

## 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
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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 bird-song 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.

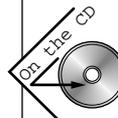
A better solution, in our opinion, is to use special software. Some people enjoy that old shareware gem called Googol Eyes (included with this book), which puts a pair of cartoony eyes on your Desktop — and they always look at the cursor, wherever it may be. Various other shareware and commercial programs 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.

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.



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.

### 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  $\frac{1}{3}$  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.)

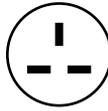
You'll discover that it's much easier to find the appropriate converter plug *here*, before you travel — at a Radio Shack store, for example — than to find one in the foreign country itself.



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.

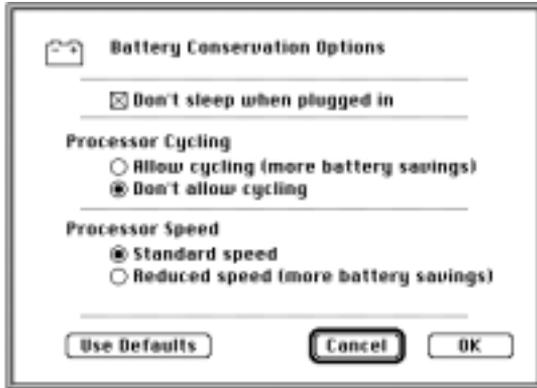
The first message says it's going to dim your screen. (It's trying to squeeze out a little more work time for you.) You can basically ignore this message. You've still got about 12 minutes of solid work time left.

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.



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,

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.

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.

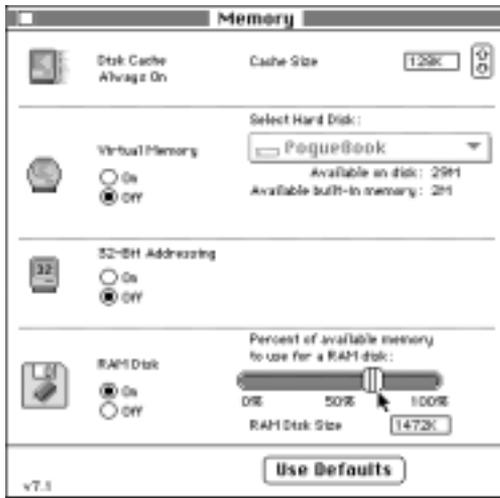


Figure 14-6  
Your Desktop after the RAM disk has been created (middle icon). In this figure, you can also see the Disk Tools disk in the floppy drive, ready for System Folder-copying.



## 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:

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.

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 DiskDoubl(er).) 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.

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

Figure 14-7  
Your PowerBook RAM disk, ready to fly.

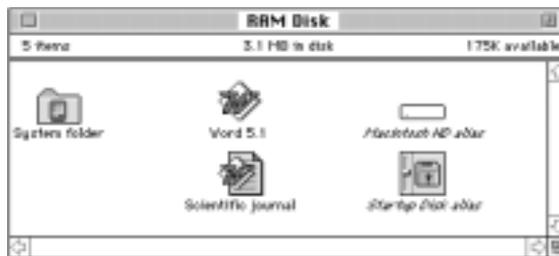


Figure 14-8  
How you put the RAM disk in charge.



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.

### *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.

Figure 14-9  
To get rid of a RAM disk start-up disk, first you must select a different start-up disk.



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  $\mathcal{A}$ -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.)

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.

Figure 14-10  
The Battery desk accessory  
in its expanded condition.



### 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.

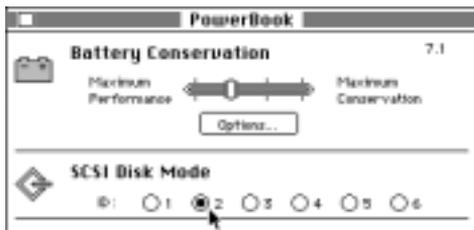
Because SCSI is a very fast method of transferring files, it's the only way to go when you have a lot of stuff to transfer to or from your PowerBook. After you've mastered this technique, you'll absolutely love it. Getting going,

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

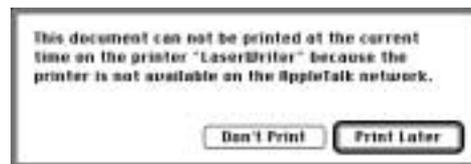
Assistant Toolbox and its many wonders

**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<sup>oooo</sup>\_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.

