw printer. Rotated images may print raggedly or stairstepped. QuickDraw GX, on the other hand, supplies its own core graphic routines built right into the system software, and you don't get rude graphics surprises.

- **Color publishing.** QuickDraw GX uses Apple's ColorSync technology to make color output predictable through the entire creation process — from the scanner, to the monitor, and finally in the printed output. Of course, your scanner, color printer, and so on, require ColorSync "profile" files, of which there aren't many yet.
- **Automatic font glamor.** As you read in Chapter 24, all existing font formats work fine with QuickDraw GX. But TrueType GX fonts are self-kerning, self-tracking, and self-ligature-making. In other words, the designer of the font decides how far apart the letters or words should be, taking into account the type size, boldness, and so on — and the font adjusts itself automatically, regardless of the program. For example, when you type 1/2, the font (which can now include up to 65,000 different characters) can intelligently substitute the typographically correct ½. And foreign languages — forget about it. QuickDraw GX can handle type that goes right-to-left across the page, up or down, or even a combination of these within a single line of text. (You're not a type expert until you've adjusted *vertical kerning* in Japanese text!)

  For the first time, people who have never even heard of kerning and tracking will, perhaps unwittingly, create absolutely gorgeous, typographically graceful documents, courtesy of these extra-smart fonts.

Why GX is mostly irrelevant

The moral of QuickDraw GX is, of course, the same as the moral of System 7.5, or Drag and Drop, or Publish and Subscribe, or any new Apple technology: Apple's software wizards have laid the groundwork. Utopia won't arrive, however, until every company that makes Mac software plays ball, goes back to the drawing board, and incorporates Apple's latest vision into its programs. In this case, the equipment makers have to work, too: You must get a GX-savvy printer driver for whatever printers you work with.

Unfortunately, most major programs today ignore GX's smarts. Software companies want their Mac and Windows programs to look and feel identical. In other words, they don't want to incorporate GX into their programs, because then their Windows programs would be left behind.

Until more programs become GX-savvy, installing QuickDraw GX isn't worth the time, RAM, or disk space — especially when Desktop Printing offers most of its immediate features with far less expenditure of disk space or RAM.

A QUICKDRAW GX SECRET

Some secret geometry



Highlight a GX desktop printer's icon. While pressing Shift, Option, and Command, choose Open from the File menu. The result: You're treated to a simple, elegant exhibition of QuickDraw GX's geometry capabilities. (You get either that or a black empty box and a system crash; we got one or the other, depending on the Mac.)

POSTSCRIPT PRINTER GUIDEBOOK

Believe it or not, a PostScript laser printer is an actual computer unto itself. Most models contain a Motorola processor, just like a Mac. And if you still need convincing, consider a laser printer's price.

Fortunately, using and maintaining this second computer of yours isn't nearly as complicated as using the first one (your Mac). But there's still plenty to learn.

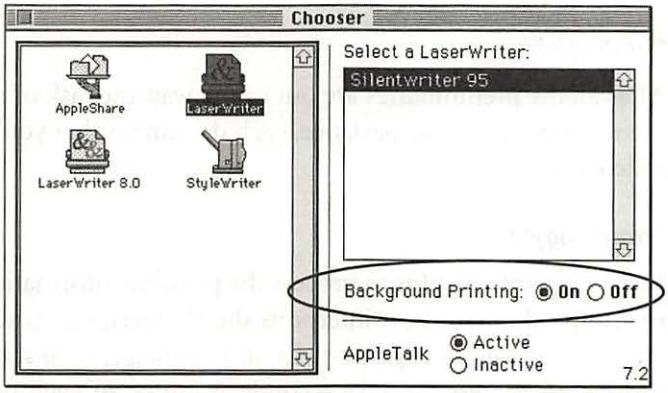
Background printing

Background printing means that you can keep working on your Mac while your document is being printed. Without background printing, your Mac simply displays a "Now printing" message for as long as the printing takes. You can move the mouse, but you can't type, use menus, click buttons, or get any work done at all until the Mac's attention returns to you. And, though we're discussing background printing here in the context of PostScript printers, some non-PostScript printers (notably the StyleWriter and DeskWriter) can also print in the background.

In all cases, the on/off switch for Background Printing is in the Chooser. Just open the Chooser, click the icon representing your printer, and click On or Off (see Figure 25-14).

LaserWriter 8.4 makes turning Background Printing on and off much easier; you can decide on a job-by-job basis which items you want to print in the background and which you don't. In the Print dialog box, select Background Printing from the main pop-up menu. You can then select either the Foreground or Background radio button — or schedule your job to print later.

Figure 25-14
You turn background Printing on or off in the Chooser, depending on what kind of hurry you're in.



Printing is faster if it's the Mac's only focus of attention. Therefore, when you're in a hurry, and you have no additional work to do on the Mac, turn Background Printing *off*.

The messages you see during printing

Whether printing is foreground or background, a series of status messages appears on your screen while the printing is going on. (If you're printing in the background, you can't see the messages unless you pull PrintMonitor to the front. More on PrintMonitor in a moment.)

"Looking for LaserWriter"

The first message you see is "Looking for LaserWriter: Claire's Printer" (or whatever you've named the printer that's selected in the Chooser). This message simply means that the Mac is trying to confirm that your Chooser-selected printer is attached and turned on. If not, the message will change momentarily to tell you that the printer is "not found."

"Initializing printer"

Each time you turn on your PostScript printer, it must be *initialized.* (The Mac doesn't bother to initialize it until you actually try to print something.)

When it initializes a PostScript printer, the Mac transmits a printer-preparation file to the printer. This file contains PostScript instructions specific to the printer driver you installed. (In this age of laser printers that can be shared between Macs and IBMs, initialization tells the printer that it's connected to a Mac, for one thing.)

For speediest printing, install the same LaserWriter driver on *all* Macs. Now the printer will only be initialized once, when the very first document of the day is printed.

"Starting job"

After all the preliminaries are out of the way, the task of printing your document begins. In Apple parlance, each document that you're trying to print is called a *job.*

"Processing job"

Now the printer begins to process the printing information from your document. In other words, it interprets the PostScript instructions coming from the Mac and begins to form them into an image, so to speak, in its head. This processing process can take seconds, minutes, or even hours, depending on the complexity of the document and the number of fonts used in it.

What a difference RAM makes

We mentioned that a printer is actually a computer unto itself. It has its own memory, too.

While 2MB may be enough memory for a typical Mac application, 2MB in a printer is barely enough to process a single letter-sized page with a couple of different fonts. The original Apple LaserWriters had less RAM than that, and they had constant problems printing complex files.

You can install additional memory into most PostScript printers. That's lucky, since hardly any printers come with even enough RAM to handle complex graphics and text on full-width, legal-size pages. And the situation's only going to get worse: All the latest printing features — Level 2 PostScript, for instance, or Apple's FinePrint and PhotoGrade enhancements — suck up RAM with abandon.

APPLE PRINTER UTILITY (LASERWRITER UTILITY)

This oddball, forgotten, underdocumented gem is a program that Apple throws onto your System disks. Its name changes every other year: first it was the LaserWriter *Font* Utility; then just LaserWriter Utility; and today it's known as the Apple Printer Utility. In any case, it performs a collection of useful tasks related to your PostScript printer.

With your permission, we'll refer to it by its current name, the Apple Printer Utility (APU).

Naming the printer

When System 7 first came out, our clients kept asking: "Isn't there a way to name printers anymore?" (In the pre-System 7 days, you got a special little program called Namer with your laser printer. You used it to give your PostScript printers names so that each would show up in the Chooser with a different title. But there's no Namer in System 7.)

Today, you use either the LaserWriter Utility or the Apple Printer Utility to name your printers.

Printing a PostScript file

As we mentioned earlier, the Print dialog box (which appears whenever you choose the Print command) lets you print to a *PostScript File* instead of to paper. (See "How to make a PostScript file," earlier in this chapter.) When you select this option, the Mac creates a new file on your hard drive, containing PostScript *instructions* for whatever you just tried to print.

Only trouble is, no one bothers to tell you how you *print* a PostScript file after you create it. APU is your answer (unless you prefer a shareware alternative, such as DropPS). Choose "Download PostScript File" from the Utilities menu. You're asked what file you want to send to the printer; find the PostScript file you created earlier and open it. Provided your PostScript printer is on, the file finally prints.

Downloading a new font to the laser printer

You can also use APU to download a *font* to the printer.

A PostScript laser printer comes with a certain set of fonts built in: Times, Helvetica, and a few others. If you want to print using a laser font that's not built in — Bodoni, say — you must send (*download*) that font to the printer before printing the document.

Fortunately, most well-behaved programs do this *font downloading* automatically. (Even APU itself, when downloading a PostScript file you created, downloads any necessary fonts before printing.) Now you know why certain text documents take longer to print than

CASE HISTORY

THE TELLTALE PRINT JOB

When you're connected to a network of Macs and printers, you have no privacy.

We know a woman who landed in some serious hot water at the PR firm where she worked. She'd been thinking of quitting her job there for weeks. Just when she got up the courage to start sending out résumés to other companies, her boss called her into his office. He demanded to know why she was spending company time and resources seeking a new job.

She was flabbergasted. How could this guy have known? She hadn't told a *soul* she was planning to leave!

Actually, she'd told *everybody.* She had failed to realize a simple fact: When you print on a network, anyone else who's trying to use the same laser printer gets a message on the screen that describes what that printer is doing.

The woman hadn't changed the name of her résumé. Her boss had tried to send a document to the same laser printer. And the message on *his* screen said, "Now processing job: Pam '95 Résumé."

He didn't have to be a rocket scientist to guess what she was up to. (And he was glad he hadn't yet installed the LaserWriter 8 driver, which no longer announces the names of the documents over the network.)

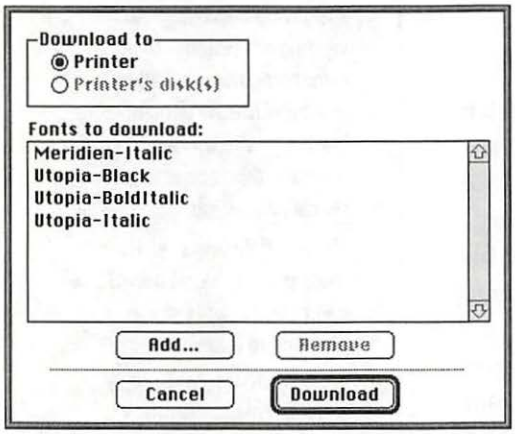
others: The Mac needs extra time to print any document that contains a font not already built into the printer.

You can avoid this time delay — well, divide it up, anyway — by sending the fonts to the printer separately. You may do this, for example, when you're on a deadline and the designer is still working on the document. You can get the printer ready by sending the fonts to it ahead of time.

To send the fonts, choose Download Fonts from the File menu. You see the dialog box shown in Figure 25-15, but it will be empty. Click Add and navigate your way to the Extensions folder in the System Folder (System 7 and 7.0.1) or the Fonts folder (System 7.1 and later). Find the name of the laser font — it's the name of the regular font minus a few letters. (For example, Palatino Roman's printer font is called PalatRom.) Double-click its name and then double-click the names of any other fonts you want to send to the printer.

When you click Done, you return to the dialog box in Figure 25-15 where the fonts you selected are now listed. Finally, click Download. If the printer is on and connected to your Mac, APU sends the font information to it.

Figure 25-15
Getting ready to send non-built-in fonts to the laser printer using LaserWriter Utility.



Remembering the font: the printer's task

One additional little Secret about downloadable fonts: If you send a font to the printer using APU, the font stays there in the printer's memory until you turn off the printer.

But if a *program* downloads a font in the course of printing a document, it immediately flushes that font from the printer's memory as soon as the document is finished printing. This flushing does make your printer ready for its next task, and it does save printer memory. But it makes documents take longer to print because fonts must be loaded first and flushed after. If you plan to do lots of printing involving the same downloadable fonts, use APU to send the font before printing the document.

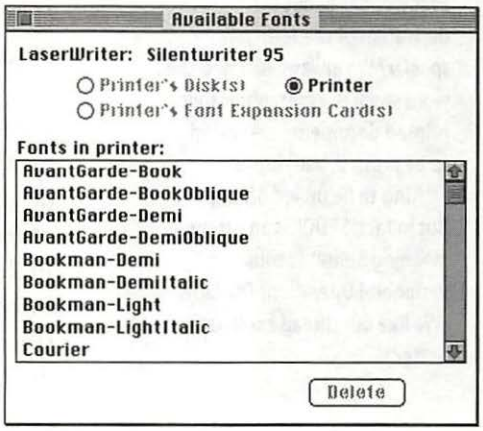
Finding your printer's fonts

Of course, you have a *general* knowledge of which fonts your laser printer has built in. But it may be wise to know more specifically; any document you prepare using the built-in fonts will print faster than one that uses downloadable fonts.

A quick, paperless way to find out is to use APU's Display Available Fonts command (File menu). After consulting your printer, the program shows you a list such as the one in Figure 25-16.

The Display Available Fonts command can be especially useful in troubleshooting printing problems. It doesn't just list the built-in fonts; it shows all *available* fonts, including those that you downloaded to the printer manually.

Figure 25-16
APU to the rescue, showing a complete list of all fonts your laser printer is ready to print.



PRINTMONITOR

PrintMonitor is one of the most powerful, intelligent, and useful programs on the Mac. It can also be the biggest headache.

Despite the confusing fact that it resides in your *Extensions* folder, PrintMonitor is, in fact, an application. Yet you probably can't ever remember double-clicking its icon. That's because PrintMonitor launches *itself*, unbidden, every time you print a file when Background Printing is turned on.

On Macs that don't have QuickDraw GX or Desktop Printing 2.0 installed, PrintMonitor is Apple's print spooler. When you use the Print command, the Mac creates a *spool file* on your hard drive — to be specific, the spool file is stored in the PrintMonitor Documents folder, inside the System Folder. (A spool file is a disk-based version of the printout that awaits its time to be sent to the printer.) PrintMonitor now takes charge of the printing process. It grabs the first spooled file and directs it to your chosen printer. When the Mac's preprocessing of the file is finished, PrintMonitor quietly departs from your screen, even if the pages haven't actually come out of your printer yet.

When things go smoothly, you're never even aware of PrintMonitor's existence. Unless there's a printing problem, the only way you'd know that PrintMonitor was running is the fact that it's listed, temporarily, in the Application menu.

Remember that PrintMonitor only plays a role in printing *if* you've turned on Background Printing in the Chooser. If you intend to print one document at a time and take a coffee break while printing is in progress, you may not even need background printing.

But to use your time most effectively, have your Mac multitask and process the job in the background. You do pay a small price for using background printing, both in the time it takes a document to print and in the peppiness of your Mac while things are being printed in the background.

TRUE FACT
WHAT SPOOL STANDS FOR

Ever wonder about the derivation of the term *print spooler?* We always assumed the word spool is a metaphor: Your printed documents are waiting to be printed, like thread waiting to be pulled off a spool. But in fact, SPOOL is an acronym meaning Simultaneous Peripheral Operations Off-Line. (We like our thread explanation better.)

The PrintMonitor window remains hidden even when it's running. You can, however, bring it forward (while it's running) by choosing its name from the Application menu. (In QuickDraw GX or Desktop Printing, just go back to the Finder and use the Printing menu.)

You can also summon PrintMonitor on command (to change its settings, for example), even when you're not printing anything. Just go to your Extensions folder and double-click the PrintMonitor icon. It launches like any other application. After changing your settings using the Preferences command in the File menu, you can make PrintMonitor go away just by clicking on the Desktop (unless, of course, PrintMonitor is actually processing a document).

NOTES ON COLOR PRINTING

Color printers

If you want a bargain-basement color printer, maybe a little zest to spark up a flier you're printing, consider a *color inkjet.* Popular examples include the DeskWriter C series and the Apple Color StyleWriter series. The low-end color StyleWriter costs less than $300, it's compact, and its printouts are impressive; from three feet away, we've seen printouts of scanned color photos that look convincingly like the real thing. And for photographically realistic printouts, get the $400 Epson Color Stylus. For the best printouts, the really amazing photo-like ones, you must use 10-cents-per-sheet special paper, but they blow away the printouts from other color inkjets.

Most Mac users look at these low-cost inkjets when buying into color, but there are more expensive, more full-featured products. Color *laser* printers, for example, are now available from Xerox, HP, Canon, Tektronix, and Apple. These printers use the same laser technology as traditional monochrome laser printers, but they fuse four different colors of toner (cyan, magenta, yellow, and black) to create vibrant, laser-sharp color images. Most of these printers can turn out up to 5 full-color pages per minute at 600 dpi. The printouts are generally gorgeous, but even the least-expensive color lasers printers are almost $5,000. One of the big selling points about the color laser models is that they double as full-blown workgroup black-and-white laser printers that can print from 10 to 12 pages per minute at 600 dpi.

Another novel alternative for color printing is a $400, miniature, *dye-sublimation* printer (the kind that makes glossy, full-color, photo-like prints — and usually costs about $10,000 for the machine) called the Fargo Foto Fun. It prints a maximum size of 4 by 6 inches, but the quality — on shiny photographic paper — is amazing. (For bigger dye-sub printouts, visit a local print shop/service bureau, disk in hand.)

Color separations

Printing on a Color StyleWriter or even a color PostScript printer is fine for printing a color flyer or two. But when you want to publish thousands of copies of something, or when you're doing professional work, you need the help of professionals. You need to take your files to a shop that can generate *color separations.*

Four-color printing used to be a photographic process. Today, separations are typically generated by high-end digital scanning equipment from such companies as Hell, Crosfield, and Scitex. Your graphic is scanned, and the color information is separated electronically into its component four colors: cyan, magenta, yellow, and black. That's where the terms *four-color printing* and *color separations* come from.

You can perform the scanning, placing, and separating yourself. Depending on your quality requirements, however, you'll need some expensive equipment. And you'll need to work closely with your print shop's staff to figure out the best settings for the separations.

Before you take the plunge into desktop separation, study the subject. You're going to get involved in such arcane arts as *trapping* and *choking.* Violent though these terms sound, they're techniques for handling colors that abut each other on the page to avoid leaving a gap if the color plates aren't precisely aligned when the printing begins.

Prepare carefully for a trip to the service bureau to print film. A normal imagesetter isn't always capable of providing precise enough *registration* for high-quality color. In other words, one plate may not line up against another. You don't want to find that out *after* you've spent serious money for four-color printing.

SECRETS OF THE SERVICE BUREAU

So now you've run proofs of your work. It looks absolutely perfect, and you want to take it over to your friendly Lino shop for high-resolution output.

Before signing a work order, be certain your job is absolutely ready. Here are a few tips we've gleaned from the School of Painful Experience.

Service bureau checklist

- **Fill out the form.** Most service bureaus give you an order form on which you describe the files you're sending. To avoid delays and extra expense for the staff to fix errors for you, answer every question.
- **Check the software.** Every service bureau has the popular programs on hand (such as Illustrator, Photoshop, PageMaker, Word, and QuarkXPress). But if you're using a less-ubiquitous program — Canvas, Publish-It Easy, or ReadySetGo, for example — find out if the service bureau has it. And check the version number. If your version is more recent than the service bureau's, they may not be able to open the files at all.
- **List the fonts.** Next to missing graphic files, the Number One source of output problems at a service bureau is missing or mislabeled fonts. The service-bureau technician won't even know there's a problem unless you provide a printout to check the work against.

  Also take a moment to notice the *manufacturer* of the font. Most service bureaus have a decent selection of Adobe fonts. But if you've got a collection from Bitstream, the Font Company, Image Club, Monotype, or another foundry, you'll run into trouble if the service bureau doesn't have the same version you have.
- **Be wary of TrueType.** Despite the convenience and good looks of TrueType fonts, many service bureaus won't touch them. Older imagesetters' RIPs (controlling computers) may need a hardware update to work with the new font format, and some service bureau owners may not want to make such an investment (which can cost thousands of dollars). Before choosing fonts for a document, call your service bureau about this.
- **Make a last check.** Before you pack up your work or send it via modem, make test prints on your own printer. The service bureau needs a test print to verify that the work has been printed satisfactorily. If your document takes 45 minutes to print on your laser printer, it will take much, much longer on an imagesetter. If it won't print at all for you, don't expect the imagesetter to do any better.

PostScript files: the pros and the cons

If your service bureau doesn't have the program or font you used to create your document, you may be tempted to save the file as a PostScript file (see "Apple Printer Utility," earlier in this chapter). As we mentioned in "PostScript Printing Secrets," PostScript files are easy to make.

But sending PostScript files to the service bureau requires some thought. Talk to the technicians. You may need to configure the Page Setup box in your publishing program to match the requirements of the printing shop.

Above all, you must be *absolutely certain* that your document is perfect! Unlike a regular document file, where you (or the service bureau) can always make last-minute changes, a PostScript file is etched in stone. A PostScript expert can, in theory, open up the file, scroll painstakingly through it, and perhaps change a misspelling for you. But he or she will bill you at a high hourly rate for such exasperating work. A PostScript file is essentially a one-way street; don't take the plunge without setting it up carefully.

SERVICE BUREAU SECRETS

Don't use Helvetica Narrow

Yes, we know, Helvetica Narrow is a common font on PostScript laser printers. Weirdly, it's *not* common on imagesetters. If you must condense Helvetica, use the horizontal scaling feature in your page-layout program, or buy Helvetica Condensed, which actually looks far superior.

Don't use PICT

Don't save your graphics in PICT format. That's a strange piece of advice, isn't it? You'd think PICT would be the perfect choice. It's the Mac's most basic and common graphics file format (see Chapter 20).



But professional imagesetters aren't Macs. They've been known to hang up for agonizing periods when sent a PICT file. Instead, save bitmapped images (paintings, such as Photoshop images) in TIFF format, and save object-oriented graphics as EPS files. These files take huge amounts of disk space, but they'll be much surer (and quicker) to print.

The page-layout trap: non-embedded graphics

QuarkXPress doesn't actually embed your graphics into the page-layout document itself. Instead, it simply keeps track of where that graphics file *is* on your hard drive. The nice result of that system is that the document file remains

small. The not-so-nice result is that it's extremely easy to leave important graphics behind on your hard drive when you send the Quark file to a service bureau for printing! (PageMaker, which used to store graphics within the document, can now use this on-disk referral system, too, so it requires the same amount of caution.)



If you have QuarkXPress 3.2 or later, it's not too hard to avoid this kind of trauma: When you're ready to send your files out for printing, use the program's Collect for Output command; it automatically copies every single graphics file used in your document into one folder that you designate — and it generates a neat output report that lists every graphic that appears in the document, along with all the fonts, colors, and style sheets. Service bureaus *love* receiving this output report because it tells them everything they need to know about your file.

At any rate, before leaving for the service bureau, be certain that you have included every graphic file used in the document. Don't rename the files, either. If you do, the page-layout program will simply report the graphic file as "missing."

Slide printing tips

To get a presentation that you created on the Mac — in Persuasion or PowerPoint, for example — transferred to slides, you must send your file to a service bureau equipped with a *film recorder.*

A film recorder writes the image onto the slide in horizontal lines. Therefore, although your presentation software may make it easy for you to create stunning *gradients* (ramps of graduated color) that change in density from left to right or diagonally, bear in mind that film recorders can take a long time to process such a slide.

A gradient that changes color from *top to bottom,* on the other hand, won't be nearly so challenging for the film recorder. (We're not saying that you shouldn't use diagonal blends; we're just pointing out that such designs may carry a price.)

PRINTING TROUBLESHOOTING

After all is said and done, it doesn't matter if you're using a QuickDraw or PostScript printer, Level 1 or Level 2, in the background or foreground, if the document won't print right.

When the printout doesn't match the screen

What put the Macintosh on the market was its ability to display an image that closely matched the one that came out on the printed sheet. But the trip from screen to printer isn't always an easy one, and things can change along the way. Here are some examples of WYS not matching WYG:

- **Screen resolution.** Not all Mac monitors have true WYSIWYG screen resolutions. Today, you can't count on a monitor's being 72 dpi (see Chapter 11 for examples). It's possible that the screen image may be slightly larger or smaller than the printout.
- **Low-res screen, hi-res printer.** There's quite a bit of difference between the 72 dpi display of a monitor and the 300 dpi (or higher) resolution of a printer. Very fine details of a document simply can't show up on the screen; they won't show up until you actually print. Two common examples: The letter spacing of type may be off, and graphics may not be positioned as precisely as you thought they would be.

  Some publishing programs (and word processors) let you zoom in, magnifying your document on the screen. Only then can you see the fine points of the text you're about to print.
- **The printer-driver difference.** Different printer drivers may have different effects on output. In other words, the way the words fall on each line, and the way the lines fall on each page, may actually shift considerably depending on *which icon* you selected in the Chooser!

  The solution to this problem is simple. Before finalizing your document's layout, open the Chooser. Select the printer driver you'll ultimately be *printing* with, even if no such printer is connected to the Mac!
- **PostScript versus QuickDraw.** As we mentioned earlier, the *kind* of image you're printing and the kind of printer you're using may also cause unexpected results. A QuickDraw printer may have trouble printing rotated text or graphics that you prepared in Illustrator, for example.
- **Font problems.** The difference between the way type appears on your screen and the way it appears on the printed page may be caused by something rather simple. If you're using a PostScript font, the printer-font portion (see Chapter 24) may have been installed incorrectly.

  Furthermore, among the popular font families (such as Times), a raft of font-conflict problems may zap you. Believe it or not, there are *two different* screen versions of the common fonts — one each from Adobe and Apple. They're named and designed similarly, but their actual letter spacing is different. It's perfectly possible, therefore, that your printout (using the laser printer's built-in Times font) might not match the screen (which

uses the Apple screen font). Likewise, if you've installed both the TrueType and PostScript version of the same font, the document may look fine on the screen, but the printed results may be unpredictable. (See Chapter 24 for details on printed deviations from TrueType on-screen display.)

Even worse surprises may result if you get caught in the snarl of competing font *companies* with fonts of the same name. Two fonts of the same name from different suppliers may differ in their *metrics* (width and height information).

- **Color differences and ColorSync.** Color work can be complex. Each brand of monitor has a different overall color tone and *gamma* setting (see "Monitors" in Chapter 4). Chances are good that the colors you see on the monitor won't quite match the ones produced on a color printer.

  To get around the differences, Apple created a technology called ColorSync. It's a system of calibrating your color monitor so that its colors match those printed by a particular color printer. (Several competing products, such as EfiColor, are also gaining popularity.) ColorSync works very well among Apple products — monitors, scanners, printers — and the required "device profile" files are now available for color products from HP, Epson, Lexmark, and other major manufacturers.

Font and graphics problems

Question: *My document prints, but the fonts are coming out all jagged. What's wrong?*

Answer: See the section of Chapter 24 called "Why Text Prints with Jaggies."

Question: *I'm trying to print out a document with an Illustrator EPS file containing Futura, but I'm getting Courier instead. Why can't this printer work properly?*

Answer: You should first suspect that your printer font isn't properly installed. Once again, see Chapter 24.

Next, you may simply be overwhelming your printer's memory. Try using fewer fonts. Finally, check to see if you selected "Unlimited Downloadable Fonts" under Options in your Page Setup box. If so, fonts are flushed from the printer right after use, to make way for new fonts. It's a way of managing printer memory better. But if a font is used only in an imported graphic (and not in the publishing or word processing document itself), the fonts may not be downloaded properly, and font substitution may result.

You have two ways out. First, use that font in the *text* of your document (color it white if you don't want it to show up in your printout). Second, turn off the Unlimited Downloadable Fonts option.

Question: *My illustrations looked beautiful until I imported them into my publishing program and printed them; now they're printing bitmapped and jagged. What's wrong?*

Answer: In most publishing programs, such as QuarkXPress, the image you see on the screen is only a stand-in for the *actual* EPS file, which resides safely on your hard drive. When it comes time to print, Quark consults the file on the disk in order to print.

If the EPS file has been moved or renamed, Quark does the only thing it can: prints the low-resolution PICT representation of the file that's used in the on-screen document. This PICT portion of the EPS file may look fine at the 72 dpi of your Mac's screen, but it will look chunky or ragged when printed. The solution is to re-import the EPS file from wherever it now lies.

Question: *Why can't I print my FreeHand files on my StyleWriter? They either don't print, or they come out jagged and bitmapped.*

Answer: Illustrations done in FreeHand and Illustrator are *PostScript* graphics. The best a QuickDraw printer (such as the StyleWriter — or most fax/modems, by the way) can do is to print the PICT portion of the image, if it's available. Here's a solution: Import the PostScript artwork into a program such as Photoshop or Color It (which comes with this book); convert it into a TIFF file with high resolution and print *that.*

Here's another solution: As mentioned earlier in the chapter, buy a translator program such as GDT Softworks' StyleScript (about $150).

General printer errors

Question: *Every time I try to print a document, I get a message about an "Undefined Offending Command," and, a few seconds later, another message that the document is "OK, but can't be printed." What's going on?*

Answer: For some reason, your file is choking the printer; maybe the document is simply too complex.

First, try printing the document one page at a time rather than all at once. If that doesn't help, go to the Page Setup box and turn off those silly printer effects (Graphics Smoothing and so on). They don't make much difference in the quality of your output, but they do steal RAM that may be needed to image the document. Another RAM-gobbling option is the Larger Print Area check box (in the Options dialog box of the Page Setup box).

Try turning off Background Printing. Finally, try restarting the printer. This last step flushes out the RAM and gives you a fresh start.

If all else fails, go back to your document and use a smaller number of fonts, or replace some downloadable fonts with those that are built into the printer (Times, Palatino, and so on). Consider making your illustrations less complex. PostScript is a truly wonderful way to produce high-quality pages, but it has its limits.

Question: *My printing appears to go okay, but when I look at the pages, the image on the edges of the pages are clipped off. What gives?*

Answer: You realize, of course, that a laser printer can't print *all* the way to the edge of the page; even if you turn on Larger Print Area (click Options in the Page Setup dialog box), a quarter-inch from the edge of the paper is about the best it can do.

If you have this problem when printing on legal-size paper, it may be that your printer doesn't have enough RAM to process a page of that size. It may be time to get some additional RAM installed, if your printer can be upgraded.

Complex printing errors

When you work on documents with complex graphics and many font changes, and when you're baby-sitting a high-resolution laser printer or imagesetter, the problems get harder to handle.

Question: *I'm frustrated. When I try to print a file, I get a slew of printer errors. Sometimes it's "Limitcheck," then it's "VMerror," or "-8133." On occasion, the printer just restarts.*

Answer: "VMerror" is what it says: a virtual-memory error. It means that your printer has run out of memory and can't process your document. You can simplify your document by using fewer fonts or by making the graphics less complex.

The Limitcheck error occurs most often when you're trying to print a document with a linked EPS file created in a drawing program like Illustrator. It means that there are too many elements (paths or complex patterns).

There are several ways to clean up such a document. First, open it and get rid of elements you don't need. Just coloring them white won't help (the printer still must process them).

Second, Illustrator has a pair of settings called Split Path Resolution and Split Long Paths that make it easier for a printer to handle the file. Unfortunately, these options make it difficult to edit your document later; you can't undo the path-splitting process. Make this change, therefore, to a *copy* of the file.

If you're using blends, you might have to make them use fewer steps. You can also turn off Background Printing or restart the printer.

If you've done the best you can, your printer may simply need more RAM. Consider printing the EPS file separately from the document file and then putting them together the old-fashioned way, by pasting one atop the other. The "-8133" error is just a general PostScript error. It means something is wrong; it's no more explicit than that.

Question: *Every time I try to print a document, the printer resets itself or halts on just one page, but I'm only using one font on that page. What's wrong?*

Answer: Maybe it's a bad printer or screen font. While the text may appear fine on your Mac's screen, a damaged printer font can prevent the document from being printed.

Question: *When I try to print blends or halftone patterns on my printer, I get a banding or moiré effect. What can I do?*

Answer: PostScript can only print 256 different shades of gray, and a standard laser printer can't even lay down that many (only a high-res laser printer or an imagesetter can approach that number).

Some imagesetter manufacturers have developed new software to optimize printing of halftones and blends to get around this limitation. In the meantime, check with the publisher of your drawing or publishing software on how to deal with this problem. Some software publishers can send you technical memos that show you how to calculate the number of permissible steps in a blend. QuarkXPress can automatically figure it for you, as long as you know the target line screen and dpi of your output device.

Just one general hint: Reducing the length of your blend helps, since each step in the blend occupies a smaller amount of space, thus reducing the banding effect.

Poor printout quality

Question: *My printouts aren't coming out with even blacks anymore. The black areas look like a dark gray.*

Answer: Sounds like you're running low on toner powder. In dim light, remove the cartridge and rock it gently to redistribute the powder — then get a fresh cartridge ready to roll when this one gives out.

Question: *Each page has a regularly spaced blob or spot or dot on it. Do I need a new cartridge?*

Answer: No. There's a blob or spot or dot on the roller inside the printer. Open the printer (you should probably let it cool since those rollers get very hot). Hunt the surface of the roller for a caked-on piece of toner or crud, and scrape it off with a Q-tip. (This goes for a continuous thin streak, too.)

Question: *There's a white streak running horizontally through the page, one dot high, in the same place every time. Should I clean my rollers again?*

Answer: Sorry, no. This time it sounds like a piece of RAM has gone bad. You must get the printer repaired.

Chapter 26

Scanning Secrets

IN THIS CHAPTER:

- Hooking up your scanner
- Color scanning
- Buying a scanner
- All about OCR

The Macintosh is a terrific tool for manipulating information. For most people, that information gets into the Mac by being typed on a keyboard. Or it enters the Mac's memory bank from a disk, from another Mac in the network, or even via modem.

But one kind of information can't be typed, downloaded, or recorded from a microphone: visual information. When you want to modify a photograph in Photoshop, pop a line drawing into your newsletter, even import some pages of text that aren't worth retyping, that's when a scanner comes into play (see Figure 26-1).

Scanning is great fun, actually. You can repair, retouch, or delete people from photos; you can scan in typewritten pages to avoid having to retype them; you can scan documents to preserve them forever . . . no wonder people get hooked.



Figure 26-1
The conventional flatbed scanner looks like a squashed copying machine.

HOW IT WORKS

A scanner is the sibling of a copying machine. Macintosh *flatbed* scanners consist of a long table with a cover (like a flattened copy machine). Under the cover, you see a piece of clear glass. Beneath the glass is a light source connected to a motor-driven assembly.

When you use the scanner, the light flashes on and the motor hauls the lamp across the image area. An array of *CCD sensors* (short for Charge-Coupled Device, a light-sensitive chip) picks up the image of the item on the scanner's glass bed and converts it to electronic current. This information is then converted into digital data that can be read and processed by your scanning software.

If you stop to think about it, a scanner is the opposite of a *printer.* A printer takes what's on the screen and sends it to a piece of paper. A scanner takes what's on paper and sends it to your screen.

HOOKING UP YOUR SCANNER

Scanners are generally SCSI devices, which means they have to be attached and terminated in the same way you hook up a hard drive or CD-ROM player to your Mac . . . uh-oh. See Chapter 30 for our enthusiastic take on SCSI chains; if you have problems getting your scanning software to recognize the scanner, or your Mac won't boot, it's time to try the usual ritual of shuffling SCSI equipment around (as described in Chapter 30). We've found, for some reason, that many scanners seem to work more predictably when situated at the *end* of the SCSI chain.

COLOR SCANNING

The basic scanner reads black-and-white and grayscale images, but color scanners are the most popular. They convert the image into *RGB values.* RGB information (Red, Green, and Blue) is the same signal used in a regular TV picture tube or a color monitor; three electron guns are combined to create a full-color image.

There are two kinds of color scanners. Some use a *single-pass* process, in which three separate lights, corresponding to these three colors, flash on and off to capture the matching color information in your document or photo. The lamps on other scanners make *three passes,* in which red, green, and blue filters are used, in turn, to capture those portions of the color spectrum.

Each method has drawbacks. The single-pass process may introduce sharpness errors because of the effects of the three lights flashing on and off. The three-pass scanner may have registration problems (where the three elements of the color image don't exactly line up). Be sure to inspect a scanner's actual output before you buy it.

In the past, this sort of high-end color processing was the province of high-priced, *drum-based* scanners. In those machines, the scanned item was placed on a large drum, and the image was exposed onto film. These handy devices cost $40,000 or more. But today's flatbed scanners provide results comparable to many of the more expensive products, especially after you tweak the image a bit in Photoshop or Color It.

WHICH SCANNER TO BUY

The most common scanners for desktop publishing use are the flatbed models we've been discussing. In recent years, the price of color scanners has dropped so much that grayscale models (at one time the low-cost alternative) have just about disappeared. Color scanners capable of producing 24-bit color images at 300 dpi or higher start at about $350; more sophisticated models can cost as much as $2,000. (Among the most popular are those from Agfa, UMAX, Apple, and HP.) Because new models are being released all the time and existing ones updated, the first step in buying a new scanner is to read reviews in a Macintosh magazine like *Macworld* or *MacUser.*

Scanners usually come with their own special software. Many scanners also come with "plug-ins" — add-on software that lets you scan an image directly into image-editing programs such as Photoshop and Color It. In fact, you often get a feature-limited version of Photoshop free when you buy a new scanner.

Other kinds of scanners

Not all scanners are flatbed. Some models are *sheetfed*; in other words, the document is inserted as though the scanner were a fax machine. A roller assembly moves the pages across the light source, which, unlike the lamps in a flatbed scanner, doesn't move. This sheetfed technology has its limits. It can't handle pages that are too large or too thick to roll through the machine.

One advantage of sheetfed scanners is their size; some sheetfed scanners (such as the grayscale Visioneer PaperPort) are barely larger than the roller mechanism itself. They're designed to fit just behind your keyboard, so that you can quickly feed in paper documents for scanning without even having

CASE HISTORY

RETOUCHING HAS ITS LIMITS

Another true story, submitted by a graphics service bureau:

A customer called us, saying that she wanted a poster made from a color slide. It was a picture of her recently deceased father with a couple of his fishing buddies in a boat.

This woman mentioned there was a slight problem: In the photograph, her father was facing away from the camera. She wanted our photo expert to flip the negative so that you could see his face.

When it was explained that this would only provide a mirror image of the back of his head, she became irate and screamed into the phone: "If you can take the pimples off those glamour girls, why can't you put a face on my father?!"

to turn away from your computer. As long as you don't need color, and as long as you're mainly scanning text, this inexpensive, slimline gadget is terrific for processing the various scraps of paper that inhabit your life.

Overhead scanners are an expensive type, usually costing several thousand dollars. They have a base onto which you place the original to be scanned. The imaging assembly is mounted at the top of the device. This contraption may be very useful if you're trying to capture the image of an actual 3-D object, such as a box or a smallish sculpture.

Then there are *slide scanners,* such as the Leafscan series and the Nikon Coolscan. These convert a piece of positive film, say a 35mm slide, into an image file. A slide scanner passes light directly through the film, much like a slide projector. These scanners have much higher resolution than standard flatbed scanners — 2,700 to 4,800 dots per inch, as compared with 600 or so for a flatbed — and the resulting Macintosh graphic file is, therefore, of much better quality than you'd get from a flatbed. Greater detail is captured, and the resulting file prints out better on high-end color equipment.

But slide scanners are expensive ($1,500 or more), and they're limited to dealing with positive film. You can't even use them to scan a piece of paper with text, graphics, or a traditional photograph! You must first convert these originals to slides before scanning.

CHOOSING A RESOLUTION

When you scan, your software will present you with a choice of resolutions — which, as in printing, is measured in *dots per inch.* Faxes look terrible because they're 200 dpi; books look great because they're 2,400 dpi. In printing, greater resolution is always better.

In scanning, however, more dots per inch *don't* necessarily make better scans. There are several problems with high-dpi scans: (1) They take much longer to make; (2) they take up huge amounts of space on your hard disk; (3) they're incredibly slow to process in Photoshop (or whatever touch-up program you use); (4) they take much longer to print; (5) they're more likely to interpret dust, streaks on the glass, or imperfections in the original as significant data.

So clearly there's such a thing as *too* much resolution; why scan at 1200 dpi if you'll be printing on a 300-dpi laser printer? But too *low* a resolution will make your finished document look grainy or *pixellated* (made up of discernible square dots). Endless debate rages, then, among the imaging elite: What's the best dpi for a given purpose?

Rule 1: The best dpi for a scan depends on the dpi of the *printer* you'll be using.

For example, if you're scanning photos for display on the Mac screen, as a slide show at your wedding, scan at 72 dpi — the screen resolution. There would be absolutely no point in scanning at a higher resolution. If you're scanning a photo that you'll be publishing in a magazine, though, you'd want a much higher resolution. (You'll also want a higher resolution if you plan to *enlarge* what you're scanning.)

Your assumption, then, might be to scan at the *same* dpi as the printer. Nope. Suppose that you have a grayscale photo on the screen that you want to print on your laser printer. How does a laser printer print different shades of gray when it can only print black dots? It creates the *illusion* of gray shades by varying the sizes of the solid black dots it puts on the paper — a *halftone.* See the "Of LPI and DPI" sidebar for an example.

Obviously, it takes *several* of a laser printer's smallest dots to create *one* of these larger, variable-size halftone dots. That's why it doesn't make sense to scan something at the same resolution as the printer: It takes at least *two* printer dots to represent each gray dot on the scan as a halftone.

Rule 2: When the printout will be a halftone, your scan is just wasting time and disk space if it's *more than half the dpi of the printer.* That is, if you have a typical 300-dpi laser printer, your grayscale image should be composed of no more than 150 dpi. Table 26-1 should be your guide.

Table 26-1
Scanner DPI Guidelines

Printer and image	Maximum useful dpi
professional color images	300*
color slides	300
color laser printer	180
onscreen display (multimedia)	72
laser-printed grayscale	150
StyleWriter-printed grayscale	180

*Note: If you'll be printing on a dye-sublimation printer, these rules don't apply; create your scan at the maximum resolution of the printer.

ANSWER MAN

Of LPI and DPI

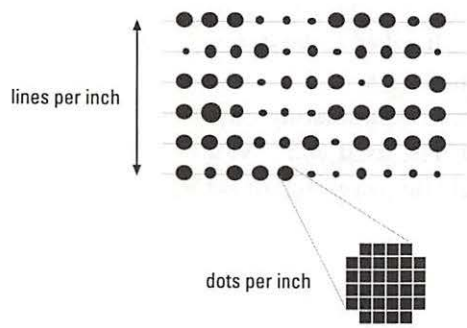
Q: *What's the difference between LPI and DPI?*

A: DPI, dots per inch, is a measure of your printer's resolution. As you know, 300 dpi is the standard quality for a laser printer.

LPI has only to do with printing color or grayscale graphics on a printer capable of printing only black and white.

To simulate different gray shades, the printer varies the sizes of its all-black dots. It places these dots along a grid of evenly spaced lines, as shown in this magnified view. The more gridlines per inch (lpi), the more convincing the shade of gray. These phony gray shades, which you see every day in every newspaper, constitute what's called halftone images.

Actually, of course, a laser printer can't vary the size of its dots. To create a halftone, the printer creates larger dots composed of its much smaller, regularly sized dots, as shown. Immediately, you can tell that dpi and lpi are related. If the printer's regular dots are smaller, then the number of different sizes of composite dots is larger, and, therefore, so is the different number of simulated gray shades the printer can produce.



Most scanner software offers you a choice of lpi. The usual rule of thumb is to set your scanner at twice the output resolution of the printer that will ultimately print this graphic. If your printer's resolution is 60 lpi (that is, a 300-dpi laser printer), scan at 120 lines. If you are enlarging the image before it's printed, choose a higher lpi setting. (Of course, if the images are shown only on the Mac screen, scan at 72 dpi, which is the screen's resolution.)

Scanning at an lpi higher than twice the ultimate printing resolution won't improve the quality of the image; it will only waste disk space and slow down printing.

For best results, though, there's one more rule to follow. If you have a scanner, you probably also have a scan-editing program such as Photoshop or Color It. Such programs possess a great talent: They can convert a graphic to a lower-resolution edition in a process known as *downsampling*. The result is always better than if you'd scanned at that lower resolution to begin with.

If you want a great 150-dpi finished scan, you get much better results scanning at a *higher* dpi and downsampling it in Photoshop (or whatever) to the resolution you want. For example, suppose that you have a 300-dpi laser printer and a 600-dpi grayscale scanner. Set the software to scan at 600 dpi. Then, in Photoshop, change the resolution (using the Image Size command) to 150 dpi, the ideal setting for a 300-dpi printer.

SCANNING SECRETS

About Ofoto

Usually you get software bundled with your scanner, and you don't have a choice of programs. But Apple scanners come with an interesting application called Ofoto. You can also buy Ofoto separately, and it works with most popular scanners.

Ofoto automates the scanning process. You place an original onto your scanner's bed and start scanning. In its automatic setting, Ofoto will prescan the document and determine whether it's a line drawing, a piece of grayscale art, or a black-and-white or color photograph. It automatically crops the image, and, most impressively, *straightens* it as well. It even determines the best resolution for scanning, based on the kind of printer you'll be using.

All this intelligent decision-making means that scanning takes longer than it does with other scanning software. But it usually means that you get an acceptable result the first time (instead of having to make several attempts, adjusting the controls each time). Ofoto also provides some basic image-editing tools to crop and enhance the scanned image. (For advanced touch-ups, though, you still need a real image-editing program such as Photoshop.)

The time-space-money continuum

Graphic images can take up huge amounts of disk space, especially if you decide to scan at a very high resolution. To save time *and* disk space, crop the image to the actual area that will be used, if you can, at the point when it's *scanned* (instead of cropping the resulting file).

As a bonus, you speed up processing of the image later on because an image's size determines how long it takes your graphics program to handle the image. Furthermore, if you import a full-sized TIFF file into a publishing program and crop it *there,* the image may take nearly as long to print as the full image would have itself. Service bureaus are known to charge high hourly rates for documents that take extra time to image.

Secrets to feeding in originals

If you're scanning a large number of pages, the temptation is to leave the scanner's cover open all the time as you scan away. But you may regret your haste. The quality of the scan can suffer if the page isn't completely flat on the scanner's glass bed. Parts of the image may come out fuzzy. (For some scanners, you can buy a document feeder, which will automatically feed the loose pages to the scanner bed.) If you're scanning text from large books, scan good photocopies of the pages instead.

TRUE FACT

WHERE THE TWAIN SHALL MEET

In recent versions of scanner-friendly software, a peculiar term is beginning to crop up. It's *TWAIN*, which is not Elmer Fudd's way of referring to a locomotive. It's a new kind of communications protocol dreamed up by Aldus, Caere, Hewlett-Packard, Logitech, and Eastman Kodak. It lets you scan an original document directly into the program you happen to be working in without having to use a special scanning program — *if* your program is TWAIN-savvy.

For example, there's a free TWAIN Plug-In for Photoshop. This plug-in (a modular software add-on) lets you scan an image using the DeskScan II software (for example) — but the image appears in a new window in Photoshop. Similarly, you can scan an image directly into PageMaker 5 and 6, which can also speak TWAIN.

Quark offers a Photoshop XTension for Quark Xpress that lets you accomplish the same thing in a roundabout way. When you choose Acquire from the File menu, it activates the TWAIN Plug-In from Photoshop, which then activates DeskScan II. The beauty of it all is that it really works.

Slides, negatives — and the great PhotoCD alternative

If you have slides, negatives, or undeveloped film that you want converted into digital form, don't rush out for a slide or film scanner. Have them made into a *PhotoCD* instead.

You can bring those slides to any neighborhood Kodak film-developing outfit. (Hint: Mail-order places are generally cheaper than walk-in shops.) A few days later, at a cost of about $1 per slide, you'll be given a CD-ROM containing each slide, represented as a *gorgeously* scanned graphics file, in five different sizes (resolutions). Unless you scan hundreds of slides/film per year, this is less expensive than buying a slide or film scanner. Furthermore, you save the time and hassle of having to do the scanning yourself. And finally, you don't have to use up any hard-disk space; those enormous files are safely, and permanently, stowed on that CD-ROM.

About those 2,400-dpi scanners

It's not a bad idea to read the fine print in the manufacturer's ads or sales literature, which usually says that resolution is *interpolated.* That means that the scanning software divides each pixel in your scanned image into smaller pixels to *simulate* a sharper image.

On line drawings, this process may actually help, because interpolation is apt to smooth jagged lines. But interpolation will never be quite as good as higher resolution. Interpolation won't, for example, fill in the details in an image that can't be picked up by the scanner's optical source.

The *optical resolution,* on the other hand, is the true indication of the native sharpness of the scanner. Most popular flatbed scanners offer resolutions between 300 and 600 dpi. True 1200-dpi scanners cost lots more and may be overkill for basic desktop-publishing use.

Turn your fax machine into a scanner

When you think about it, fax machines and scanners do almost exactly the same thing. They both use light-sensi-

tive hardware to convert the light and dark areas on a piece of paper (or a slide) into a stream of electronic data. On a fax machine, the data is then broadcast over a telephone line, while the scanner records the information digitally and transfers it to your hard drive.



It naturally follows, then, that with the aid of a fax modem, you can use your fax machine's scanning capabilities to digitize a document and send it directly to your computer, in essence turning your fax machine into a scanner. Here's how you can do it:

First, disconnect your fax machine from the telephone jack in the wall and plug it directly into your fax modem's line jack. Load your fax machine with the document you want to scan. Next, launch your fax software and set it up to manually receive a fax. (Fax software is designed to answer incoming calls *automatically*, listen for a fax signal, and then start receiving, but most include a manual receive command — and that's what you have to activate. This bypasses the program's automatic answering function and forces your modem to start listening for a fax transmission at your signal, regardless of whether the phone is off the hook or not. The keystroke in Global Village software, for example, is ⌘-Shift-6.)

Now, start sending the fax from your fax machine. If your fax machine insists that your dial a number before sending, just dial a one-digit number, then start sending. At this point, your fax modem will already be listening for the fax transmission and should start receiving the fax.

Granted, this method will only work with black-and-white images and the resolution will be crude — most fax machines create low-res images at about 200 dpi. But it will enable you to transform a hard-copy image or document into a file on your computer.

We found this secret won't work with every brand of fax machine; some are fussier about being connected to a live telephone line than others. If these steps don't work for you, try following the same procedures, but keep your fax machine connected to the telephone jack until the screech of the fax transmission begins, then quickly pull the wire out of the phone jack and plug it into your fax modem.

ALL ABOUT OCR

Normally, if you scan an item, the result is a picture — usually a TIFF graphics file. The Mac thinks of that scanned image as a bunch of pixels. If those dots happen to form words, the Mac doesn't know about it. The only way you can edit those words is by using the Eraser tool in your painting program.

But with an OCR program — short for *optical character recognition* — the Mac can be asked to analyze those patterns of dots to see what the text is and

to store the text in a brand-new text file. You can then open this exported text file in your word processor and go to town, editing it and formatting it.

OCR equipment cost tens of thousands of dollars when it first became popular in the 1970s. But today, for a few hundred dollars, you can buy software for your Macintosh that works even better than those early machines. OCR software is, however, memory-intensive, and it requires lots of processing power. As a matter of fact, OCR programs require between 4MB and 6MB of memory, and they must run on Mac II-class machines or better.

How OCR software works

A scanned image is made up of lots of little dots called *bitmaps.* (See Chapter 20 for more on bitmapped graphics.) The scanner itself doesn't discriminate between text, drawings, or photos; it simply records the light and dark areas of a page and converts them into an electronic reproduction.

OCR software examines the little dots and, using various programming schemes, attempts to determine whether those assemblages of dots correspond to letters and numbers. Some of the more sophisticated OCR programs even attempt to duplicate the original typeface and layout of a document.

An OCR program may consult a kind of database of letter shapes in its attempts to recognize the characters. Some programs are *trainable;* that is, you can teach them to recognize oddly shaped or distorted characters. This new information is recorded in a preference file, and the program uses that data to improve the accuracy of character recognition the next time.

Faxes and OCR

Faxes, because of their fuzzy edges and low resolution, can easily confound the best OCR software. Because most fax machines have Normal and Fine settings, you have the best results with faxes sent in the Fine mode. Caution whoever is sending the fax to make the copy as clean as possible.

Recent fax/modems, however, come with specialized software (from STF and Global Village, for example) that provides OCR recognition of faxed pages. The result is often far more accurate than that produced by a standalone OCR program, and the price is quite a bit less, too (see Figure 26-2).

The end of spell-checking?

OCR software can save hours of drudgery in retyping a manuscript, but it isn't 100 percent accurate. While 99 percent accuracy may be achieved on an especially clean manuscript, that means at least one typo per 100 characters.

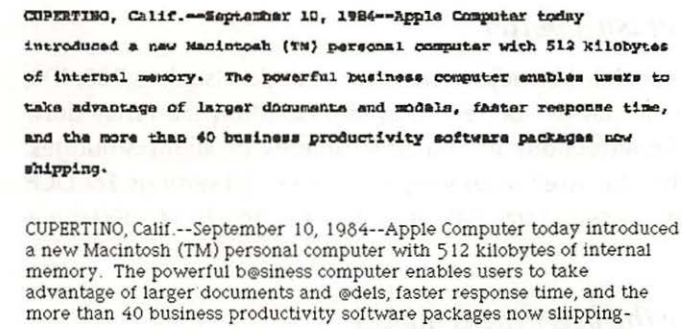

CUPERTINO, Calif.--September 10, 1984--Apple Computer today introduced a new Macintosh (TM) personal computer with 512 kilobytes of internal memory. The powerful business computer enables users to take advantage of larger documents and models, faster response time, and the more than 40 business productivity software packages now shipping.

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Figure 26-2
Fax OCR software can take a murky, muddy fax (top) and do a pretty decent job of converting it into a word-processor file. (The bottom figure is a screenshot from the resultant Microsoft Word file.) As you can see, your keen eye is definitely necessary to spot the glitches (note the last word of the paragraph).

Worse, the errors made by OCR software aren't the simple ones of letter transposition or minor (but consistent) misspellings made by the human typist. Instead, they're errors of visual identity. The letter m might become rn when recognized by the OCR program, or li becomes h, and so on. These can be especially sinister mistakes because a spelling checker won't catch them. What on the original said yarn may be translated into yam, and the spelling checker won't blink an eye. (Your client may well do so, however.)

Run your spelling checker on your OCR-resultant documents, by all means. But in the end, a human proofreader is essential — particularly if numbers are involved. (Numbers are easily misrecognized by OCR software, and the consequences, if undetected, could be disastrous.) OCR software may mean less work for typists, but proofreaders won't be looking for new jobs anytime soon.

OCR SECRETS

The importance of a clean original

When you're working with a poor-quality original scan, you may discover that you could have retyped the material in the amount of time you spend fussing with the OCR program.

Use a clean, clear copy of a manuscript or book. Copy that's indistinct or marked up will wreak havoc on the accuracy of a scan. Even a pen mark on a single character will prevent the OCR software from recognizing the word. Some OCR programs even skip an entire *line* when encountering markings that it considers unfamiliar.

Resolution: Bigger isn't better

If your scanning software lets you adjust the scan resolution (such as 300, 400, or 600 dpi), bigger is not always better. A higher-resolution scan may draw attention to minor imperfections in character shapes or slight smudges. Furthermore, doing the scan itself takes longer at higher dpi settings. For OCR purposes, if the text is of normal size (10- or 12-point or so), 200 or 300 dpi is sufficient.

What a difference the brightness makes

The brightness controls are *critically* important in achieving a high accuracy rate of text recognition. When scanning smudged or dark copy, for example, lightening the scan by 25 percent or so can dramatically improve the OCR accuracy. (This fact is especially true of the one and only OCR-ready hand scanner, the Typist from Caere Corporation.)

OCR on dot-matrix printouts

If the manuscript was printed by a dot-matrix printer such as an ImageWriter, see if your OCR software has a special setting for recognizing such documents.

Otherwise, here's a trick: Photocopy the document and scan in the *copy*. The copying will, in essence, connect the separate dots that make up the characters and improve the accuracy of the translation.

Chapter 27

Mysteries of the Modem

IN THIS CHAPTER:

- V.32bis and other jargon: What it means to you
- Mastering the Hayes command set
- Modem initialization strings
- How to dial up another Mac by modem
- The Mac as fax

Connecting a modem to your Mac is easy; getting it to *communicate* with the outside world — which is, after all, the whole point — is more challenging. Welcome to telecommunications, a technology riddled with numbingly unintuitive terms like Cyclic Redundancy Checking, TCP/IP, and YMODEM-G; a technology in which several of the commonly used abbreviations are in French; a technology requiring equipment that makes hideous sputters, whines, and squeals when it's working *right.*

Of course, we don't believe for a minute that DOS-flavored terminology, shrieking hardware, or even French words should stop you from mastering the art of communicating via modem. This is one of the most rewarding aspects of Macintosh computing. Once connected to a modem, the world is your desktop. Plug into the Internet or a subscription online service and suddenly your Mac becomes a tool with which you can shop, conduct research, exchange ideas on an international level, play games, even commute to work — without ever stepping out of the house. When you consider the possibili-

ties, it's hard to think of a more exciting way to use your Mac — if you can get it to work.

In this chapter, we'll show you how to set up a modem and coax it talk to other computers and fax machines. In the next chapter, we'll discuss the much juicier subject of how to connect to online services, communicate over the Internet, and explore the World Wide Web.

HARDWARE

Modems exist because computers and telephones communicate in two fundamentally different ways. As you probably know, your Mac thinks in binary numbers, processing every shred of information in digital form. With each action performed by the Mac, millions of electronic switches in its circuits are thrown either on or off, producing a stream of 1s and 0s.

Most telephones don't think in 1s and 0s; they're *analog* devices, meaning they convey data (specifically, sounds) not through a series of on and off signals, but by means of a steady flow of electric current that is *modulated* to different frequencies, voltages, and amplitudes.

So, the modem's job is to take your Mac's digital code — all those 1s and 0s — and translate each little piece of code into a corresponding frequency that can be sent over the phone line. It does this by varying (or modulating) the electronic signal being sent through the phone line, assigning a different frequency for each bit or group of bits. In case you haven't already heard, this is how *modems* got their name; they *mo*dulate and *dem*odulate the electric current passing through the phone line.

Both internal and external modems are available for the Macintosh. External modems, which plug into one of the Mac's serial ports, are usually equipped with a row of status lights to tell you when the modem is ready to connect; when the phone is off-hook; when the modem detects a carrier tone from another modem; and when the modem is receiving or sending data.

Modem speeds

Probably the single most significant feature of your modem is its transmission speed. Right now, most people use modems that transmit at 28,800 bits per second (usually written *28.8 Kbps*). The days of speed-doubled modems appearing every year are over, however; though 33.6 Kbps modems are available, engineers tell us that that's about as fast as modems will ever be able to communicate over existing phone lines. A couple of modem manufacturers

claim to have begun developing 56 Kbps modems, but they probably won't produce any significant speed increases — using existing phone lines — over today's modems.

Just what do these numbers mean in terms of actual speed? Well, sending a 1MB file with a 28.8 Kbps modem (under ideal phone line conditions) takes about three or four minutes. The same file, transferred at 9,600 bps, takes nearly three times as long — almost 15 minutes. And if you're saddled with a vintage 2,400 bps modem, the file transfer stretches on for more than an hour! Obviously, a faster modem saves you a bundle on long-distance charges and online service fees.

So, here's our advice: When it's time to shop for a modem, buy the fastest one you can afford. Every extra dollar you spend to upgrade to a higher transmission speed will wind up back in your pocket as you reduce your telephone and online charges. You'll also have a lot more fun connecting to the Internet or services like America Online, because you'll spend less staring at the screen, waiting for files to download.

When you go shopping for a modem, you also may notice that some manufacturers boast transmission speeds of 57.6 or even 115.2 Kbps for their modems. Be aware that in actuality these modems usually transmit at 28.8 Kbps, but they include data-compression features that can produce an *effective throughput* that's much higher because the data moves across the phone lines in compressed form. The fact is that you never actually get speeds that high, because the modem automatically slows down if line noise or other interference is detected on the phone line. With less-than-ideal line conditions (and *most* line conditions are not ideal), you experience less-than-ideal transmission speeds.

The important thing to remember about modem speed is that two modems can only communicate at the highest speed supported by *both* modems. If you buy a 33.6 Kbps modem and subscribe to an online service that offers only a 28.8 Kbps connection, you'll be forced to log on at 28.8 Kbps. And if you equip your PowerBook with a 28.8 Kbps modem that's advertised to feature "built-in data compression for an effective throughput of 115,200 bps," but your office uses a modem that *doesn't* support data compression, you'll still transmit at 28.8 Kbps, at best.

Standards and protocols

For telecommunications to work, the modem on the receiving end of the phone line must follow exactly the same rules of frequency modulation and demodulation as the modem doing the sending; if they don't follow the same

ANSWER MAN

Baud and bps: The true story

Q: ***All right, once and for all. I'm sick of not understanding this. What's the difference between a 28,800 baud modem and a 28,800 bps modem?***

A: The terms "baud" and "bps" both refer to a modem's transmission speed, the rate at which it sends information over the telephone line. Many people (and Macintosh books, we might add) consider the terms interchangeable — but they ***don't*** mean the same thing.

Baud is the number of times a modem changes the ***frequency*** of its signal per second, while ***bps*** refers to the actual number of ***bits*** of digital information transmitted each second.

So why all the confusion? In the olden days of telecommunications, baud and bps ***were*** the same. Slower modems — those operating at 300 bps — used to send one bit of information with each frequency change; the 1s were represented as tones of 2,225 vibrations per second and the 0s as tones of 2,025 vibrations per second. With this one-to-one correspondence between bits and the frequencies representing them, the number of frequency changes per second ***did*** equal the number of bits per second. So 300 baud was the same as 300 bps.

This relationship changed with the development of faster modems. Instead of one frequency representing one bit, a single frequency is used to represent ***groups*** of bits. So, the number of frequency changes per second no longer equals the number of bits per second. A modem may send at 600 baud (meaning there are 600 frequency modulations per second), but those frequencies may each represent 2- or 4-bit strings, achieving 1,200 or 2,400 bps.

The bottom line: What you care about (and should use in conversation) is the ***bps*** of your modem, not the baud, which is irrelevant.

rules, it's impossible for them to understand and properly decode the signals they send and receive. In other words, there must be a standard to assure that two modem-equipped computers can talk to each other.

Enter the ITU-T — the International Telecommunications Union — Telecommunications Standardization Sector (formerly known as the *Comité Consultatif International Télégraphique et Téléphonique*, or CCITT), an international group of experts that decides which modem communication methods and protocols constitute the standard. Modem manufacturers, telecommunications carriers, and governmental bodies all sit on this committee, which is actually an agency of the United Nations!

At any rate, with consistent standards set for transmission methods, you're assured that two modems can communicate with each other as long as they support the same standard.

Here's a rundown of the standards now in common use. The first four standards primarily have to do with the *speed* of transmission; the others relate to *error correction* and *data compression*.

- **V.22bis:** You don't see this one too often anymore; it's simply the standard for 2,400 bps data communications. The *bis*, by the way, is from a French word that can mean *repetition* (the reprise of a song chorus) or *prime*, in the sense that we might say X, X', Y; the implication is that this is a revised version of the V.22 standard. (On the other hand, *bise* is also French for *kiss*, so perhaps this is part of an inside joke concocted by the laff-a-minute ITU-T.) If your modem says it is V.22bis-compliant, it simply means that it supports data communication with other 2,400 bps modems.

- **V.32:** The standard for 9,600 bps data communications.
- **V.32bis:** The standard for transmissions of up to 14,400 bps.
- **V.34:** The most recently introduced standard, this originally referred to modem transmissions of up to 28,800 bps. In 1996, the ITU-T amended the standard to include the specification for speeds of 31,200 bps and 33,600 bps as well. A V.34-compliant modem doesn't *necessarily* transmit faster than 28,800 bps, but it can, if the manufacturer chooses to include the higher-speed features. Little-known fact: The V.34 standard isn't just faster than previous standards; it's more reliable. Modems that comply with V.34 are better at maintaining stable communications despite noisy phone lines and other interference problems.
- **V.42:** This standard has nothing to do with speed; it's an *error-correction* standard. It includes levels 2 through 4 of the Microcom Networking Protocol (MNP) — a transmission scheme that checks for errors in transmission and, if some of your data appears to have been garbled by static on the line, automatically resends the last message. These error-correction features are built into the hardware of V.42-compliant modems.
- **V.42bis:** A data-compression standard that greatly speeds up data transfers by compressing data before it is sent, with decompression handled by the receiving modem. Another transmission protocol, called MNP Class 5, also offers data compression and is supported by many modems. Files already compressed by a utility such as StuffIt don't go any faster with this kind of compression, by the way; their contents already have been compacted as much as possible. For V.42bis to be fully operational, you must connect the modem to your Mac with a *hardware handshake cable* — a cable specially wired to take advantage of the data compression hardware in the modem.

These standards are not mutually exclusive. A modem can (and likely does) support more than one standard. If a modem is listed as being compliant with the V.42, V.42bis, and V.34 standards, that means it can support data transmissions at up to 28,800 or 33,600 bps, has built-in error correction, and uses data-compression technology.

Now, we'll be honest: You don't need much knowledge of communications protocols and standards to use your modem. For example, if your modem supports V.42bis data compression, you really don't have to *do* anything about it. All it means is that if your modem happens to connect to another modem that also supports the V.42bis standard, a data-compression routine

is automatically triggered to speed up the throughput. You don't have to issue any special commands, push any buttons, or throw any switches.

For much, much more about modems, protocols, and file transfers, see the excellent manual for ZTerm, included on the *SECRETS* CD.

Beyond the modem

Imagine dialing into the Internet, connecting to a remote computer, and downloading files at more than *four times* the speed of the very fastest modems now available.

You can do it — with an ISDN line. ISDN stands for Integrated Services Digital Network. This relatively new (and expensive) technology, offered by more and more phone companies, allows you to transfer data at up to 128,000 bps — and that's *without* data compression. (By contrast, as we've said, conventional modem technology can't be pushed much further than 38,600 bps.)

Why are ISDN lines so fast? Because, although they operate over existing phone wires, ISDN lines carry *digital* information rather than *analog* signals. In other words, an ISDN line doesn't even require a modem. Remember, the whole job of a modem is to *convert* a computer's digital information into the analog signals used by traditional phone lines and vice versa. With a fully digital line, that conversion isn't necessary — and that makes for much faster data throughput.

ISDN is *so* fast, in fact, that it may be too fast for your Mac. Power Macs and the Quadra AV models can handle communications at up to 250,000 bps, but older Macs require a special NuBus serial card to keep up with the flow of data pouring in and out of an ISDN line.

That's not the only hardware needed to use an ISDN line. You also have to buy a network terminator, an interface box that the ISDN line plugs into, as well as a terminal adapter, which allows you to connect the network terminator to your Mac. Right now, the entry-level hardware needed to connect to an ISDN line costs about $500. From what we hear, configuring the hardware can be a nightmare, too.

Operating the lines is also spendy. Prices vary from phone company to phone company, but some are charging from $50 to $100 per month for an ISDN line, in addition to fees for initiating each call, plus actual online long-distance charges.

Beyond ISDN

ISDN's successors are already on the way. One of these technologies, SDSL (symmetric digital subscriber line), is twelve times *faster* than ISDN. With SDSL, you can transmit data at 1.544 Mbps — that's 1,544,000 bps — over traditional phone lines. SDNL will allow voice and data to be transmitted simultaneously over the same line. Also under development is an even more staggering new technology called ADSL (asymmetric digital subscriber line) that supposedly could permit connections up to 6.312 Mbps, again over ordinary phone lines. At that speed, it will take less than two seconds to move an entire megabyte of data over the phone lines. So far, SDSL and ADSL are still in the testing stage, require extremely expensive hardware and can be used only to transfer data over fairly short distances.

Still, the development of these technologies simply means the price of obtaining a high-speed connection to the Internet will continue to drop, and that using the Internet to transfer large quantities of data will become more and more practical in the future.

Handshaking: two modems get acquainted

When two modems connect, the first thing they do — even before you see the familiar CONNECT message — is compare each other's features and come up with the highest-level standard that they are *both* equipped to support. When they've agreed upon a connection method, they go ahead and establish a suitable data connection. This process of comparing features and reaching a mutually agreeable standard is called *handshaking*.

Most modems are quite good at handshaking; that's why you usually don't have to worry about which standards and protocols your modem supports. The modems are smart enough to work things out between themselves.

To illustrate: Suppose that you try to establish a connection between two modems — one that is both V.34- and V.42bis-compliant, and another that is V.32bis-compliant. The V.42bis modem first tries for the best connection possible, employing its full battery of built-in error correction and data-compression features. But the other modem doesn't support those features, so the V.42bis modem drops down — it pretends it has no error-correction features. But there's still another problem: One modem is trying to connect at 28,800 bps, while the V.32bis is limited to 14,400 bps. So the faster modem drops down to the fastest speed of the other modem. After comparing a number of other transmission parameters, the two modems agree to a standard 14,400 bps connection, without data compression or error correction, and the connection is established.

THE SOFTWARE

Before your modem can communicate with the outside world, *you* must communicate with your modem. That's the job of telecommunications software — the link between your Mac and the modem's brain. You need telecom software to control the modem's settings, select data for transmission, capture incoming data to your hard drive, and monitor the status of phone connections.

When you subscribe to online services (such as America Online) or sign up with an Internet service provider (ISP), you generally get all the software you need to connect. But if you aren't connecting to one of the subscription services — if you just want to dial up free bulletin boards or communicate with a remote computer — you need software to serve as an interface between you and your modem.

Most modems come with at least some kind of basic telecommunications software. Some of these programs are pretty utilitarian; they let you connect to an online service, bulletin board, or another computer and adjust the modem's basic settings, but lack special features for automating modem use and transferring files using special error-control protocols.

For those sorts of tasks, you need a full-featured package such as White Knight, SmartCom II, or MicroPhone Pro. If you don't have any of those, or find them too expensive, relax; on the CD that comes with this book we've included a copy of ZTerm, a feature-packed program with all the essential telecom and file-transfer capabilities you need.

All the programs mentioned here include features for automating use of the modem through a *scripting* language; you can teach the program how to log on to a service and retrieve information, after which the program can step through the entire process on its own, automatically dialing the number, entering the password, and issuing the correct commands to access the information you want.

Modem settings demystified

If there's anything that makes telecommunications seem intimidating, it's the sheer number of options you confront when setting up a telecom session. Should you select full duplex or half? Should you use hardware or software flow control? What kind of parity do you need? Should you send your file using YMODEM or ZMODEM? And what the heck is Kermit?

Here's a roundup of the alien-sounding terms you must wade through when configuring your modem prior to a telecom session. We should stress that none of these settings makes *any difference* if you're connecting to

America Online or another service for which you get a special program used for connecting. You worry about these settings primarily when you're connecting with a local bulletin board service that doesn't use special software — or when you're dialing up a friend, computer-to-computer.

- **Flow control.** Think of flow control as a valve that allows each modem to regulate the flow of data so that the stream of incoming information doesn't overwhelm either computer. Many telecom programs ask you to choose between two types of flow control: *X-On/X-Off* and *hardware handshake.*

  X-On/X-Off flow control is software-based. The receiving computer automatically sends out a special X-Off character whenever it begins receiving data faster than it can process it. The X-Off character pauses the sending modem until further notice. When the receiving computer is ready to receive more information, it sends out the ASCII X-On character and the flow resumes.

  High-speed modems that support hardware handshaking have flow control built into their circuitry and don't require the X-On/X-Off characters. Instead, the modems themselves issue Request to Send (RTS) signals and Clear to Send (CTS) signals to control the flow of data traffic — the equivalent of "Hold on a sec!" and "Okay, go ahead."

- **Data bits.** This parameter refers to the number of binary bits (1s and 0s) used to make up each ASCII character in a transmission. Most connections express these characters in 7-bit or 8-bit packets. In order for two modems to communicate properly, they must both be set to expect the same number of bits per data packet. It doesn't make any difference which setting you use, as long as both modems are set the same.

- **Parity.** Parity is an error-control feature used mostly in lower-speed transmissions. There are three settings to choose from — Even, Odd, and None. Usually, you should choose None; parity error checking isn't used much with higher-speed modem connections. It's pretty limited and not nearly as effective at preventing data errors as *file-transfer protocols* (which we discuss later in this chapter).

  When parity is activated, the modem adds one extra bit to each packet (burst) of data. If Even parity is selected, the modem adds either a 1 or 0 to make the sum of the bits in the packet add up to an even number. If Odd parity is selected, an appropriate bit is added to make the sum of the bits add up to an odd number. The receiving modem monitors the parity of each packet — checking for oddity or evenness — to make sure that all the data bits were transmitted correctly.

- **Stop bits.** One letter of the alphabet — one character — takes *eight bits* of information to identify. A modem adds at least one additional bit to the beginning and end of each packet to delineate the end of one ASCII character and the beginning of the next. The bit added to the beginning is called the *start bit,* and the bit (or bits) added to the end is called the *stop bit.*

  Here again, the setting doesn't make much difference, as long as both modems use the same setting. Some telecom programs, such as MicroPhone II, have an Auto stop bits feature, which automatically selects the proper stop bits setting for the connection.

- **Local Echo.** When Local Echo is on, each character you type is both displayed on your own screen *and* sent to the screen of the computer to which you're connected. Because most computers automatically echo, or send back, a copy of each character received through a modem transmission, you usually *don't* need Local Echo on; you see the characters you type because they are echoed back to you by the remote computer.

  If you have Local Echo on and the remote computer also is echoing what you type, you see *double characters* on your screen, lliikkee tthhiiss. Conversely, if the remote computer does *not* echo and you have local echo *off,* you won't see *anything* you're typing. Each character you type is sent directly to the remote computer without first appearing on your own screen.

  Fortunately, you can switch Local Echo on or off *during* your telecom session. That is, if you suddenly discover that you're typing double letters, turn off Local Echo.

- **Half/full-duplex.** A half-duplex connection is like a one-way street — data can travel in only one direction at a time. In the more common (and faster) full-duplex mode, data can travel in both directions simultaneously. Generally, if you connect to a remote computer that's in full-duplex mode, you have to turn *Local Echo* off because the remote computer is set to echo back everything you type.

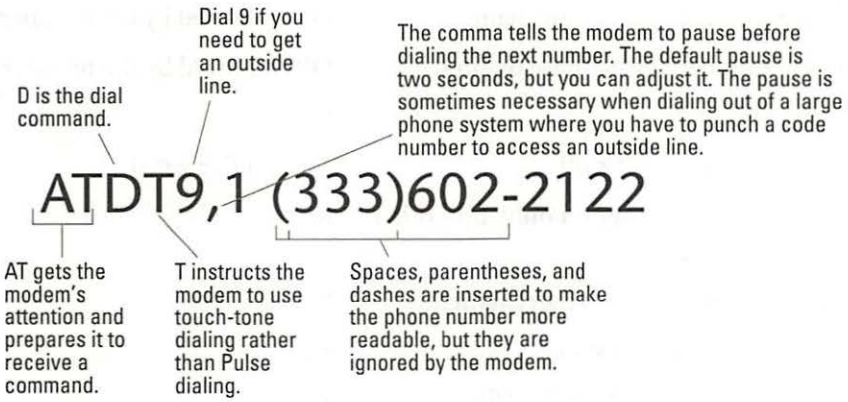
Hayes AT command set

Telecom programs such as ZTerm and MicroPhone work in one of two modes — *online* or the *command state.* Usually, after a successful connection is established, your telecom software automatically jumps into online mode. When online, you're communicating with the remote computer; the words you type are transmitted directly to the screen of the computer at the other end of the phone line.

Sometimes, however, you may want to send special instructions to your own modem, not to the person on the other end of the line. To do that, you must switch to the command state. In the command state, any characters you type are interpreted by the modem as operating instructions. They're not transmitted through the phone line.

Such commands must be issued to the modem in its native language, the Hayes *AT command set.* This collection of modem commands was originally developed by Hayes Microcomputer for its modems, but the commands have now been adopted as the industry standard.

Figure 27-1
Anatomy of an AT command.



As the name suggests, the primary command of the set is AT, which stands for *ATtention.* Not surprisingly, when you send an AT command to the modem (via your telecom software), it calls the modem to attention and prepares it to receive additional commands. In most telecommunication programs, if you type **AT** and press Return, the modem responds with *OK* (which appears on your screen); that's the modem's way of saying, "Yes, I'm listening and ready to do whatever you tell me."

In a typical command, the letters AT are immediately followed by *other* command letters, which instruct the modem to perform a certain action (dial a number, answer a call, hang up). These commands may also tell the modem which of its features it should activate or suppress.

What's interesting is that you can string together a number of these commands — as long as the entire block is preceded by the letters AT — into one long message to your modem. With impressive originality, they call this string of modem commands a *modem string.* (Figure 27-1 shows the anatomy of a sample string.)

There are dozens of AT commands, many of which you'll never see or need. Table 27-1 lists the ones you're most likely to find useful in controlling a modem or changing its settings.

Table 27-1
Common AT Commands

To Make Your Modem Do This:	Type AT, Plus This:
Answer the phone	A
Repeat the last command issued (don't type AT first)	A/
Dial a number (using tone dialing)	DT (followed by the number)
Dial a number (using pulse dialing)	DP (followed by the number)
Hang up	H
Turn modem speaker off	M0 (that's a zero)
Turn modem speaker on only until other modem answers	M1
Turn modem speaker on permanently	M2
Switch to command state	+++
Reset the modem's default settings	Z
Save the current configuration as the default settings	&W
Dial without checking for a dial tone	X3
Restore the modem's factory settings	&F
Change the number of seconds the modem will pause when encountering a comma in a dialing string	S8=*n* (where *n* is the number of seconds. The default is 2.)
Change the number of seconds the modem should wait for the other modem's"carrier tone" (the initial shriek)	S7=*n* (where *n* is the number of seconds. The default is 30.)
Change the number of seconds the modem should wait for a dial tone	S6=*n* (where *n* is the number of seconds. The default is 2.)
Change the duration of each touch tone and of the space between each touch tone	S11=*n* (where *n* is the number of milliseconds; use a number between 50 and 255.)

Remember that every one of these commands must be preceded by the letters *AT*. Therefore, to make your modem silent, you type **ATM0** (that's a zero). To restore its factory settings, you type **AT&F**. If you're on the line with a friend, chatting by voice, and you decide you want the modem to pick up the line, type **ATA**. And so on. (Follow any of these commands with a Return.)

So where do you type this stuff? If you're using a text-based telecom program such as White Knight (formerly called Red Ryder), MicroPhone, or ZTerm, you simply type these codes onto the screen. If you're using another program that dials (such as QuickDex or America Online), you'll find a Modem String blank somewhere in the Preferences or Setup dialog boxes.

Many telecom programs have buttons or check boxes that eliminate the need for you to type out these commands in AT format. Instead of making you type **ATS0=1** (the command that makes your modem answer the phone on the first ring), for example, the software may offer a dialog box in which you can select Auto Answer with a check box (and provide a blank where you can type in the number of rings).

If, during an online session, you must issue an AT command, you can jump back to the command state by typing +++. Then, when you're finished, you can go back online by issuing the **ATO** command (that's a letter O).

The modem initialization string

Don't bother memorizing the complete Hayes command set; today's telecommunications programs generally don't require you to fiddle around with these commands very often. There is, however, one rather vital string of Hayes commands that deserves your attention and respect — your modem's *initialization string.*

The initialization string is the cluster of Hayes commands that gets sent to your modem the moment you launch a telecommunications program, such as Microphone Pro or America Online. The initialization string tells your modem exactly which features to activate or suppress during the current work session in order to behave properly with the software. This is vital because not all modem features are compatible with all programs. Certain features (such as faxing capabilities, error correction, and data compression) may actually get in the way of programs that don't support those features. So the modem initialization string primes your modem, getting it ready for action, restoring all the appropriate settings in order for your telecom software to work properly.

Here's how a typical initialization string looks:

```
ATE0Q0V1X4&C1&D0M0
```

Each chunk of this string contains a specific modem command. For example, **Q0** tells the modem to return a result code — such as RING or CONNECT or BUSY — when something happens, and **V1** specifies that the result code be expressed in English, rather than as a numeric code. The command **&D0** tells the modem to ignore the status of the DTR (Data Terminal Ready), a signal generated by the serial ports of some computers to monitor the flow of data to and from the modem. DTR is always ignored when using a modem with a Mac.

We tell you all this because sometimes you can solve major telecommunications snags by adjusting this initialization string. If your modem simply won't dial out or refuses to communicate with CompuServe, it may be that a different initialization string is needed to activate (or disable) the appropriate features. Check the manuals that came with your modem and your telecom programs to see if a change in the initialization string is needed.

You may have to do a little hunting to figure out where a particular program stores its initialization string. With America Online version 2-point-anything, for example, the string isn't stored in the application itself, but in a separate modem file stored in the Online Files folder. To edit the initialization string, you must open the AOL modem file being used by your modem when you log on. In that file, you'll find a field called Configuration. *That's* where you edit the commands that make up the initialization string (see Figure 27-2).

In America Online 3, you can edit the initialization string more easily: At the sign-on screen, click Setup, then click Edit Modem Profile.

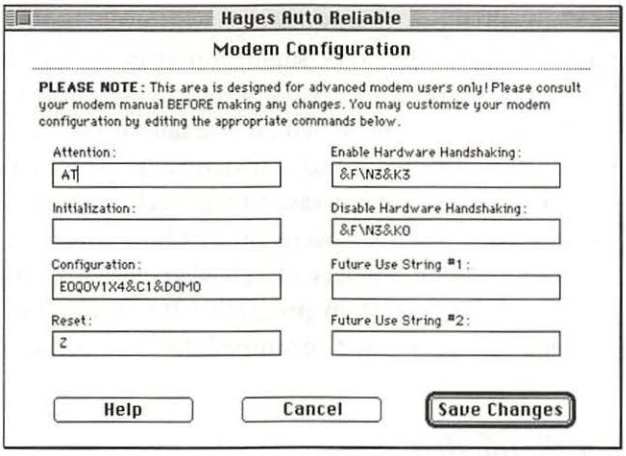
DIAL UP ANOTHER MAC BY MODEM

Suppose that you want to connect to your sister's Mac. Call her up by voice to make sure that you've both set up your parameters the same way, as described in "Modem settings demystified," earlier in this chapter. Launch your telecom program (such as ZTerm, included with this book). Your sister should do the same.

If your telecom program has an Auto-Answer feature, she should turn it on (or she can just type **ATA** and press Return).

On your end, type **ATDT 555-1212** (or whatever her number is) and press Return. If the modem is correctly hooked up, it dials. If *her* modem is correctly hooked up, it answers. The word *CONNECT* appears on both your screens.

Figure 27-2
A modem initialization string doesn't look like much, but it tells your modem exactly how to behave during a communication session. The string shown here is typed into the software you use to connect to America Online.



At this point, many beginners give up in frustration because they forget the most critical step. After the word *CONNECT* appears, *press Return.* You both need to do this.

Now you're hooked up! It gets wild and wonderful: Anything you type appears on her screen, and vice-versa. You can have an entire conversation just by typing to each other. The text rolls up the screen; depending on your program, you can copy and paste it or *capture* it into a text file (check your File menu for a Capture Text option).

Transferring files

After you connect to a remote computer, chances are you'll want to do more than chat with the person on the other end of the line. At some point you'll want to send an entire file. Most telecommunications programs offer several methods of sending a file.

Text transfers

The first and most basic method is a plain text transfer. In such a transfer, you select a file — it must be a plain text file. The contents are automatically typed out on the screen and sent to the remote computer one character at a time, as if you were actually typing out the file while online.

There are some obvious disadvantages to this method. You can't send a formatted Word document, for example, using a text transfer. For that mat-

ter, you can't send graphics, spreadsheets, scanned images, or any other non-textual data. Furthermore, a text transfer doesn't include any error checking; if the phone line is noisy and characters get garbled, the remote computer has no way of knowing that it has received corrupted data.

With all those disadvantages, why even bother with the text transfer method at all? One very significant reason: It allows you to transfer data between just about *any* two computers on Earth equipped with just about *any* telecom software. When all else fails, even the most bare-bones telecom package can do a plain text transfer. Your cheerful authors can vouch for the fact that this feature has saved their necks on various occasions. (We recall, for example, when we were on deadline and had to shuttle information between a Mac and a very old Hewlett-Packard 110 laptop equipped with a stone-tools-level telecom program.) If you absolutely have to transfer data between two seemingly incompatible computers, the plain text transfer is probably your answer.

Mac file transfers

To transfer formatted documents and graphics, you need to use a *file-transfer protocol.* These protocols are special routines that let you send a whole file (or group of files) chunks at a time, with an error-checking routine built in. As the remote computer receives each packet, it verifies the packet to make sure that the transfer was accurate. If a discrepancy is detected between the packet of data sent and the packet received, the modems automatically repeat that part of the transfer until the packet transfers without error. In comparison with plain text transfers, protocol transfers are much faster and more reliable.

File-transfer protocols

There are five kinds of protocol transfers you're likely to encounter. Once again, when you're connected Mac to Mac, the telecom programs running on both machines have to use the same file-transfer method.

- **XMODEM.** In an XMODEM transfer, a file's contents are parceled out in packets of a fixed size (usually between 128 bytes and 1K each). As each packet is sent, XMODEM uses one of two error-checking methods to make sure that the packet is sent reliably.

  With the older method, *checksum,* the sending computer adds up the sum of the binary digits in each packet and tacks this number on at the end of the packet. The receiving computer performs the same computation with the data after receiving it and checks its result against the sum

sent with the packet. If the two numbers check out, the receiving computer sends out an ACK code — a signal acknowledging the receipt of the packet and asking for the next. If a discrepancy is detected, that the packet is sent again.

Some telecom programs offer a new error-checking method called *Cyclic Redundancy Checking* (CRC). CRC provides more accurate error control than the checksum method.

- **YMODEM.** The YMODEM protocol works just like XMODEM, except that it allows you to batch a group of separate files together and send them with a single transfer command. YMODEM sends data in packets of 1K each and uses CRC error checking.

- **YMODEM-G.** This is YMODEM with one key difference. Under YMODEM-G, if the CRC error-checking routine indicates that a data packet contains an error, the modem *doesn't* resend the packet; it just cancels the whole transfer, forcing you to start over. For this reason, YMODEM-G is a good choice only when you're working with highly reliable connections or with modems that feature built-in error-correction hardware.

  YMODEM-G outperforms regular YMODEM because it doesn't wait for the receiving computer to send an ACK command before sending the next packet. (However, it *does* notice if the receiving computer sends a Negative Acknowledgment signal, indicating that a packet was not received properly.)

- **ZMODEM.** Like YMODEM-G, ZMODEM provides fast file transfers because it doesn't wait for the receiving computer to send an acknowledgment before sending each packet of data. But ZMODEM doesn't break off a transfer when it detects an error (as YMODEM-G does); it just resends the data packet until it is received without errors. ZMODEM is also unique because if you either accidentally or intentionally interrupt a transfer in progress, you can resume the transfer at another time, picking up exactly where you left off.

  ZMODEM, if available, should be your first choice for sending files to other Macs. (ZTerm, included with this book, can handle ZMODEM transfers.)

- **Kermit.** Slower but more flexible than ZMODEM, the Kermit protocol is useful for transferring files to and from mainframe computers that might not work with other file-transfer protocols. With Kermit, you can control the size of data packets and change the control characters that define the beginning and end of each packet, making it the most flexible protocol available. Because Kermit is completely ASCII-based, it can accommodate communications with very un-Mac-like computers.

- **MacBinary.** Don't start yelling, techies of the world; we *know* MacBinary isn't a stand-alone transfer protocol. It's a file-formatting option supported by the file-transfer protocols we've already mentioned. When you set up a file transfer using XMODEM, YMODEM, or ZMODEM, you usually have to decide whether or not to use MacBinary formatting.

  When you send a file *without* MacBinary, only the file's data fork — the part of the file containing the actual contents of the document — is transferred. With MacBinary selected, the file's data fork *and* resource fork are sent, assuring that the file's unique Macintosh attributes — its name, icons, size, creation date, and other Finder information — are transferred along with the file. As long as the receiving computer is capable of supporting MacBinary and can display Mac information, it's always best to use MacBinary.

TELECOM SECRETS

Correcting line breaks in downloaded text

If you've ever downloaded text from a service such as America Online or CompuServe, you probably noticed that if you try to open the text file with a word processor, the line breaks sometimes fall in the wrong spots and cause the text to line up incorrectly.



There's an easy solution for this: Reformat the text in a monospaced font — one in which every character and space is the same size — such as Courier or Monaco. You may also need to widen the margins. (If you actually want to *fix* such text, instead of just *reading* it, use Tex-Edit, included with this book; it can strip out the superfluous *linefeed* characters.)

Determining current settings

If you frequently change modem settings, you may have trouble remembering your modem's current settings configuration. You may forget, for example, whether you've set the modem to answer on the third ring or fourth ring — or whether you've disabled the auto-answer feature altogether.

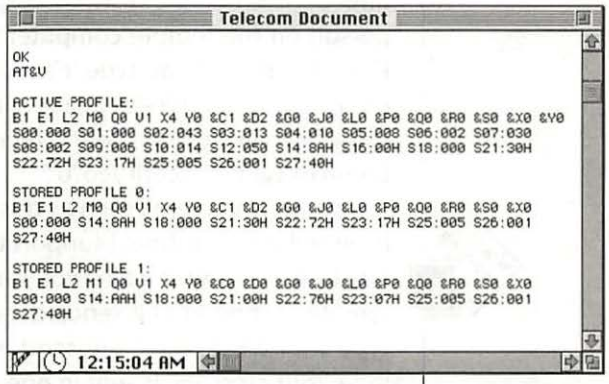
There's an easy way to recall current settings. On most modems, you can use the AT&V command. This command causes your telecom software to display every modem setting on the screen (see Figure 27-3). If your modem supports stored configurations, it shows each of those as well.

Getting rid of double characters

If you connect to a bulletin board or to another computer and eevveerryytthhiinngg yyoouu ttyyppee llooookkss lliikkee tthhiiss, it means you have Local Echo active in a full-duplex connection. In other words, the letters you type are being displayed on your own monitor *and* echoed back by the other computer.

To eliminate the problem, just turn off Local Echo with your telecom software.

Figure 27-3
The AT&V command shows all the modem's active settings and any shared settings.



Eliminating overstriking characters

Sometimes, during an online session, you may notice that pressing Return *doesn't* move you to the next line. The lines of typing overstrike each other, making them nearly impossible to read. This usually happens because the computer you're connected to is expecting a Line Feed (LF) command along with each carriage return.

Most telecom software gives you the option of sending carriage returns alone (usually called CR), carriage returns *along with* a Line Feed command (CR/LF), or line feeds alone (LF). To correct the overstriking text problem, change the setting to CR/LF. (Look for a Preferences or Settings command.)

On the other hand, if you're getting a *double-space* between lines each time you press Return, you're sending a line feed command that isn't necessary. Change the setting from CR/LF to CR.

Preventing line interruptions from extension telephones

A modem connection or file transfer can be ruined if someone unwittingly picks up a telephone extension elsewhere in your home while your modem is online.

You can prevent this from ever happening by connecting a Radio Shack Teleprotector #43-107 to your phone line. This gizmo makes all other telephone extensions in the house go dead so that you can't be interrupted when online.

Dialing out with no dial tone

Normally, a modem waits for a dial tone before starting to dial out. If the phone system you're on doesn't provide an initial dial tone — or if you're in a country with a telephone system that uses a dial tone not recognized by your modem — use your telecom software to insert the X3 command into your dialing string (like this: ATX3DT555-1212). Your modem dials without a dial tone present.

Using the buffered keyboard

In a full-duplex modem connection, with data zipping back and forth in both directions simultaneously, you experience some bizarre results if you and the person on the remote computer both try typing messages to each other at the same time. If you type "How are you doing over there?" while the person on the other end types: "I have something important to tell you," you may see something like this on your screen: "I haHove wso amerethi nyg ou imdpooir-tangn ot ver ttoh teerll yeo?u."



To avoid problems such as this, most telecom programs (including ZTerm, included with this book) support the use of a *buffered keyboard.* This is a separate little window in which you can type and edit an entire message, while the remote computer still sends data to your main terminal window. After you type your whole message, send it all at once by pressing Return. The advantage: Your message is sent in one chunk to the recipient and isn't interrupted by other typing.

Making your modem shut up — and speak up again

Don't you hate the blood-curdling screech that modems and fax modems emit when connecting? We mentioned earlier that it's easy to make your modem mute by issuing the ATM0 command (that's a zero).

However, we haven't yet mentioned how to turn the speaker back on again: The command is ATM1.

Making your modem answer when you want it to

If you share one phone line between your voice calls and modem connections, you probably want some control over when your modem answers the phone. You can determine this with simple Hayes-compatible AT commands, issued to the modem through your telecom software. The command ATS0=1 makes the modem answer on the first ring, ATS0=2 on the second ring, and so forth. Choosing ATS0=0 disables the modem's auto-answer function; the modem ignores the ringing phone until you type ATA in your telecom program. (Those are zeros.)

Disabling Call Waiting

Call Waiting can cause serious problems during a telecommunications session. The click of an incoming call in the middle of a file transfer can cause glitches in the transmission and ruin the transfer.

So if you have Call Waiting on your phone line and you use that same line for modem connections, make sure that you disable it before you log on. In most areas of the country, you just dial *70 before making a call.

If you use an AT command to dial numbers with your modem, you can just add the *70 to the number string like this: ATDT*70,555-1212. The comma adds a brief pause after the disabling command is issued and before the number is dialed.

MAC AS FAX

When fax modems debuted a few years back, the Macintosh community was skeptical, to say the least. Many of the earliest models were only *send-fax* devices, capable of sending faxes but not receiving them. Even the models with full send-and-receive capabilities were overpriced, came with lousy software, and offered unpredictable performance.

Today, there are dozens of send-and-receive fax modems available, plenty costing less than $100. Most are equipped with circuitry capable of reliably transmitting data to and receiving transmissions from Group III fax machines at a rate of 9,600 bps. Fax software has come a long way, too; the best packages make faxing a document no more complicated than printing. And virtually all of them also function as standard data modems, too, capable of putting you online and performing file transfers at 14,400 bps or higher.

How to fax

With most fax modem packages, you can send outgoing faxes directly from within any Macintosh application. To fax a document, the directions vary by modem brand:

- **Global Village:** Hold down the Option key as you choose Print from the File menu. Actually, you choose *Fax* from the File menu — the word *Print* disappears when you hold down the key.
- **Apple's ExpressModem software (including the GeoPort Telecom Adapter):** Press Shift and Control while choosing Print from the File menu.

DIALOGUE

Fax modem versus fax machine

JS: You know, people ask us all the time which they should get — a fax modem or a fax machine. And we, of course, always respond with the one obvious answer...

DP: We tell them to buy a fax machine.

JS: Exactly! And we — wait a minute. No, we don't. We heartily recommend the fax modem.

DP: *You* heartily recommend the fax modem.

JS: And why shouldn't I? A decent fax modem costs ***one-third*** as much as a stand-alone fax machine. It's the deal of a century.

DP: You pay less, you get less.

JS: No, you get ***more***: A modem for dialing up the Internet and, in some cases, a built-in answering machine.

DP: Sure, but face it: A fax modem, no matter how many fancy features you roll into it, hardly takes the place of a real full-featured fax machine.

JS: Such as?

DP: Suppose I want to fax in my order from a preprinted order form in a catalog. Now, with a fax machine, I'd just fill out the order form, feed it into the machine, and send it off. Just how could I do ***that*** with a fax modem?

JS: Well...

DP: You can't fax *any* preprinted documents with a fax modem. That's a serious drawback. You're strictly limited to the documents on your Mac. You can't even fax a letter with your signature on it, unless you first scan your signature, save it as a graphic, and then paste it into your letter — which, of course, would require buying a scanner, too. And take three times longer than simply signing a piece of paper ...

JS: All right, all right ...

DP: And speaking of graphics, remember that most fax modems can't send PostScript images. Artists and designers who need to transmit high-quality graphic images to clients can't use a standard fax modem; typically, they have to print their material on a PostScript printer and then fax out the results.

JS: OK, so a fax modem *doesn't* completely replace a regular fax machine. But it offers a million other advantages.

DP: A million?

JS: Well, four.

DP: I'm all ears.

JS: When you need to fax a document using a fax modem, you don't have to print it first. In fact, you don't even have to lift your fingers from the keyboard. Do you realize what a time-saver that is? And when a fax comes in, it pops up right on your screen. You can preview *every* fax you get and delete the ones you don't really need. No wasted toner and ink. Now, what could be more convenient than *that?*

- **Supra and some others:** The software installs a new Fax *menu* to the right end of your menu bar. Choose Fax from this menu.

Any modem brand also offers a secondary, less convenient method: You first select the fax modem device's name in the Chooser — just as you would select a printer — and then choose the Print command.

In any case, the fax software *prints* (faxes) the document by converting each page into a bitmapped image, dialing a fax number with the modem, and transmitting the converted file through the phone line. The document is transferred from your Mac to the remote fax machine without having to be printed first.

Likewise, a fax modem lets you receive incoming faxes right on your Mac. You can read the fax documents on-screen without ever having to print them. Of course, if you *do* need a printout of a document, all you have to do is print it as you would any other document.

FAX MODEM SECRETS

Faxing PostScript graphics

Most fax modems don't understand PostScript. If you try to send a document containing PostScript graphics (from Illustrator or FreeHand, for example), the fax machine prints only PICT representations of the PostScript images, and you'll get unacceptably jaggy results.

But you can make the results look a little better using the following method: When you first create the PostScript graphics, make them about three times larger than intended, then import them in a page-layout program (or Color It or Photoshop), and reduce them to the desired size. The reduction gives the final PICT image a finer resolution in the final faxed document. (Alternatively, you can buy a PostScript converter program such as GDT Softworks' StyleScript, which does the deed automatically.)

Margins of error

Some fax modems and fax machines chop off the edges of a document during the transmission process. So to protect the integrity of your documents, create extra-wide margins on documents that you plan to fax — maybe adding a quarter-inch margin on every side.

ATM and faxing

For the best-looking faxes, make sure that you use TrueType fonts, or PostScript fonts with Adobe Type Manager (see Chapter 24 for details). TrueType and ATM work with fax modems exactly as they do on your monitor and on QuickDraw printers to render smooth, crisp text.

GEOPORT

Most recent Macs, instead of having the traditional modem and printer ports on the back, have one or two GeoPorts — small round jacks that look for all the world like the modem or printer ports on an older Mac. And, indeed, you could go on with your life using a GeoPort as simply a modem or printer jack, plugging in your same old peripherals the same old way.

If you look closely, however, you'll discover that the GeoPort jack *isn't* exactly like the typical modem or printer port. For starters, it has one tiny pinhole more than the traditional modem jack. This extra wire provides electricity to whatever special GeoPort-capable device you plug in there.

What are these devices? Actually, there's only one: the GeoPort Telecom Adapter, otherwise known as the Pod. The Pod is a strangely shaped, gray plastic box that dangles off your GeoPort jack. When it's plugged into a phone line (and when you've installed the appropriate software), the Pod serves as a fax modem (and, depending on the software you use with it, as a speakerphone, too).

When it was first released, the big selling point of the GeoPort technology was price: Adding the GeoPort Telecom Adapter to a GeoPort-equipped Mac cost only about $90, compared with the high-speed-modem price

DP: A regular fax machine. On most monitors you can't even *read* a whole faxed page at full size.

JS: So?

DP: So, that means you either have to change the magnification using the fax software, or — worse yet — scroll horizontally and vertically to read the document. There goes all the time you saved.

JS: OK. Let's talk ecology.

DP: I'd love to.

JS: Fax modems save paper; you can send and receive fax documents without printing them. Over the course of a year, you can save literally *reams* of paper. Maybe even an entire tree! It's an environmentalist's dream.

DP: Not quite. Let's not forget that using a fax modem means leaving your Mac *and* modem on 24 hours a day! An environmentalist might not be too thrilled about all that wasted power. And besides, let's be honest: Sooner or later you're going to have to print out at least *some* of those incoming faxes . . .

JS: Not really. You just save your faxes right in a folder on your disk.

DP: Yes, but *eventually*, Joe, eventually you'll need to print something out . . .

JS: True, but on those *rare* occasions when I do have to print out a fax, at least my hard copy won't wind up on that awful, thin, waxy, thermal paper spit out by most fax machines.

DP: I'll grant you that: Fax paper is truly a loathsome substance.

JS: I'm glad we agree.

of around $200. Why the price difference? As it turns out, the Mac can imitate all the usual squeals and shrieks of a modem; the Pod serves only as a connector to your phone line and *isn't* a modem itself.

GeoPort 2.0 and MegaPhone

Actually, there's another advantage to the GeoPort: Because it's software-based, new features can be added just by writing more software. After two years, this promise was finally fulfilled by the release of the GeoPort 2.0 software in late 1995. (The upgrade became available free from online services or from Apple's Internet sites, such as *ftp.support.apple.com;* shipped with the some recent Mac models; and it came with the GeoPort pod.) This software includes a program called MegaPhone that turns a GeoPort-savvy Mac (Power Macintosh or AV) into a pretty formidable answering machine and speakerphone.

You speak into the Mac microphone (perched, for example, on your monitor) and you hear the caller through your Mac speaker. The sound quality is excellent — unlike a real speakerphone, your Mac doesn't cut out the caller's voice when you start to talk. And because it's a computer program, MegaPhone provides an autodialing phone book, logs your calls, dials numbers such as 800-GO-BROWNS automatically, and so on.

If you decide to pay the extra $50 to upgrade to the full version of MegaPhone, you get a whole raft of additional features: You can retrieve messages by dialing in, integrate your existing programs with the dialing function, and so on.

Of course, none of this works unless you run the telephone software at all times. If it quits, or if your Mac has a system crash, you have no answering machine. Furthermore, MegaPhone saves its messages as standard, double-clickable System 7 sound files, which take up considerable disk space (236K per minute). The standard GeoPort won't work on digital (that is, office) lines, and the MegaPhone setup doesn't let you have separate lines for voice and modem calls. Weigh these drawbacks — and remember that an *actual* answering machine only costs about $40.

Telecom 3.0 — GeoPort reborn

While the GeoPort 2.0 software added plenty to the original GeoPort technology, it was still limited in one very big way. A GeoPort-equipped Mac, even with the 2.0 software, can't transfer data any faster than 14.4 Kbps. Meanwhile, shortly after the release of GeoPort 2.0, the rest of the world began switching to faster, more reliable 28.8 Kbps modems. And prices kept dropping, until — ridiculous irony! — a 28.8 Kbps *real* modem was *less* expensive than the Pod, which was only half as fast.

GeoPort users waited impatiently until late 1996, when Apple released Telecom 3.0, an upgrade that boosts the GeoPort Adapter to the V.34 standard — at least 28.8 Kbps. Telecom 3.0 replaced the MegaPhone software with Apple Phone, an improved speakerphone and voice mail package, and also includes AppleFax, for sending and receiving faxes, and Apple AddressBook, a telephone and address book that works with both AppleFax and Apple Phone.

Unfortunately, because the GeoPort's modem capabilities are *software*-based, the faster you connect, the more work the Mac's CPU has to do to process the data. Therefore, transmitting at 28,800 bps with the GeoPort can slow down any other functions on your Mac.

TRUE FACT

DOES YOUR MAC HAVE A GEOPORT?

Power Macs and other four-digit Mac models have *two* GeoPorts - both the modem and printer ports are GeoPort-ready.

The original GeoPort-equipped Macs, the Quadra (Centris) 660AV and Quadra 840AV, came with only one GeoPort jack — the "modem" port.

Chapter 28

The Web, the Net, and Everything Online

IN THIS CHAPTER:

- How to get online
- Observing online etiquette
- The Internet: e-mail, FTP, Telnet, Gopher, IRC, newsgroups, mailing lists
- Browsing the World Wide Web
- Creating Web pages
- America Online and CompuServe

Even if you have a modem and it's plugged into a phone line, you're still not quite ready to go online and explore the famous Internet — and its most popular attraction, the World Wide Web. Before you can start downloading Dilbert cartoons, searching Apple's Web site for the latest system update, or e-mailing your cousin in Sierra Leone, you'll have to wrangle yourself a connection to the online world.

GETTING ONLINE

There are two ways to get such a connection: You can sign up with an Internet service provider (a local or regional company that lets you dial into its computer system and share its Internet access), or you can subscribe to a commercial online service (such as America Online or CompuServe).

Internet Service Providers

Signing up with an Internet service provider (or ISP) generally costs about $20 a month (and sometimes a setup fee); the ISP provides *unlimited* Internet access. (If only the phone companies offered such a deal!) In some cases, you can pay a lower rate (say, $7 per month) in exchange for five hours a month. If you exceed the limit, you pay an hourly rate.

Small-time, local ISPs may require you to provide your own software (Navigator, Gopher, and so on) and knowledge of how to use it. They sell you the privilege of dialing into their system, but it's up to you to find your way around.

ISPs generally offer no content of their own — no *Time* magazine, no encyclopedias, no stock quotes, none of the organized, popular features of online services. A direct Internet connection can be harder to use and troubleshoot than an online service. And getting phone help from these chronically understaffed companies is practically hopeless.

However, ISPs are improving rapidly. Companies such as EarthLink, for example, offer free self-configuring software that makes setting up your direct Internet account almost as easy as signing on to America Online (AOL). They also let you start up your own World Wide Web page on the ISP server, so that you can make your own information available to the rest of the world (more on that later).

If you like the financial sound of an ISP's deal, but would rather do without the software hassles and configuration problems, we can't recommend Apple's Internet Connection Kit highly enough. (It comes installed with most of today's Mac models, with System 7.6, or you can buy it for about $50.) This elegant program handles all of the setup for you, and even installs a page of Launcher icons for the various programs you'll need on the Internet (Navigator, Telnet, and so on) — and offers you a simple way to shop among six or seven different national ISPs. And switching ISPs is just as simple as signing up for one the first time.

Finding a local provider

If Apple's Internet Connection Kit is too easy for you, find a local Internet service provider by asking your friends for recommendations, consulting the business section ads of most newspapers, looking in the big Mac magazines for ads, or checking the frequently updated text file called PDial. To get the PDial list, send e-mail to *info-deli-server@netcom.com* — yes, that's the address; and, if you make one little punctuation error, this won't work. (Welcome to the Internet.) In the body of your e-mail message, type only this: ***SEND PDIAL***. (It makes no difference what you put in the Subject line.)

Don't sign up for a *dialup* (or *shell*) account unless you're a programmer. What you really want is a *SLIP* (Serial Line Internet Protocol) or *PPP* (Point-to-Point Protocol) account. With a SLIP or PPP account, you can use programs such as Netscape Navigator, NewsWatcher, Eudora, and Fetch that put a graphic, point-and-click interface on the Internet. (In general, you need one of these front-end programs for *each* of the Internet features we described earlier.)

The Internet via AOL

Instead of tracking down an ISP and fending for yourself, you can sign up with a subscription online service, such as America Online or CompuServe. (Don't bother with Prodigy. It's slow, it's underfeatured, it's slow, they censor your e-mail, and it's slow.)

As of this writing, CompuServe charges about $10 per month, which includes five hours of connect time. Additional hours are $3 each. America Online, however, costs exactly the same as most ISP's — $20 per month for as much online surfing as you can stand.

AOL's Internet access (in AOL 3.0) is amazingly clean, integrated, and easy, presented with a point-and-click interface (just like the Mac). Furthermore, unlike previous versions, when you're on AOL 3, you have a genuine Internet connection; you can use any Web program you want (Navigator, Cyberdog, whatever). (World travelers note: AOL also has local access numbers not just nationwide, but, increasingly, worldwide.)

We'll discuss America Online in much greater detail at the end of this chapter.

The Secrets guide to online etiquette

Regardless of which method you use to get online — a direct Internet connection or an online service — you're technically in a public place where your every word and thought are read and judged by thousands of people all over the world — but don't let that faze you. That's the glorious thing *about* being online. It's the only human interaction where you're judged *purely* by your thoughts. Your age, race, looks, disabilities, insecurities, hair status, accent, height, weight, and even hygiene don't make *any* difference to anybody online. We've heard more than one story of love born via e-mail (or during live chat sessions).

However, presentation counts in our society, and that's still true in the electronic anonymity of online communications. Here are the top four ways you can be sure you won't identify yourself as an amateur.

- **Don't type in all capitals.** All capital letters are hard to read and have a special meaning in the soundless realm of online speech: It means YOU'RE SHOUTING. Reserve it for when you really *are* shouting.
- **Watch the flaming.** The phenomenon known as *flaming* is unmodulated ranting. People do it because they're anonymous online, and feel freer to "let 'er rip," and because, perhaps, they need attention. Our only advice here is that (a) you usually can't take down a message you post online, so don't say things you'll regret, and (b) you *may* actually meet these people face-to-face one day!
- **Online, no one can hear you smile.** In cyberspace, there's no body language, no raised eyebrows, nothing but your cold, hard words on everybody else's screens. Therefore, be aware of your tone when writing online. Take care to consider what possible misinterpretations lie in the way you phrase things.

  A common trick toward solving this pitfall is the use of the smiley face. You make this little grinning face by typing a colon and a closing parenthesis, like this — :) — which, if you turn your head 90 degrees to the left, look like smiling features. This little face is supposed to indicate that *you* were smiling when you wrote something. There are hundreds of similar faces:

:(	Unhappy
;)	Sly wink
:*	Kissing
8)	Wearing shades
:p	Sticking out tongue
8-p	Drooling
:O	Shock

  But there are also thousands of people who find these faces insufferable.
- **Learn the lingo.** You're likely to be befuddled unless you at least know the following handful of abbreviations you're likely to see people typing online:

LOL	Laughing out loud
ROTFL	Rolling on the *floor* laughing

BRB	Be right back
BAK	Back at the keyboard
MORF	Are you male or female?
FYI	For your info
OIC	Oh, I see
RTFM	Read the f@*#! manual
IMHO	In my humble opinion
IMNSHO	In my not-so-humble opinion
GMTA	Great minds think alike
@*#*&!!	Golly

- **Quote the relevant part before responding.** If we send you an e-mail that says only, "No, we don't think so," you'll smite your forehead in frustration, having forgotten completely what the original question was. It would have been more polite of us to *quote back* what you originally asked in *your* e-mail. Generally, people use brackets to show the original message, most often like this:

```
> Hey, Pogue and Schorr: Is online etiquette very hard to master?
>Nobody can give me a straight answer. I'm a little nervous
>about going online for the first time.

No, we don't think so.
 — David and Joe
```

Claris Emailer, America Online 3.0 and later, and most other e-mail-related programs offer an automatic quoting feature that saves you the trouble of copying, pasting, and adding the brackets.

The Internet's Secret Codes: BinHex, UUencode and Base64

One of the great reasons to explore the Internet is to find free stuff — movies, sounds, pictures, portable documents, and actual programs — that you can download to your own hard drive. You can find downloadable software at FTP sites (described later), in newsgroups (also coming up), and on many World Wide Web sites. Downloading a file from an FTP site or Web page is easy; just click the name of the file you want and the transfer is triggered automatically.

The tricky part is what to do with the file *after* it has been transferred. If you simply double-click it, you may be in for a surprise. Not all Internet

downloadable goodies come in handy little StuffIt packages (*Pacman.sit*, for example). Instead of the cool 24-bit color image or QuickTime movie you were expecting, you may see a screen that looks something like Figure 28-1.

Figure 28-1
You call this clip art? Sure, but not until it's been run through a BinHex converter, which turns Mac code into strings of text for transfer over the Internet. If you end up with stuff like this, it's time to do a little decoding.



What's all that gibberish? Did something go wrong with the file transfer? Not at all. You just have to *decode* it. In order for Mac files to be transferred over the Internet via alien computer systems (such as UNIX), they must be translated into a form that *any* computer can understand. That form happens to be *plain text.*

And that's where BinHex, UUencode, and Base64 come in. These systems translate Mac files into strings of text that can be successfully transferred between computers of different design. (UUencode stands for *Unix-to-Unix Encode* — this encryption system was introduced on UNIX, but it supports transfers between Mac, Windows, MS-DOS, and UNIX systems. Base64 is a newer, more standardized scheme meant to replace uuencoding.)

Once you receive a file encoded with one of these systems, it must be decoded back into its original form so that your Mac can understand it. This is a relatively painless task, if you have the right decoding tools. Good decoding utilities, such as the freeware programs uucd, uuUndo, and StuffIt Expander (which came with this book), are easy to get through online services and via the Internet.

How do you know if your file is UUencoded, BinHexed, or Base64'ed? If you use StuffIt Expander to decode them, it doesn't make any difference; Expander will automatically decode whatever it is.

If you want to know, though, here are a few ways to tell. Generally, *UUencode* and *Base64* are used for *cross-platform* files (files that work regardless of the computer type), such as graphics files (GIF, JPEG), sound files (MIDI, MOD), and so on. *BinHex,* on the other hand, is a Macintosh-specific encoding scheme. It's used for almost any kind of Mac files, including archives created with programs such as StuffIt and DiskDoubler.

Another clue is the file name itself. If you download a file called *barney.uu,* there's little doubt that it's UUencoded. BinHexed files, on the other hand, often have the suffix *.hqx.*

In many cases, though, the *uu* or *hqx* suffix isn't added to the name of the file. In that case, open the file with a word processor, such as Microsoft Word, and look at the code itself. The first line of code in a UUencoded file always starts with the characters "begin 644" (or another three-digit code) and all subsequent lines begin with the letter "M" (see Figure 28-2). Each block of code ends with a line containing the single word "end."

Figure 28-2
Telltale signs of a UUencoded file — the characters "begin 644" at the top and an "M" at the beginning of each line.

```
begin 644 MacSecrets
M_C\!"""""""0"!D"""""""$"""L20`!T0"""""""*P"""
M"""""""""""""""""""0"$"""0"$"""Y@"""""Y@"""
MY@"#@"Y@X!?@"\%"""\%"""\%"""\%"*"\'@*"\*"
M"""\*"""\+P`>"YXP(Q"\30`("\50`&"\B\*@"\ED0S0"
MY@"""&"8"/(0"""/%L`,,"/(0"""/(0"""0,F`!X"/(0"""
M`/(0"""/(0"""/(0"""/(0"""/(0"""E#:&%P=&5R"0U4:&4@
M4F5S161I="!#:&%P=&5R#0U4:&4@2V5Y8F]A<F0@365N=2!R979E86QE9`U(
M879E('EO=2!E=F5R('-E96X@=&AE($9I;F1E<B=S($ME>6)O87)D(&UE;G4_
M($ET)W,@<FEG:'0@=&AE<F4@:6X@=&AE($9I;F1E<BP@;F5S=&QE9"!B971W
M965N('1H92!"86QL;V]N($AE;"@86YD($%P<&QI8V%T:6]N(&UE;G4@:6-O
M;G,L(&)U="!M;W-T($UA8R!U<V5R<R!N979E<B!L87D@97EE<R!O;B!I="X@
M5&AA="=S(&)E8V%U<V4@=&AE($ME>6)O87)D(&UE;G4@87!P96%R<R!O;FQY
M(&EF('EO=2=V92!U<V5D(&]N92!O9B!!<'!L92=S(%=O<FQD4V-R:7!T(&QA
M;F=U86=E(&MI=',@=&\@#51H92!7;W)L9%-C<FEP="!K:70@:6YS=&%L;',@
M82!F;W)E:6=N(&QA;F=U86=E('-Y<W1E;2!S8W)I<'0@(&EN=&\@=&AE(&]P
M97)A=&EN9R!S>7-T96TL(&%L;&]W('EO=2!T;R!O<&5R871E('1H92!-86,@
M:V5Y8F]A<F0@86-C;W)D:6YG('1O('1H92!R=6QE<R!O9B!A;F]T:&5R(&QA
M;F=A=6=E+B`-#5=H>2!A<F4@=V4@:6YS=&%L;&EN9R!I="P@8F5C875S92!I
```

A BinHexed file generally contains a message at the top indicating what you need to do with it. The message will say something like "this file must be converted with BinHex 4.0."

By the way, it's perfectly possible to download dozens of files without ever having to deal with all this BinHex mumbo jumbo; some programs are designed to handle decoding as part of the download process. America Online, for example, will UUdecode an encoded file as soon as you download it, without even telling you. Claris Emailer handles the translation of BinHex,

ANSWER MAN

And then there's MIME

Q: ***This is all well and good, but I just got a file over the Net that says it was encoded by MIME. What's Marcel Marceau got to do with the Net?***

A: Nothing.

Sometimes, when you receive e-mail with UUencoded or Base64 files attached, you may see a message that the files were attached using a *MIME-compliant* e-mail system.

MIME, in this case, is short for Multipurpose Internet Mail Extensions, and it refers to a set of standardized rules that allow different types of e-mail systems to properly transmit files across the Internet. A MIME-compliant e-mail program includes a bunch of information in the header of each message, telling the recipient's computer what kind of encoding was used (UUencoding, Base64, BinHex), and how to decode the attached files. Generally, MIME-compliant e-mail systems are designed to handle the various kinds of encoding and decoding seamlessly, so that you don't have to manually decode an attachment when it arrives.

UUencoded, and Base64 files seamlessly whenever you send or receive mail for attachments. Likewise, Netscape Navigator can hand off a downloaded file to a *helper application* such as StuffIt Expander for decoding automatically. By the time you actually open the file, the decoding is done.

THE INTERNET

The U.S. government designed what we today call the Internet during the 1960s. It was meant to be a communications web with so many alternate routes for messages that it would survive even if a nuclear attack took out a major city or two. The network was originally named *ARPAnet* (for the Advanced Research Projects Agency network). In the decades that followed, the Internet grew beyond the United States, but was still used mostly by educational and government agencies.

In the '90s, the Internet was opened to commercial access. Once companies were allowed to use the Internet, they began selling access to individuals like us — and, as every headline and magazine has no doubt informed you, the result was an explosion of interest and popularity. Today, the Internet is a collection of literally thousands of regional computer networks that are capable of connecting to each other through main communications lines that can transport data at 45 *million* bits per second.

Anyway, that tale of the Internet's origins should clue you in as to why it uses so many arcane terms and complicated protocols. It was designed at a time when terms like *Macintosh* and *ease of use* were equally alien — and nothing much has changed.

What's on it

The Internet's allure boils down to several popular features. America Online offers all of the following except Telnet and IRC. As we've hinted, if you have Internet access through an ISP instead of America Online, you

need a separate (usually shareware) program to access each feature. (Disclaimer: We realize that this stuff is unnecessarily jargon-filled, complex, and sometimes iffy. Remember, though, that this stuff was invented long before words like "Macintosh" and "user-friendly" hit the dictionary.)

- *Electronic mail.* You've heard of this. You send messages anywhere in the world for pennies, and they arrive in minutes. Required software (examples): Claris Emailer, Eudora.
- *File Transfer Protocol (FTP)* means downloading software — like having access to a global, all-inclusive shareware library 1,000 times the size of America Online. Required software (examples): Fetch, Navigator.
- *Usenet newsgroups.* Newsgroups are public bulletin boards. They give the Internet its color and sense of community. There are thousands of newsgroups, on every conceivable topic. You could fritter away your entire life just trying to keep up with a few of these newsgroups. Plenty of people do. Required software (examples): Newswatcher, Navigator.
- *Telnet* is a purely text-based protocol that allows you to access databases, bulletin boards, and downloadable files — no graphics, no animation, just plain text-based menus. You may have to type in a password or User ID in order to access a Telnet site. Telnet sites certainly aren't the most alluring sites on the Internet, but a number of specialized databases are available only using Telnet. Required software (examples): NCSA Telnet, dataComet.
- *Mailing lists* are a cross between newsgroups and e-mail — you subscribe to such a mailing list as though it were a free magazine; thereafter, each successive bulletin-board message on the topic at hand gets e-mailed to you automatically. (Also known as *listservs* or *mail lists.)* Required software (examples): Same as e-mail.
- *Gopher* is a menu-based system for retrieving information from databases: university-library card catalogs, census data, whatever. Gopher is like FTP, in that you can use it to retrieve files; but FTP shows only lists of files on the host computer to which you're connected, while Gopher can show lists of files that are on many computers. Required software (examples): TurboGopher, Gopher Surfer.
- *Internet Relay Chat* (IRC) lets groups of people type messages to each other in real time, like a typed CB radio. If you've used Instant Messages or chat rooms on America Online, you get the idea. Required software (examples): GlobalChat, Homer.

DIALOGUE

Internet: Help versus Hype

JS: OK, I did my share: I wrote this chapter. But I still don't feel right about this whole Internet thing.

DP: Internet thing ...? Joe, in case you haven't noticed, the Internet is the biggest technological/cultural/social phenomenon of our time. It's changing the way we work, the way we shop, the way we fall in love ...

JS: Please! You know perfectly well that most of this Internet stuff you read everywhere is pure, unadulterated hype.

DP: Hype?

JS: Look, when you peel away all the glitz and media hysteria, it's just a computer network. A very, very, very big computer network.

DP: Have you tried surfing the Web? We're talking about a global network of information, at your very fingertips ...

JS: Yes, in a completely disorganized, random state of undirected chaos.

DP: It's not that bad ...

JS: And it's not surfing. It feels nothing like surfing. Especially with a 28.8 Kbps modem. It's a huge time waster — and everyone's getting sucked in by the hype.

DP: Oh, come on. You're exaggerating.

- The *World Wide Web* integrates text, pictures, sound, and video into convenient point-and-click *pages* (screens). The Web is the one Internet feature that doesn't require a computer science degree. We've devoted a separate section to this hottest of all possible cyber-passions at the end of this chapter. Required software (examples): Netscape Navigator, Microsoft Internet Explorer, Cyberdog.

Unfortunately, although everyone agrees that there's a lot of great stuff and info on the Net, it's incredibly scattershot. You'll find 100MB of data on violins, say, but nothing on brass quintets. Our best advice is to (a) spend hours and hours exploring, or (b) keep your eyes peeled for Internet addresses in magazines, books, newspapers, and even TV ads.

Getting around: Internet addresses and URLs

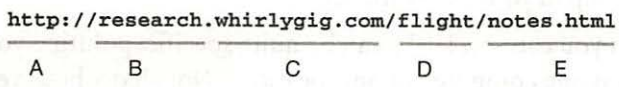
OK. You got yourself a PPP account, installed the required software for making a connection (MacPPP or FreePPP, for example, plus either Open Transport's TCP/IP control panel or the older MacTCP control panel), dialed up your Internet service provider, and you've established a connection. You're online, right?

Not quite. Opening your PPP connection makes Internet services *available* to your Mac, but it doesn't connect you to any actual services — no e-mail, no Web sites, no Newsgroups. It's still up to you to locate the *file servers* (remote computers) you want. Remember, the Internet isn't a single online service; it's not located in any one place. It's a sprawling web of regional computer networks scattered all over the world, so you must tell your Mac which one of those networks you want to hook up with. You need to specify an *Internet address.*

The first step, of course, is to launch a program designed to interpret the particular type of Internet data you want to access. As we said before, you need programs such as Navigator, Emailer, and Fetch to do this. Without at least one of these front-end programs running, you have no way of even typing *in* an Internet address.

Internet addresses can look a little intimidating at first, especially if you're accustomed to the warm comfort of services such as America Online, where other users have screen names like FrogMan, or MathDude, or Bob99. Internet addresses are considerably longer because they identify more than a specific user. Out of the thousands of computer networks plugged into the Internet, they must pinpoint a particular *protocol* (the type of data being transferred), a *host* (the actual file server you're connecting to), and a *domain* (the location of the file server). In the case of Web and FTP (downloadable software) sites, the address may also specify a particular folder, subfolder, and document on that distant hard drive.

The address of an Internet resource is called its *URL* — Uniform Resource Locator. You must know a site's URL if you hope to connect to it. The URL contains all the information your computer needs to track down the right file server — regardless of where it may be located on the Internet — and log you in. Here's a typical URL, along with an explanation of what all the parts mean:



A. The first part of a URL always specifies the *protocol* — the type of data transfer required to interpret information from a given site. Each feature of the Internet — FTP, Web, Telnet, and so on — uses its own protocol. In this example, the *http* protocol (which stands for HyperText Transfer Protocol) indicates that this URL (Internet address) points to a World Wide Web page. The protocol part of a URL is always followed by a colon and two slashes. Other examples: *ftp://*, *Telnet://*, and so on.

B. The next part of a URL identifies the *host* computer that you're connecting to — in this case, *research.* This computer might be at some huge corporation, like Boeing, or it might be in a teenager's living room in Hackensack, NJ.

JS: No I'm not... Last week, I wanted to do a little research on biopharmaceutical ogleonucleotides and I had to sift through mounds of information to find anything useful.

DP: Ogleonucleotides...?

JS: It's a hobby.

DP: Well, you should've used a search engine...

JS: I did use a search engine. That was the problem. Alta Vista turned up 4,633 hits. Yahoo turned up 5,024.

DP: You struck gold.

JS: Gold? It took me three days to check out all the links. And most of them turned out to be complete dead-ends. Sixteen crashed my computer, nine turned out to be pornographic, and one was a home page by a fourth grader in Elk Mound, MN.

DP: Ah, but eventually, you found the site you wanted, didn't you?

JS: Yes. One. One site out of thousands.

DP: See that? Thanks to the Internet, you were able to home in on precisely the information you needed.

JS: Not quite. That site was under construction. And you needed the beta version of Netscape Navigator 5.0 to read it.

DP: Well, surely you must have turned up something else that was useful.

JS: Ah, yes. Perhaps you're referring to the Official Fantasy Island Interactive Trivia Game and Video Clip Archives Home Page.

DP: There you go.

JS: I plan to visit often.

DP: That's the beauty of the Internet.

JS: Anyway, my point is that a trip to the public library would have taken two days less, plus I would've gotten some exercise and interacted with actual, breathing human beings — including a helpful librarian.

DP: Well, what the heck are ogleonucleotides, anyway?

JS: Look it up on the Web.

C. After the host name comes the *domain name* — the actual location of the host computer. In this example, the domain is *whirlygig.com*. The components of the host and domain names are always separated by periods. The *.com* tag at the end of this domain name indicates that this is a commercial institution. Other domain names may end in *.edu* (a school or college), *.gov* (a government agency), *.org* (a non-commercial organization of some type), *.mil* (a branch of the military), *.net* (a network of some type). Sometimes the final tag on a domain name indicates the *country* in which the host is located: uk = United Kingdom; se = Sweden; jp = Japan; and so on.

D. The slash mark after the domain name means the next bit of information in the URL pinpoints a specific *directory* (folder) on the host computer. *Flight* is one directory (or folder) on the host computer.

E. Finally, the item *notes.html* is a specific *document*, in the directory *flight*, on the file server. Using this URL would take you directly to this document and open it up in your Web browser.

As you can see, URLs can be quite specific, pointing you to one particular file, on one computer, at one location. (Not all do, however. Many URLs simply point to the host computer; from there, you navigate to the particular directory and documents you want to view.)

In the case of e-mail addresses, a URL also specifies a *user*. The user's name is always included at the beginning of the address, followed by an @ (which means *at*) and the host and domain name. A guy named Schorr who works at the company used in the previous example might have an e-mail address of *schorr@research.whirlygig.com*.

By the way, these Internet addresses aren't something you just make up. Imagine the chaos that would erupt if several people all over the world chose the same Internet address. No, when you want to establish a new Internet address, you must pay to register that address with the Network Information Center (NIC). (You can contact the NIC by e-mail at *hostmaster@nic.ddn.mil.*) Once you're registered, you have what's called a Fully Qualified Domain Name that no one else is using.

MACINTOSH SECRET

THE INTERNET ADDRESS NOBODY KNOWS

The type of URL we've discussed in this chapter is called a *domain name*. Domain names are somewhat descriptive and easy to remember. Underneath the surface, though, each computer on the Internet has *another* address — its IP Address (IP stands for Internet protocol).

An IP Address is a number that identifies a specific site on the Internet. The address number is generally represented by four strings of numbers separated by dots, like this: 184.54.338.190. (Techies gleefully refer to this as a "dotted quad.")

Thankfully, you don't have to know a site's IP Address to connect to it. When you attempt to connect to a valid address, a host computer in the domain you're trying to connect to compares the name you've typed (or *clicked on*, if the URL is a hypertext link on the Web) with a database of all the names within the domain. The host computer (a *Domain Name Server)* finds the numeric IP Address corresponding to the domain name you've requested, and uses the IP Address to connect you to the appropriate server on the network. (Whew.) This process accounts for the bizarre "DNS (Domain Name Server) entry not found" message Netscape Navigator and Microsoft Explorer sometimes gives you. That message means that your browser can't find any Web page IP address corresponding to the Web address you typed.

The numeric IP Addresses are vital, though, when it comes to configuring Internet connections. For example, if you connect to a local Internet provider for your gateway into the Internet, you'll probably have to know the provider's numeric IP Address to configure your telecommunications software.

Don't forget — we warned you that this isn't simple stuff.

Where to go on the Internet

No matter how you get onto the Net, you're going to be overwhelmed. As we said before, there's no hierarchy to the Internet, no welcome screen, no logical organization. Therefore, the best Secret we have to offer is to suggest a few typical, interesting, or famous places to go once you're out there.

Newsgroups

As we said, a *newsgroup* is like a bulletin board, in which one person responds to the previous message, someone else responds to *that*, and so on, for months. There are about 16,000 different topics available, from Mickey Mouse fan clubs to left-handed golfers. To access these groups, you need (as always) some shareware program dedicated to the task, such as Newswatcher. You'll immediately understand the layout: you simply double-click a topic to see a list of messages, double-click a message to read it, and use the Next and Prev buttons to move through the discussion.

A word of caution: Internet regulars hold an inexplicable hostility for newcomers — and people who connect via America Online. So, before you chime in with your own thoughts, read that newsgroup for a while to get the feel of it. Figure 28-3 lists some newsgroups.

To make life more interesting, by the way, you might sometimes open a particular newsgroup message and find no message at all — instead, there's some button to click to begin a *download* (see Figure 28-4). True enough; despite the mixed metaphor, you can post files in a newsgroup message. In fact, in the dozens of groups whose names begin *alt.binaries...*, you'll find *mainly* downloadable files. That's where you find things to download like FAQs (Frequently Asked Questions documents — download and read so you'll know what's going on), Mac shareware, and the photographs that have had Congress and many parents worried.

Figure 28-3
There are newsgroups (BBS topics) of every possible description — tens of thousands of them. Here's a tiny few in the As.

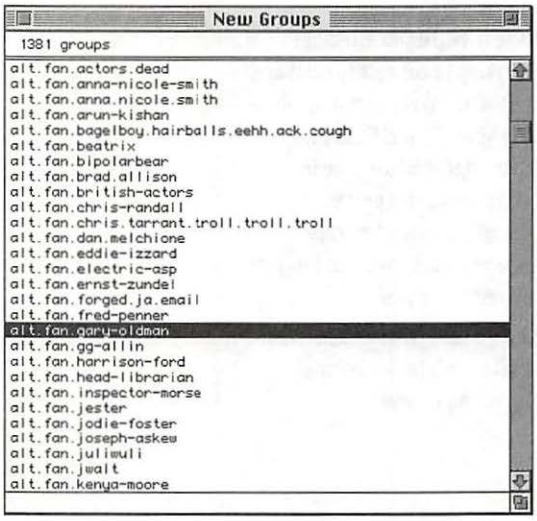
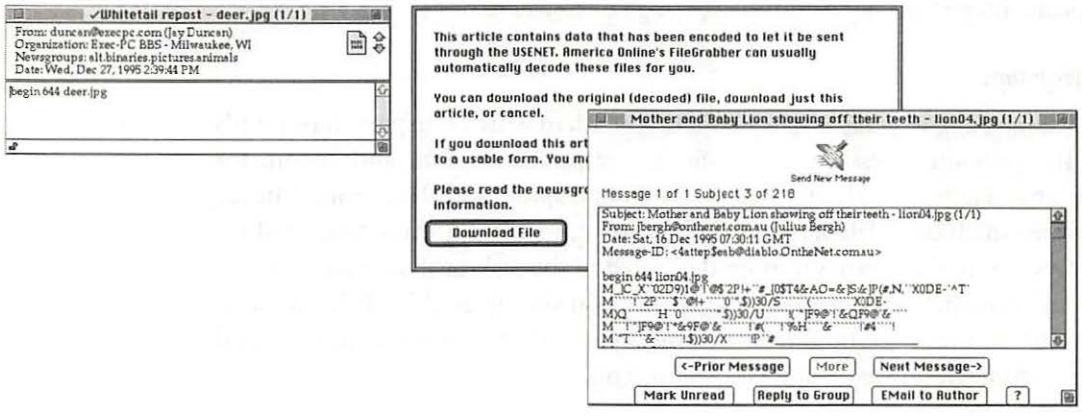


Figure 28-4
What it looks like to download a file from a newsgroup if you're using a true Internet message reader like NewsWatcher (left) — click the icon to download the file — and America Online (right). The America Online message looks like the front image here — a bunch of text gibberish — but fortunately, the America Online program offers to translate it into a real file for you.



In the sample newsgroup names below, you'll discover that every discussion name seems to begin with one of these prefixes:

alt. — an alternative newsgroup hierarchy
bit. — duplicates of mailing lists
comp. — computers, programming, operating systems
k12. — education
misc. — miscellaneous
news. — about newsgroups themselves
rec. — recreation (games, pets, sports)
sci. — science, medicine
soc. — society, culture
talk. — general conversation, politics

After this prefix comes a bunch of other abbreviations separated by periods. Eventually you'll be able to understand what's going on just by looking at the name of a newsgroup. These examples should show you what we mean:

Newsgroup info for beginners
alt.answers, comp.answers, news.answers, and so on
news.answers.newusers
news.newusers.questions

Humor
rec.humor.funny

The arts & showbiz
rec.arts.dance
rec.arts.fine
rec.arts.startrek.*
rec.arts.theatre
alt.fan.letterman
rec.arts.theatre

Science
sci.astronomy
sci.bio.*
bionet.*
sci.environment

Lifestyles & Hobbies
misc.fitness
soc.roots (genealogy)
rec.photo
alt.politics
rec.food.recipes
alt.personals
alt.romance
rec.travel

Pets
rec.petc.cats
rec.pets.dogs
alt.fish

Music
rec.music.classical
rec.music.country.western
alt.elvis.sightings.
rec.music.bluenote (jazz)
alt.music.* (popmusic)

Cars
rec.autos
rec.autos.forsale
etc.

Macintosh
comp.system.mac.graphics
comp.system.mac.apps
comp.system.mac.games
comp.system.mac.portables
comp.system.mac.wanted

Sports
rec.sports.baseball.*
rec.sports.basketball
rec.sports.football.fantasy

* There are many groups that begin with this name, broken down into subtopics

To visit a newsgroup from America Online, use keyword *Internet*, click the Newsgroups button, click Expert Add, type in the name of the newsgroup you want to read, click OK, and click Read My Newsgroups.

FTP sites

FTP, of course, refers to software that you can download. (It stands for *file transfer protocol.)* For the Macintosh, the worldwide FTP centers of shareware and other good stuff are *sumex-aim.stanford.edu* and *mac.archive.umich.edu.*

Trouble is, these locations are so popular that they're often crowded full, and impossible to get into. To get around this problem, every day, the **sumex** and **umich** computers send *copies* of their downloadable files to other computers — *mirror sites* — to make them more widely available. Use the mirror sites whenever possible. Tables 28-1 and 28-2 show the American and Canadian mirrors of those two popular Macintosh software sites.

Table 28-1
Sumex-aim and its Mirrors

FTP site	Directory
sumex-aim.stanford.edu	info-mac
amug.org	info-mac
ftp.ucs.ubc.ca	pub/mac/info-mac
ftp.hawaii.edu	mirrors/info-mac
grind.isca.uiowa.edu	mac/infomac
wuarchive.wustl.edu	systems/mac/info-mac

Table 28-2
Umich and its Mirrors

FTP site	Directory
mac.archive.umich.edu	mac
grind.isca.uiowa.edu	mac/umich
wuarchive.wustl.edu	systems/mac/umich.edu

Another useful site is *ftp.support.apple.com*, Apple's primary outlet for new and updated Apple system software and utilities.

You can visit an FTP site using a World Wide Web browser such as Netscape Navigator (see the discussion later in this chapter for more on Web browsers) or using FTP client software such as Fetch (available over the Internet and online services). To visit an FTP site from America Online 2.6 or later, use keyword *FTP*, click Go To FTP, click Other Site, type in the name of the site you want to explore, and click Connect.

Mailing lists

As we've said, a mailing list is like a subscription to an e-mail-based discussion group. (You don't need a separate program to use mailing lists; your regular e-mail program collects the messages.) You're automatically e-mailed a copy of everything other people have to say about a particular topic. Sign up for these sparingly; they can fill your e-mail box with dozens or hundreds of messages a day.

For a more complete list of mailing lists, read the Publicly Accessible Mailing Lists list, available in the *news.lists* newsgroup. Also visit the Web address *http://www.yahoo.com/Computers/Internet/Mailing_Lists/* for still more information about mailing lists.

Generally, you subscribe to one of these free e-mailings by sending an e-mail to its sign-up computer. To make it work, the receiving computer inspects what you've put in either the *body* or the *Subject* line of the e-mail to see if you typed out the correct code. (What you put in the other field generally makes no difference.)

Note: When you've been added to the mailing list, you'll receive e-mail confirming your subscription. Be sure to save that message — it contains instructions for *unsubscribing* from the list. That information may be useful when you discover exactly how hard it is to keep up with 100 messages per day! Alternatively, consider signing up for the *digest* option of most mailing lists — instead of receiving every little message as it's written, you get a single, e-mail compilation each day containing all the individual written transactions. (If you need help with a mailing list, or if you forget how to unsubscribe, send e-mail to the mailing list with the word HELP by itself in the body of the message.)

In the following instructions, substitute your first *and* last name (for example, Frank Jones) for **your name**.

- **Information Alley.** This is a fantastic free electronic magazine published by Apple. Each day, you get a memo to the Mac world; in no other forum is Apple so up-front about problems and undocumented features. It's also the only announcement the public gets of Apple's absolutely essential

software updates and fixes. Send an e-mail to *listproc@listproc.info.apple.com* and put the words *Subscribe Infoalley* and *Your Name* into the message area. (Type your actual name in place of *Your Name.* What you put into the subject line makes no difference.)

- **Apple's software-update notification.** Wouldn't you like Apple to tell you whenever it releases a free update to some System folder component that makes your Mac faster or less trouble-prone? Now Apple will. Send an e-mail to *listproc@listproc.info.apple.com* and put the words *Subscribe Infoalley* and *Your Name* into the message area.
- **TidBITS.** This is Adam Engst's weekly magazine about the Macintosh and the Internet. Send e-mail to *listserv@ricevm1.rice.edu* with **subscribe tidbits your name** in the body of the message.
- **Humor.** Send e-mail to *listserv@uga.cc.uga.edu* with **subscribe humor your name** in the body of the message to get mailed jokes every day.
- **TV Tonight.** This is an electronic TV guide. Send e-mail to *majordomo@netcom.com* with **subscribe tv2nite-l** in the body of the message.

Internet Relay Chat

Most of the Internet, if you really think about it, is like a giant answering machine or bulletin board: People leave messages now, with the hope that other people will get them later. Internet Relay Chat (IRC) is different: It's live, real-time, typewritten conversations between people online right now. Just as in the chat rooms on America Online, most of the conversations that take place on IRC "channels" are insufferably boring, filled with inside jokes, smileys, {{{{{hugs!}}}}}, and so on. Here and there, though, IRC carries online games, instant world-crisis news, or even the occasional organized discussion.

Once you have an Internet account, you need only two things more: an IRC shareware program (such as Homer, Ircle, Chat for the Macintosh, or GlobalChat) and the address of a good IRC *server* (host computer). Here are some IRC server addresses in the U.S., each with many separate channels of conversation:

irc.bu.edu
irc.colorado.edu
mickey.cc.utexas.edu

Once you've found an IRC channel, you'll be asked to make up a nickname and select the particular channel you want to join. In the little window where your typing shows up before you press Return to send it into the great electronic conversation before you, you can type various codes to gain some control over your experience (see Table 28-3).

Table 28-3
IRC Control Codes

Code	Description
/help	Brings up a more complete list of commands than this one, with explanations.
/list	Shows you a list of channels available. The ones map begin with a # symbol are the public channels.
/join #hottub	Lets you join the conversation called #hottub (always a popular one); obviously, you can substitute the name of any existing channel.
/names -min 20	Shows you a list of people on any channel with more than 20 people participating.
/Quit	Ends your IRC session.
/ignore idiot@aol.com	Makes your program hide any comments from some jerk who's annoying you (of course, substitute that person's actual online name for idiot@aol.com).
/msg SkiBunny	Lets you send a private message to the person whose name you've typed, much like the Instant Messages on America Online.

THE WORLD WIDE WEB

The most popular part of the Internet — the part you couldn't avoid hearing about if you tried — is the World Wide Web. We know third graders who run around urging schoolmates to "check out" their Web pages. Web addresses are showing up everywhere — on business cards, in print ads, even in TV commercials. (Have you noticed *http:/www.sony.com* or *http://www.ford.com* flashing by at the end of recent movie ads and car commercials? Those are Web sites.)

The Web has become incredibly popular for one simple reason: It *isn't* like the rest of the Internet. It looks friendly and familiar to Mac and Windows users. When you connect to a Web file server, you don't encounter streams of UNIX code or view lines of monospaced text. Instead, information is displayed with a completely graphic interface — formatted text, pictures, color icons, and interactive buttons (see Figure 28-5).

MACINTOSH SECRET
CLARIS EMAILER'S SECRET KEYSTROKES

Not only is Claris Emailer (included with this book) an amazingly slick, efficient program that automates getting and sending your Internet or America Online mail, but it also harbors several neat secrets.

For example, Emailer is among the world's most Drag-and-Drop-savvy applications. You can drag text to or from any window, including text clippings or even text *files* from the Desktop. Your cheerful authors keep an "e-mail excerpts" folder on the Desktop whose sole purpose is to store text clippings dragged out of Emailer.

Furthermore, as free book winner Jerry Byers found out, the various buttons, tabs, and check boxes in Emailer can all be triggered from the keyboard. And how do you know what the keystrokes are? Just press and hold the ⌘ key; the names of the buttons, tabs, and check boxes will all change to reveal their secret keyboard equivalents.

Figure 28-5
A typical Web page as it appears when viewed with Netscape Navigator, the most popular Web browser. Just click things that look interesting. It's like a multimedia elevator: Push a button to get where you want to go.



Navigating the Web requires little more than clicking buttons and colored, underlined text phrases known as *hypertext links*. You're automatically transported from one file server to another — without having to type in a single Internet address. You can also download text, pictures, sounds, movies, and other documents to your computer with the click of a button.

When you connect to a Web site, you're actually logging in to a file server (hard drive) on a remote computer network. Each separate document that you access on that server is called a Web *page*. No matter how long a particular document is, it still constitutes one *page* on the Web. The hypertext links embedded in the page can transport you to a different location in the document you're currently viewing, to a different document on the same file server, or even to a file server located in a different country. That's the beauty of the Web — by click-

ing on hypertext links, you can jump seamlessly from a file server in Show Low, AZ, to another in Florence, Italy. You can weave your way across the globe, jumping from link to link, to track down the information you want — that's why it's called the World Wide Web. The URL information your Mac needs to make those jumps is all embedded in the hypertext links. As far as you, the customer, are concerned, linking to a Web site down the street is no different than linking to one in Tanzania.

A World Wide Web warning

All of this amazing online multimedia stuff stresses your modem nearly to the breaking point. Even with a 33.6 Kbps modem — the fastest standard modem there is — you still wait about 10 seconds, or more (if it's a fancy page), for *each* Web page to float onto your screen. (If you connect through America Online, the wait is even longer for each page.) Don't even try connecting to the Web with a 9,600 bps (or slower) modem.

People who get seriously Web-addicted — and many do — wind up spending huge amounts of money to install a special high-speed phone wire (such as T-1 or ISDN) that bypasses the modem altogether. For them, switching Web pages is nearly instantaneous. Even they, however, are at the mercy of the *other* end's modems, network software, and wiring speed; getting frequent busy signals (in the form of "that URL not available" messages) when trying to access your favorite pages is a fact of Web-surfing life.

In any case, remember that you *don't* have to wait for a page to finish arriving on your screen. You can go ahead and click whatever *part* of it you can see — such as the Back button in Navigator, for example — if you're impatient. (Unfortunately, you can't move on if you're downloading a file from a Web page; you're condemned to sitting at that Web page until the download is complete.)

Web browsers

Viewing Web pages requires a special program called a *browser,* such as Netscape Navigator, Microsoft Internet Explorer, or Cyberdog. A browser interprets information transmitted over the Internet and displays it on your screen as graphics. The actual information your Mac gets — and that the browser translates — is coded text. It's in a computer language called HyperText Transfer Protocol (HTTP), which can transfer formatted text and

graphics, the distinguishing characteristics of the Web. (That's why every Web address on the planet has a URL that starts with *http.)*

A Web browser doesn't directly connect you to the Internet, although it can be configured to launch your dialing software (such as MacPPP or the Apple Internet Dialer) automatically when you launch it. As with most Internet software, it sort of glides *on top of* the PPP, SLIP, or AOL connection you've previously established (see "How to get on it" earlier in this chapter). The browser's job, once you've established an Internet connection, is strictly to interpret and display the documents that you connect to on other Web servers.

Helper apps and plug-ins

Because Web sites can contain links to such a wide variety of media, most browsers are designed to work with *helper applications* — little supplementary programs that handle the display of specific kinds of media. One helper may play QuickTime movies, another can play back AIFF sounds, a third can open JPEG images, and yet another plays QuickTime VR movies. When the browser encounters a specific type of data, it automatically launches the appropriate helper application. If your Mac has the RAM available, that helper program displays or plays back the picture, movie, or sound in a new window of its own. (You can download a complete collection of helper apps and *plug-ins,* described next, from Netscape's own home page, *http://www.netscape.com* — or just click the Netscape logo in the upper-right corner of the window. And you specify which little program you want to use for which media type by choosing General Preferences from the Options menu, then clicking the Helpers to tab.)

Helper apps are not to be confused with *plug-ins.* True, plug-ins accomplish many of the same tasks as helper apps — serving as little multimedia SimpleTexts and Movie Players for incoming Web data. But plug-ins make the show appear to take place right *on* the Web page, rather than in a window of its own. For example, MacroMedia's Shockwave plug-in shows animations right on certain Web pages. This kind of add-on makes the Web's multimedia offerings appear to be better integrated with the Web, but the cost is RAM; the more plug-ins you have installed, the more RAM your browser needs to run.

Netscape Navigator

About 80 percent of Web population uses a browser called Netscape Navigator. As you browse the Web with Navigator, the program keeps track of each Web page you visit. You can instantly jump back to a site you've already

been to during your online session by choosing its name from the Go menu — or by clicking the Back button in the browser window. (The keyboard shortcut is ⌘-left arrow.)

The Navigator interface (2.0 and later) lets you use three Internet features that would otherwise require additional programs. First, you can connect to FTP sites to download files. Second, you can read your e-mail; third, you can even read newsgroups, all from within Navigator. (In practice, however, you may still prefer the more complete feature set of separate shareware FTP, newsgroup, and e-mail programs.)

Microsoft Internet Explorer

If you know anything about Microsoft, you know it's not about to sit back and let any company have 80 percent of *any* market. So how did Microsoft strike back at Netscape? By whipping together a rival browser program of its own and giving it away free. Predictably, the Mac version of each Internet Explorer update is released after the Windows version. Otherwise, though, Explorer is a perfectly good browser, and some people even feel that it makes pages seem to load faster.

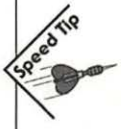
Thousands of people, in fact, are using Explorer without even realizing it: it's the browsing software built into America Online 3.0 and later.

NETSCAPE AND WEB SECRETS

Navigator's golden typing shortcuts



The most important shortcut we (or free book winner David Henry Sholkoff) can possibly communicate: If you're entering a URL that's in a standard company's format, such as *http://www.sony.com* for Sony or *http://www.adobe.com* for Adobe, you can omit everything except the company's actual name. That is, in Navigator's Go To: field, you can type only *sony* or *adobe*; Navigator will add the rest of that junk — *http://www.* and *.com* — for you. This works with any URL that starts with *http://www.* and ends with *.com* — and thousands do. In every case, just type the company name that appears in the middle of the address. (Microsoft Explorer isn't quite as intelligent; you can leave off the *http://* and *.com,* but you must still enter the *www.*)



Another free book winner, Justin Crompton, also discovered that you don't have to include the *http://* (or *ftp://* or *gopher://*, and so on) when typing an Internet address into Navigator's Go To: field. Navigator is smart enough to examine each address, figure out what type of URL it is, and then add the appropriate protocol prefix itself.



By the way, you can even skip the *www.* and *.com*, even if you want to specify a specific location or document *within* a Web site. For example, to reach *www.odysseus.com/goddesses/calypso/*, all you have to type is *odysseus/goddesses/calypso/*.

Navigator Bookmark secrets

If you keep adding Web sites to your Bookmarks menu, you'll eventually end up with one huge, unwieldy menu. In Netscape Navigator, you can choose Bookmarks from the Window menu (or press ⌘-B) to open your list of Bookmarks and rearrange it.

The Bookmarks window looks a lot like a Finder window, with all your bookmarks displayed in a list view. Here are some of the things you can do to impose order on a chaotic list:

- Press ⌘-A to select all your bookmarks, then choose Sort Bookmarks from the Items menu to rearrange all the bookmarks in alphabetical order.
- Add folders to your Bookmarks window (using the Insert Folder command in the Items menu) to sort your bookmarks into logical groups. Give each folder a name reflecting a particular category — Search Engines, Research, Concerts, and so on — then drag the appropriate bookmarks into these folders. When you're finished, your Bookmarks menu will be transformed into a nicely-organized hierarchical menu (see Figure 28-6).

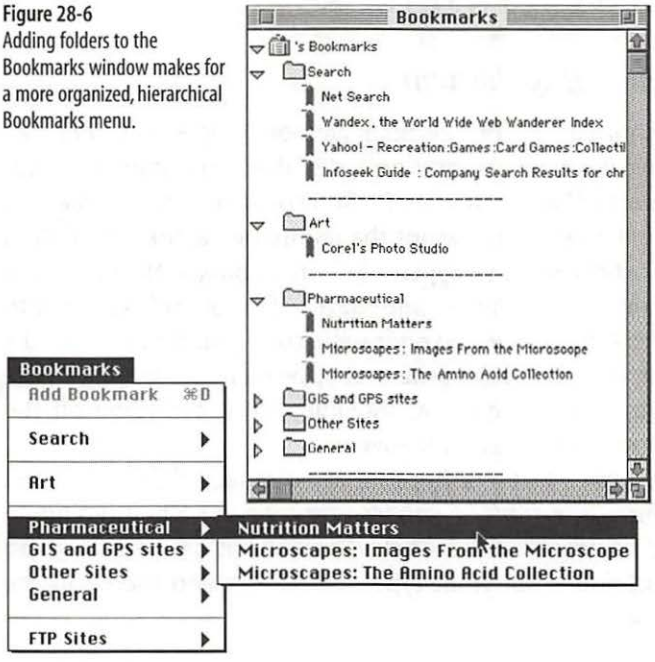


Figure 28-6
Adding folders to the Bookmarks window makes for a more organized, hierarchical Bookmarks menu.

- Use the Insert Separator command to add separator lines to your Bookmarks menu. To add a separator, first click on the item in the Bookmarks window just *above* where you want the separator line to appear, then choose the command.
- Drag bookmarks, folders, and separators in the Bookmarks window to arrange them in any order to want.
- Press ⌘-Delete to delete bookmark, folder, or separator.
- Click a folder in the Bookmarks window, then choose the Set to Bookmarks Menu command from the Items menu. Now, your Bookmarks menu will contain only the bookmarks contained in that one folder. If you have dozens of bookmarks stored in your copy of Navigator, this is perfect way to temporarily filter out bookmarks you know you aren't going to need during a given online session. To restore your complete Bookmarks menu, click on the top Bookmarks folder, then choose the Set to Bookmarks Menu command again.

If you get serious about this kind of thing, all kinds of desktop-based Web-address managers are available, from commercial programs (Aladdin's CyberFinder) to shareware (Internet Memory).

Set your own home page

When you first launch Netscape Navigator, it's configured to transport you — where else? — to the Netscape home page, where you can purchase all manner of Netscape products, accessories, and action figures.

If you're tired of starting every one of your online sessions with a visit to the Netscape site, you can change your startup page to any other site you want. Choose General Preferences from Navigator's Options menu. In the Startup section, go to the Home Page Location field and replace the Netscape address with the URL of your choice (see Figure 28-7). (Examples include: *www.macintouch.com*, a daily summary of developments in the Mac universe; *www.apple.com*, Apple's Web site; your favorite newspaper's site; or, of course, your own Web page.)

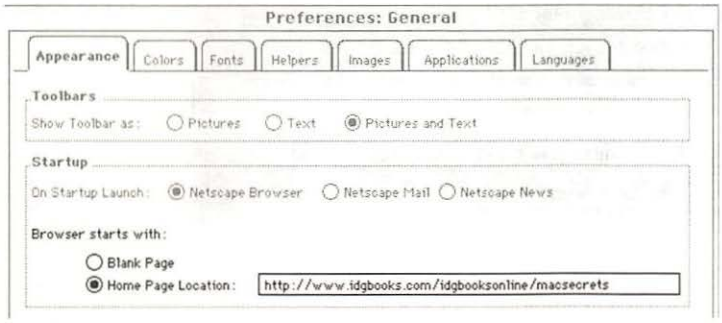


Figure 28-7
Start surfing on the Web page of your choice. Just type in the URL you want in the Home Page Location field.

Turn your bookmarks into your home page

Worth Learning π=3.14

Here's a great variation on the previous Secret: Set your Home Page Location to your own *bookmarks* list. To do this, use Navigator's Open File command to open the file called *Bookmarks.html*, which is located in the Netscape folder, inside the Preferences folder in your System Folder. When the file opens, you'll see its location listed in the Location field just under the Navigator toolbar. Select all the text that appears *after* the colon — starting with the // — and copy it.

Now, choose General Preferences from the Options menu and paste what you copied into the Home Page Location field (see Figure 28-7). From now on, when you launch Navigator, the first thing you'll see will be a page containing your own bookmarks. Clicking on any of the bookmarks will take you directly to that site.

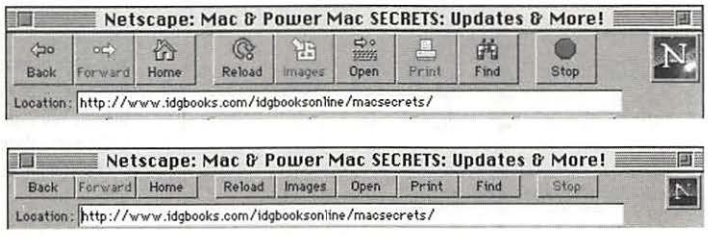
Make the World Wide Web wider

When you're viewing Web pages with Navigator, a good portion of your screen is monopolized by the Navigator interface itself: A big, fat toolbar, directory buttons, a status line, scroll bars, and so on.

If you want to fill your browser window with as much of a Web page — and as little of Navigator — as possible, just turn off the Show Toolbar, Show Location, and Show Directory Buttons commands in the Options menu. (You can still enter new URL addresses even when the location bar is hidden; just press ⌘-L.) Finally, press Control-Option-H to hide the scroll bar. You'll have an expansive, unobstructed view of your whole Web page. (To restore the scroll bar, press Control-Option-J.)

If that seems a bit extreme, then at least consider compressing those gigantic icon pictures (see Figure 28-8). To do so, choose General Preferences from the Options menu, click the Appearance tab, and select the Text option.

Figure 28-8
Why give up so much space to the pictures on Navigator's toolbar (top), when you could have the streamlined look shown at bottom?



Express route to the White House



For what it's worth, in Netscape Navigator 2.0 and later, you can press Control-Option-W to go directly to the White House Home Page. From there, you can navigate to the home pages of various government agencies — or you can learn all about the President and Vice-President of the United States and their accomplishments.

Reloading and Super Reloading

Sometimes a glitch in a file transmission causes a Web page to display incorrectly in a Navigator browser window. If the page looks a little wacky, with some graphics missing, for example, don't give up; trying clicking the Reload button (or choose Reload from the View window.) This will force Navigator to redisplay the entire page again — hopefully, without a glitch.

If that doesn't work, hold down the Option key and try choosing the Reload command again. The command's name will change to Super Reload. Choosing this command prompts Navigator to reload the currently displayed page from scratch.

Visit the Amazing Fish Cam



The Fish Cam is part of Netscape's Web site. This bizarre Web page features color images of an actual 90-gallon fish tank, as captured by a digital camera. Once each minute, the camera takes another picture, which is immediately converted into JPEG and GIF formats and loaded on to Netscape's Web server. Moments later, you can experience the thrill of viewing the fish tank over the Web.

The Fish Cam page contains information about the particular tropical fish that are in the tank, as well as the tank itself and the filtration system below the tank. There are also links to other fish-related Web sites.

At any rate, here's the big Fish Cam Secret: No matter where you are on the Web, you can navigate instantly to the Fish Cam by press Control-Option-F.

Get Info comments that are actually useful



Almost nobody we know really types comments in a file's Get Info box — the window that appears when you select a file in the Finder and choose Get Info from the File menu. In fact, we've always thought of the old Comments field in the Get Info window as somewhat useless.

Navigator, however, does something meaningful with the Get Info box. Whenever you save a Web page as text, using Navigator's Save As command, the program automatically types the page's URL into the Get Info comments box of the saved file. If you later forget where on the Web you found your saved file, a quick look at the Get Info box will tell you. (And, of course, with

System 7.5.3 and later, those comments are preserved, even when you rebuild your Desktop.)

The RAM-disk acceleration trick



In Chapter 9, we described the exhilarating joy of running programs from a RAM Disk, a scheme that treats a portion of your Mac's available RAM as a virtual hard disk — a very, very fast virtual hard disk.

We point out here that you can, in fact, run your Web browser from a RAM disk — and reap enormous speed gains. No, the RAM disk won't speed up your modem or improve the quality of your phone connections. But it will accelerate your browser's ability to process the incoming data, scroll through pages once they've been transmitted, and display graphics.



Alternatively, you can set up Navigator so that it stores its Disk Cache on a RAM disk. First, create a RAM disk. (If you use AppDisk, included with this book, you don't have to restart the Mac, as you do with the Memory control panel's built-in RAM disk feature.)

Then, open Navigator's Network Preferences and click the Browse button to set the Cache Directory option to the RAM disk. After you've shifted the cache to the RAM disk, you can navigate back to previously browsed pages with incredible speed.

See Chapter 9 for step-by-step RAM disk instructions.

Where to go on the Web

And where do you find good Web URLs? From friends, from articles, on television, and so on. Look for "http" at the beginning of the URL — a guaranteed sign that the address points to a Web page. (Most Web URLs' domain name includes *www*, but not all of them.) Here are a few to get you started.

Ways to search for a particular topic

Each of these Web pages offers a vast searchable index of *other* Web pages — not every Web page in existence, but a darned impressive percentage of them.

- *http://www.yahoo.com* — Arguably the pioneer Internet guide, **Yahoo!** has been accepting submissions from Internet sites since the beginning of it all. There's an editorial filter at work here — not every college student's home page makes it into the directory.
- *http://www.infoseek.com* — Our favorite. The layout of the found items is cleaner than Yahoo, and you get to see the first paragraph or so of each found Web page's text.

- *http://altavista.digital.com/* — This "search engine," as these things are called, is **Alta Vista.** It offers compact or detailed searches through what the company claims is the largest Web index — it knows about 8 billion words filling 16 million pages. It also provides a full-text index of more than 13,000 newsgroups.
- *http://www.excite.com/* — This is the **Excite** database, which contains more than 1.5 million Web documents, covering 40,000-plus Web sites. Excite also provides NetReviews — sites that journalists have evaluated for content quality — as well as up-to-the-minute news updates. From Architext Software.
- *http://www.lycos.com/* — This is the **Lycos** Web searcher, which features a database with millions of link descriptors and documents; updated daily. The index searches document title, headings, links, and keywords it locates in these documents.
- *http://webcrawler.com/* — **WebCrawler** allows searches by document title and content. Managed by Brian Pinkerton at the University of Washington.
- *http://home.netscape.com/home/internet-search.html* — This is the **Netscape Navigator's search page.**

Fun places to start browsing

- *http://gagme.wwa.com/~boba/pick.html* — **Spider's Web Pick of the Day** tirelessly scours the net looking for the very best pages. Every day Spider chooses one page that's outstanding because of its design, content, or concept.
- *http://turnpike.net/metro/mirsky/Worst.html* — And now we have the exact opposite of Spider's pick of the day: **Mirsky's Worst of the Web.** Every day, this page features the ugliest, silliest, most vain, and most tasteless Web pages Mirsky can dig up.
- *http://www.eg.bucknell.edu/~boulter/crayon/* — You've probably heard the hype: One day you'll be able to create your own newspaper with just the news you're interested in. You can do it now with **CRAYON:** CReAte Your Own Newspaper. CRAYON lets you pick and choose from news pages all over the Web: national news, world news, sports, weather, entertainment, and even comic strips. The only limitation is that the news must be on the World Wide Web, and it must be free. Even with those limitations, CRAYON is fantastic, and points to a new age of information gathering.

- *http://www.apple.com* — **Apple's** beautifully designed page contains links to pages with new product announcements, Apple's tech info library, product data sheets, and pointers to other Apple resources on the Internet.
- *http://www.info.apple.com* — This is another elaborate Apple Web page, providing access to the company's technical support staff, press releases, and the invaluable Tech Info Library, the database of technical articles that Apple's own staff uses to handle troubleshooting.
- *http://www.support.apple.com* — This Apple page is a great repository of the latest system software and other Mac updates, among other technical-help resources.
- *http://www.shareware.com/* — **Shareware.Com** offers zillions of Mac shareware programs for downloading. If it's out there, it's in here. This site not only lets you search for files on innumerable FTP sites, it lists the mirrors of popular sites from which files can be downloaded.
- *http://www.ups.com/* — **UPS.** Track your packages, and so on.
- *http://www.fedex.com/* — **FedEx.** Track your packages, and so on.
- *http://www2.netscape.com/fishcam/fishcam.html* — The famous **Fishcam** is updated every few minutes: a close-up view of somebody's fish tank. Live. Weird. Useless.
- *http://mistral.enst.fr/* — This gateway to the **Web Museum,** an incredible complex of art museums, features the Louvre, where you can actually view and read about hundreds of paintings hanging there.
- *http://www.star.niu.edu/jeff/tv/tv.cgi* — This page shows you **what's on TV right now.**
- *http://pathfinder.com* — This features the electronic editions of **popular magazines** like *People, Time, Money, Fortune,* and more. Lots of graphics — a nice site if you're willing to wait for the pictures to arrive.
- *http://www.idgbooks.com/idgbooksonline/macsecrets* — It's the page for this book . . . updates, excerpts, and so on.
- *http://www.thespot.com* — It's an "episodic" Web site; an **MTV-style soap opera.** Good-looking 20-somethings post photos and their spicy diaries each day.
- *http://www-1.openmarket.com/boscam/boscam/index.htm* — Here's Boston's **Beacon Hill** — an ever-changing camera's-eye view.

- *http://www.interart.net/* — This is a good example of the growing popularity of QuickTime VR on Web pages (see Chapter 22). In this case, a real-estate company called InterArt uses QuickTime VR to give house and office hunters "walkabout" tours of actual properties for sale.

Help writing your own Web pages

- *http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html* — This is a terrific beginner's guide on using HTML tags to create your own Web pages.
- *http://union.ncsa.uiuc.edu:80/HyperNews/get/www/html/learning.html* — This is another introduction to using HTML.
- *http://info.med.yale.edu/caim/StyleManual_Top.html* — This is Yale University's slightly more advanced World Wide Web Authoring Manual.

HTML: The language of the Web

For many people, browsing the Web is only half the fun; the other half is making one's *own* Web page. Yes, this requires programming, but it's programming in one of the easiest computer languages in the world.

That standard language of the Web is called HyperText Markup Language, or *HTML*. Every page you see on the Web has been designed using HTML, a fairly simple language of special text codes.

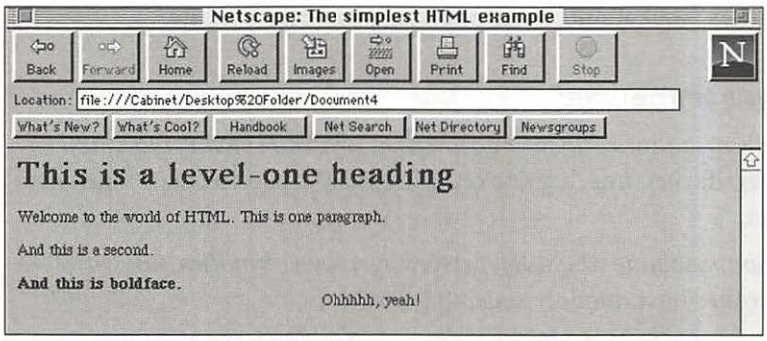
Understanding HTML

Here's what a typical chunk of raw HTML looks like before it gets interpreted by a Web browser:

```
<HTML>
<HEAD>
<TITLE>The simplest HTML example</TITLE>
<H1>This is a level-one heading</H1>
Welcome to the world of HTML.
This is one paragraph.<P>
And this is a second.<P>
<B>And this is boldface. </B>
<CENTER>Ohhhhh, yeah! </CENTER>
```

And Figure 28-9 shows what that blob of coding produces when viewed by a Web browser such as Netscape Navigator, so you can see how the codes produce text effects on the screen.

Figure 28-9
The simplest example of HTML code produces this look when viewed by somebody visiting your page on the Web.



As you can see, HTML is just plain text with codes that determine what formatting will apply to each line. For example, the HTML tag for boldface is <B>. When your browser encounters the HTML tag <B> and then finds the corresponding closing tag </B>, it knows that the text *between* the two tag codes should be displayed in a bold font. Text straddled by the <CENTER> and </CENTER> tags is displayed with center-alignment in a Web browser, and so on.

There are dozens of different HTML tags for headlines, italics, quotations, colored text, blinking text, bulleted lists, numbered lists, and other formats. Other HTML tags let you designate portions of a document as hypertext, linking to another specific URL, or let you place a GIF or JPEG graphics file (see Chapter 20) into the Web page. (See our list of Web sites above for some sites that provide excellent HTML reference guides.)

Using HTML

Obviously, then, creating your own Web documents doesn't require much in the way of specialized software. You can use SimpleText, in fact, if you know which codes create text styles, add links, and embed graphics files. Of course, typing codes isn't exactly a lot of fun, and you won't know how your HTML document will really look until you open it with a Web browser, but it can be done.

But wouldn't it be nice if you could apply text styles and design pages just as you would in QuarkXPress or Microsoft Word — by picking them from a style palette or menu? Some shareware programs, such as HTML Editor, work just this way. You can use a full-blown Web page-layout program such as the wildly popular Adobe PageMill or Claris Home Page. These programs let you not only apply text styles but also add hypertext links and graphics to your Web pages — and they provide a WYSIWYG view of your work, so you

know exactly what your Web page is going to look like before you load it on to a Web server and make it accessible to the rest of the world.

Creating your own Web page

Of course, *writing* the HTML documents is only part of establishing your own Web page. To make your documents available to the outside world, you have to load them on a *Web file server* — a hard drive with a direct Internet connection that lets other users log in and browse.

There are three ways to get your own page on the Web.

- Set up your own server — turn your own Mac into an Internet site, an expensive and complicated procedure.
- For a fee, most Internet service providers let you "rent" space on their file servers. Generally you're allowed a fixed amount of hard drive space within one folder of the provider's file server. You can then upload your Web pages directly to that folder, making them available for public browsing. You pay a monthly fee to the service provider for the privilege of using its system as your "home" on the Web and *it* takes care of keeping the file server running and connected to the Internet. If you've signed up with an ISP, you may be able to set up your Web page for free. Some ISPs include Web page space — usually just a megabyte or two — with the monthly access package that you purchase.
- As always, the simplest but least-flexible method is to use America Online. Use the keyword *MyPage* to read about how you can create your own page on America Online, accessible by anyone on the entire Internet. It doesn't cost anything extra. You have your choice of having a pretty simplistic page that shows nothing but your America Online profile — or designing your own page, using HTML, as we've been describing. People can even download stuff from your page, look at pictures, whatever — as long as your material doesn't take up more than 2MB (per screen name) on America Online's hard drives.

HTML SECRETS

Make Web pages the easy way

When you're trying to design your own Web pages, don't knock yourself out trying to re-invent the wheel. Feel free to view the underlying HTML code behind any Web page that you decide you'd like to adapt.

To do so using Netscape Navigator, just choose Source from the View menu. You're immediately shown the HTML commands, in a new window, that created whatever amazing graphics you just saw (see Figure 28-10).

Figure 28-10
A Web page (left) and the underlying HTML source code that created it (right). By studying the HTML stuff — or copying and pasting it — you can make leaps in your own HTML coding.



AMERICA ONLINE 3

When you dial a pay-by-the-month service such as America Online, you're actually dialing into a roomful of enormous mainframe computers that are so quick-witted, they're able to talk to your Mac and thousands of other personal computers all over the world — simultaneously.

These services, once you figure them out, can provide a wealth of handy up-to-the-minute information. For example, virtually all the services let you visit the Internet; read movie reviews; book flights on commercial airlines; send e-mail to almost anybody in the world (including the White House); get 15-minute-old stock quotes; check the latest sports scores; read the latest headlines; look up back issues of Consumer Reports; consult Grolier's Encyclopedia; and more.

When you're using a paid subscription service that charges by the minute — like CompuServe, or America Online's original pay-by-the-hour pricing system — every second online counts. When time is of the essence, then, the smart way to use such services is to do your work beforehand. Use America Online's FlashSession or Auto AOL feature — or, better still, Claris Emailer — to jump online, grab your mail, and get off. Read the mail and compose your replies while you're not connected. CompuServe's more complex Navigator program is similar, but performs even more functions automatically.

If cost is no object, access CompuServe using its CompuServe Information Manager (CIM) program. The software, a graphic front-end program, is inexpensive, but it requires that you spend much more time online. It makes CompuServe appear on your screen as icons and windows, much as America Online does, making the service *much* easier to navigate. (Without CIM or the above-mentioned Navigator, you're condemned to watching lines of 12-point Monaco text scroll up your screen, and you navigate by typing mysterious commands.)

These services provide a lot of their own content, but they also provide Internet access, taking pains to present all of the Internet with a point-and-click interface, just like the Mac, with a minimum of jargon and configuration hassle. For example, on the startup screen of America Online, there's an Internet button. Click it to see a screen with icons for FTP, newsgroups, the Web, and so on — you're in.

Real Internet techies sneer at this approach. They used to argue that an hourly-rate service winds up costing much more than a direct Internet connection. Now that AOL offers unlimited surfing for the same monthly $20 as most ISPs, some hard-core Internauts still sneer just because AOL members don't have to sweat to do the Net.

AOL SECRETS

E-mail from one service to any other

Little-known but powerful Secret: from the cozy, user-friendly comfort of, say, America Online, you can send e-mail to any other service. CompuServe, AppleLink, and even the Internet are within hailing distance.

All you need to do is add the appropriate suffix to your recipient's e-mail address. Here they are:

@aol.com = America Online

@CompuServe.com = CompuServe (replace the commas in the address with periods, too)

@applelink.apple.com = AppleLink (while this service exists)

@prodigy.com = Prodigy

@genie.geis.com = GEnie

You can send more than text messages; you can even attach files sounds, graphics. (Though they may have to be decoded when they arrive, as explained earlier in this chapter.)

E-mail from America Online to any other service

As a convenience, America Online lets you send e-mail to other services using shortened routing extensions. You'll see that the list below offers simplified suffixes.

@cis.com = CompuServe

@apple.com = AppleLink

@genie = GEnie

Shortcut to any Internet site from AOL

How would you get to a Web page from AOL? Probably you'd click the Internet Connection button, wait, click the Web button, wait, type the Web page's address (URL) into the strip at the top of the window, and press Enter.



Why bother? Just press ⌘-K to make the Keyword box appear. You can now type an Internet address into the *Keyword* blank — be it Web page, FTP site, whatever — and press Return; you're teleported directly to that Internet site!

How to put the meter on Pause (CompuServe, too)

Suppose you're logged onto some online service and your doorbell rings. If you leave the computer and answer the door, you waste precious time online — if you're being charged by the minute.

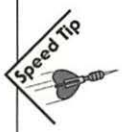
You could sign off — but that would mean having to log on again when you returned. Instead, just navigate to the online service's *help area,* where you're never charged for your time online. You can park yourself in the help area as long as needed without logging off, and when you're ready to resume your work, just move back to whatever you were doing.

Background downloading

When you're downloading files from (or uploading files to) America Online or MacCIM (CompuServe's front-end program), you're not condemned to sitting there doing nothing while the file comes in (or goes out).

Just click in another program's window, or on the Desktop, and get to work. Your telecom program merrily recedes into the background and continues to download. You're notified by the usual, cheery "File's Done!" voice from your Mac speaker when the transfer is complete.

In fact, beginning with America Online 2.6, you can even do other things *online* while the downloading is going on — read mail, send Instant Messages, and so on.



Make the Media Tool shut up forever

Do you get the irritating "The Media Tool was not loaded" error message whenever you launch America Online 2.7 or earlier? Have you ever, in your life, *missed* the Media Tool?

What this message is *trying* to say is, "You don't have the QuickTime extension installed." Apparently some one hoped that QuickTime movies would one day be an every day part of surfing AOL. Not!

But there's no point in sacrificing the RAM and startup time to the QuickTime extension just to shut up the AOL message. Instead, beat AOL at its own game: *get rid* of the Media Tool. It's an icon inside the Online Tools folder (in your America Online folder), and you'll never miss it!



Replace the America Online sounds

If you tire of that guy's voice — the one who says *"You've* got *mail!"* and *"Good*-bye!" and *"Wel*come!" — feel free to replace him with a sound of your own choosing. You might elect to replace these quips with your own voice, for example, or with silence. All you need is ResEdit. See Chapter 21, where you find step-by-step instructions for replacing America Online's sounds.

Pay no attention to that man behind the curtain . . .

Want a frightening glimpse of AOL 2.7 or earlier behind the scenes?

An anonymous free book winner discovered that if you press ⌘-Shift-Option-K before you sign on, America Online, in a new window, will display a shocking list of its internal modem commands, scrolling up your screen as fast as they're generated.



Automatic file decompression

Little-known fact: If you download files that have been compressed with StuffIt (and, therefore, bear the **.sit** suffix in their names) from America Online or CompuServe, these files expand automatically when you log off — even if

you don't have a copy of StuffIt on your hard drive. For this to work, you must have the auto-unstuff option selected in your copy of the front-end program (AOL or MacCIM).

What happens if your phone goes dead or your system crashes before you get to log off and trigger the automatic unstuffing process? See the next Secret.

Use America Online as a graphics viewer or StuffIt clone

The America Online program is a terrific tool for managing files you encounter online. You don't need to be online to perform any of the procedures in this Secret — indeed, you don't even need to be an America Online member!

For example, this program can actually open and display several graphics formats — PICT, GIF, and JPEG — beautifully, which is perfect for checking out pictures you've downloaded. (Just drag the graphic file's icon onto the America Online application's icon. Alternatively, launch the America Online program and use the File menu's Open command; then locate and open your graphics file.)

Similarly, the AOL program is terrific for compressing and decompressing StuffIt files. To unstuff something, use the AOL File menu's Open command; open your .sit file; and save the decompressed file wherever you like.

To stuff a file, choose Compose Mail from the Mail menu. Click the Attach button; select the file or folder you want to compress; click the Compress Files check box; click Attach; and click Save. The result is a compressed StuffIt file that takes much less time to send by modem.

Gambling on America Online



In a chat room, such as the Lobby or another public room, type this:

```
//roll-2-6
```

(Substitute any numbers you wish for the 2 and the 6.) Press Return. Then, in front of everybody in the room, America Online will print:

```
OnlineHost : Pogue rolled 2 6-sided dice: 4 1
```

(Of course it'll have *your* screen name instead of Pogue's.)

We suspect this feature was part of America Online's early design, when the programmers imagined that games of chance would play a role.

A little America Online privacy, please

When you're in a hurry, there's nothing more disrupting than getting Instant Messages (IMs) from other AOL members. Worse, when you're in a free area or (depending on your version of the software) downloading something, you *can't* respond.

Here's the tactful solution. Send an instant message to the screen name *$im_off* (and you have to type *something* into the message area, so just type a couple of spaces or something there).



Now, if someone tries to send you an Instant Message, they'll be told politely that you can't receive it at the moment. And they won't hate you for ignoring them.

To receive IMs again, send an IM to screen name *$im_on*.

Two utilities to save your sanity

Sure, we know — the graphic interface of America Online is what makes that service great. But every now and then, you'll click some icon, see the dreaded progress bar — and realize this particular feature requires you to wait for 15 full-color screens of *artwork* to be downloaded to your Mac, while the meter keeps running.

The ArtValve control panel, included with this book, tricks AOL versions 2.7 and earlier into believing you already *have* the necessary art. It does so by slapping a generic AOL icon into the appropriate vacant spot on your screen. You can still access whatever features lie behind those icons (by clicking); you just don't get the unwanted art. And if you do desire the actual artwork, you can switch ArtValve off. (AOL 3.0 has the equivalent of a built-in ArtValve, never making you wait for art.)

We're also fans of Claris Emailer, a central program that sends and fetches e-mail to and from AOL, CompuServe, the Internet, and so on (it's included with this book). All of your address books, mail-writing interfaces, and passwords are collected into one clean, clever program. You can schedule these e-mail bursts to occur at any hour of any day, with or without you, even in the background — and you never, *ever* wait for art to be downloaded!



How to make an e-mail answering machine

For this trick, you need Claris Emailer, as described in the previous Secret; you can make it act as your answering machine if you go out of town. You just tell it what standard response you want it to send out while you're away, and it safely collects your e-mail, automatically, until you return.



To make this work, choose Mail Actions from the Schedule menu. Click Add; type a name (such as "out of town"); choose All Mail from the pop-up menu; click "Auto reply to message," and click Edit Reply. Then just set up Emailer to log on automatically, as usual, and the rest is taken care of! (On behalf of the Internet's millions of users, however, kindly unsubscribe yourself from any Internet mailing lists — described earlier in this chapter — before doing so. Otherwise, your "I'm on vacation" e-mails will bounce back to the mailing-list computers, causing untold irritation directed at you.)

Adding a dead President to your AOL Address Book

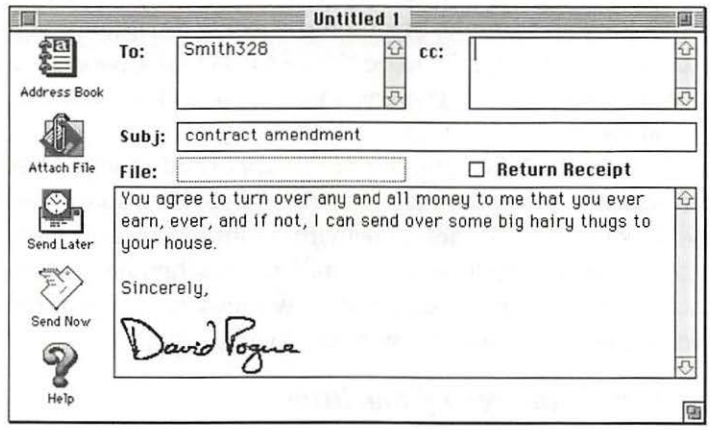


Use ResEdit (see Chapter 21) to open the Address Book file that came with your AOL software (version 2.5 through 2.7); it's in the Online Tools folder. Double-click the *fDf6* resource icon and open the only resource listed, ID 4129. Scroll down through a few lines of the hexadecimal code until you find, in the right-hand column of ASCII text, the hidden command: "Click 'Add' to add the screen name 'Richard Nixon' to the selected address book entry."

Graphics in your America Online e-mail

Ever have the urge to put your actual scanned signature into the body of an e-mail? Or a little icon? Or a small photo? Of course, that's impossible; everyone knows e-mail is text. But you can! See Figure 28-11.

Figure 28-11
Inserting graphics or scans into your America Online or eWorld text messages is easy — if you know the trick.





FC Text-Picture, a little program included with this book, can do it. It converts any picture on the Clipboard into an "image" you can paste into an America Online or FirstClass e-mail. Of course, the "image" is actually a big blob of tiny, tiny text — at 1-point size, and colored appropriately, so it *looks* like you've pasted a graphic right into your e-mail! (Bummer: this trick no longer works in America Online 3.0.)

Surf America Online via the Internet



You may suppose that an America Online account is one thing, and an ISP account (described at the beginning of this chapter) is another. But you can actually connect to AOL *from* the Internet!

There are at least four excellent reasons you might want to do so.

- This trick means that you can actually use America Online at staggering speeds, 57 Kbps or higher, if you have a high-speed line (such as an ISDN phone line) that the Internet can handle, but AOL can't.
- This is also a useful technique if you live in an area where there's no AOL local phone number, but you're connected to a local Internet number.
- You can use this Secret when your local AOL access numbers are busy — you can dial right in via your Internet provider.
- Finally, the ability to connect to AOL over the Internet means that e-mail programs such as Claris Emailer can grab your mail from AOL and the Internet all at once, with a single phone call.

Here's what you do. First, sign onto your Internet account, as you would before using any Internet program, such as Netscape Navigator. Now launch the AOL program; at the startup screen, click Setup. In the Setup window, choose *TCPack* from the top pop-up menu, and click Save.

Now click the Sign On button. You'll connect to America Online, all right, but much faster than you ever have before — and without any noisy modem sounds. You can now use AOL normally, almost unaware that you've dialed in via the Internet instead of your local access number.

DRAG-AND-DROP THE INTERNET WITH CYBERDOG

Having read the first part of this chapter, you appreciate how fragmented the Internet is. You need one piece of software to get on. Another to visit the Web. Another to check your e-mail. Each utility program comes from a different author, has a different interface, requires different preference settings. Too bad Apple can't take that splintered mess and perform its usual magic, making something that's simple, intuitive, and integrated.

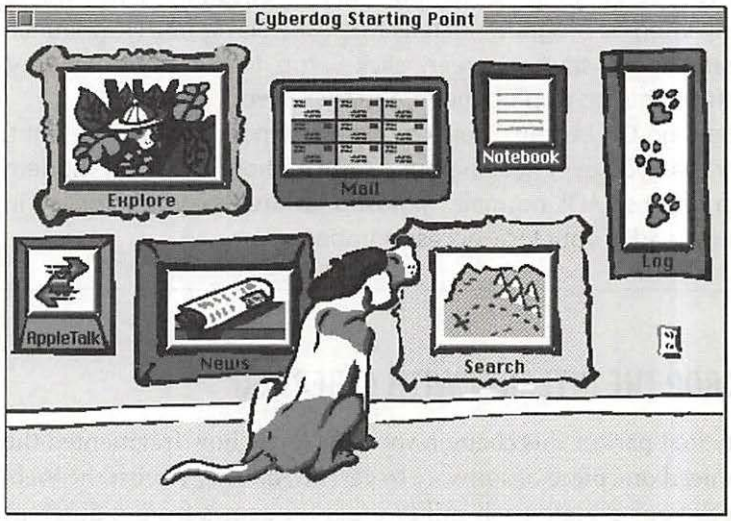
Actually, Apple did. It's called Cyberdog, and it's included on the CD with this book, and it's also part of System 7.6. We won't devote as much space to Cyberdog as we'd like, mostly because only about 1 percent of the world uses Cyberdog. However, once System 7.6 and Open Doc become commonplace, we hope this elegant effort will become more popular.

The Cyberdog concept

Before you install Cyberdog, you must install Open Doc. Open Doc, described in greater detail in Chapter 16, is an Apple technology designed to combat the tendency of popular software programs to become monolithic, do-everything behemoths. In short, Open Doc lets you assemble many small software parts, feature by feature, creating software that's exactly what you want, nothing more.

Cyberdog is the first good example of what Open Doc makes possible. This "single" program replaces your Web browser, e-mail program, FTP software, Telnet software, Gopher program, URL manager, newsgroup reader, and more (see Figure 28-12).

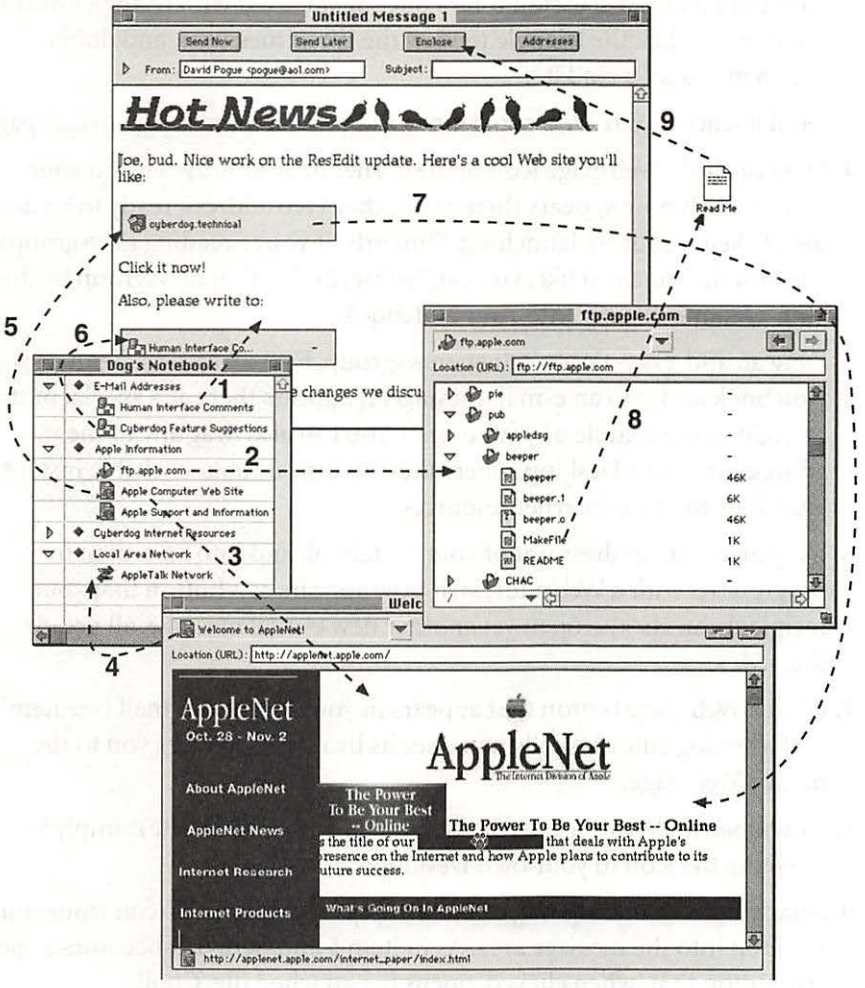
Figure 28-12
Your Cyberdog experience generally begins by your opening the Open Doc/Cyberdog document called Starting Point. Clockwise from upper left, click these icons to open windows for Web browsing, e-mail, your Notebook (see Figure 28-13), a log that shows (in neat double-clickable lists) every single Internet address you've visited, a Web search page, newsgroups, and your AppleTalk network. (Clicking the dog cancels a connection in progress.)



Instead of making you use a different shareware program for each of those features, Cyberdog eliminates many of the distinctions between Internet media. Instead, it organizes all Internet offerings into more logical groupings.

Take the Notebook, for example, shown in Figure 28-13. It gives you a freely rearrangeable, collapsible list of every kind of Internet address — Web, e-mail, FTP, Gopher, Telnet, newsgroups, and so on. Why should you, after all, have to treat each of these addresses differently?

Figure 28-13
In the Cyberdog Notebook, all Internet addresses are equals. Organize them however you like, using the little Finder-like flippy triangles.



The Notebook's contents are live. Almost anything in it can be double-clicked or dragged into almost any other Cyberdog window. For example, in Figure 28-13, you can achieve any of the following:

1. Double-click an e-mail address in the Notebook to open a preaddressed, empty e-mail message. In fact, as an Open Doc program, the Cyberdog e-mail editor even lets you create various letterhead styles and graphics to send as part of your correspondence (assuming your recipient also has Cyberdog).

2. Double-click an FTP or Gopher address to open a window that displays the contents of the distant computer as ordinary Finder-like folders, complete with flippy triangles. Similarly, double-click a newsgroup name to view the various discussion topics once again listed with triangles next to the titles — click the triangle to view the list of messages, and double-click a message to read it.
3. Double-click a Web address to launch the Web browser and go to that page.
4. Drag the little Web-page icon in the corner of your browser into your Notebook. It now appears there as another Web address, ready to be double-clicked for future launching. Similarly, if you're reading newsgroups and you find one you like, you can "subscribe" to that newsgroup by dragging its name directly into your Notebook.
5. Drag an address — Web, Telnet, newsgroup, FTP, whatever — out of your Notebook and into an e-mail message. It appears there as a special button — right in the middle of your e-mail. You can also drag any of these addresses to your Desktop, where they become double-clickable instant launchers to those Internet resources.
6. Drag an e-mail address out of your Notebook and into an e-mail in progress. As with a Web address, it now appears as a button that your recipient can click to open yet another new e-mail message, all preaddressed.
7. Click a Web-page button that appears in your received e-mail (see item 5); Cyberdog automatically launches its browser and takes you to the named Web page.
8. Download a file you see on the Web (such as in an FTP site) simply by dragging the icon to your own Desktop!
9. Attach a file to an outgoing e-mail simply by dragging its icon from your Desktop into the message area. As in item 5 and item 6, it becomes a special button that, when clicked, opens the attached file. Cool!

This unbelievable collection of Drag-and-Drop features is more than simple convenience. Collectively, they make Internet use feel less like peering through a window, and more like having your hands directly on the Internet's goodies.

CYBERDOG SECRETS

Importing Netscape bookmarks

Fortunately, switching to Cyberdog from Netscape Navigator doesn't mean you have to start from scratch building a list of favorite bookmarks. Just open the Notebook you want them listed in, choose Import Items from the Notebook menu, choose Netscape Notebooks from the Import Items submenu, and open your Netscape file called BOOKMARKS.HTML.

You'll get a new category in your Notebook called BOOKMARKS.HTML. Click the flippy triangle next to the category heading to make all the bookmarks appear. Double-clicking any one of them, of course, takes you directly to that Web page.

AppleTalk networks: fetch, Cyberdog!

As Cyberdog's Starting Point window illustrates, Cyberdog treats your Macintosh network exactly as though it were part of your online Internet world. In Cyberdog, AppleTalk zones and file servers (other hard drives on your network) have their own URLs — like Web addresses. You can manipulate these "network addresses" just as you would any Cyberdog addresses: add them to Notebooks, double-click to open them, and so on.

Start by clicking the AppleTalk icon in the Starting Point. Or, if there's an AppleTalk Network listing in the notebook, double-click that. Or, if you know it, you can type in the URL of the Mac you want to connect to in the "at:" box at the top of the window.

You'll see a list of AppleTalk zones, exactly as you would in the Chooser (see Chapter 32). Click a flippy triangle to view the individual networked Macs in a zone, and double-click one of the Macs to access its contents. You'll see exactly the same series of connection boxes shown in Chapter 32 (Figure 32-22 and thereafter).

How to make Cyberdog Cyberdocuments



If you really want to do the Open Doc thing, you'll create Cyberdocuments — actually, little multiple-data, Web-page-like documents that reside on your own hard drive. Each can include text, graphics, and Internet information such as the Web page, e-mail-address, and other buttons described earlier that go to the corresponding Internet location when clicked. The links can be to Internet resources or files on your own hard disk or network. You can even embed a live browser into a Cyberdocument that's updated continually with Internet information.

Creating these documents is definitely for the power experimenter at this point, however — the documents you create can only be opened by other people who use Cyberdog. We hereby refer you to the Acrobat instructions included on the CD-ROM with this book.

Chapter 29

CD-ROM, DVD, and Other Such Words

IN THIS CHAPTER:

- How a CD-ROM works
- Transfer rates and access times
- What's on CD-ROM discs
- Photo CD
- Making your own CD-ROM discs

CD-ROM BASICS

A CD-ROM is a silvery, plastic-coated disc, usually $4^3/4$ inches across. It weighs about half an ounce. It has two remarkable attributes that make it cry out to be used with a personal computer: It's dirt cheap to manufacture, and it holds a *huge* amount of information (about 600MB) — on *one side!* (The data is recorded on the underside.)

The speed issue

CD-ROM has a major drawback: It's slow. Although the newest CD-ROM drives operate several times faster than earlier models, CDs still lumber along lag far behind even inexpensive hard drives.

When evaluating a CD-ROM drive's speed, you're confronted with two issues: *access time* and *transfer rate.* Both are important, but not as important as you might think.

The access time is how long it takes the drive to find a particular piece of information on a CD. Early drives had dismal access times — about 500 milliseconds (ms), as compared to 12 ms for the average hard drive. Current CD-ROM drives offer access times as low as 145 ms — better, but they're still at least seven times slower than a hard drive.

The other key speed issue is transfer rate. That's the speed at which the drive can shuttle information to your Mac once it has been located on the CD, which is especially significant when it comes to reading large video and sound files from a CD. The first CD-ROM drives delivered only about 150K of information to the Mac per second; today, expensive "8x" drives from NEC, Apple, and others are advertised to have 1,200K/second transfer times. That's a big improvement, but still not very impressive compared with he average hard drive, which can transfer data at the rate of 2,048K per second.

The great "4x, 6x, 8x" myth

In practice, there's often very little difference between the speed of, say, quad-speed and 8x-speed drives. True, an 8x-speed drive is *theoretically* capable of transferring data to your Mac at twice the speed of a 4x-speed drive. But often the sheer transfer rate is *not* what determines a CD's overall speed. For example, if a CD contains video clips optimized to play back on a double-speed drive — which is true of almost all CDs, since manufacturers want them to be as widely compatible as possible — switching to an 8x drive will hardly make any difference in playback quality.

The lesson here: Don't rush out and buy the fastest CD-ROM drive you can find. You'll probably do just as well with a slightly slower drive — and you'll save a lot of money.

How a CD works

A CD is a sandwich: layers of clear acrylic covering outside, layers of aluminum and plastic inside.

Data gets etched into a single, continuous spiral on the disc. The data consists of pits and *lands* (the plateaus between the pits). As the disc spins, the CD-ROM drive shines a narrow beam of laser light through the clear plastic to strike the pits. The flickering light created by striking pits and lands with the laser beam is converted by the drive's complex electronics into data. The

laser device is attached to a long arm that moves back and forth across the disc. Incredibly, a data track on a CD-ROM is about 1/100th the thickness of a human hair. That's why a disc so small can store 600MB of computer information — that track is three miles long!

A phonograph record spins at a constant rate, usually 33 1/3 RPM, from the edge of the record toward the center. In contrast, the CD-ROM drive reads data from the *inside* of the disc outward. The drive speed varies according to the position of the laser beam; the disc gradually slows down as the laser travels toward the outer edge of the disc. (In other words, the surface of the disc is always moving at the same speed past the laser.)

When the laser is at the beginning, or inside, of the disc, the disc spins at about 500 rpm; by the end or edge of the disc, it's down to 200 rpm. The data is actually read by the laser beam at a rate of between 1.2 and 1.4 meters per second.

WHAT TO DO WITH 600MB

The term CD-ROM stands for *Compact Disc — Read-Only Memory.* As we mentioned in other chapters, *ROMs* on your Mac are chips that have software permanently "burned" onto them. A CD-ROM is also a read-only device: You can get information off it, but you can't store your own files there. (At least, not more than once, as we'll explain later.)

You can get CD-ROM discs filled with regular business programs; libraries of clip art, QuickTime movies, and fonts; interactive comic-book adventures with sound and video; electronic encyclopedias; and more.

Shovelware

But let's face it: 600MB is a lot of data. Makers of CD-ROM discs seem to have struggled with the task of filling that much space in one of two ways: Either they *don't* fill it — just put a few dozen megabytes' worth of information on a disc and leave the rest empty (as we've done; see Chapter 34); or they pile on some useful stuff and some *shovelware* — demo software, shareware, HyperCard-like presentation stacks, and other fluff you'll never use. (Given the number of poor-quality CDs on the market, it doesn't surprise us in the least that only 5 percent of the CD-ROMs published in 1995 actually made money.)

TRUE FACT

WHERE'S HIGH SIERRA?

The major manufacturers got together at the dawn of CD-ROMs to establish a set of standards so that every maker's CD-ROM player can play the same discs. CDs that meet this standard can actually be played on CD-ROM players for both Mac and IBM.

The first meetings to discuss CD-ROM format standards were held in 1985. Those attending included representatives from Apple Computer, Digital Equipment, Hitachi, LaserData, Microsoft, 3M, Philips, and others. They held their meetings in a spot called High Sierra, near Lake Tahoe, NV.

To this day, the CD-ROM format we've come to know is called the *High Sierra* standard. High Sierra is a part of the general ISO (International Standards Organization) 9660 CD format.

Commercial software on CD

Still, the situation is getting better. We've seen a few clever and practical uses for the CD-ROM medium. Indeed, now that even PowerBooks have CD-ROM drives, we expect more and more software companies to follow the lead of Claris, Microsoft, Now Software, and others: They now provide their products on CD. A CD-ROM holds as much data as 416 floppy disks; it makes perfect sense, therefore, that most of us would much prefer to install Microsoft Office from a single CD than from 37 floppy disks. The CDs are cheaper to mass-duplicate than floppy disks, take up less space, and can't be erased by mistake. And you, the buyer, are saved from the misery of feeding floppies into a disk drive for 90 minutes. Instead, you load a single CD-ROM and let the installation take care of itself.

Adobe pioneered a scheme you're going to be seeing a lot. You get a CD-ROM disc containing *everything* they sell, all 40 million fonts (or whatever the number is). But it's password-protected. When you want to "unlock" a certain piece of software, you call up the company and provide your credit-card number. In exchange, you're given the code that unlocks the program (or font) you want.

Interactive CDs

One of the most promising uses for CD-ROM is the interactive CD. This kind of software responds to your actions or your answers, changing the storyline (if it's a movie or story) or the course outline (if it's training), according to your feedback.

Interactive game/stories, like space-adventure CDs (Myst and Iron Helix, for example), are one category of interactive CDs. Another category is tutorials; software manufacturers have already begun to provide interactive lessons for some of their more complex programs. Adobe PageMaker's version 6.0 CD, for example, came with a training session that's even better than a videotape. You can sit in front of your Mac, learning first-hand how to use your new software, with a helpful bit of voice and visual feedback as well.

Is the CD-ROM going to become the medium-of-choice? Apple certainly has taken a brave step toward making the CD-ROM more ubiquitous: Most Mac models include a built-in CD-ROM drive and a bundle of CD titles. However, we read that 50 percent of the people who buy a computer equipped with a CD-ROM drive *never buy another CD-ROM disc.*

The DVD (born 1997)

If anything kills the floppy disk forever, it's likely to be the DVD. (You'll hear people claim the initials stand for *digital versatile disc,* or *digital video disc,* or whatever, but, in fact, DVD is a pure marketing designation that stands for nothing in particular.)

These discs look just like traditional CDs. And, as with today's discs, you won't be able to tell by looking whether a DVD is designed to play music (like audio CDs), video (like today's laserdiscs), or computer data (like today's CD-ROMs). The good news, however, is considerable: A DVD can hold up to 14 times more data than today's CD-ROM discs — and play much faster. Apple has said that it intends its late 1997 Mac models to come equipped with DVD drives instead of the older CD-ROM format. Fortunately, a DVD drive can play the thousands of existing (original-format) CD-ROM discs as well as the new format.

If you're on the World Wide Web (see Chapter 28), you can read up on DVD technology by visiting *http://www.sel.sony.com/SEL/consumer/dvd/index.html.*

GETTING YOUR CD-ROM UP AND RUNNING

Hooking up your CD-ROM player is as easy as connecting any other device on your Mac's SCSI chain. You have to watch for the same pitfalls of SCSI termination and cabling described in Chapter 30.

But the CD-ROM adds some additional complexities. A typical CD-ROM comes with a set of oddly labeled system extensions that lets your Mac read the little discs. The Apple CD-ROM drives, for example, include Foreign File Access, High Sierra File Access, and ISO 9660 File Access — and that's just to read the discs. You probably have additional extensions that let your drive read Photo CDs (Apple Photo Access) or use your CD-ROM unit to play audio discs (Audio CD Access). Without these extensions installed, your Mac will act as though you don't even have a CD-ROM drive; your drive will slurp up any disc you insert, but no icon will appear on your Desktop.

PHOTO CD

Kodak's Photo CD works like this. You take a roll of 35mm film to a local camera shop. They send the film to a photo lab, where the photos are scanned with an ultra high-resolution film scanner.

After the photos are digitized, they're recorded onto a Photo CD disc. The Photo CD can hold up to 100 photos. They're recorded in five different resolution levels, ranging from thumbnail size up through 3072 by 2048 pixels — big enough and detailed enough for professional use.

Photo CD costs about $30 for a 24-exposure roll and takes about a week to process. Be aware that the photos are often multimegabyte affairs, even though they are compressed with Kodak's special compression scheme. A CD-ROM player, even 8x-speed drives, can take quite awhile to transfer that data to your hard drive.

If you don't have enough photos to fill a CD the first time out, you can send the disc back with another roll of film and add more scans to the disc. But only certain CD-ROM players, called *multisession drives*, can read these multisession discs. All recent drives from Apple can read multisession discs.

After you have a Photo CD

After your pictures are transferred to Photo CD, you'll be amazed at how easy they are to work with.

Kodak's Slide Show Viewer program lets you preview the Photo CD. If you run a graphics program like Photoshop, you can transfer the image you view directly to it, either by copying and pasting, or by using a menu command. Desktop publishing programs such as QuarkXPress also let you import Photo CD images directly into page layouts.

MAKE YOUR OWN CDS

If building a clean room and buying expensive CD duplication equipment doesn't quite fit your budget, you have another option: CD-R, short for CD-Recordable. (Kodak's Photo CDs are actually CD-Rs.) If you need to make just a small number of CDs, this may be the technology for you.

CD-R systems let you record the disc just once; if you make a mistake in what you record, you must create another disc from scratch, at a cost of about $20. Many of the newer recordable CD-ROM drives offer *multisession recording*, meaning that you can go back and add material to a partially-recorded disc.

A CD-R player uses a laser beam to apply heat to the disc. The heat generates nonreflective spots on the disc surface, very much like the pits on a conventional CD. Also like the most expensive CD products, the CD-R disc is gold-plated, which is said to provide superior reflective characteristics.

CD-R technology is rapidly becoming inexpensive enough to be practical. Sony, JVC, Kodak, Yamaha, and other companies make recordable CD-ROM drives starting at about $1,000; only the $20-each cost of the discs stands in the way of your becoming the next major CD-ROM publisher. On the other hand, recordable CDs aren't necessarily ideal for archiving large amounts of stuff. For example, a Jaz disk holds 40% more than a CD-ROM disc — and you can erase it as many times as you want.

CD-ROM SECRETS

Auto-playing CDs

With the introduction of QuickTime 2.5, you no longer must use the AppleCD Audio Player desk accessory to play your music CDs. Visit your QuickTime Settings control panel, described in Chapter 4, where you'll find the on/off switch for the auto-play feature. It makes a music CD begin playing automatically when you insert it.

In fact, in the coming years, you'll see auto-playing CD-ROM discs, too — not music CDs, but regular Mac games and other computer data — that also auto-play when inserted. (They must be specifically designed to do so before the QuickTime 2.5 auto-play feature will work on them.)

TRUE FACT

HOW A CD IS MADE

Manufacturing a CD is such a complex process that the manufacturing plants cost $30 million to build. With data on a compact disc reduced to microscopic levels, manufacturing must be done under extraordinarily clean circumstances. CD plant workers must wear protective clothing and face masks. The work is actually done in a so-called *clean room* that's carefully controlled to be free of even the smallest contaminants. A single particle of dust is more than 100 times larger than a data pit on a finished CD!

Before they can build a master, workers transfer the data to 9-track computer tape. From there, the data is etched onto a glass master disk, called a *float glass*. A laser beam burns data onto the float glass.

Next, the glass master is silver-plated to create a negative. The negative is called a *father* disc, which, in turn, is used to generate a series of positive-imaged discs labeled *mothers*. The mothers beget *sons* (we're not making this up), which are the actual molds used to stamp the finished CDs.

The actual injection-molding or stamping process takes about 15 seconds per disc. A laser beam inspects the discs for flaws, after which the disc is coated with reflective aluminum (or gold, in the case of the purist-style audio CDs). Finally, they apply clear acrylic to the aluminum coating; then the disc goes off to inspection and packaging.

At every step of this highly complex process, the equipment must be absolutely clean. The pits in a CD are microscopic in size, and a single particle of dust can make them unplayable.

The first and last

Your Macintosh's internal drive usually has terminators already installed. If you ever open up your Mac to look at its internal hard drive, you'll see several little, usually orange, electrical components plugged into the bottom of the drive. Those are your terminators. The internal drive is generally the first device on the chain.

Termination must also be installed on the *last* device in the chain, whether it's a hard drive, scanner, plotting device, or whatever (see Figure 30-1). Usually, it comes in the form of a gray plug that gets plugged into the empty jack on your last SCSI gadget. If there's only one set of jacks on the device, you can get what's called a "pass-through" terminator that has a plug on one end and a jack on the other. The jack is for your SCSI cable.

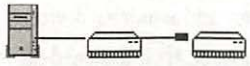


Figure 30-1
Standard SCSI setup. Because the Mac (at left) already has internal terminators, all you have to do is put a terminator on the last physical SCSI device.

External drives, internal terminators

Fortunately, the days of cheapskate manufacturers are nearly over; in the early years, some companies sold hard drives that are *internally* terminated. That meant you couldn't string such a drive together with other SCSI devices unless it was the *last* item in the chain. Other cheapskate manufacturers let you switch termination on and off, but required you to flip a tiny, confusing set of DIP switches to do so.

Today's very best SCSI appliances — Zip and Jaz drives come to mind — have a termination on/off switch, which at least makes the process simple (and saves you the cost of a terminator plug).

Active termination

We can't close this section without briefly mentioning still another aspect of termination. This new wrinkle seems to hold out the promise of relieving SCSI confusion: *active termination.* This feature is starting to appear in some drives, such as the Jaz drive and drives sold by APS. It's a cir-

MACINTOSH SECRET

HOW TO REMOVE INTERNAL TERMINATION

If you're unlucky enough to own a hard drive that's internally (and nonswitchably) terminated, it's not so tough to turn it into one that's *not* terminated.

The following procedure is simple, but don't be reckless with those pliers. If you tamper with a hard drive or other SCSI device and something goes wrong, either to the device or your Macintosh, the manufacturer may not honor the warranty.

Open up the hard-drive case and unscrew the drive from the case (usually four screws are involved). You see three or four small round-edged, pronged, probably orange resistors in a horizontal row plugged into the bottom of the drive. Remove these components with your fingers or a pair of pliers; that removes the internal termination. If these parts don't come out easily, don't force anything. Seek a dealer or a Mac guru for assistance.

In case you want to use that drive as an internal device later on, place the termination resistors in a safe place.

Incidentally, one reason you may want to remove those terminators is to convert an internal Mac drive into an external one (by installing it into its own casing). This is a perfect procedure for doing so.

cuit that decides whether termination is needed or not and turns it on when it's appropriate to do so. Active termination isn't widespread in the marketplace yet, but it seems to work beautifully.

TRUE FACT

MORE EXCEPTIONS THAN RULES



Figure 30-2
Typical PowerBook SCSI setup, showing termination both at the first and last external SCSI device.

As we said, termination rules on the Macintosh are not cut in stone. Here are a few exceptions to the Termination Rule.

PowerBook: PowerBook models (except those with IDE internal drives) have what Apple calls "a small, built-in terminator" attached to the internal drive. But this terminator isn't sturdy enough to handle a large SCSI chain. So here's the oddball recommendation: If you have *more than one* SCSI peripheral attached, connect a terminator to the *first* external device *and* the last one (see Figure 30-2)! If you count, you'll realize that you then have *three* terminators attached (including the internal one). Chapter 14 provides more details about PowerBook termination.

Mac Plus: The Plus doesn't have any internal connections for a hard drive. Therefore, the *first* hard drive you plug into it must have termination. And you still need a second terminator at the end of the chain if you add additional devices.

Macintosh IIfx: For this model, Apple designed the infamous *black* terminator, a 200-ohm terminating resistor, which includes a capacitor that supposedly absorbs power spikes. A regular terminator, according to Apple, can cause problems.

Quadra 900/950: Many Quadra models make life even more difficult. They each have *two* SCSI buses: One chain for the internal drives and another for the external devices. But because the SCSI chip is addressing both banks as though they're one gigantic chain, you're still limited to seven devices on the chain. Talk about confusing!

To add to that confusion, the *internal* SCSI bus is already terminated at the beginning *and* end. So if you're installing any additional hard drives into the commodious drive bay of the 900 or 950, you must first *remove* the internal termination, or you're asking for trouble.

(We should mention here that the Quadra 800 does have an active termination scheme, but it's only active when SCSI devices are installed within its large drive bay. If you install an *external* SCSI device, the 800's active termination is automatically disabled, and you're back to the usual inconvenient SCSI termination ritual.)

Rule #2: SCSI addresses

Remember, the Mac can send information to up to six attached pieces of SCSI equipment. To make sure that each SCSI device receives the correct messages from the Mac, each must have a unique *address* or *ID* number.

Your Macintosh reserves ID number seven for itself. Apple always sets the internal drive's ID to zero and the built-in CD-ROM, if there is one, to three. That leaves the numbers 1, 2, 4, 5, and 6 for you to play with. (Of course, some *non*-Apple internal drives are sometimes set to different SCSI numbers. If you're not absolutely certain, install the SCSIProbe control panel included with this book and check for yourself. See Chapter 34.)

How to choose the address numbers

The last actual device on your SCSI chain doesn't have to have the highest or lowest ID number. The physical order of the devices can be independent of their ID numbers.

However, Apple recommends that you give higher numbers to the devices you'll use most frequently — give ID 6 to an external hard drive you start up from, for example — and lower numbers to SCSI devices you'll use less frequently — give ID 1 to a tape backup machine, for example.

How to physically change the addresses

External devices usually include a switch, dial, or set of DIP switches that let you change the address number. (We prefer the dial. Although it's a little harder to change, it's less apt to be changed *accidentally* when you move or reconnect the drive. Memo to manufacturers who use those hateful DIP switches: Get with the program. This is the Mac.)

The key to all this is that *every device's ID number must be different.* If two or more devices have the same ID number, the instructions to the drives will get confused. The drives, or your Mac, or both, are likely to crash.

Note: *Before turning on your Mac, make sure that there are no duplicate SCSI ID settings!*

Rule #3: Cabling

Cables are often ignored as a source for SCSI-related troubles. But it's very common for internal wires to fray and jacks to become damaged over time, causing unexplained havoc across your SCSI chain. (We actually have a client who *threw away* a 500MB hard drive that he couldn't get to work. We rescued it from the garbage and discovered that its SCSI cable had become pinched by a heavy piece of equipment. The drive, on the other hand, was fine.)

The first rule here: Keep the cables as short as possible. Although the Mac SCSI standard allows you to use up to 18 feet of cable, you must subtract from that figure the amount of cable *inside* an external SCSI case. With so many fragile electronic signals traveling so fast and so far, it's not uncommon for troubles to occur even if the overall length of the cables is within the limit.

ANSWER MAN

On and off

Q: *Do I have to have all my SCSI-chain equipment turned on when I use my Mac? It seems like I'm wasting a lot of electricity if I'm not going to use my scanner today.*

A: You may be able to leave some of the SCSI devices off without problems, depending on the individual pieces of equipment. You can sometimes get away with turning *one* SCSI device off. It may cut out the *rest* of the SCSI devices (on the far end from the Mac), but the devices closer to the Mac still work.

The only way to tell whether a device will bring down the entire SCSI chain when the power is off is to try it. (This kind of experimentation *won't* hurt your Mac or your SCSI chain.) Apple says that it's generally OK to leave SCSI devices off if you're using a non-PowerPC (four-digit) model, but that PowerPC Macs require a fully powered chain — yet simple experiments show that this rule doesn't always hold true.

As a matter of fact, most of these devices draw very little current to begin with, and their life expectancy is at least several years. So don't lose sleep over leaving them on anyway.

Furthermore, you'll have problems using a SCSI cable longer than *two feet* with any PowerBook model.

Almost every new external SCSI component comes with the cable you need to connect it to your Mac. That's usually a smallish, 25-pin connector on the Mac end (called a *DB-25* connector) and a very wide 50-pin (*Centronics-style)* connector at the other. A few drive manufacturers (LaCie, for example) provide cables with 25-pin jacks on both ends because the drives they sell have 25-pin connectors, just like the Mac.

What is usually *not* included with your new drive is the cable you need to daisy-chain it to another device. If you have one or more SCSI peripherals already, before you buy another SCSI device for the chain, buy another (usually 50-pin-to-50-pin) cable, too.

Apple's SCSI cables are the most expensive and the most reliable we've ever used. They're worth every penny. Since the first two editions of this book appeared, a half-dozen readers have written us to confirm this: A new, shielded, Apple SCSI cable instantly solved an otherwise baffling SCSI problem.

The Great SCSI power-off myth

Ever since the Mac was introduced, every book, manual, and article pounded the following warning into our soft little brains: Never connect or disconnect a SCSI device while the Mac is on! According to the myth, you'll crash your computer or even damage your Mac's SCSI controller chip.

Well, we have some shocking news. We asked an Apple hard-drive engineer about this famous bit of Mac lore. Know what he said about "hot-plugging," as he calls it? "I've been hot-plugging hard drives daily for ten years, and I've never had a single problem. We hot-plug hard drives all the time."

It's true. If you're careful, it's perfectly possible to plug and unplug SCSI devices while everything's on.

So where did the great Power-Off Myth come from? Even our Apple engineer friend concedes that it's possible to cause damage if you don't hot-plug correctly. And what's "correctly?" All the pins of the SCSI connector should arrive

or depart at the same moment. In other words, don't pull the right side off, and then the left; attach the SCSI connector flat, all at once, face-to-face with its jack. If the connector is attached or removed unevenly, you run the risk of creating a power surge on the subset of pins that are momentarily in contact with the jack or of grounding the wrong pin.

The Myth arose for a second reason, too: If a hard drive isn't already attached as the Mac starts up, the drive's icon won't show up on the Desktop. This would certainly alarm the novice. If you hot-plug a hard drive without restarting the Mac, its icon still doesn't automatically appear. However, you can use SCSIProbe, included with this book, to "pull" its icon onto the screen after it's attached. (That's how the Apple engineers do it.)

One additional caveat: If a new hard drive you're attaching has the same SCSI address as one that's already attached (see Rule #2), the Mac may very well wipe out the new drive's folder hierarchy. This is no myth.

Obviously, then, it's safest to follow the official Apple guidelines — to turn off the Mac and all SCSI devices when connecting or unconnecting them. But if you're savvy, or impatient, there's no reason to be terrified by the Great SCSI Power-Off Myth.

(Please remain terrified by unplugging your *keyboard* cable while the Mac is on, however.)

SCSI TROUBLESHOOTING

If all goes well, after you have your SCSI chain set up, you can turn on everything and start your computer. After your Desktop pattern appears, you should see the icons for all your external hard drives in the proper places at the right side of your Mac's Desktop.

If every component and every cable is textbook-perfect, you can get back to work or play on your Mac without any further incident. There are times, though, when things just don't work the way they ought to work, and you begin to learn what the term "SCSI hell" is all about.

Most times, SCSI troubles are very obvious. Sometimes they're so subtle you don't even suspect SCSI. So let's take them in turn.

Spotting the symptoms

You won't believe how many different kinds of Mac troubles *can* be caused by SCSI glitches. These include a completely frozen, empty gray screen at startup; the blinking question-mark disk icon at startup; a Sad Mac icon at startup; a freeze when the Happy Mac icon appears; or a freeze at the

"Welcome to Macintosh" startup screen. Sometimes a specific SCSI device's icon won't show up on your Desktop, or you get random freezes when you attempt to save or copy large files onto a specific hard drive.

A SCSI conflict can affect a system software installation, too (for example, the Mac won't recognize one of the installation disks). If something bad is afoot in your SCSI chain, the installation process can come to a screeching halt.

Solving the problems

First, you need to determine if it's really a SCSI problem. As explained in Chapter 33, begin by pressing the Shift key during startup (to turn off all your extensions). Disconnect the SCSI cable from the back of your computer. Now you have *no* external SCSI gear. Try to start up again.

If your computer works, then you've confirmed that something in the SCSI chain is wrong. If your computer still won't work, then perhaps the problem is with your internal drive or system software. Try starting up with the Disk Tools disk that came with your Mac.

If you're able to start successfully, you may simply have to update your internal drive with your formatting software (see Chapter 8 for more on hard-disk drivers and updating them). Damaged or incompatible hard-disk drivers — software — are sometimes responsible for all sorts of ills that are blamed on the hardware. Sometimes one crash can do a device driver in. Frequent crashes when you are trying to access data from your hard drive or write data to it may indicate a damaged driver.

Which SCSI device is it?

If the trouble lies in the SCSI chain, disconnect the newest device on the chain. Recheck your cables and termination again and then power up. If it works okay, then you've narrowed the problem down to that new device. To isolate the problem, connect *only* that device to your Mac and see if it works. This is the time to check the manual. It may tell you that your new device is internally terminated or that it works best in a certain SCSI chain location.

If you're still having no luck

Take a deep breath. Review each of the following steps, in order. If you follow them all, you *will* solve what's wrong. You may never know *why* things weren't working, but you'll be pleased enough that everything finally works.

1. Make sure that every device is plugged into a power outlet. Make sure that they're all switched on. Check that each connector is firmly attached to its SCSI jack.

2. Change the ID numbers of your SCSI gear. Try reversing the numbers, for example — but be absolutely certain, before you turn on the Mac, that there's no numbering conflict. Use SCSIProbe, included with this book, to see what's going on.
3. Change the termination. As we said, not everything in SCSI-land is clear-cut. First, try removing all terminator plugs from your external drives. (You can't hurt your equipment by having too few terminators.) If that doesn't work, put a terminator plug on the last device in the chain.
4. Suspect your cables. Check their length. The total combined length can't exceed 18 feet; 12 feet is safer. Swap the cables among the devices in your chain. Replace them, if you have spares. Try Apple cables.
5. Place your SCSI devices in a different physical sequence. Put the last device on the chain first or somewhere in the middle. (But don't forget: When you make these changes, reinstall the termination on the last item in the chain and check for secure connections and correct ID numbers.)
6. Make sure that you've installed the proper software driver for each device. Without the driver, your Mac may not even know that a SCSI device is there.
7. Put a terminator in the middle of the chain.

What if the drive just won't mount?

You restart your computer, and everything *seems* to be working fine — except that the hard drive icon doesn't appear on your Desktop!

At times like this, you really need a utility that lets you examine your SCSI setup. One such tool is SCSIProbe, provided with this book. SCSIProbe shows you the SCSI address numbers of your various devices and whether or not they're mounted. In this case, if you didn't turn on your external device soon enough before booting your Mac, SCSIProbe's Mount button will actually pull your external drive's icon onto the Desktop.

If SCSIProbe doesn't work, or your system crashes when you try to mount the drive, try replacing the device driver with your formatting software first and see if it works.

If you still can't get the drive to mount, use Apple's Disk First Aid or a commercial set of hard-disk repair/recovery tools, such as Norton Utilities. For greater insights into hard-drive lore, consult Chapter 8.

CASE HISTORY

SCSI VOODOO IN ACTION

One of your cheerful authors tells the following illustrative tale. He wanted to attach a 425MB external drive to a Macintosh that already had a SyQuest drive and a scanner. Based on the manufacturer's recommendations, the scanner was the last device on the chain, and a terminator was attached to one of the two SCSI jacks on the scanner. The new external drive was connected directly to the Mac, and the removable drive was in the middle of the chain.

The way it's written, this setup should have worked. In fact, the Mac started up fine, and the drives mounted properly. But every so often, when a lot of data was being written to or from one of the drives in the chain, the Mac froze and the activity light on that drive remained lit. The Mac had to be restarted.

He did the usual SCSI troubleshooting dance: Moved drives to different spots in the chain (with appropriate changes to the termination); swapped cables; and juggled ID numbers. The drives and removable cartridges were reformatted. But the problems persisted.

On the suggestion of an Apple technician who specialized in SCSI voodoo, the 425MB drive was placed last on the chain, with *double* termination — one terminator block *ahead* of the drive and one attached to the empty SCSI jack at the rear of the drive. And the problems vanished!

The moral: When the rules of SCSI let you down, break the rules of SCSI.

SCSI-2: FAST, WIDE, AND PRICEY

The Macintosh Plus was the first personal computer on Earth to offer a SCSI jack. Unfortunately, SCSI — and the Mac's SCSI equipment — hasn't changed much since that 1985 moment.

The rest of the world has continued developing the SCSI technology, however, and much faster versions are available. For example, the next generation of SCSI circuitry is called *SCSI-2*. Although few Macs have built-in SCSI-2 circuitry, you can add it, via a NuBus or PCI card, and quadruple the speed of data transfer from, say, an external hard drive to your Mac. (Atto Technology and FWB are among the companies who make SCSI-2 equipment.)

Of course, there's more to getting the benefits of SCSI-2 than buying a card that lets your Mac "talk" this new standard; you also have to buy a hard drive that is itself SCSI-2-ready. The card and the drive together will cost $2,000 or more — which may, nonetheless, be a reasonable price to pay if you're in a speed-dependent business such as video digitizing, setting up a Mac to serve a large network, prepress, or large database applications.

You can buy SCSI-2 equipment in any of three flavors:

- **SCSI-2 Fast:** This equipment sends data twice as fast as regular SCSI, with a maximum speed of 10MB per second instead of 5MB.
- **SCSI-2 Wide:** This is another way to double regular SCSI's speed. This kind of equipment has wires 16 bits "wide" instead of 8, so it can shove information through them twice as fast. Actually, there aren't any SCSI-2 Wide products available for the Mac — only Fast/Wide.
- **SCSI-2 Fast/Wide:** This combines the two technologies, reaching a top speed of 20MB per second.

We said that the Mac's built-in SCSI equipment hasn't changed *much*, but that doesn't mean Apple is completely ignoring the potential of SCSI-2. As we've noted, some high-end Macs (such as the Power Mac 7500, 7600, 8100, 8500, and 9500) offer not one *but* two SCSI

chains — an internal and an external. On these models, the *internal* SCSI chain already has Fast SCSI-2 circuitry, saving you the cost of a SCSI-2 card for these models.

As an added bonus, the 7500, 8500, and 9500 also come with a Fast SCSI-2 internal *hard drive* to take advantage of the circuitry, meaning that these models can transfer up to 10MB per second to or from the Mac's brain.

IDE: CHEAPER, SOONER, AND LESS FLEXIBLE

For years, it was safe to assume that if it was a Mac, it had a SCSI hard drive inside. No longer. More and more new Mac models (such as the 6300 line and the PowerBook 5300) come with a completely different kind of device-chain circuitry inside — protocol borrowed from the world of DOS clones. It's called the *Intelligent Drive Electronics* bus design — IDE for short.

Apple is moving to IDE for two reasons. First, IDE drives are cheaper than SCSI drives (because of competition in the DOS world). Second, advances in hard-drive capacity occur in the IDE manufacturing world sooner than in the SCSI world. Already, IDE drives for DOS machines come in sizes up to 8.4 GB.

Anyway, Apple figures that most people won't know or care that an IDE drive is inside. You still get the standard SCSI jack on the back of your computer, to which you can plug the usual assortment of SCSI devices. They'll work perfectly well with (and independently of) the internal IDE hard drive.

You don't need to fuss with terminators or addresses in the world of IDE. In the unlikely event that you want to expand your IDE chain, you'll be limited to *one* additional device. (An IDE chain can have only two devices — a master and a slave. A slave drive can't start up the Mac, by the way.)

If you have an IDE-equipped Mac, the primary change in your life will be your drive formatting program. Most of the usual SCSI-based formatters (such as Apple HD SCSI Setup) don't work to format or rescue IDE hard drives. See Chapter 8 for details.

If you wish, you can replace your IDE hard drive with a larger one. Unfortunately, though, now you'll be trafficking in the icky world of PC clones, where nothing is standard and everything is incompatible. When shopping for a new IDE drive, you must buy one that meets the following technical criteria, even if you don't know what these things mean:

- The drive must support the *identify* command.
- It must work at least at *PIO mode 2* performance level.
- It must have *write caching* on so that *auto-reallocation of new spares* is invoked.

Apple suggests that drives manufactured by IBM, Quantum, Conner, Seagate, or WD (Western Digital) will give you the best luck.

THE FUTURE OF SCSI

Whoever elected SCSI, anyway? It's awkward, it's a headache, it's limited.

Fortunately, America's best engineers are designing improvements. Most of these improvements have to do both with improving the *speed* of data transfer and relieving the headaches of setting up SCSI gadgets.

More SCSI

SCSI-2, of course, isn't the last trick hardware engineers have up their sleeves. SCSI-3 is already on the drawing boards. Unfortunately, nobody is quite sure what it is or what it represents, since every manufacturer has its own agenda and proposed protocol. For example, one piece of SCSI-3 is called Ultra SCSI, a 40MB-per-second technology being developed by several hard drive makers even now. Then there's Fiber Channel, which uses fiber-optic or copper cable that can be 100 meters long, with no ID numbers or terminators to worry about, 127 devices per daisy chain, and data-transfer rates of up to 100MB per second.

FireWire

The technology Apple is banking on, however, is called FireWire. What if you could connect your hard drives, CD-ROMs, printers, videotape recorders, scanners, and other devices — up to 63 in a chain — to a single jack on the Mac? What if you could connect and unplug them freely, without even having to shut down the computer? What if the cables were smaller, cheaper, and could be longer than SCSI cables? And — while we're dreaming — how about eliminating the hassles of termination and ID switches forever?

That's FireWire's promise — a new, six-pin, multimedia-oriented system of connecting your Mac peripherals. Otherwise known in the industry as spec P1394, FireWire isn't as fast as some of the SCSI-3 proposals, but it's far less expensive and easier to work with. Apple developed this new standard with Texas Instruments and plans to introduce it on new Mac models in 1997 (probably as a PCI card option). Of course, in theory, this means that you'll have to buy all new hard drives, printers, and so on. Fortunately, Apple is working on a way to make FireWire compatible with these existing devices. Frankly, we can't wait; we don't care if we never see a SCSI terminator again.

TRUE FACT

HOW FAST IS YOUR MAC'S SCSI PORT?

Apple doesn't bandy about official figures as to just how fast the SCSI port is of each Macintosh model. However, here we've listed a few examples. Speeds are dependent on the kind of storage device installed, the kind of formatting software, extensions, SCSI setup, the size of files being transferred, and so forth.

Model	Maximum SCSI port speeds
Macintosh II, IIx, IIci	1.25MB/second
Macintosh LC family	1.5MB/second
Centris, Quadra 605 through 900	5MB/second
PowerBook 100/500 series	1.5MB/second
Duo 200 series	1.5MB/second
Power Mac 6100, 7100, 7200, 8100	5MB/second
Power Mac 7500, 7600, 8100, 8500	10MB/second (internal bus; 5MB/sec. external)

Chapter 31

NuBus, PCI, and Other Slots

IN THIS CHAPTER:

- What NuBus is
- What PDS means
- What PCI does
- How to install a card
- The future of slots

Installing new circuit boards into your Mac has always been a breeze. On the Windows machines of yesteryear, you'd have to fiddle around with a bunch of little jumper plugs and DIP switches. On the Mac, you just insert the board in the slot, reboot your Mac, and you're in business. Although sometimes you may have to install a control panel to make some settings to the board, a NuBus or PCI device is self-configuring. But that easy setup process belies the sophisticated technology behind it.

NUBUS CARDS

The expansion slot standard used on Macs until late 1995 is called *NuBus* (pronounced *new* bus, which, more or less, describes what it is). The technology was originally developed in the 1970s at the laboratories of MIT and was perfected by Texas Instruments for use in workstation computers. Apple's version of NuBus wasn't released until March 1987, when the Macintosh II

CASE HISTORY

GETTING THE SIZE RIGHT

There was a bit of a flap back in 1987 when Apple went to the Institute of Electrical and Electronics Engineers (IEEE) to get their version of the NuBus specification certified. Apparently, Apple's engineers failed to account for the thickness of the Mac II's *case* when they made their measurements from the blueprints. Consequently, when they started testing prototype NuBus boards, they found that the boards built to this spec were a quarter inch too big to fit in a Mac!

Needless to say, Apple was forced to contact the IEEE and have the standard changed slightly before it was published.

was produced. The Mac II (and its successors, the IIx and IIfx) contained six expansion slots; no model since then has had as many.

The big idea

The theory behind NuBus is simple: It's a *bus* (an electronic pathway) that lets you expand your Macintosh. Without having to buy a new computer, you can add features as you need them.

By far the most common NuBus card is a *video display adapter* board (see Chapter 11 for more on monitors), into which you can plug your monitor. While most recent Mac models have built-in video memory, most still require a video board if you want to get 24-bit color or graphics acceleration.

Some other reasons you might buy a NuBus card:

- To provide Ethernet or Token Ring network communications capabilities to a Mac that doesn't have them.
- To speed up SCSI transfers (see Chapter 30 for details on SCSI-2).
- To capture video images, either still frames or movies, for processing on your Macintosh.
- To replace some of the functions of your Mac's main logic board in the pursuit of accelerating your Mac.
- To put a PC inside your Mac so that you can run DOS and Windows programs without buying a whole new computer.

NuBus '90

In 1990, the Institute of Electrical and Electronics Engineers (IEEE) overhauled the NuBus technological specs. They arrived at a new design, called NuBus '90, which Apple implemented either partly (Quadra family, for example) or completely (Quadra 900/950 and first-generation PowerPC-based Macs).

The differences between NuBus and NuBus '90 are extremely technical, but they boil down to speed. A feature called the IIx Block Transfer Protocol doubles the speed of information flowing between the Mac and the card (to 20 MHz from the previous 10 MHz).

PDS CARDS

Certain Mac models — such as the LC series — have a *Processor-Direct Slot* (PDS) instead of a NuBus slot. The PDS is another way of expanding your Mac's capabilities. A card installed in this slot hooks directly to your Mac's main logic board; the PDS board becomes, in effect, a part of that logic board. (A NuBus board, on the other hand, can be a computer unto itself.) A PDS card is ideal for less ambitious hardware add-ons, such as cache boards and accelerators.

Unlike the NuBus board, which can work in most any Mac with slots, the PDS board has to be designed to support a specific model or range of models. (There are, however, adapters that let you plug NuBus cards into some PDS slots.)

THE PCI REVOLUTION

NuBus is on its way out. Beginning with the late-1995 Power Mac models, Apple introduced a new expansion-card technology to the Mac. It's called the *Peripheral Component Interconnect* (PCI) Local Bus. More than 150 other companies, too, have endorsed this new technology. All future desktop Macs — and even PowerBooks — will feature PCI slots instead of NuBus.

In some ways, PCI and NuBus are very similar: Visually, for example, there's not much difference. Where a NuBus card has a plastic connecting plug at the bottom, the PCI board's "pins" are etched into the bottom edge of the board itself. Installation is simply a matter of sliding the board securely into its slot. Likewise, PCI cards perform much the same jobs as NuBus cards — such as adding high-speed networking, accelerated video display, video digitizing, high-speed SCSI data transfer, or DOS/Windows capability to your Mac.

In other ways, however, PCI and NuBus are worlds apart.

Why PCI?

There were three reasons behind Apple's decision to adopt the PCI standard. First, speed: A PCI card today runs at 33 MHz (compare with NuBus: 10 MHz) and can transfer data to your Power Mac at roughly 20 to 40 megabytes per second — about twice as fast as a NuBus card (10 to 16 megs per second). When System 8 (Copland) finally arrives, you'll get even better data throughput. All of this speed is extremely valuable to people who depend on networks, work with digital audio, or make digital movies.

ANSWER MAN

Using a PC PCI in a Mac

Q: *Can I use PCI cards sold for PC (non-Mac) computers in my Power Mac?*

A: In general, yes. There are conditions, however. First, the PCI card must, of course, come with a software extension — a driver — that tells your Mac how to communicate with it.

Second, cards that need to load at startup — like video cards and hard drive controller cards — must be "Open Firmware"-compliant. (Open Firmware-compatible cards automatically work in any Open-Firmware-compatible computer, such as the Mac.)

If the card *doesn't* need to be loaded when the Mac turns on — such as network cards — they don't have to be Open-Firmware compliant.

But if speed were the only issue, Apple could have done better, adopting one of many slot designs floating around in today's technology circles — things called FutureBus, S-Bus, or the VESA Local Bus, for example. A second reason, therefore, was cost. In theory, PCI cards will ultimately be cheaper than NuBus cards, largely because they're so popular already in the competitive PC clone market. (In fact, however, the manufacturers' cost of adapting existing cards to work with the Mac may eat up the savings in the short term.)

The final reason for Apple's switch to PCI is probably the most important: Apple needed to reach a compromise with IBM in the design of the new hybrid "PowerPC Platform" Mac/IBM computers (see the end of Chapter 13). To create such machines, Apple and IBM had to choose components that would work with any operating system — and NuBus wasn't among them.

PCI futures

The current PCI Local Bus can transfer data 32 bits at a time. But *64-bit* data "pipes," as well as doubled 66 MHz running speeds, are in the plans for new PCI slots and cards, scheduled for debut in 1997 or 1998 Macs.

Despite the PCI technology's promise, don't expect NuBus boards to disappear overnight. NuBus boards will still be manufactured for several years to satisfy the needs of millions of Mac users who have no intention of migrating to PCI-equipped Macs. At this writing, you can buy Mac clones (from Power Computing) that contain both PCI and NuBus slots. Furthermore, even with a PCI-only Macintosh, your previous investment in NuBus cards isn't worthless; for $600 or less, Second Wave (512/329-9283) will sell you an Xpanse PN, a PCI card with a 30-inch cable to an external box that holds two NuBus cards. (They also sell four- or even eight-NuBus-card models, all connected to a single PCI slot.)

HOW TO INSTALL A CARD

If you follow instructions, you don't endanger your warranty by installing a card yourself. Although directions may differ from model to model, here are the basics:

First, turn off the Mac and all connected equipment. Leave the power cord plugged in, however, to act as a ground. You're usually told to let the Mac sit for a few minutes, to give the storage capacitors in the power supply a chance to drain current. That's just to prevent you or the card from getting "zapped" with some stray electrons. (We've never known any Mac or owner to be zapped from not having waited long enough after shutting down the machine, however.)

Then open your Mac. Depending on which model you have, you may need a screwdriver to remove one or more screws to get the Mac's case off. Place them in a safe place (such as an ashtray) so that you can find them later. Truth be told, we know plenty of people with desktop-style machines who change their expansion board lineup so often they never bother to reinstall the screws.

Losing charge

Before you touch anything inside your Mac, touch the power supply case (the large metal silver cube inside the Mac where the power cord attaches from the outside) to discharge static electricity from your body. If your work area has a carpeted floor, or you're living in a dry climate, you might get a tiny, harmless shock. Your hair won't stand on end (if you still have hair and it's not already standing up).

Some manufacturers include, in the NuBus card's box, a wrist strap to drain current. You wrap one end around your wrist and attach the other end to the power supply. You may feel like a mad scientist wearing one of these things, but we wish more hardware manufacturers offered them with their multithousand-dollar boards.

If your expansion board has an external connector (such as a video display adapter or, if it's a QuickTime movie board, a jack for a video cable), you have to remove the plastic or metal cover plate at the rear of your Mac. It pushes out from inside. We recommend that you pop it out with the end of a pencil, however, having had our knuckles ripped too many times by those sharp little prongs. You should probably save the plate after it's out, in case you intend to remove the board later on. (We learned this lesson the hard way, when the day came when we wanted to sell a Quadra 800, and we couldn't find the missing back-panel slot plate. The buyer put up a fuss.)

The board meeting

Remove the card from its antistatic bag carefully, holding the board by its edges or by the metal faceplate, if it has one, at one end of the card. Take the

MACINTOSH SECRET
HORIZONTAL SLOTS

In "tower" or "minitower" — design Macs, such as the Power Mac 8500, the slots aren't on the floor of the Mac; they're on the sides, so the card sits horizontally instead of vertically. To keep everything securely in place, Apple provides a plastic expansion-card *clip*. You have to remove this clip before connecting your new board and reinstall it after the board is plugged in.

With such a tower-design Mac, it also helps to turn your computer on its side before installing an expansion board; installing a card side-saddle can be awkward.

And speaking of awkward: The Quadra 800 is a rare Mac. It has both kinds of slots, NuBus *and* PDS. But they're positioned so that you can fill one slot or the other, but not both. When there's a PDS card installed, it blocks the NuBus slot.

ANSWER MAN

What's a DAV slot?

Q: *Yeah—what's a DAV slot? My 8500 has one.*

A: DAV stands for Digital Audio Video. This slot can accommodate a video-compression card, although we don't know of anyone making such cards for this slot yet.

card to your open computer. Look at the bottom of the Mac to spot the actual thin rectangular slot connector. Then align the card so that the matching connector on one long edge of it mates with the slot on the Mac floor. The components on the board (all the little transistors and things sticking out of one side of the board) usually face the power supply.

Gently press the card until it's seated on its connector. Wiggle it back and forth slightly, to see that it's connected firmly. If you can't get the board to fit inside the connector slot, first check whether you're dealing with a NuBus, PCI, or PDS board (the connectors are all slightly different). Don't force it; you don't want a big repair bill if you bend or break the connector. If you can't seat the board in its place, call the manufacturer or dealer or your favorite Mac guru for assistance.

After the board is installed, close the Mac's cover. *Before* replacing and tightening the screws, hook up your accessories and start up the Mac, just to be sure everything is working. (It's perfectly okay to start up your Mac without its cover on.)

NUBUS AND PCI SECRETS

Removing the card

Removing a card works almost exactly like installing one: You open the Mac's cover, wait a few moments (if you believe in that), and touch the power supply.

Then you grasp the card at two points: The metal clip at the rear of the Mac and the other bare corner of the card. (If it's not a card designed to protrude out the back of the Mac, there may not be a metal clip. Grab that back upper corner instead.) Tug upward, using the metal clip as your main handle. We usually find it easier to pull a card out diagonally, with the back end (with the clip) coming up first.

How long can a NuBus card be?

The original MIT NuBus standard specified that NuBus boards should be between 11 and 14 inches long. But Apple made a few changes to better suit its designs and declared that NuBus cards for Macs could be between 4 and 13 inches long.

Imagine the consternation of NuBus board manufacturers, then, when the Centris 610 was introduced. Its new case design (later used in the 6100, and so on) placed a new limit on the length of NuBus cards that sent manufacturers scrambling back to the drawing boards: Seven inches. Nowadays, you have to specify your Mac model before ordering a card so you can be sure it will fit!



Surviving the Duo Dock NuBus

The desktop housing for a PowerBook Duo, the Duo Dock, can accommodate two NuBus cards. Installing or removing a card from a Dock, however, is nowhere *near* as easy as it is on a traditional desktop Mac.

We only have one Secret to share here: Don't install a NuBus card into a Duo Dock when you're on a deadline. Allot an hour if it's the first time you've attempted the process. You wind up taking the Dock almost completely apart, with the manual on your lap and perspiration on your brow.

Chapter 32

The Networking Chapter

IN THIS CHAPTER:

- Networking basics and terminology
- LocalTalk, PhoneNet, Ethernet, Token Ring
- How to connect a Mac to a PostScript printer
- How to hook two Macs together
- File servers, print servers, fax servers, net modems, and e-mail
- PowerTalk and Open Transport
- Apple Remote Access
- Troubleshooting a network

NETWORKING BASICS

Mac users became part of the networking revolution when the first Macintosh came with built-in networking capabilities. The power to network Macs — that is, to connect them together — has grown ever since. Feel free to lord this fact over your Windows-loving pals: Every Mac comes with built-in networking circuitry and built-in networking software. For free.

Shared devices and servers

Like any other great development in technology, networks were invented, in part, out of economy. Because Apple originally charged $6,000 for one laser

ANSWER MAN

Who's doing all the talking?

Q: *Look, as long as I'm getting all this terminology at once, how about defining the difference between LocalTalk and AppleTalk? I'm totally confused.*

A: After SneakerNet — running to a coworker's Mac, bearing a floppy disk in hand — the most common method of Macintosh networking is Apple's LocalTalk.

LocalTalk and AppleTalk aren't, of course, the same thing. LocalTalk is the *wiring;* AppleTalk is the *kind of message* that travels over it. AppleTalk could be likened to the spoken word, and LocalTalk to the telephone and wires that carry the spoken word.

printer, people eagerly sought methods of sharing a single printer among multiple Macs. Therefore, today's networkable printers and modems are known generically as *shared devices.*

Then there are *file servers.* A file server is a hardware and software setup — usually another Macintosh — that lets you share files with other people on the network. A file server's icon shows up on your Mac's screen as another disk that you can open and whose files you can access. Using Apple's *AppleShare* technology, this same file server's icon can also show up on *other* people's Macs. Everyone can be working with the file server's files at once.

Today, there are other kinds of servers, from database servers (such as FileMaker) to address-book servers (such as Now Contact), all designed to let multiple Mac users access a common set of data.

AppleTalk messages and LANs

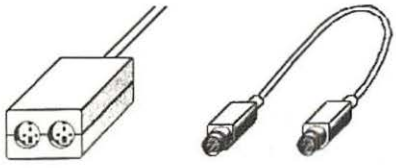
When a Mac prints out something on a laser printer down the hall, it sends the printing information over the network cables in the form of electronic messages. These messages are sometimes called *packets.*

Because networks are like streets and highways, complete with intersections and two-way movement, the activity on a network is called *traffic.* Packets can be said to represent individual vehicles as they hug the yellow line of the network cable. If the packet is a city bus, then the passengers on that bus are the data contained within the packet: instructions to a printer, an e-mail for a coworker, and so on.

After you connect several Macs, shared devices, and servers, you have yourself a LAN: a *local-area network.*

LocalTalk versus PhoneNet

Figure 32-1
Apple's LocalTalk connector and cable.



Originally, Apple wanted everyone to buy its proprietary *LocalTalk* boxes and cables, illustrated in Figure 32-1. A LocalTalk cable is cylindrical. Unfortunately, these connectors and wires have always been expensive. Worse, they sometimes came unconnected in the real-world office environment, causing network managers to slowly grow bald trying to find the elusive breaks in the network.

A hero is born

Then came Reese Jones in Berkeley, CA. Driven by a shortage of AppleTalk connectors, among other factors, he and some friends designed a new type of LocalTalk connector called *PhoneNet.* In the eyes of network gurus, PhoneNet was a godsend. Before long, Jones started a company called Farallon to market his hit invention.

These new connectors used ordinary telephone wire, the thin cable that connects your telephone to the wall jack, instead of Apple's proprietary round connectors. Not only did this new product make networking less expensive, it also meant that you could connect Macs using *existing* telephone cord that already snaked through the walls in most modern offices. (We'll tell you how shortly.)

The PhoneNet system was a tremendous hit in homes and small offices. Even if you didn't use the "use-the-existing-phone-wiring" feature, you could always just buy some phone wire from a hardware store to connect your Macs together, at a cost dramatically less than that of Apple's LocalTalk cables.

As a bonus, PhoneNet also permits the total length of all the wires in your network to be between 3,000 and 5,000 feet, which grants much greater freedom than Apple's LocalTalk system, whose maximum length is 1,000 feet. Finally, Apple's original LocalTalk cable and connectors are expensive compared to PhoneNet hardware. Each Apple connector costs about $40. The equivalent PhoneNet connector (see Figure 32-2) costs under $15.

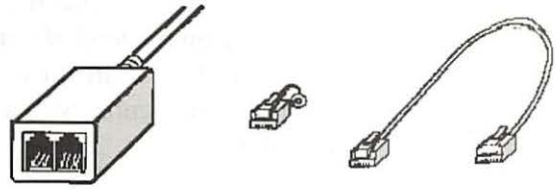


Figure 32-2
From left to right, a PhoneNet network connector, a terminating resistor, and a phone cable.

These days, everyone seems to sell PhoneNet connectors — some are licensed clones, others aren't. Even Apple sells something called "LocalTalk RJ11" — you can probably guess what it really is. (In fact, if you want to make a salesperson laugh, try asking for an original LocalTalk connector.)

The terminating resistor

This is important. Each end of any LocalTalk cable chain, whether Apple or PhoneNet, must have a terminating *resistor* (see Figure 32-2). Without it, you may get errors when sending files or messages, and some network devices may not function at all. The terminating resistors at each end of the wire absorb any stray electrical signals; otherwise, these signals may bounce back down the wire, confusing your Macintosh and other devices with phantom signals.

Each PhoneNet connector usually comes with a terminator, a tiny plastic clip stuck into one of the connector's jacks. (Apple's LocalTalk connectors are *self-terminating.*)

Ethernet

A LocalTalk network works well for a handful of Macs. It even works well for several handfuls of Macs. But the larger the network gets, the slower it gets. In other words, copying a file from one Mac to another slows traffic to a crawl, especially if someone else on the network is also copying files. In big business, this kind of delay can be disruptive and annoying.

Fortunately, for companies that are network-dependent, there's a much faster, alternate kind of wiring system: Ethernet, which is rapidly taking over the world of Mac networks.

Ethernet and speed

Messages travel at about 230,000 bits per second on a LocalTalk network. They travel at up to *10 million* bps on an Ethernet setup. (For some perspective, this page contains about 20,000 bits.)

According to our figures, then, Ethernet network speed is 43 times faster than LocalTalk. In practice, however, the true throughput bogs down, depending on the level of network traffic, the type of data being exchanged, and so on. In real life, then, Ethernet may run 1.3 to 3 times faster than a LocalTalk connection, with a total capacity of 3 to 5 times that of LocalTalk networks.

Setting up an Ethernet network: The hubs

In general, Ethernet is slightly harder to set up than LocalTalk — for two reasons. First, if you intend to include more than two Macs or printers in your network, you must connect each directly to a central gadget called a *hub.* (The result forms a *star pattern;* an octopus diagram. Contrast with LocalTalk, where each Mac is hooked up to the previous one, in a *daisy chain.)*

This hub looks like, well, a hub: a small rectangular box with jacks for five, ten, or more Ethernet cables. (An Ethernet cable, known as *10BaseT* or even *100BaseT,* looks like a slightly overweight telephone cable, with fatter versions of phone-cable clips on each end. These jacks and clips are called RJ45 connectors by the telephone installers, who you may want to involve in wiring your office for Ethernet.) A hub costs from $100 to $500, depending on its

features and number of jacks, and comes from a mail-order outfit or a computer store.

Hubs are likable gadgets for three reasons:

- Hubs aren't platform-specific — there's no Mac/Windows distinction.
- When your network gets big, you can plug one hub directly into another, as though your octopus patterns are sharing arms.
- If you have multiple hubs, and one of them goes bad (or some loose connection develops), the rest of the network remains intact.

Setting up an Ethernet network: the Mac jacks

The other part of what makes Ethernet slightly more complicated than LocalTalk is the fact that, unlike LocalTalk, not every Mac has the appropriate jack. (After all, *every* Mac has a printer port!) Various Mac models have come in any of three different Ethernet-ready states:

- **No Ethernet at all.** Older Macs, such as the Mac II series, didn't come with any Ethernet circuitry. You must buy an Ethernet NuBus card, insert it into the NuBus slot, and hope for the best.

  Recent PowerBooks don't have Ethernet jacks either, but they are Ethernet-ready. You must only buy an Ethernet PC card, such as the Global Village Teleport Pro card or those from Farallon. (For a PowerBook Duo, you can buy an Ethernet-ready minidock from, for example, Newer Technology.)
- **AAUI jack.** Most Quadras and first-generation Power Macs offered this kind of jack: It's shaped like a monitor jack (rectangular with sloping right and left sides), but it's smaller (about 3/4 inches wide). Into this jack you plug a *transceiver,* a $30 connector that offers jacks of its own — 10baseT jacks (the ones that look like fat telephone jacks).
- **10baseT jacks.** These jacks (the very same telephone-wall-jack-style jacks described earlier in our discussion of Ethernet hubs) are the most convenient of all. They come on most of today's Power Mac models and high-end Mac clones, and they mean that you don't have to buy transceivers, as you do for Macs with AAUI jacks. You simply plug your Ethernet cable directly into the Mac.

Once your Ethernet setup is complete — you've bought your hubs, transceivers (if necessary), and Ethernet cable and set up your star patterns — the software setup is exactly the same as that described in the remainder of this chapter.

MACINTOSH SECRET
CONNECTING TWO MACS WITH ETHERNET ON THE CHEAP

In Chapter 25's "PostScript printer secrets," you can read our money-saving trick for connecting a single Mac to a single printer without having to buy PhoneNet connectors: Just use a simple StyleWriter cable. As free book winner Kah Heng Tan discovered, you can use a variation of the same trick for a two-device Ethernet hookup. Here, though, you save even more money, because you don't have to buy an Ethernet hub.

The principle is the same: If you're connecting only two Macs, or one Mac and one Ethernet-ready printer, you don't have to buy a hub. You can connect them with a special cable called a *twisted* Ethernet, or crossover, cable. One wire — no hub, no transceivers — instant Ethernet connection!

If your Macs have standard 10BaseT Ethernet jacks — such as the 7500, 8500, and 9500, plus some clones — you need nothing more to make this trick work; just the simple Ethernet cable. If your Macs (like the 6100, 7100, and 8100 series) require AAUI transceivers, so be it: attach the transceivers. The trick still works, and you still don't have to buy a hub.

Token Ring

Token Ring is an alternative to Ethernet. The primary difference is that Token Ring controls the traffic on the network by granting permission to only one network device at a time to transmit information.

In contrast, Ethernet nodes speak up whenever they have something to say. Occasionally, two or more Ethernet nodes speak at the same time. A data *collision* occurs, which is why Ethernet networks don't function very well under extremely high-traffic conditions.

Therefore, a Token Ring network can be much more effective at keeping network traffic humming under heavy load conditions. But it's also more expensive than Ethernet, more difficult to expand in networks with large numbers of nodes, and requires a great deal more planning and thought while designing. As a result, Ethernet is still the preferred high-speed choice of most Macintosh networks.

CONNECTING ONE MAC, ONE PRINTER

Let's start with the most popular network arrangement in the world: One Mac and one laser printer. Oh, yes indeed, even this individual Mac setup is actually a network.

LocalTalk: Connect the round plug of one PhoneNet connector into the printer port of your Macintosh (see Figure 32-3). Insert the round connector from the second network connector into the matching jack on the *printer.*

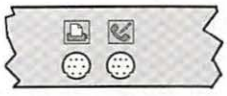


Figure 32-3
The Mac jack on the left is the printer port; on the right, the modem port. The printer port can also serve as the network connection and is sometimes referred to as the LocalTalk port.

Now plug the telephone wire into one of the empty sockets on each of the two PhoneNet connectors; your devices are now connected. Plug the terminating resistors into the remaining empty socket on each PhoneNet connector.

(If you'll never use more than one Mac and one printer, you can also use a regular StyleWriter cable from the Mac's printer jack to the printer's matching jack, as described in Chapter 25, instead of using PhoneNet and phone wire.)

Ethernet: Connect your 10baseT cable to the Mac and printers' matching jacks (or to their transceivers, if required; see "Setting up an Ethernet network: the Mac jacks" earlier in this chapter).

Congratulations! You've just wired your first network. All that remains is to select the appropriate printer icon in the Chooser (see Chapter 25) and test the system.

CONNECTING TWO MACS (+ PRINTER)

Your one-Mac, one-printer network is a one-way street. Except for simple status messages, your printer doesn't send anything useful to your Macintosh.

Eventually, however, you may add a second Macintosh to your network. Maybe it'll be used by a second person. Maybe it'll be your PowerBook.

Two Macs, no printer

The procedure for connecting two computers is almost identical to connecting one Mac to a network printer. For LocalTalk, plug the PhoneNet connectors into the printer port of each Macintosh's rear panel. (See Figure 32-4.) Don't forget the terminators. And for Ethernet, use a crossover cable, as described earlier in this chapter, to connect the two Macs' Ethernet jacks.

What's handy about this arrangement is that you can remove a connector from either Mac and insert it into a laser printer. The actual wiring, and the connectors, are the same. For a PowerBook owner who returns home and wants to transfer files to a desktop Mac, simply swiping the cord from the laser printer (temporarily) is a convenient and quick way to create an instant two-Mac network.

ANSWER MAN

Ethernet and LocalTalk simultaneously

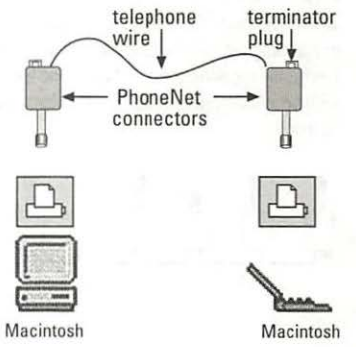
Q: *My Mac's printer port has a LocalTalk connection to a LaserWriter, and its Ethernet jack is connected to the office network. When I select EtherTalk in the Network control panel, my Mac doesn't see the LaserWriter. Can I access EtherTalk and LocalTalk simultaneously?*

A: Yup. You need Apple's free LaserWriter Bridge 2.0 software. Giving an Ethernetted network Mac a secondary connection to LocalTalk is precisely what it's for. Once it's installed, use the Network (or TCP/IP) control panel to choose EtherTalk as your main network protocol, then open the LaserWriter Bridge control panel to set up a secondary LocalTalk connection.

If LaserWriter Bridge didn't come on your System CD-ROM, you can get it as part of Network Software Installer software from Apple's Web page *(http://www.support.apple.com/wwwdocs/apple_sw_updates.html)*.

Just one limitation: LaserWriter Bridge will solve *your* problem. But any other Macs on the LocalTalk leg of your network won't have access to the Ethernet leg — unless you also buy Apple's $100 LocalTalk Bridge software, which can connect LocalTalk and Ethernet networks.

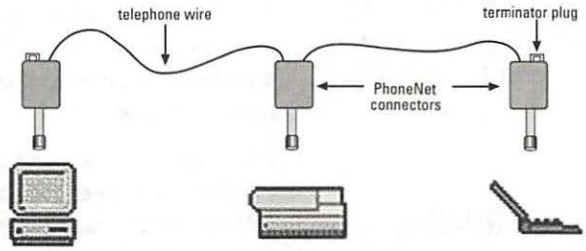
Figure 32-4
A simple two-Macintosh network. This arrangement is exactly the same as connecting one Macintosh to a LaserWriter; just substitute a second Mac for the printer.



And printer makes three

LocalTalk: So far, you have two PhoneNet connectors, two terminators, a phone cable, and two Macs connected together. To add your LaserWriter back into the mix, you need a third PhoneNet connector and another phone cable. You *don't* need another terminating resistor; remember, you only need a resistor at each *end* of the daisy-chain of devices (see Figure 32-5).

Figure 32-5
Example of a daisy-chained network topology. Adding more devices to this type of network is as simple as adding more PhoneNet connectors and cable and placing the terminating resistors at each end of the line, as shown.



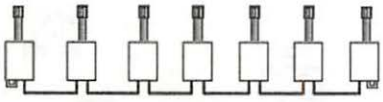
Ethernet: Now that you're adding a third device, our cheapo jack-to-jack crossover cable trick won't work. You must buy an Ethernet *hub* and connect both Macs, plus the printer, into three of its jacks.

Open the Chooser on each Mac to verify that you can select your printer from both computers.

Beyond the mini-network

LocalTalk: By adding a network connector to each additional Mac, you can continue to expand the network. If you use the Mac's built-in LocalTalk features, however, you can't string the Macs together in any arbitrary path. You must string them together in a line. This arrangement, as shown in Figure 32-6, is called a *daisy-chain topology.* (*Topology* is networkese for *layout.*)

Figure 32-6
A daisy-chain of PhoneNet connectors, phone cable, and terminating resistors. (Imagine a Mac or laser printer plugged into the connectors pictured at top.) Electrically speaking, a daisy-chain is one long cable with network connectors *tapping* the signal along its length.



Think of this as a single, long water pipe. The pipe may turn corners and go through walls, but it's still one continuous conduit for water. The Macs and other network devices in this example are like faucets that you install along this pipe, say every 8 feet or so.

Ethernet: See "Setting up an Ethernet network: the hubs" earlier in this chapter.

NETWORK SERVICES

Now you have a bunch of equipment wired together. In this section, we'll show you what you can *do* on a network: File sharing, print serving, sending messages to friends and coworkers at other Macs, and teaching your applications to communicate with one another.

File servers

Next to sharing printers, the most common advantage that a network offers is the accessibility of *file servers.* A file server acts as a remote hard drive for network users. Sitting at their Macs, several people can open files from that server at once. A server's icon appears on each user's Desktop just like an ordinary disk.

Print servers

Print servers are another kind of network service. We mentioned print spoolers (such as PrintMonitor) in Chapter 25. A print server is little more than a print spooler that does spooling for more than one user, and the files are stored on a networked computer instead of in your own Mac's PrintMonitor Documents folder.

One of the primary differences between a local print spooler and a network print server is that the server can accept and control print jobs for multiple printers. This difference can be a very real time-saver for print-happy users in a large office.

E-mail

Electronic mail is one of the most ingenious and practical uses of a network. You open a desk accessory from your menu, click the name of somebody in your office, type a message, and click Send — and your message (or maybe just a notice) pops

ANSWER MAN

Terminator, too

Q: *What's the big deal about terminators? I have two Macs and a laser printer hooked together with PhoneNet connectors. But I've never used those little terminator plugs, and everything's always worked fine.*

A: Termination is the process of ending an electronic signal on a network cable. Without termination, signals bounce back off the ends of the cables and can interfere with new signals.

As on a highway for automobiles, light traffic usually moves well no matter what the technical shortcomings may be for a given stretch of road. But with added traffic, any minor engineering flaw quickly creates traffic jams. The same is true in AppleTalk networks.

On short networks, like yours, or on networks with little traffic, reflected signals may present no problem. But as networks grow, correct termination becomes a critical factor. A common symptom of heavy traffic and poor termination is when devices disappear intermittently in the Chooser. This is known as ghosting or dropout.

Q: *Well, it doesn't matter anyway, because my brand of PhoneNet-style connectors is supposedly self-terminating. It has a little LED light that glows.*

A: Oh, yeah, those. They come on the PhoneNet-style connectors from companies such as Focus. They glow when they encounter a spike in network electrical signals. However, these little bulbs are slower to react than true terminator plugs. Worse, the termination power they provide fluctuates, so they may still cause problems on large networks or when traffic is heavy.

up on the recipient's screen. If that person's away from the desk or busy, the e-mail waits patiently until he or she returns, even if the Mac isn't turned on!

E-mail beats voice mail for several reasons. You can ignore it. It forces people to get to the point. It can be printed and saved forever. It can be sent to a group of people simultaneously. It can be forwarded to somebody else. It can include a Macintosh document or a voice recording. You can request a *receipt* e-mail back, so you can make sure that your e-mail reached its destination. You can check to see whether or not someone has read your e-mail.

The best known e-mail programs are Lotus cc:Mail, Quarterdeck (formerly Microsoft) Mail, CE Software's Quick Mail, and FirstClass (from SoftArc). They're remarkably similar — and indispensable in any office. And more and more offices are now using Apple Internet Mail Server (sometimes called MailShare) as a free solution, running Claris Emailer or Eudora as *clients* (the receivers of information sent by a server).

Net modems

For people using Macs in offices, a modem and a dedicated phone line for it aren't exactly standard employee perks. Even with just ten people in the office, installing modem phone lines for everybody would cost over $500, plus $1,200 for no-frills 28,8000-bps modems. Then, just maintaining standard service on the phone lines would incur monthly charges of at least another $400 or $500 — plus long-distance charges.

Enter the *net modem.* Hook one of these to its own phone line, and you and your coworkers can dial up your favorite bulletin boards, online services, or connect to an Internet service provider with ease, without installing phone lines and modems on every computer.

A net modem requires only a single phone line, yet it can be shared over a LocalTalk or Ethernet network, exactly like a laser printer. The network administrator can even grant access privileges to each user on the network, allowing password-protected access to the modem through the Chooser. A net modem can be shared not only as a dial-out modem among everyone *in* the office, but can also be used by people *outside* the office to dial into the office network (using Apple Remote Access, which we'll describe later in the chapter).

Net modems are more expensive than standard modems, but the fact that they can be shared over a network makes them cost-effective for larger offices requiring modem access. A Global Village OneWorld network modem, for example, costs just under $1,000, connects to a single phone line, and oper-

ates at 28,800 bps, providing modem services for an entire office connected via Ethernet.

The only real drawback of a net modem is that only one person on the network can use it at a time.

Fax servers

Fax servers are based on the same concept as net modems, allowing an entire network of users to share a single phone line and modem. The fax server lets a group of network users send and receive faxes, right from their own computers, through a single fax modem attached to one Mac on the network — the *fax server* Mac. The fax server receives job requests from the network, lines them up in a queue, and then attends to the task of imaging fax pages, dialing the modem, and transmitting the data, one fax at a time.

In most cases, sending a fax on a network equipped with a fax server is as simple as printing the document to a LaserWriter or ImageWriter. You simply target the fax server as your printing device instead of your regular printer. (Most fax software lets you switch from your standard printer driver to the fax server driver with a single keystroke, bypassing the Chooser.) You add the name and phone number of the destination fax machine on your screen, click Send, and you're finished — the fax server does the rest. Because the fax server handles the job of imaging the fax pages and connecting to a remote fax machine, your Mac is freed for you to continue working right away.

As with net modems, the drawback with a fax server is that you're still stuck with a single phone line that must be shared by multiple users; the systems can send no more than one fax at a time. However, with a fax server, jobs are automatically handled in the order they are received, so you don't have to wait to send a fax. All you have to do is zap the job to the fax server and forget about it. Eventually, the fax server will send a message back to your Mac, telling you whether or not the fax was successfully sent.

Fax server packages are expensive, but they're cheaper and much more stable than they used to be. A package that includes a standard fax modem along with software for up to 50 users costs about $1,500.

Program linking

If you're using System 7's built-in networking features (described in the next section), you may encounter a strange, mostly undocumented item in the Sharing Setup control panel called *program linking.*

Program linking is a system of letting one Mac program control another Mac program, even if they're not on the same Mac (across a network, for

example). For example, using a shareware utility called Remote Shutdown, you can restart or shut down any Mac on the network without leaving the comfort of your own Mac.

When System 7 was first released, Apple evangelized the power of program linking to developers. One day, companies were told, there'd be no such thing as a 7MB word processor such as Microsoft Word — each company would sell tiny, efficient modules, each dedicated to one small task, all working together via program linking. (This vision is part of Apple's so-called OpenDoc technology, a system of interlinking different applications.)

To date, though, not very many programs use program linking for more than simple remote-control functions, such as the Remote Shutdown example we mentioned.

FILE SHARING 1: SETTING UP THE CONTROL PANELS

You now know that networked Macs can do more than just print to a common printer; they can also use other shared equipment.

One of the most powerful features of all, however, is *file sharing*, where you can make certain files on your Mac available to other people. What's especially great about file sharing is that, for once in your Macintosh life, you don't have to spend any extra money or add any extra gear to get it. This feature is built right into every System 7 Mac.

Apple calls this feature *Personal File Sharing*. It lets up to 30 people share files on each others' Macs; no dedicated Mac is required, as it was under previous file-sharing schemes. (Apple still sells a separate product called AppleShare, however. It turns a dedicated Mac into a centralized file server that can share files among thousands of Mac, Apple II, and DOS computers.)

First stop: The AppleTalk (or Network) control panel

The first step in setting up file sharing is to specify what kind of network you're on (Ethernet, LocalTalk, and so on). Which control panel you have for this purpose depends on whether or not you've installed *Open Transport*, described at the end of this chapter.

If you've installed Open Transport, you have the AppleTalk control panel; if not, you have the Network control panel. However, you don't have to pay this control-panel visit if you're using regular LocalTalk — only if you plan to use Ethernet, a high-speed networking card, or Remote Access (discussed later in

this chapter). If you're going to use PhoneNet connectors and LocalTalk, skip this step completely. Jump to "Second stop: Sharing Setup control panel."

The AppleTalk/Network control panel: What it does

The Macintosh can use several different network types: LocalTalk, Ethernet, and so on. But only one can be active at a time. To switch from one to the other, you go to the AppleTalk control panel and choose the appropriate network type from the pop-up menu, or the Network control panel and click the appropriate icon. (See Figure 32-7.)

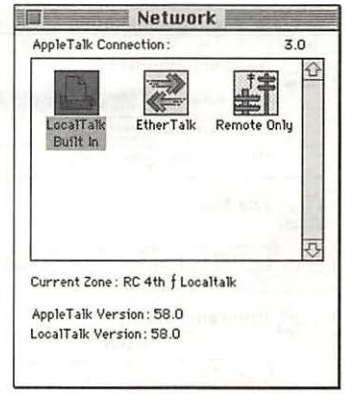


Figure 32-7
The Network control panel indicates that this computer is operating through the built-in LocalTalk connection. It has EtherTalk and Remote Only as alternate choices. (For a complete explanation of Remote Only, see the Apple Remote Access section.) You can't use this control panel unless AppleTalk is turned on in the Chooser.

The drivers

The choices in the AppleTalk or Network control panel represent *drivers*. A driver is the software used to translate the communications between the Mac and an external device. Of the many available network drivers, the following are the most common:

- **LocalTalk.** This driver is installed in every Macintosh. It lets you use the Mac's printer port as your network connection.
- **EtherTalk.** This driver is useful only if Ethernet circuitry is installed in your Macintosh. Some non-Apple boards require you to use a specialized driver, but most current manufacturers' boards work with the Apple EtherTalk driver. (If you don't have an Ethernet-ready Mac, this option doesn't appear in the AppleTalk control panel.)

  Within the world of EtherTalk, there are two subtypes: Phase I and Phase II. You should ask a network administrator or Mac guru which driver you need to use. Phase I and Phase II EtherTalk driver icons are distinctive (see Figure 32-8).



Figure 32-8
The Phase II EtherTalk icon (left), the Phase II TokenTalk icon (middle), and the Remote Only icon (right).

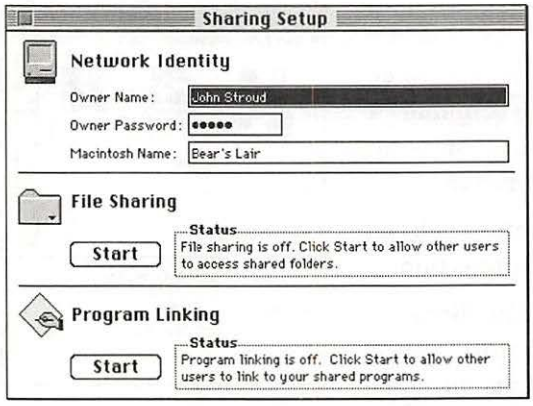
- **TokenTalk.** Use this driver if your Mac has a Token Ring card installed.
- **Remote Only.** This driver gets installed when you install the program called Apple Remote Access, which you buy from Apple. For details, see the Apple Remote Access section of this chapter.

  Actually, we should have called the Remote Only icon a *non*-driver. When you click it, the software actually *disconnects* the LocalTalk connection at the computer's printer port, freeing that port for non-networking functions such as using a modem (yes, on the *printer* port).

Second stop: Sharing Setup control panel

Sharing Setup is the next stop on the road to file sharing. It's a required stop, too, not just to make file sharing happen, but also to establish a little security. Without it, everyone on your network would be able to open and read everything on your hard drive.

Figure 32-9
The Sharing Setup control panel offers you the chance to enter your network identity, set a password for yourself, and turn file sharing and program linking on or off. This illustration shows both features in their *off* state.



Enter your name here. Also type in the name of your Macintosh as you want it to appear in the Chooser windows of *other* Macs trying to gain access to your drives. (See Figure 32-9.)

You can leave the password field blank, but the control panel will scold you. If you do allow file sharing to start without having entered a password, anyone on your network who knows your name (as you entered it in the Owner Name blank) has access to all of your files. (Of course, if it's just you in your little office, by all means leave the password blank — you'll save a lot of time over the coming weeks.)

Finally, click Start. The Mac begins making itself ready for file-server mode. This process can take a few minutes, depending on the number and size of the disks you're sharing. (This feature uses up memory, too. The more files and disks you share, the more memory it uses. It's a good idea for PowerBook users to turn off file sharing, therefore, when on the road.)

When file sharing has started completely, the button in the File Sharing box changes to say "Stop." As you may have already surmised, clicking Stop turns off file sharing, thereby making your Macintosh invisible to other network users.

Ignore the Program Linking button, as we mentioned earlier.

Third stop: Users & Groups control panel

If you're the only person who will be using your little network — for example, connecting a PowerBook to another Mac — skip this step.

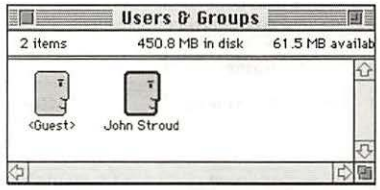
Having switched on file sharing, you present a virtual doorway to everybody else on the network — but you have yet to provide them a key to that door. That's where the Users & Groups control panel comes in.

This control panel provides a switch to grant or deny access to your computer's shared functions for each of the people on your network. Those functions are file sharing, program linking, and (if you installed it) remote access.

The Users & Groups control panel actually doesn't look much like a control panel when you open it. It looks like a window, as shown in Figure 32-10 (but you see your own name on the right-hand icon).

Each icon represents somebody who could be on the network. We'll show you how to add names and change their security status a little later.

Figure 32-10
The Users & Groups members of a freshly installed System. Note the bold outline of the user icon on the right; it identifies that user as this Mac's owner. You can't change the owner's name in the Users & Groups control panel; you can only do that in the Sharing Setup control panel. You can change other users' names, however, exactly as you'd change any icon's name.



A word about security

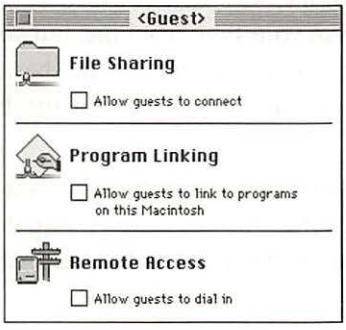
On a two — or three-Macintosh network, you probably don't have to think much about security. We've been to more than a few offices where everyone shares everything; for such a small network, that's fine.

If your network grows, however, or if you set up your Mac to be accessible by telephone (using Apple Remote Access, for example), network security quickly becomes a concern. Here, for the record, is how you can protect your data.

What the Users & Groups options mean

To specify how much access a certain person has to your files, double-click one of the icons in the Users & Groups window. The icon opens into the window shown in Figure 32-11. (We'll discuss these icons, and how you create them, later in this chapter.)

Figure 32-11
The access on/off switches for one of the Users & Groups icons.



ANSWER MAN

Why anyone can be you

Q: *I think I've caught a mistake in your book. You just said that if I don't give myself a password, then anyone on the network can get at all of my disks. But I happen to know that no disk gets shared until I click on it and choose Sharing from the File menu.*

A: You *do* have to turn on sharing for each folder or disk independently — to let *other* people in.

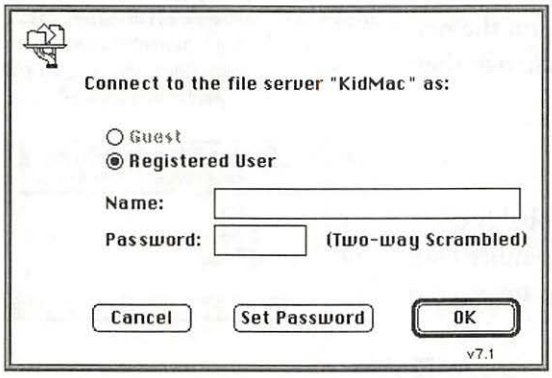
But when file sharing is turned on, the system software automatically makes *all* mounted drives available to the owner. That usually means *you.*

Isn't that a nice gesture? If *you* try to access your own Mac from elsewhere on the network, you can open all the folders and disks on your own Mac, even if you *didn't* turn on sharing for any of them!

Therefore, as we said, leaving your password blank essentially lets anyone else on the network impersonate you just by typing your name. They are free to root through, read, change, and *trash* anything on your hard drive (or drives).

If your sole purpose in networking is to connect your own PowerBook to your own Mac, this feature can actually be a time-saver. But if you really don't know everyone on your network, it's not such a fun thought.

Figure 32-12
If guest access isn't permitted on a file-sharing Macintosh, the Guest option is grayed out. The Mac's file-server functions are available only to users whose names are registered in the Users & Groups control panel.



- **Allow guests to connect.** This check box determines whether or not someone can see the files in your shared disks or folders at all.

  If you turn off this option for the Guest icon, then when somebody on the network tries to log on to your Mac, the Guest icon is dimmed in the Chooser (see Figure 32-12).

- **Program Linking.** This option controls other people's access to the linkable programs on your hard drives. (We mentioned program linking earlier in this chapter.)

- **Remote Access.** You only see this option if you installed Apple's dial-in network software, Apple Remote Access. We'll discuss this software later in the chapter.

The Guest icon

The *Guest* icon is the biggest security hole in the system. If you set up the Guest icon to permit access to your Mac, then *anyone on the network* can get access to your shared disks without having to know *any* legitimate user's name or password.

Incredibly, Apple set the Guest icon's *default* parameters in System 7.0 and 7.0.1 to permit Guest access to every Mac! Network administrators shrieked. Apple listened. Starting in System 7.1, the Guest's default setting is Off.

The Owner icon

The Owner — that's you — has a unique icon, distinguished by its bold outline. When you double-click it, the resulting window has some extra settings not available to other user types. Here's an overview of the on/off switches that govern your own access to your Mac from elsewhere on the network.

- **Allow user to connect.** We don't know why you'd want to keep yourself from getting to the contents of your own machine, but you can turn this feature on and off here. This option affects only file sharing (the capability to mount your hard disk icons onto the Desktop of another Macintosh on the network).

- **Allow user to change password.** Of course, you can always change your password using the Sharing Setup control panel. Using this option, however, you can change your password *remotely,* from the Chooser of another Mac on the network.

- **Allow user to see entire disk.** As we mentioned a moment ago, this option is only available to you, the Mac's Owner.

  For anybody else on the network, even when file sharing is turned on, your Mac's disks are completely inaccessible and invisible *unless* you select each disk and turn on Sharing (from the File menu).

  Under normal circumstances, however, *you* are allowed to get at your disks from any Mac on the network even if you *don't* turn on sharing for any of them. As you see by the wording here — "Allow user to see entire disk" — you're also allowed to see *everything* on your disk, even if you've only specifically shared a folder or two on it.

  If you turn *off* this check box, however, you are treated just like any other user out there on the network. You are unable to see any of your disks (from another Mac on the network) unless you first turn on sharing for each one.

- **Program Linking** and **Remote Access.** As we mentioned, Program Linking lets programs communicate with each other. We'll get to Remote Access later in this chapter.

The User icons

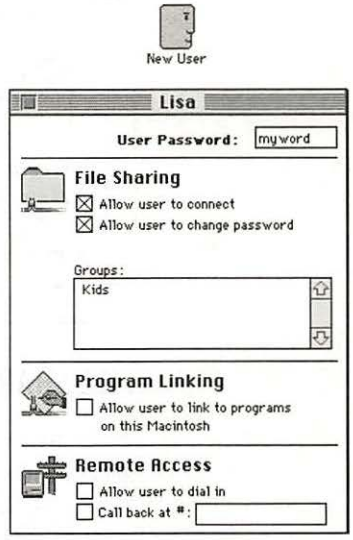
The Mac creates a Guest and an Owner icon automatically after you turn on file sharing and restart the Mac. However, only you create *User* icons. You're supposed to create one for each person who may want to connect to your Mac.

You'll never guess how you make a new User icon — it's one of the oddest mechanisms on the Mac. In the Finder's File menu, the command that usually says New Folder suddenly *changes* to say New User! (Apple doesn't usually pull stunts like changing the commands in a standard menu.)

When you double-click a User icon, it opens into the same kind of configuration window as it does for Guest and Owner icons (see Figure 32-13). There's no "Allow user to see entire disk" option, but there is a new blank here: The password.

You don't have to enter a password, but it's a good security precaution. Unlike almost everything else on the Mac, the password is case sensitive. The passwords *Fish*, *FISH*, and *fish* are considered three different passwords.

Figure 32-13
An individual user's Users & Groups window adds the ability to enter a password. This illustration shows a password just after it has been typed in. After you close and reopen the window, the password changes to a row of dots (bullets) so that no one can snoop to find out coworkers' passwords.



The Group icons

Whenever more than one user needs access to a particular folder on your system, you can save time by creating a *group.*

The group contains the names of all the users who belong to it — one for each project team or department, for example. Each user can be a member of more than one group. The great advantage of a group is that, in a single step, you can adjust the access levels for everybody who's part of it.

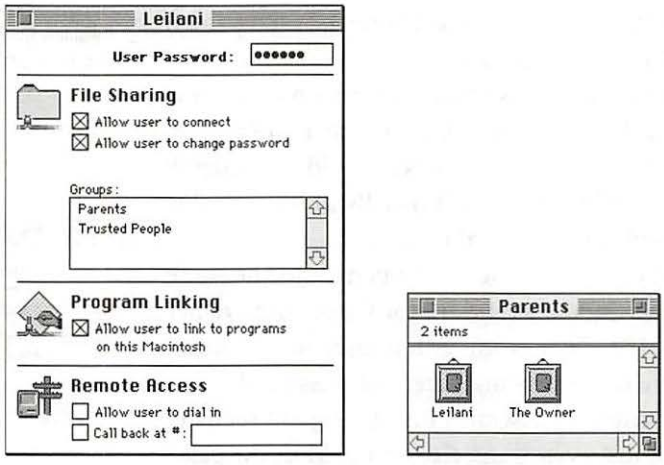
After you create icons for all the individual users, you create a group like this:

1. Open the Users & Groups control panel.
2. Choose New Group from the File menu. A new double-headed icon appears, called New Group. Simply start typing to rename the group.
3. To make a user part of this new group, drag the user's icon onto the group icon. It's almost like dropping a file into a folder, except that the user's icon both stays in the window *and* goes into the group.

To see what groups a user belongs to, double-click the User icon.

To see which users belong to a group, double-click the group's icon. (See Figure 32-14.) To remove a user from a group, drag the user's icon out of the Group window and into the Trash.

Figure 32-14
The user window on the left shows the groups to which Leilani belongs, Parents and Trusted People. Opening the Parents group icon shows Leilani as a member, as you would suspect.



FILE SHARING 2: SHARING SPECIFIC FOLDERS

Even after all of this setting up, no one but you, the Macintosh Owner, can access the files on your Mac! You have yet to designate which files and disks you want to make available to others. (You can't share individual *files* with others on the network, only folders and disks.)

The Sharing command

For each disk or folder you want to share, you must perform the following steps:

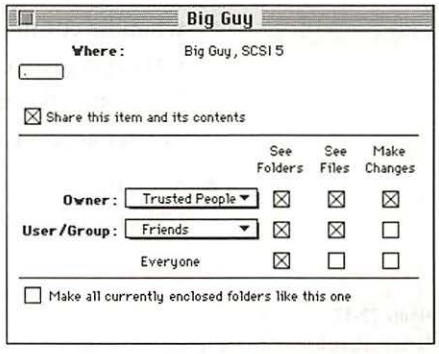
1. Highlight the folder or disk icon you want to share with the network.
2. From the File menu, choose Sharing.
3. In the dialog box that appears, specify *how much* access you want to provide to this file or folder. (See the next section.) Close the window. Click Save.

The Sharing window

Just deciding to share a folder isn't the end of your decision making. You can also specify what *degree* of access you want to grant. For example, you can say that it's OK for people to *look* at the contents of a folder, but not to *change* anything. Or, they can look and change things, but they can't throw anything away. (We'll be honest: This stuff may be tough reading. It's easier to grasp when you actually do it.)

The Sharing window appears when you highlight a disk or folder, and then choose Sharing from the File menu. (See Figure 32-15.)

Figure 32-15
Big Guy, a hard drive, is shown as the shared volume in this Sharing window.



The *privileges* — See Folders, See Files, and Make Changes — are the check boxes in the center section of the window. The *clients* are listed in the pop-up menus. They have the names Owner, User/Group, and Everyone.

Already things get confusing. Ready for this? The *Owner* in this window has absolutely no relationship with the Owner of the *Mac!*

Here's the explanation. Even if it's your shared Mac, *other* people can create new folders on *your* hard drive. The person who creates a new folder on your Mac is, of course, the Owner of that folder. Other than you, he or she is the only one who can change the access privileges for that folder. He or she can also transfer ownership to somebody else, using this same Sharing window.

The *Owner* in this Sharing window, therefore, refers to the Owner of the individual folder or disk, not to the Owner of the Mac. Nonetheless, if the folder is on *your* Mac, then you still have full access to it, even if someone else is the designated Owner of it. Odd though it may seem, you can actually let somebody else on the network be the Owner of a *disk* attached to your Mac, too.

(And why would you want anyone else to have their own folders on your hard drive? We can think of a couple of examples. If you're the editor of a newspaper, you may want each of the newspaper's departments — Editorial, Advertising, and so on — to be able to maintain its own folders on your central Mac.)

In any case, you can tell at a glance whether or not you're the Owner of a certain folder. If it's yours, the folder tab has a black stripe (see Figure 32-16). It doesn't matter whether this folder of yours is on *your* Mac or not. As we said, you can perfectly well create a folder on somebody else's Mac. When you view the contents of that person's Mac, your one folder appears with the familiar black tab.

Figure 32-16
The folder on the left is a folder owned by you. Somebody else owns the folder on the right — or perhaps it's not a shared folder at all.



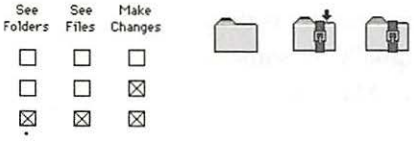
Different degrees of access

After you open the Sharing window for a certain folder or disk, you can control how much access each network member has. Three options exist for this folder or disk. In this explanation, let's suppose that you choose a network member named Dad from the User/Group pop-up menu. You therefore specify how much access Dad has to a selected disk when he accesses your Mac from his.

- **See Folders.** If this option is checked, Dad is able to see your folder icons when he connects to your Mac. Otherwise, this disk appears empty. This setting is primarily useful to help people navigate to folders *within* folders. You could, for example, allow only See Folder access to a folder, but permit greater access to folders *within* that folder.
- **See Files.** If this box is checked, Dad can see the file icons within this disk. Otherwise, it appears empty.
- **Make Changes.** If this option is selected, Dad can see, duplicate, delete, and save changes to the files inside this disk.

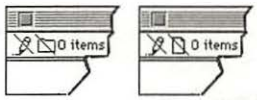
You can combine these three security options in any combination for *each* user or group listed in the pop-up menus (which come from your work in the Users & Groups control panel). The most common conditions of shared folders are *locked* (no one can get anything in or out); the *drop-box* effect (people can put files *in* but can't open the disk or folder to see what's in it); *see files and folders* (where documents and folders show up but can't be changed); and *full access*. Figure 32-17 shows those first three examples.

Figure 32-17
At right: Three folders as they appear to someone else logging into your Mac. The black tab indicates the logged-in user is the owner of that folder. The middle icon is a *drop box* — the user may place files inside the folder but can't open it. The third folder is completely locked: The user can't put files in and also can't open the folder to see what's in it. At left: The Sharing window options that created those three folder-access levels.



Others on the network know, with a glance at a folder's icon, how you've set it up. In fact, even the opened *windows* for shared folders and disks have telltale visual cues to indicate their security status. If you turn off See Files and See Folders, the window for the affected folder displays other icons, as shown in Figure 32-18. Again, these visual clues only appear on the screens of *other* Macs on the network — not on the Mac containing the folder or disk itself.

Figure 32-18
On the left, the windows belonging to a disk for which Make Changes and See Folders are both turned off. On the right, a disk window, for which Make Changes and See Files are turned off.



If you're enjoying the appearance of these little icons, you may wonder what happens if you deselect *all three* check boxes in the Sharing window for a folder. Do networked users see all three tiny symbols in the folder's window?

Trick question. If all three check boxes are deselected, you create a completely locked folder. The user can't even *open* the folder icon, and, therefore, no *window* for it can ever appear!

Open for business

If you've followed this discussion, your Macintosh is now a full-fledged file server — even if there aren't actually any other Macs connected to it. (We'll cover how you *connect* to this Mac in a moment.)

A few additional thoughts about sharing the folders and disks of your Mac: First of all, you can use the Sharing command to set up different degrees of access for a maximum of ten folders and disks. Of course, that's really not much of a limitation, because any one folder or disk can contain hundreds of *other* folders that all switch on simultaneously.

SHARING COMMAND SECRETS

Who's Everyone?

When you set up your sharing levels for a certain folder or disk, you can set privileges for Everyone. Keep in mind that Everyone refers to guests *and* all other users you set up in your Users & Groups control panel. People often think Everyone means only guests and may inadvertently grant access.

Give the Everyone category the *least* access of any.

A dangerous option



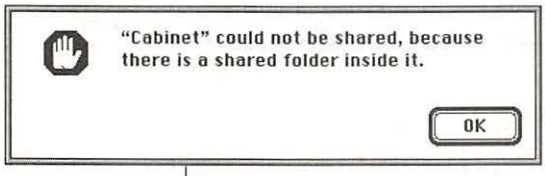
The check box in the Sharing window called "Make all currently enclosed folders like this one" can be a tad dangerous if you're not thinking. It immediately nukes the access-level settings for any folders *inside* the folder for which you select this box.

More than one Mac user has spent hours setting up explicit access privileges for some folders — and then wiped out all that work with one click! Use this option only if you mean to. It has no Undo button!

How to find out which inner folder is shared

If you try to turn on File sharing for a disk or a folder, you may sometimes get the message shown in Figure 32-19.

Figure 32-19
The frustrating message. Somewhere, some folder is being shared. But which one?



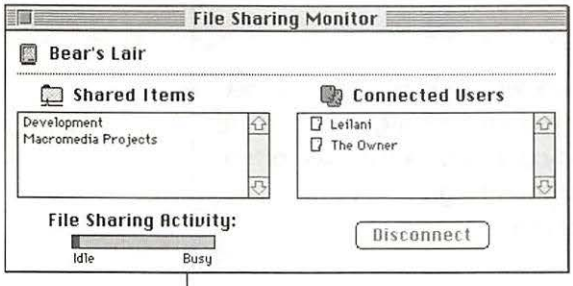
This message indicates that, at some point, you turned on sharing for some folder somewhere within your disk. This can be a royal pain if you don't remember *which* folder — perhaps buried deeply somewhere in your hard drive — is being shared.

Fortunately, there's a quick way to hunt down the offending item. Open the File Sharing Monitor control panel. The list at left shows all your shared folders. Note the name, close the window, and find that folder. Turn off sharing for it. At last you can turn on sharing for the enclosing disk or folder.

Monitoring and ejecting network denizens

After you open your Mac for business, others on the network can begin to tromp through your files (to the extent you've let them, of course). It may reassure you to know that System 7 gives you an easy way to keep track of who's doing what on your disk.

Figure 32-20
The File Sharing Monitor control panel lets you keep track of what people are doing on your Mac.



The key to these features is the File Sharing Monitor control panel (see Figure 32-20).

In the list at left, you see each folder or disk you are sharing. (Don't forget that all the items *inside* each folder or disk are also shared.) On the right, you see a list of all the network Mac users who are connected to your Mac.

If you decide to boot somebody out of your system, click that person's name (or Shift-click to select several) in the list on the right, and click Disconnect. You're asked how much warning you want to give these people that they are to be disconnected — type 0 if you want them off *now* — and click OK.

This unceremonious network dump is only a temporary solution, however. After you disconnect someone, he or she can merrily log right back on to your Mac. (If you really want to keep somebody out, change the appropriate Users & Groups icon settings.)

One more way to monitor activity

Even without opening the File Sharing Monitor control panel, the Mac gives you a handy way to see what's going on with a folder on your disk (see Figure 32-21).



Figure 32-21
This is what individually shared folders look like when they appear on *your* Mac. On the right: A folder that's available for other people to work with, but no one is signed onto it. On the left: A shared folder that's currently being accessed by somebody else on the network. (There aren't any comparable clues to indicate when a *disk* is being accessed.)

FILE SHARING 3: LOGGING ON TO OTHER MACS

So far, we've exclusively discussed how to set up *your* Mac for *other* people to access. But you can only play host for so long; sooner or later, you'll want to be the visitor and work with files on other Macs on the network while seated at your own.

The table of contents for your network is, of all things, the Chooser. Most people think of the Chooser as a mechanism for selecting a *printer.* In fact, it's called the Chooser (and not, say, Printer Choice) because you also use it to select *other* kinds of external devices attached to the Mac: Network modems, fax/modems, and electronic mail servers, for example — and, in this case, a file server.

Here are the steps for logging on to another Mac on the network:

1. Open the Chooser.
2. Click the AppleShare icon. The names of other network Macs show up in the right side of the window, provided their owners are sharing them. (If no Mac names show up here, see the Troubleshooting section at the end of the chapter.)
3. Double-click the name of the Mac whose contents you want to see. The window shown in Figure 32-22 appears.

   If the owner of the Mac permits access for guests, then the Guest button is available. Otherwise, Guest is dimmed, and you must type in your official name and password — as it's been *previously established* on the other Mac. If in doubt, chat with its owner, open up its Users & Groups control panel, and see that you're represented there by an icon whose name and password are what you want.

Figure 32-22
Connecting to the file server KidMac involves entering a user name and password or selecting Guest status, should that server allow Guest access. The typed password shows only bullets, for added security.

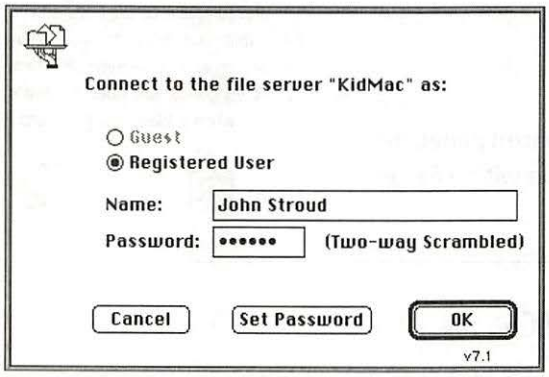


Figure 32-23
Click OK to complete the login process and mount the disk Macintosh HD (that's attached to the Mac called KidMac) onto the Desktop of the computer you are using.

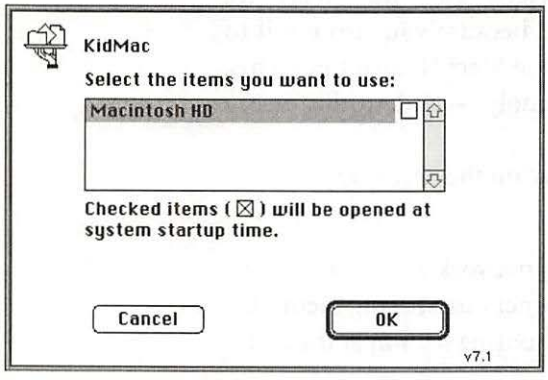


Figure 32-24
The AppleShare file server icon.



The password is case sensitive; enter it here exactly as it originally was set up. If (in the Users & Groups control panel on the other Mac) your User icon was set up so that you're allowed to change your password, you also at this point can click the Set Password button to change your password.

4. Click OK. Yet another window appears (Figure 32-23), showing all the shared folders or disks on the Mac you selected.
5. Click the name of the folder or disk that you want to open. Shift-click to select more than one, or type the first letters of its name to scroll directly to it.

   If you will log on to this folder or disk every day, you can save yourself all the trouble of these first five steps if you click the check box to the right of a volume's name. The Mac automatically brings that folder or disk's icon onto your Mac's Desktop the next time you restart your Mac (if the other Mac is turned on).
6. Click OK.

At last, you've broken through. The icons for the folders or disks you've selected now appear on *your* Desktop exactly as though they were disks attached to the Mac. A network-accessed volume always looks like the one in Figure 32-24, regardless of whether it's a disk or a folder, and no matter what its *actual* icon looks like (on its home-base Mac).

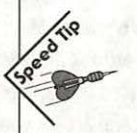
If something didn't work right, march over to the owner of the Mac you're trying to work with. Check the Sharing menu item for the folder or disk in question. Consult the Users & Groups control panel. Make sure you have the correct privileges for the folder or disk you're trying to work with.

FILE-SHARING SECRETS

Log-on shortcuts

When you visit the Chooser to log on to another Mac, you can use a few clever shortcuts to reduce the whole affair to a few keystrokes.

For example, instead of clicking the AppleShare icon in the Chooser, you can just type the first letter of its name to select the icon automatically. Now press Tab to activate the File Server window and type the first letter (or letters) of the name of the file server you want. Press Return to open the next dialog box, in which you type your password or log on as a Guest.



If you want to log on as a Guest, just press ⌘-G. If the Guest radio button is selected and you want to log on as a Registered user, press ⌘-R to activate the Registered User option. Then type your password and press Return.

Password Secrets

Mac file-sharing passwords can be a maximum of eight characters long. Capitalization counts.

If security matters to you, don't use a password that anyone can guess (like your name or spouse's name). A good trick is to substitute the number 1 for the letter L (or I) and the number 0 for letter O in an ordinary word — B1NG0 instead of BINGO, for example. This trick foils hackers who have programs that try every word in the dictionary until they break your password.

Apple unleashes killer rabbits!

Today, System 7's file-sharing feature is called Personal File Share. But as it was in the works at Apple, its code name was Killer Rabbit. (See Figure 32-25, and watch *Monty Python and the Holy Grail* to appreciate the joke.)

Figure 32-25
The last remnant of Personal File Share's original code name.



By the time System 7 was released, all references to the code name were removed from the software. All but one, that is. The little fellow in Figure 32-25 was left in. It's the icon of a file called AppleShare PDS, which is usually invisible. (PDS stands for Parallel Directory Structure.) This AppleShare PDS file is created when file sharing is turned on.

You can see the Killer Rabbit yourself by using Drop • Info, included with this book. Launch Drop • Info, then use its Get Info command to open the AppleShare PDS file in the outer level (root directory) of your hard drive. Make the file visible by deselecting the "Invisible" check box and clicking change. Now return to the Finder and have a look! (When you're finished, make the file invisible again.)



MACINTOSH SECRET
MORE STREAMLINED YET

Obviously, we're not the only ones who think that the usual File Sharing mechanism is way too complex for just transferring files between Macs. In its latest PowerBook models, Apple has reduced this procedure to a graceful art — you just aim the PowerBooks' infrared (IR) lights at each other, run the included IR File Exchange, and fire away; your files are neatly placed into a folder on the other PowerBook in folders called, for example, "From Mike Spindler." No wires, no control panels. Nice.

And if you're trying to zap your files from a PowerBook to a *desktop* Mac, all you do is buy a Farallon AirDock for $70, which you plug into your desktop Mac, thus equipping it with its own infrared transceiver. Unfortunately, the AirDock connects to your modem port — and the last thing most people need is another appliance fighting for the modem jack. Until Apple starts putting an infrared transceiver on *desktop* Macs, too, wireless network nirvana only to PowerBook owners.

EASIER NETWORKING FOR ONE

The discussion in the preceding pages is geared toward using a network in an office environment with at least a handful of Macs. We emphasized the levels of security you can set up for each disk or folder that you want to share.

But if you're the only person who uses your Mac, then all that rigamarole is overkill. If you have two Macs — one PowerBook and one desktop Mac — then you're probably more interested in some fast-and-easy system of transferring files between them.

For your benefit, here's a greatly shortened version of the usual file-sharing saga. This process approximates the same steps a regular network user would follow. But we assume that you're interested in *maximum* convenience and *minimum* security, so the steps are vastly streamlined.

For clarity, we'll pretend that you're seated at your desktop Mac and want to bring the *PowerBook's* icon onto the screen. You could just as easily reverse the procedure, of course, and access the desktop Mac from the PowerBook.

Another note: You only have to go through all of the following steps *one time!* Thereafter, you'll be able to connect the Macs with a quick double-click.

Setting up the PowerBook

To reduce verbiage and increase clarity, let's call the Mac on your desk a Performa and call the PowerBook the PowerBook.

1. Open the PowerBook's Sharing Setup control panel. In the dialog box, enter your name and a name for the Macintosh. (You don't need a password for this security-free scenario.)
2. Click the upper Start button. (If you don't see two Start buttons, then AppleTalk probably isn't on. Open the Chooser, turn on AppleTalk, and restart the Mac. Then start over from Step 1.) Close Sharing Setup.

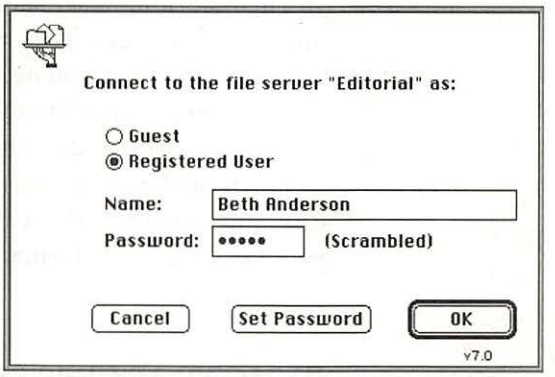
Setting up the desktop Mac

Your PowerBook is ready for action. Now connect it to your desktop Mac, as outlined at the beginning of this chapter. After the Macs are *physically* connected, here's how you bring the PowerBook's icon onto the Performa's screen:

1. Open the Chooser. In the Chooser, click AppleShare. On the right, you see the name of your PowerBook. Double-click its name. A window like the one in Figure 32-26 appears.
2. Click Registered User. Type your name exactly as you set it up in Step 2. Leave the password blank. Click OK.

   Another box appears, listing your PowerBook's hard drive. Click OK.
3. The PowerBook's icon should now appear at the right side of your Performa screen. You can open the PowerBook's window and use its contents as usual.
4. To save time, select the PowerBook drive icon on your Performa screen. Choose Make Alias from the File menu.

Figure 32-26
Logging on to your PowerBook.



The *next* time you want to hook up, you won't have to bother with *any* of the steps we just outlined. Instead, just double-click the alias you just made. The PowerBook's actual icon pops onto your screen.

File synchronization

Now that you have two Macs, you have a new problem: How to keep track of duplicate sets of files. If you're writing a book, and you work on Chapter 3 on your PowerBook during a trip, when you return home you have to remember that the Chapter 3 on your PowerBook is *more recent* than the one on your Performa. Multiply that situation by the hundreds of files you may have and you can get an idea of the problem.

We can think of several schemes for keeping track of which files are most recent, but they all involve extreme discipline (keeping the files you modify in a single PowerBook folder, for example). It may be simpler to use a *file-sync* program, whose job it is to bring the files on *both* computers up to date with each other. Apple's own file-sync software, File Assistant, comes with System 7.5, and should do the trick.

WHEN NO ONE'S HOME: REMOTE ACCESS

Apple Remote Access (ARA) is a program from Apple that lets a modem-equipped Macintosh connect to an AppleTalk network *over the phone.* Using System 7's file-sharing feature, you can copy or read files on the home-base Macs. You can even *print* things — from your PowerBook in Tulsa, you can print on the LaserWriters in Toledo.

The Mac doing the dialing has every bit as much access to the network as any Mac that's actually in the office. You can check e-mail or retrieve data from a database. All you need is a fast modem on each end of the line.

ARA comes free with most PowerBooks — well, half of it does; you generally get the part that does the dialing, called ARA *Client.* You're still supposed to purchase the ARA *server* software, the part that can receive calls. In any case, you install the ARA Client on your PowerBook and the host portion on your host Mac or Performa.

REMOTE ACCESS SECRETS

Disconnect the local network

When you're using ARA on a networked Mac to dial in to a distant network, you wind up connected to two networks at once — the one where you are, and the one you're dialing into. From your view in the Chooser, your Mac is connected to both networks at once.

You can, if you want, disconnect from the local network and see only the remote network. You may need to do this, for example, if you run into a *network number conflict* (when a device on the remote network has the same number as one on the local network). More commonly, you may want to disconnect from the local network so that you can use your printer port for a *printer* (like a StyleWriter) instead of being hooked up to the local network.

To disconnect from the local network, open the Network control panel. Click the Remote Only icon. (Or, in Open Transport, use the AppleTalk control panel instead.)

Switch on your Mac automatically

Unless you relish high electric bills, you probably don't want to leave your home Mac on, awaiting calls from your PowerBook, during your entire six-week trip to the Alaskan tundra. Fortunately, it's easy to turn on the home Mac from wherever you are and shut it off when you're finished remote accessing — if you're willing to spend $50.

The device is called a PowerKey Remote (from Sophisticated Circuits, 800-827-4669), a one-inch, inconspicuous gadget that goes between your Mac and the modem. When a call comes in, it turns on your Mac, and you're in business. It comes with a software control panel that automatically shuts down the Mac a few minutes after you hang up.

If you have a Mac model that can't be turned on with the keyboard power button, you also need the regular $119 PowerKey (a surge-protected multi-outlet box that lets you turn on the Mac from the keyboard). Actually, even owners of Macs that can be turned on with the keyboard should consider the PowerKey; it lets you power up not just the Mac but any attached hard drives, SyQuest drives, CD-ROMs, and other peripherals with the same phone call.

EXPANDING THE NET

In the really big companies, people want to connect more than 10 or 20 Macs; they want to join several LANs together — or to break one increasingly unwieldy network into several smaller ones. This is where *bridges* and *routers* come in. These gadgets connect two or more LANs together. The resulting jumbo-network is sometimes called an *internet*. (*An* internet isn't the same as *the* Internet, as described in Chapter 28.)

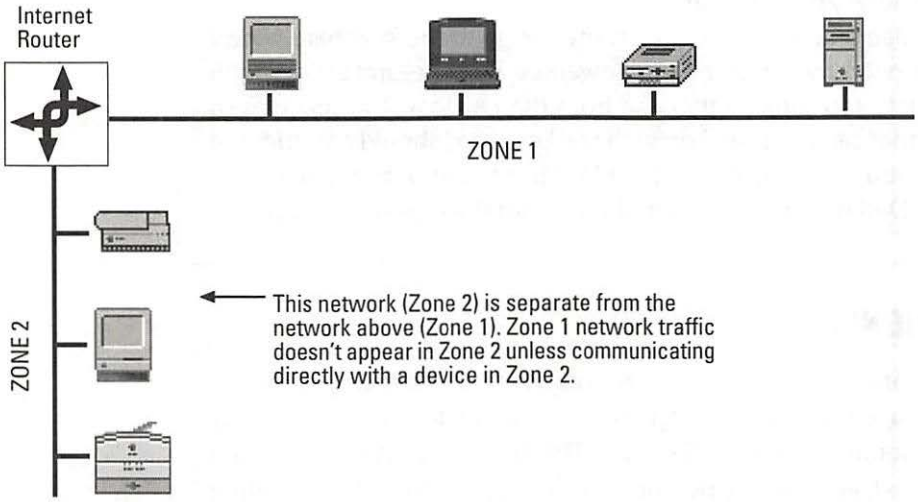
After they're connected by these devices, the networks are said to be in *zones*. Network traffic generated by somebody on one floor isn't passed through the router to any other floor unless it's *supposed* to (for example, if you send e-mail to somebody on a different floor). And even then, only the floor with the destination device experiences network traffic; the other floors' routers and bridges ignore the signal.

Routers are smart little devices. First, they can join networks of different types: An Ethernet system on one floor, LocalTalk on another, and so on. Second, routers send data along the best-available wiring routes, based on traffic levels, availability, and the general status of wide-area connections.

When connected by a router, separate networks remain independent, but you can still easily access any device anywhere on any of the networks (see Figure 32-27).

Like routers, *bridges* connect networks — but only networks of the same type (LocalTalk to LocalTalk, Ethernet to Ethernet, and so on). A bridge's primary job is to monitor the network traffic on either side and pass only data intended for the other side. The benefit of a bridge is that network traffic isn't passed on to the opposite side of the bridge unless its destination device actually resides there.

Figure 32-27
The PowerBook in Zone 1 does not affect network traffic in Zone 2 when it communicates with the Power Mac in the same zone as itself. However, when the PowerBook prints, its AppleTalk printing traffic passes through the AppleTalk Internet Router to the LaserWriter in the lower zone.



GENERAL NETWORKING SECRETS

Reducing traffic on the network

Of all the types of network traffic, printing is one of the most common.

If your network has more than one zone, put a LaserWriter (or other network printer) in each zone where printing is heavy. As a result, the printer traffic in one zone doesn't affect AppleTalk traffic in any other zone. The result: Lower overall traffic and a faster, more efficient network.

Installing system software over a network

In the beginning chapters of this book, we mentioned that Apple's system software Installer doesn't work over a network.

Depending on your point of view, we lied. See Chapter 5 for our trick that, in essence, lets you use the standard Apple Installer to install a System Folder onto another Mac over the network.

POWERTALK

PowerTalk, included with System 7.5 and later, looks at first glance like the world's largest gob of superfluous extensions, control panels, and Desktop

icons. Then you consult the manual, and you think you're in a Monty Python skit — the instructions are so confusing and full of meaningless double-talk that you begin to wonder if PowerTalk might have been designed by, say, Microsoft.

Actually, though, only the *execution* of PowerTalk is hopelessly convoluted; the concept behind it is brilliant. Imagine that you have a folder full of icons on your Desktop, each representing a person you deal with. One may live in a straw hut in Pakistan, reachable only via the Internet. Another may be in the Marketing department three floors below you.

Now, suppose that you want to send a file to one of them. You polish up your design in, say, Photoshop, and then you drop the file's icon on top of the Pakistani's icon. The Mac takes it from there, automatically dialing into the Internet, entering all the necessary password information, correctly addressing and sending your file electronically, and hanging up — without any further help from you.

Furthermore, suppose that you have an In Box icon on your Desktop. You can double-click it to see, represented as an icon, *all* your incoming stuff: Faxes, e-mail, voice mail from your GeoPort's MegaPhone software (see Chapter 27), and so on. And imagine having to remember only *one* password for all your various online services and e-mail accounts.

That was the promise of PowerTalk: To reduce to invisibility the complexities of networking, online services, e-mail, and so on.

Apple has disowned PowerTalk since the last edition of this book; its future is uncertain. Still, if you're really interested, you can read all about it — we've ripped our discussion out of these pages, only to include them on the CD-ROM with this book. You'll find the discussion in the "Mac Secrets Outtakes" folder.

OPEN TRANSPORT ARRIVES

Open Transport, introduced with the PCI-slot Power Macintosh models and now available for any Mac (except 68000 and 68020-based models), is a dramatic behind-the-scenes rewrite of the Mac's networking software. Its primary purpose, according to Apple, is to make *multiprotocol* networking easy — that is, connections to various kinds of computers (Macs, PCs, and so on), different networking languages (X-OTI, UNIX STREAM, DLPI), different networking "environments" (serial, dial-up network, LAN, WAN), and different "protocols" (AppleTalk, TCP/IP, serial, and so on).

If that all sounds like a lot of geek talk, you're right; not many people besides network administrators get excited about Open Transport. Indeed,

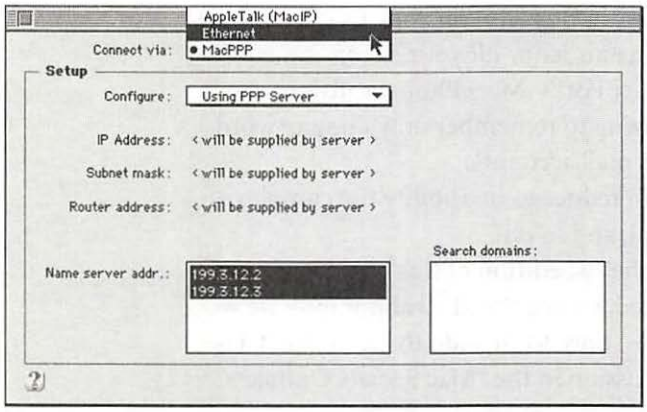
for the average person, Open Transport's flurry of initial releases (versions 1.0 through 1.0.7) were nothing but trouble; SLIP/PPP Internet connections were iffy, e-mail messages from Eudora and Claris Emailer didn't always get transmitted, and the Mac sometimes crashed during printing.

So what's good about Open Transport?

- Open Transport offers the ability to switch among different networking systems without restarting the Mac or quitting any programs. For example, you can change (on a PowerBook, for example) how you're connecting to the Internet — with PPP or with Ethernet — without restarting the Mac. Such switching is also great if you need to switch among Internet service providers, each with its own configuration.

  To switch among settings, all you have to do is open the TCP/IP control panel and choose from a pop-up menu (see Figure 32-28).

Figure 32-28
Switching from one Internet connection type to another is as easy as choosing from a pop-up menu in Open Transport's TCP/IP control panel.



- One of Open Transport's biggest pluses is for people who manage network servers — a Web site, for example — where multiple simultaneous connections are common. MacTCP (Open Transport's predecessor) was limited to about 50 simultaneous connections, and bogged down quickly.
- Furthermore, most people discover that Open Transport 1.1 or later gives overall network and Internet connections a slight speed boost and — surprisingly, in light of the early versions' bugginess — better stability.
- Open Transport means that programmers can more easily write programs that work with all those various networking protocols.
- Open Transport lets you change your network settings without having to reboot.
- Open Transport is written in PowerPC native code, whereas the older MacTCP wasn't.

Unless you're a network techie, you'll notice few other differences in your routine. A control panel called AppleTalk replaces the Network control panel, and the MacTCP control panel has been replaced by a TCP/IP control panel. In fact, we're confident that millions of people are merrily using the

networking and Internet features we've described in this book, utterly unaware that they're using a different networking software suite. (Unless, of course, they stumble across the *six* Open Transport extensions in the System folder!)

On the non-PCI Power Mac models, a special treat awaits: a little program called Network Selector. Since non-PCI Power Macs are capable of running *either* "Classic AppleTalk" networking or Open Transport, this little program lets you switch between them. (More recent Macs, those with PCI slots inside, can't run classic AppleTalk; they're Open Transport all the way.)

For more detail on Open Transport, we leave you to your network designer — and Apple, whose explanation of Open Transport is filled with writing such as this:

"Manual configuration of static AppleTalk addresses supports Mac OS products that utilize WAN datalinks where non-full-mesh topologies are important. This includes datalinks such as Frame Relay, SMDS, and ATM."

TRUE FACT

THE DISAPPEARING CONTROL PANELS — MAGICALLY DELICIOUS!

As we've mentioned, non-PCI Power Macs can run either "Classic AppleTalk" networking or Open Transport. Apple programmers faced, therefore, a conundrum: AppleTalk networks require the MacTCP control panel for Internet connections, but Open Transport requires the TCP/IP control panel — and yet, the two control panels are mutually incompatible. What's a programmer to do?

Free book winner Nick Fraser discovered how they solved this little user-interface problem: When you use the Network Selector program to switch to Open Transport networking, the Mac automatically makes the TCP/IP control panel *invisible!* That's right — it completely disappears from the visible surface of your hard drive. And, actually, when you switch back to AppleTalk, the Mac re-visifies the TCP/IP control panel and makes the *MacTCP* control panel invisible.

Talk about protecting us from ourselves!

NETWORK TROUBLESHOOTING

Things go wrong on networks all the time. You may try to print something and be told that "The LaserWriter 'Accounting' cannot be found." As in any system with as many fragile and interdependent components, chinks can develop in hundreds of hard-to-get-at spots.

Try not to think of your network as a mass of wires and computers. Think of the network as systems and subsystems. When a problem is befuddling you, try replacing subsystems — one complete Mac with all its wiring, for example — rather than components. You'll find the trouble far more quickly.

AppleTalk troubles

Even with a network as easy to use as AppleTalk, problems can still be tricky (especially as networks grow larger). AppleTalk problems usually have one of the following three components.

Incompatible System versions

In any office, making sure that all Macs are running the most current version of the Mac system software is always important. But in networking it's critical. Visit each Macintosh. Choose About This Macintosh (or About This Computer) from the menu to confirm the version. Also, open the Network control panel and verify the AppleTalk or Open Transport version.

Broken or loose connections

Next, check the network connections. Every connector should be solidly plugged in. If your network includes a networkable printer (such as a laser printer), a simple way to isolate the problem is to open the Chooser on each Macintosh. If the networked printer shows up in the Chooser, the connection between that Macintosh and the printer is good. By making this test on Macs that are successively farther away from the printer, you can discover where the connection is broken and isolate the problem.

In our experience, especially in LocalTalk networks, a telephone cable that works perfectly well as a telephone cable may not work as a network cable. If your LocalTalk network isn't working, replacing the phone wires should be one of your first thoughts.

Circular wiring

Diagramming the network is a good idea, even before you have problems, but it's also an excellent way of discovering circular or other improper connections. AppleTalk is a *bus topology* network: The network should have two (and only two) end points, each terminated, and no circular connections.

Open Transport Troubles

Symptom:

- I can't connect to the Internet using Open Transport.

Possible causes:

- Your TCP/IP control panel may not be set up right. Check the pop-up menu to make sure the correct connection this selected. If the pop-up menu doesn't list your connection type, you probably have to re-install it — for example, you won't see a PPP connection listed there unless you have a PPP extension of some kind (such as MacPPP or FreePPP 2.5).
- The Configure pop-up menu may not be set up right. If your Internet service provider gave you a fixed IP number, choose Manually from the pop-up menu, and then enter that IP number. If you're using a dial-up SLIP or PPP account, simply choose "Using SLIP" or "Using PPP Server."

Other common problems and solutions

We can't cover every possible cause for network failures. But the following common problems and solutions may aid you in becoming a network-savvy person. If you have access to CompuServe, America Online, or Apple's Web pages (see the Introduction), you'll find hundreds of useful articles on networking and troubleshooting in Apple's Tech Info Library.

Missing device problems

Symptom:

- Can't access file server, printer, another zone on the network, or another network.

Possible causes:

- Break in connector; damaged pins on connector box; damaged cables.
- Device turned off.
- Network interface card damaged, missing, or not installed properly.
- System software versions not consistent across the network.
- Incorrect or missing software printer driver, or other device drivers.

Ghosting problems

Symptom:

- Network device appears and disappears in the Chooser.

Possible causes:

- Loose connector; damaged cable or extenders.
- Improper termination.
- The cables are too long (check the user manual).
- You've got too many devices on the network.
- Electromagnetic interference from a large appliance.
- Network not designed properly.

Speed degradation

Symptoms:

- Slow printing, slow file transfer (that is, even slower than usual).
- Network appears to be dead.

Possible causes:

- You have too many devices, or too much traffic, on the network.
- System software versions not consistent across the network.
- Viruses.
- Someone on the network has turned on the Calculate Folder Sizes option in the Views control panel. When a Mac with this option switched on mounts a remote volume, the host Mac must crawl through the necessary calculations and slow down the network substantially.

File Sharing problems

Symptom:

- File Sharing doesn't start; the "File Sharing is starting up" message stays on-screen indefinitely; a "File Sharing cannot be enabled" message appears. (For details on the solutions below, call Apple's fax request line, 800-505-0171, and request document 20235.)

Possible causes:

- Less than 360K of space free on each volume you make available for sharing, or less than 270K of RAM free.
- Damaged PRAM (parameter RAM) settings (see Chapter 33).
- Damaged Users & Groups Data File, AppleShare PDS file (invisible), or other file-sharing or system software.
- Bad block on the hard drive.

For more information

If you still crave more details on networking, check out the *Macworld Networking Bible* (by David Kosiur and Joel Snyder; IDG Books Worldwide, 1994). We're also fond of *Hands-On AppleTalk* (by Mike Rogers and Virginia Bare). It's somewhat dated, but provides excellent background on the construction of LocalTalk and Ethernet networks.

Apple's own *Inside AppleTalk* also provides a wealth of information and is especially suited for the technically oriented person. It's available from APDA, 800-282-2732.

Chapter 33

Troubleshooting

IN THIS CHAPTER:

- The *SECRETS* Rule of Three
- Error messages explained
- Oddities on the screen
- Startup troubles
- Disk troubles
- File, desktop, and icon ailments
- Keyboard snafus

PRINCIPLES OF TROUBLESHOOTING

The Macintosh has an infinite number of cooks. There are the programmers at Apple who wrote the system software. There are the programmers who wrote the software you use, including the extensions and control panels that *modify* the system software. And then there's the hardware, complete with a number of additional software elements (in the ROM chips, for example), both from Apple and other companies.

With so many instructions being shouted at it, no wonder the Mac can get flustered and throw up its hands in frustration. The problems you may encounter vary:

- Mysterious system crashes or freezes
- Error messages
- Startup problems (the blinking question mark icon or the Sad Mac icon)
- Application problems, when the Mac simply doesn't do what it's supposed to
- Printing troubles
- Disk problems (their icons don't show up on the desktop or the Mac reports that they're "not a Macintosh disk")

A word about troubleshooting

There's a certain emotional element to a Mac going wrong. The Mac, after all, is betraying you, usually at a moment when you can least afford it. We don't know about you, but when *our* Macs go goofy, we feel a rising well of frustration and loss of control. Our heart rate doesn't go back to normal until some semblance of normal operation has returned.

Therefore, our troubleshooting advice for you is to establish control first, even if it means that you have to strip down your system. Once you know the machine is working properly, you can restore your software and hardware add-ons, one at a time, until you discover which element is causing the problem.

It's important to understand that in many cases, you *never find out* what caused the problem. You may rearrange the SCSI devices attached to your Mac and find the problem gone. You may change the order in which your extensions load and find that you have no more mysterious crashes. Or, you may reinstall your system software and clear up some odd behavior you'd noticed. In all of these examples, you'll never know *why* you had a problem. You'll have isolated only the general area of the problem.

Still, you'll be just as happy that the problem is gone.

More troubleshooting

Before you become alarmed at the relative thinness of this chapter, please be advised that you'll find substantial troubleshooting chunks at the end of some chapters. Separate troubleshooting sections appear for fonts (Chapter 24); printing problems (Chapter 25); SCSI (Chapter 30); and networking (Chapter 32).

In this chapter, we hope to give you some Mac-guru wisdom on the general concept of troubleshooting, as well as mention a number of miscellaneous, mysterious, very common Mac problems and how to solve them.

THE *SECRETS* RULE OF THREE

Wouldn't it feel good to know a three-step procedure *guaranteed* to wipe out any mysterious software problems? There is such a trick. Our sure-fire solution is grounded on a simple idea: Your Mac worked when it left Apple's factory. (Some of our friends chuckle at this statement. Still, we have to start somewhere.)

Therefore, our troubleshooting concept is simple: To hunt down the problem, you restore the Mac to the way it was when you bought it. It's a three-step process.

Except in cases when something's genuinely wrong with your Mac (that is, it requires a service call), this three-step process is nearly infallible.

Step 1: Start up with the Shift key

The first things you should suspect when you're having strange system problems are the extensions and control panels you installed. These, after all, didn't come from Apple.

If you're using System 7 or later, this is an easy step. Restart the Mac. As it's starting up, press the Shift key. You can release the key as soon as you see the "Extensions off" message.

This simple step, we've found, promptly cures more than half of the mysterious system errors that plague a typical Mac. Of course, all you've achieved so far is to temporarily eliminate the problem — an extremely useful accomplishment if you're in a hurry, need to get some work done, and don't have time to fiddle around with hours of troubleshooting steps.

You still have to figure out *which* extension was causing the problem, though. And the most efficient way to do that is to use Conflict Catcher, or even the demo version thereof, which is included with this book. See Chapter 34 for instructions.

(And if the purpose of your turning extensions off is to permit a safe, clean installation of new system software, as described next, you don't have to worry that the Shift key will turn off the very extensions needed to run your CD-ROM drive. On all recent Macs, including most Power Macintosh models, the system software CD-ROM itself contains the extensions that allow it to mount and start your Mac. Clever of Apple, huh?)

Step 2: A clean reinstall of the System

System software, like politicians and fresh fruit, may go bad over time. Fortunately, you have an infinite supply of healthy replacement copies (your system disks or system CD-ROM).

However, as we mentioned in Chapter 5, there's more to fixing your System Folder than simply running the Installer. The Installer program, as a convenience to you, is designed to replace *only* those components of the System Folder that need updating. If your System file is already corrupted, it will stay corrupted. If you have a damaged font suitcase, it will remain damaged. And so on.

The only way to guarantee a virgin System Folder is to perform a *clean install.* Doing so is as easy as a long A-B-C. (If you have System 7.6, you'll be walked through these steps.)

A: Check the hard drive surface

Start up your Mac from the Disk Tools disk. (This floppy comes with every Mac ever made.) Run the program on it called Disk First Aid. (Disk First Aid is also on your system disks, every System Update disk set Apple releases, and every Mac's system-software CD-ROM. But Disk First Aid can't repair any problems it finds on the disk it's *on* — nor on the startup disk — which is why you have to start up your Mac from the Disk Tools disk. Of course, if you have an external drive of some kind, such as a Jaz, Zip, or SyQuest cartridge, you can start up from that disk and run Disk First Aid off of *it.*)

Disk First Aid may well discover — and fix — problems with your hard drive that have been responsible for whatever glitches you've been having. You should still proceed with installing a new System Folder, however.

B: Install the new System Folder

The next step depends on your Mac model. In all of the following scenarios, you'll have the best luck if you start up your Mac from your Disk Tools disk, or from your system-startup CD-ROM, or with all extensions off except those needed to run the CD-ROM.

- If you're using System 7.5, run the System Software Installer from your Apple CD-ROM (or your Install Me First floppy). Press -Shift-K at the main Installer screen, and click the "Install New System Folder" button. (If you have a PowerBook that didn't come with a set of system disks, and you failed to make a set of backup disks when you bought the computer, you'll have to buy a set of system disks by calling 800-SOS-APPL.)
- If you're using Mac OS 7.6, click the Options button on the main installer screen; choose "Create additional System Folder."
- If you have a Performa, or System 7.1 or earlier, open your existing System Folder. Hide the Finder icon by dragging it into another folder — the Preferences folder, for example. Then *rename* the System Folder. (Call it "Old System Folder," for example.)

The point of these two steps is to make the Installer think that there's *no* System Folder on your hard drive. Thwarted from simply building a new System Folder *around* your old one, the Installer will build a completely new System Folder.

Now run the System Software Installer from your Apple CD-ROM (or your Install 1/Install Me First floppy) in the usual way. If you have a recent Performa, this means running your Restore System Software program (on the Performa CD-ROM). If you have an older Performa, run the Apple Restore program. (This will work only if you faithfully made yourself a set of backup disks the day you bought the computer, as instructed. If you didn't, you have no choice but to throw yourself on the mercy of 1-800-SOS-APPL to get, or buy, a set of system disks.)

C: Customize your fresh System Folder

The new System Folder won't have any of the extensions, fonts, control panels, Apple menu items, and sounds you may have added to your original System Folder. Nor will it have any Apple system-update files (such as System 7.5 Updates). And it won't have any Preference files your software has created over the years. Re-creating all of them — your settings, passwords, toolbar configurations, and so on — could take hours. That's why your old System Folder remains with its new name ("Previous System Folder," in System 7.5/7.6's case).

After you've confirmed that the clean reinstall successfully restored your Mac to health, you can put those add-on components back into the new System Folder. Where possible (especially in the case of fonts), therefore, reinstall this stuff from original master disks, not from your problematic previous System Folder. Preferences files are tricky; you can *usually* get away with dragging them out of your old System Folder's Preferences folder into the new one, but remember that corrupted Preference files are a leading cause of Mac glitches and hangups. If you can limit your Preferences file-dragging to the programs you've spent the most time customizing (such as your Word and QuicKeys files), you may spare yourself yet another round of troubleshooting.

If you put only a few add-on items at a time into the new System Folder, and then restart each time, one of two good things will happen. Either you'll finish adding everything to your System Folder and wind up with a perfectly functioning machine, or you'll stumble onto the one extension, control panel, font, or preference file that started the trouble in the first place.

MACINTOSH SECRET
NEVER DO ANOTHER CLEAN REINSTALL

If you've ever done a clean system reinstall, as directed in this chapter, we know one thing for sure: You'd much rather not have to endure that entire ordeal again the next time troubles arise. Fortunately, we have two tricks to make your future life easier.

First of all, the minute you're finished performing a clean reinstall, *back up the new System Folder!* Drag the entire fresh folder onto a Zip, Jaz, or SyQuest disk. And if you have no such backup system, consider compressing the entire fresh System Folder with StuffIt or another compression program (see Chapter 22). Next time you're tempted to perform a clean reinstall, you'll have this fresh, wholesome System Folder ready to use (after first renaming and disabling your old System Folder, of course).

Our second suggestion: For goodness' sake, *apply a colored label to the contents of your Control Panels, Extensions, Preferences, Fonts, and Apple Menu Items folders.* As we mentioned in Chapter 2, the point of applying a label from your Labels menu to everything in a fresh System Folder in this way is that later, when you examine the contents of these folders, you'll be able to see at a glance which items you or your software have added to the System Folder — as opposed to the items that were originally installed by the Apple installer. This makes it much easier to reinstate your custom components from the old System Folder to the new one.

The glory of a clean reinstall

In any case, reinstalling your System Folder can work wonders on a sick Mac. Over and over and over again, we've solved the *weirdest* problems using this technique, both on our own Macs and our friends' Macs. We've often had clients considering us geniuses after a clean reinstall, especially when we've helped them do so over the phone — "That did it! My problem's gone! You're amazing! How the hell did you fix it?!"

Many problems solved by a clean reinstall sound like they have *nothing* to do with system software: a SCSI drive that's not working; font problems; printing troubles. A clean reinstall solves it all.

In fact, if it weren't that running the Installer entails 45 minutes of inserting disks and copying add-on components from the old System Folder, we'd suggest doing a clean reinstall *first* when you start getting system troubles.

Network users: Don't forget how easy it is to run the Installer on several Macs on a network without having to shuffle floppy disks. (See our "Installing system software over a network" Secret in Chapter 32.)

Step 3: Unplug the SCSI chain

As you know from Chapter 30, the equipment plugged into the SCSI port on the back of the Mac can have a huge and devastating effect on your Mac's behavior. In that chapter you'll find specific ideas for hunting down the causes of the conflict.

The first step is to figure out if you *have* a SCSI problem. Therefore, when you have a strange, repeating system problem, disconnect your SCSI chain from the Mac so that your SCSI port is left empty. If the problem disappears, you know where to being your troubleshooting search, following the suggestions at the end of Chapter 30.

Other things to try

We truly believe that our three-step plan is nearly foolproof. After all, once you've turned off your extensions, reinstalled the System, and unplugged the SCSI chain, your Mac should be pretty much the way it was when you bought it!

If you're still having some unexplained erratic behavior, here are a few more treatments worth trying, roughly in this order.

Zap the PRAM

The PRAM (*parameter* RAM) is a tiny cache of memory kept alive by your Mac's built-in battery. It's responsible for keeping the Mac's clock ticking and maintaining the settings you make in your control panels — such as sound, mouse speed, memory, network, SCSI, and screen settings.

Rarely, rarely (but still sometimes), this tiny bit of memory gets corrupted somehow. Typical symptoms: Your control panels won't retain their settings; you can't print; you have strange networking problems.

To reset the PRAM, restart the Mac. As it's starting up, hold down the , Option, letter P, and letter R keys until you hear the second or third startup chord. Release the keys. (On a PCI-slotted Power Mac, turn off the Mac and hold down the keys *before* turning it on again.)

Zapping the PRAM often erases your control panel settings: your preferred mouse-tracking speed, desktop pattern, speaker volume level, and so on. Still, it's but the work of a moment to reset them using your control panels.

(PowerBook 500 or 5000 owners' note: Don't press the PRAM keys beyond the second chime. If you do, the PowerBook will shut down and can't be restarted until you press the back-panel power switch for 30 seconds.)

Rebuild the Desktop

Several times in this book we've mentioned the Desktop file, the invisible database on every disk that stores information about all your icons — what they look like, which programs they belong to, and where they're positioned in Finder windows. If the information in this Desktop file gets mangled, it causes problems.

The cure is simple: You can rebuild the Desktop file by holding down the Option and keys while restarting your Mac — or, for a more thorough job, by using TechTool, included with this book. For a complete discussion of Desktop rebuilding, see Chapter 1.

TRUE FACT

WHITHER AWAY THE GET INFO COMMENTS?

For over a decade, rebuilding the Desktop file meant losing whatever comments you had typed into the "Get Info" boxes of your files and folders. Indeed, even the "Rebuild the desktop?" dialog box mentioned this unfortunate side effect. For years, Apple promised that it would get around to fixing this silly bug in some future system update.

That day has finally arrived. Beginning with System 7.5.3, no such warning appears in the "Rebuild?" dialog box when you press -Option at startup, and your Get Info comments are, indeed, preserved. Hallelujah.

However, as free book winner Jean Pierre Jansen observes, not all is yet right with the world. Experts agree that using TechTool, included with this book, remains a safer and more thorough method of rebuilding your Desktop file — but it still *doesn't* preserve your comments when it nukes your Desktop file. Guess you can't have everything.

Throw away the Prefs file

Whenever you launch a modern software program, it generally consults the *Preferences file* in your System Folder's Preferences folder before its loading process is complete. If that Prefs file is damaged, so is your work session.

Therefore, if you're having trouble in one particular program, quit the program. Then open your System Folder, open your Preferences folder, and trash the program's Prefs file. The very next time you launch that program, it will automatically create a *new* Prefs file — one without any corruptions. (One reason a corrupted Prefs file often eludes diligent troubleshooters is that reinstalling an entire program generally preserves your existing Preference file, corruptions and all.)

This trick is especially useful in that most frequently used program of all — the Finder. The Finder Prefs file stores all kinds of settings important to your Mac work environment: The font and icon-layout settings used for Finder windows; list-view window settings; whether or not the "Are you sure?" message appears when you empty the Trash; and so on.

Therefore, if you start noticing weird goings-on with your icons, windows, or Trash, try discarding the Finder Prefs file. Restart the Mac to generate a fresh, clean copy.

Other Preference file-related troubles to watch for:

- **Network problems.** If you're having trouble with networking and you're hardware doesn't seem to be the problem, try deleting the File Sharing folder and the User & Groups data file, both located in the Preferences folder. Then, after restarting, go to the Sharing Setup control panel, enter a new Owner password and turn on File Sharing. This creates a new Users & Groups data file, replacing the corrupt data. Of course, you also lose any previously defined users and group data.
- **PC Exchange.** You've been happily mounting PC disks on your Mac for months, then, all of a sudden, your Mac won't accept DOS disks anymore. Once

again, the solution is simple. Drag PC Exchange Preferences file out of the Preferences folder and into the Trash. The next time you start your Mac, a new Preferences file is created.

- **Apple Menu Options.** If you encounter, on startup, a message that says "There is not enough memory to load all of your extensions"— and you know that you do indeed have enough memory — the likely culprit is the Apple Menu Options Prefs file. Trash it and restart.
- **Space hogs.** Most Preference files are very small; they only contain basic settings information. But certain files in the Preferences folder can take up quite a bit of space. CD-ROM caching programs, such as CD AutoCache, for example, store in the Preferences folder directory information from the CD-ROMs you use. These directories add up quickly, especially if you use a large number of different CD-ROMs. Another often-overlooked Preference file is the Desktop Patterns Prefs. In System 7.5/7.6, you change the desktop pattern using the Desktop Patterns control panel, but the patterns are stored in the Desktop patterns Prefs file. If you add a large number of new Desktop patterns, this file, too, can become bloated. Finally, there's the Cache folder for your Web browser (Netscape Navigator and AOL's browser, for example). It can quickly mount up to dozens of megabytes if you don't watch over it carefully. (You can adjust your browser's Cache-folder buildup potential in the Preferences command of the browser itself.)

If you find megabytes mysteriously disappearing from your hard drive, check the Preferences folder for such files, which can be dumped periodically.

There's only one problem with the drag-your-Preferences-to-the-Trash approach to problem-solving, by the way — you lose your preferences. Cumulatively, they represent hours of work that you'll have to re-create from scratch if they become corrupt. We highly recommend backing up your Preferences folder (from inside your System Folder) religiously. When troubles later arise, you can drag the corrupt file to the Trash and replace it with the backup.

Replace the battery

Every Mac has a battery — not just PowerBooks. We refer, of course, to the built-in five- to seven-year battery that maintains the clock even when the computer is off.

In the olden days, nobody thought much about the lithium battery. These days, however, it's suddenly rearing its ugly head — all over the world, more and more Macs are reaching their fifth and seventh birthdays. People's

lithium batteries are dying, causing all kinds of bizarre behavior usually related to file dates. For example, if your Mac suddenly starts stamping every new or modified file with the year 1904 or 1957, you've got yourself a dead lithium battery.

We'd love to tell you which Eveready battery to pick up at your local drugstore, but no such luck. Your Mac's internal battery must generally be replaced by an Apple technician, usually at a cost of about $25.

Update your hard disk driver

Follow this step only if your Mac started life using one system version (such as System 7.0) and then was upgraded to a newer one (such as System 7.5).

As we mentioned in Chapter 8, not all software is compatible with new system versions — that includes the invisible software that controls your hard drive (its *driver*).

If our first three steps haven't resolved the problems your Mac's been giving you, and your hard drive is a candidate, follow the instructions in Chapter 8 for updating your driver. Fortunately, updating the driver *doesn't* involve erasing your hard drive or having to copy your files off it.

Remove your expansion cards

If you've tried the usual array of troubleshooting steps and something still seems to be wrong, question any NuBus, PCI, or PDS cards you've installed (see Chapter 31). The point, remember, is to restore the Mac to its fresh-from-factory condition in your quest to find the problem. As free book winner Amitai Schlair points out, an out-of-date or poorly seated card could easily escape your notice.

Run a hard disk diagnosis program

There are certain hard-drive problems that even our troubleshooting process can't solve. They have to do with the invisible files the Mac maintains on your hard drive: The Desktop files, the list of fragmented files, and so on. If these files become damaged, a hard disk repair program may come to the rescue.

Your Mac came with such a program: Disk First Aid. It's not much, and it's not nearly as good as the commercial drive-repair programs like Norton Utilities. But Disk First Aid can indeed solve a number of these hidden disk problems. Just run Disk First Aid (after starting up the Mac from your Disk Tools floppy or Apple CD-ROM) and click the Start button.

For PowerBooks only: Reset the Power Manager

The Power Manager is a special circuit in the PowerBook that supervises the use of battery juice. When the Power Manager gets confused, all kinds of terrible things can result: Problems turning on the computer, charging your battery, using the trackpad, starting up, going to sleep, and so on. Here's how you reset the Power Manager to its default state.

Always begin by unplugging the power adapter and removing all batteries. Leave the laptop that way for 10 minutes. If the problem doesn't go away when you try turning it on again, continue as follows:

- **PowerBook 140–180.** Insert two straightened paper clips, simultaneously, into the tiny holes — the reset and interrupt switches — on the back panel (next to the power button). Hold the paper clips this way for 10 seconds.
- **PowerBook 150.** Push the reset button on the back panel with a paper clip for 10 seconds. Reattach the power adapter and push the reset button again — just briefly. You should hear a small pop from the speaker. That's normal.
- **PowerBook 500 series.** Press the , Option, Control, and Power On keys simultaneously. This keystroke resets the Power Manager whether or not the computer is turned on. (If it's on, though, it will turn off when you do this.)
- **PowerBook Duos.** Press and hold the Power button on the rear of the laptop for 45 seconds.
- **PowerBook 5000, 1400, and 190 series.** Shut down the PowerBook. Turn it on while holding down the , Option, P, and R keys (yep, the same keystroke as resetting the PRAM, as described earlier). You'll hear a single chime, then the screen will go dark and the green Sleep light will be on. Press the reset button on the back of the machine (under the external video port, if you have one).

In all of these cases, you should now be able to turn the PowerBook on normally. Note, however, that this procedure deletes your RAM disk, if you've set one up.

AVOIDING TROUBLES IN THE FIRST PLACE

Of course, it's much better to spend 30 seconds *preventing* problems than to spend three hours *solving* them. Chapter 8 contains our preventive-maintenance schedule for your hard drive. We urge you to follow it.

MAC SECRET

CREATE YOUR OWN EMERGENCY DISK IN AN EMERGENCY

Hard disk utility software (Disk First Aid, Norton Utilities, MacTools, and so on) is all well and good, but it has one inconvenience: You can't use it to analyze or repair the disk it's *on*. And it can't operate on the startup disk, either (which is usually your internal hard drive, usually precisely the disk you want to repair).

For a while, each commercial hard disk program came with an "Emergency Disk" — a floppy containing a tiny System Folder (enough to start up the Mac) and the utility program itself. (In the case of Disk First Aid, the Emergency Disk is called Disk Tools.) This arrangement was colossally inconvenient, though. (1) If you didn't have the Emergency Disk with you when things went wrong, you were out of luck. (2) If you didn't have the exact Emergency Disk for *your model,* you were out of luck. (3) And, as new Mac models and new System versions appeared, the likelihood of your being able to create a correct, working Emergency Disk grew increasingly slim.

There's a better solution. Open your Memory control panel. Turn on the RAM Disk option. Move the slider to, say, 3.5 or 4 megs — enough to hold a bare-bones System Folder and your disk utility program. Restart the Mac. When it comes to, you'll see a new disk icon on your Desktop: The RAM disk.

Onto this disk, copy the System suitcase file from your System Folder, plus the Finder, plus any enabler your model needs to run. (Put them into a folder called "System Folder" on the RAM disk.) Copy the disk-repair program onto it, too. Finally, use your Startup Disk control panel to choose the RAM disk as the next startup disk. Restart the Mac a second time.

Now the Mac is running off the RAM disk. Your hard disk utility program can safely (and *really quickly)* operate on your internal hard drive, which is no longer the startup disk and no longer the disk that contains the hard disk program.

If your Mac doesn't have enough RAM to create a big enough RAM disk, by the way, consider creating a RAM disk just big enough to hold a mini-System Folder. Once the Mac is running, you can always then run the disk-utility program from a floppy (instead of copying it to the RAM disk).

Here's a blockbuster Secret, new in this edition, that we've used to save hours of installing and troubleshooting time in the last few years: *Turn off your extensions* before you install *anything.*

That is, the next time you get a new program, or an updated version of an old one, restart the Mac with the Shift key down. You've just restored your Mac to its original birth condition, which is exactly how your new software expects to find it. You've just dodged a whole host of potential conflicts and corruptions that can occur during the installation process — many of which may not crop up to haunt you until weeks later.

Ironically, this step is *especially* valid when you're installing Apple's own system-software updates.

THE *MAC SECRETS* ERROR-MESSAGE TABLE

Wouldn't it be great if your Mac could tell you exactly what went wrong in the aftermath of a crash? Imagine recovering from a crash and seeing a dialog box that says, "Your system has crashed because, due to a programming error. The Make Compost command in EnviroHelper Pro 2.0 conflicts with the desk accessory TimeKiller 3.1. Please update the desk accessory to version 3.3.2 to eliminate this conflict."

In reality, the Mac's error codes aren't nearly that precise — or enlightening. For one thing, the error definitions themselves provide you with little information that you can actually use; knowing that your crash was caused by an "unimplemented core routine" (Error 12 or Error -4) doesn't shed much light on why a program keeps crashing. When something goes wrong deep inside the Mac, it can only report to you that something is wrong. It has no idea which specific series of keystrokes, mouse clicks, and software interactions actually caused the problem. Error messages are of primary value only to programmers — and not very helpful even to them. Furthermore, Mac error messages are often flat-out wrong. The Mac says you had an "illegal instruction" problem (Error 3) when in reality you simply used up all your RAM.

In the first three editions of this book, we explained all this. We said that a list of Mac error messages, and their meanings, is pointless.

Yet, the mail from readers of each edition was always the same: "Please print a list of the error messages!" At last, then, here it is.

As you'll see, these descriptions occasionally provide a clue for action on your part (that is, *disk is full*). In others, however, there's a bug in your software, and there's not much you can do about it. As you'll read in the following list, many bugs result from programmers failing to clean up after themselves during programming — or being unable to anticipate their program's interactions with other software.

There are two categories of error messages. Those with positive numbers are the so-called DS errors (which stands for *deep doo-doo*). These are serious system crashes that require you to restart the machine. Errors with negative numbers aren't so severe; usually you just have to click OK to proceed.

DS Errors

By far the most common positive-numbered error codes are Type 1, Type 3, and Type 11. You can read about them below; for now, note that the primary steps to solving repeated problems of these types are (a) update or turn off your extensions, (b) update your hard disk driver, and (c) do a clean reinstall of your System Folder. All three of these techniques are explained at the beginning of this chapter.

ID=01: Bus Error (Type 1 error)

The Mac has tried to access memory that doesn't exist — for example, the program you're using assumed that the Mac has more RAM available than it actually does. This kind of glitch — probably one of the most common — is called a *bus error.* You can remedy the problem by allocating more memory to the program that crashed, adding more RAM to your system, or by simply restarting your Mac so that the RAM available isn't fragmented (but is available on contiguous chunks).

ID=02: Address Error

Mac Plus and SE only: Your processor tried to access an odd-numbered RAM address when it should have accessed an even-numbered one.

ID=03: Illegal Instruction

Your software issued an instruction your Mac's processor model doesn't understand. The cause may be an out-of-date system extension or hard disk driver.

ID=04: Zero Divide Error

When programmers test their works in progress, they might deliberately instruct the computer to divide a number by zero, to see how well the program handles errors. They occasionally forget to take this instruction *out,* as you've just discovered.

ID=05: Range Check Error

The software checked to see if a number — part of some internal calculation — is within a certain range. It wasn't.

ID=06: Overflow Error

A number was too large for the space the software allotted for it.

ID=07: Privilege Violation

This only crops up during the writing of a program. The Mac attempted to process a command in User mode instead of Supervisor mode.

ID=08: Trace Mode Error

When debugging newly written software, programmers sometimes walk through it, line by line, using what's called Trace mode. This message indicates that your Mac's processor has accidentally switched into Trace mode.

ID=09 and ID=10: Line 1010 & 1111 Trap

Once again, the software has issued an instruction that the processor doesn't understand.

ID=11 (Type 11 error)

A Type 11 message is the Power Mac equivalent of a generic Type 1 error. It simply refers to an error that has occurred in the native Power PC code. Technically, Apple calls it a "hardware exception error." Realistically, it's an extension conflict, a corrupted font, or a Power Mac-hostile program. Do a clean reinstall, as described earlier in the chapter. And if you're getting *lots* of Type 11 errors, remember that Apple has been methodically eliminating them with each successive release of the System 7.5 family of system software. Keep your Mac's System Folder current.

ID=12: Unimplemented Core Routine

As with the ID=04 error, an instruction was left over from the debugging process.

ID=13: Uninstalled Interrupt

An *interrupt* is a moment during the running of a program when an external device, such as the keyboard or the disk drive, asks for attention. If there are no instructions in RAM that tell the Mac how to talk to that device, you get this error.

ID=15: Segment Loader Error

To conserve RAM, a non-Power Mac program is loaded into RAM in *segments* as needed. A system-software program called the *segment loader* oversees this swapping. If, for some reason, the segment loader can't do its thing, this error results.

ID=20: Stack Ran into Heap

Oops — a program's internal instructions somehow overflowed into the memory space reserved for data. May also trigger an ID-25.

ID=25: Memory Full Error

You've probably run out of memory, although this message sometimes appears erroneously.

ID=26-27, 30-31: Missing Packages

A *package* is a ready-to-run set of system software instructions that handles a particular task, such as initializing a disk. If a package is damaged, one of these messages tells you so. You need to perform a clean reinstall of your System Folder, as described earlier in this chapter.

ID=28: Stack Ran into Heap

Fancy way of saying you ran out of memory.

Negative Error Codes

There are many more negative-numbered error messages than positive. Furthermore, they make even less sense to the nonprogrammer. (Helpful example: "Packet too large or first entry of the write-data structure didn't contain the full 14-byte header." Sure.)

Table 33-1 provides the general categories for each number range, along with a few that actually make sense to human beings.

Table 33-1
The Authoritative List of Negative Error Codes

Error Number	What Causes It
0 through -8	General System errors.
-9 through -21	Color Manager errors.
-17 through -61	System errors involving files and disks (input and output).
-34	Disk is full.
-35	No such disk, or the Mac can't find the disk it's looking for.
-37	Illegal filename (for example, the name includes a colon).
-39	A corrupted file is on the disk, or the disk is having problems. Usually accompanied by the message "end of file" or "no additional data in the format." It points in the general direction of a corrupt file. It means that the Mac started to process a file, but couldn't finish reading it — as if the end of the file had been chopped off. If you encounter this particular message at startup, it could

	mean a your Launcher has become corrupt. Drag the Launcher into the Trash and reinstall it.
-41	File is too big to fit in memory.
-42	Too many files open.
-44 and -46	Disk is locked.
-53 through -57	Illegal disk request.
-60	Something's wrong with the disk directory.
-64 through -66	Font problems.
-64 through -90	Problems reading disks (timing and track troubles).
-91 through -99	AppleTalk errors.
-108 through -117	Various memory-allocation errors.
-120 through -127	HFS errors (disks, folders).
-126 through -128	Menu problems.
-130 through -132	More HFS errors.
-147 through -158	Color management problems.
-185 through -199	Resource Manager errors (problems managing data).
-200 through -232	Problems with sound or sound files.
-250 through -261	Problems with the MIDI Manager.

Details on the most common error messages

Table 33-1 covers both common and obscure error numbers. Here, for your post-crash enjoyment, are more complete descriptions of the most commonly spotted error messages.

"No Co-Processor Installed"

The "no co-processor" message is almost never accurate — almost every Mac made today *has* a math co-processor chip (a floating point unit, FPU; described in Chapter 12), yet this message seems to crop up all time.

The answer is so weird it's almost funny. Whenever a software problem erupts, the Mac rapidly runs through an internal list of error messages, trying to find an accurate description. If it doesn't find anything appropriate to report, it helplessly shows you the *last error message* in its list. Naturally, the "no co-processor" error is the last one on the list.

The "no co-processor" message has *nothing* to do with whether your Mac has an FPU — or whether your software needs one.

Bus errors

If you get a system crash with the "bus error" note, chances are good that your hard disk driver is incompatible with your software. It may be having the incompatibility with System 7, virtual memory, or 32-bit addressing (see Chapter 9 for more about virtual memory and 32-bit addressing.)

If you have an Apple hard drive, run Apple HD SC Setup (see Chapter 8). If you have a non-Apple drive, call the manufacturer and get a copy of the latest utility software that can update your drivers.

Other sources of bus errors are extensions. Follow Step 1 in the Rule of Three at the beginning of this chapter to ferret out the cause.

"Bad F-line instruction"

An *F-line instruction* is a line of software code that directs your processor to consult the math chip, or floating point unit. But as you've probably discovered, this message appears even on Macs that *do* have an FPU. Or, they get the message when running software that *doesn't* require an FPU.

In other words, this message usually lies. Your software may be trying to access a nonexistent memory location, or it may have encountered the letter "F" in the wrong place in the programmer's code! As is typical with such generic errors, a clean install of the system software — or of the program you've been using — will probably solve the problem.

"Application busy or missing" or "Application not found"

As we mentioned in Chapter 1, you get this kind of message when you double-click a document for which the Mac doesn't *think* it has the program to open it.

The possible solutions are:

- You really *don't* have the required program. If you double-click an Excel document and you don't have Excel on any disk, this is the message you get. Except for installing Excel, there's nothing you can do.
- You *do* have the required program, but the Mac is confused. It's an easy one to fix: Just rebuild the Desktop file (see Chapter 1). Or, you may have *two* copies of the same program, perhaps with different version numbers. Clear out the older one.
- You have the required program, but it's an outdated version, and the document you're trying to double-click is from a newer version. Update the program.

- You have the required program, but the document's four-letter creator code somehow has gotten zapped, so the Mac doesn't know which program it's supposed to use to open the document. You can restore the creator code by using either Get Info Extreme or ResEdit (both included with this book) to type the code back in. See Chapter 16 for detailed instructions.

"Application unexpectedly quit"

Usually this message means that a program ran out of memory. Normally, a program sees the end of its memory supply coming and warns you. But sometimes it gets caught unaware, like a center fielder who slams into the outfield wall going for a fly. You can try giving the program a larger memory allotment (see Chapter 9 for instructions on using the Get Info window to do so).

Then again, this might be one of the standard problems: An old version of the program; a program incompatible with System 7 or 7.5; or a program incompatible with virtual memory or 32-bit addressing.

"The File Sharing extension is not installed"

You get this message when you choose Sharing from the File menu in the hopes of sharing your Mac's hard drive with other Macs on the network.

Sometimes, of course, it's true — the File Sharing software *isn't* installed. Use the Installer on your system disks to install it. On the other hand, this message also appears when a much simpler problem exists: You need to turn on AppleTalk in the Chooser.

"System 7.1 won't run on this machine. A newer version is required."

You see this message in exactly one circumstance: when you're trying to start up a Mac that requires an *enabler* extension (see Chapter 5), and your startup disk is lacking the enabler. Find your original Install Me First system disk, insert it into the drive, and try starting up again.

TRUE FACT
EASY OPEN

You may live to see the end of the "Application not found" message on Macintosh computers.

System 7.5 comes with a system extension called Easy Open. It, and Easy Open-aware programs, have built-in intelligence that can handle documents whose parent programs don't seem to be available.

When you double-click a PICT file on an Easy Open-installed Mac, for example, you get a dialog box that offers a *list* of every program on your drive capable of opening that PICT file! You just select the one you want to use for opening the file, and you're on your way.

As more software companies build Easy Open features into their programs, and as more translator files (like the ones provided with System 7.5) become available, life will become more and more effortless and carefree. Without those, Macintosh Easy Open doesn't do much beyond handling PICT and text files. (See Chapter 4 for details.)

"You do not have enough access privileges"

Occasionally, this message speaks the truth: Your Mac is on a network, and you're trying to examine the hard drives of other people on the network who haven't given you permission.

These days, however, this message generally indicates a much simpler problem: You're using a Performa or System 7.5, and you're trying to move something out of the System Folder. Open your General Controls (or Performa) control panel, and you'll see the problem immediately: You've got the "protect System Folder" feature turned on. (It's designed to protect your Mac from being trashed by a clueless child. See Chapter 4 for more on General Controls.)

Incidentally, you'll also get this message if you keep your programs in a folder called Applications and the "Protect Applications folder" checkbox in the General Controls panel is turned on.

Fortunately, Apple cleared this problem up with the release of System 7.5.3; the error message now clearly tells you that "protect System Folder" is the culprit.

"The command cannot be completed because it cannot be found"

This all-time Goofy Grammar Hall of Fame winner sometimes appears when you try to paste a new icon onto your hard drive (described in Chapter 1). Of course, the reason you're *doing* that task is that the drive's previous icon has *disappeared.* Try as you might, pasting the new icon into the drive's Get Info box won't work.

This problem crops up when you're trying to change your hard drive's icon for the *second* time. The *first* time you pasted a new icon for your hard drive, two things happened behind the scenes. First, an invisible file called *Icon* was created on the hard drive (you can see it using ResEdit). Second, the Mac switched on an internal toggle switch — the *custom icon bit* — that tells it to use the new icon file.

If that original invisible icon file is missing for some reason, the Mac consults the custom icon bit, goes searching for your custom icon file, doesn't find it, and displays the generic disk icon in its place. If you try to paste on a *new* custom icon, you get this message. It tells you that the Mac can't find the *old* icon (the "it" that "can't be found" in the error message) over which to paste the new one. Wild, eh?

The real solution, obviously, is to reset the erroneous bit. ResEdit won't work; it operates only on files, not disks. The simplest solution is to use Disk Rejuvenator, included with this book; it neatly solves this problem.

"That folder is in use and cannot be deleted."

This infuriating message most often refers to an item in the Trash, especially the familiar "Rescued Items" described in Chapter 2. Free book winner Stefan Anthony discovered a sneaky way to delete that which is un-deletable.

1. Drag the folder (we'll use the Recovered Items folder in this example) to the Desktop.
2. Rename the Recovered Items folder to the name of another folder on your disk. For example, if you have a Downloads folder, change the name of Recovered Items to Downloads.
3. Open the Downloads folder. Move all of the items in it to the newly named Downloads folder on your Desktop.
4. Trash the original Downloads folder. Move the *new* Downloads folder to the location of the *former* Downloads folder.

You should now be able to empty the Trash, having successfully outfoxed the Mac at its own game. After all, you're now trashing a perfectly ordinary folder.

ODDITIES ON THE SCREEN

Sometimes, no error message is necessary to tell you that something's gone wrong. One glance at the screen tells you that something's amiss. Here's how to handle these situations.

Generic icons

As we mentioned in Chapter 1, the solution to your files losing their icons is to rebuild the Desktop.

Every now and then, however, you'll discover that only *one program's* set of icons is turning up blank. If that's the case, the "bundle bit" (a tiny software pointer that associates a program with its set of icons) may have become confused. You can use a shareware program like ReBundler or Save-a-BNDL, or you can reinstall the program onto your disk.

After you have the bundle problem resolved, you still have to rebuild the Desktop to make the icons reappear — unless you use this System 7 trick. Select a file whose icon is missing. Choose Get Info from the File menu. Click the icon and press -C (copy); then press -V (paste). You just pasted the generic icon back onto itself. Finally, press -X (cut) to remove the "custom" icon. This forces Finder to reread the BNDL information from the file on disk instead of from the Desktop databases.

Shimmering monitor

A monitor shimmer is *usually* caused by interference, such as a lamp, a fan, or other appliance that's very close to it, or an air conditioner running on the same circuit. Consider putting the a/c on a separate circuit. You can also spend $250 or so for a *line conditioner* for the Mac.

If none of these steps solves the problem, it's possible the monitor actually needs to be repaired.

Flashing menu

You wouldn't believe the number of people — even power users — who accept a blinking menu as a way of life. Because it's been blinking for several years, they just assume that it blinks all the time. Of course, what you're actually seeing is the Alarm Clock desk accessory, which blinks forever unless you turn it off. (See Chapter 3 for instructions.)

Black menu

On a Mac with a color monitor, the menu is usually marked on the menu bar by an icon with horizontal colored stripes (Apple's logo). If it shows up as solid, puffy *black* when the rest of the screen is in color, then one of two statements applies to your Mac:

- You've set your monitor to *thousands of grays* mode, which, nonsensically enough, puts your screen in *color,* except for the menu.
- You or someone else used the Installer's Minimum System Software option when installing the System Folder. The color logo is one of the resources that the Installer leaves behind in its efforts to create the smallest possible System Folder.

Finder changes don't stick

If your changes to the way the System 7 Finder displays windows and icons don't seem to stick when you restart the Mac (for example, when you change the Views control panel settings), you may have a damaged Finder Preferences file. Open your System Folder; open the Preferences folder; find the Finder Preferences file; trash it; and restart the computer. The problem should be gone now.

No Mac icon on the System Folder

The System Folder on your startup disk usually displays a little Mac icon, as shown in Figure 33-1.



Figure 33-1
On the left, a normal System Folder. On the right: Where *is* the little Mac icon?

If the System Folder has a normal folder icon instead, there are only three possibilities:

- You have *two* System Folders on your drive, and this isn't the one currently running.
- You're not looking at the System Folder of the *startup* drive, but instead it's the System Folder on another disk.
- The real System Folder is *inside* another folder (possibly this one).

STARTUP TROUBLES

There's almost nothing worse than encountering Mac problems before the thing has even *started up!* This guide will be of some assistance.

The Sad Mac icon

First of all, be aware that the Sad Mac icon can appear when you press (or some object on your desk presses) the Interrupt switch on your Mac, either inadvertently or on purpose. See Chapter 6 for more about the Interrupt switch.

If the sad Mac appears during startup, however, something's wrong with the circuitry or the System Folder (see Figure 33-2).



Figure 33-2
The dreaded Sad Mac icon.

Beneath the Mac icon there's a row or two of special codes (such as 0F000D, which you may recognize from Chapter 21 as being hexadecimal notation). In theory, they can help you figure out exactly what's wrong with the Mac. In practice, these codes are designed for techies and may not even be accurate.

In our experience, the Sad Mac most often appears just after you've installed new RAM chips. It tells you that one of the chips is defective or improperly seated. Try reseating the chips.

The Sad Mac can also appear mysteriously as a result of a number of other conditions, most of which you can solve by following our Rule of Three (especially Step 3). In fact, the sad Mac *often* goes away by itself, even if you don't change a thing.

For the Mac SE and all later Macs, you actually get two lines of codes that are supposed to help you figure out what's wrong. The only useful numbers are the bottom row and the second half of the top row. Table 33-2 lists some

CASE HISTORY
THE SCSI FROM HELL

We found this message posted on America Online and found it enlightening — and yet typical.

Nothing was working at all with my System 7 system. I got nothing all day long but constant bus errors, freeze crashes, Type 1 errors, and other nonsense.

Finally, I tried switching the order of my SCSI cable path, from one direction out the Mac, to the polar opposite. (No other change in SCSI IDs or any other change, period.) This experiment resulted in a sheer inability to even *start* my Mac!

Feeling that, at least, I was on to some source of the problem, I reinstated my previous SCSI path, with one simple difference. Instead of going *in* on the *bottom* of each external drive's two SCSI ports, and out the top port, I brought the cables *in* on the *top*, and out on the bottom. And I ended the SCSI chain with the terminator on the bottom SCSI port.

I know it sounds baffling, but my Mac is back to its previous rock-solid state! I'm just very happy to have everything working again, I don't care why!

(For more on the nonsensical world of SCSI troubleshooting, see Chapter 30.)

common codes and what they mean. By Code, we mean here the *second* four characters on the top row.

Be aware of two things about these codes. First, they don't apply to Macs before the SE, and they don't apply to the PowerBook. Second, some of these codes may suggest something obvious for you to try: If it's code 0006, you may as well try plugging and unplugging the keyboard cable. But in general, our original words apply: The problem usually goes away by itself or goes away when you follow our Rule of Three steps.

Table 33-2
Sad Mac Codes

Code	Explanation
0001	The ROM chip is having trouble (may not be seated correctly).
0002	Something's wrong with a SIMM in bank B, if your Mac has two banks of SIMMs.
0003	Something *else* is wrong with bank B.
0004	Something's wrong with a SIMM in bank A.
0006	Something's wrong with your ADB (keyboard/mouse) jack.
0008	Again, an ADB problem.
000A	There's a problem with the NuBus slots.
000B	Trouble with the SCSI chip.
000C	It's floppy drive trouble.
000D	Something's wrong with the printer or modem port.

If it still doesn't go away, and you've even tried reseating the RAM chips, then it's time to call a dealer.

The blinking question-mark icon at startup

The Mac blinks the question-mark/disk icon when it can't find a System Folder. Of course, you can always get

around this by inserting your Disk Tools system disk. But that's not a long-term solution — something is clearly wrong with your *hard drive,* which is supposed to have its own System Folder.

Apply the Rule of Three. Restart the Mac. Restart the Mac with the Shift key held down. Unhook external SCSI devices. (This often solves the problem; see "SCSI Troubleshooting" in Chapter 30.) Try starting up from your Disk Tools disk. Do a clean reinstall of your system software. Run the Disk First Aid program. If your hard drive still isn't showing up on the screen, get a program such as MacTools or Norton Utilities and see if *it* can bring your drive back to life.

Actually, if all else fails, free book winner J.W. Leedom correctly observes that the problem may be far simpler. If anything is keeping the mouse (or PowerBook trackball button) pressed as the Mac is trying to turn on, this same blinking question mark may result. Lift that stack of books/Jaz cartridge/cinder block off the mouse button, and your Mac will proceed to start up as usual.

Crashing on startup

Clearly, you've got an extension conflict. You can *temporarily* get up and running without *any* of these extensions — and without any conflicts — by following Step 1 of our Rule of Three.

To *find* and *eliminate* the conflict, however, your first thought should be to use Conflict Catcher, included with this book, which automates this testing process and tells you what the conflict was.

Twilight Zone theme, car crash, or four notes

If, when starting up, your Mac plays a series of musical notes (Mac II series), the first four notes of the Twilight Zone theme (Centris or Quadra), a flute or drum solo (LC series), or a car-crash sound (Power Macintosh), it's trying to tell you that it didn't pass one of its routine startup tests. (See Chapter 8).

You most often hear these chimes just after you've installed new memory into the Mac; it means that one of the SIMMs isn't seated right (see Chapter 9 for details); the chimes also sound if something is pressing your Mac's Interrupt switch at startup (see Chapter 7).

DISK TROUBLES

Like all living things, hard drives and floppies have occasional bad hair days. You can cope, though, as follows.

CASE HISTORY

YOU THINK YOU'VE GOT TROUBLE?

Scott Gaidano of DriveSavers told us the following true story about one of his clients.

In early 1993, a cruise ship was just starting its 1,000-mile cruise up the Amazon. Three hundred passengers were on board. Just as the ship set out, it struck an underwater barge and sank. (It was the same day as the World Trade Center bombing, so there wasn't much news of it.)

Two of the passengers were a couple, a juggling team, who had been hired as onboard entertainment. The story of their journeys was painstakingly written up — on the PowerBook 100, now deep underwater in the sunken cruise ship.

Two days after the ship sank, the guy persuaded his fiancée to get into scuba gear and swim down into the lime-green, piranha-filled ship. She swam down two flights of stairs, down the corridor, and into what had been their stateroom. Sure enough, there was the PowerBook on the desk. She also grabbed, from the dresser drawer, the diamond ring her great-grandmother had given her, a bag of juggling equipment, and her contact lenses that were bobbing in their case on the ceiling of the stateroom.

She brought it all to the surface. She sent the PowerBook to Scott, whose staff decontaminated it, desalinized it — and successfully rescued the files!

Hard disk troubleshooting

For a huge helping of hard drive troubleshooting, see Chapter 8. In the meantime, if your hard drive is giving you a hard time, try these steps, in order:

- Restart the Mac.
- Run Disk First Aid. (Click the Repair button more than once; sometimes this takes several tries.)
- Reinstall the hard disk driver. (Don't *initialize* your drive, just update; see Chapter 8 for details.)
- Rebuild the Desktop (see Chapter 1).
- Do a clean install of the system software (see the beginning of this chapter).
- Zap the PRAM, as outlined at the beginning of this chapter.
- Check your SCSI setup (see Chapter 30).

If you've tried everything and haven't succeeded in resurrecting your hard drive, you can always wipe it out, reformat it, and start from scratch. But if there's important data on the drive, you may find it worth sending to DriveSavers (we've provided a discount coupon in the back of this book). They have clean rooms, deoxidants, and all kinds of high-tech gear devoted exclusively to getting data off a drive, and they report a success rate of more than 90 percent.

All floppy disks show up locked

Of course, all your floppies aren't *really* locked. We've seen this in several Macs, and the problem is simple enough: Dust on the drive mechanism.

If you're technically minded, open the Mac case. Use a screwdriver to gently take out the

floppy-drive unit. (On some Macs, you also have to lift out the hard drive unit first. Just remember where everything came from!)

Look at it closely. You see a toothpick-like, spring-loaded, white plastic pin. This pin usually slips into the locked/unlocked hole in a disk, and it tells the Mac whether the disk is locked or not. Over time, this pin gets caked with dust and gunk and becomes less springy; eventually, it may stay in the down position, making the Mac think that the disk is locked. Clean the pin carefully, test for springiness, and reinstall everything.

FILE, DESKTOP, AND ICON TROUBLES

This section of our encyclopedia of woes pertains to files and icons that go awry.

Strange crashes with 32-bit Enabler

Apple's 32-bit Enabler, as we mentioned in Chapter 8, is a successor to Mode32. Both give a "32-bit dirty" Mac (IIcx, SE/30, and so on) access to the 32-bit addressing feature. (Again, see Chapter 9.)

Unless you think system crashes make life more interesting, take note of the following: Make sure that Balloon Help is turned off when you use the standard Apple Color Picker (the circular color-wheel dialog box).

Can't empty the Trash

If you can't empty the Trash, try one of the following:

- Hold down Option as you choose Empty Trash.
- Quit your programs and try again. (Maybe another program is using the Trash.)
- Restart the Mac and try again.
- Restart the Mac without any extensions (see Step 1 at the beginning of this chapter) and try again.
- Try a different startup disk. Also try a clean system reinstall.

KEYBOARD AILMENTS

As we mentioned in Chapter 10, your keyboard is actually a computer unto itself. As such, it gets problems all its own.

Dead key

When we say "dead key" here, we *don't* mean one of those Option-key characters. We mean a broken key.

You can get the keyboard repaired professionally, of course. But chances are good that the problem is just a gummed-up contact, which you can clean.

Turn off the Mac. Carefully pry the plastic key off its stem. Then take a can of WD-40 aerosol lubricant (available at hardware stores). Insert the narrow plastic WD-40 tube into the point where the key plunger enters the black body of the key. Give a short spray. Press the key plunger a few times and then hook everything back up to see if the key works. If the key still isn't fixed, repeat a couple more times.

Crazy slow typing

If the Mac suddenly gets incredibly slow to respond to your typing, chances are that the culprit is one of the following:

- The Key Caps desk accessory is open somewhere in the background. It's intercepting every keystroke, displaying the appropriate symbols, and gumming up everything. Close it.
- You're multitasking. The Mac is splitting its focus between your typing and its background task (printing or copying files, for example).
- If your Mac is on a network, bad equipment or frayed wiring may be transmitting garbled signals over the network lines. Disconnect yourself from the network and see if the slowdown persists. If the problem vanishes as soon as your Mac is cut loose from the network, you know you've got a network problem on your hands. See Chapter 32 for some tips on network troubleshooting.
- Your SCSI chain is acting up. See Chapter 30 for instructions on solving SCSI problems.

WHEN ALL ELSE FAILS

If you can't find your trouble described and troubleshot in this chapter, and you have access to the Internet, visit Apple's Technical Information Library. It contains a searchable collection of thousands of tiny articles on techie subjects that aren't available anywhere else. (You might search, for example, for "PowerBook 2300 and batteries.") The address is *http://til.info.apple.com/til/til.html.*

If you really think something's mechanically or electrically wrong with the equipment, don't forget that Apple is taking especially good care of you and your Mac lately.

If you bought a PowerBook and it's less than a year old, Apple will send someone to pick it up, ship it overnight to their repair facility, fix it, and air-express it back to you. *Free.*

If you bought *any* Mac after February 1993 and it's not yet a year old, Apple will *send someone to your house* to fix it! And, remember, you're still eligible for toll-free help. Let us tell you: Apple's phone-support people are *ace.* They sit down there in Austin, TX, becoming the world's best experts on what can go wrong. And they're darned friendly.

The number to call, both for help and for repairs, is 800-SOS-APPL.

THE TOP 10 SOFTWARE SUSPECTS

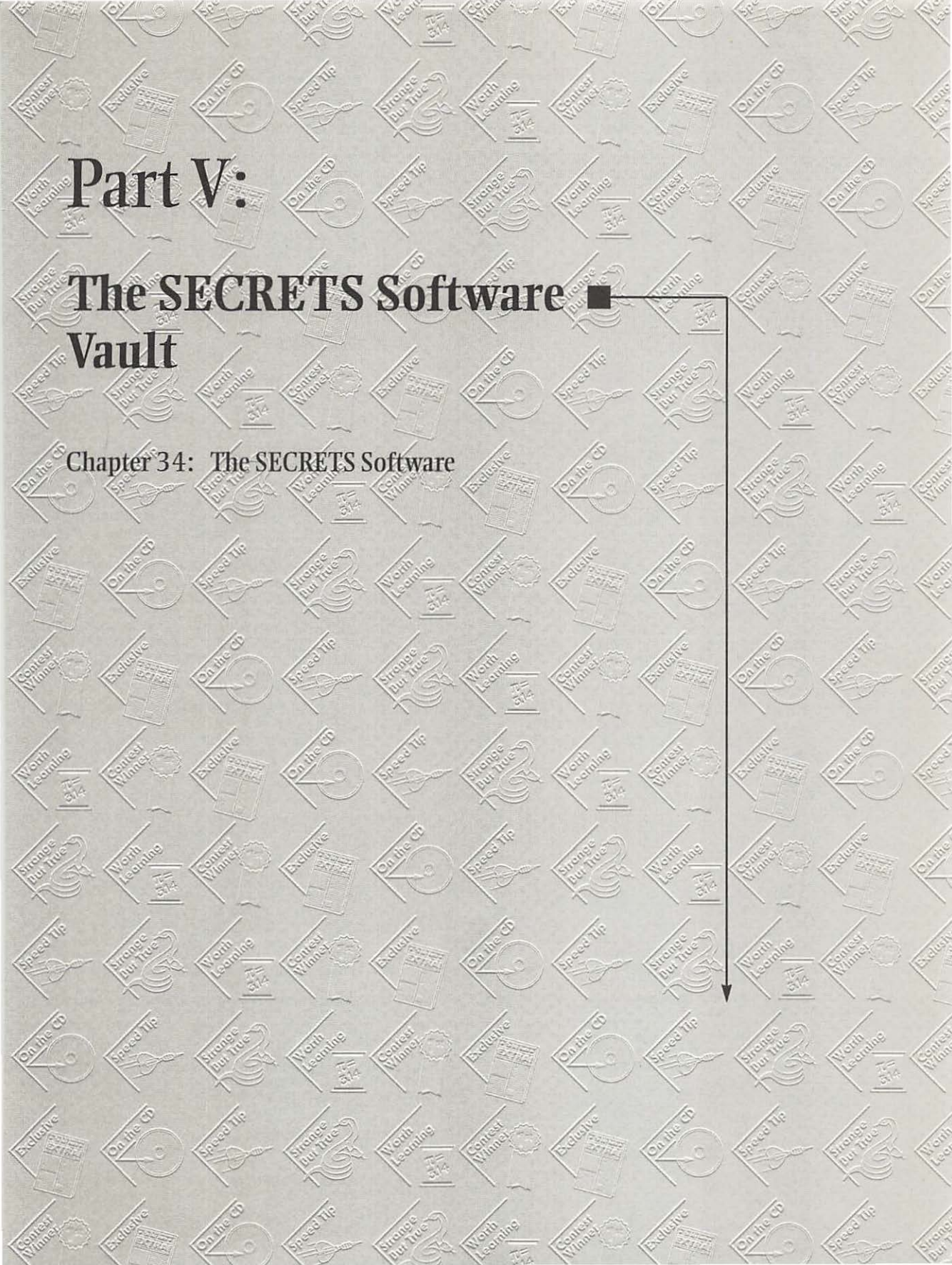
After having read literally tens of thousands of e-mails and BBS postings, we know one thing for sure: A huge percentage of crashes, freezes, and incompatibility problems are caused by the same culprits. Over and over again, the problem turns out to be an outdated or incompatible copy of one of the following programs. Pay special attention to these offenders when you upgrade anything on your Mac, such as the system software or the Mac itself.

1. **FaxSTF.** For some reason, this fax/modem software seems to conflict, sooner or later, with just about everything.
2. **Other fax/modem software.** It's just a sensitive class of software.
3. **ATM.** Every time Apple engineers sneeze, this thing needs to be upgraded.
4. **After Dark.** Ditto. Before version 3.0, Berkeley Systems had worked their way up to version 2.0y. They had to tweak this screen-saver about 15 times to make it compatible. Good thing version 3 came out — what would they have called the version after 2.0z?
5. **TimesTwo** or **Stacker.** You mess around with the Mac's guts enough, you're asking for trouble.
6. **RAM Doubler** or **Speed Doubler.** Same problem. These programs are constantly updated; make sure that you have the latest.
7. **Suitcase.** With System 7.1, there's less call for this — but be sure to upgrade to the latest version if you use it.
8. **Adobe Type Reunion.** Conflict city. Use WYSIWYG Menus (included with this book) instead.

9. **Super Boomerang.** Anything this powerful and complex qualifies as a suspect in times of trouble.
10. **ClickChange.** Likewise. This system colorizer/customizer is awfully neat, but practically guaranteed to cause conflicts somewhere along the line.

Part V:

The SECRETS Software Vault



Chapter 34: The SECRETS Software

Chapter 34

The SECRETS Software

We understand that despite the countless hours your cheerful authors have spent researching and writing this book, you may well consider the software supplied with this book to be the main course.

Before we begin, please note: the SECRETS software comes on a CD. If you don't have a CD-ROM drive, send in the coupon at the back of this book. The publisher will send you high-density floppy disks at no charge. The floppy disks don't contain *everything* on the CD-ROM, but the three-disk set includes over 9MB of the best stuff. The floppy-based collection includes all the commercial software plus most of the shareware that's specifically mentioned in the discussions in this book.

WHAT YOU'VE GOT HERE

There are three categories of software on these disks: commercial software, shareware, and freeware.

- **Commercial Software:** These are full-fledged, non-demo versions of commercial programs. You may get the actual, current software package (such as DiskFit Direct) or the previous shipping version of something (such as Claris Emailer 1.1). In exchange, the software companies hope you'll want to upgrade to newer versions as they appear. (You'll find demo versions of several Adobe and Claris programs here, too.)

  They've made doing so attractive, too, by including coupons with special offers at the back of this book.

- **Shareware:** *Shareware* lets you try out the programs without paying a dime up front. Then, if you like the software and want to continue to use

EVERYTHING'S DIFFERENT, NOTHING'S CHANGED

If you've owned previous editions of this book, don't be fooled — although some titles of the programs we're including here look familiar, almost all of them are included here in newer versions. And they're not finished, either — no software ever is — so we plan to post updates for the shareware and freeware programs on the Web site during the year. The address, of course, is *http://www.idgbooks.com/idgbooksonline/macsecrets*.

You'll notice one other change in the CD-ROM, too — we've done away with those cute custom folders... the ones with the miniature icon inside each folder. We discovered that when you open a window containing a hundred of these things, a CD is painfully slow. So our software comes packed this time in plain, boring, ordinary folders — and the windows open a lot faster.

Finally, as long as we're discussing things that change over time: our apologies if some of the e-mail or Web addresses provided in this chapter don't work by the time you read this (because people move on). Hey — it's the Internet. What did you expect?

it, the honor system dictates that you pay them the small fees their authors request (usually between $10 and $20).

In exchange for paying the fee, some authors give you a password to unlock additional features or eliminate persistent reminders to pay up. Often you'll get a manual or a disk back by mail, containing the newest version of the software, along with a selection of other products in the author's line.

- **Freeware:** Some of the programs on our disks are designated as freeware; no payment is requested. The author retains the copyright.

DISCLAIMER

We've tested every program here on Power Macs, PowerBooks, and standard desktop Macs. Still, here's about the only guarantee we can make: this stuff works on *our* machines. We can't promise that it all works smoothly with whatever junk you've already got in *your* System Folder. Strange as it may sound, we also can't promise that it all works *together* without a little experimentation — you've got to be pretty bold to throw 90 control panels into your System Folder at once.

Some of the potential problems are common sense: don't install a screen saver if you already have After Dark. Take out Adobe Type Reunion if you want to install WYSIWYG Menus. And so on.

If you have trouble, here are four ways out. First, consult our own troubleshooting chapter (Chapter 33), where you'll find out how to do basic conflict-hunting (holding down the Shift key works wonders; doing a clean re-install works miracles).

Second, contact the company or shareware author who created the program. We've included phone numbers, e-mail addresses, and Web page addresses in this chapter.

Third, ask at your user group or in a Mac forum of an online service.

Finally, if you have no luck, contact IDG Books at 800-762-2974. While we don't know each program as intimately as the people who wrote it, we'll see what we can do to help.

HOW THE CD-ROM IS ORGANIZED

These folders are on the CD-ROM:

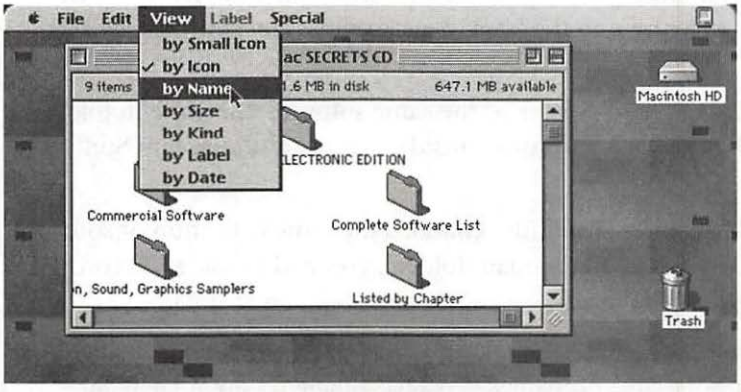
- **Mac Secrets ELECTRONIC EDITION** — The electronic version of this book, provided in Adobe Acrobat format, so that you can search the entire text for specific topics instantly.
- **Complete Software List** — All the *Mac SECRETS* software, in alphabetical order (exactly as it appears in this chapter); each program is in a folder with its own on-disk manual and other information.
- **Listed by Chapter** — Aliases of the same software folders, grouped in folders corresponding to this book's chapters. This way, if you've just read about something in the book you can find it instantly on the CD-ROM.
- **Listed by Category** — Aliases of the same software, this time in folders organized by the *kind* of software inside: Games, Utilities, Fun Stuff, and so on.
- **Listed by Author** — This folder contains the same collection of software (again, mainly aliases to the main folder), grouped in folders according to the programmers or software companies who created it.
- **Commercial Software** — Actual, fully functional software provided by commercial software companies — Claris Emailer, CanOpener, Now Utilities, and so on.
- **Icon, Sound, Graphics Samplers** — From Nova, Zedcor, Component Software, Olduvai, and others: sampler sets of commercial graphics, sound, and icon collections.
- **Shareware and Freeware** — Aliases to all the non-commercial software.
- **Apple Advanced Technologies** — Direct from Apple Computer: cutting-edge software like speech, movies, Cyberdog, OpenDoc, videoconferencing, virtual-reality movies, and other cool programs.

In the following discussions, we're assuming you have a Mac SE or later running System 7 or later; we'll list additional requirements if necessary.

THE SECRETS SOFTWARE DESCRIBED

Aaron

WHAT IT IS Aaron transforms your Mac environment into what we used to know as the Copland (Mac OS 8) look, as pictured in Chapter 6, before Apple put Copland on indefinite hold. It replaces the windows, floating windoids, scroll bars, push buttons, check boxes, radio buttons, and pop-up menus with ones based on the Mac OS 8 Default Theme; gives windows a thick border you can use to drag the window from any side; substitutes Espi Sans Bold 10 for Chicago 12 as the system font; adds a gray background to the menu bar and menus; gives Finder windows gray headers with subtle 3D tinges and dividers; installs Mac OS 8 folder icons; changes the progress bars in the Finder to give them a cool 3D look; adds spinning zoom rectangles to windows opening in the Finder; and much more!



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Aaron folder; drag the extension onto your System folder and click OK.

THE MANUAL The user guide is a SimpleText document in the Aaron folder.

NOTES AND CREDITS

Shareware: $10
Author: Gregory D. Landweber
E-mail: *greg@abel.MATH.HARVARD.EDU*
Web: *http://greg.math.harvard.edu/*

Add/Strip

WHAT IT IS One of the most annoying aspects of the Internet (and IBM compatibles) is getting text files and e-mails filled with strange line breaks and annoying garbage characters. Add/Strip is your revenge. It neatly turns such hard-to-read text files into easy-to-read regular text.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Add/Strip folder; if you like, drag the Add/Strip folder to your hard drive.

THE MANUAL The user guide is a SimpleText document in the Add/Strip folder.

NOTES AND CREDITS

Shareware: $25
Author: Jon Wind
Jon Wind, 2374 Hillwood Drive, Maplewood, MN 55119
CompuServe: *70167,3444*

Anagrams

WHAT IT IS An *anagram* is a phrase created by scrambling the letters of another phrase. For example, an anagram of *information superhighway* is "New utopia? Horrifying sham!"

You just type in a word — your name, for instance — and this program automatically spews out thousands of English phrases, or pseudo-phrases, composed of those rearranged letters. Anagrams (the program) offers several clever methods of weeding out the junky nonsense phrases, making it much easier for you to locate the meaningful ones.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Anagrams folder; if you like, drag the Anagrams folder to your hard drive.

THE MANUAL Anagrams's user guide is built into the program. Just choose About Anagrams from the menu and then use the pop-up menu to select a topic.

NOTES AND CREDITS

Shareware: $15
Authors: Andrew Trevorrow and Nick Spencer
E-mail: *akt@kagi.com*
Web: *http://www.kagi.com/authors/akt/*

Apeiron

WHAT IT IS Apeiron is a wild, high-speed, arcade-style variant on the old Centipede game. According to the author: "During a port through the looking glass, the mirror shatters and your ethereal energy (you know, the stuff that allows you to get up and go to work on a Monday morning) is trapped within one of the crystal shards. Immediately the residents of the mushroom patch sense your presence. Led by the Pentipede, these critters relentlessly hunt the crystal, intent upon sucking the trapped energy out. With plasma cannon blazing, you must hold out as long as possible."

WHAT YOU NEED Apeiron requires a 256 color/gray scale monitor 13" or larger (640 × 480 pixels or greater).

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Apeiron folder; if you like, drag the Apeiron folder to your hard drive.

THE MANUAL Apeiron's user guide is in the form of a FAQ, or frequently-asked-questions document, inside the Apeiron folder. Double-click to open it.

NOTES AND CREDITS

Shareware: $15
Author: Andrew Welch, Ambrosia Software,
716-325-1910 (technical support), 800-231-1816 (orders)
E-mail: *help@AmbrosiaSW.com* (technical support)
register@AmbrosiaSW.com (orders only)

AppDisk

WHAT IT IS AppDisk is a shareware RAM disk application. What is a RAM disk? It's a piece of software that lets you use some extra RAM memory as a really fast hard disk (and extend the life of a PowerBook battery; see Chapters 9 and 14). The disk appears on your desktop just like any other hard disk, and you can copy files to it normally. When you turn off your Mac or restart, the contents of the RAM disk are lost — so AppDisk has several options to automatically save a copy of the RAM disk contents onto your hard disk.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the AppDisk folder; drag the AppDisk program icon to your hard drive.

To launch AppDisk, double-click its icon. AppDisk instantly creates a RAM disk on your desktop. (To change the RAM disk's capacity, change AppDisk's Get Info memory size before launching it.)

THE MANUAL AppDisk's user guide is a SimpleText document in the AppDisk folder.

A VERY HOT APPDISK SECRET We've discovered that AppDisk can be extremely useful for extending the lives of any copy-protected software you've purchased.

Some of today's copy-protected software uses a *hard-disk install* method: you're permitted to install the program one or two times onto a hard drive. Once there, it behaves exactly like any other program. If you choose not to install it onto a hard drive, you're asked to insert the original key floppy disk every single time you run the program. This scheme is used by Performer, Vision, Final Draft, and other niche-market software.

Trouble is, floppies go bad; your key disk may stop working. Worse, standard hard drive maintenance, such as defragmenting or repartitioning, loses your precious hard-disk-installed copy forever. Using AppDisk, however, you can protect yourself. We'll use Performer in this example.

Using AppDisk, create a RAM disk large enough to contain a copy of Performer. Use the hard-disk installation procedure to install a copy of Performer onto the RAM disk. Quit Performer.

Now use AppDisk's Save command. You've just preserved the installed commercial program forever, in its no-key-disk-required condition!

Run Performer's installer a second time, and this time *uninstall* Performer from the RAM disk! You've now reclaimed that precious installation back onto the floppy. Finally, quit AppDisk *and do not save changes!*

At this point, you have a good hard-disk installation left on your master floppy *and* a RAM disk that, as long as you never save changes, has a permanent supply of HD installs. You can make as many copies of the AppDisk as you want.

NOTES AND CREDITS

Shareware: $15
Author: Mark Adams
E-mail: *MarkA38@aol.com*

Apple Advanced Technologies

WHAT IT IS As our CD went to press, Apple was putting the finishing touches on some new technologies and FedExing disks to us. Consider our Apple Advanced Technologies folder a grab bag, then — open it up and see what's in there! Frankly, we'll be just as surprised as you.

Whatever's in there, though, we know there will be this much:

- Installation and usage instructions are with each software package
- Some very cool QuickTime movies and QuickTime VR panoramas (see Chapter 23)
- Apple's speech technology, voice recognition and text-to-speech — along with some new voices you can't get elsewhere
- Apple VideoPhone lets you do picture-phone conferencing with inexpensive cameras such as the Connectix QuickCam — and even lets you use the Internet as a free long-distance telephone!

Special thanks to the Apple advanced-technology evangelists who pulled these together for us. You know who you are, Dana and Steve.

Apple Product Database

WHAT IT IS Without adding another 1200 pages, we weren't able to fill Chapters 12 and 13 with as much detail about every Mac model ever made as we would have liked. If you really, really want to know about the possibilities of a particular model, or when it was introduced, or how much VRAM it has, consult this amazingly complete database from Apple. (We'll post updated versions on our Web site, *http://www.idgbooks.com/idgbooksonline/macsecrets,* as they become available.)

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Apple Product Database folder; if you like, drag the folder to your hard drive.

AppSizer

WHAT IT IS If you read Chapter 9, you know the drill when it comes to changing how much memory a particular program uses when it's running — highlight its icon, Get Info from the File menu, and so on. AppSizer, however, lets you change how much RAM a launching program will use on the fly — you just press the Control key as it launches.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the AppSizer folder; drag the control panel onto your System folder, click OK, and restart.

THE MANUAL The user guide is a SimpleText document in the AppSizer folder.

NOTES AND CREDITS

Shareware: $19.95
Author: Michael Peirce, 408-295-9760
E-mail: *mpeirce@peircesw.com*
Web: *http://www.peircesw.com/FTP.html*

AreaCodeFinder

WHAT IT IS AreaCodeFinder is a fast, elegant way to find out the area code for a certain city — or vice versa. It has over 2,400 American cities listed, and you can add your own. There's even a US map, so you can make sure you're not about to wake up somebody in another time zone.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Drag the AreaCodeFinder folder icon to your hard drive. (Don't run AreaCodeFinder from the CD-ROM.)

THE MANUAL All the instructions you need are contained within the program. Just click the question-mark button.

NOTES AND CREDITS

Shareware: $15
Author: John J. Calande III
E-mail: *jjciii@aol.com*

Art Explosion! Sampler

WHAT IT IS Art Explosion! is among the most impressive professional clip art collections ever assembled: 40,000 images on five CD-ROM discs accompanied by a paperback visual index. This folder includes a dozen sample EPS images from that collection.

WHAT YOU NEED A graphics program (such as Color It, also included with this book), a page-layout program like PageMaker, or a word processor like WordPerfect or Word.

INSTALLATION SUMMARY Note: You can't just double-click an EPS file to open it! Launch the viewing program (such as Color It) first. Then choose Open from the File menu, navigate to the Art Explosion! Sampler folder, open it, and double-click the image you want. Or, if it's a word processor or page-layout program, use the Import command. See Chapter 20 for details on EPS files.

THE MANUAL Brief instructions appear in a SimpleText document in the Art Explosion! Sampler folder.

NOTES AND CREDITS Brought to you by Nova Development, 800-395-NOVA.

Art Today sampler

WHAT IT IS ArtToday is a Web site clip art collection — an unbelievably enormous one, with over 500,000 images (at this writing). It's a fantastic resource for anyone who works with graphics . . . just search for whatever picture you're looking for ("Santa Claus," "roses," or whatever), and you'll be shown dozens of matches. Preview them online, download them if you like them.

This folder contains 18 folders full of sample images, converted to double-clickable picture-clipping (System 7.5) format. (The graphics online are in JPEG or EPS formats.)

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Art Today folder; just double-click an image to view. (Use the Copy command to place one into your work.)

THE MANUAL The user guide is a SimpleText document in the ArtToday folder.

NOTES AND CREDITS

Brought to you by Zedcor, Inc., 520-881-8101 or 800-482-4567
E-mail: *support@arttoday.com*
Web: *www.arttoday.com*

ArtValve

WHAT IT IS Don't you just hate it when you log onto America Online 2.x and end up sitting there, for the remaining 45 minutes before bedtime, waiting for *art* to get downloaded?

ArtValve tricks AOL into believing that you already have the necessary art. It does so by slapping a generic AOL icon into the appropriate vacant spot on your screen. You can still access whatever features lie behind those icons (by clicking); you just don't get the unwanted art.

WHAT YOU NEED America Online before version 3.0 (which doesn't do the art downloading anymore).

INSTALLATION SUMMARY Open the ArtValve folder and drag the ArtValve control panel onto your System Folder icon. Click OK. Restart your Mac. Open the control panel to turn the art-downloading on or off.

THE MANUAL ArtValve's user guide is a SimpleText document inside the ArtValve folder.

NOTES AND CREDITS

Shareware: $5
Author: Bill Karsh
E-mail: *billKarsh@aol.com*

AutoMenus Pro

WHAT IT IS AutoMenus Pro is a control panel that makes using menus drop automatically. It can be set so that menus drop down when the cursor is placed in the menu bar — or it can be set to drop down a menu after a mouse click, as in Microsoft Windows.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the AutoMenus Pro folder; drag the control panel onto your System folder, click OK, and restart.

THE MANUAL The user guide is a double-clickable electronic document in the AutoMenus Pro folder.

NOTES AND CREDITS

Shareware: $15
Author: Night Light Software
E-mail: *nlsoftware@aol.com*
Web: *http://www.nlsoftware.com*

Bitstream Fonts

WHAT IT IS By special arrangement with Bitstream, one of the oldest Mac typeface foundries, we've included with this book a pair of commercial TrueType font families from Bitstream's vast library of typefaces.

After trying out these fonts, check the back of the book for the discount coupon to order the full Bitstream starter collection of 25 fonts and the exclusive Star Trek Fonts collection.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Bitstream Fonts folder. Drag the individual font suitcases onto your System Folder and click OK.

Cache-22

WHAT IT IS As you may remember from Chapters 12 and 13, nothing gooses a Mac's speed like a high-speed memory cache. But how do you know if your Mac has one? And if you just installed, say, a Level 2 cache into your Power Mac, how do you know if it's working?

This program tells you what PowerPC chip you have, what caches, and how big they are.

WHAT YOU NEED A PowerPC-based Mac.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Cache-22 folder.

THE MANUAL The user guide is a double-clickable electronic document in the Cache-22 folder.

NOTES AND CREDITS Cache-22 was developed by Craig Marciniak. It's supported by:

Newer Technology, 800-678-3726, 316-685-4904
E-mail: *NewerRAM@aol.com*

CanOpener 3.0

WHAT IT IS CanOpener is an indispensable utility that gives you emergency access to any file. It lets you copy text, pictures, or sounds out of *any* file, including foreign files, corrupted files, and mystery files. It's a lifesaver for recovering text from damaged files. See Chapter 22 for details.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the CanOpener folder.

THE MANUAL The user guide is a SimpleText document in the CanOpener folder.

NOTES AND CREDITS CanOpener is commercial software from Abbott Systems. See the discount coupon in the back of the book to upgrade to the latest version.

Abbott Systems Inc., 800-552-9157 or 914-747-4201
E-mail: *info@abbottsys.com*
Web: *http://www.abbottsys.com*

Chiral

WHAT IT IS Cross the addictive real-time flipping action of Tetris with the thinking of molecular science, and you've got Chiral, a visually stunning game from Ambrosia Software. Your test tube is filling up with atoms. Can you bond them into molecules fast enough — and keep your molecules stable?

WHAT YOU NEED A 256-color display and at least 2.3MB of free memory.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. For best results, copy the entire Chiral folder to your hard drive. Open the copied folder, double-click Chiral, and you're in business.

THE MANUAL Chiral's user guide is in the form of a FAQ, or frequently-asked-questions document. It is a SimpleText document inside the Chiral folder.

NOTES AND CREDITS

Shareware: $15
Authors: Trevor Powell and Andrew Welch, Ambrosia Software,
716-325-1910 (technical support), 800-231-1816 (orders only)
America Online: *AmbrosiaSW*
Internet: *help@AmbrosiaSW.com* (technical support)
register@AmbrosiaSW.com (orders only)

Claris Emailer 1.1

WHAT IT IS Here it is, the program that revolutionized reading and writing e-mail — this is the real, fully functioning Emailer from Claris. Not only does it consolidate your e-mail from multiple sources into a single consistent interface — Internet, America Online, CompuServe, and so on — but it has dozens of shortcuts and automatic features to process e-mail faster and more efficiently. Automatic signatures . . . convenient filing into your own saved-mail folders . . . automatic mail-replying (or mail-ignoring from certain addresses) . . . automatic sign on at specified times . . . drag-and-drop file enclosures . . . and much more!



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Claris Emailer folder. From there, run the Installer; that's all there is to it!

THE MANUAL The user guide is a SimpleText document in the Claris Emailer folder.

Note: Because Claris is providing Emailer at no charge, please don't call the Claris tech-support line for help. Instead, if you need help, visit the Web's Emailer Resources page, *http://www.claris.com/support/products/emailer/emailer.html* . . . or join the Emailer mailing list . . . or consult the FAQs (Frequently Asked Questions) sheets we've provided. If all else fails, send e-mail to *pogue@aol.com.*

NOTES AND CREDITS Emailer is commercial software from Claris Corporation. See the back pages of this book for a special upgrade offer to Emailer 2.0.

Web: *http://www.claris.com*

Clip Jokes

WHAT IT IS A bunch of jokes downloaded from the Internet, in System 7.5 text-clipping format. We just threw 'em on here for fun. Just double-click to open one.

Clockometer

WHAT IT IS Clockometer tells you exactly how fast your Mac is running, in MHz. If you've installed a clock-speed accelerator (such as the Newer Technology MacClip or PowerClip), then at what speed is that computer running? Or what if someone installed the accelerator in *one* of ten 6100s in the office? How do you quickly determine which one it's in? Clockometer answers the question in one second.

As to the second question: if you have a Macintosh 9500, 8500, 7600, or 7500 with a removable CPU card, how do you know what card is actually in the computer? Or how do you know what speed the card is? Clockometer gets the answers within a second.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Clockometer folder.

THE MANUAL The user guide is a SimpleText document in the Clockometer folder.

NOTES AND CREDITS Clockometer was developed by Craig Marciniak. It's supported by:

Newer Technology, 800-678-3726, 316-685-4904
E-mail: *NewerRAM@aol.com*

Color Coordinator

WHAT IT IS This control panel lets you switch your screen's color setting (256 colors, black-and-white, and so on) simply by pressing a key.

More impressively, it can *automatically* switch to the appropriate color depth as you switch from application to application, without any effort on your part: 24-bit color for Photoshop, black-and-white for word processing, and so on. Color Coordinator is published by Casady & Greene.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Color Coordinator folder. Drag the Color Coordinator control panel onto your System Folder icon and click OK. Restart the Mac.

THE MANUAL The manual is a SimpleText document in the Color Coordinator folder.

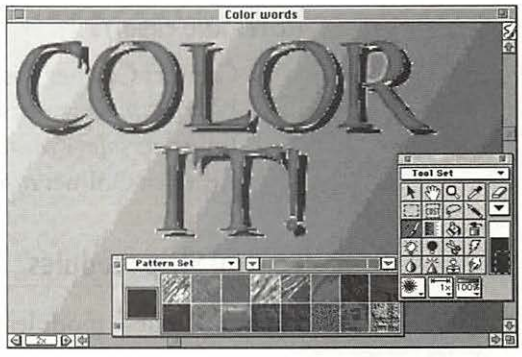
NOTES AND CREDITS

Author: Jeffrey Robbin, author of Conflict Catcher and co-author of an arcade game called Spaceway 2000, both from Casady & Greene
E-mail: *jlr63@aol.com*

Color It! 2.3

WHAT IT IS Color It! is a powerful commercial 24-bit painting and retouching program from MicroFrontier. It's a program along the lines of Photoshop — but it's quicker to load, simpler to learn, offers multiple Undos, and requires half as much memory.

Color It! lets you either create new color paintings or retouch scanned photos — from black-and-white all the way up to millions of colors. It reads MacPaint, PICT, TIFF, Photoshop, and EPS files and offers an impressive list of features: multiple Undo; work with multimegabyte files even with limited RAM; editable tool palette; custom patterns; image masking; and image-processing filters.



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Color It! folder and double-click the Color It! icon to launch the program.

By the way, whenever you launch Color It! by double-clicking its icon, your new painting window will be filled by a colorful ad encouraging you to upgrade to Color It! Version 3. Just double-click the Eraser tool to nuke the message.

THE MANUAL A manual is included in the Color It! folder on your hard drive. Double-click it to start reading; use the Contents menu to turn pages.

NOTES AND CREDITS Color It! is a complete 24-bit graphics editing program from MicroFrontier. We've included a coupon in this book that lets you upgrade to the newest version — which adds GIF and JPEG support, and much more — at a special price.

Web: *http:///www.microfrontier/com*

Conflict Catcher 3 Demo

WHAT IT IS Conflict Catcher 3 is a startup-file manager. If you press the spacebar as your Mac starts up, you're shown a list of every extension and control panel in your Mac. At this pause in the Mac's start-up sequence, you can switch extensions on or off (by clicking); rearrange the loading order (by dragging); view them sorted by type, name, or loading order; group them into mutually required, or mutually incompatible, clusters; or group them into named subsets. Conflict Catcher can actually show the *names* of your extension icons as they load.

Best of all: if you're having some mysterious glitch or crash, you click on CC's Conflict Test button. After a few restarts, CC triumphantly names the problem extension and offers to turn it off for you.

This demo version expires 72 hours after you first use it — long enough to get out of whatever extension conflict you're currently suffering.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Conflict Catcher 3 folder. Double-click the CC Installer icon.

THE MANUAL Most of Conflict Catcher 3's manual is found within the Conflict Catcher 3 control panel itself. You can view these files by clicking the Help button of the control panel. In addition, there's a helpful SimpleText document inside the Conflict Catcher 3 folder.

NOTES AND CREDITS

Conflict Catcher 3 is from Casady & Greene, 408-484-9228
Web: *http://www.casadyg.com*
Internet: *sales@casadyg.com*
America Online: *casadygree*

Control Strip modules

WHAT IT IS These modules add additional functions to Apple's Control Strip.

Control Panels Strip provides a fast, easy way to open control panels and access items in the Extensions, Control Strip Modules, and Startup Items folders.

Terminator Strip provides a variety of functions, including hiding or showing of the Control Strip depending on the mouse location, quitting all applications, quitting the Finder (saving precious RAM), shutting down, and much more.

BunchOApps lists the most recently run programs (and also programs you want to remain permanently in the list). Selecting an application from either list launches the application.

WHAT YOU NEED Apple's Control Strip control panel (see Chapter 4). It comes with System 7.5.3 and later, although you may have to use the installer's Custom Install option to get it.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Control Strip modules folder.

Drag the Control Strip icons into the Control Strip Modules folder inside your System Folder icon. Restart your Mac.

THE MANUAL Each Control Strip has a corresponding SimpleText document inside its folder.

NOTES AND CREDITS These Control Strip modules vary in price from freeware to $5. Registration forms for those that require payment can be found in the appropriate folder (just double-click them to open).

Terminator Strip & Control Panels Strip author: Ammon Skidmore,
13447 Alpine Cove Drive, Alpine, UT 84004
E-mail: *skidperfect@pothole.com*
Web: *http://www.shore.net/~chanson*
BunchOApps author: Patrick McClaughry
E-mail: *patm@parcplace.com*

Décor

WHAT IT IS We get this question almost every day: "How can I fill my entire desktop background with one big photo?"

Décor does exactly that. And more: it can put any PICT, TIFF, or JPEG file onto your desktop; it has a Control Strip module for quick picture-changing; and it can even change the picture through the course of the day.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Décor folder; double-click the Décor Installer to install the program, then restart.

THE MANUAL The user guide is a double-clickable electronic document in the Décor folder.

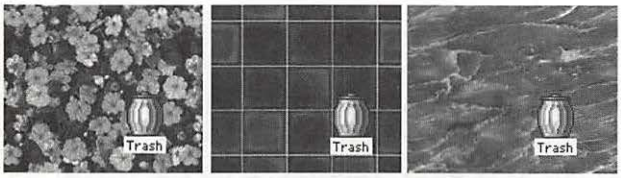
NOTES AND CREDITS

Shareware: $10
Author: Francois Pottier
E-mail: *Francois.Pottier@inria.fr*
Web: *http://pauillac.inria.fr/~fpottier/*

Desktop Patterns (Wraptures)

WHAT IT IS We nearly love Desktop Patterns, the System 7.5-and-later Desktop customizer. But we're really tired of the set of 64 that Apple provides. Therefore, we welcome these 19 amazing, photo-realistic desktop patterns from Form & Function.

They were adapted from Wraptures, a gorgeous collection of photo-realistic backdrops for multimedia and Web creation; call 503-731-0985 for more information.



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Desktop Patterns (Wraptures) folder. Now open your Desktop Patterns control panel; simply drag one of these desktop pattern icons *directly onto* the Desktop Patterns program's window. Click the Set Desktop Pattern button to install the pattern onto your actual desktop.

THE MANUAL The user guide is a SimpleText document in the Desktop Patterns (Wraptures) folder.

NOTES AND CREDITS These picture-clipping desktop patterns are commercial software from Form & Function, 503-731-0985.

E-mail: *wraptures@aol.com*
Web: *http://www.wraptures.com*

DFErase

WHAT IT IS Personalization is a sort of copy protection by software vendors. What the vendors didn't consider was the fact that computer ownership

changes as well as software. This is especially true in the corporate world, where a computer can pass from person to person. DFerase can "de-personalize" some of the most popular programs, such as Microsoft Word and Excel.

REMEMBER: Make a copy of any file you plan on DFerasing. If it turns out to be the wrong file, you can corrupt/destroy the application.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the DFerase folder.

THE MANUAL The user guide is a SimpleText document in the DFErase folder.

NOTES AND CREDITS

Shareware: $5
Author: Dave Hirsh,1027 Stratford Court, Loveland, OH 45140
E-mail: *usr9528a@tso.uc.edu*

Dialog View

WHAT IT IS A persistent annoyance about the Macintosh interface: although file names can be up to 31 characters long, the Standard File dialog boxes (produced by choosing Open or Save from the File menu) don't display that many characters. In System 7, long file names are displayed in compressed type, but that's not a very satisfactory solution.

Dialog View lets you change the appearance of directory dialog boxes (Open and Save). You can control what kind of icons are used, increase the height and width of the file list, and set the font for the file list.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Dialog View folder; drag the Dialog View control panel onto your System Folder icon. Click OK. Restart the Mac.

THE MANUAL Dialog View's manual is a self-contained, double-clickable electronic document (in the Dialog View folder). Use the Chapters menu to turn pages.

NOTES AND CREDITS

Shareware: $10
Author: James W. Walker
E-mail: *jwwalker@kagi.com*
Web: *http://members.aol.com/jwwalker*

Disinfectant

WHAT IT IS Disinfectant, a freeware application and extension, is one of the very best antivirus programs available for the Macintosh. It both recognizes

and eradicates 25 Mac viruses and all known variations of them. Disinfectant also recognizes many possible *unknown* variations. It detects the viruses and, when possible, repairs files infected by the viruses.

Disinfectant also includes a virus protection extension (INIT) that loads at startup and continually protects your Mac from infection by any of the known non-HyperCard Mac viruses.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Disinfectant folder; if you like, drag the Disinfectant program icon to your hard drive.

THE MANUAL Disinfectant's manual is all electronic. Launch Disinfectant, then choose Disinfectant Help from the Apple menu.

NOTES AND CREDITS Disinfectant is free. See the last page of the online Help screens for important distribution and contact information.

John Norstad, Academic Computing and Network Services,
Northwestern University, 2129 North Campus Drive,
Evanston, IL 60208
Internet: *j-norstad@nwu.edu*

Disk Rejuvenator

WHAT IT IS It's a real bummer: you try to paste a new icon onto your hard drive, but you get the bizarre error message "The command could not be completed, because it could not be found." You're in the bundle-bit snafu described in Chapter 33. This program from Aladdin Systems cures it.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Disk Rejuvenator folder; if you like, drag the program icon to your hard drive.

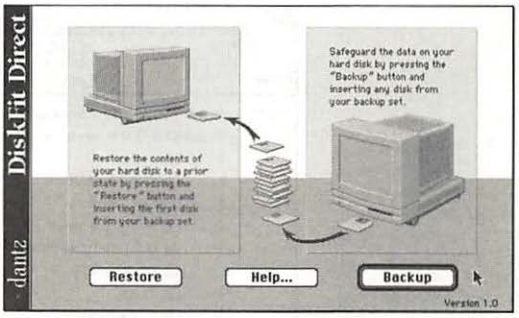
THE MANUAL Disk Rejuvenator's user guide is a SimpleText document inside the Disk Rejuvenator folder.

NOTES AND CREDITS

Author: Leonard Rosenthol,
brought to you by Aladdin Systems, 408-761-6200
America Online: *Aladdin*
Internet: *aladdin@well.sf.ca.us*

DiskFit Direct

WHAT IT IS DiskFit Direct, a commercial program from Dantz Development, makers of Retrospect, is an incredibly simple backup program. Just three clicks and your whole hard drive is backed up!



Best of all, DiskFit Direct backs up your icons *as* icons — it doesn't code them into some special file format, as other backup programs do.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the DiskFit Direct folder. Drag the DiskFit program icon onto your hard drive.

Important: run DiskFit *from* the hard drive you want to back up.

THE MANUAL DiskFit's user guide is a SimpleText document inside the DiskFit folder. Double-click to open it.

You'll also find complete instructions within the program itself; choose Help from the Windows menu.

NOTES AND CREDITS DiskFit Direct is commercial software, graciously contributed by Dantz Development. See the coupon in the final pages of this book for a special upgrade offer.

Dantz Development, 4 Orinda Way, Building C, Orinda, CA 94563
Phone: 510-253-3000, 510-253-3050 (technical support)
E-mail: *DANTZ@aol.com*
CompuServe: *73367,2416*

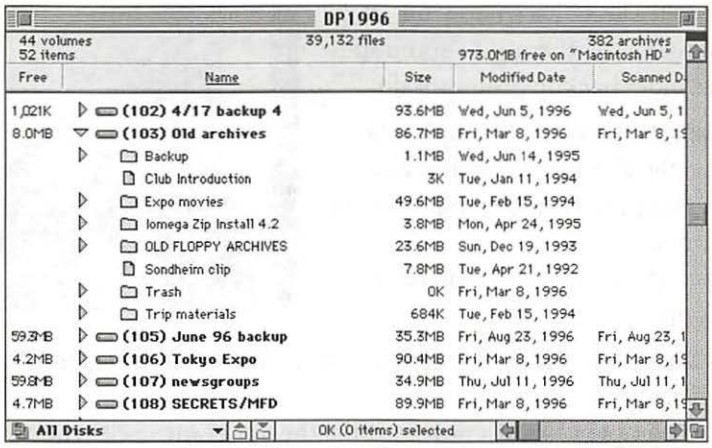
DiskTracker

WHAT IT IS DiskTracker is an extremely powerful and flexible disk cataloging and management system. With DiskTracker, you can quickly and easily create a catalog of every file on your floppy disks, Zip disks, Jaz cartridges, SyQuests, hard drives, CD-ROMs, optical drives, servers, or whatever. Naturally, DiskTracker can read into StuffIt and Compact Pro archives and self-expanding applications.

After scanning your disks, you can then search the catalog at unbelievable speeds with the powerful searching facility. You can easily create disk labels, scan disks in the background, launch files directly from the program, search on almost 20 different criteria, locate the disks with the most free space at a glance, and more!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the DiskTracker folder; if you like, drag the folder to your hard drive.

THE MANUAL The user guide is a double-clickable electronic document in the DiskTracker folder.



NOTES AND CREDITS

Shareware: $20
Author: Mark N. Pirri
E-mail: *thevortex@kagi.com*
Web: *http://woland.mit.edu/dt*

DocMaker

WHAT IT IS Have you ever wanted to send a letter to someone on a disk, but you weren't sure what word processor that person had? Have you wanted to put your own documentation on a disk for others to read and print without worrying about word processor compatibility? Well, now you have it: DOCMaker!

DOCMaker creates stand-alone, self-running document files. It features scrollable and re-sizable windows, graphics, varied text styles and fonts, and full printing capability. The stand-alone files are self-executing applications which you may distribute to others to read and print. No other application is required! This gives you the ability to distribute documents and information widely with no knowledge of the end-users' Mac configuration or software. DOCMaker is a great way to distribute information on disks, networks and bulletin board services.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the DocMaker folder; if you like, drag the folder to your hard drive.

THE MANUAL The user guide is — what else? — a standalone, double-clickable DocMaker document!

NOTES AND CREDITS

Shareware: $20
Author: Mark Wall, Green Mountain Software
Voice/Fax: *205-883-0373*
America Online: *MSWall*
Internet: *greenmtn@hsv.tis.net*
ftp site: *ftp.hsv.tis.net/pub/users/greenmtn*
Web: *www.hsv.tis.net/~greenmtn/*

DragAnyWindow

WHAT IT IS Doesn't this always seem to happen? There's some information you need to see in order to finish filling in a dialog box, but the information is covered *by* that very dialog box, and the dialog box is not movable! DragAnyWindow changes that by allowing you to, well, drag any window.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the DragAnyWindow folder. Drag the DragAnyWindow icon onto your System Folder icon. Click OK. Restart your Mac.

THE MANUAL DragAnyWindow's user guide is a SimpleText document inside the DragAnyWindow folder. You'll also find more information in the control panel itself.

NOTES AND CREDITS

Shareware: $5
Author: Alessandro Levi Montalcini
E-mail: *alm@torino.alpcom.it*
FTP: *ftp://ftp.alpcom.it/software/mac/LMontalcini*

DragClick

WHAT IT IS Macintosh drag-and-drop is the best thing to happen to the Mac OS since System 7. (See Chapter 1 for more about how great it is to drag highlighted text into and out of your word processor windows.) Only one problem: not all programs support drag-and-drop.

Well, they do now. DragClick adds automatic text dragging to almost any program that uses the normal Mac routines for the display and manipulation of text — including Word 5, America Online 2.7, and so on. Just click on selected text, and drag to the desktop or into a program that *does* support drag-and-drop.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the DragClick folder; drag the extension onto your System folder, click OK, and restart.

THE MANUAL The user guide is a SimpleText document in the DragClick folder.

NOTES AND CREDITS

Freeware.
Author: Greg Friedman
E-mail: *friedman@apple.com*

DropStuff

WHAT IT IS DropStuff makes the creation of StuffIt compressed archives a piece of cake. Simply drag the file you'd like to compress onto the DropStuff icon, let go, and the program automatically compresses it, creating the new compressed file and adding ".sit" (which is pretty much universally used to let people know that they're dealing with StuffIt compressed files) to the end of the original document name.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Double-click the DropStuff with EE 4.0 Installer icon. Press Return to OK your way through the welcome screens; follow the instructions on the screen. Restart the Mac.

THE MANUAL All you need to know is provided in the screen that appears when you launch the program.

NOTES AND CREDITS

Shareware: $30
Author: Aladdin Systems, Inc., 408-761-6200
Internet: *aladdin@aol.com*

Dvorak Keyboard Layouts

WHAT IT IS When Charles Sholes designed the 100-year-old typewriter keyboard layout we still use today, he was trying to design something as clumsy as possible — he didn't want fast typing to jam his prototype typewriter. August Dvorak, in 1930, designed an improved layout, in which all the frequently-used letters are directly beneath your fingers. Typists swear that the Dvorak layout lets them type faster, more accurately, and with far less finger movement than the traditional layout.

Fortunately, you have a Mac; you can see for yourself. Simply drop this keyboard layout icon onto your System Folder and select it with your Keyboard control panel (or your Keyboard menu, if you've made yours appear as directed in Chapter 21).

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Dvorak Keyboard Layouts folder; drag the Dvorak Keyboard Layout icon you prefer (usually the Main one) onto your System Folder. Click OK.

Now, to try out the new layout, open your Keyboard control panel. Click the Dvorak layout's name. Consult the chart (provided in the Read Me file) or your Key Caps desk accessory to learn the new locations of the keys.

THE MANUAL The manual is a SimpleText document in the Dvorak Keyboard Layouts folder.

NOTES AND CREDITS These layouts were provided by Steve Ingram, president of Dvorak International, a nonprofit group dedicated to spreading information and assistance for people adopting the Dvorak keyboard layout.

E-mail: *Dvorak Int@aol.com*

Drop•Info

WHAT IT IS Drop•Info is fantastic for the kinds of file editing described in this book: making something invisible, changing a file's secret creator or type codes, and so on.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Drop•Info folder; if you like, drag the Drop•Info program icon to your hard drive.

Remember that Drop•Info is Drag-and-Drop friendly — to process a file, just drop its icon onto Drop•Info.

THE MANUAL The SimpleText document inside the Drop•Info folder contains the most essential information.

NOTES AND CREDITS

Freeware.

Author: Leonard Rosenthol

Eclipse Screen Saver

WHAT IT IS Flying toasters and exploding rabbits are fun for a while, but perhaps you're getting a little tired of using a screen saver that takes up huge amounts of disk space, devours memory, slows down your Macintosh, and

causes inexplicable crashes. Eclipse is an application, so it avoids the problems of extension-based screen savers. Eclipse displays the current time as a floating clock, graphics (PICTs, JPEGs, and GIFs), or QuickTime movies from a folder full of choices.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Eclipse folder; if you like, drag the Eclipse folder to your hard drive. For best results, put an alias of Eclipse into your Startup Items folder so that your screen saver will come on automatically.

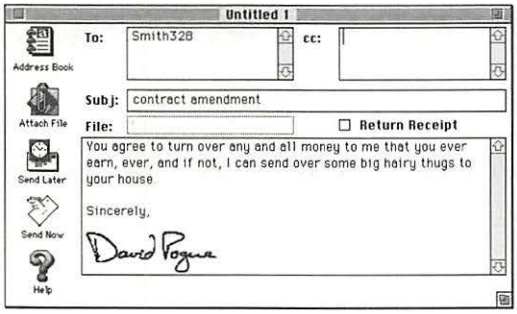
THE MANUAL An electronic manual called Eclipse Documentation is in the Eclipse folder. Double-click it to start reading; use the Contents menu or click the bottom scroll bar to turn pages.

NOTES AND CREDITS

Shareware: $15
Author: Andrew Welch, Ambrosia Software, Inc., 716-325-1910 (technical support), 800-231-1816 (orders only)
America Online: *AmbrosiaSW*
CompuServe: *74777,1147*
Internet: *help@AmbrosiaSW.com* (technical support)
register@AmbrosiaSW.com (orders only)

FC Text-Picture

WHAT IT IS If you are one of the elite, you know how to send your actual, visual signature — or an icon or any other graphic — to another person by e-mail (see the figure below). Of course, that's impossible; everyone knows e-mail is text.



But FC Text-Picture converts any picture on the Clipboard into an "image" you can paste into an America Online (before version 3) or FirstClass e-mail. Of course, it's actually just text — but at 1-point size, and colored appropriately, so it *looks* like you've pasted a graphic right into your e-mail! No one will be able to figure out how you did it!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the FC Text-Picture folder; if you like, drag the FC Text-Picture program icon to your hard drive.

THE MANUAL FC Text-Picture's user guide is a SimpleText document inside the FC Text-Picture folder.

In short, though, here's how you do it: copy a graphic. Launch FC Text-Picture, click Clipboard, click Done, click Copy & Quit, go to your e-mail, and paste!

NOTES AND CREDITS

Freeware.
Author: Ammon Skidmore
E-mail: *ammon@cs.byu.edu*
Web: *http://students.cs.byu.edu/~ammon/ammon.html*

Flash-It

WHAT IT IS Flash-It is a shareware screen-capture utility. Flash-It defines up to five screen-capture key combinations (called HotKeys). Each HotKey performs one of the following functions:

- Captures a portion of the screen image to the Clipboard.
- Leaves the captured image in the Clipboard or saves it to a PICT-based disk file or to the Scrapbook or sends it to the printer.
- Lets you choose the destination of the image on the fly.

Flash-It works even while menus are being displayed. It can capture only the frontmost window (or alert/dialog box) or only the displayed menu; if you want, you can capture the pointer (or cursor) as part of the image.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Flash-It folder. Drag the Flash-It icon to your System Folder and click OK. Restart your Mac.

THE MANUAL Flash-It's manual comes in the form of a word processing document, in your choice of three formats: Word (4/5/6), MacWrite, or ClarisWorks 4 (all are in the Flash-It folder). If you own one of those programs, double-click the document. If not, launch your word processor; then choose Open from the File menu to import the manual.

NOTES AND CREDITS

Shareware: $15
Author: Nobu Toge, 2425B Channing Way, Suite #314,
Berkeley, CA 94704-2209
Internet: *76334.650@compuserve.com*

Folder Icon Maker

WHAT IT IS Folder Icon Maker is a simple, effective program that will help you visually keep track of what's inside your folders. To use Folder Icon Maker,

just drag an application or document onto the Folder Icon Maker icon. A new folder will be created with a miniature version of the application's icon pasted onto it!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Folder Icon Maker folder; if you like, drag the Folder Icon Maker program icon to your hard drive. In this folder, you'll also find a number of additional files, which you can use to further customize your icons.

To create a folder, just drag any icon on top of Folder Icon Maker.

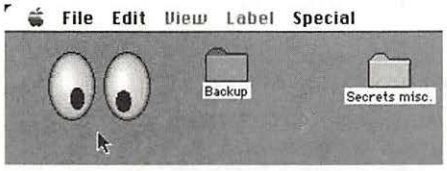
THE MANUAL Folder Icon Maker's user guide is a SimpleText document inside the Folder Icon Maker folder.

NOTES AND CREDITS

Postcardware: If you like the program and plan to use it, send a picture postcard of your hometown to the author at:
Author: Greg Robbins, 109 Crocker Avenue, Oakland, CA 94610
E-mail: *grobbins@eworld.com*

Googol Eyes

WHAT IT IS The search is over! For all of us who have been desperate to have a pair of onscreen eyes follow our cursor around, Googol Eyes is the answer. Actually, this little program can be more than a silly RAM-waster: if you have multiple monitors or a PowerBook screen that's hard to read, this short program can help you find those "lost" cursors.



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Googol Eyes folder; if you like, drag the Googol Eyes program icon to your hard drive. Just double-click to make the eyes appear.

If you'd like to have Googol Eyes launch every time you turn on your Mac, drag its icon (or alias) into the Startup Items folder in your System Folder. If you'd like to have more than a single set of eyes staring at your cursor, duplicate the program, rename the copies, highlight them all, and double click 'em.

THE MANUAL Googol Eyes's user guide is a SimpleText document inside the Googol Eyes folder.

NOTES AND CREDITS

Googol Eyes is freeware by author Bohm S. Kim.
E-mail: *kimbs@aol.com*

GURU

WHAT IT IS GURU is a fast, slick program that tells you about your Mac model's RAM possibilities: the amount of RAM your computer can handle, how many slots you can fill, and what combinations of chips you'll need to reach a certain maximum amount of RAM.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the GURU folder; if you like, drag the GURU program icon to your hard drive.

THE MANUAL There's really not much in the way of instructions, except this: launch the program. Choose your Mac model from the pop-up menu, and read all about it.

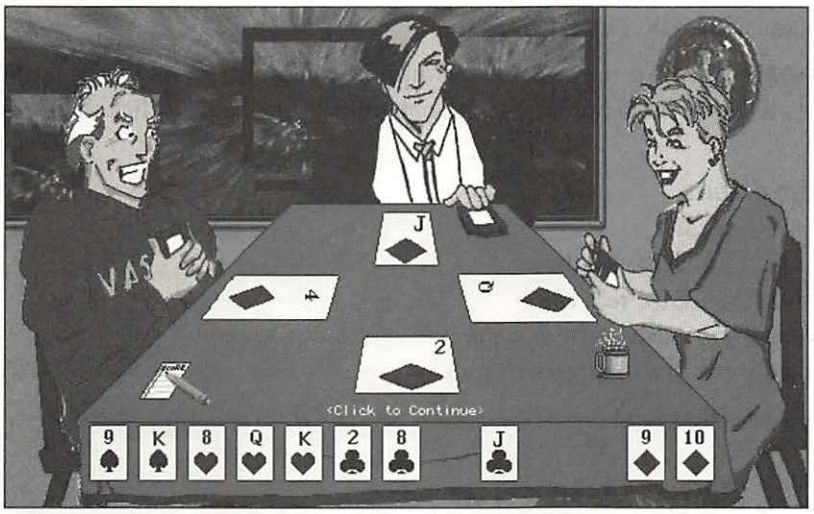
NOTES AND CREDITS GURU is freeware from Newer Technology. It was developed by Craig Marciniak. It's supported by:

Newer Technology, 800-678-3726, 316-685-4904
E-mail: *NewerRAM@aol.com*

Hearts Deluxe

WHAT IT IS Hearts Deluxe is like no computer card game you've ever seen. Its features include: 3-D interface, animated opponents that comment and react to each hand, a tutor to help you learn and then master the game, and speech recognition with the latest Apple Speech software.

And — oh, yeah — it plays a very good game of Hearts!



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Hearts Deluxe folder; if you like, drag the folder to your hard drive.

THE MANUAL The user guide is a SimpleText document in the Hearts Deluxe folder.

NOTES AND CREDITS

Shareware: $20
Author: FreeVerse Software, 212-929-3549
E-mail: *freeVerse@aol.com*
Web: *http://www.freeverse.com*

Helium

WHAT IT IS You've probably said it yourself: "I hate the drudgery of having to go all the way to the Help Menu, turn on Balloon Help, point at the thing I want help with, and then turn Balloon Help off again every time I want help with *one little thing*!"

Helium puts an end to that drudgery. It lets you choose a key combination that inflates Help Balloons instantly. When you let go of the keys, the Balloons disappear. It's almost magical! If that weren't enough, you can also choose the font and size of the text in the Balloons, and you can hide the Balloon Help icon in the menu without giving up access to those special Help Menu items.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Helium folder. Drag the Helium icon onto your System Folder icon. Click OK. Restart your Mac.

THE MANUAL Helium's manual is a SimpleText document in the Helium folder. It's also provided online — in the Helium control panel, click the Help icon.

NOTES AND CREDITS

Shareware: $7
Author: Robert L. Mathews
E-mail: *rob@tigertech.com*
Web: *http://www.tigertech.com/*
ftp address: *ftp://ftp.tigertech.com/*

Holiday Lights

WHAT IT IS Holiday Lights (based on the wildly popular Xmas Lights program) is an entertaining application that places flashing light bulbs around the edge of your screen, as though a (well-insulated) elf had crawled into your computer through the disk drive slot and stapled them there. The lights flash in the background while you continue to work; it's not just a screen-saver! The "bulbs" include standard Christmas tree lights, chili peppers, stockings, holly, snowmen, happy faces, and more — and you can create your own bulbs using ResEdit or a similar program.

Holiday Lights also includes cheery *background music*, using Apple's QuickTime Musical Instruments (see Chapter 23) . . . new holiday lights (including Halloween) . . . and a built-in snowy screen saver to put you in the holiday spirit. It's a multimedia extravaganza!

WHAT YOU NEED System 7.1 or later, with QuickTime. You'll only hear the music if you've installed the QuickTime Musical Instruments file, too. (See Chapter 23.)

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Holiday Lights folder. Double-click the Holiday Lights Installer and follow the instructions on the screen.

THE MANUAL The Holiday Lights manual is a SimpleText document in the Holiday Lights folder called Getting Started.

NOTES AND CREDITS

Shareware: $15 (gets you more music and other files)
Author: Rob Mathews
E-mail: *rob@tigertech.com*
Web: *http://www.tigertech.com/*

JPEG View

WHAT IT IS JPEGView is a fast, powerful image viewer for both 680x0 and PowerPC Macs. JPEGView can open and display images in JPEG, PICT, GIF, TIFF, BMP, MacPaint, or Startup Screen formats. Full drag-and-drop support, easy to use, decompresses images faster than almost any other Macintosh image software, provides an excellent slide show, includes exhaustive on-line documentation and balloon help, and comes with a cool colorful JPEG test image!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the folder; if you like, drag the folder to your hard drive.

THE MANUAL The user guide is a SimpleText document in the Add/Strip folder.

NOTES AND CREDITS

Postcardware (send a postcard if you like it to 182 E. 95th Street 11E, New York, NY 10128); or send $20 for printed, bound manual and official release disk.
Author: Aaron Giles
E-mail: *giles@med.cornell.edu*
America Online: *AGiles*

Kaboom! Sounds

WHAT IT IS When you grow bored with the simple beep or the other spare sounds that come with your Mac System software, it's time for a change. And we've got it for you, in the form of several saucy sound files from the award-winning Kaboom! collection from Nova Development. The back pages of this book contain special offers for the complete package.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Kaboom! Sounds folder; if you like, drag the Kaboom! Sound icons to your hard drive. Just double-click to hear a sound. Or drop it onto your System Folder icon to install it into your system.

NOTES AND CREDITS Brought to you by Nova Development, 800-395-NOVA.

KeyQuencer

WHAT IT IS Cut down the likelihood of repetitive stress injury by reducing repetition! When you find yourself traveling to the same menus to make the same choices over and over again, you can turn to KeyQuencer. With the included extensions, KeyQuencer lets you assign combinations of keys to automate certain activities, like capturing a screen image, opening a file or a folder, launching an application, making menu selections, typing a key combination, clicking on a button, changing the number of colors on your screen, dialing a phone number, changing the speaker's volume, switching to another application, and much more. It can even insert boilerplate text.

KeyQuencer is more difficult to figure out than some macro programs, in part because there's no single manual. On the other hand, it uses much less RAM than the larger commercial macro programs, and has some unique and powerful features.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the KeyQuencer folder.

Drag the KeyQuencer icon, the KQ Apple Events icon, and the KeyQuencer Extensions folder onto your System Folder icon. Click OK. Restart your Mac.

THE MANUAL KeyQuencer's user guide comes in the form of several SimpleText documents inside the KeyQuencer folder. (Check out the Documentation and Hints folder.) You'll also find more information in the control panel's online documentation.

NOTES AND CREDITS

Shareware: $10
Author: Alessandro Levi Montalcini
This version of KeyQuencer has been provided by Binary Software, who makes KeyQuencer 2.0, a commercial product.
E-mail: *alm@torino.alpcom.it*
ftp: *ftp://ftp.alpcom.it/software/mac/LMontalcini*

Label Secrets Pro 2.0

WHAT IT IS Label Secrets Pro is a completely original and exclusive program, and nobody has it but you (and your fellow SECRETS buyers).

Your cheerful authors dreamed up the idea for Label Secrets when writing Chapter 2, which deals with the utter pointlessness of the Label menu in System 7. We thought: if *only* it could be made to do something useful!

Now it does. Each time you turn on your Mac, the Label menu at your Finder desktop displays a different message containing one of the Macintosh Secrets from this book. It shows an actual Macintosh Secret every day for a year, right on your Mac screen!

Label Secrets Pro 2.0 offers an updated set of Secrets (for those fans who've exhausted the 1.0 set).

Second, there's a Label Secrets Pro *secret.* If you're clever, you'll figure out how to that lets you add your *own* secrets (or edit ours), right in the control panel! (Hint: it involves pressing the Option key while opening the control panel.)



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Label Secrets Pro folder. Drag the Label Secrets Pro icon onto your System Folder icon; click OK. Restart the Mac.

THE MANUAL The manual is a SimpleText document in the Label Secrets Pro folder.

NOTES AND CREDITS David Pogue dreamed up the idea and wrote the secrets; Apple programmer/boy genius Jeffrey Robbin (author of Casady & Greene's Conflict Catcher) did the programming.

Label Secrets is available exclusively with this book. You may not distribute this program, post it on bulletin boards, or give it away.

E-mail: *Pogue@aol.com*

Mac Secrets ELECTRONIC EDITION

WHAT IT IS At last: an electronic, searchable edition of *Macworld Mac SECRETS!* The complete text is here. There's not much interactivity, and no color pictures, because we had to create the electronic edition in almost no time at all (after the book was written, but before it was published!) — but it's still great to have on the PowerBook for trips, or on the regular Mac for reference.

INSTALLATION SUMMARY Open the Mac Secrets ELECTRONIC EDITION folder on the CD-ROM. Run the Acrobat Installer and restart the Mac. Once you've done so, you'll be able to open the actual electronic edition just by double-clicking.

NOTES AND CREDITS

Authors: David Pogue and Joseph Schorr.

Note: This book is our livelihood. Please don't give the electronic edition to anyone else — don't distribute, upload, e-mail to people, or otherwise duplicate. Doing so not only kills our book's sales, but is also a violation of federal copyright law.

Mac Secrets Outtakes

WHAT IT IS What do you do when you've got a 1,100-page bestseller that needs updating and expanding? Make it *2,400* pages?

We chose the best, most current, most usable information. It seemed a waste to throw away what we cut — so we decided to stash it on the CD-ROM. This folder contains numerous pieces of information we considered too old (about System 6), too unimportant, or too lengthy to justify their places in the paper edition of this book.

You'll find each document in several popular word-processing formats: Word (version 4/5/6), ClarisWorks, and MacWrite.

Macman Pro

WHAT IT IS Macman Pro is loosely based on the original Pac Man arcade game. It uses only a small amount of memory, looks great in color, and best of all (for those of you who aren't video-game wizards), has a *cheat mode.* 'Nuff said.

WHAT YOU NEED To play in color, set your monitor to 16 colors or 256 colors before launching (or configure Color Coordinator, also included with this book, to do it for you). Setting your monitor to thousands or millions of colors causes the game to run in black and white.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Macman Pro folder; if you like, drag the Macman Pro program icon to your hard drive. To play, double-click the Macman Pro icon.

THE MANUAL The Macman user guide is a SimpleText document inside the Macman folder.

NOTES AND CREDITS

Shareware: $10
Author: John Butler, 2061 Vinton Avenue, Memphis, TN 38104

Maelstrom

WHAT IT IS Maelstrom is a fast action arcade-style game for the Macintosh that uses rendered 3-D graphics, high-speed animation, and four-channel digitized sound effects. It's a modernized update to the old arcade game Asteroids.

WHAT YOU NEED A 256 color display and at least 2.3MB of free memory. It will not work on 12" monitors.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. For best results, copy the entire Maelstrom folder to your hard drive. Open the copied folder, double-click Maelstrom, and you're in business.

THE MANUAL Maelstrom's user guide is in the form of a FAQ, or frequently-asked-questions document. It is a SimpleText document contained inside the Maelstrom folder.

NOTES AND CREDITS

Shareware: $15
Author: Andrew Welch, Ambrosia Software,
716-325-1910 (technical support), 800-231-1816 (orders only)
America Online: *AmbrosiaSW*
Internet: *help@AmbrosiaSW.com* (technical support)
register@AmbrosiaSW.com (orders only)

MenuChoice

WHAT IT IS MenuChoice is a shareware control panel that enables hierarchical menus under the Apple menu. With it you can open applications, control panel devices, and documents of all kinds quickly and easily using your menu.

MenuChoice is compatible with System 7.5 and provides many features not found in the built-in Apple Menu Options control panel. (You can use MenuChoice in addition to, or instead of, the built-in program, but for speediest operation you should disable Apple Menu Options when you install MenuChoice.)

When you select an item from a submenu, it is added to a list of the ten most recent items used. This list is always available at the top of the Apple menu as a submenu called Recent.

You can even put an alias of your hard disk in the menu. With it you can access any item on your disk from the menu. As you can imagine, dealing with submenus that go as deep as your folders can be unwieldy. For this reason, and because the Macintosh operating system is limited to five simultaneous menus, MenuChoice has a feature called Deeper Menus that lets you access menus as deep as you care to go.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the "For systems before 7.5" folder. Open the MenuChoice folder. Drag the MenuChoice icon onto your System Folder icon, and click OK. Restart the Mac. Open the control panel to configure it.

THE MANUAL MenuChoice's user guide is a double-clickable electronic manual inside the MenuChoice folder.

NOTES AND CREDITS

Shareware: $15
Author: Kerry Clendinning, PO Box 26061, Austin, TX 78755
E-mail: *76424.2214@compuserve.com*

MIDI Files

WHAT IT IS A *MIDI file* is the musical equivalent of a plain text file: it's the exchange format between MIDI music programs.

As it turns out, QuickTime 2.0 and later *is* a MIDI program. As described in Chapter 23, you can import these files into Movie Player, assign each music track to a QuickTime Musical Instrument, and orchestrate your own music!

WHAT YOU NEED System 7.1 or later; QuickTime, QuickTime Musical Instruments, and Movie Player (included with this book).

INSTALLATION SUMMARY Launch MoviePlayer (included on this CD-ROM). From the File menu, choose Open; locate one of these MIDI files and open it. Follow the instructions in Chapter 23's sidebar, "Your Secret Synth: QuickTime Musical Instruments."

Movie Cleaner Lite 1.3

WHAT IT IS Movie Cleaner is an award-winning QuickTime video compression tool. This means that Movie Cleaner takes a QuickTime Movie and reduces it in size using the standard QuickTime *codecs* (compression methods). For more information on video compression, see Chapter 23.

Movie Cleaner Lite offers a unique combination of powerful features including: Batch Processing (simply drag and drop up to 2,000 movies onto Movie Cleaner's icon to process one after another automatically); the Movie Expert (an expert system, based on the knowledge of dozens of QuickTime professionals, that discusses your movie and desired results with you, and then creates compression settings based on your needs); Suspend & Resume (lets you suspend your movie compression at any point and use your computer for other applications, and then resume compression when you choose); Before/After feature; and much more.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Movie Cleaner Lite folder; if you like, drag the folder to your hard drive.

THE MANUAL The user guide is a double-clickable electronic document in the Movie Cleaner Lite folder.

NOTES AND CREDITS Commercial software from Terran Interactive. By calling 800-577-3443, 408-278-9065, or Visiting the Web site and purchasing the code, you can turn Movie Cleaner Lite into Movie Cleaner Pro; see the electronic manual for instructions.

E-mail: *info@terran-int.com*
Web: *http://www.terran-int.com*

Movie Play

WHAT IT IS A fast, simple, fun QuickTime movie player. Lets you cut, copy, and paste chunks of your movies for simple editing.

WHAT YOU NEED System 7.1 or later; QuickTime (included with this book).

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Movie Play folder; if you like, you can drag Movie Play to your hard drive.

THE MANUAL There's no manual, except for the basic QuickTime editing techniques shown in Chapter 23. Just drop a QuickTime movie icon onto Movie Play — or open a QuickTime movie using Movie Play's Open command.

NOTES AND CREDITS Movie Play is provided courtesy of Motion Works USA, makers of the CameraMan QuickTime screen-capture utility.

E-mail: *beta@applelink.apple.com*

Movie2Snd

WHAT IT IS Movie2Snd is a very simple application that extracts soundtracks from QuickTime movies. You can also use Movie2Snd to extract sounds from audio CDs. (See Chapter 23 for more.)

Drop-launch a movie onto the application (or choose a movie from the open dialog). You will be prompted for a location for the resulting sound file. That sound file is a plain ol' System 7 sound file that can be played by opening (double-clicking) it.

WHAT YOU NEED System 7.1 or later; QuickTime.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Movie2Snd folder; if you like, drag Movie2Snd to your hard drive.

THE MANUAL Movie2Snd's user guide is in the form of a SimpleText document inside the Movie2Snd folder.

NOTES AND CREDITS

Freeware.
Author: Scott Lindsey
E-mail: In flux; send e-mail to *pogue@aol.com*, and it will be forwarded to Scott, wherever he may be.

Now Utilities 5.02

WHAT IT IS This is the real Now Utilities, the commercial bestseller from Now Software. With this book, you get all eight modules of version 5.0.2, including:

Now FolderMenus lets you "pop up" a menu of any folder's or volume's contents just by clicking on the item and holding down the mouse button.

Now Menus gives you the power to customize all of your menus; and by allowing you to create your own Custom Menus, it makes access to files, folders, and just about anything else on your Mac faster and easier. Change the order in which items appear in the Apple menu; create your own pull-down and pop-up Custom Menus in which you can place just about anything you

use on a regular basis; even select the font and size in which all your menus will be displayed. Now you can choose a small font to fit better on a smaller monitor or a large font that's easier to view.

Now Profile reports on the status of your system and its configuration. The report can be used to keep track of what's installed on your system or to help you troubleshoot any problems you may be experiencing.

Now QuickFiler makes it easy to locate one specific file among the thousands on your hard disk, and then perform any of several handy file management functions on the file (or multiple files). To conserve disk space, you can archive and compress files, too.

Now Save saves your work automatically and protects you from losing data because of unexpected system crashes. Now Save can be set to save your work automatically after a specified number of minutes, keystrokes, and/or mouse clicks. As an extra measure of protection, Now Save can also record your every keystroke with its Key Capture feature. If your system crashes three minutes after the last save, you can still lose your unsaved work.

Now Scrapbook takes the concept of the system scrapbook to a new level of power. It lets you create multiple catalogs for storing text, graphics, sounds, and even QuickTime movies. You can locate catalog items easily and even modify them using the built-in Clipboard Editor.

Now Startup Manager helps you manage the loading of extensions, control panels, Chooser extensions, fonts, and other startup files from one convenient location. If you experience a system crash that's related to an extension, Startup Manager will automatically load different groups of extensions for successive restarts and then ask you if the problem is still occurring. After a number of cycles, Now Startup Manager pinpoints the problem for you and offers options for solving it.

Every time you open a document, application, or folder, **Now Super Boomerang** remembers it, adding it to a list of recently-opened files and folders, and helps you get to it quickly the next time you need it. When you're in an Open/Save dialog box and you can't locate the file or folder you want, Now Super Boomerang can search for items from within this dialog box, saving you time you might otherwise spend switching back to the Finder and manually searching through disks and folders.

Now WYSIWYG Menus lets you customize your font menus so that you know exactly what a font looks like before you choose to include it in a document. It draws all your font names in their actual typefaces (instead of plain old Chicago); lets you reorder fonts within the font menus; and reduces the length of your font list by grouping font families together and attaching them as submenus to each font name. Reducing the size of your font list helps you find the font you need faster!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Now Utilities folder. Double-click the Now Utilities Installer, and follow the instructions on the screen.

THE SERIAL NUMBER The next time you start up the Mac, *you will be asked for a serial number.* Here it is:

NUA-502-0001-774581588459

THE MANUAL There are three manuals for Now Utilities. (1) Choose Now Scrapbook from your Apple menu, and open the Scrapbook file called About Now Utilities. (2) Double-click the SimpleText document in the Now Utilities folder. (3) Open the illustrated manual in the "Illustrated QuickStart Manuals" folder; it's available either as a Word (4/5/6) document or an Adobe Acrobat Reader document. (You can get Acrobat Reader free from the Mac SECRETS Electronic Edition folder.)

NOTES AND CREDITS Now Utilities is included with this book as a courtesy of Now Software. To upgrade to the hot new 6.5 or 7.0 version at a special price, check out the special ad page at the end of this book.

Olduvai Fonts & Sounds

WHAT IT IS Eeps, quacks, and Simple Beeps are never enough. Here's a useful sampler from Olduvai Software's Graphics Essentials collection. As an added bonus, here too is a handful of striking, unusual, fun TrueType fonts from that same CD-ROM.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Olduvai Fonts & Sounds folder.

Fonts: To install TrueType fonts: Quit all open applications. Drag the font suitcases onto your System Folder icon. Click OK.

Sounds: Just double-click to hear a sound. Or drop it onto your System Folder icon to install it into your system.

NOTES AND CREDITS These fonts and sounds are included here courtesy of Olduvai Software. To order the full font/sound/clip art collection at a big discount, use the coupon in the back of this book.

Olduvai Software, 9200 S. Dadeland Blvd., #725, Miami, FL 33156
Phone: 800-548-5151

PowerPCheck

WHAT IT IS Curious about why your brand-spankin'-new PowerPC is running like a drunken cockroach through a three-day-old puddle of raspberry jelly? PowerPCheck ferrets out the truth about your applications. Does the application really have entirely native code? This program can even remove the PowerPC or 68K code from "fat binary" programs.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the PowerPCheck folder; if you like, drag the PowerPCheck program icon to your hard drive.

To make it work, drag a program's icon on top of PowerPCheck; the rest is automatic.

THE MANUAL Full documentation is available inside the application — just select About PowerPCheck from the Menu.

NOTES AND CREDITS

Shareware: $5
Author: Alessandro Levi Montalcini
E-mail: *alm@torino.alpcom.it*
ftp: *ftp://ftp.alpcom.it/software/mac/LMontalcini*

PowerSecretary demo movie

WHAT IT IS PowerSecretary is a voice-dictation system for the Mac. With a headset microphone and this software installed, the Mac actually types what you say, enabling you to do all your "typing" — including corrections — with voice control.

This is a short QuickTime movie illustrating what it's like to dictate to your Mac. (It was made a couple years ago on a pretty slow Mac — things are much faster on, say, a Mac with a PowerPC 604 chip!)

WHAT YOU NEED System 7.1 or later and the QuickTime extension.

INSTALLATION SUMMARY Launch SimpleText or Movie Play (both included with this book) or another movie-playable program. Use its Open command to open this movie. For improved playback, move the PowerSecretary demo movie icon to your hard drive before playing.

THE MANUAL There's a small SimpleText Read Me file in the PowerSecretary Demo Movie folder.

NOTES AND CREDITS This little movie was created by David Pogue to show people how he works all day long! Do whatever you want with it.

Program Switcher

WHAT IT IS Getting tired of mousing up to the Application menu to switch between programs? Program Switcher lets you switch between running programs via a simple keystroke.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Program Switcher folder.

Choose either the PPC Program Switcher control panel (if you have a Power Mac) or the 68K Program Switcher control panel (if you *don't* have a Power Mac). Drag the icon onto your System Folder icon. Click OK. Restart your Mac.

Launch a couple of programs and try pressing Option-Tab!

THE MANUAL Program Switcher's user guide is a SimpleText document inside the Program Switcher folder.

NOTES AND CREDITS

Shareware: $25
Author: Michael F. Kamprath
E-mail: *kamprath@kagi.com*
Web: *http://www.leonardo.net/kamprath*

QuickPop

WHAT IT IS QuickPop does just two things, but was designed to do them very well. The first is to allow you to assign "Hotkeys" to up to 30 Apple Menu Items, control panels, applications, FKEYs, documents, or monitor depth (colors) or speaker volume settings. When the Hotkeys are pressed from within most any program, the selected item will instantly launch.

The second is to make a menu pop up anywhere on the screen when you hold down a particular key and click. From this pop-up menu you can launch any of those same kinds of files (documents, applications, control panels, etc.).

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the QuickPop folder. Drag the QuickPop icon onto your System Folder icon. Click OK. Restart your Mac.

THE MANUAL QuickPop's user guide is a SimpleText document inside the QuickPop folder.

NOTES AND CREDITS

Shareware: $10
Author: John V. Holder
E-mail: *JohnHolder@aol.com*
Web: *http://www.northcoast.com/~jvholder*

QuickScrap

WHAT IT IS QuickScrap can do things to make your life so much easier when using your Macintosh. Have you ever wanted to be able to easily store a piece of information from any document you're reading or editing? With QuickScrap, you just select whatever text or graphics you're looking at — press a keystroke — and that text or picture is instantly safely stored in your Scrapbook (or a ScrapIt Pro file). You can plow through the Web, through e-mail, through whatever you're reading, collecting pieces of information quickly and easily, without messing with copy-and-paste.

You can set another key to open any Scrapbook or ScrapIt Pro file, display all the items in a gallery view or alphabetical list view, and allow you to select an item and instantly have it pasted into whatever document you're editing!

This program performs functions that will benefit any Mac user and is extremely simple to set up and use. You can now define all those useless function keys on your extended keyboard (along with any other keys) to perform extremely useful tasks!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the QuickScrap folder; drag the control panel onto your System folder, click OK, and restart.

THE MANUAL The user guide is a double-clickable electronic document in the QuickScrap folder.

NOTES AND CREDITS

Shareware: $15
Author: John V. Holder
E-mail: *JohnHolder@aol.com*
Web: *http://www.northcoast.com/~jvholder*

QuickTalk

WHAT IT IS Apple's text-to-speech PlainTalk software lets your Mac read out loud — anything that's typed. Only one problem: just a handful of programs have been updated to take advantage of this feature (see Chapter 23).

Now it doesn't matter. QuickTalk, a commercial program from JEM Software, lets *any* program talk. Just highlight some text and press a key — no matter what program you're using, it speaks out loud!

As a bonus, you get CalcTalk — a talking, full-featured scientific calculator — hey, finally, a calculator with a paper-tape readout! — and ClockTalk, a talking clock.



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the QuickTalk folder; open the "For Extensions Folder" folder; and drag the QuickTalk extension onto your System folder to install it. Click OK and restart the Mac.

THE MANUAL The user guide is a double-clickable electronic document in the QuickTalk folder.

NOTES AND CREDITS

Author: JEM Software, 7578 Lamar Ct,
Arvada, CO 80003
E-mail: *RbJEM@aol.com*
Web: *http://www.arielpub.com*

QuickTime 2.5

WHAT IT IS QuickTime is the extension that lets your Mac record and play digital movies! We've licensed it from Apple; see Chapter 23 for details on what it can do.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the QuickTime folder. Double-click the QuickTime 2.5 Installer.

THE MANUAL See Chapter 23 for details on what you can do with QuickTime. Try, for example, using the Movie Player program (included) to edit a movie (a couple movies come with this book, too). Because you have QuickTime Musical Instruments, you can get great music from Holiday Lights (included with the book) and by converting MIDI files (also included)!

NOTES AND CREDITS QuickTime and its accompanying files come from the Apple Programmers and Developers Association (APDA).

RAMometer

WHAT IT IS This program is a high-speed, no-cost RAM Tester. It runs an extensive series of tests and provides a solid test bed for your memory. If you suspect that your RAM is going bad, then fire up a copy of RAMometer and check it out.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the RAMometer folder; if you like, you can drag the folder to your hard drive.

THE MANUAL The user guide is a SimpleText document contained in the RAMometer folder.

NOTES AND CREDITS RAMometer was developed by Craig Marciniak. It's supported by:

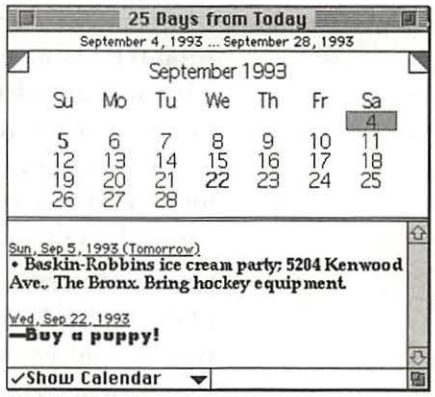
Newer Technology, 800-678-3726, 316-685-4904
E-mail: *NewerRAM@aol.com*

Remember?

WHAT IT IS Remember? is an incredibly flexible, colorful, and powerful on-screen calendar. It shows you what you've got coming up when you turn on the Mac each morning and can even remind you during the day as each appointment comes up.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Remember? folder. Then drag three items onto your System Folder icon: (1) the Remember? suitcase file, (2) the Remember? Extension, and (3) the Occasions folder. Click OK. Restart the Mac.

Open Remember? by choosing its name from the Apple menu. Be sure to read the Basic Setup section of the manual for what to do next.



THE MANUAL Remember?'s user guide is an electronic double-clickable document in the Remember? folder.

NOTES AND CREDITS

Shareware: $20
Author: Dave Warker
E-mail: *dwarker@acy.digex.net*
Web: *http://www.acy.digex.net/~dwarker/*

ScrapIt Pro

WHAT IT IS ScrapIt Pro is the Mother of All Scrapbooks. It stores and indexes anything you can copy to the clipboard, import, or drag-and-drop: sounds, PICTures, text, QuickTime movies, and lots more — all accessible at the click of a mouse! You can print thumbnail pictures or text lists of all items in any Scrapbook file. You can quickly and easily search through all the text items or item names of a scrap file to find what you're looking for. You can actually edit text, play movies, and copy pictures — right in the window!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the ScrapIt Pro folder; if you like, drag the ScrapIt Pro program

icon to your hard drive. (You'll probably want to put it, or an alias, into your Apple Menu Items folder.)

THE MANUAL The manual is a double-clickable electronic document in the ScrapIt Pro folder.

NOTES AND CREDITS

Shareware: $15
Author: John V. Holder
E-mail: *JohnHolder@aol.com*
Web: *http://www.northcoast.com/~jvholder*

SCSIProbe

WHAT IT IS As we explained in Chapter 30, keeping tabs on the SCSI chain is often half legerdemain and half blind luck. SCSIProbe is an indispensable tool that helps you manage the complexities of your SCSI setup. With SCSIProbe you can determine the device type, vendor, product, and version for every device connected to your bus. It even helps you mount removable devices by a simple keyboard command.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the SCSIProbe folder; drag the SCSIProbe control panel onto your System Folder icon. Click OK. (SCSIProbe works even if it wasn't in your System Folder at startup, however.)

THE MANUAL The SCSIProbe user guide is a SimpleText document inside the SCSIProbe folder.

NOTES AND CREDITS

Freeware
Author: Robert Polic
E-mail: *POLIC@aol.com* or *POLIC@applelink.apple.com*

Secret About Box Game

WHAT IT IS In Chapter 6, you can read about one of the greatest Easter eggs (hidden credits screens) of all time — in System 7.5 only. All subsequent versions of System 7.5 lacked this important secret breakout game. Of course, in Chapter 21, we show you how to recover the game from subsequent systems using ResEdit. But why bother? Here it is, ready to double-click and play.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Secret About Box Game folder; if you like, drag the folder to your hard drive.

NOTES AND CREDITS

Freeware
Author: Anthony D. Saxton
E-mail: *elenay@wizard.com*
America Online: *Elenay*

Secret Finder Features

WHAT IT IS Believe it or not, this bizarre little hack may save you as much time than any other software on this CD-ROM. Simply put, it adds the following wonderful free features to the Finder:

- Control-drag an item to make an alias of it
- ⌘-R to Reveal the original item of an alias
- ⌘-Delete Moves selection to the Trash

The legend goes that these features were written into the Mac OS, but turned off at the last minute for fear of freaking out novices — and that this extension simply unlocks them. On the other hand, maybe this *extension* gives you those wonderful new keystrokes. Either way, it's a no-brainer to install this and start enjoying the efficiency — especially that part about ⌘-delete to put a highlighted icon into the trash!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Secret Finder Features folder; drag the extension onto your System folder, click OK, and restart.

THE MANUAL The user guide is a SimpleText document in the Secret Finder Features folder.

NOTES AND CREDITS

Apparently freeware
Author: Marc Bizer
E-mail: *mlbizer@mail.utexas.edu*

ShareDraw

WHAT IT IS ShareDraw is a powerful, full-featured drawing program — like MacDraw or the drawing window of ClarisWorks, but with many more features. High precision, context-sensitive help, full color capability, and native PowerPC speed make this an ideal graphic tool.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the ShareDraw folder; if you like, you can drag the folder to your hard drive.

THE MANUAL The user guide is a double-clickable electronic document in the ShareDraw folder.

NOTES AND CREDITS

Shareware: $24.95
Author: Peirce Software, 408-295-9760
E-mail: *sharedraw@peircesw.com*
Web: *http://www.peircesw.com/FTP.html*

ShrinkWrap

WHAT IT IS Without a word of warning, Apple and many other software companies have begun providing software in a strange and confusing format — *disk images.* A program like Apple's Disk Copy can open one of these disk-image files and, when you insert a blank floppy disk, convert it into a floppy disk that's completely identical to whatever master disk was used to create the disk image. Every icon, window, and folder on the resulting floppy will be exactly where the software company intended it to be.

Using ShrinkWrap is far superior to that clunky insert-floppy-disk routine. You just drag the disk image onto ShrinkWrap, and it creates a *virtual* floppy on your desktop. From there, the Mac treats them as though they were actual floppies. And since ShrinkWrap can "mount" many disks in this way, you can install software that would ordinarily require dozens of floppy disks — without ever inserting a single disk.

ShrinkWrap can also create disk images with equal ease — just drag-and-drop — perfect for sending out over the Internet. Actually, ShrinkWrap performs dozens of other useful functions — read its manual for ideas.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the ShrinkWrap folder.

THE MANUAL The user guide is a SimpleText document in the ShrinkWrap folder.

NOTES AND CREDITS

Author: Chad Magendanz (ShrinkWrap appears here courtesy of Aladdin Systems)
E-mail: *chad@halcyon.com*
Web: *http://www.halcyon.com/shrinkwrap*

SmartKeys

WHAT IT IS SmartKeys is a control panel designed to help you type. First, SmartKeys automatically corrects typing that violates conventional typesetting rules, such as typing more than one consecutive space. (Also in this category — converting straight quotes into curly ones, and creating a long dash — like this — when you type two hyphens.) Second, SmartKeys automatically corrects fast typing errors, words that are often misspelled, such as "teh" for "the" and "THe" for "The". Third, SmartKeys can quietly keep a log of everything you type so that, in the event of a system crash, you can recover anything you typed even if you didn't save.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the SmartKeys folder; drag the SmartKeys control panel onto the System Folder icon. Click OK. Restart your Macintosh.

THE MANUAL SmartKeys' manual is a SimpleText document in the SmartKeys folder. There's also Apple Guide available.

NOTES AND CREDITS

Shareware: $10
Author: Maurice Volaski
Internet: *volaski@contra.med.buffalo.edu*
America Online: *Mauric9278*

Snapz

WHAT IT IS Snapz lets you quickly and easily capture the image displayed on your monitor and save it to a PICT file for later editing. Snapz offers several unique features over both the built-in ⌘-Shift-3 capture facility and other screen-capture utilities. Snapz captures images when other programs fail, such as (a) when a screen saver display is on the screen, (b) in the middle of the action in a game, (c) while a menu is pulled down, or even (d) while your Macintosh is starting up. If it is displayed on your screen, Snapz can capture it.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Snapz folder. Drag the Snapz icon onto your System Folder icon. Click OK. Restart your Mac.

To capture the screen, press ⌘-Shift-3 (you can change the keystroke in the control panel). Look in your menu for the Snapz folder; it contains the PICT files that result.

THE MANUAL Open the control panel and click About.

NOTES AND CREDITS

Shareware: $15
Author: Andrew Welch, Ambrosia Software,
716-325-1910 (technical support), 800-231-1816 (orders only)
America Online: *AmbrosiaSW*
Internet: *help@AmbrosiaSW.com* (technical support)
register@AmbrosiaSW.com (orders only)

SndSampler

WHAT IT IS SndSampler is the ultimate tool for recording, editing, and working with Macintosh sounds. First, of course, it gets you around the Sound control panel's frustrating 10-second length limit when recording sounds — but SndSampler lets you do so much more: stereo, CD quality, special effects, mixing, file-format conversion, and more.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the SndSampler folder; if you like, you can drag the folder to your hard drive.

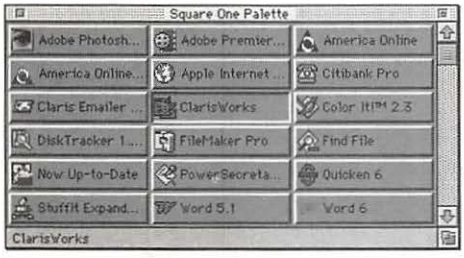
THE MANUAL The user guide is a SimpleText document in the SndSampler folder.

NOTES AND CREDITS

Shareware: $20
Author: Alan Glenn and M. Q. Edison, 4516 Cruz Drive, Midland,
MI 48642

Square One

WHAT IT IS Square One, a commercial program from Binary Software, is a great-looking, drag-and-drop–savvy *launcher* — a floating palette whose tiles represent your favorite files and programs. Click any tile to launch the associated item.



Install a new file or program just by dragging it onto your palette; use the pop-up menu to launch associated documents; quit any running program remotely; and more.

WHAT YOU NEED Dragging items from the Finder to your palette is only available when using System 7.1.1 or later.

INSTALLATION SUMMARY FOR SQUARE ONE Open the Complete Software List folder on the CD-ROM. Open the Square One folder; double-click the Square One icon.

THE MANUAL The Square One manual is provided as several SimpleText documents in the Square One folder. There's also Apple Guide help available.

NOTES AND CREDITS Square One appears courtesy of Binary Software. See the back of the book for a coupon that lets you upgrade to the full, non-Lite version for only $15.

Binary Software, 310-449-1481 Ext.11
E-mail: *ggonzalez@binarysoft.com*
Web: *http://www.binarysoft.com*

Startup Screens

WHAT IT IS As we explained in Chapter 7, you don't have to stare at the "Welcome to Macintosh" or Mac OS logo during the 20 minutes it takes your Mac to start up. If you place a correctly formatted and named PICT graphics file in your System Folder, you can stare at it, instead, during the startup process. Here are several gorgeous, full-screen, full-color photo images to try out.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Startup Screens folder. Open one of the folders inside (*Earth from Space,* for example). Drag the file called *StartupScreen* into your System Folder. Restart your Mac.

NOTES AND CREDITS Thanks to Bob Nichols for Earth from Space, and Mark H. Delfs for the Mac-specific screens.

Stickies Color Editor

WHAT IT IS Stickies Color Editor lets you change the colors of the little notes in Apple's Stickies application (in your menu). No more tame pastels!

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Stickies Color Editor folder.

THE MANUAL For full instructions, launch Stickies Color Editor and click the Instructions button.

NOTES AND CREDITS

Freeware
Author: Joseph Ashear
E-mail: *rendererer@aol.com*
Web: *http://www.users.interport.net/~jashear*

StuffIt Expander

WHAT IT IS Virtually every file or program you can download from an online service or the Internet arrives on your desktop in a specially encoded compact form. StuffIt Expander is an all-purpose file re-expander. It turns downloaded files ending with the suffixes *.sit*, *.cpt*, and *.hqx* back into human form; and if you add the companion shareware program DropStuff with Expander Enhancer (also included with this book), it will open *.gz*, *.z*, *.uu*, *.ARC*, *.ZIP*, and *.uu* files, too.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the StuffIt Expander folder. Double-click the StuffIt Expander 4.01 Installer icon; follow the instructions on the screen. Our advice: leave an alias of StuffIt Expander out on your desktop, ready for downloaded-file drag-and-drops.

Special hint: If you hold down the Control key when dropping a file on the icon, StuffIt Expander will delete the original archive after expanding it.

THE MANUAL The instructions are in a SimpleText document. You'll find it in the StuffIt Expander folder *after* you run the Installer.

NOTES AND CREDITS

StuffIt Expander is free from Aladdin Systems, 408-761-6200
Author: Leonard Rosenthol
E-mail: *Aladdin@aol.com*
CompuServe: *75300,1666*
Internet: *aladdin@well.sf.ca.us*

Super Comments

WHAT IT IS Until System 7.5.3, rebuilding your desktop meant losing any comments you had typed into the Get Info boxes of your files. Super Comments lets your Macintosh keep those comments when the desktop is rebuilt! It also lets you *see* those comments in the Open File dialog boxes — and even *edit* them in Save File dialog boxes.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Super Comments folder. Drag the Super Comments control panel icon onto your System Folder, click OK, and restart the Mac.

THE MANUAL The instructions are in a SimpleText document in the Super Comments folder.

NOTES AND CREDITS

Shareware: $10
Author: Maurice Volaski
Internet: *volaski@contra.med.buffalo.edu*
America Online: *Mauric9278*
Web: *http://www.fluxsoft.com/*
Technical support: *support@fluxsoft.com*

Swoop

WHAT IT IS Swoop is a fast vertical shoot-'em-up arcade game in which you battle 3-D rendered aliens with a variety of powerful weapons. The gameplay is a combination of frantic rapid-fire activity and even more frantic dodging. Definitely not a game for wusses.

WHAT YOU NEED A color monitor that can show at least 640 × 480 pixels. A minimum of 2.3MB of free memory is required.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. For best results, copy the entire Swoop folder to your hard drive. Open the copied folder, double-click Swoop, and you're in business.

THE MANUAL Swoop's user guide comes in the form of a FAQ, or frequently-asked-questions document. It is a SimpleText document inside the Swoop folder.

NOTES AND CREDITS

Shareware: $15
Author: David Wareing and Andrew Welch, Ambrosia Software, 716-325-1910 (technical support), 800-231-1816 (orders only)
America Online: *AmbrosiaSW*
Internet: *help@AmbrosiaSW.com* (technical support)
register@AmbrosiaSW.com (orders only)

System 7 Pack

WHAT IT IS With the System 7 Pack, you can increase the speed of Finder file copies (System 7.0 through 7.1 only); change Command Keys in the Finder; add a Quit Menu so that you can quit the Finder; get rid of the annoying rename delay; make the Finder use the 3/9/97 date format; change or eliminate the word *alias* on every alias you make; and much more!

WHAT YOU NEED System 7.0 through 7.1. A few features don't work on later System versions; we've included System 7 Pack primarily so that you can change your Finder list-view date format, as explained in Chapter 2.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the For Systems Before 7.5 folder. Open the System 7 Pack folder; if you like, drag the System 7 Pack program icon to your hard drive.

To launch System 7 Pack, just double-click its icon. Note, however, that you should turn off your virus programs when you use System 7 Pack to make changes.

You may want to copy your Finder onto a floppy before you use the System 7 Pack. (Even easier, simply go to the System Folder, select the Finder file, and press ⌘-D to duplicate it. Then you'll have a Finder copy that you can always use as a replacement in the rare event that something goes wrong.)

THE MANUAL System 7 Pack's user guide is a double-clickable electronic manual inside the System 7 Pack folder.

NOTES AND CREDITS

Shareware: $29.95
Author: Adam Stein, 126 Calvert Avenue, East, Edison, NJ 08820
Voice/Fax: 908-548-5107
E-mail: *AdamStein@aol.com*
CompuServe: *71140,2051*

TechTool

WHAT IT IS TechTool is an important Mac utility program. It does five things beautifully: (1) Checks your system files for damage. (2) Zaps your parameter RAM (PRAM) in a more thorough way than pressing the usual keystroke, ⌘-Option-P-R. (3) Rebuilds the desktop; once again, TechTool does better than the usual ⌘-Option keystroke, since it actually *deletes* the old desktop file instead of just rebuilding it. (4) Shows system and drive info about your particular Mac. (5) Shows manufacture date and hours of use! Find out when your Mac was made and how many total hours of usage it has had.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the TechTool folder; if you like, drag the TechTool program icon to your hard drive.

THE MANUAL TechTool's user guide is a SimpleText document in the TechTool folder. Help is also available within the program.

NOTES AND CREDITS TechTool 1.1.2 is provided courtesy of MicroMat, makers of MacEKG diagnostic software.

Internet: *micromat@nbn.com*
CompuServe: *71333,166*
America Online: *MicroMat*

TempoEZ

WHAT IT IS Tempo is a commercial *macro utility,* as described in Chapter 22. A *macro* is a chain of tasks that your Mac performs automatically — when you press a single key. One might type out your return address; another could launch America Online, type in your password, and sign on; another might choose boldface Helvetica 18-point.

A Tempo macro may include keystrokes, menu selections, button clicks, file selections, window drags, a series of steps, and much more. Plus, you can teach Tempo to pause, branch to other macros, repeat macros, and switch to other applications and files.

There are two versions of Tempo: the full-fledged Tempo II Plus and the easier to use, simpler TempoEZ; both are sold by Affinity. With this book, you get a special version of TempoEZ that comes with a number of useful ready-to-use macros. You can create five new macros *per application* you use in your work, plus ten macros of your own that work in *every* program.

Usually, you play a macro by pressing a key or key combination, such as F1 or ⌘-A. In Tempo, these trigger keystrokes are called *key codes.*

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the TempoEZ folder. Double-click the TempoEZ Installer and follow the instructions on the screen.

When it's all over, you'll find these items in your System Folder:

- **System Folder:** TempoEZ Demo Macros, TempoEZ Demo
- **Apple Menu Items:** Tempo
- **Startup Items Folder:** !Tempo Assist

After installing Tempo, restart the Mac.

In addition to the files named above, you get a TempoEZ Demo Folder. It contains a selection of extremely useful ready-made macro files; by switching these files with your own macro files, you can swap the canned set for the ones you've made yourself. A TempoEZ Demo Manual is also in this folder; it explains how to do the swapping (to get around the 5/10 macro limit) and how to use the amazing Photoshop Magic macros also included in your TempoEZ Demo Folder.

ABOUT TEMPO'S MACRO FILES Tempo stores its macros in a *macro file.* One macro file can hold all the macros for every application, plus Universal macros. TempoEZ's default macro file is called TempoEZ Demo Macros.

The first time you use Tempo, it will look for a TempoEZ Demo Macros file in the System Folder or in the Tempo+ Folder on your startup drive. If there is none, Tempo will ask you to select a macro file or create a new macro

file. It's best to store your Tempo macro files directly in the System Folder. If you create your own new macro file, be sure to check the "Use as default macro file" checkbox (you'll know it when you see it).

THE MANUAL The TempoEZ manual is a double-clickable electronic document in the TempoEZ folder.

NOTES AND CREDITS Tempo is provided with this book courtesy of Affinity Microsystems. If you have a question about TempoEZ, call Affinity's tech support number: 303-442-4840.

E-mail: *Affinity@aol.com*

Tex-Edit 2.7.2

WHAT IT IS Welcome to Tex-Edit, a drag-and-droppable, multi-window, styled text editor that fills the gap between Apple's bare-bones SimpleText and a full-featured word processor. Tex-Edit is small, fast, easy-to-use, and requires little memory.

With Tex-Edit you can do everything SimpleText does, plus reformat downloaded e-mail or text, correcting word-wrap problems and removing extraneous, non-Mac characters; prepare text for upload to a BBS, so that people with MS-DOS systems can view the document as it was intended to be viewed; instantly quote a brief passage from received e-mail, allowing the senders to remember their original message; read any text document aloud, if you have Apple's Speech Manager extension; create simple hypertext documents; attach sound annotations to ordinary mail, and more.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Tex-Edit folder; if you like, drag the folder to your hard drive.

THE MANUAL The user guide is, of course, a Tex-Edit document.

NOTES AND CREDITS

Shareware: $5
Author: Tom Bender
E-mail: *tombb@aol.com*

TypeIt4Me

WHAT IT IS TypeIt4Me is a typing saver. Your cheerful authors used it to write this book, and in the process only had to type about 70 percent of the pages in your hands. TypeIt4Me did the rest — by *expanding abbreviations* as we typed.

And where, you may ask, did these abbreviations come from? As you go about your daily life, you *teach* TypeIt4Me. You make up your own abbreviations for words you use a lot: you might use **Mc** for *Macintosh,* **bc** for *because,* **aol** for *America Online,* and so on. Over time, your word list grows, and the amount of typing you save grows! It's good for people with repetitive-stress disorders, it's good for people who want to speed up their typing (and increase accuracy), it's great for people in technical fields, and it's a blessing for anyone who uses the Mac for typing.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the TypeIt4Me folder. Drag the TypeIt4Me icon onto your System Folder icon. Click OK. Restart your Mac.

THE MANUAL TypeIt4Me's complete manual is built right into the program. Open the control panel and click Help.

NOTES AND CREDITS

Shareware: $30
Author: Riccardo Ettore, 67 rue de la limite, 1970 W-Oppem, Belgium
E-mail: *72277.1344@compuserve.com*

Web Explosion Sampler

WHAT IT IS Nova Development calls Web Explosion 20,000 "the ultimate graphics library for creating Web pages" — 20,000 royalty-free buttons, banners, photos, backgrounds, and other ready-to-use graphics for making Web pages, on two CDs.

This sampler contains 25 sample images that can be opened with any Web authoring program, Web browser, or image editing application (such as JPEGView, included with this book).

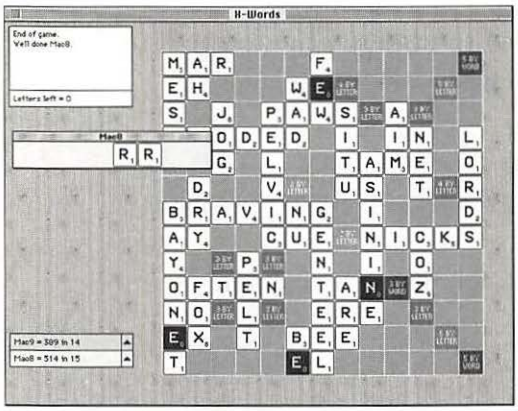
INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Web Explosion Sampler folder. Note: *These files won't open by double-clicking unless you have Photoshop.* Instead, launch JPEGView or another program and use its Open command.

THE MANUAL The user guide is a SimpleText document in the Web Explosion Sampler folder.

NOTES AND CREDITS This sampler is brought to you by Nova Development, 800-395-NOVA.

X-Words

WHAT IT IS X-Words is Scrabble, really. A fantastic electronic edition of Scrabble.



INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the X-Words folder. If you like, drag the X-Words folder to your hard drive.

THE MANUAL The manual is built into the program; choose About X-Words from the menu. Use the pop-up menu to change topics.

NOTES AND CREDITS

Shareware: $20
Author: Andrew Trevorrow
E-mail: *akt@kagi.com*
Web: *http://www.kagi.com/authors/akt/*

Zonkers! Sampler

WHAT IT IS Want watercolored windows? Striped scroll bars? Mauve menus? The power to wreak your own personal havoc with the look and feel of the Mac interface is here now — in the form of Zonkers, from Nova Development. Here are 20 icons (chosen from the hundreds in the Zonkers collection) for you to play with.

Use these to dress up your own folders and documents, using the Get Info command, as explained in Chapter 1.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the Zonkers Sampler folder.

To transplant one of these icons onto a file of your own: Highlight a Zonkers icon you like, choose Get Info from the File menu, click the icon, choose Copy, and paste into the Get Info box of one of your own folders or documents. Full instructions are in Chapter 1.

NOTES AND CREDITS Brought to you by Nova Development, 800-395-NOVA.

ZTerm

WHAT IT IS ZTerm is an award-winning shareware telecommunications program that you can use to dial bulletin boards or other Macs. ZTerm gives you a Phone List file that can hold many Dialing setups. Each setup contains the phone number, port settings, and many other settings. Each dial setup appears in the Dial menu to allow easy connection to all of the services you connect to.

INSTALLATION SUMMARY Open the Complete Software List folder on the CD-ROM. Open the ZTerm folder; if you like, drag the ZTerm folder to your hard drive.

THE MANUAL There are two manuals: a Beginner's Guide (double-click to open; use the Contents menu to turn pages), and the original ZTerm manual. This latter comes in the form of either a MacWrite or a Word document (in the ZTerm folder). If you own Word or MacWrite, double-click the document. If not, launch your word processor; then choose Open from the File menu to import the manual.

NOTES AND CREDITS

Shareware: $30
Author: David P. Alverson, Alverson Software, PO Box 175,
Maineville OH 45039-0175
CompuServe: *72155,1560*
America Online: *Dave Zterm*
Internet: *davea@xetron.com*

A Final Dialogue

JS: David, do you realize that the two of us have been practically chained to our Macs for months, cranking out more than a thousand pages of Macintosh Secrets and undocumented tips . . . ?

DP: It wasn't easy, was it? Those round-the-clock work sessions. The late-night pork chow mein dinners. The gallons of instant coffee . . .

JS: But you have to admit, it was worth all the agony. Isn't it a kick getting to reveal to the world all this never-before-published dirt about the Mac's System software?

DP: I loved your ResEdit trick about colorizing the Calculator . . .

JS: What about those step-by-steps on recovering the five hidden megs on a hard drive? Great stuff.

DP: And my personal favorite, that part where we told how to replace the About the Finder dialog box with a scanned photo of your mother-in-law.

JS: Hey, now that we've got ourselves a book, what do you say we put all this aside and relax a little?

DP: Great idea. I know just the thing: We can play a little SuperTetris, maybe break out the SimCity Supreme . . .

JS: Uh . . .

DP: In fact, I have the new Terrain Editor.

JS: Actually, David, I was thinking more of, you know, really relaxing. I mean, actually doing something.

DP: Doing something? Such as . . . ?

JS: Interacting with real human beings.

DP: Gotcha. And you're absolutely right. We've been isolated for weeks.

JS: Exactly.

DP: We'll fire up the old modem and see who's chatting on America Online.

JS: No! David — let me be blunt: My body is beginning to atrophy. Your eyes are bloodshot. We have both lost touch with our friends and loved ones. My wife, son, and daughter barely know me anymore. We need to get out of here. I mean, there's a big, bright, wonderful world out there — a world where the sun shines and birds sing. A world filled with music and sound and color.

DP: Oh, oh, oh! I see what you mean . . .

JS: You get the idea?

DP: Absolutely. You want to make a QuickTime movie!

JS: No!

DP: But sound and color . . .

JS: Look, just turn off your Mac.

DP: What?

JS: Turn it off.

DP: Joe —

JS: Let's go outside. We'll play tennis. We'll . . . throw a Frisbee. We'll work up a sweat.

DP: You mean — like — we'll go outside?

JS: You'll feel like a new man.

DP: You sure about this?

JS: Come on!

DP: Um . . . should I bring my PowerBook?

Glossary

A/UX Apple's version of UNIX. *See* **UNIX.**

accelerator Usually, an expansion board that speeds up performance by replacing the functions of the CPU or providing accelerated video.

access privileges Rights of a network user to access shared files on another Mac.

access time 1. A measurement of the performance of a hard drive or other storage device. 2. The time it takes to move between tracks of a hard drive in search of a particular piece of data.

active program The foreground application; the program whose windows are in front.

active window The window in front; the currently selected window.

ADB Acronym for Apple Desktop Bus. This is the socket (on some Macs it's two sockets) into which you can plug your keyboard, mouse, and other input devices (even some modems).

alert (alert box) A message that appears on the screen, usually to tell you that something has gone wrong.

algorithm The code that describes how a particular function in a program is to be performed; often used to describe the technique compression programs use to reduce the size of a file.

alias An icon, consuming almost no disk space, that serves as a double-clickable pointer or reference to the original file/folder/disk. A feature unique to Macintosh System 7 and later.

alpha testing The first stage, before beta testing, in which early versions of a software or hardware product are evaluated for bugs and performance.

antialiasing Smoothing bitmapped images by varying the color or shades of gray at the edges.

Apple Guide A form of interactive, tutorial, onscreen help to master software tasks; a feature of System 7.5 and later, accessed from the Guide (question-mark) menu.

Apple Events A part of System 7's interapplication communications feature. These are instructions one application may give to another; for example, to open or save a document.

Apple menu The menu at the left side of the menu bar. A launching pad for desk accessories, aliases, programs, documents, or folders.

AppleScript A system extension (an OS enhancement) that permits you to automate certain computer tasks; requires programming ability.

AppleShare 1. The extension provided with Apple's system software to access files on other Macs across a network. 2. Apple's networking software.

AppleTalk The trademark for Apple's communications protocol, which allows Macs, printers, and servers to be shared over a network.

application A program in which you actually do work, as opposed to support programs (such as control panels and extensions).

application menu For System 7 users, this menu at the right side of the menu bar displays the icon of the program you're currently using. Pulling down the menu allows you to select another application (if another is running) or hide specified applications.

ascender In typography, the part of a character that extends above the mean line (as the upper part of the letters *h* and *k* do).

ASCII Acronym for American Standard Code for Information Interchange, pronounced *ass-kee.* It's a standard that identifies the letters of the alphabet, numbers, and various symbols by code numbers. Often used in the expression *ASCII text,* designating a plain-text file.

ATM 1. Adobe Type Manager, a program that allows PostScript Type 1 fonts to appear smooth-edged at any size on your Macintosh screen, and allows them to print on non-PostScript printers. 2. Asynchronous Transfer Mode, a high-speed networking protocol. 3. Automatic Teller Machine, a bank's cash dispenser.

background (in the background) Part of the Mac's *multitasking* capability. A program in the background continues to run, carrying out a time-consuming task you've specified, while you are working in another program (which is in the foreground — that is, its windows are in front).

background printing A feature of Apple system software that allows your computer to process a document for your printer while you're continuing to do work on the Macintosh.

Balloon Help System 7's method of online help. Choose Show Balloons from the Help menu and point at objects on the screen; small help windows appear that explain how to use each object.

baseline In typography, the imaginary line on which the letters and numbers in a typeface sit.

baud rate An expression of the data transfer speed of a modem; it is usually (and incorrectly) defined in bits per second, such as 2400 baud, 9600 baud, or 14,400 baud. *See* **bps.**

BBS Acronym for bulletin board system — akin to an online service (reachable by modem), but often run locally by an individual. You can use it to exchange messages or files with other Mac users.

benchmark A number used to compare speed results of different tested devices or systems, or the test itself; a standardized performance rating for hardware or software.

beta testing The process of testing software or hardware for bugs and other problems before final release.

Bézier curves In professional drawing programs, lines generated by mathematical computation; they contain four control points to allow for precise manipulation.

binary The way computers count in computer language; base two, as opposed to the base ten numerical system people use.

bit The smallest piece of computer information; derived from *b*inary dig*it*. In computer language, a zero or one.

bitmap An image that the computer stores as a specific arrangement of screen dots.

bitmapped font A font in which the computer stores each character as a specific arrangement of individual screen dots; used most often for screen display. See Chapter 24.

bomb A system crash, or the bomb-shaped signal that appears on the screen to let you know a crash has occurred.

boot To start up a computer.

bps Bits per second; the measurement of a modem's speed. See Chapter 27.

bug A programming mistake that causes a program to behave in an unexpected way.

bus A circuit, an electronic pathway through which data is transmitted between components on a computer.

byte A piece of computer information made up of eight bits. *See* **bit**.

cache A holding or buffer area, generally RAM, in which frequently used data is stored for faster reaccess.

cache card A circuit board loaded with high-speed RAM chips for the purpose of storing frequently used computer instructions to produce an overall Macintosh speed boost.

CAD Acronym for computer-assisted design. A program used for drawing architectural or engineering plans, for example.

card A small printed circuit board (such as a NuBus or PCI expansion board) that adds some new feature to the Mac.

carpal tunnel syndrome One of several painful wrist disorders that may be caused by long or repetitive use of a keyboard and mouse.

cartridge drive A storage device, similar to a hard drive, in which the storage medium is a cartridge that can be removed from the mechanism.

CDEV In System 6, an acronym for Control Panel DEVice. A control panel.

CD-ROM Acronym for compact disc — read-only memory. Derived from the audio compact disc. Stores data files that can be read from your computer in the same way data is stored on a hard drive. A typical CD holds 600MB of information. See Chapter 29.

character A single letter, number, space, or symbol.

chip An integrated electronic circuit etched into a piece of silicon. Usually a RAM or ROM device, a chip is made up of thousands of microscopic electronic components.

Chooser A desk accessory used to select a printer or other external device or to log onto a network.

Chooser extension A device driver, usually for a printer or fax modem, whose icon appears in the Chooser.

clip art A collection of prepackaged drawings that can be pasted or imported into a document.

Clipboard A portion of memory where the Mac stores information cut or copied from a document (for the purpose of pasting it elsewhere).

clock rate The speed of a computer's computations, usually measured in megahertz (MHz). See Chapter 12.

close box The little square at the upper left-hand corner of a window; it closes the window when clicked.

code Generally refers to the actual programmer-written instructions in a computer program.

Color Picker The special Macintosh dialog box that shows a circular palette of colors from which you can select (for your desktop shading or for painting in a graphics program, for example).

color separation A color printing process. The colors used in a document are divided into four parts, each of which is printed separately. When the four plates are merged in the printing process, a full-color document is the result.

command The act of giving an instruction to your Mac, either by menu choice or by keystroke.

Command key The key on your keyboard that has the ⌘ symbol on it. Used with another keystroke to activate some function on your Macintosh.

commercial software A software product sold through mail order or computer stores by for-profit corporations. *See also* **shareware.**

compact Mac A desktop Macintosh design that contains the CPU and monitor in a single cabinet.

compiler A program that converts programming code into a form that can be used by your Mac.

compression A technique that reduces the size of a file by eliminating or encoding redundancies. See Chapter 22.

contrast In image editing, the range between the lightest and darkest areas of an image file.

Control key A seldom-used modifier key on the Macintosh.

control panel A program, often with a single window, that allows you to change specific settings in a program or in the way your Mac looks and behaves.

Copland Code name for Mac OS 8, eventually replaced by a series of semi-annual system-software updates. See Chapter 6.

coprocessor *See* **math coprocessor.**

copy protection An encoding scheme for software that prevents its duplication, or prevents multiple copies of the same program to be run simultaneously by different Macs on a network.

CPU Acronym for central processing unit. 1. The Motorola chip that is the brain of the Mac; it funnels data to and from the rest of the computer's logic board. 2. The box portion of a Mac (as distinguished from the monitor).

crash A system malfunction in which the computer stops working and requires restarting.

CRT Acronym for cathode ray tube, the picture tube in a monitor. See Chapter 11.

cursor The usually arrow- or cross-shaped pointer on the screen, the movement of which is controlled by the mouse.

Cyberdog Apple's Internet-surfing software, incorporating Web, FTP, newsgroup, Telnet, and e-mail features into a sleek, Drag-and-Drop-based interface. See Chapter 28.

DA Acronym for desk accessory.

daisy chaining The act of stringing together add-on appliances (such as SCSI devices) by plugging one into the next.

data The information processed by a computer.

database An electronic list of information, such as a mailing list, that can be quickly sorted or searched for a specific item.

daughterboard A small printed circuit board that attaches to a larger or main board (motherboard).

debug To look for and eliminate bugs in software or hardware.

default The original or proposed "factory settings" of software or hardware.

defragment To concatenate data that has been broken into pieces into contiguous chunks (on the hard drive or in memory) for space and speed considerations. See Chapters 8 and 9.

descender In typography, the part of a character that extends below the baseline, such as the bottom portion of the letters *g*, *p*, or *y*.

desktop 1. The Finder. 2. The actual colored or shaded backdrop of the screen.

Desktop file The invisible files in which the Finder stores a database of information about files and icons. See Chapter 1.

desktop publishing The process of designing printed documents electronically.

deselect To make a highlighted (selected) item return to its preselected condition. Said of text, graphics, check boxes, or other onscreen items.

dialog or **dialog box** An onscreen message box that appears when the Mac requires additional information before completing a command.

digitize To convert linear, or *analog*, data into digital data that can be processed by a computer. Scanning and sound recording are two examples.

digitizing board A circuit board that converts video, audio, or TV signals into files on your Mac.

DIMM Acronym for Dual Inline Memory Module, a memory chip. Small printed circuit board on which RAM (random-access memory) chips are placed in second-generation (and later) Power Mac models. See Chapter 9.

DIP switch An assembly containing tiny switches. When flipped into a specific order of up and down positions, these switches change a setting on a piece of equipment (for example, a SCSI address).

disk cache A portion of RAM in which frequently accessed data from the disk can be stored for faster subsequent access. A speed enhancement. See Chapter 9.

disk drive The machinery that reads what's on a disk, or the slot for a floppy disk.

disk image An electronic file that, when processed by a program like Apple's Disk Mounter or DiskCopy, can recreate the contents of a floppy disk that perfectly matches the original preparer's copy. Frequently used to transmit copies of floppy disks via modem.

disk window The window that displays the directory or contents of a disk.

document The file you create (database, illustration, spreadsheet, or text file, for example), as distinguished from the application program that creates it.

documentation The manual.

dogcow The unofficial Apple mascot, as pictured in the Print or Print Options dialog box.

DOS Acronym for Disk Operating System; the operating system used in IBM PCs and compatibles.

dot-matrix printer An impact printer, such as the ImageWriter, that produces an image by striking pins against a ribbon. See Chapter 25.

dots per inch A gauge of visual clarity, both on printouts and on the screen. The Mac's screen became famous for having a high resolution — 72 dots per inch, or 72 dpi. A typical laser printer is much sharper, capable of printing at 300 or 600 dpi.

download To transfer a file from one computer to another over the phone wires via modem. If you're on the receiving end, you *download* the file. If you're on the sending end, you *upload* the file.

downloadable font An outline font, either PostScript or TrueType, that is transferred to the printer before a document can be printed. See Chapter 24.

dpi Acronym for dots per inch. *See* **dots per inch.**

DRAM Acronym for Dynamic Random Access Memory, another name for the memory chips used in the Macintosh.

drawing program An object-oriented graphics program that creates individually selectable circles, squares, and lines. *See also* **painting program** and **bitmap.** See Chapter 20.

driver A file on your disk that tells the Mac how to communicate with, control, and run a specific piece of add-on equipment (such as a storage device, a printer, or a scanner).

ELF Acronym for extremely low frequency radiation; energy between 60Hz and 75Hz generated by computer monitors and other appliances that create magnetic fields; accused by some of posing a health hazard.

e-mail Electronic mail. Messages are read and/or written on-screen and sent across a network or through a modem.

em dash A long dash that is as wide as an em space; on a typewriter, it is usually represented with two hyphens.

enabler A model-specific System Folder-resident file that contains the necessary information for an existing OS version to comprehend that particular Mac model. See Chapter 5.

en dash A dash the same size as an en space that usually signifies a range, as in 1945–1993; also used as a minus sign. See Chapter 22.

EPS Acronym for Encapsulated PostScript, an image file format. Contains two parts: invisible PostScript information for printing at a printer's maximum resolution, and a PICT file for displaying a 72-dpi representation on the Mac's screen.

Ethernet A protocol for fast file transfer across a network; it requires special circuitry and cables. See Chapter 32.

EtherTalk The network language used to route AppleTalk data among Ethernet-equipped devices.

expansion slot A connector inside your Macintosh into which you can plug a printed circuit board that provides new or enhanced functions for your computer, such as network communications, video display, SCSI acceleration, and so on. Slot formats include PCI, NuBus, and PDS.

extended keyboard A 101-key keyboard that provides numeric and function keys; closely resembles the standard enlarged DOS or AT-style keyboard.

extension A startup program installed into the System Folder that enhances the functions of a Mac. Examples include screen savers, virus protectors, and type enhancements. See Chapter 4.

fax/modem A modem that includes the ability to send and receive a fax. *See* **modem**. See Chapter 27.

fat binary Describes a program that, within a single desktop icon, includes the code for both PowerPC-based Macs and older, traditional Macs. Such a program runs at optimal speed on both kinds of machines, but takes up more disk space than a 680x0-only version or a PowerPC-native version of the same program.

field Computerese for *blank*, like a blank on a tax form.

file The generic word for an application, document, control panel, or other collection of Macintosh data.

file compression *See* **compression**.

file server A hardware or software mechanism that makes files centrally available for other Macs on a network.

File Sharing A built-in feature of System 7 wherein any file, folder, or disk can be made available to other Macs across a network.

Finder The cornerstone, home-base application of the Macintosh environment. The Finder regulates basic file-management functions of your Mac (copying, renaming, deleting) and serves as the principal launching pad for files.

Fkey A keystroke combination of ⌘-Shift and a number key that initiates an automated function, such as taking a screen shot.

flat-file database A shopping list, mailing list, or phone book; a simple collection of information. Contrast with **relational database**.

folder In the Mac world, an electronic directory, represented by a filing folder icon, that contains files. Used for organizational purposes.

font A typeface; a file that contains the characters in an alphabet, numbers, or additional letterforms in a particular style. See Chapter 24.

Font/DA Mover A program used to load fonts and desk accessories into the System file in versions before System 7.

footer Text that appears at the bottom of each page of a document, such as a page number or date information.

footprint The surface area of a table or desk occupied by a piece of equipment.

FPU A floating-point unit — a math coprocessor chip to speed up mathematical calculations. *See* **math coprocessor**.

fragmentation The breaking up of a file, over time, to many separate locations in memory or on disk.

freeze A system error in which the cursor locks in place on the screen and the Mac no longer responds.

function key A key on the top row of a standard extended keyboard (F1, F2, and so on). Contrast with **Fkey**. See Chapter 10.

GB, gig Short for **gigabyte**.

Gershwin The version of the Mac OS once discussed as the successor to Mac OS 8 (Copland). See Chapter 6.

Get Info A Finder File-menu command that presents an information window for a selected file icon.

GIF Acronym for Graphics Interchange Format — a graphics format for quickly transferred, relatively low-quality pictures over the Internet or other modem services.

gigabyte Equal to 1024 megabytes, a very large amount of space or memory (pronounced with a hard *g*).

gradient A color effect in which the shade gradually changes as it proceeds across the image.

grayscale An image or monitor whose picture is composed solely of shades of gray.

grow box Slang for **resize box**.

guest In Macintosh networking, an unregistered user. See Chapter 31.

Guide menu The menu at the right of System 7.5's menu bar, symbolized by a question mark. Contains the Show Balloons command to turn Balloon Help on and off, as well as the Macintosh Guide help system.

halftone An image composed of variously sized black-and-white dots; used by black-and-white printers to represent continuous-tone color or grayscale on-screen images.

handshake A message, exchanged by modems or other communicating devices, that confirms that a connection has been made or that data has been received. See Chapter 27.

hang Slang for **freeze**.

hanging indent In word processing and page layout, a paragraph in which the first line extends to the *left* of the rest of the paragraph body.

hard copy A printout.

hard disk A **hard drive**.

hard drive A large-capacity data storage device made of multiple spinning platters driven by motors and sealed inside a case.

hard space In word processing and page layout, a space between two words that is not broken across a line break. (Create by pressing Option while typing a space.)

hardware Computer equipment. Contrast with **software**.

head crash The dangerous and extremely rare occurrence of a hard drive's read/write heads physically touching the surface of the spinning platter (when the drive is severely jarred, for example), often resulting in damage to data and drive.

header 1. Text that appears at the top of every page of a document. 2. The data written at the beginning of a file, such as a PostScript file, that identifies its type and contents to the computer.

Help menu The previous name for the **Guide menu**.

Hertz A single cycle or occurrence (abbreviated Hz).

HFS Acronym for Hierarchical Filing System, the current Macintosh disk-formatting scheme whereby folders are nested in other folders.

high-density disk The 1.4MB floppy disk used in the Mac's Super Drive. See Chapter 8.

highlight To select, usually by clicking or dragging with the mouse. In the Mac world, text and icons usually indicate that they are selected, or highlighted, by turning black (or a highlighting color you've chosen).

hinting Subtle programming code in a TrueType or PostScript typeface designed to enhance its clarity on low-resolution printers, especially at smaller point sizes. See Chapter 24.

hot spot The single pixel of a pointer that serves as its clicking point for selecting an icon or button.

HyperCard A "software construction kit" program, once included free with every Macintosh. It represents a simply scripted programming language that can be used to create a customized Rolodex or onscreen presentation maker.

I-beam The cursor shape () that appears when editing text.

icon A cornerstone of the Mac's interface; a graphic symbol for a file, folder, or disk.

imagesetter A high-resolution PostScript or PostScript-compatible printer, usually rated at 1200 dpi or better, that outputs onto film or to paper-based photographic media.

ImageWriter Apple's discontinued line of dot-matrix printers. See Chapter 25.

incremental backup Making a backup copy only of those files that have changed since the previous backup.

initialize To format a floppy disk and prepare it for use on your computer, or to replace the old directory file building with a new one on a hard drive or other storage device.

INIT System 6's designation for an extension. *See* **extension**.

inkjet printer A printer that uses a reservoir of ink, usually a cartridge, and creates images on paper by spraying small jets of ink onto the page. See Chapter 25.

insertion point In word processing, the short blinking vertical line that's always somewhere in your text. It indicates where your next typing (or backspacing) will begin.

installer Software used to install a program onto a Macintosh hard drive.

interface The way a program interacts with the user.

Internet The worldwide network of computer networks that offers modem-equipped computer users an inexpensive means of exchanging e-mail, conducting research, and exploring for fun. See Chapter 28.

Interrupt button A switch, either a physical button or a keystroke (⌘-power key), used by programmers to make the Mac enter a debugging mode. See Chapter 7.

jaggies Ragged or stair-step edges on type or graphics appearing either on the Mac's screen or on a printout.

JPEG Acronym for Joint Photographic Experts Group. High-resolution color graphics format, popular for transferring images on-line or across the Internet. See Chapter 20.

K Short for **kilobyte**.

kerning The act of removing space between two letters — causing one to slightly invade the other's space — to produce more compact, readable type, especially in headlines. See Chapter 24.

keyboard shortcut A combination of keys, usually including a modifier key such as Command, Option, Shift, or Control, that when pressed activates some function in a program normally accomplished by choosing a command from a menu.

kilobyte 1024 bytes of computer information (for example, 1024 typed characters).

LAN *See* **local area network**.

landscape The sideways orientation of a piece of paper.

laser printer A printer incorporating a laser engine that can provide high-quality text and graphics. The output is generated with toner powder much in the manner of a conventional copying machine. See Chapter 25.

LaserWriter Apple's line of laser printers.

launch To open a program (usually by double-clicking its icon).

LCD Acronym for liquid crystal display. A technology used in flat computer screens, such as those used in Macintosh PowerBooks and digital watches. See Chapter 14.

leader In typography, a repeated fill character (such as a period or underline character) used to separate items in subsequent columns of a table.

leading Pronounced *ledding*. A term from the world of traditional typography that refers to the distance from the baseline of one line of type to the baseline of the next. See Chapter 24.

ligature In typography, a single character that is a composite of two separate characters; for example, the *fi* in the word *fish* and the *fl* in the word *flounder*.

line spacing Same as **leading**.

lines per inch The measurement unit for the resolution of a **halftone**. See Chapter 20.

local area network A group of computers, printers, and other devices plugged into each other so that they can exchange information. The acronym is **LAN**. See Chapter 32.

LocalTalk Apple's name for the wires and connectors used to link Macs together into a local area network. See Chapter 32.

logic board The motherboard — the main printed circuit board on a Mac.

Mac OS The Macintosh Operating System (usually refers to System 7.5 or later). Used to distinguish a Mac or Macintosh clone from Windows-based computers.

macro A series of steps, such as opening and printing a document, that is stored and played back by specialized macro software and triggered by a single keystroke. See Chapter 22.

mail merge The production of form letters in which the names on a mailing list are seamlessly merged into a text document.

marquee A dotted rectangular outline used to indicate the selection of a region of graphics in a Macintosh program.

math coprocessor A chip, also called an FPU, that works with the Macintosh to handle math-intensive processing. See Chapter 12.

MB Short for **megabyte**.

media In computer parlance, the actual material inside a disk or cartridge that stores data.

megabyte A unit used to measure the capacity of hard disks and other large storage devices. One megabyte equals 1024K. *See* **kilobyte**.

memory The temporary electronic holding area for computer data where a document is stored while it's being edited. See Chapter 9.

menu bar The white horizontal strip containing menu titles that's always at the top of the Mac screen.

MFS Acronym for Macintosh Filing System. The original scheme for Mac file organization on a disk; in it, files and folders occupy a single level on the desktop.

modem A device used to translate computer data into telephone signals. Derived from *mo*dulator/*dem*odulator. See Chapter 27.

modifier keys Keys that give letter keys alternate functions: Shift, ⌘ (Command), Option, Control, and Caps Lock.

monochrome A black-and-white or grayscale monitor. See Chapter 11.

monospaced font In typography, a typeface in which every character has the same width, as the characters on a conventional typewriter do. Courier is such a typeface. See Chapter 24.

motherboard *See* **logic board.**

mount To make a disk or cartridge's icon appear on the Mac desktop so that its contents may be viewed or opened.

multimedia The merger of graphics, sound, text, and video into a single, often audience-driven, presentation.

multitasking Running more than one application (or performing more than one task) simultaneously on a computer. See Chapter 16.

nanosecond The measure of the speed of a chip: a billionth of a second.

native mode Using a computer's original operating system, as opposed to emulating another operating system. For example, a PowerPC may emulate a Macintosh, or it may run in the faster *native-PowerPC* mode.

network The connection of two or more computers and peripherals together for the purposes of exchanging information; for example, a local area network. See Chapter 32.

Newton A hand-held personal information-management device produced by Apple and others.

NuBus The expansion slot interface used on the Mac into which intelligent, self-configuring expansion boards may be installed. See Chapter 31.

NumLock A keyboard mode in certain programs (particularly Microsoft programs) in which the Mac's extended keyboard produces numbers rather than commands; also, the key that turns this mode on and off.

object-oriented 1. A kind of graphics created by a drawing program in which each object drawn remains a distinct, editable object (used to distinguish this kind of graphic from *bitmapped* graphics). 2. A programming technique in which an *object* (a section of computer instructions) is plugged directly into a program instead of being simply referenced by the program.

OCR Acronym for optical character recognition, a technology in which the text of a document is scanned and converted into editable word-processor text. See Chapter 26.

OEM Acronym for original equipment manufacturer, a company that manufactures equipment that is subsequently packaged and sold by other companies.

online Connected; for example, to a network, online service, or BBS.

online service A large, commercial electronic bulletin board that is accessible by modem, such as America Online, CompuServe, and others.

OpenDoc A new Apple software architecture wherein component features from competing companies may be added as desired to a single customized "container" program — a spelling checker from Claris, type-manipulation controls from Adobe, and so on. See Chapter 16.

Open Transport A rewrite of the Mac's networking software, designed to make *multiprotocol* networking easier, offering the ability to switch among different networking systems without restarting the Mac. See Chapter 32.

operating system On a Macintosh or any other computer, the software that controls the computer itself (for example, System 6 and System 7).

optical disk A high-capacity storage medium read by laser that comes in the form of a disk/cartridge. See Chapter 8.

orphan In page design, a stray line of type at the top of a column or a page, or the last line of a preceding paragraph. Definitions vary; see Chapter 18.

outline font A PostScript or TrueType font that can be scaled to any size and that always prints at the maximum resolution of the printer. Contrast with **screen font** *or* **bitmapped font**. See Chapter 24.

painting program A bitmapped graphics program. See Chapter 20.

palette A small floating window that contains a selection of colors, tool icons, or other frequently accessed program options.

parameter RAM A tiny battery-operated memory bank that stores such settings as the Mac's clock, desktop pattern, mouse tracking speed, sound level, and other settings. See Chapters 7 and 33.

partition A subdivision of a hard drive's surface that allows the computer to treat each partition as a separate hard drive with a separate icon on the Macintosh desktop. See Chapter 8.

pasteboard In publishing software, a blank area surrounding the image of the page where graphic or text objects can be temporarily stored; the computerized representation of the pasteup area used by a mechanical artist.

patch A small modification to an existing program, usually designed to fix a bug or provide a new feature.

PC Acronym for personal computer. Ordinarily refers to IBM or IBM-clone computers, but the Macintosh fits into this broad category as well.

PDS Acronym for Processor Direct Slot, an expansion slot connected directly to the motherboard of certain Mac models. See Chapter 31.

peripheral An add-on component for your computer, such as an expansion board, an external hard drive, a CD-ROM, a printer, or a scanner.

PhoneNet An inexpensive networking connector that employs modular plugs and jacks much like those found on telephones. See Chapter 32.

pica In typography, a measurement of size or space; in desktop publishing, equal to $^1/_6$ inch or 12 points.

PICS A file format for animated graphics.

PICT A standard Macintosh graphics format. See Chapter 20.

pixel A single, tiny, square dot, one of the thousands that constitute the computer's screen (from *pic*ture *el*ement).

PMMU Acronym for Paged Memory Management Unit, the chip that enables the virtual memory feature. *See* **virtual memory**. See Chapter 9.

point In typography, a measurement of size or space; in desktop publishing, $^1/_{72}$ inch. 12 points = 1 pica. (In traditional typography, there are 72.27 points to the inch.)

pop-up menu Any menu that doesn't appear at the top of the screen. Usually marked by a down-pointing black triangle. Doesn't actually pop up; usually drops down.

port A connection socket or jack on your Macintosh.

portrait A right-side-up piece of paper; the opposite of **landscape**.

PostScript The name of a mathematical language that describes the characteristics of the printed page. PostScript was developed and is licensed by Adobe Systems. See Chapter 25.

PostScript font A scalable font format based on the PostScript page description language. See Chapter 24.

power supply A set of electronic components used to convert and supply the power used by a Macintosh or peripheral.

PRAM *See* **parameter RAM**.

PrintMonitor The application that provides background printing on a Macintosh; used to monitor the progress of a printout. See Chapter 25.

print spooler A program that stores documents to be printed on the hard drive; prints in the background and monitors progress of the printing. Example: PrintMonitor. See Chapter 25.

printer font The abbreviated-name file that serves as the printer's half of a PostScript font (the other half is the **screen font**). Must be in your System Folder, and one printer font is required for each style (bold, italic, and so on). See Chapter 24.

processor The chip that does the actual computing work in the Mac.

program A piece of software written by a programmer that permits the computer to perform a specific task.

programmer's switch Actually two switches or two keyboard shortcuts to trigger the same result. The Reset half restarts the computer. The Interrupt switch is used by programmers to enter the debugger.

proportional font In typography, a typeface in which each character has a different width. Contrast with **monospaced font**.

public domain Software for which the programmer has given up all rights of ownership.

Publish and Subscribe System 7's live copy and paste feature, wherein an update made to the original file is automatically reflected in the copies of it. See Chapter 16.

QuickDraw The core set of built-in graphics drawing programs on the Macintosh.

QuickDraw GX The memory-hungry, advanced printing, color, and font technology included with System 7.5 and later. See Chapter 25.

QuickDraw 3-D The Apple technology that permits creation, storage, and manipulation of three-dimensional graphic objects with great speed and relatively little memory. See Chapter 20.

QuickTime The Apple system extension that gives programmers the tools for compressing, playing, and editing animation, movies, and sound on the Macintosh. See Chapter 23.

QuickTime VR The Apple technology in which you can drag your cursor within an onscreen photo, in the process changing the camera angle, permitting you to look all around the room in which the photo was taken. See Chapter 23.

quit To exit or close a program.

radio button A small, round onscreen button found in a set of two or more and used to offer a mutually exclusive set of options (in a dialog box, for example).

RAM Acronym for random-access memory. The memory chips that hold data when a Mac or peripheral is running. See Chapter 9.

RAM disk A portion of RAM set aside to emulate a very fast hard drive. See Chapters 9 and 14.

ReadMe A text file document often supplied with a software or hardware product that explains changes, bugs, and incompatibilities discovered too late to include in the manuals.

read/write head The sensor assembly on a hard drive (or other storage device) that actually stores and retrieves information from the disk surface.

reboot Restart the computer.

rebuild the desktop To update the invisible Desktop files. See Chapter 1.

record In database terminology, one *card* in a database, such as one person's address information.

redraw To refresh or update the image on the Mac's screen.

relational database A complex information list where each list of information (such as a mailing list) is interconnected to information on another list.

remote access The technology for connecting to a networked or shared computer from a remote location by modem. See Chapter 32.

removable cartridge A self-contained form of storage media, something like a floppy/hard drive hybrid (for example, SyQuest and Bernoulli). See Chapter 8.

ResEdit Apple's own resource-editing program, used to customize various parts of a specific program. See Chapter 21.

Reset switch Half of the programmer's switch found on most Mac models, or the keystroke (⌘-Option-power key) that triggers the same result. When pressed, it restarts the Mac. See Chapter 7.

resident font A font built into a printer. See Chapter 24.

resize box The small square at the lower-right corner of a window that, when dragged, changes the size and shape of the window.

resolution A number, measured in dots per inch, that indicates how crisply a printer or a monitor can display an image.

resource The portion of a file that usually contains the programming information.

restart switch The **Reset switch**.

RGB Acronym for red, green, blue, the three colors from which a full-color image is created on your Mac's color monitor.

RISC Acronym for Reduced Instruction Set Computing. Describes the new generation of CPU chips at the heart of Apple's second-generation computers, the PowerPCs, which use a smaller set of commands. See Chapter 13.

ROM Acronym for read-only memory. 1. A memory chip on which data is permanently imprinted. 2. In a Macintosh, the ROM contains the basic toolbox routines that provide the Mac's unique graphic environment.

root directory The main hard-drive window.

router A device that can connect several different networks, intelligently choosing the most efficient route for a network data packet to move from one address to another. See Chapter 32.

sans serif A font, like Helvetica or Geneva, lacking small "ledges" (serifs) at the tips of each letter. See Chapter 24.

save To write a file onto a disk.

scanner A machine that optically reads an image, whether on paper or three-dimensional, and converts it into digital form on the Mac, where it can be displayed and edited. See Chapter 26.

screen font Another name for **bitmapped font**. See Chapter 24.

screen shot A digital picture (usually a PICT graphics file) of all or part of the image on the Mac's screen.

script A user-made routine for automating a set of tasks on the Mac.

scroll bar Didn't you read the introduction to this book? We said we weren't going to define this, and we mean it.

scroll box The box within the scroll bar that is used to navigate through a window. You can get a rough idea of where you are in a window by the position of the scroll box.

SCSI Acronym for Small Computer System Interface (usually pronounced *scuzzy*). The port, cable, and technology that allow hard drives, CD-ROMs, scanners, tape drives, and other peripherals to be attached to the Macintosh. See Chapter 30.

SCSI address The ID number of a SCSI device; a unique number between 0 and 7. *See* **SCSI device**. See Chapter 30.

SCSI device A scanner, CD-ROM drive, external hard drive, removable-cartridge drive, or other piece of equipment that attaches to the wide SCSI port in the back of a Mac. See Chapter 30.

SCSI port The wide 25-pin connector in the back of a Mac.

serial port The modem and printer jacks at the rear of the Mac. (*Serial* refers to transmitting pieces of data in order, one after another, as opposed to *parallel* [simultaneously].)

serif A font that has small ledges at the tip of each letter. For example, Times. See Chapter 24.

server A central Macintosh on a network dedicated to sending and receiving files for *client* Macs.

shareware Software that's distributed for free, primarily via electronic bulletin boards, the Internet, and online services. The programmer requests that you send a payment to him or her if you wind up using the program. See Chapter 34.

SIG Acronym for special interest group or a special topic area of a user group or online service.

SIMM Acronym for Single Inline Memory Module, a memory chip. Small printed circuit board on which RAM (Random Access Memory) chips are placed. See Chapter 8.

sleep 1. A command — and a condition — of PowerBooks or recent Power Mac models. 2. A standby power-conservation mode in which data remains in RAM while most other systems are off or working at reduced capacity. A single keystroke restores the computer to full operation.

slot *See* **expansion slot**.

software Files on disk that contain computer instructions.

software engineer A programmer.

spooler *See* **background printing.**

spreadsheet A program designed to resemble an electronic ledger book; it adds up columns of numbers automatically. See Chapter 19.

startup disk A disk that contains a System Folder. *The* startup disk is the one designated to be in control in the event there's more than one to choose from. The startup disk *Control Panel* is used to specify the startup disk. See Chapter 7.

stationery A System 7 feature. Click a document icon, choose Get Info from the File menu, and select Stationery Pad. From now on, when you double-click that icon, it doesn't open; instead, an exact *copy* of it opens.

StyleWriter A low-cost, high-quality, slow-speed Apple inkjet printer. See Chapter 25.

submenu A hierarchical menu item; a mini-menu that pops out, usually to the right of a main menu command, offering several variants of the command.

SuperDrive The kind of floppy disk drive found on every Macintosh except the Plus and early Mac IIs and SEs. Called Super because it can read high-density (1.4MB) floppy disks instead of the unsuper 800K disks, and because it can, with add-on software, read IBM-format disks.

surge suppressor A power strip that includes a circuit to reduce the effects of sudden surges of electricity.

SYLK Microsoft's file format for transferring data between databases and spreadsheets.

sysop Usually the head of a BBS; on an online service, the head of a particular forum area. From *sys*tem *op*erator.

System 6 A version of Macintosh system software. Requires 1MB of memory, or less.

System 7 The 1991 major rewrite of the Macintosh system software, providing many enhancements over previous system software versions.

System crash An internal computer error that's serious enough to prevent you from continuing to work. Sometimes accompanied by a message that reads, "Sorry, a System error has occurred."

System disk *See* **startup disk.**

System file A file in the System Folder containing the instructions that allow your Mac to run; also stores such necessary resources as keyboard layouts, sounds, and (in versions prior to System 7.1) bitmap and TrueType fonts.

System Folder The all-important folder that the Mac requires in order to run. Contains, at minimum, a System file and a Finder. Usually also contains fonts, desk accessories, printer fonts, and so on.

system software Generic term for the contents of the System Folder.

tab-delimited file Usually a text file exported from a spreadsheet or database in which entries, field contents, or words are separated by tab characters.

TeachText The rudimentary text-editing program provided with Apple system software. Today known as SimpleText.

telecommunication Communicating with other computers over the phone lines. Requires a modem.

template A prepared, preformatted document used as the basis for other documents.

terminator *See* **SCSI.**

third party A non-Apple company that produces software and hardware for the Macintosh.

32-bit addressing A feature that permits the Macintosh to recognize and use more than 8MB of installed memory. See Chapter 9.

TIFF Acronym for Tag Image File Format, a graphics file format used for scanned drawings and photographs. See Chapter 20.

title bar The strip at the top of a window where the window's name appears. Shows thin horizontal stripes if the window is *active* (in front of all the others).

toner The fine powder that serves as the "ink" for a laser printer.

tracking In typography, overall letter spacing. See Chapter 24.

TrueType A font format from Apple and Microsoft that provides clear screen display and printing of type at any point size and at the maximum resolution available to the printer. See Chapter 24.

24-bit color A color or grayscale image or monitor that can be produced from a palette of millions of colors. See Chapter 11.

Type 1 The standard PostScript font format that includes *hinting* capability. See Chapter 24.

Type 3 A secondary, unhinted PostScript font format. Often used for logos because it's capable of generating complex graphic shapes, including shades of gray. See Chapter 24.

UNIX A command-line operating system used mostly in workstation-class computers but available on a Macintosh in several forms, including A/UX.

upload To send a file via modem or across a network.

URL Acronym for Uniform Resource Locator — an Internet address, such as *www.Macworld.com.*

user group A computer club, a community of computer users, meeting locally, regionally, or online, sharing information and helping one another.

vaporware Software that is announced, discussed, or promoted but not yet (or never) released.

video board A circuit board used in conjunction with a monitor to provide basic video display or graphics acceleration.

virtual memory A System 7 feature that sets aside space on a hard drive to simulate RAM. See Chapter 9.

virus A self-duplicating computer program designed (by some antisocial programmer) to gum up the works of the Mac. See Chapter 22.

volume A disk, cartridge, or shared folder.

VRAM Acronym for video RAM. Memory chips used to process the Mac's video display. See Chapter 11.

WAN Acronym for wide area network, a very large network, comprising machines located in different buildings or even different geographical locations.

wide area network *See* **WAN.**

widow A very short last line of a paragraph (but definitions vary). See Chapter 18.

window A square view of Mac information; in the Finder, a window is a table of contents for a folder or a disk. In a program, a window displays your document.

word wrap A word processor's capability to place a word on the next line as soon as the first line becomes full.

World Wide Web The graphic interface of the Internet, a point-and-click series of millions of interconnected "pages" (screens). See Chapter 28.

WORM Acronym for write once — read many, an optical disk onto which data may be recorded exactly once and not erased.

WYSIWYG Acronym for "what you see is what you get," the principle that the screen representation of a document matches the printout.

Zip disk An inexpensive, slightly fattened floppy disk from Iomega that holds 100MB.

zone A single area or location in a network.

zoom box The small square in the upper right-hand corner of a window (in the title bar) that makes the window jump to full size when it is clicked.

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Ohio-bred, Yale-educated, Connecticut resident David Pogue is the author of the #1 Mac bestseller *Macs For Dummies,* now in its fourth edition; its inevitable sequel, *MORE Macs For Dummies;* and *Macworld Mac FAQs,* the book of 500 frequently asked questions (and their answers). Nineteen ninety-seven will see the release of two new Pogue books that, put together, are still thinner than this one: *The Great Macintosh Easter Egg Hunt* (Berkley Books) and *The Weird Wide Web* (IDG Books, written with Erfert Fenton).

He writes the back-page column, "The Desktop Critic," in *Macworld.* His novel, *Hard Drive* (Berkley Publishing Group), was called "a notable book of the year" by the *New York Times.* His Mac students include Stephen Sondheim, Carly Simon, Mike Nichols, Harry Connick, Jr., Gary Oldman, Natasha Richardson, and Mia Farrow.

In his other lives, David is a dinner-table magician, occasional Broadway conductor, and, with collaborator Joseph Schorr, composer of such little-known musicals as *Downtown Local* and *Odysseus: The Man and His Music.* His e-mail address is *Pogue@aol.com.*

Joseph Schorr, a journalist and playwright, writes the monthly "Secrets" column for *Macworld.* A 1985 graduate of Yale University, he spent seven years as a reporter with *The Oregonian* newspaper in Portland, Oregon, and is currently the editorial production manager of a Mac-based publishing company in Eugene, Oregon.

Joe wrote *Mac SECRETS* while living in an absurdly remote town in the White Mountains of Arizona, where he communicated with the outside world solely via modem (address: *schorr@earthlink.net*). His plays have been produced at Yale, Off-Off Broadway, and at Wolf Trap.

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Installing the SECRETS Software

The *SECRETS* Software comes on a CD, which, of course, requires a CD-ROM drive. If you don't have one, send in the coupon at the back of the book; the publisher will send you high-density floppies at no charge. The disks contain 9MB of the best stuff, including the commercial programs.

Chapter 34 contains step-by-step instructions for installing each individual program. But here's a summary:

Step 1: Insert the CD

If the disc's icon doesn't appear on the desktop after a moment, you're probably missing the Apple CD-ROM extension. There's also a chance that your CD-ROM drive isn't connected properly. See Chapters 4, 29, and 30, or call 800-SOS-APPL for assistance.

Step 2: Find the program you want

On the CD-ROM, you'll find the same 110 programs arranged in several different folders — organized by name, chapter, author, category, and so on. If you're in a hurry, remember that the Complete Software List folder contains everything.

Refer to Chapter 34 for individual software installation instructions, but the basics are simple: if the software you want is a control panel, extension, desk accessory, sound, or keyboard layout, drag its icon onto your System folder icon, click OK, and restart the computer. Almost everything else may be run directly from the CD, but will probably be faster and more satisfying if you copy it to your hard drive first.

For the Mac SECRETS Electronic Edition, run the Acrobat Installer program provided in the Mac SECRETS Electronic Edition folder. After you restart the Mac, double-click the Mac SECRETS Electronic Edition icon to open the searchable electronic version of this very book.

THE SECRETS SOFTWARE AT A GLANCE

See Chapter 34 for more complete descriptions.

Aaron

Transforms your Mac desktop environment into the futuristic Copland (Mac OS 8) look!

Add/Strip

Fixes Internet (and DOS-like) text files filled with strange line breaks and annoying garbage characters.

Anagrams

Creates *anagrams* — scrambled words. For example, an anagram of *information superhighway* is "New utopia? Horrifying sham!"

Apeiron

A wild, high-speed, arcade-style variant on the old Centipede game.

AppDisk

A RAM disk. Made of memory, so it acts like a disk — but 20 times faster.

Apple Advanced Technologies

QuickTime VR . . . live photographic panoramas, plus the software you need to make your own! **Apple's speech technology** . . . voice recognition and text-to-speech — along with some new voices you can't get elsewhere. **Apple VideoPhone Lite** . . . lets you do picture-phone conferencing with inexpensive cameras such as the Connectix QuickCam — and even lets you use the Internet as a free long-distance telephone! **QuickTime 2.5** . . . plus some amazing digital movies and a Web plug-in. **QuickDraw 3D** . . . three-dimensional modeling, including some amazing demos.

Apple Product Database

Detailed specs about every Mac model ever made.

AppSizer

Lets you change how much RAM a launching program will use on the fly — you just press the Control key as it launches.

AreaCodeFinder

A fast, elegant way to find out the area code for a certain city — or vice versa.

Art Explosion! Sampler

A dozen EPS images from Nova's Art Explosion!, a clip art collection of 40,000 images.

Art Today sampler

18 folders full of picture-clipping images from ArtToday, a Web site clip art collection with over 500,000 images.

ArtValve

Don't you just hate it when you log onto America Online 2.x and end up sitting there, for the remaining 45 minutes before bedtime, waiting for *art* to get downloaded? No longer!

AutoMenus Pro

Makes menus drop automatically, as in Microsoft Windows.

Bitstream Fonts

A pair of commercial TrueType font families from Bitstream.

Cache-22

How do you know if your Mac has a high-speed L2 cache? This program tells you.

CanOpener 3.0

An indispensable utility that lets you copy text, pictures, or sounds out of *any* file, including foreign files, corrupted files, and mystery files. Commercial software from Abbott Systems.

Chiral

Cross Tetris with molecular science, and you've got this visually stunning game from Ambrosia Software.

Claris Emailer 1.1

The program that revolutionized reading and writing e-mail — the actual Claris Emailer. Consolidates your e-mail from multiple sources — and has dozens of shortcuts and automatic features to process e-mail faster and more efficiently.

Clip Jokes

A bunch of jokes downloaded from the Internet, in System 7.5 text-clipping format.

Clockometer

Clockometer tells you exactly how fast your Mac is running, in MHz.

Color Coordinator

Lets you switch your screen's color setting simply by pressing a key. More impressively, it can *automatically* switch to the appropriate color depth as you switch from application to application.

Color It!

A powerful commercial 24-bit painting and retouching program from MicroFrontier. It's a program along the lines of Photoshop — but it's quicker to load, simpler to learn, offers multiple Undos, and requires half as much memory.

Conflict Catcher 3 Demo

A three-day demo of Conflict Catcher 3, the conflict-finding, icon-identifying startup-file manager from Casady & Greene.

Control Strip modules

Additional modules for Apple's Control Strip.

Décor

Fills your entire desktop background with the PICT, TIFF, or JPEG graphic of your choice.

Desktop Patterns (Wraptures)

19 amazing, photo-realistic desktop patterns from Form & Function.

DFErase

Can "de-personalize" some of the most popular programs, such as Microsoft Word and Excel.

Dialog View

Widens the Open and Save dialog boxes so you can read the *entire* names of your files. And much more.

Disinfectant

One of the very best antivirus programs available for the Macintosh. Recognizes and eradicates 25 Mac viruses and all known variations of them.

Disk Rejuvenator

Fixes the "Command could not be completed, because it could not be found" problem.

DiskFit Direct

An incredibly simple backup program. Just three clicks and your whole hard drive is backed up! Commercial software from Dantz Development.

DiskTracker

Quickly and easily creates a catalog of every file on your floppy disks, Zip disks, Jaz cartridges, SyQuests, hard drives, CD-ROMs, optical drives, servers, or whatever.

DocMaker

Creates stand-alone, self-running document files, self-executing applications that you may distribute to others to read and print.

DragAnyWindow

Lets you move any window on the screen — even normally unmovable ones.

DragClick

Adds drag-and-drop text dragging to almost any program — including programs that aren't drag-and-drop savvy, like Word 5 and AOL 2.7.

DropStuff

Creates compressed StuffIt archives — just drag and drop. From Aladdin Systems.

Dvorak Keyboard Layouts

The famous keyboard layout in which all the frequently-used letters are directly beneath your fingers. Typists swear that the Dvorak layout lets them type faster and, more accurately.

Drop•Info

A simple drag-and-drop program for the kinds of file editing described in this book: making something invisible, changing a file's secret creator or type codes, and so on.

Eclipse Screen Saver

A simple, low-memory, non-extension screen saver.

FC Text-Picture

Lets you paste graphics — even your signature — into America Online 2.7 e-mail.

Flash-It

A screen-capture utility — take a picture of the screen, save it as a file or put it into the Scrapbook.

Folder Icon Maker

Drag an icon onto the Folder Icon Maker — a new folder will be created with a miniature version of the icon pasted onto it!

Googol Eyes

For all of us who have been desperate to have a pair of onscreen eyes follow our cursor around, Googol Eyes is the answer.

GURU

A fast, slick program that tells you about your Mac model's RAM configuration possibilities.

Hearts Deluxe

Like no computer card game you've ever seen. Even has speech recognition with the latest Apple Speech software.

Helium

Lets you choose a key combination that turns on or off Balloon Help instantly.

Holiday Lights

An entertaining application that places flashing light bulbs around the edge of your screen, as though a (well-insulated) elf had crawled into your computer through the disk drive slot and stapled them there. Music, too!

JPEGView

A fast, powerful image viewer that can open and display images in JPEG, PICT, GIF, TIFF, BMP, MacPaint, or Startup Screen formats.

Kaboom! Sounds

Several saucy sound files from the award-winning Kaboom! sound-effect collection from Nova.

KeyQuencer

The powerful, fast macro program that creates combinations of keys to automate certain activities, like capturing a screen image, opening a file or a folder, launching an application, making menu selections, typing a key combination, and much more.

Label Secrets Pro 2.0

Exclusive with this book! Each time you turn on your Mac, the Label menu at your Finder desktop displays a different message containing one of the Macintosh Secrets from this book.

Mac SECRETS ELECTRONIC EDITION

At last: an electronic, searchable edition of *Macworld Mac SECRETS!* The complete text is here.

Mac SECRETS Outtakes

What do you do when you've got a 1,100-page bestseller that needs expanding? Cut the less-juicy info and stash it on the CD-ROM.

Macman Pro

Loosely based on the original Pac Man arcade game.

Maelstrom

A fast action arcade-style game based on the old arcade game Asteroids.

MenuChoice

Enables hierarchical menus under the menu. More powerful than System 7.5/7.6's Apple Menu Options.

MIDI Files

Music files to play through QuickTime's built-in synthesizer.

Movie Cleaner Lite

Takes a QuickTime movie and reduces it in size using the standard QuickTime *codecs* (compression methods). Commercial software from Terran Interactive.

Movie Play

A fast, simple, fun QuickTime movie player. Lets you cut, copy, and paste chunks of your movies for simple editing.

Movie2Snd

Extracts soundtracks from QuickTime movies or audio CDs.

Now Utilities 5.02

This is the real Now Utilities, the commercial bestseller from Now Software. Includes **Super Boomerang, Now FolderMenus, Now Menus, Now WYSIWYG Menus**, and four others. Fully functional, System 7.5-savvy.

Olduvai Fonts & Sounds

A useful sound-FX and fonts sampler from Olduvai Software's Graphics Essentials collection.

PowerPCheck

Ferrets out the truth about your applications — PowerPC or not? Can even remove the PowerPC or 68K code from "fat binary" programs.

PowerSecretary demo movie

QuickTime movie demonstrating a voice-dictation system for the Mac.

Program Switcher

Lets you switch between running programs via a simple keystroke. Can also quit all running programs with a single command.

QuickPop

Launches Apple Menu Items, control panels, applications, FKEYs, documents, or monitor depth (colors) or speaker volume settings with a single keystroke.

QuickScrap

Select whatever text or graphics you're looking at — press a keystroke — and that text or picture is instantly safely stored in your Scrapbook (or a ScrapIt Pro file). You can plow through the Web, through e-mail, through whatever you're reading, collecting pieces of information quickly and easily, without messing with copy-and-paste.

QuickTalk

Lets *any* program talk. Just highlight some text and press a key — no matter what program you're using, it speaks out loud!

QuickTime 2.5

The extension that lets your Mac record and play digital movies, licensed from Apple.

RAMometer

A high-speed, no-cost RAM Tester.

Remember?

An incredibly flexible, colorful, and powerful on-screen calendar.

ScrapIt Pro

The Mother of All Scrapbooks. Stores and indexes anything you can copy to the clipboard, import, or drag-and-drop: sounds, PICTures, text, QuickTime movies, and lots more.

SCSIProbe

An indispensable tool that helps you manage the complexities of your SCSI setup.

Secret About Box Game

An easy-to-activate version of one of the greatest Easter eggs (hidden credits screens) of all time — the secret breakout game that was in System 7.5 only.

Secret Finder Features

Adds the following wonderful features to the Finder: Control-drag an item to make an alias of it . . . ⌘-R to Reveal the original item of an alias . . . ⌘-Delete Moves selection to the Trash. Incredibly handy.

ShareDraw

A powerful, full-featured drawing program — like MacDraw or the drawing window of ClarisWorks, but with many more features.

ShrinkWrap

Opens the increasingly common *disk-image* files and mounts them on your desktop for easy installation.

SmartKeys

Automatically corrects typing that violates conventional typesetting rules, such as typing more than one consecutive space. Also corrects fast typing errors, words that are often misspelled, such as "teh" for "the" and "THe" for "The". Can quietly keep a log of everything you type so that, in the event of a system crash, you can recover anything you typed even if you didn't save.

Snapz

Captures the image displayed on your monitor when other programs can't — when a screen saver is on, in the middle of a game, or even while your Macintosh is starting up.

SndSampler

The ultimate tool for recording, editing, and working with Macintosh sounds.

Square One

A great-looking, drag-and-drop-savvy *launcher* — a floating palette whose tiles represent your favorite files and programs. Click any tile to launch the associated item. Commercial software from Binary Software.

Startup Screens

You don't have to stare at the "Welcome to Macintosh" or Mac OS logo during startup. Use one of these gorgeous, full-screen, full-color photo images instead.

Stickies Color Editor

Stickies Color Editor lets you change the colors of the little notes in Apple's Stickies application (in your menu).

StuffIt Expander

An all-purpose file re-expander for downloaded *.sit*, *.cpt*, and *.hqx* files, and more. From Aladdin.

Super Comments

Lets your Macintosh keep Get Info comments when the desktop is rebuilt, even before System 7.5.3.

Swoop

A fast vertical shoot-'em-up arcade game. Battle 3-D rendered aliens!

System 7 Pack

A System 7 customizer — lets you change the date format in Finder windows, for example.

TechTool

Does five things: (1) Checks your system files for damage. (2) Zaps your parameter RAM (PRAM). (3) Rebuilds the desktop. (4) Shows system and drive info about your particular Mac. (5) Shows manufacture date and hours of use!

TempoEZ

A commercial *macro utility,* as described in Chapter 22. Performs tasks automatically — when you press a single key.

Tex-Edit 2.7.2

A drag-and-droppable, multi-window, styled text editor that fills the gap between Apple's bare-bones SimpleText and a full-featured word processor.

TypeIt4Me

TypeIt4Me is a typing saver. You teach it abbreviations, which TypeIt4Me expands as you type.

Web Explosion Sampler

25 sample images for Web design — from Nova's Web Explosion 20,000-image collection.

X-Words

A fantastic electronic edition of Scrabble.

Zonkers! Sampler

20 icons from the hundreds in the Zonkers collection of Mac customizing tools from Nova Development.

ZTerm

An award-winning telecommunications program that you can use to dial bulletin boards or other Macs.



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Try the **Tempo Photoshop Magic** macros! Your single command will play the 200 steps it takes to change black & white art... Tempo II Plus to colorful chrome...



What's a macro? Tempo records your keystrokes, menu selections and button clicks as you perform them, so you can play them all back with a single command. That's a macro.

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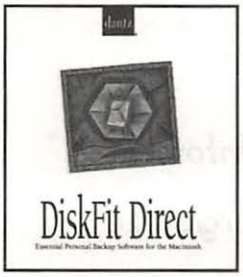

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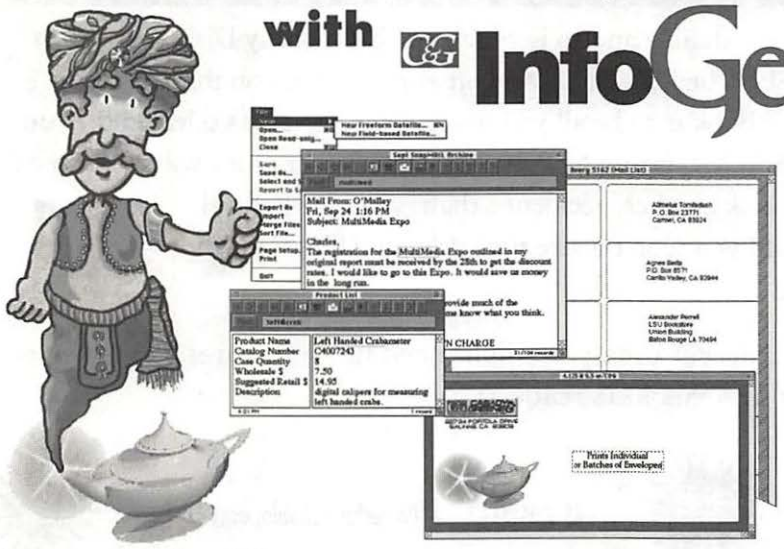

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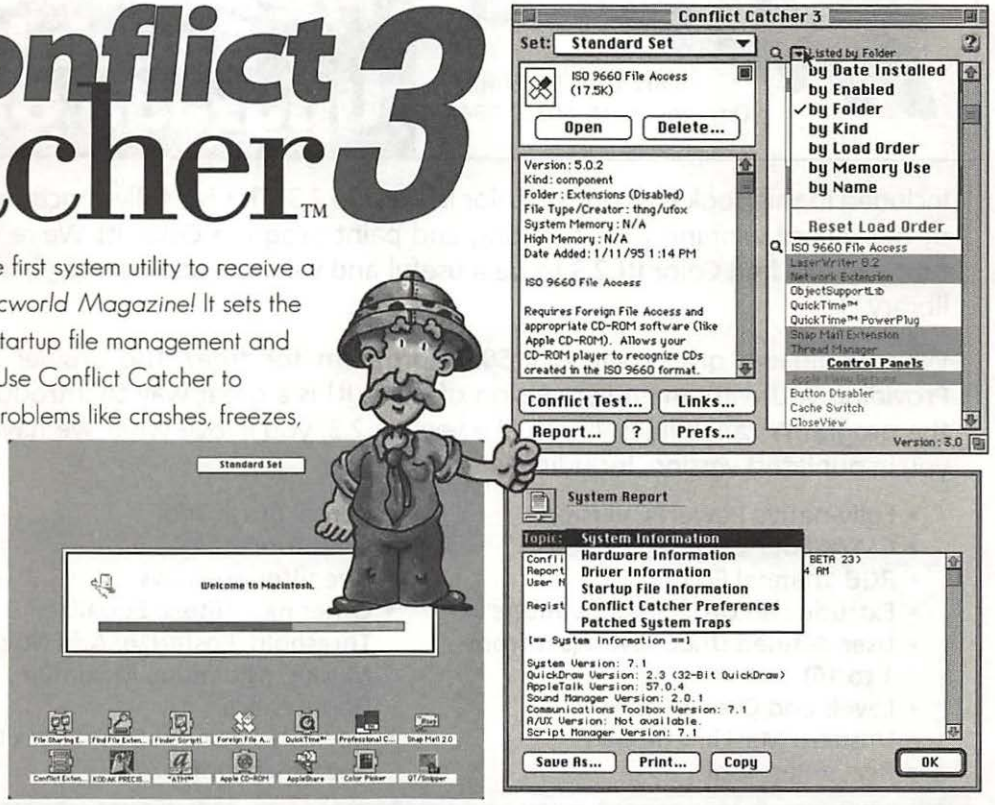

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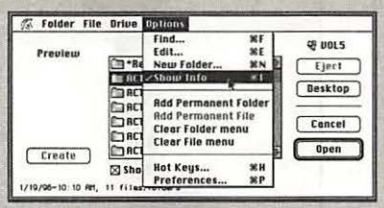

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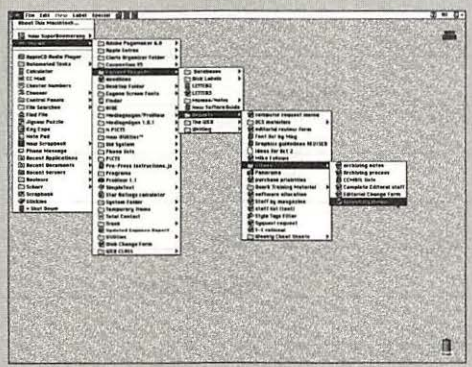

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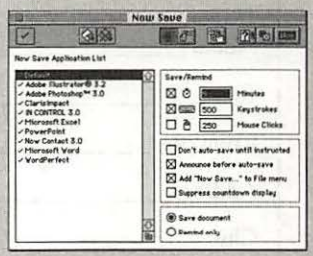

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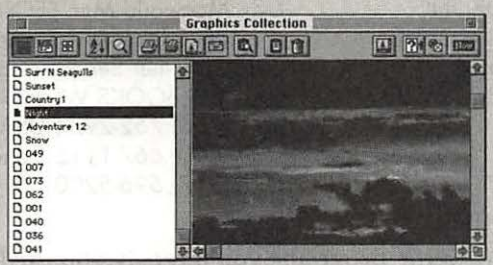

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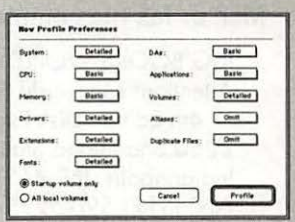

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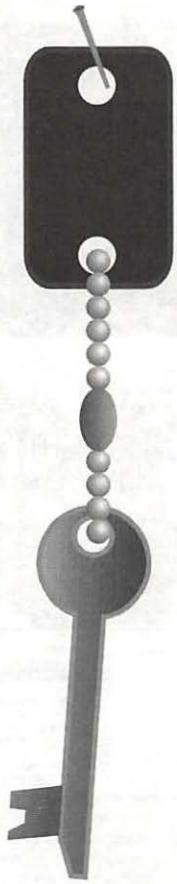

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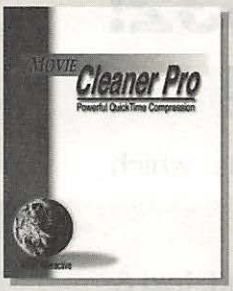

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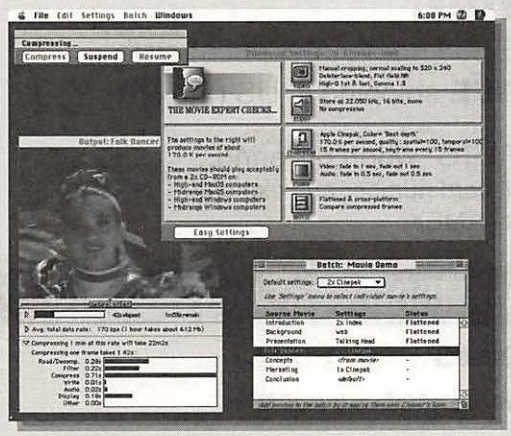

Screen shot of Movie Cleaner Pro in action.

What is Movie Cleaner Pro?

Movie Cleaner Pro is a professional production tool that optimizes and compresses your movies for your multimedia projects. It is a dedicated QuickTime utility for the MacOS that produces movies which can be played on both Macintosh and Windows.

Movie Cleaner Pro allows you to pre-process and compress your movies using any of the available QuickTime codecs, like Cinepak and Indeo. It has powerful filters to make your video compress better with time saving features to help you efficiently manage your compression jobs.

Why use Movie Cleaner Pro?

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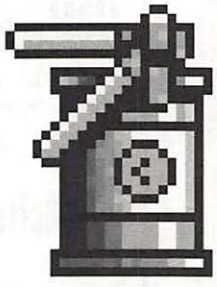

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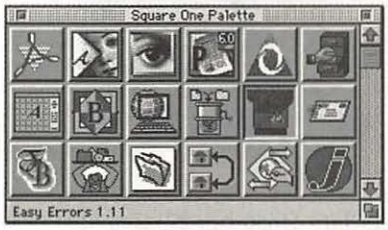

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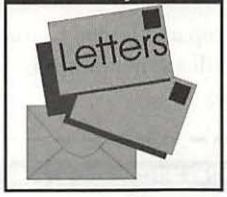

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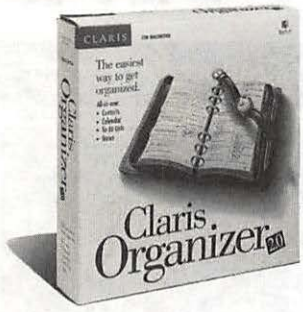

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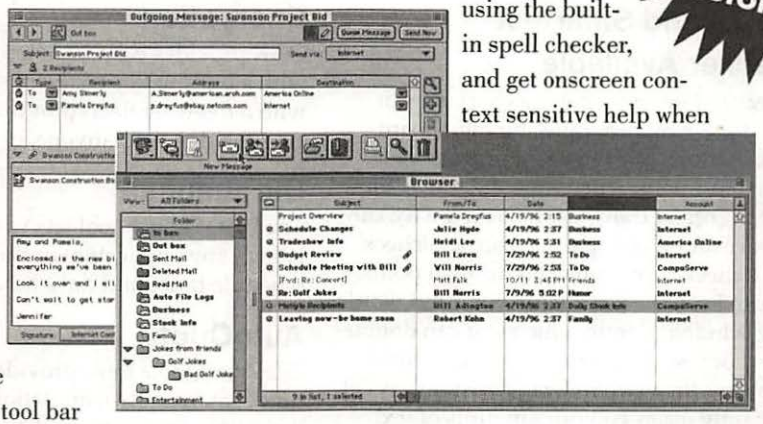

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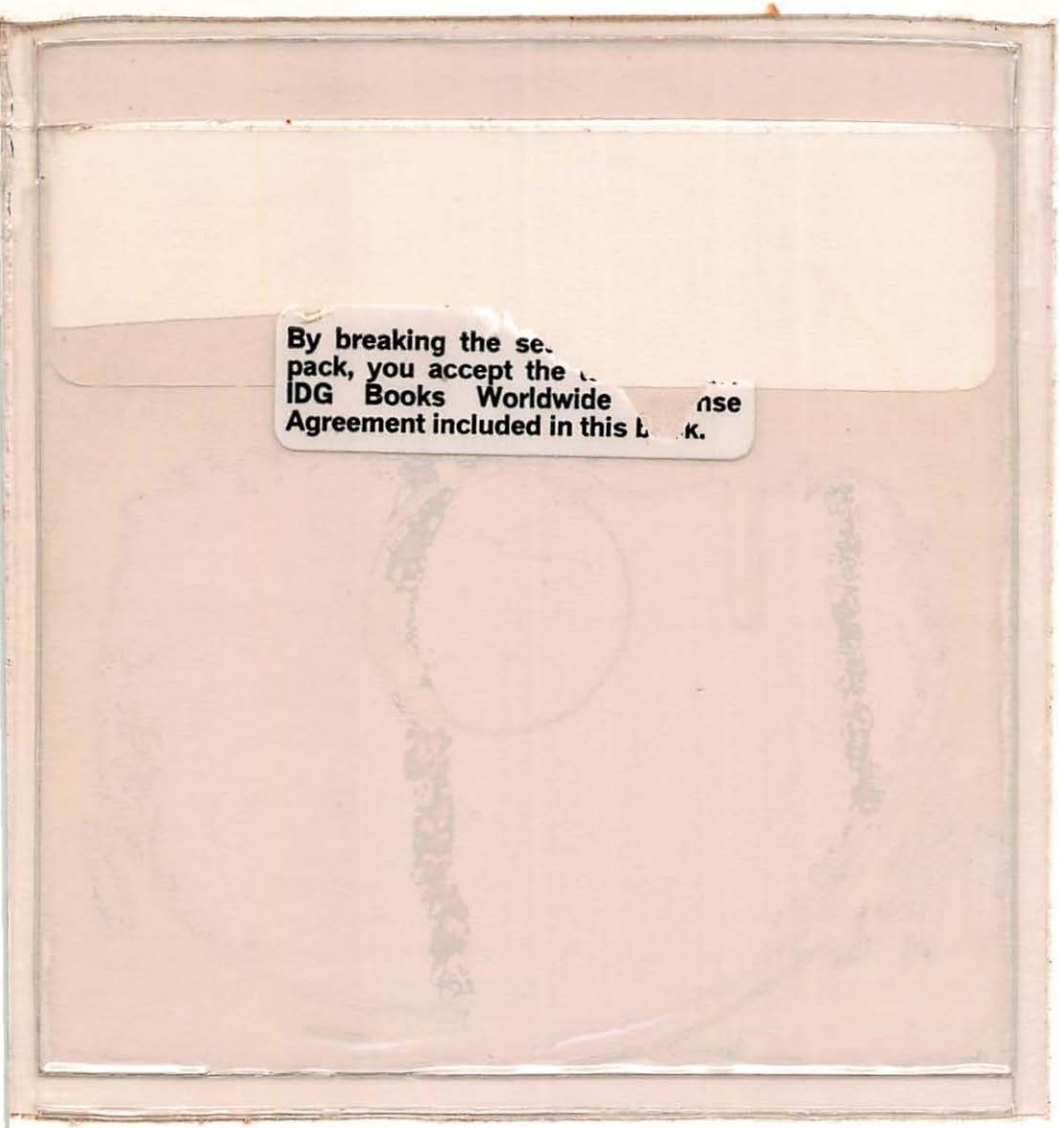
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David Pogue writes The Desktop Critic column for *Macworld* magazine. He's also the author of three other IDG Books bestsellers: *Macs™ For Dummies®*, *MORE Macs™ For Dummies®*, and *Mac™ FAQs™*.

Joseph Schorr writes the SECRETS column for *Macworld* magazine. He's a professional Mac troubleshooter in Eugene, OR.

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