

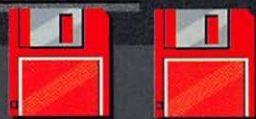
Raines Cohen & Ross Scott Rubin

Hayden's

PowerBook®

POWER BOOK

Second Edition



**2 High-Density Disks
include:**

AppleLink® –for
access to an online
resource center

Vital and powerful
PowerBook utilities

Power Book essentials
on disk –for the
ultimate in portability

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Hayden's PowerBook Power Book

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Hayden's PowerBook Power Book

Raines Cohen and Ross Scott Rubin



Hayden
Books

Hayden's PowerBook Power Book, Second Edition

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Dedication

To my wife Kandy, for her unending understanding and support,
especially during the “lost summer” of 1993.

Raines

To the memory of my uncle Herbie, whose joyful embrace of life will
always inspire me.

Ross

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Raines would like to add:

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Raines Cohen
Berkeley

Ross Rubin
New York

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Part I

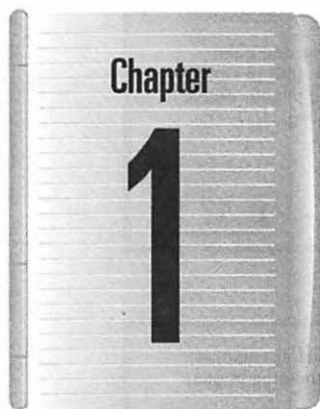
The Basics of Using a PowerBook

When you power up your PowerBook, you start a journey of exploration and discovery. In your quest to get the most for your money and your time, you ask yourself:

- What can I do with this thing?
- How can I do it more efficiently?
- How can I do it longer?
- How can I do it without interruption?

I'll address those questions here, starting with an overview of how to extend your system's battery life. In chapter 2 you'll find valuable tips to increase your mobility, including how to deal with moving your data back and forth between a desktop system and your PowerBook, and how to connect to on-line systems and networks from the road.

Once you're up and running, your next concern is how to avoid stopping unexpectedly. Chapter 3 covers preventative maintenance, so you can know what to do to keep from getting stuck. Chapter 4 covers security, teaching you how to keep from losing your PowerBook and the data on it, and how to protect both from unauthorized use by others.



Power Management

Using a PowerBook can be quite a liberating experience. Thanks to Apple's modern miracles of Macintosh miniaturization, you can go nearly anywhere you choose to work or play, free of the power-cord tethers that chain desktop computer users to their offices.

The idea is this: you can run any Mac application, wherever you are. On the road, in a field, in transit, in meetings, you name it. With your PowerBook in tow, you feel more powerful, more organized, able to leap small projects (if not tall buildings) in a single bound.

However, this freedom does not last forever. There is a price you pay for the small size and high power of the Mac. Eventually, you come to the point where the system's defensive mechanisms kick in, letting you know that all good things must one day come to an end (see figure 1.1).

The dialog box shown in figure 1.2 appears eventually and accelerates your pace, warning you that the end is near. From this point on, using a PowerBook while away from a power source is often a race against the clock, a mad dash to complete the task at hand. Your heart beats in synchronicity with the battery icon blinking in the upper left hand corner of the screen.

Even if you had the foresight to carry a spare, charged battery, your emotions range from mildly annoyed to outright panicked. You unconsciously take on the PowerBook Pose, scanning nearby surfaces for electrical outlets. If you are in transit, or otherwise out of reach of power, your gaze turns to the people around you, rudely probing to determine:

- Does that person have a PowerBook?
- Is it the same type as mine?
- Will she let me use her battery?
- Will she respect me if I ask?

Eventually, the very battery that set you free shuts you down, interrupting your flow of thought and bringing to a sudden halt whatever you were trying to accomplish (see figure 1.3).

Figure 1.1

*The beginning
of the end.*

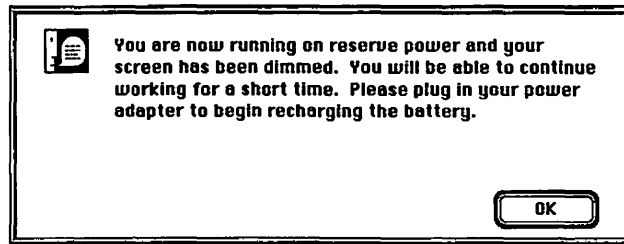


Figure 1.2

*The last-chance
warning.*

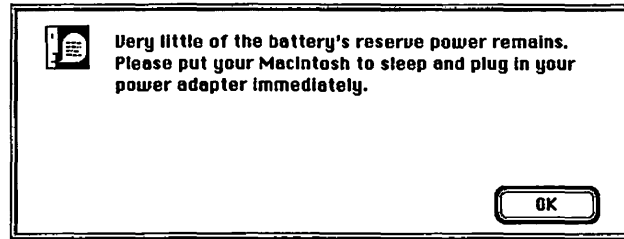
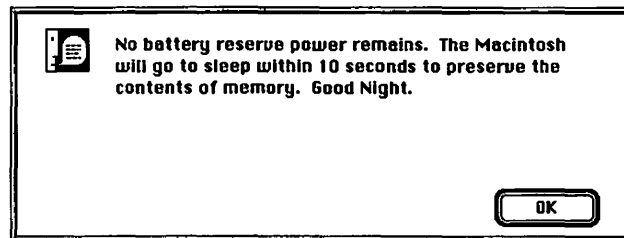


Figure 1.3

*What PowerBook
users dread most.*



Fortunately, there are a number of techniques you can employ and products, both software and hardware, you can apply, to postpone your brush with disaster and/or embarrassment. You can extend your running time if you read the next section and learn how to:

- Determine where the power is flowing.
- Reduce the drain on your battery.
- Manage your battery use for maximum output.
- Replace your battery or boost its power with external devices.

Before you continue, however, you should understand that the title of this tome does not refer strictly, or even primarily, to the electrical power energizing the circuits of your laptop Mac. While a basic understanding of how to make every charge last as long as it can is important, there's much more than that to know about Apple's best-selling product line.

Rather, *The PowerBook Power Book* is about the power these systems give you and the power you can have over your own PowerBook, once you master it.

The next 200-some pages will take you across the spectrum of how to accomplish what you want to with a PowerBook, simply and efficiently. You'll learn about which products take advantage of the unique features of the PowerBooks, and which ones operate at cross purposes to your battery-conservation goals. You'll discover new uses for your system, including applications that simply aren't possible or practical on a desktop computer. And, I hope, you will come away understanding a little bit more about what's going on inside the system, and be surprised a little less often by what your PowerBook says and does.

Where Does All the Power Go?

Once you unplug your PowerBook's power cord, the system relies entirely on the charge stored in its removable battery to power all the components of the system. The hard drive, display, memory, processor, communications circuits and support electronics all play a role in sapping the strength of the battery. In certain settings and configurations, they can reduce your operating time between charges to less than an hour.

To fight back and gain more time, you can adjust a number of hardware and software settings, as well as consider carefully the applications you use and the patterns in which you use the system. What follows is some insight into how the various components use and conserve power.

Whenever the system is on and running off the battery, the clock is ticking. Although your battery's charge would last practically forever if you never used the system away from an electrical outlet, this isn't practical for most people. If it works for you, skip ahead to the next chapter.

The biggest consumers of PowerBook power include:

- the hard drive
- the screen's backlighting
- the Central Processing Unit (CPU)
- networking and communications components

One of the most power-hungry components in a PowerBook is the internal hard disk drive. The electrical motor that spins the magnetic platter consumes a great deal of current in comparison to the system's many non-moving components. Fortunately, circuitry and software in the system automatically detects when you haven't been using the drive, and shuts it off after a period of inactivity.

However, there's a little more to it than that. Nearly all hard drives use more power in the few seconds while they're starting up than in a minute of spinning normally. So if you're using a program that accesses the disk every minute and a half (such as a word processor, where you save your work often), the drive will start up over and over again in a short period of time. This surge of power consumption can lead to a disproportionately large reduction in the time your battery's charge lasts, because of the way batteries are designed (more on this topic later in this chapter).

The backlighting you use to make the PowerBook's built-in display more legible also draws power. The brighter you have it set, the less time you get between charges. Set the backlighting to the lowest level at which you can still read the text, and increase the contrast (which doesn't draw nearly so much power) to improve the legibility.

The PowerBooks' Motorola 68030 processor itself takes a fair amount of power. A respectable amount, considering that most of the time it is doing nothing, just waiting for you to catch up.

***PB100:** The PowerBook 100 uses a Motorola 68000, but the same concepts apply.*

An internal modem, if you have one installed, uses just a little power when it is off, but a lot when you are connected to another system or even just running a communications program that keeps the modem active.

Likewise, maintaining an AppleTalk network connection eats up chunks of that ever-so-valuable power. Simply having AppleTalk turned on uses some power, but maintaining a connection prevents the PowerBook from automatically putting itself to sleep and performing other feats to save power.

While RAM does use some power, it consumes so much less than the display or hard disk that it is hardly worth worrying about. The more RAM you put in your PowerBook, the less you need to keep the hard disk spinning or to wake it back up.

You wouldn't be left with much if you disassembled your PowerBook and removed all the aforementioned components—just some support circuitry, peripherals, and a big mess. Even if you left in the truly essential components, you'd be hard-pressed to, for example, pop your system's hard drive in and out several times an hour, in a vain effort to fight off the battery blues.

Fortunately, the PowerBook includes functions that shut down many of the troublesome pieces some or most of the time, turning them on for only the briefest of periods. And software can control what goes on when, why, and for how long. So you can stretch your battery life to the limit—and then some.

Software Control Over Power

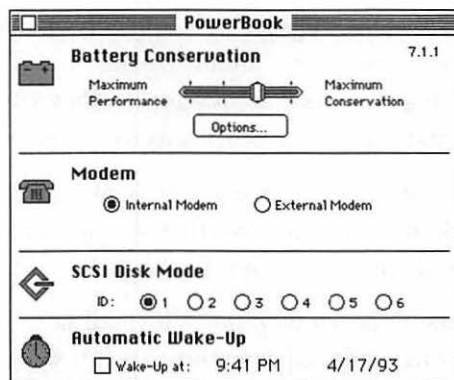
As you come to depend on your PowerBook more and more, you may find it gives you less. That is, less time to use it per charge. Fortunately, simply taking better advantage of the built-in power-saving controls can add hours per charge to your battery life. Using third-party utilities gives you even more control, so you can stretch out the working time between charges.

Optimize Your Settings

Most of the built-in controls are on the PowerBook control panel (see figure 1.4), which you can usually find inside your System Folder and access via the Apple menu.

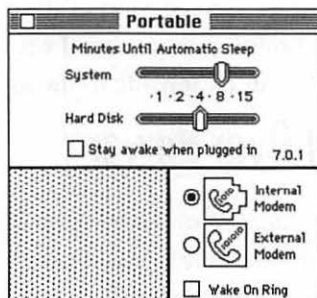
***Tip:** If you find yourself changing settings a lot, make an alias to your PowerBook control panel, and stick the alias in the Apple Menu Items folder in the System Folder. That way, it will appear directly on your Apple menu, and you can make changes without the extra step of going through the Control Panels folder.*

Figure 1.4
*The PowerBook
control panel.*



Under System 7.0.1, this control is actually two controls, one for the system itself and one for the hard drive sleep time (see figure 1.5). This approach gives you more flexibility, but setting it is slightly more complicated.

Figure 1.5
*The PowerBook
control panel under
7.0.1.*



From this one place, you can affect the power drain of the entire system and some of the power-hungry individual pieces, including the hard drive and processor. Other components, such as the display, are controlled in other ways you'll discover as you read. (Note that the new PowerBook control panel, version 7.2, will change from this somewhat.)

Sleep Mode

You can leave a desktop Mac on for hours or even days at a time, if you don't mind paying the electric bill. But with a battery-powered PowerBook, every minute is precious.

One way the system conserves power is by "going to sleep." After you haven't used it for a while, or when you tell it to (by choosing Sleep on the Special menu or pressing the Sleep button on the Battery desk accessory), it shuts off most of the components and gives every appearance of being turned off to the outside world.

Duo: Simply closing a PowerBook Duo puts it to sleep.

However, the system is actually hibernating inside, preserving the contents of memory and waiting for you to press a key. As soon as you do, it wakes up all the pieces and, within a few seconds, you can resume your work.

Alas, there's no easy way to tell if a PowerBook is asleep or shut down, short of pressing a key, which wakes it up if it was sleeping.

PB100: On the PowerBook 100, pressing a key restarts the system if it was shut down.

Waking up the system requires some power, and you can't use the system until it is fully awake, several seconds later. So you may not want to set it to go to sleep very quickly if you are pausing while taking notes during a lecture, for example.

In general, however, to get the most time out of your battery, set the system to go to sleep in a short period of time—maybe a few minutes. If you need to keep it awake, just wiggle the trackball or press a key.

Hard Drive

PowerBooks include power-saving circuitry and software that spins down the hard disk, effectively putting it to sleep, when it has not been used for a period of time. You can control the time period by setting the battery conservation control on the PowerBook control panel (see figure 1.5). The further to the left you set the control, the longer the drive keeps spinning after it is used.

So, you would think that you could extend your battery life by simply setting the hard drive to go to sleep as quickly as possible, after as little as a minute of inactivity. However, it's not quite that simple.

The best thing you can do to increase the time you can use your PowerBook between battery charges is to avoid waking up the hard disk except at the beginning and the end of your use of the system. To do this, you can:

- **Use programs that don't need to wake the drive.**

A program that can fit entirely into memory and load documents into RAM is generally preferable to ones that have to load additional code or data midway, waking up the hard drive.

Some programs, like Microsoft Word 4.0, let you set a preferences item to make them load the program and document into memory. Others are small enough to fit by themselves, or designed to work within the constraints of available RAM.

- **Buy more memory.**

If more applications can fit at once, you don't need to wake up the hard disk when switching programs. However, make sure that you buy a type of RAM that doesn't drain the battery even faster.

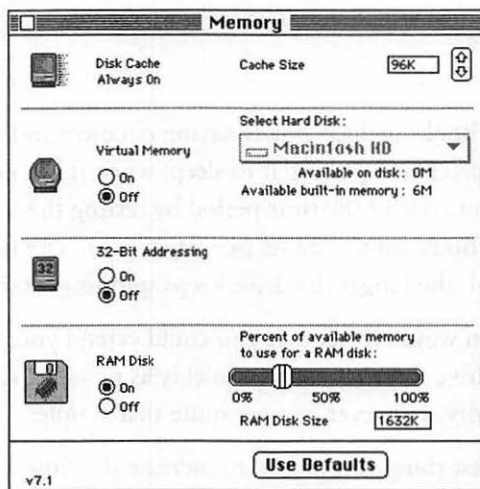
- **Use the built-in or a third-party RAM disk.**

RAM disks, whether the built-in kind (see figure 1.6) or a third-party utility, set aside part of RAM to use as a simulated disk drive. You can copy over a system, your application, and perhaps the documents you are working on.

Keep in mind that RAM you allocate to a RAM disk subtracts from the RAM you have available to actually run applications.

Figure 1.6

The Memory control panel.



- **Increase the disk cache setting.**

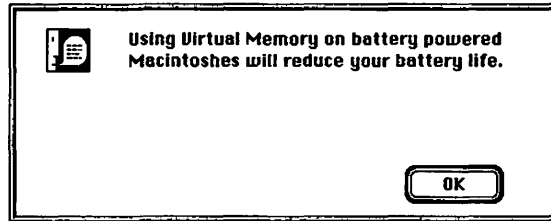
The Memory control panel (see figure 1.6) lets you set aside part of memory to act as a cache, remembering part of what has been read from the disk so that if the system needs to refer back to an item, it can read it from RAM rather than the hard drive.

- **Turn off virtual memory.**

While you can set aside part of the PowerBook's hard disk to act as though it were memory, doing so reduces system performance, eats up valuable disk space, and increases power consumption, because the PowerBook has to go to the disk more often. As the dialog box (see figure 1.7) warns you, don't try this without plugging in the PowerBook.

Figure 1.7

Why not to use virtual memory on battery power.



- **Use a third-party power-saving utility.**

Many third-party utilities exist that control some or all of these attributes. Many also add more options; a common solution is to enable the user to create sets for use in a specific situation—one set for when the PowerBook is plugged in, another for airline flights, and so forth. Many of these utilities are discussed later in this chapter.

Display

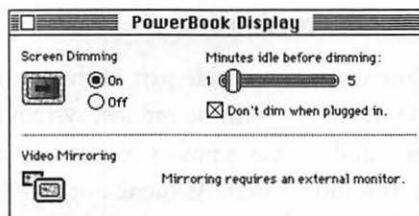
If you can touch-type, and all you're doing is taking notes or transcribing a meeting, turn the backlighting to the lowest setting as soon as you're set up, and don't turn it back on until you need to save or make corrections.

The PowerBook Display control panel (see figure 1.8) lets you set the built-in screen's backlighting to dim automatically when you are taking a break. Set this to dim as rapidly as possible, unless you spend lots of time reading the PowerBook's screen without typing or moving the mouse.

If you have an external video output or adapter card that displays the PowerBook's screen on a projection panel or external monitor, disable it (if it doesn't already turn itself off) when you're running on battery power, if you can. Often, turning off the external device doesn't keep your PowerBook from trying to display on it. Video output uses a lot of power.

Figure 1.8

*The PowerBook
Display control
panel.*



Memory

RAM consumes power, especially certain configurations offered by certain manufacturers for certain PowerBooks. Some use different types of memory circuits that cost less but require more power than consumed by this problem than other models.

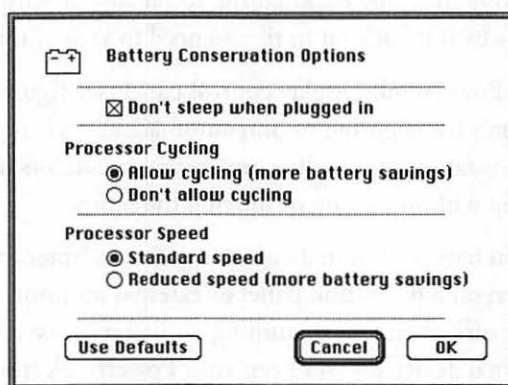
Duos: *The PowerBook Duos seem to be more affected by this problem than the other models.*

Processor

To keep from wasting lots of valuable energy on an idling processor, power-saving circuitry built into all PowerBooks automatically slows down the processor to a fraction of its normal speed when you're not interacting with it. You can control this feature, known as Processor Cycling, from the PowerBook control panel's Battery Conservation Options dialog box (see figure 1.9).

Figure 1.9

*The Battery
Conservation
Options dialog box.*



The speed control in System 7.0.1 is on the PowerBook control panel. You can control processor cycling, known as *Rest Mode*, by pressing the Option and Command keys as you click on the words “Minutes until automatic sleep:” in the PowerBook control panel (see figure 1.10). It will give you the choice shown in figure 1.11.

Figure 1.10

The PowerBook control panel under 7.0.1.

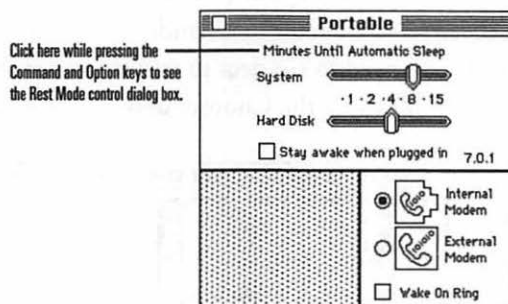
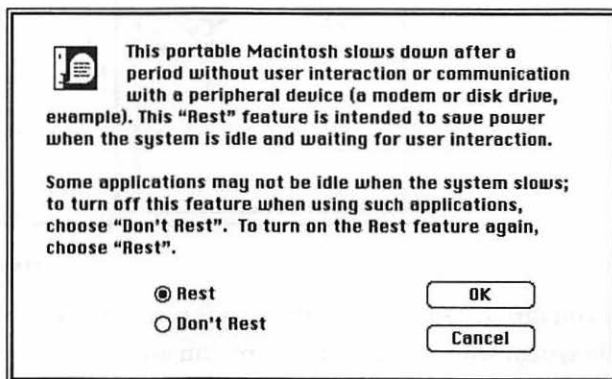


Figure 1.11

The Rest Mode control dialog box under 7.0.1.



Generally, you’ll want to leave system rest enabled except when you’re running a program that is performing calculations, communicating with other systems, or running some background function that shouldn’t slow down. The system decides when to slow down based on how long it’s been since the user has moved the trackball or pressed a key, not (normally) based on what programs are doing.

In the same dialog box you can, on most PowerBook models, set the processor to run at less than full speed, to conserve power. Changes to this setting don’t take

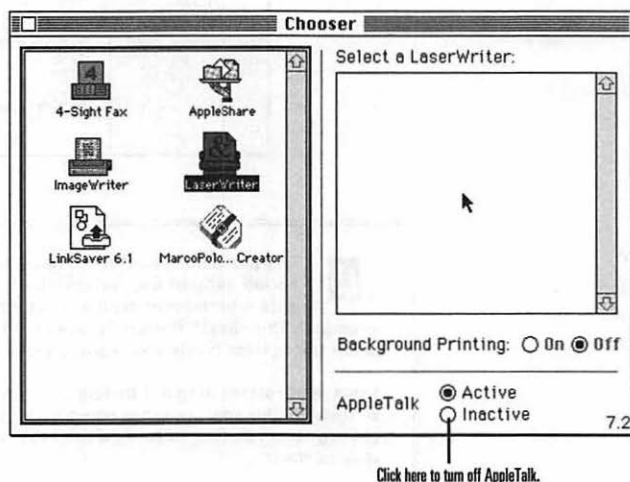
effect until you restart the system (not just put it to sleep), but you may want to take the time to experiment with the slower 16 MHz speed to see whether your programs are still usable at the slower speed.

Network Connections

If you leave AppleTalk active on your PowerBook, part of your battery's valuable power is being diverted to a circuit that handles network interactions. This is wasteful if you have no need to connect to a laser printer or directly to another Mac. You can turn it off using the Chooser desk accessory (see figure 1.12).

Figure 1.12

The Chooser desk accessory.



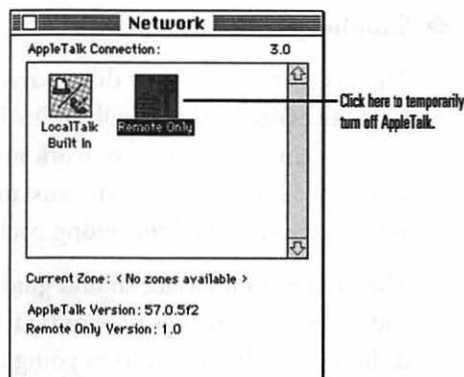
Click here to turn off AppleTalk.

If you turn off AppleTalk, the circuit turns off right away. However, if you start the system with AppleTalk off, you can ask it to turn on, but it won't actually turn on until you restart the system, because it saved RAM by not loading the AppleTalk system software when you first started. This can be quite annoying if you want to conserve power while out of the office, but use AppleTalk when you are in it.

There is a better way: If you install AppleTalk Remote Access, Apple's dial-up networking utility, it adds an additional option to your Network control panel: Remote Only (see figure 1.13). This option turns off the AppleTalk circuit, but continues to load the software, so you can later reactivate the built-in AppleTalk circuits without restarting, by clicking on the Remote Only icon.

Figure 1.13

*The Network
control panel.*



Use Third-party Utilities

When the first edition of this book was published in early 1992, there was no category for PowerBook-specific third-party utilities. Why not? Because none existed!

In the short time since then, Apple has sold zillions of PowerBooks, and many of the people who bought them have grown frustrated with the limitations of the built-in power controls. A few of those users wrote programs that go further, both to control individual functions and to automatically manage hundreds of little details that each would deliver too small of a battery-life benefit to make twiddling with them worth your while. A number of these programs have been released through on-line services and user groups, while some have become commercial packages.

How to Choose a Package

Which package you prefer is largely a matter of individual style. The programs, especially the integrated multifunction utilities, are constantly being upgraded in a futile attempt to outdo one another, so the interface and choices in each may well have changed by the time you read this. You should base your decision on:

- **Completeness**

Does the program do everything you want it to, or do you need to add other utilities to fill in the gaps? Unless you prefer the a la carte approach (and some people do), find one that does everything you need, but not one that does so many other things that it becomes unwieldy.

● **Simplicity**

The main appeal of most third-party PowerBook utilities is that they make your life easier, automatically adjusting the power-conserving functions of your system so that you can work most effectively. If you find yourself, after an initial adjustment period, constantly changing the program's settings, then you may have picked the wrong package for your needs.

The program's interface should guide you towards making the right choices, and come with settings pre-configured for "typical" usage patterns. However, it shouldn't inhibit you from going in and adjusting the details if you so choose.

● **Effectiveness**

All the other details are worth little if the program doesn't actually extend the amount of time you can use the system. Although there's no way to tell this from a preview or in a store, talk to other people who use the same model and configuration of PowerBook as you do to find out what you can realistically expect to gain by using a particular program.

● **Price**

The cost of a package is the last item on this list for a reason. Although how much you spend is important, think about the value of your time, and how much you waste when you have to stop what you're doing and change batteries or find an outlet or simply stop working altogether.

The street prices of the commercial packages (as opposed to the retail prices listed throughout this book) are close enough so that all you really need to decide is this: Do you want to get a commercial utility or a free one? If you take the commercial route, you may well be able to get others inexpensively through "sidegrade" deals in which the competing vendors try to get you to switch. If you stick with the free and shareware programs, you'll likely end up assembling a collection of task-specific programs that do the job but may leave you wondering about compatibility and completeness.

Common PowerBook Utility Functions

Many of the packages contain a number of features not directly related to power-saving. Their most useful functions, however, include:

● Automatic switching

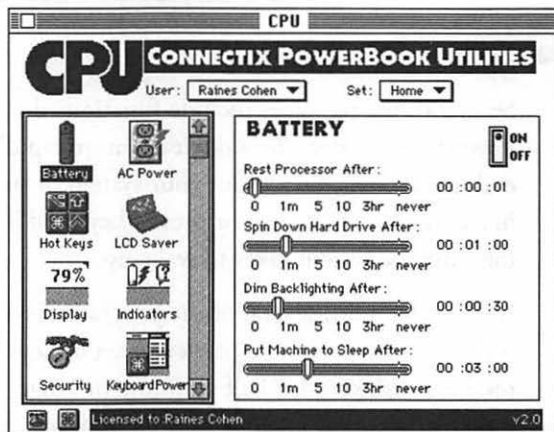
The built-in PowerBook controls for sleep time and other functions have only a single setting. (Version 7.2 of the PowerBook control panel fixed this.) Most of the third-party packages include several different settings.

At the very least, the programs change screen backlighting brightness levels, hard disk sleep time, and other factors when you plug in an external power source, so you don't have to live under the same constraints when battery life isn't an issue.

Many PowerBook utilities give you a choice of settings optimized for home, office, travel, and the like, and let you define your own "locations." (see figure 1.14). Some even (try to) automatically detect what location you are at when you wake up the system, and adjust settings accordingly.

Figure 1.14

The "expert" Battery settings in CPU 2.0.



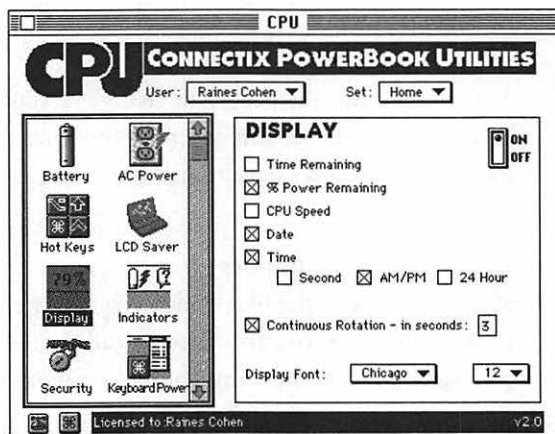
● Improved feedback

Without a third-party utility, you don't know when the battery is running down and how long you've got until the ominous warnings described at the start of this chapter begin to appear. The Battery desk accessory gives you some information, but it is very approximate and often inaccurate.

The integrated utility packages and quite a few non-commercial single-function programs, such as SuperClock, provide status readouts in the menu bar (see figure 1.15). Some attempt to "learn" the discharge patterns of your batteries (and help you condition them, as described in the next section), and give either percentage readouts or "time remaining" feedback.

Some even show a countdown when they prepare to put the hard disk to sleep.

Figure 1.15
*Display options in
CPU 2.0.*



● **Faster access**

Several of the packages include functions that purport to help you put your PowerBook to sleep or wake it up more rapidly. These can save power if you end up less reluctant to put your system to sleep because it is easier (just click in a corner of the screen or press a key) and because you won't dread as much the time the system takes to wake up.

In the same vein, several of the programs let you put the hard disk to sleep or wake it up by pressing a particular set of keys. This way, you don't have to let the hard disk spin for half a minute or longer. If you know it won't be needed for a bit, you can put it to sleep right away.

So you can see that there's lots to think about when choosing a PowerBook utility. It gets even more complicated once you start to consider a program's secondary features, including file reconciliation, security, and user-interface shortcuts. Later chapters in this part discuss other options in more detail.

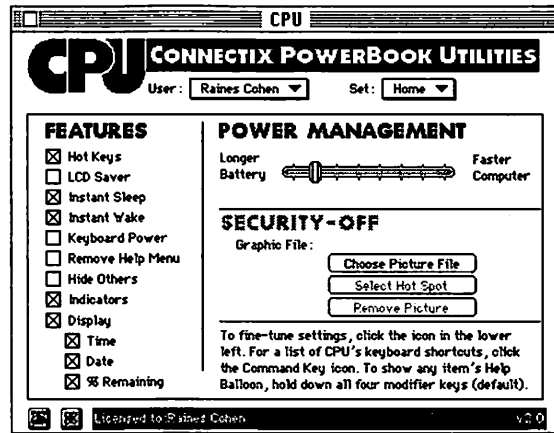
PowerBook Power-management Utilities

As of this writing, the best-selling commercial PowerBook utility packages with power-management functions as of this writing are:

● **Connectix PowerBook Utilities**

Version 2.0 of CPU, as it is commonly known, dramatically simplified the interface and amplified the power of this program (see figure 1.16).

Figure 1.16
CPU 2.0's main
menu.



- **Norton Extensions for the PowerBook**

Symantec Corp.'s product was originally Guy's Utilities for the Macintosh, slated to be published by After Hours Software.

- **Power-To-Go**

Claris Corporation's Clear Choice division bought this package from Alsoft Corp., which called it Utilities for the PowerBook (UP).

- **On The Road**

Palomar Corporation's program (now published by Connetix) is mainly intended for printer- and network-connection management, but it can help conserve power as well.

- **Billy Steinberg's PBTtools**

Inline Design, a software publisher known mainly for its Mac games, released this package based on the author's earlier shareware products.

One of the most useful function-specific utilities is:

- **SuperClock**

This shareware control panel displays a clock on the menu bar. But on PowerBooks, it also adds a battery-level indicator, and control-clicking on the clock can put the system to sleep right away.

Battery Management

PowerBook users who want to get the most time per charge need to do more than just use software to manage power drain. The batteries used on several PowerBook models can lose their capacity over time, providing a little less operating time each time they are charged. In addition, the total operating life span of batteries, measured in the number of times they are charged and discharged, can be greatly extended by proper treatment of the batteries.

There are also a number of alternative power sources available for most PowerBook models, including third-party internal PowerBook batteries, external batteries, and power adapters.

Battery Life

PowerBooks are still relatively new. Users haven't had them long enough to really know how long a battery will last, in terms of the number of charges or the number of years. From the limited experience we do have, combined with what we know about battery technology and battery performance in other systems, we can learn a few things about PowerBook battery maintenance.

The nickel-cadmium (NiCad) batteries used in most PowerBooks are good for about 500 charges, according to Apple. Depending on how you use your system, this could last you one year, two, or something in between.

Battery Memory

Long before your battery's life is up, you are likely to run into a different problem: memory. We're not talking about the memory where you store data and programs inside your computer, but rather, the tendency of nickel-cadmium batteries that are less than fully discharged to accept less than a full charge before they register as full.

If your PowerBook battery develops a memory, the symptoms will include:

- less operating time per charge
- seemingly faster full charges
- inaccurate warning dialogs
- power-warning dialogs in rapid succession

The strategy for avoiding this kind of memory problem is perhaps counterintuitive after all this discussion of keeping your battery charged and getting the most power per charge. To try to remove or prevent a battery memory, you have to *discharge* the battery.

PB100: *The PowerBook 100 and the original Mac Portable use lead-acid batteries, which have a very different chemical structure than the NiCad batteries we're discussing here. As a result, they require a very different strategy to prevent the development of battery memory. If you have one of these systems, you should avoid totally discharging the battery, and instead try to keep it charged up. If a lead-acid battery is totally discharged, it can become damaged in such a way that it can never be fully charged again.*

Duos: *The PowerBook Duos use a different battery type, nickel-metal hydride (NiMH, or NiHy for short) which, in theory, does not have a measurable memory effect. The Duos also include more-sophisticated battery management circuitry and software that charges the batteries more efficiently without the risk of overcharging. However, in practice, some people have found that their Duo batteries do develop a memory in some circumstances. If this happens to you, try some of the procedures described in this section.*

Do not short-circuit the battery to discharge it. This can blow the built-in fuses, cause the battery to heat up, leak, or explode, or otherwise damage it.

Instead, try a different technique: leave the PowerBook unplugged, and ignore all the power warnings until it shuts itself off. Or, for a fuller discharge, use a third-party utility (I'm told PBTools is most effective) and tell it to discharge the battery. Finally, you can also use an external battery conditioner, like one of several offered by Lind Electronic Designs, that first deep-discharges the battery before it charges it.

Other Battery Options

Apple isn't the only company to make a battery that can fit your PowerBook. Several vendors offer internal replacements that claim to be better in some regard or external supplements that take advantage of the extra space outside the case to deliver a little more.

Battery Technology Inc. (BTI) makes a replacement internal battery that fits most of the PowerBooks (all but the 100 and Duos, as of this writing, although I wouldn't recommend it for the high-power-drain 165c and 180c). It uses a different sort of latch technique than Apple's standard batteries, so you can pack several in your travel-bag more efficiently.

BTI says its batteries last longer than Apple's, but I have yet to see a report confirming this.

By the time you read this, some other companies may offer PowerBook internal batteries. Before you buy one, check carefully to make sure that the company is known to be reliable, and that the difference in price is worth the actual benefit, not just what the maker claims.

Several companies offer external battery packs that mimic external chargers by plugging into the external power port. The state of the art as of this writing includes a flat batteries from VST and Technöggin; an external lead-acid pack from Lind; and a D-cell emergency pack from Lind.

Tip: If you use an external power pack and a power-management utility, remember to change your settings to keep from draining your external pack. As far as your PowerBook is concerned, it is running on AC power, and most packages include default settings that don't conserve power well when they think the PowerBook is plugged into a wall outlet.

The VST ThinPack and Technöggin PowerPlate are both thin external batteries that fit beneath the PowerBook, for a trim package.

Lind sells an external lead-acid battery pack that it says delivers 10 hours of use on a PowerBook 170 in fast-discharge mode.

Lind also offers an emergency power-pack designed to help travelers stuck without PowerBook batteries on hand. The lightweight device can run a PowerBook for a good long while if you add in eight D-cell batteries, available nearly anywhere.

Unfortunately, it doesn't work with rechargeable batteries, so you need to discard the alkaline cells you use when you're done.

Users of classic PowerBooks that need to change batteries without external power available but don't want to lose their work or the contents of a RAM disk can take advantage of PowerSwap, an external device from Utilitron that lets you connect a nine-volt battery to the external power port. While this can't power a running PowerBook for more than an instant, it can sustain the RAM of a system in sleep mode long enough for you to switch internal batteries.

External Power Sources

You can also turn to a number of external power sources and adapters to charge your PowerBook's battery or power the system without a battery installed.

Beyond Apple's charger, there are third-party devices that let you run your PowerBook off of car power, via the cigarette lighter. Some companies offer fast-chargers and battery conditioners that let you charge (or discharge, as the case may be) your batteries faster than the PowerBook's built-in or Apple's external charger.

One very handy accessory to have along with your PowerBook on a trip is an extension cord, to reach those hard-to-find or just-out-of-reach-of-the-chair outlets. Make sure it is either taped down, highly visible, or otherwise positioned so that passersby don't trip over it, injuring them, you, or, most importantly, your PowerBook.

***Duos:** The PowerBook Duos, unlike other models, require a grounded (3-prong outlet). However, a 2-to-3-prong adapter can help you convert. One nice feature of the Duos' power adapter, besides its light weight, is its capability to accommodate standard power cords that plug into the backs of Macs and monitors, so that in most any business you can "borrow" somebody's cord to pick up a charge. This is especially useful in foreign countries, where the electrical outlets may be, well, foreign, but the Mac plug ends are reliably the same.*

It may well be worth your money to invest in a second power supply, so that you can have one at work and one at home, or one to take with you on a trip and another for someone to send when you lose the first one.

What to Do When You're Absolutely Out of Juice

So you're down to the last drop, you've used up all your spare batteries, and you still haven't accomplished what you need to finish on your PowerBook. Here are a few things you can do to get the job done:

- **Find a plug.**

You'd be amazed at how many public places have electrical outlets. It shouldn't be too surprising — after all, the proprietors have to run cleaning equipment and the like.

You'll be even more amazed at all the trouble these places go to to conceal, seal, and otherwise prevent access to the outlets. Are they concerned about somebody stealing a few cents worth of electricity? More likely, liability concerns related to fears of children sticking their tongues in outlets has something to do with it.

So look around. If you're in an airport or other transit lounge, look behind seats, on poles, on floors, and occasionally, even ceilings. If you're in someone else's home or office, ask them, especially before you unplug somebody's life-support equipment or refrigerator.

Above all else, *do not* just leave your system lying there, plugged in. It *will* be stolen, or detonated by a roving bomb squad.

When you leave, don't forget to take your power supply with you! I've left supplies behind in hotel rooms a number of times, especially when the outlets are hidden behind dressers.

- **Remove the battery.**

If the battery is totally dead, some PowerBook models will refuse to start up, even when you plug them in. Why? Because they're routing all the power to recharge the battery.

To get around this, simply remove the battery. This is perfectly safe, and doesn't risk losing any data *if* you are certain that the electrical outlet is truly live and the connections are intact.

- **Bum a charge.**

As a last resort, look around. Does anybody else in the room have a PowerBook? Offer them the latest version of the hottest new PowerBook shareware utility. They may be convinced to sympathize with your plight, and loan you the use of a battery or a charger.

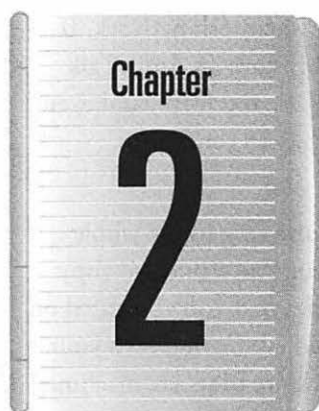
Summary

At this point, you probably feel dizzy. "So many choices," you wonder, "What should I do?"

First, relax. If you totally ignore the advice in this chapter, your PowerBook will still function just fine, and the built-in battery-saving functions left at their default settings will usually give you enough time to get your work done, and sufficient warning to avoid losing your work when the battery finally goes.

If you do decide to go further, using the hardware, software or techniques described here to extend your system's operating time remember that it is a balancing act. You can very often make tradeoffs in performance or convenience and gain lots of battery life, as well as vice versa.

The best course is to experiment and discover what works best for you.



Mobility

If you're a longtime desktop computer user, like me, you probably find much familiar about the PowerBook: It walks like a Mac, talks like a Mac, and even occasionally squawks like a Mac.

However, there are some aspects of the mobile computing that are different or have no equivalent on your desktop Mac. For instance, keeping your network connections going while you move about and alight at multiple locations is a challenge. In the same vein, you may find that you need to reconcile changes in the files on a PowerBook's hard disk with changes made on a network. Fortunately, there are solutions available to help you accomplish all these things, and more.

Networking

Every PowerBook includes hardware and software to support Apple's networking protocol, AppleTalk. This lets you create ad-hoc or permanent networks in a snap, using inexpensive cabling.

But you can go much further with a Mac network, using software that lets you dial up to another Mac or network over phone lines, or even connect wirelessly to networks and services such as paging, news broadcasts, and communications.

AppleTalk Remote Access

AppleTalk Remote Access (ARA) is software from Apple that forms a temporary network over the phone lines between your PowerBook and another Macintosh running ARA. It consists of a control panel that provides the actual connection, along with an application that initiates connections from your PowerBook and acts as a server on the system you call. The application exists on both the PowerBook and the desktop Macintosh you are connecting to; it controls both ends of the link.

AppleTalk networks are by far the most common kind of Macintosh network. If your Macintosh is connected to a LaserWriter, you probably have an AppleTalk network. AppleTalk enables different Macs to move files back and forth, and even to run applications from other machines; it also enables Macs to connect to printers.

When you use ARA to connect to a Macintosh, you're connecting to the whole network. You could link to your office Macintosh with your PowerBook to copy the files you forgot to bring home with you—or to send files that you've created on your PowerBook to your coworkers in the office. You could even connect to your network from a remote location and use the office printer. Sure beats fax machines!

***Note:** We are describing a link where a PowerBook connects to a desktop Macintosh (and any network it's connected to), because that's what you are most likely to see; however, you can use ARA to link any two Macs with modems—two PowerBooks, or two desktop Macs, or even to make a desktop Mac call a PowerBook.*

ARA was bundled with modem-equipped PowerBooks from 1991 through 1992, but Apple started to sell it separately in the fall of 1992. Apple may soon start bundling a scaled-down version of ARA with PowerBooks, called ARA Client, that just enables users to connect to another Macintosh that is running the full ARA package.

Using ARA is really only practical with a high-speed modem, 9600 bps or faster. Even at these speeds, it will seem slow because traditional (wired) AppleTalk networks run more than ten times as fast.

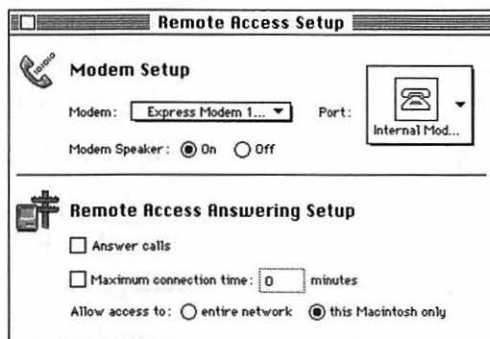
Several third-party developers now offer their own ARA servers that don't tie up a Mac and one of its ports. Besides costing less per port (per user online at a time), third-party offerings such as Shiva's LANRover offer multiple ports in one box (for easier management). Some include built-in modems. Most of the third-party offerings include some number of ARA licenses for the PowerBooks that call in.

Once you install ARA, you need to configure it for your PowerBook and tell it what server to call and how to call it:

1. Open the Remote Access Setup control panel (see figure 2.1) to select your modem and port using the pop-up menu.

Figure 2.1

*AppleTalk Remote
Access Setup control
panel.*



If your modem is not on the list, select a modem with similar capabilities or one from the same manufacturer; you may need to get a modem script file from your modem maker or an online service or user group.

2. Open the Remote Access application.
3. In the Untitled window that appears, enter your user name and password on the remote system. The same name and password you use for file sharing logins are used for ARA connections.

The ARA server administrator may need to create multiple accounts for you, however, if you call from different locations and the server uses call-back security (explained below).

While checking the “Save my password” box provides added convenience, it adds a security risk: anybody who gets access to your PowerBook or the data on it for even a few seconds could copy the file and log onto your ARA server impersonating you (unless the server uses dial-back security), without you ever knowing it.

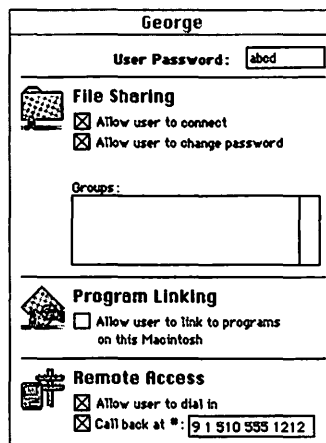
Choose the “Remind me of my connection” option if you want to add an extra warning dialog every so often to keep long-distance bills down. ARA is so transparent that it is quite easy to forget that you are connected!

4. Enter the remote system’s phone number. Remember to add whatever codes are necessary for long-distance dialing or an outside line.
5. Save the document, naming it based on the name of the server and the method of connection. For example, I have connection files named “work from home” and “work from the road”; the latter dials 9 (to get an outside line) and the area code before the number.

Next, you need to configure the ARA server on the host Macintosh (possibly your desktop Mac) to allow just the users you want to gain access to your Mac or network. This involves a few steps beyond the installation:

1. Open the Remote Access Setup control panel. Select your modem and port. Check the “Answer Calls” button and set a maximum time per connection. Choose whether callers are limited to the resources of just the server Mac or the entire network (or networks) it can reach.
2. Open the Users & Groups control panel (see figure 2.2). Open every user listed there and check or uncheck the “allow user to connect” button as appropriate.

Figure 2.2
*Setting up an
ARA user.*



This would be a good time for you to review the settings for every user. Make sure that each user you allow to dial in has a password assigned; you may want to uncheck the “Allow user to change password” button so that you can assign hard-to-guess passwords, rather than trusting to your users’ judgement.

Consider carefully whether you want to allow each user to share files or link to programs on your Mac. The latter consideration is more important than you may realize, because you can’t discriminate with detailed privilege levels the way you can with filesharing: If you allow any user to link to a program, that user can link to all programs that you let any user link to. Some programs ship with the Allow remote program linking setting turned on, so you could inadvertently let somebody remotely control your programs and mess up your work.

3. If you can, enter a call-back number for each user you allow to connect. Even if it means creating multiple user accounts per person, it is worth it, because it dramatically enhances the security of your system.

Without dial-back security, somebody who guessed or obtained the password of any user could call your system and impersonate that user, gaining access to whatever services your system offered that person.

With dial-back, ARA verifies the user's password, hangs up, and then calls back at the number listed for the user. This adds an element of physical security—the caller has to be at the listed number in order to connect.

This security is by no means absolute. There are ways to trick modems and reroute calls, but these take a whole lot more skill and work on the part of the cracker. Many ARA server operators have a policy of only allowing accounts with dial-back.

You can't use callback security if you don't know the phone number the user will be at or if the caller is at a hotel or other location that requires human intervention to route the call. In these cases, setting up a temporary non-callback account may be appropriate.

4. Run the Remote Access application in the background. The Remote Access application has to actually be running in order for users to link to the Macintosh; if it isn't, the Macintosh won't answer the phone when the remote user's modem calls. If you leave the Connection Status window open it will show you what's going on as users call in.

Once both ends are all set up, connecting is pretty simple. You can connect in one of several ways:

- Open the Remote Access connection document you saved.

I put an alias to the connection document in the Apple Menu items folder so I could connect in a single step. Just choose the connection document from the Apple menu, click the Connect button, and you'll soon be online.

- Open (or drag something onto) an alias to an item on a remote server. If you have the Remote Access Aliases extension installed (the ARA installer adds it to your System), it will trigger the appropriate connection document, unless you're already on the same network the item is on.

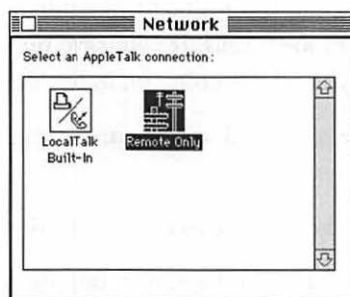
The simple interface of ARA and the apparent ease of initiating a connection

conceals a complex process of interaction between Macs, modems, and phone lines that may be reluctant to talk freely and openly. If at first you don't succeed, try, try again. Reset the modems at both ends. Verify your settings and phone numbers. Check your connections. Try out the modems with another communications program. Re-install ARA at both ends. Put your PowerBook to sleep and wake it up again. Some combination of the above will, if nothing else, make you feel like you're doing something, even though it might have no actual effect on your success at connecting.

Once you're connected, you won't see much difference except for the clock ticking in Remote Access's Connection Status window. However, if you open the Chooser on the Apple menu, you'll see more resources listed—those of the Mac you're connecting to, and possibly the network it is on.

Tip: When you install AppleTalk Remote Access, a file called "Remote Only" is added to the system extensions folder inside your System Folder. This adds a new choice, Remote Only, to your Network control panel (see figure 2.3). The Remote Only option turns off the AppleTalk circuitry without actually disabling the AppleTalk software. While it was designed for use with AppleTalk Remote Access, you could actually use it by itself, simply as a way of reducing power drain. See chapter 1 for more on this option.

Figure 2.3
Remote Only.



Duos, 100: If your PowerBook 100 or Duo is equipped with just a single serial port, you can use the Remote Only network option to free up the port for use with a modem or non-AppleTalk printer without disabling AppleTalk altogether.

Connecting to Ethernet

Connecting to an Ethernet network with a PowerBook requires either special software on a “host” desktop Mac or special hardware for the PowerBook.

Farallon Computing makes LocalPath and PowerPath, system extensions that let a desktop Mac act as a router in the background, so you can connect PowerBooks and other LocalTalk-based Macs to give them Ethernet access.

LocalPath sells for \$199 and supports up to eight connected devices. PowerPath is just \$149, is good for just two local devices, and includes 2 PhoneNet StarConnectors to plug in the devices.

You can instead use a hardware adapter that connects your PowerBook to Ethernet. Several vendors, including Asanté, and Dayna offer these adapters. Most connect to the SCSI port (meaning you need to go through a dock or SCSI adapter if you’re using a Duo), although Dayna offers one that connects to the serial port.

Printer management

Your PowerBook’s operating environment may encompass more than just the unit itself. Chances are, you also interact with networks, printers, and other external devices that are different at different places.

The problem is, changing all your settings around to accommodate these differences can be a pain. To turn AppleTalk on or off, reselect a printer, and print documents can take several minutes and often requires restarting the PowerBook.

Several third-party vendors and Apple have come to the rescue, with printer- and network-settings management modules in PowerBook utilities and one product dedicated specifically to this purpose.

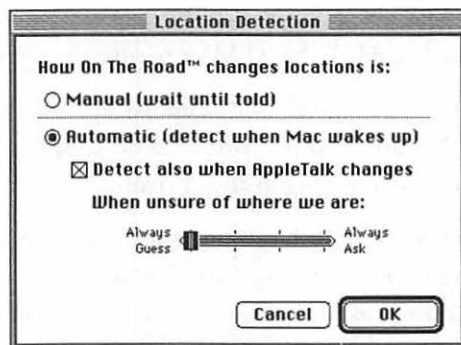
On The Road

Palomar Software’s On The Road utility (recently acquired by Connectix) simplifies printer and network management by automatically changing settings based on your PowerBook’s location. It figures out “where it’s at” by determining which devices are connected to the PowerBook each time it starts up or wakes up. It looks at network zones, devices, what monitor is active, if the PowerBook is docked (if it’s a Duo).

If the program isn't sure which location you're at (for instance, if you've got two locations with identical devices attached or a changed configuration at one location), it asks you; you can tell it whether it should make its best guess or ask you, based on its level of confidence (see figure 2.4).

Figure 2.4

On The Road can guess at where you are, or ask you to tell it.



At a given location, the program loads documents, applications, and configuration files you've set up; selects the printer at that location; mounts network volumes you've previously used there; and selects the fax modem you used there.

What's most interesting about the program, however, is that it lets you continue to print documents when you're not connected to a printer. The "Print" button in the printing dialog box changes to "Defer," and the program saves documents and prints them later when you're connected to an appropriate printer.

Not all printers, networks, and modems are supported, although the program does work well with AppleTalk Remote Access, EtherTalk, and, in Version 1.1, Novell networks. It does work with most printers that support background printing.

Modules in PowerBook utilities

Apple's PowerBook File Assistant includes extensions that add a couple of printing-related functions. Like On The Road, it can defer printing until a printer is connected, but it doesn't automatically determine when the printer is connected—you have to tell it.

When Connectix upgraded its Connectix PowerBook Utilities to Version 2.0, it added a module that manages printer settings, restoring printer selections and network settings saved for different locations. However, it doesn't handle deferred printing and it doesn't automatically determine your location based on the network connected—you have to tell it your location.

Useful functions in other programs

There are also some general Mac utilities (not just for PowerBooks) that can direct output to a particular printer. In general, these don't handle deferred printing but they do make it easier to switch between printers.

One class of this type of program is drag-and-drop printing programs. These typically work as follows: First, you run the program and select the device it will print to. Then, you simply drag onto it any files you want to print on that device. It takes care of switching and switching back behind the scenes.

One program in this category is easyPrint from SF/O. The program is based on DTPrinter, a freeware program written by Leonard Rosenthol.

It is relatively easy to write this type of program in scripting environments such as UserLand Frontier and AppleScript.

Wireless communications

Your PowerBook can communicate with other Macs and services not just through dial-up lines and network connections but also through a multitude of wireless communications. In the context of looking at enhancing your mobility, we'll focus in this section on out-of-the-office wireless communications, rather than on in-office wireless networks.

This whole category is changing rapidly, with new entries coming every day. However, I'll start by showing you a simple method that you may already be familiar with: the cellular phone.

Cellular phones and cellular modems

Yes, your PowerBook can make a data call on your cellular phone. If your phone has a data port (or if you can add one as an option), you can simply plug in your modem and communicate. That is, at least in theory.

Not all cellular phones can accommodate data ports. The optional port adapters on some can cost as much as the phone itself, or more, up to several hundred dollars.

My experience is that this approach does work under certain conditions, but it has several limitations. Namely:

- The signal quality provided by a cellular phone call is generally not as high as that of a land-line call. As a result, you may experience more line noise and you may not be able to use the full range of speeds your modem supports.

- If you are in a moving vehicle while making a cellular call, the network will have to switch to a different base station in the middle of your call, when you get out of range of the one you started with. When this happens, communications is interrupted for as long as a second or so.

While you can usually cope with this in a voice conversation, many modems interpret the interruption as a signal that the call is over, and hang up.

Even when you can change the settings on your modem to tell it to ignore the breaks in communication, or you use a “cellular modem” that specifically knows not to cut out when the conversation stops, you rarely have control over the modem used at the other end of the call. And if it hangs up, you’re out of luck!

- You may need to try redialing several times to get a good connection. My wife and I ended up driving our van all around rural Newton, Iowa, in a vain attempt to find a place where power lines and the local topography didn’t interfere with our calls.
- Most cellular phones don’t supply a dial tone or even let the modem do the dialing (you typically have to dial by hand on the phone’s keypad), so you have to reconfigure some communications scripts to make them work.

Tip: If you insert X3 into your modem’s dialing string, after the AT but before the DT, that will usually tell the modem not to wait for a dial tone before listening for a connection. This is very helpful when you’re using a cellular phone that doesn’t provide a dial tone.

Applied Engineering is trying to make things easier, selling its PowerBook internal cellular modem along with a line of interfaces to common cellular phones.

Down the road is a new standard called CDPD, short for Cellular Data Packet Delivery, which routes little snippets of data in between the talking on regular calls. But this isn’t yet commercially available as of this writing and it will require special modems specifically designed for this purpose.

In the meanwhile, a simple cellular dial-up connection can serve you well if you don’t need to transfer much data at a time. If you need to move lots of wireless data, look into some of the alternative network schemes listed below.

Paging as messaging

Although you might not think of a pager as a computer peripheral, it can function as one, offering one-way broadcasting of alerts or data to you or your PowerBook.

Ex Machina's Notify! application can run in the background on a desktop Mac, calling a paging service and triggering alerts when:

- A timer alarm sounds.
- Another program sends an Apple event.
- An electronic mail message arrives.

Typically, the program relays a message that you can read on a pocket display pager. However, another program from the same company addresses the other end of the equation: Update! lets you hook a pager with a serial port (such as the Motorola NewsStream Advanced Information Receiver) to your PowerBook. The pager stores up to 32K of messages for later download to a Mac. Messages can include the stereotypical "call-me" pages as well as stock price updates; it can even send Apple events to control other applications on your PowerBook.

This level of functionality doesn't come cheap, however. Although Notify! and Update! both sell for less than \$200, pagers with serial ports cost much more than low-end display pagers. And not all paging services allow "computer-originated paging", which is needed for your Mac to be able to send you messages.

Other wireless communications systems

Other wireless communication systems are based on packets, rather than calls. This approach is closer to that of wired local-area networks, where you don't dial a number but instead you exchange packets with other nodes on the network, simultaneously working with a fileserver, e-mail server, and more.

Digital Ocean's Grouper, for example, costs \$450 per node, but is limited to a range of 250 feet, making it appropriate for in-an-office ad-hoc networks but not for more distant excursions.

Large-scale wireless networks include ARDIS, an IBM-Motorola partnership, and RAM Mobile Data. Both are mostly aimed at (and priced for) large corporate customers with a need for in-the-company wireless communications, although the networks are being updated and made more economical for hooking into a departmental network. Both require, for the moment, expensive and awkward-to-carry external receivers as well as special software for Macs to connect.

There are also wireless networks that operate on a much smaller scale—inside a room or a building. These can be quite helpful for PowerBook users that move around within a facility—you don't have to plug in to a physical connection to log in. However, most of these networks are configured for Novell networks, and are impossible or extremely difficult to make work with Macs. Motorola's Altair Ethernet-compatible wireless network is one that does work.

Apple and other companies have proposed standards for data personal communication services (Data-PCS) that will allow standard data communications both indoors and out. But these are a ways off from government approval, and years away from use in more than experimental form.

I'm told that infrared networks, that use light rather than radio signals to communicate, are the next big thing. Right now, infrared is used for some across-the-desktop communication between Apple Newtons, some Sharp handheld organizers, and Hewlett-Packard's palmtop computers. But systems that actually act as a network are harder to come by.

Photonics offers an AppleTalk infrared network, PhotoLink, but its current implementation, several years old, uses big clunky boxes larger than a PowerBook. Keep an eye on this company—sooner or later it is bound to bring the miniature infrared networking technology it now uses in PC notebooks to AppleTalk, in a product now called "Cooperative" and expected to cost less than \$250 per node.

In summary, there's a lot you can do with wireless communication, but not a lot that's convenient and inexpensive right now. This will change as more networks come online, competition heats up, and the technology is better integrated into PowerBooks.

Right now, non-Mac notebook computers have the lead in this area, simply because many support the PCMCIA card slot standard, and communications hardware developers are making their products fit this slot so they don't have to re-engineer their offerings for every single computer on the market.

If you feel like you need to buy one now, make sure you actually try it and see how well it fits into your lifestyle. Carefully assess your needs to determine how much data you need to send when, and look at whether you can get by without wireless connections.

Networking conclusion

PowerBooks, like all Macs, are network-ready, able to connect or disconnect to AppleTalk networks in the blink of an eye. But hooking up and logging in is not always quite so easy when you are trying to connect to a foreign network or stay in touch on the road.

Reconciliation

Many people using PowerBooks find themselves in a pinch: they keep copies of files in two places, and always want to work with the most up-to-date copy of a file.

This situation can arise when you have:

- Files on a PowerBook internal and an external drive.
- One copy on a server and another on a PowerBook.
- A file that you regularly exchange with a colleague.

Each time you go to edit one of these files, you have to ask yourself: Is this really the latest version? If I make changes here, will I have to go back and make them again in the other copy? Will I copy the wrong one over, destroying critical data?

Fortunately, the advent of PowerBooks has inspired a whole category of utilities that aim to help you do just that job: figure out which copy of a file is the one you want. Not only do standalone utilities do this job, but people using scripting systems such as UserLand Frontier and AppleScript have created programs that you can customize, and PowerBook multifunction utility makers are including reconciliation modules in their products as well.

Standalone reconciliation

There are some applications that have one function in life: to straighten out your files. They compare two folders, disks or files and, with your guidance, copy files one way or the other to make things match up.

PowerMerge

Leader Technology's PowerMerge lets people who need to merge files build lists of files on two disks, including and excluding particular files or types of files. The shows a preview of the merge operation, listing which files will be replaced and which will be copied.

The program warns you if files have changed on both disks since the last update and lets you decide what to do. You can create setup files that perform the merge operations, or simply drop onto the PowerMerge application the files or folders you want to merge. It keeps a journal logging exactly what occurred in each session.

Version 2.0 adds improved automatic reconciliation and can run at startup or shutdown. It lets you better merge file contents, either by directly opening the documents with the application that created them or using Apple events to ask the application to compare the document contents (see below).

Apple has bundled PowerMerge with some configurations of the Duo Dock, to help customers synchronize files on the Duo's hard disk and the one in the dock.

ShuttlePilot

Xanatech's ShuttlePilot provides a simpler approach—it lets you select folder pairs to merge but it doesn't go through the hierarchy and deal with all the subfolders. It also includes an icon bar that lets you quickly mount network and SCSI volumes with files and folders that need to be synced.

Other standalone utilities

Qdea's Update! is very affordable, but it offers little protection against accidentally overwriting a file if a new folder in one directory has the same name as one already in another folder. You can set up filters that specify which files to copy and not to copy in a particular synchronization session.

Inline Sync, from Inline Design, is designed to synchronize entire disks at a time. Rather than store settings for each pair of folders, the way most other programs do, this application stores information for pairs of volumes in the program itself. An included system extension can perform synchronizations at preset times or when you're not doing much on your Mac.

Magnet

No Hands Software's program is more than just a synchronization tool. It creates what the company calls "magnets," files that tell it to make aliases of, move or copy other files that match criteria you set up.

You could create a magnet, for example, on your PowerBook's internal hard disk that copied any new files from a designated folder on your network server each time you connected. You can use this ability for backup, or for classic synchronization functions.

Modules in PB utils

The number-one feature added to the second edition of PowerBook utilities is file reconciliation. The vendors are responding to your needs, based on your experiences, in a process accelerated by competitive pressure.

CPU and NEP

Both Connectix's CPU 2.0 and Symantec's Norton Extensions for the PowerBook (NEP) include synchronization modules, curiously both called Sync-It. Although the modules differ in punctuation (Norton's is called SyncIt!), the competing modules work remarkably alike.

CPU's Sync-It goes a little further: It changes the dialog boxes the Finder displays when a file being moved or copied will replace an existing file, adding two buttons. Instead of just "Replace" or "Cancel", you can choose "Sync," which tells you which file is most recent and lets you select which one to place at the destination, or "Merge," which goes even further, copying the target file back to the source if the target is more recent than the original file.

PowerBook File Assistant

Apple's utility can automatically synchronize files, folders and disks locally, over a network or via a diskette.

You set up matching file pairs by dragging icons from the Finder into the program's Synchronizer window. You can choose one-way or two-way, manual or automatic synchronization.

The program is unique because it watches what you do in the Finder, changing linked items to reflect changes you make such as renaming or moving a file.

Scripting systems

Scripting systems such as AppleScript and UserLand Frontier make it easy to write simple programs that do reconciliation. In fact, both Apple and UserLand include with their environments sample programs that do just that.

Although the programs are intended as examples of how to program in the respective environments, you can use them as-is for simple reconciliation. The advantage of using these is that the source code is available, so you can examine what the programs do, the assumptions they make, and change them to suit your needs. Also, in both environments, you can trigger the programs by an Apple event, or have them send a message to another program.

Manual reconciliation

Of course, you don't need all these fancy programs—you can simply use the Finder to copy files back and forth as you need.

One way of making this process go faster is to create aliases to the files and folders all in one place, so you can move files between folders without a lot of window-swapping.

Merging file contents

Although utilities that pick the most recent of two versions of a file can be helpful, they can't help (and they may even lose some of your data) when you've made changes to both versions since they were created.

Fortunately, a growing number of applications now can accommodate PowerBook users by intelligently merging the content of two or more files. Because the programs know their own formats, they can go through the data and figure out which pieces have been changed and which have been newly created in each file. This feature also is useful in some desktop applications, like combining multiple address books.

A couple of prime examples of programs supporting this feature are Portfolio Software Inc.'s Dynodex and Symantec Corp.'s ACT! for Macintosh. Look for more products to adopt this feature as competitive pressure increases.

Leader Technology has put forth a proposal for some standard Apple events (which it promises to include in PowerMerge 2.0) so reconciliation programs can ask applications to determine the differences between files and merge them. If these catch on, reconciliation will be able to go much further in depth. As of this writing, however, no applications support the events yet.

What to look for in reconciliation utilities

Above all else, reliability is key in a reconciliation utility. If a program makes a wrong decision, replaces the wrong file, or even presents an unclear dialog box that leads you to make the wrong choice, it is worse than having no program at all.

So don't be the first on your block to try out a new reconciliation program. Wait until people you trust, friends and colleagues as well as "experts" and professional

reviewers, have figured it out and made their pronouncement. Likewise, don't adopt a new reconciliation module simply because it is part of a new PowerBook utility or a new version you use for other reasons.

Reconciliation programs have to walk a narrow path between offering convenience (automatic operation) through intelligence, without crossing the line and overwriting a file without your permission. Many let you tell them what to do if in doubt, but changing the built-in settings without thinking through the effect can also be hazardous.

Be extremely careful if you exchange files with users whose clocks aren't set reliably, or if you change time zones and work with files at frequent intervals. Most reconciliation programs rely on the system's automatic date-and-time stamping of files, and can easily become confused if the times are not consistent and accurate.

Travel tips

When you're on the road, your resources are limited. You leave the safety net of your usual working environment and you can face unexpected challenges from what would be a minor inconvenience in your normal setup.

Although the traditional image of the PowerBook-equipped traveler (one promoted in Apple commercials) is the international jet-setter, computing for hours on end on long flights, the reality is that most people use PowerBooks for short periods of time in local or regional commuting. So I'll focus here on tips most useful for that task.

Local travel

When zipping around town, you'll often want to take notes, set up meetings, enter appointments—use your PowerBook. There are several different settings in which you'll do your travelling, and you can use your PowerBook in any of them.

Walking

Yes, you can use your PowerBook as you walk around. The main thing you need to watch out for is this: try to avoid moving the system, especially jarring, dropping, or suddenly moving it, while the hard disk is spinning. In general, set the PowerBook

control panel to put the hard disk to sleep after a short interval of non-use, or use a third-party utility to sleep it on demand. Be conscious of what you're doing and be ready for the hard disk to come on at any time without notice.

***Duos:** Apple's internal hard drives for the PowerBook Duos automatically retract the heads a few seconds after each data access is complete, reducing the likelihood of damage to your disk if the system is dropped—even while the disk is spinning.*

The Duos are light enough so that you may be able to hold one against your leg, just above the knee, with your wrists as you type. However, this is very precarious and the strain on your wrists is likely to increase your chances of suffering carpal tunnel syndrome or a similar repetitive stress injury.

While most carrying cases make it awkward to actually use the PowerBook while you walk around, one enterprising vendor, The Madson Line, has created “classic” PowerBook and Duo-sized bags that open accordin-style to let you cradle the PowerBook and use it while you are in motion.

If you're going to use your system while walking about, be prepared for strange looks from passersby. And don't forget to look where you're going!

Driving

A PowerBook in the car is worth two on the desk? Seriously, your PowerBook can easily accompany you on your road trips, to remind you of appointments, for looking up the phone number of people you're visiting, and for navigation (see chapter 8 for some programs that help you navigate).

I shouldn't have to say it here, but I will: computing and driving don't mix. Please pull over when you use your PowerBook, or delegate the trackball to your co-pilot while you're handling the steering wheel. While a cellular phone is dangerous enough, a PowerBook can steal away your visual focus from the road and traffic around you. Even trying to sneak in a few clicks while stopped at a light can backfire if the light changes unexpectedly.

On public transit

I've written many a *MacWEEK* news story sitting cross-legged on the floor of a crowded Bay Area Rapid Transit district subway car on my 30-minute commute to

work. I find it a great way to get my first task of the day out of the way before all the distractions of the office can capture my time.

The trickiest part, I've found, is to save my work, wait for the hard disk to spin up, and shut down the PowerBook in time so that I can get up to leave the train as my stop arrives, without having to carry the system through the station with the disk spinning. While putting the system to sleep is faster, I'd just need to wake up the Duo again at the office in order to shut it down to dock it in the waiting DuoDock.

Security is a concern—use common sense and always remain conscious of where your PowerBook and all its accessories are at. Be aware of who else is on with you, and how much attention they're paying to you. What kind of neighborhood are you passing through? The perceived safety of a transit vehicle can change in seconds as passengers board and depart.

Alas, I'm not aware of any good public-transit schedules in computer form, but some people have used HyperCard or word processors to enter or scan a custom electronic schedule from printed timetables.

In Hotels

While a good hotel room can feel like a home away from home, PowerBook-equipped travelers may be seeking out something more like an office away from the office. Fortunately, many hotels are now making it easier than ever to plop down, plug in, turn on and tune in your PowerBook from the comfort of your room.

When you check in and enter your room, you need to figure out:

- Can you plug in? Is there power available in a convenient location? Or do you have to deplete your PowerBook's batteries and alternately charge it off a shaver plug?
- Can you tune in? Is there a telephone jack you can connect to? Can you afford to make any calls at the hotel's rates?
- Can you work there? Is there a desk and chair appropriately sized and placed for your comfort?

Hotel telephony and power

Look under the hotel phone and at the wall jack, if you can see it (they are often hidden behind headboards or other furniture). Do you see a "normal"-looking

modular jack on either? If so, you're probably in luck. If not, you may have to turn to different connection techniques. See chapter 7, "Online Communications," for more details.

Hotels often charge extravagant prices for long-distance and local calls dialed directly. Before you dial, check the rates. Often you can call a long-distance company's toll-free number without a surcharge and dial much less expensively. If your online services have local access numbers near your hotel, look them up before you go.

Don't forget to plug the telephone back in so people can reach you when you're not online and so you don't miss wake-up calls.

Finding conveniently-located electrical outlets can also be difficult. If you have a Duo, which requires a 3-prong (grounded) outlet, pack an 2-to-3-prong adapter. An extension cord is a good idea in any case, unless you relish using a tethered PowerBook in a strange posture.

Be careful about unplugging the room's alarm clock (you might forget to plug it back in and not wake up) and your television (some are alarmed or hard-wired to the wall).

In the air

A PowerBook will fit on most airline tray tables, so you can keep on doing whatever you're doing while you're aloft. However, your seatbelt is not the only constraint you'll face while computing in the air.

Most airlines (as of this writing) ban the use of computers, among other electronic devices, while aircraft are on the ground, taking off, or landing—anytime you're below 10,000 feet—on the grounds that these can interfere with aircraft navigation systems. This may seem like a real pain if you are stuck on a grounded plane for a while, but keep in mind that failure to comply with the flight attendants' instructions can get you jailed. If in doubt, ask permission.

Some airlines have prohibited outright the use of any computer with an external device (like a mouse) attached, as the cable can radiate RF emissions. So get used to that trackball, and leave your external floppy drive stowed for the duration of the flight.

While some planes are equipped with electrical outlets in the lavatories, it hardly seems worth the trouble to plug in there. Simply plan ahead and take spare or external batteries and make sure you're all charged up before you travel.

International

If you want to avoid paying a duty on your PowerBook when you re-enter the country after an international journey, drop by a U.S. Customs office on your way out and fill out a "certificate of registration for personal effects taken abroad." You list the model and serial numbers of items you are taking out of the country so that you can show you didn't acquire them while travelling.

Depending on the country you're traveling to, you can often find the power and phone adaptors you'll need in electronics stores there more conveniently than in the U.S.

Summary

As Apple sells more and more PowerBooks, the people buying them are discovering new, unique uses for them. And developers, driven by the prospect of such a large audience, are turning their attention to developing new types of applications that help people using PowerBooks work better on the road.

The end result of this ongoing process will be new categories of applications and utilities that purport to make your life on the road easier, more profitable, or maybe just longer. You need to inspect these offerings with a critical eye, evaluating:

- **Is it really new?**

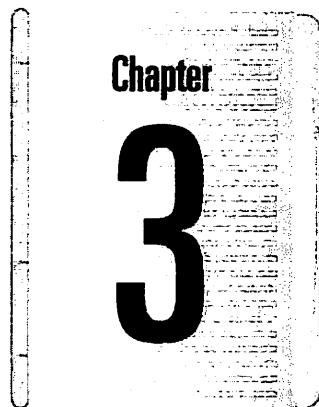
Many seemingly-new categories are just fancy names for what you or your programs do already. Beware of buzzwords such as "agent," "artificial intelligence," "expert system," and "productivity enhancers."

- **Is it worth the cost?**

Until competition establishes the "value" of a category, vendors will charge whatever they can get.

- **Is it really useful?**

While some types of software can seem incredibly interesting at first blush, think about whether or not the service they preform will actually help you out significantly. Some software creates more problems than it solves.



Uninterrupted Computing

Once you've gotten your PowerBook, you've got it charged up, and you've got it mobile, your next concern is probably to keep it running. As it becomes increasingly important in your life, acting as a repository for your documents, data, contacts, and calendar, as well as your conduit for communications, your PowerBook becomes much more critical. If it should let you down, you could miss business opportunities, lose money, and generally suffer a marked decrease in your quality of life.

So read on to discover how a few preventive steps you can take today could save you from hours, weeks, or months of time that your PowerBook or the data on it is unuseable, how you can avoid panicking if you do run into problems, and how to overcome them effortlessly.

Preventive Maintenance

There's a lot you can do, both when you first get your PowerBook and as you use it, to keep it happy and avoid problems down the road. Depending on how you configure your PowerBook and its hard disk, you can save space, make it easier to recover lost or accidentally deleted files, and make sure your system is in working order.

The first 30 days

For PowerBook and Macintosh basics, turn to chapter 15. But once you're up and running, there are a few simple steps you can take to both make sure your system is working properly and to prevent the loss of data down the road. In short, the steps I recommend are:

1. Verify the integrity of your hard disk.

Use the programs Disk First Aid and HD SC Setup (or its third-party equivalent if you have a non-Apple internal hard disk drive) to make sure that your hard disk has no bad blocks (the "verify" or "test" options).

If there are any problems with your hard disk, it is best to know that they are there before you put any valuable data on it (see the section below, “Why not to try to fix your system yourself,” for further advice on this topic).

2. Make sure that your screen is fully operational.

Run a program such as PB Screen Tester, which is available through user groups and online services. It blinks all the pixels on your screen so you can make sure that none are stuck on or off.

3. Back up your unmodified system.

If you have software problems it helps to have an original copy to go back to. I recommend a backup of the hard disk before you install anything on it in addition to the set of system installation disks that came with your system.

***145B:** This PowerBook (and perhaps others by the time you read this) does not include system installation disks, making it even more important to back up your unmodified original system. A simple backup utility is included.*

4. (optional) Reformat your hard disk to gain some extra space.

Many people have changed the settings in HD SC Setup, the Apple-supplied utility that tests and formats Apple’s hard disks, in order to gain a few Kbytes of extra space. Unfortunately, some people discovered that this can tend to trigger an obscure bug in the Macintosh operating system, making it easier to appear to lose data. In my experience, it isn’t worth the effort and potential trouble it may cause.

5. Install a utility that helps you recover deleted files.

The FileSaver module in Norton Utilities for the Macintosh (NUM, not to be confused with Norton Extensions for the PowerBook) is one of several that keeps track of files you have thrown away, making it easier to retrieve them after you have emptied the trash.

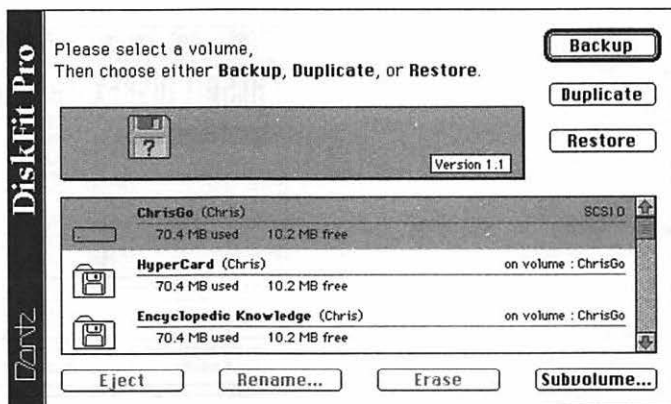
Once you’ve done the above, you can install your applications, documents, extensions, and so on, confident that your PowerBook itself is working and you can always fall back to the base system if your software should become corrupted.

Useful utilities

There are several types of utilities you can install and use regularly to help keep your system happy. Backup, anti-viral, disk-repair and defragmentation programs can help.

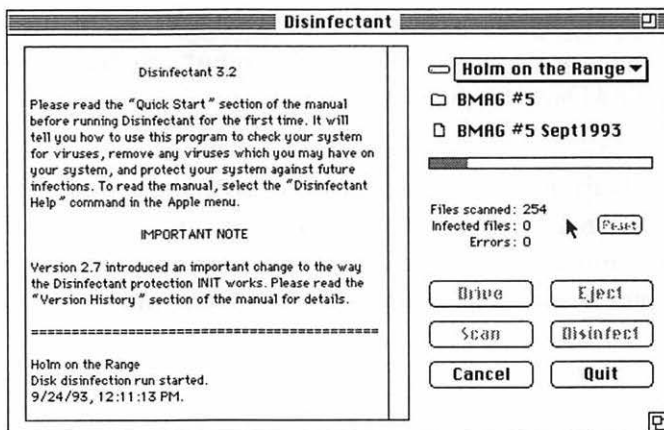
A backup program (see figure 3.1) automates the process of saving files from your hard disk onto some other medium, so that if anything happens to your PowerBook or hard drive, your data is still safe. See chapter 4, “Security,” for more on this topic.

Figure 3.1
Dantz's DiskFit.



Anti-viral software scans floppy and hard disks for viruses, detecting and eliminating them. While most Mac viruses are not intentionally destructive, many include bugs that can cause your system or applications to behave unpredictably, bomb, or lose data.

Figure 3.2
Disinfectant.



You can choose a commercial package such as Symantec Antivirus for the Macintosh (SAM) or the free program Disinfectant (see figure 3.2). Make sure that you use the latest version—as new viruses are discovered, new versions of the software are released to combat them. If you use an old version, you'll still be susceptible to the most recent viruses.

Disk-defragmentation utilities reorganize the contents of your hard disk so that you can retrieve files more rapidly. Many of these, such as ALSoft's Disk Express (see figure 3.3), rearrange files in the background, when your system is on but not actively in use.

Figure 3.3
Disk Express.



System extensions

Unlike application extensions, which slowly continue to gain popularity among developers and users, system extensions have been incredibly popular with Mac users for several years. They too have been known by many arcane names, among them control panels, INITs, cdevs, RDEVs, and startup documents. They compose some of the most well-known Macintosh programs, however, such as After Dark, DiskDoubler, QuicKeys 2, and Virex.

System extensions are programs that run when the Macintosh starts up, almost always displaying their icons in a row at the bottom of the screen. Typically, they add functionality to the standard operating environment, providing such magic as automatic virus scans, screen savers (not really too valuable on a PowerBook), automatic compression of files, and hierarchical Apple menus.

System extensions are automatically placed in either the Control Panels or the Extensions folder when you drag their icons to the System Folder. Extensions in the Control Panels are called control panels (formerly called cdevs); they can be double-clicked and configured.

You cannot open extensions by double-clicking. Some, such as the LaserWriter and StyleWriter extensions, can be accessed through the Chooser. Others just do what they do and cannot be configured. The DiskDoubler extension, for example, places a DD menu in the Finder and does not need a control panel interface. You change its options from the menu itself.

Extensions use hard disk space and RAM. Although many of them consume minimal amounts of RAM, owners of 2M PowerBooks will be hard-pressed to run many. Provided you have enough RAM, there should be no limit to the number of extensions you can use. Some power users have used more than 30, providing many added functions but using a lot of RAM.

The real problem with extensions is that they sometimes conflict with system software, applications, and even each other. Extension conflicts are so often a cause of conflict that they should be among the first items you check. You can turn off all extensions by holding down the Shift key as the PowerBook starts up. The standard welcome message changes to “Welcome to Macintosh. Extensions off.”

For more sophisticated extension management, a good extension manager can make all the difference. Extension managers let you selectively turn off different extensions at startup, which eliminates much of the tedium associated with troubleshooting extensions. They also enable you to rearrange the order in which extensions load. For more information about troubleshooting extension conflicts, see the “Troubleshooting” section, later in this chapter.

Disk utilities

Symantec’s Norton Utilities for Macintosh and Central Point Software’s MacTools 3.0 are the premiere data recovery packages for the Macintosh. Norton Utilities’ Disk Doctor component can quickly scan and repair directory damage on hard disks, and its Unerase feature can often resurrect files you have emptied in the

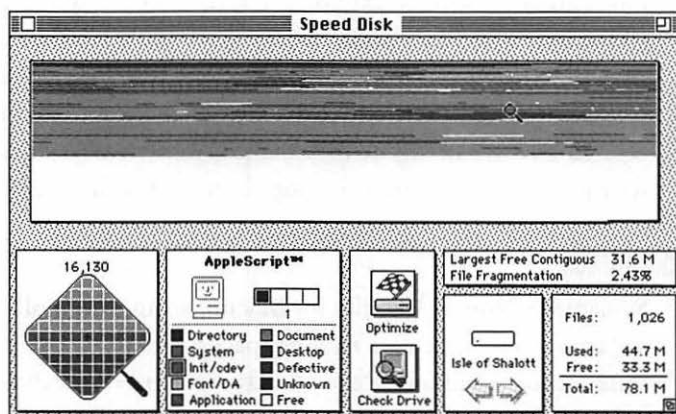
Trash. Unerase achieves much of its magic through a control panel called FileSaver (see figure 3.4), which makes a copy of your directory in case the original gets corrupted. Although the program attempts to track the last 500 deleted files, you probably won't be able to recover many older ones.

Figure 3.4
Norton Utilities for
Macintosh's
FileSaver control
panel.



Norton Utilities also contains Speed Disk, a program that takes parts of files that have been spread out over the hard disk and puts them in one contiguous block (see figure 3.5). The Norton Utilities Speed Disk is one of several disk optimizers that you should run only when the PowerBook is plugged in. The process of files getting separated and spread out is called *fragmentation*, and it happens to all disks after they have been used for a while. Programs such as Speed Disk are called *defragmenters* or *optimizers*.

Figure 3.5
Norton Utilities'
Speed Disk.



A competitor to Speed Disk, DiskExpress II, keeps the hard disk constantly optimized by shuffling parts of files when you're not busy at your Mac. The usefulness of this constant disk-chugging has been debated, and it is of even more

dubious value in the disk access-sensitive world of the PowerBooks. Generally, your PowerBook will not suffer from the slowdown associated with severe fragmentation if you use a program such as Speed Disk once a month.

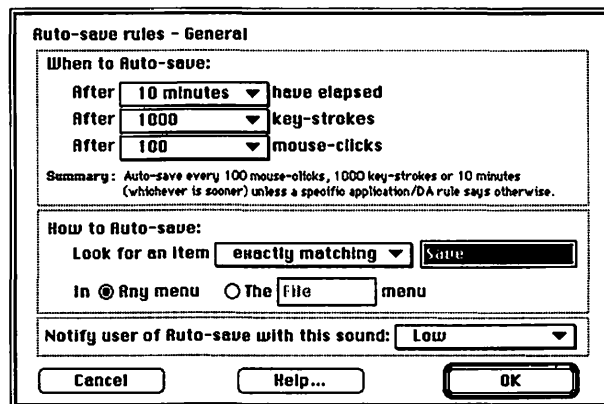
MacTools 3.0 is a solid competitor to Norton Utilities. It offers some features the former does not offer, including a capable backup application and good security. You can run its optimizer from the startup disk, whereas you must boot Speed Disk from a floppy disk to defragment your internal hard disk. Its Rescue program (the counterpart to Disk Doctor) provides advice for specific problems that can circumvent running the program; its Mirror program (which is similar to Norton's FileSaver program) can update its copy of the directory by means of a hot key.

Saving as you go

Last Resort by Working Software performs like a modest safety net. This small control panel remembers each keystroke you type and stores it in a file. Because—unlike file recovery programs that update only at shutdown—Last Resort works constantly, you have some sort of automatic backup for text-based documents even if a problem does not give you a chance to save your work. Using Last Resort's control panel interface, you can specify how often you want it to write keystrokes to its backup file, which wakes up the hard disk if it is asleep (see figure 3.6).

Figure 3.6

Last Resort saves each keystroke you type.



If you need to recover text from a Last Resort file, don't expect a beautiful layout to be preserved. Last Resort's clearly stated purpose is to record everything you type, including text you've deleted and replaced. You might have to spend some time re-creating the document from fragments contained in the Last Resort file.

Last Resort also poses a potential security risk because it records passwords you might have typed to get into network services or password-protected documents from programs such as Excel, WordPerfect, or MicroPhone II. Anyone who can access the backup file might be able to figure out your passwords. Still, if you don't tend to work with confidential documents, or if your entire hard disk is password-protected, Last Resort can easily return you its tiny cost in saved frustration.

Hardware hints

Your PowerBook will last longer and run more reliably if you treat it right, both by keeping it clean and not subjecting it to unusual stresses.

First off, if you can avoid getting the system dirty, you won't have to work as hard to keep it clean. Try not to eat while you work, and especially avoid sticky and crumbly items.

Some of the key spots that are vulnerable to interference from foreign substances include:

- **The keyboard.**

Crumbly things can get down below the key caps and interfere with key movement. Turn the system upside down, shake it (making sure that it is turned off and the hard disk is not spinning), and use compressed air to get things out.

Wet substances can drip down through the keyboard into the circuits below, short-circuiting the main logic board as well as damaging other components. If liquid gets on the keyboard, immediately stop, shut down, remove power, drain as much as possible, and air dry. If the liquid contained sugar, a follow-up dose of intentionally-spilled water can reduce overall stickiness.

- **The trackball.**

Your fingers can transfer grease, dirt and all kinds of gooey things to the rotating ball, which then jettisons its load onto the rollers that support it, resulting in poor cursor tracking and uncomfortable rolling.

Removing and shining the ball with a clean, dry cloth will help a lot (to get it out, rotate the outer ring counterclockwise and pry it and the trackball out

with something no sharper than a butter knife). Scraping the rollers with a fingernail also improves the feel if you're in a pinch, but Apple advises against this because it is easy to create imperfections that interfere with the rolling action.

- **The screen.**

Don't let your PowerBook fan club mistake the screen for a touchpad to be caressed as they admire its quality; fingerprints, dust and other ephemera onscreen can decrease visibility (perhaps leading you to increase brightness to compensate, reducing battery life). Besides, they generally look ugly.

Some people recommend anti-static clothes drying towlettes as a way to keep the screen clean (if you used an ordinary dustcloth, you'd just attract more dust because of a static charge, the wisdom goes). Some non-lint-bearing moist towels intended for computer screen cleaning may do the job.

- **The case.**

A damp cloth or paper towel will do just fine for external cleaning, but avoid harsh detergents—mild soap is the strongest thing you want to touch the surface.

Try to avoid washing off your serial number—you might need it someday! If you do, write it below in permanent ink with a Sharpie or equivalent marker.

PowerBooks are also vulnerable to physical shocks. If you drop one, the screen may well shatter or other damage occur. The damage can be hidden, so that visible surfaces appear intact while cards or connectors have come loose internally.

If your system shows any sign of structural damage, especially to the battery (which can expose you to hazardous substances when it breaks), don't even try to start it up—you could cause further problems. Immediately consult a dealer or Apple's service line for guidance.

Service

In normal operation, a PowerBook should require no hardware tune-ups or other regular service.

If you sell the system or add AppleCare coverage after your initial warranty has run out, you may need to have your PowerBook inspected. Many dealers should be able to do this, simply by physically inspecting the unit and using Apple diagnostic software and equipment, for a small fee.

When a component failure occurs or you break something, you will need to seek repairs. PowerBooks, like all of Apple's current Macs, are designed for replacement of individual subassemblies or modules, rather than repair in the field of the actual electrical or mechanical component that is at fault.

What this means is that if a 5 cent transistor fails and makes your PowerBook inoperable, Apple or its dealer will generally replace the entire board or piece that item is located on, and charge you accordingly, unless your warranty or extended warranty is in effect.

Some dealers do perform component-level (individual circuit) repairs. However, with PowerBooks it is nearly impossible to perform such operations without leaving behind evidence, and this type of service invalidates a warranty.

Troubleshooting your PowerBook

It's bound to happen sooner or later, no matter what you've done to prevent it. You go to wake up your PowerBook—and it doesn't. Or you drop the system, or stick it under a telephone with a magnetic bell, or you see just a blinking question mark on startup.

In any of these situations, your reaction may well be the same as mine: panic. Fortunately, more often than not, there's a quick and easy way out, something you can do that will restore at least the illusion of normalcy.

One of the most useful determinations to make early on is whether the problem you're experiencing is software or hardware related. Hardware problems generally consume less troubleshooting time than software problems. Unfortunately, you can't do much yourself if your hard disk has really died.

Apple has instituted a plan in which you can send PowerBooks directly to the company for service. If you call 1-800-SOS-APPL you can make arrangements to have your PowerBook picked up by overnight courier and returned to you in a matter of days. If you opt to take advantage of this service, you might be able to get your PowerBook back faster than through traditional dealer channels.

Troubleshooting tools

When something goes wrong, it may seem as you are the sole victim, the only person stupid enough to do whatever it was that caused that particular glitch. Yet, chances are, somebody else, if not thousands of other people, have run into the same difficulty. And they've probably figured out a solution.

Apple has sold over a million PowerBooks, enough to have a fairly good idea of what problems people are most likely to run in to as they set up and use their systems. To minimize the amount of time its technicians have to spend on the phone answering the most common questions, Apple tries mightily to improve subsequent PowerBook models so that the questions don't arise in the first place. It also tries to answer the questions in the documentation included with every machine.

So do take the time to read your PowerBook manuals, even if you've previously used a Mac or consider yourself a PowerBook expert. You may well discover something you didn't know, like a shortcut that helps you accomplish something in fewer steps than it takes you now, or learn about how to prevent a problem.

Likewise, the user community is large enough to be communicating online and at in-person user group and PowerBook special interest group (SIG) meetings, coming up with solutions to common problems both as they arise and in summary documents that list answers to frequently asked questions (FAQ) on a topic.



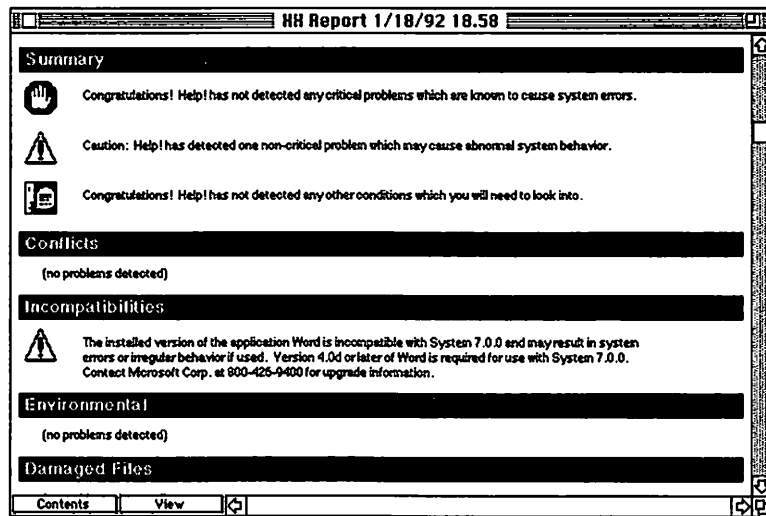
Another worthy source of information are the PowerBook-specific forums on online services. (Of course, you need a working computer to get onto an online service!) In particular, AppleLink's Mobile Support forum can provide answers to many Macintosh questions. The AppleLink software and a special connection offer are included with this book.

Identifying conflicts

Teknosys' Help might be the next best thing to traveling with a Macintosh expert, and you don't have to feed it. Although most file recovery programs can detect such basic problems as multiple System Folders, Help! goes an order of magnitude deeper to provide a detailed, beautifully formatted report on your hardware and software (see figure 3.7). Teknosys' Help! screen doubles as a printed report. You can navigate the wealth of information it provides by using the pop-up menu in its lower left corner. You can navigate the report on-screen or print it.

Figure 3.7

*Teknosys' Help!
provides you with
information about
current and
potential problems
on your system.*



Help! is very easy to use, which is fortunate because the last thing you need when things aren't working right is a stress-inducing application. Help! did unexpectedly quit during one analysis, but it worked fine after removal of an out-of-date version of the font-management program Suitcase II.

The brain of Help! is a file called Knowledgebase, which Help! uses to determine incompatibilities and store information about whom to contact. If you were using an old version of Thunder 7 with your PowerBook, Help! might tell you something like "Thunder 7 1.0 is incompatible with System 7.0. You should use Thunder 7 1.04. Please contact Baseline Publishing at 901-682-9676."

Help! is a great product superbly implemented, but its usefulness depends on how thorough and up-to-date the Knowledgebase remains. Teknosys intends to update the information file every six months, but the pace at which Macintosh software is developed and updated will unfortunately ensure that Help! is always playing catch-up with the products it diagnoses.

Although Help!'s nontechnical explanations of complex incompatibilities are useful to beginners, and it is most useful when an experienced user can interpret its results, it might not always give the right advice because it might lack completely up-to-date information. If Teknosys can enlist the cooperation of other vendors to keep Help! mostly accurate, it can be a powerful weapon in a troubleshooting arsenal.

Diagnostic software

Micromat's MacEKG performs a series of eye and ear-dazzling diagnostics at startup, compiling and recording statistics for hard disk and CPU speed. MacEKG performs a series of diagnostics, in the process generating a number it calls a "MPR" (mean performance rating) you can use to determine if some subsystem of your PowerBook isn't performing up to snuff.

Hardware related

PowerBook hardware problems often have symptoms that software could not have caused, such as hardware that refuses to turn on or a floppy drive that refuses to read a variety of disks. Sometimes, though, you cannot possibly tell at first glance whether hardware or software is causing a problem. For example, if you see a blinking question mark at startup, you don't know whether a damaged System file or a dead hard disk is responsible without further investigation.

Sometimes, sneaky hardware defects cause problems that software traditionally causes, such as system errors. Often, this problem is caused by a hard disk that unexpectedly stops, or by failing RAM or some other chip on the PowerBook logic board. Because of difficulties with SCSI termination, you should also remove any devices attached to the PowerBook's SCSI chain (Duo users should also remove any docks that include SCSI connections or have their own hard drives) before troubleshooting system errors.

Hardware problems are often less predictable than software. Software-caused crashes often happen while you're doing something like saving, printing, or switching among applications. Hardware-based problems that failing components cause tend to occur more randomly and with no help from you.

If your RAM is failing, for example, it might crash the machine at some random time after startup. One good way to test for failing RAM is to start up with the System 7 Disk Tools disk and just leave your plugged-in PowerBook on for a while. If a RAM chip is going, there's a good chance the Mac will crash after just a few minutes.

Some of the most common PowerBook problems I hear of (and experience!) include:

- It won't turn on.
- It turns on, but is "unhappy."

In place of the usual smiling Macintosh icon, you hear a series of chimes and see a sad Macintosh icon.

- The battery won't charge, or discharges very quickly.
- The system won't sleep right.

It either won't go to sleep, won't stay asleep, or sleeps spontaneously without you asking it to.

- You don't see "Welcome to Macintosh."

Instead, you may see a blinking question mark, a happy-face Mac icon that never goes away, a flickering dialog box, or other odd behavior.

Although some of these problems can be a symptom of a hardware problem that may require service to fix, you can take many steps on your own to diagnose and solve several of these.

Keep in mind that a particular set of symptoms doesn't necessarily correspond to just one problem. For instance, a confused power manager system can make a PowerBook charge batteries strangely or behave unpredictably in other ways.

You can turn to chapter 7, "Online Communications," for details on solving common problems related to communications and networking.

Power problems

If your PowerBook won't turn on, any number of things could be wrong, but there's a fairly straightforward drill you can go through to determine where the problem is:

1. Make sure the PowerBook isn't really on already.
2. Make sure the battery is properly seated.
3. Try a different battery.
4. Connect the power supply.
5. Reset the power manager.

First off, make sure it really isn't on already (when you pushed the power button, you may have simply woken it up from sleep mode). In a dark location with the

backlighting off, it is difficult to tell that a PowerBook is turned on. Adjust the contrast and increase the brightness to make sure it isn't simply on and hard to see. Remember that some PowerBook utilities override the manual brightness controls, so try hitting the key combinations that increase brightness (often command-option-up arrow) or turn on the backlighting.

Next, check to make sure that the battery is seated securely in the PowerBook. You might take it out and inspect the contacts, making sure that there is no debris on them that would prevent power from flowing to the PowerBook. Rub them with a pencil eraser if there is.

***Duos:** It is very easy to place a battery in the PowerBook Duos so that it appears to be seated but it is really about a millimeter out, not making a good contact with the battery terminals inside the system. Before you slide the battery's built-in latch to the right, make sure the battery is all the way in there. Don't worry about the "switch" on the side of the battery; it doesn't do anything except remind you (if you remember to set it in the first place) whether the battery is charged or not.*

If that doesn't work, try a different battery, ideally a spare you know has been charged recently. If you have access to another of the same model of PowerBook, try that battery in another PowerBook to see if it is the problem.

***100:** Try replacing the three tiny backup batteries located in the swing-out compartment next to the sound output port.*

Next, try the AC adapter. Make sure it really is plugged in and the wall outlet is active. Try starting up with the PowerBook plugged in and the battery removed. Most of the time, this works for me.

***100:** Make sure the storage switch on your PowerBook 100 is in the on position if it will turn on only when the AC adapter is attached. Also, 100's have been known to develop a technical fault that keeps them from running on AC power or charging the internal battery. If your PowerBook 100 only works with a battery charged in another 100, call Apple or visit a dealer.*

Finally, you can try resetting the Power Manager, the set of circuits and software that regulate how PowerBooks use power and charge batteries.

To do this on the all-in-one PowerBooks, the 140, 170, and so forth, simultaneously inset two paper clips, to press the interrupt and reset switches, for at least five seconds.

On the Duos (210, 230, and so forth), simultaneously press and hold for at least five seconds the startup key above the keyboard and the power switch on the back.

Startup problems

If your PowerBook frowns at you, don't worry—it is not mad at you! It is just trying to tell you that something failed when the system ran the automatic self-test at startup. The series of chimes and the codes below the “sad Mac” icon tell technicians the nature of the problem.

One common cause of sad Mac-type problems is a loose or faulty RAM card. If you know the procedure to open your Mac and you have the tools, you can try removing or reseating a troublesome card yourself. Otherwise, bring it in to a dealer or call Apple.

If a third-party card is the culprit, you might try the card's maker first: it may be able to send you a replacement that you or a local dealer can swap and avoid sending your entire PowerBook away for repairs.

If the PowerBook starts up but simply flashes a blinking question mark, that usually means there is a problem with the hard disk. Skip ahead to the discussion of hard-disk-related troubleshooting.

Charging problems

When your battery doesn't charge or it doesn't hold a charge, you need to figure out if the problem is with the battery, the PowerBook, or the power supply.

The quickest way to track down the culprit is to swap the battery and then the charger with another PowerBook, to see if the problems persist in one setup or another.

Nickel-cadmium batteries used in the all-in-one PowerBooks (except the 100) are vulnerable to a memory effect if they are subjected to a pattern of repeated partial charging and discharging. See chapter 1, “Power Management,” for more on how to avoid and recover from this problem.

Just because the Battery desk accessory shows the charging icon doesn't necessarily mean that the PowerBook is really charging. There might not be power at the outlet, or there might be a loose connection, or the charger could be defective.

Some all-in-one PowerBooks have chargers that are vulnerable to a physical problem involving a cracked insulator on the tip of the plug that goes into your PowerBook. This condition can blow a fuse on the PowerBook logic board, so call Apple for a free repair, even out of warranty, if you see this problem.

Sleep problems

Some PowerBooks have been known to become insomniacs, liable to wake up unexpectedly or to refuse to go to sleep. This can be a real problem when you are moving around and you don't want your system's hard disk to be spinning (and therefore vulnerable to jarring), and because it can drain your battery without your knowledge.

Some common causes of unexpected wake-ups include:

- A key is being hit.

If your PowerBook is improperly reassembled after a repair or if anything hits the keys while the system is closed, it can wake up the system. Check the alignment and make sure nothing touches the keys as you close the case; don't put papers or anything between the keyboard and screen as you close a PowerBook.

- The PowerBook is set to automatically wake up.

The PowerBook 100 and Duos can be set through the PowerBook control panel (the Portable control panel in System 7.0.1) to wake up at a particular time. All models with internal modems installed can likewise be set to wake up when the phone rings. Double-check these settings.

If the PowerBook won't go to sleep, the cause may well be:

- Communications.

If programs are using the modem, serial port, or AppleTalk, the PowerBook won't automatically go to sleep.

- External batteries.

The "Stay awake when plugged in" setting in the PowerBook control panel can't tell the difference between being plugged in to a charger and an external battery. Uncheck it for the latter.

- **Software settings.**

Check the sleep time in the PowerBook control panel, or the setting on any PowerBook utility you've installed that overrides this setting.

- **Background tasks or timed events.**

Some system extensions and applications do things in the background that keep the system from sleeping.

- **SCSI Disk Emulation.**

A PowerBook in SCSI Disk Emulation mode (where it is acting as a disk drive for another Mac) won't sleep or even rest.

- **Docking.**

Duos in DuoDocks won't sleep at all, as well as Duos in MiniDocks with external monitors connected.

The PowerBook starts up but gets into trouble later

A number of symptoms indicate hard disk or system software problems: a blinking question mark, system errors, odd behavior.

Testing the hard disk is trickier, especially for intermittent problems. Because the Macintosh system software is so involved with any reading or writing to the hard disk, intermittent hard disk problems are nearly indistinguishable from system software problems. In fact, if you are having problems reading or writing from hard disk too, damaged system software is much more likely the culprit than a damaged hard drive, especially on a new PowerBook.

If the hard disk appears on the desktop (when you start from another disk, such as the Disk Tools disk in your system software set) but cannot start the Mac, you can also reasonably assume that system software is responsible. For a hard disk that just refuses to start up the Macintosh or appear on the desktop, a quick way to tell whether it's a hard disk problem is to start up from a floppy containing a hard disk formatting utility, such as Apple's HD Setup application, located on the Disk Tools floppy disk.

Open the hard disk formatting utility. If the hard disk doesn't appear in the list of valid hard drives, the problem is probably hardware related. The problem could be

as simple as a loose cable connecting the hard drive to the logic board, but start hoping that the hard disk is under warranty.

***Tip:** Apple's HD SC Setup application often fails to recognize completely functional hard disks because they don't have the Apple label on them. If you use a third-party hard disk, like those from CMS and Microtech, be sure to test them with the utility supplied by the hard disk vendor.*

If the formatting utility indicates that it can see the hard disk, you can breathe a sigh of relief for the time being. At least you've determined that the hard disk is receiving power and sending a signal through the SCSI chain. While you are using the formatting utility, you might as well also take advantage of the testing features many of these utilities offer. A test usually scans your hard disk looking for damaged sectors that could cause data loss. Smart formatting software automatically takes these bad sectors out of commission so that your data doesn't get written onto them. Just make sure not to perform any "destructive" tests until you back up your data!

Why you shouldn't try to fix hardware yourself

I've run into a lot of people who think they are smart. Too smart for their own good might better describe them, as I think you'll agree when you hear what they do.

A dear friend of mine, let's call him Joe, really likes to figure out solutions to problems. So much so that when his PowerBook gives him trouble, he manages to work his way around the problem.

In particular, his hard disk was giving him trouble, operating intermittently. When he got stuck, he would run recovery utilities, reformat, and restore the contents.

Joe had to do this a lot, but he was so proud of himself for figuring out a "solution" he ignored the pattern, which should have told him that his drive had some more fundamental problem.

Finally, his drive gave up the ghost altogether. But by then, his warranty had run out, so he had to pay for repairs.

The moral? Look at the bigger picture. If Joe had sent in his PowerBook to Apple for drive repairs the first, second or even the third time his problem cropped up, he could have gotten the problem taken care of once and for all, avoided lots of hassle,

and he would have received a 90-day warranty on the replacement drive, all at no cost! Sure, he would have been without his PowerBook for a few days, but, frankly, that would have done him some good.

So do call Apple when:

- A problem recurs and simple steps you can take don't solve it.
- Physical damage is evident.
- You can't reach local dealers, or they are unhelpful.
- A recall or other service program exists.

Don't call Apple if:

- You can't part with your PowerBook for five days.
- The system is out of warranty and the failed component, like a hard drive, can be replaced by a less expensive or more powerful third-party alternative.
- You have a minor problem and you haven't taken the time to isolate it and determine the true cause.

Software problems

Because the PowerBooks have a finite number of hardware components, the dealer or Apple can diagnose what is wrong with it relatively easily. Authorized Apple dealers have diagnostic tools that further facilitate the process. Certainly, there are fewer variables than exist in the thousands of Macintosh programs containing millions of lines of potentially conflicting programming code.

Troubleshooting software—although far from fun—confers an expertise that enables you to resolve problems quickly the next time they appear. Having this ability can be rewarding and make you more productive in the long run. Although some problems can take even experienced Macintosh consultants hours to resolve, you'll fix more in less time if you use a good, general method.

To reiterate, Mac software problems can occur at five levels: document, application, application extension, system extension, and system software, the last of which has been discussed. You won't always have clear indications at what level the problem occurs, but you can often narrow down the possible offenders fairly quickly.

System corruption

The Macintosh System file is an extraordinarily complex piece of software responsible for many tasks. In addition to managing nearly every conceivable task from memory handling to printing, the System file acts as a liaison between the PowerBook hardware and application software. This relationship makes the System file very susceptible to damage. It is hard to say exactly what causes System files to get corrupted, but a corrupted System file is a very common source of system errors and oddities.

If the System file is seriously damaged, you'll have a very rude awakening when you try to restart your PowerBook and you see the notorious blinking question mark. In this case, you can be sure the system file is the problem if you can start up from the floppy drive with a floppy disk containing system software. Sometimes, though, partially damaged system files can cause frequent crashes in many programs, cause just one program to bomb, or even cause one feature in one program not to work.

Often, you can solve the problem by reinstalling the system software, a simple but tedious procedure if you have all the disks available. Five or more disks might seem like a cumbersome insurance policy, but it is a worthwhile one. Even PowerBook 100 and Duo owners should consider taking external floppy drives (and for Duos, floppy adapters) behind. Is the extra pound or so worth the possibility of not being able to fix—or even start—your machine?

Sometimes, though, even the Installer cannot repair a damaged System file. This difficulty is at least partially because the Installer just updates selected parts of the System file and leaves other parts alone. The damage can often lie in places where the Installer cannot repair it. If this occurs, salvage any important fonts or sounds (important sounds?) by dragging them out of the System file and then delete the System file. Then reinstall the System software. If the problem was a corrupted System file, the PowerBook should work just fine. If not, your hard disk might have directory damage, and you should turn to an application such as Norton Utilities for Macintosh (discussed later) for its ability to fix problems on the disk that we can't even see.

Sometimes, hard disks don't appear on the desktop because of damaged or incompatible drivers. A hard disk driver is software that manages communications between the hard disk and the system software. Apple's HD SC Setup Utility has an

Update button that might be able to repair a damaged hard disk driver. Other formatting utilities have functional equivalents. Many hard disk formatting utilities enable you to update the hard disk driver without forcing you to erase the disk. You should always make sure you have the most recent version of formatting software. Most vendors—including Apple—make updates of their formatting software available free.

If the vendor did not supply a formatting utility (tsk, tsk) or if you want something that provides more options than generic formatting utilities, you should consider Silverlining from La Cie, Ltd. This trustworthy utility recognizes Apple and third-party drives and provides a host of ways to customize your hard disk, including a choice of icons and a software-based “access light” that flashes in the top-left corner of the Mac screen. A less expensive but arguably more elegant formatter is the System 7.0-savvy Drive7 from Casa Blanca Works, a company that seems to be finding a niche for inexpensive, useful utilities.

As a method of last resort, assuming you have backups of your important work, you should try reformatting the hard disk. You will lose all the data on your hard disk, but reformatting might be able to clear up problems or severe directory damage that data recovery programs can’t fix. If your formatting utility can’t reformat the drive, it’s worth a try to use a different formatting utility. Beyond that, it’s probably safe to say your hard disk has serious physical problems and must be repaired or replaced.

Application problems

Application errors are easy to spot and easy to fix. They often occur after a system error so severe that the application becomes corrupted. An application that ran fine yesterday refuses to open now, although you haven’t changed anything else.

As a rule, the first thing you should try is increasing the RAM allocation from the application’s “Get Info” window. A lack of available RAM often causes problems for applications. This is the “magic elixir” that solves many application-crashing problems.

Sometimes, a corrupted System file can cause applications to crash. To eliminate any doubt, replace the application on your hard disk with a fresh copy from the master or a backup. If the program is well-designed, any preferences you have set

should remain intact because you are still using your old preferences file in the System Folder's Preferences folder. (Sometimes, the Preferences file can be the source of the problem. If you can stand to lose the preferences, try replacing the file with a fresh copy.)

Tip: Although carrying around a complete set of backup floppies with you might be unreasonable, you might want to consider taking backup copies of your most important applications along with a set of System 7 floppies. If the application is too large to fit on a floppy, you can compress it onto a self-extracting archive using a compression program such as StuffIt Deluxe. In this format, the archive can self-expand onto your hard disk.

File corruption

File corruption problems are among the easiest to detect but among the most frustrating to fix. Essentially, if you aren't having troubles with any document except one and the others have similar file size and complexity, it's easy to see that that document is corrupted. If the problem occurs in more than one file, you should suspect something other than the document. Text might be garbled or overlaid; the document might refuse to open, save, or print (those pesky PostScript errors); or scrolling to a part of the document might cause a system error.

As long as you can open the document, you have a chance of recovering a good part of its content. Select small pieces of the document and cut and paste them into another document. If scrolling to part of the document causes you to crash, try scrolling past that part. Sometimes, you can select what comes after it and you'll need to re-create only the part that somehow got corrupted.

If you can't open the file, your chances for recovering the bulk of a file are much greater if it is a text-oriented file such as one from a word processor. You might also have luck trying to open the file with another application; for example, Microsoft Word can read MacWrite files. (In fact, Microsoft Word can read *any* file. More than likely, if the file isn't some type of word processing file, you won't find anything interesting, but in dire circumstances it's worth a try.) Several freeware and shareware programs can read the data parts of word processing files, enabling you to salvage much of the file.

System extension conflicts

As was discussed earlier, extension conflicts are one of the most common sources of Macintosh troubles. Extension conflicts can take several forms, and can cause several different types of errors. If the Macintosh crashes while starting up, during the time when the extension icons march across the bottom of the screen, it's likely that you have an extension conflict. Other errors, however, can be harder to diagnose. Extension conflicts are so common, however, that it's often worth a quick test to see if a conflict is causing your problem.

The basic process of solving extension conflicts is simple: Figure out which extensions are conflicting with each other, and don't use one of them, or change the order in which they load. However, the actual process of analyzing an extension conflict can be tedious and time-consuming.

To quickly recover from the problem, you can restart while holding down the Shift key. This will turn off all the extensions—if the problem was an extension conflict, the problem will be avoided. However, you won't have any extensions running. Many extensions are simply conveniences, but some extensions are crucial for some tasks—for example, you can't print without some extensions running.

So, you want to find out exactly which extensions are causing the problem. To do this, you basically keep restarting your Macintosh with different groups of extensions active. By repeating this process, you can narrow the problem down to a specific set of extensions.

Of great assistance in this process are special control panels called extension managers. They enable you to manipulate the extensions that load without forcing you to open the System folder and drag extensions back and forth.

If you are lucky, you know where the system error occurred, and you can experiment using the extension manager to move the offending extension earlier (or later) in the startup sequence. Most extension managers offer the option of automatically disabling the extension that was loading when the system error occurred.

***Tip:** You can also use the rearranging feature of extension managers to have important extensions—such as virus checkers—load early in the sequence of*

extensions. This way, they can check for viruses in other extensions. If you use security software that uses an extension to prompt for the password (like MacPassword), you might want to rename the software so that it loads before the extension manager itself. This way, knowledgeable intruders can't use the extension manager to turn off the security software.

Almost all extension managers let you save groups of extensions in sets. You can create a minimal set that contains just your essential extensions, or exclude an extension when you know you'll be using an application incompatible with it.

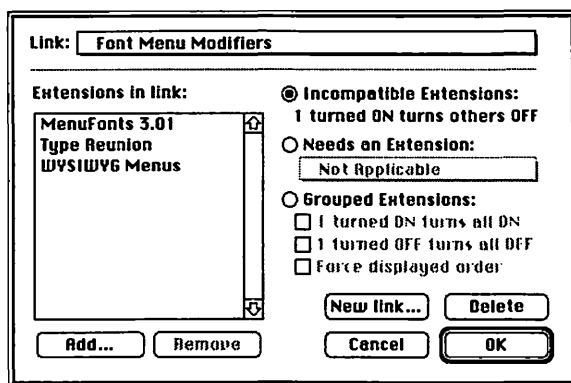
***Tip:** Although most extension managers are technically control panels, you must place them (or a companion file) in the Extensions folder because that is the folder the PowerBook first examines when it starts loading extensions. If you want to access your extension manager in the Control Panels folder, place an alias of it there.*

Ricardo Batista, an Apple employee, wrote a capable, free extension manager that's aptly named Extensions Manager. Like most in its genre, you can configure its control panel by opening it or hold down the space bar at startup. Extensions Manager offers the unique feature of defining the types of files you regard as extensions. This feature might become more important as new utilities are being written as applications that can go in the System Folder's "Startup Items" folder.

Other extension managers include Startup Manager (part of Now Software's Now Utilities), On Startup (part of Icom Simulations' On Cue II), and Microseeds' INITPicker.

Startup Manager enables those with many extensions to display all the startup icons in two or three rows, but it also changes the file type of the extension. You cannot configure disabled control panels for the next restart. Startup Manager does provide a unique Links feature that enables you to specify, for example, two extensions that should never run together, or to specify that one extension depends on another. Now Utilities' Startup Manager enables you to create relationships among extensions, such as automatically turning off incompatible extensions in the same set (see figure 3.8).

Figure 3.8
Now Utilities'
Startup Manager.



For example, CE Software's QuicKeys 2 is not fully functional unless CEToolbox has loaded before it. Using Startup Manager, you can specify that CEToolbox must load if you select QuicKeys 2. Startup Manager also provides thorough reports on extensions and how they load, which can be helpful to you or useful for sending to a technical support department if you cannot resolve an extension conflict by reordering extensions.

Microseeds' INITPicker was once the CEO of extension managers, but it has not undergone a major revision in some time. The main gripe with INITPicker is—despite updates that have promised better speed—the program scans the System Folder for new extensions relatively slowly compared with its fleet competitors.

INITPicker provides a more convenient way to determine the file type and size of the extensions it's managing than other utilities, and it does not change or move them. In a way, this approach is seamless compared with that of other utilities, but it gives you no indication that an extension has been disabled. This lack of feedback can be confusing if you don't remember what you turned off. When opened, most control panels are smart enough to realize that they were not loaded at startup, but some might give you confusing error messages.

***Tip:** When using an extension manager to troubleshoot extensions, keep halving your extensions as you restart until you determine where the trouble is occurring. For example, say that an application is crashing with all your extensions loaded, but it doesn't crash when an extension manager disables them all.*

To determine the exasperating extension, try loading all extensions that start with the letters A through M and see whether the application crashes. If it does, you know the problem is among those extensions. You can keep restarting, using half of that set (that is, trying A through G and then A through D, and so on) until you determine which extension is causing the problem. Of course, if the application does not crash with extensions that begin with the letters A through M, you should start narrowing down the culprit from the N through Z set.

As this example illustrates, even a good extension manager cannot eliminate the tedious—and battery-consuming—troubleshooting process, because you might have to restart several times to determine what is causing the problem. You could avoid much of this trouble if someone already knew which extensions conflicted and what they could do to resolve the conflicts.

Someone does know. Baseline Publishing sells INITInfo Pro, a HyperCard stack that contains a plethora of information on extensions and how they go bump in the Mac. The information in INITInfo Pro has been collected largely from members of the online community of CompuServe, which boasts some of the most knowledgeable names in the Macintosh community. A demonstration version of INITInfo is available online there.

You can sometimes resolve extension conflicts by having one extension load before another. This strategy is especially good if you see crashes at startup before you even arrive at the Finder.

By default, extensions load alphabetically within three folders. All extensions in the Extensions folder load first, followed by control panels in the Control Panels folder. Any extensions loose in the System Folder load last. Within these folders, the programs load in alphabetical order. For example, KiwiPowerWindows would load before On Location Extension, because both belong in the Extensions Folder; AlarmsClock would load after both of them, because it is a control panel and it resides in the Control Panels folder.

As mentioned earlier, most extension managers enable you to control in what order your extensions load. This feature can often help you actually solve the problem, rather than just avoiding it.

Application extensions

Application extensions have a variety of names depending on what application they are extending. Quark calls them QuarkXTensions, Aldus calls them Aldus Additions, Claris calls them Add-Its, and Adobe calls them plug-ins. Regardless of their name, application extensions provide an easy way to customize an application's features. The Find File command in Microsoft Word 5.0 and 5.1 enables you to search for files based on a variety of criteria. Such a feature is an example of an application extension that adds new capabilities to the program in a modular way.

Extensible, modular applications are a good thing because they provide a way for developers to add your dream features to their programs without a time-consuming upgrade to the application itself. They also enable you to continue working with applications with which you are comfortable.

For example, say you do a lot of scientific reports and you need an equation editor integrated into your word processor. Because this feature is not one that the majority of people need, a developer might be reluctant to make an equation editor a feature of the program. If someone else could develop an equation editor extension to your word processor, that would fill your need and you would not have to wait for an upgrade or choose another word processor which might have that feature.

Application extensions add yet another layer of complexity to the Macintosh environment. Worse, from a technical support perspective, is that they introduce the idea of "fourth-party developers" who create extensions for applications written by third parties (like Aldus or Claris) that second parties (like you) use on machines created by first parties (such as Apple). At this rate, you might soon need an attorney present to turn on your PowerBook!

If you are using application extensions and are having problems (the problem might not necessarily surface when using the extension's features), try disabling the extension or extensions and starting again. With most applications that support extensions, like QuarkXPress or SuperPaint, you can disable the extension by dragging modules out of a special folder the application searches when it opens. For example, SuperPaint keeps these files in a folder called "SP Pouch." At least one application, Deneba Software's Canvas, enables you to select which extensions you want to use with an innovative tool picker that appears when you open the application.

When you discover the extension that's causing the problem, you might need to contact the developer of the extension rather than the application developer to get technical assistance.

Right now, application extensions cause a relatively small share of problems, but this situation is likely to change as more applications adopt a modular approach to adding features.

When all else fails

If you go through the following checklist and re-read the preventive maintenance section of this chapter, you may be able to solve your problem without outside help. To re-iterate the basics:

- **Strip down**

Remove extra peripherals from your system, and boot with extensions turned off (hold down the Shift key). If the problem goes away, you can probably solve it in software.

- **Substitute**

Swap out suspect pieces with ones known to work. For instance, change batteries and re-install system software. This can help you isolate the problem.

- **Reset**

Reset the power manager, zap the parameter RAM, and rebuild the desktop. By restoring the system to its original settings, you can often eliminate the symptoms, if not the problem.

When the above drill doesn't help, it may be time to seek expert assistance.

Calling for help

The operators who answer Apple's customer assistance center get hundreds—if not thousands—of calls a day. If you call at a peak time, you can end up waiting for quite a while. And if you send in your PowerBook for a repair, you can lose the use of it for several days. Why not avoid calling and sending your system if you can?

If you decide to call Apple, have this information handy:

- **Your PowerBook's serial number.**

If this is your first call, you will be asked to supply other registration information as well. The serial number is located on the bottom of the case, so eject your Duo from its dock before you call.

- **The nature of the problem.**

If you can understand what's going on and describe it, all the better. But whatever description you can provide should be helpful.

- **What steps you've tried in order to fix it.**

If you know the proper terminology and nomenclature you'll get the fastest, most accurate response. Use the terms in this book and Apple's documentation for best results.

Apple will generally send you the next day a padded PowerBook shipping box with pre-addressed shipping and return labels.

Warranty issues

Apple's one-year send-it-in-and-we'll-take-care-of-it warranty was once considered very generous by industry standards. But more and more computer companies are now offering longer-term warranties standard with their systems, and the pressure is on Apple to offer something more flexible than its pricey AppleCare extended warranty program.

While you are within the term of the warranty, however, your foremost question when something goes wrong is most likely this: am I covered?

While you can strain your eyes reading myriad meanings into the fine print of Apple's warranty language, it basically comes down to this:

You are covered (Apple will pay for service parts and labor) if:

- You purchased the system within a specified period of time (currently one year).
- You did not subject the system to any unusual stresses, such as dropping, burning, drowning or melting it.

- There really is a problem.

If you are just imagining things, or if non-Apple software causes your problem, be prepared to pay a service charge if you send your unit in.

- You have not physically modified the system.

Adding RAM and modems is OK. If Apple determines that a third-party peripheral is causing your problem, it will remove it for you.

- There is a recall or service program in effect on your system or its components.

In my experience, Apple service will generally be reasonable in working with you to help you get your system up and running quickly.

Sending your system

Before you part with your system, however ill it may be, you should, if you can, do a few things. In particular, you should back up the hard disk (if the hard disk is working at all) and take care in packing it.

While Apple claims to make every effort to return your system with its original components, including your hard disk drive, there's always the risk that the drive will be found defective and replaced while the PowerBook is being serviced. Therefore, it is important that you at least try to back up your data before you send in your system.

I try to keep enough room on an external hard disk for a complete backup of my PowerBook every time I send it off or depart on a trip. However, when this isn't possible, I at least copy key data files to floppy disks.

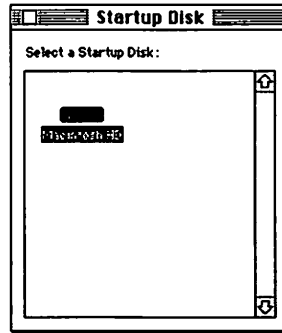
If your hard drive is not working or the PowerBook itself is in such bad shape that you can't boot the system, or your floppy drive is inoperable, this is more difficult. Try one of the following options to get at that hard-to-reach data:

- Boot from a floppy disk, or
- Boot from an external hard disk.

If you can get into the Finder and mount another hard drive on the desktop, use the Startup Device control panel (see figure 3.9) to select the external drive.

Figure 3.9

*Startup Device
control panel.*



If booting from the internal drive always gets you stuck, or you can't mount the external drive when you boot from the internal, try holding down the Command, Shift, Caps Lock, Control, Option, and Tab keys while starting the system to force it to ignore the internal drive.

If you have a Duo, you'll need to connect a dock (see chapter 10, "Duos") for a SCSI connection.

- Use SCSI Disk Mode.

If your PowerBook supports it (all current models except the 140, 145, and 170 do), you can use SCSI Disk Mode to have your PowerBook's drive function as an external hard drive for another Mac.

- Remove the drive and place it in another PowerBook.

While this is a last-ditch measure, it can work if you have access to more than one PowerBook and you absolutely need to get the data and the problem is with the PowerBook, not the hard drive. I'm not going to detail the procedure here, because I wouldn't recommend it for somebody without the right experience and tools.

I will, however, add this warning: different models of PowerBooks use different connectors and power levels for hard drives. Don't make a problem worse by trying a hard disk transplant without making sure that the specifications are the same at both ends. This is especially important with third-party drives that use special mounting hardware.

- Use a commercial disk-recovery service.

A company such as DriveSavers, in Novato, California, can recover data off of hard drives that have been run over, flooded, burned, and otherwise mutilated. They, or a local service like them, may be able to help you save your data when your drive is seemingly dead. Often, your local user group or in-house support department will have its own recovery service as well.

Apple's PowerBook shipping cases make it difficult to go wrong. Do read and follow the instructions included with the box, as Apple may change the procedure and mechanism it uses by the time you read this.

Two aspects are key. First, make sure that your address is correctly listed on the return shipping label. You wouldn't want Apple to send your PowerBook to someone else! This is especially important if you are having the system sent to an address different from the one you gave when registering the system.

Second, pack the system carefully. Make sure it is totally shut down, not just sleeping. I'd recommend removing the battery, especially if you have problems with the system spontaneously starting up or draining the battery unusually fast. Use all the interlocks built into the packing box, so it doesn't open up in transit; a smidgeon of packing tape on top of the locks wouldn't hurt either.

When the system is all packed and ready, call the shipping company listed in the paperwork accompanying the package. Call early in the day to arrange a pickup. Even if the company's local offices are open until the evening, there is often an earlier deadline for shipments to the East Coast, where Apple's service center is currently located.

Unless Apple's instructions advise otherwise, do fill in the "declared value" portion of the shipping label. This is especially important if you've added valuable third-party peripherals or RAM to your system. That way, if the system is lost or damaged in transit, you can be reimbursed for the full replacement value of your system.

What to do when travelling

If you take a few simple steps before you depart the comfort of your home base, you can make it easier on yourself. Just as you wouldn't want to leave your toothbrush behind, you'll probably want to take along a few things to help your PowerBook's mental hygiene.

Before I leave on a trip, I always make a point of looking on AppleLink, Apple's online service. Not just to look up the local access numbers and procedures for the countries I'll be visiting, but also to look up the contact information for Apple's local offices in those places. I do this not because I want to drop in and introduce myself, but rather so that if there is a need for service, I could locate a local dealer and get my PowerBook repaired.

As was mentioned earlier, it's a very good idea to take a set of System software disks with you. Your PowerBook is not good for much without System software! Also, backups of any crucial applications on your PowerBook are a good idea, too.

Flip back to chapter 2, "Mobility," for more on what you need to bring for communications and hotels.

In the states

Always remember that you can call Apple's dealer-locator line, (800) 538-9696, to find a local dealer or user group wherever you're going.

As the beginning of the chapter warns, better safe than sorry where backups are concerned. Assume that any application and document on your PowerBook will refuse to open when you need it most, so at the very least bring whatever elements are "mission-critical" for this particular trip. You might even have a colleague standing by ready to send another backup.

Internationally

Another way to find local dealers, given a local telephone directory organized by subject, is to look for the Apple logo, even if you can't read the native language. Look for it in ads and on storefronts.

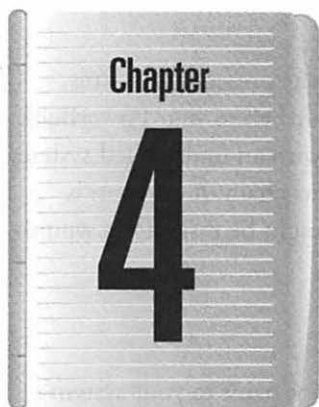
The way Apple's global warranty works when you are in another country is thus: pay for your repair at an Apple-authorized service center, ideally by credit card, and Apple will reimburse or credit you when you return.

This procedure is slightly risky, as Apple may decree that the problem that led to the service call is not its problem, or not covered under warranty, and you may end up stuck with the bill for service. So take extra care to document the nature of the problem, making sure that the service facility records on your copy of its bill its diagnosis and the action it took. And make certain that your problem is really a hardware problem and not a one-time glitch or software-related errant behavior.

Oh, yes, one last pointed note, for the benefit of those that were asleep for most of this chapter: Before you embark on any trip, make absolutely sure that your entire hard disk has been backed up. If you start your journey with the assumption that the PowerBook or its contents won't be coming back with you, you can allow yourself to be pleasantly delighted the many times you have a safe, wonderful trip.

Summary

So now you can venture out into the world with your PowerBook, secure in the knowledge that whatever ill may befall it, you can set it on the road to recovery, if not fix the problem at the source. And when all else fails, you know when to throw in the towel and submit your system to the tender ministrations of Apple service.



Security

Once you reach the point where your life revolves around your PowerBook, it becomes difficult to imagine going without it. You take it for granted so much that it would be hard to go back to doing things the old way, whatever that is for you.

Consider this, too: How much personal or corporate information do you carry on your PowerBook? Probably quite a bit, for the sake of convenience if nothing else. Even if you don't explicitly or intentionally put confidential material on your system, the little tidbits of information in your day-to-day work can give away a great deal about you, your business, your health, and your friends.

Given these facts, it is quite surprising how casual many people I've seen are about their PowerBooks. They carry flashy cases, even ones that give away the identity of the computer inside. They don't back up or even secure their data, relying on physical control over the PowerBook to prevent unauthorized access.

There are a number of countermeasures you can take to maintain possession of your PowerBook. It is up to you to figure out the combination of physical security, data security, and practices that work yet don't inconvenience you to the point where you abandon them.

Deterrence

A good defense is the best offense, or something like that, when it comes to keeping your PowerBook around. Before you spend any money on security or start to keep your PowerBook locked in a safe all the time, read these tips about how to stop theft before it starts:

- Look secure.
- Make your PowerBook invisible.
- Maintain physical contact.
- Identify, log, and register.

Look Secure

Thieves always look for the easy way out. If they suspect the presence of alarms, they're more likely to go elsewhere. If a cable-lock is visible before your PowerBook leaves the table, you're that much more likely to end up with an undamaged system, set down rather than dropped when it gets to the end of its chain. If a system is prominently labelled as being marked and registered, it might be easier for a would-be thief to decide stealing it isn't worth the effort.

Make Your PowerBook Invisible

While I don't recommend the application of radar-resistant paint to your system's exterior surfaces, there are a number of things you can do that make your Mac that much less tempting. In the office, simply unplug it and lock it in a file cabinet or desk drawer; out of sight is out of mind. On the road, use a carrying case that doesn't say "valuable computer inside." Don't use it as a status symbol to be displayed in public while you use it, but rather as an embarrassment to be concealed except when absolutely necessary.

On the other hand, don't rely exclusively on your personal magic invincibility or invisibility. Thieves break into car trunks because they're there, not because they've run X-ray scans to reveal the PowerBook within (although the Apple sticker on your rear window probably offers a clue, if you think about it).

Maintain Physical Contact

If you are always in touch with where your PowerBook is, you'll be able to detect the tentative tug of a wandering hand eager to determine just how mobile your Mac can be. Carry it just about everywhere, and train yourself to recognize the system's absence.

Identify, Log, and Register

Log all of your serial numbers in a safe place, and label all of your equipment. Etch the PowerBook's serial number and your driver's license number on the bottom of the case to help authorities trace the rightful owner if the system is stolen and recovered. Contact the Apple Assistance Center and provide your serial number so they'll have it linked to you in their files.

Physical Security

There are many ways to keep your PowerBook from wandering. Some are more appropriate for permanent installations, such as a desk at work, while others lend themselves to spur-of-the-moment arrangements while you're traveling.

None of the choices are ideal. They all add weight and bulk. While a few slip right on, others require permanent modification of your PowerBook or force you to disassemble the system to install them.

Also keep in mind that most of these options simply deter theft, they don't guarantee success. A truly determined thief can, in just a few minutes, inflict severe damage on your PowerBook in the course of an attempt at theft. They just discourage your co-workers (and unscrupulous passersby) from borrowing the system without your permission. For more on deterrence, flip back a page or two.

A major gap still remains: keeping your peripherals secure. Hopefully, as PowerBook-based mobile offices become more common over the next few years, either hardware manufacturers will get smart and start adding security features themselves, or other vendors will supply add-on products so that you can keep your whole system intact.

While at a Desk

When you know you're going to be sitting at a desk, there's quite a bit you can do to lock down your system. Your options vary, depending on the model of your PowerBook. While the newer models include a built-in security slot that makes it easy to secure the unit without bulky hardware, security systems designed for the original models won't fit many of the newer ones (especially the thin Duos).

MacShackle

The MacShackle slips over the backs of PowerBook models 140, 145, 145B, and 170, locking it to a standard bicycle cable-lock and preventing the system from being moved. Unlike many other locks, it can be easily attached or removed in a few seconds. It doesn't impede the use of the PowerBook.

A model is available for the PowerBook 100 as well.

Notebook Guardian

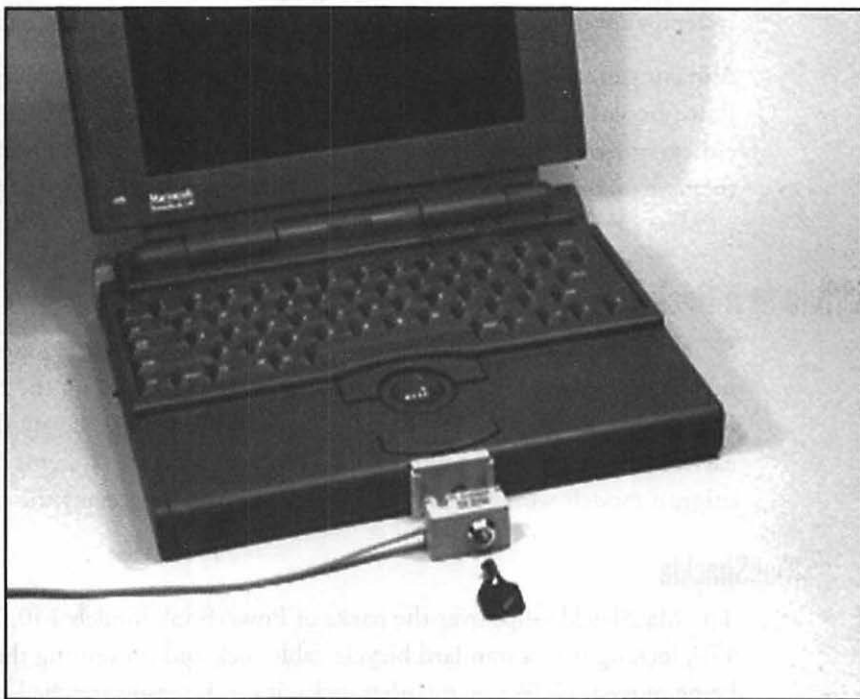
The Notebook Guardian from PC Guardian attaches to the front of PowerBook models 140 through 180, locking through a screw hole and the latch opening at the front (see figure 4.1). Weighing nearly 7 ounces, the Guardian is more cumbersome to install than the MacShackle, but it is more obvious (remember the power of deterrence) and it can lock the screen closed.

A version is also available with an adhesive locking connector for the PowerBook 100 and the Duos.

When you consider another system, take into account how visible it is, whether it requires permanent installation (that might void your warranty), and whether it seems truly secure.

Figure 4.1

The Notebook Guardian attaches to the front of the PowerBook through a screw hole and the latch opening.



The Kensington Security Slot

The 160, 165, 165c, 180, and 180c include a small security port compatible with Kensington MicroSaver security system and compatible locking systems. The

MicroSaver, a small, light (less than six ounces including cable and key), simple cable-lock, can fit these slots, and secure one of these PowerBooks without a whole lot of fuss.

The PowerBook Duos also use the Kensington security slot, but with a twist. While the Duos don't have a security connector themselves, many of the docks they connect to do. When the docks (including the floppy adapter and MiniDock) are secured with a MicroSaver, they prevent the docking mechanism from letting go of the Duo.

This approach works for what it does, but, like most other solutions, it doesn't secure peripherals in the least. It also doesn't prevent passersby from using or abusing your PowerBook, and it is vulnerable to the smallest of cable-cutters.

Apple's Duo Dock includes a key lock that can keep your Duo in (and others out). The Dock itself can be secured with a Kensington-compatible lock.

Keep in mind that with many of these approaches, which secure the PowerBook to a piece of furniture like a desk or table, there is often nothing stopping a thief from taking the table in order to get your Mac.

Other systems are available as of this writing, but most of them require permanent glue or take hours to install. They do have quite a bit of deterrent value to the casual thief, however.

While on the Road

When you are out of the office, the most important thing you can do is deter crime. Never let your PowerBook out of your sight for a second, anywhere. Mark the exterior so that is clear the system is identified and traceable.

While you can often loop a security cable around a table leg in an office, ask first. There may be some obvious security flaw that you are not aware of, or some good reason why you shouldn't tie down to someone else's desk.

While portable motion alarms are available, they often take a fair amount of adjustment if you want to avoid false alarms but still get some sort of warning.

Perhaps someday, PowerBooks will come with built-in circuitry that inactivates the system if it is moved without permission. Until then, you're on your own, although there's a lot you can do in software to make your system pretty unusable for anyone else, as you'll discover in the next section.

Data Security

Stop! I bet you're about to flip the page right now. "I don't need to worry about data security," I can hear you thinking. "I'll always have my PowerBook in my hand, so I can control who gets to it. Besides, I don't have anything valuable on it."

The reality is that you can lose (or lose control of) your PowerBook at any moment. And while the data might not seem valuable, consider this: How long would it take you to re-create it? What opportunities would you lose until you did? Could you really get everything back from backups; can you really be sure you didn't forget something?

And that innocuous-sounding data really gives away more about you and your business than you might expect. Your contact information, your working documents, business plans, schedule, and electronic mail would give somebody a pretty good idea of what you do and how you do it, as well as how you're doing.

And if you keep communications and network settings files on your drive (nearly everybody does, sometimes unknowingly), your PowerBook can become a key to nearly every system you connect to. Even if your passwords aren't stored on the system, enough clues to guess them probably are there, in the patterns. And somebody with your passcodes can assume your identity in trusted communities and seriously damage your reputation.

Even if your machine isn't stolen, someone could easily gain access to it during a lunch break or overnight, and read messages, copy files, introduce a virus (perhaps inadvertently while doing something else on this list), change your system's settings, or decrease your security.

The latter are the most insidious, because there's often no visible sign of change when somebody has had access to your PowerBook for as little as 30 seconds and turned on file sharing or introduced a new access password. The culprit could then flee to an office miles away but on the same network and quietly copy all your data over time, or introduce inaccuracies.

If the preceding text hasn't seriously scared you, then you might as well jump ahead to the next chapter—I don't think there's hope. But remember that this section is here, because I'm sure you'll be back, sooner or later!

Backups

Yes, you should have a backup of your data. You probably know this but figure, “Oh, I haven’t lost anything yet. I’ll get around to it later.”

The reality is this: sooner or later you will lose something. It could be catastrophic, a whole drive at a time. It could be just a few files that become corrupted and unreadable. Or you might not even know what is missing, just that something’s missing.

Backup Methods

There are plenty of approaches to backing up data, including:

- **Print your documents.**

While this approach is the simplest and guarantees that your data will not be erased by magnetism, it does have a notable disadvantage: You’ll need to re-create your documents if you ever need them again. On the other hand, you can free up lots of disk space by deleting documents you’ve finished, and you retain access to your documents even if your PowerBook is stolen or broken.

- **Transmit your data.**

If you don’t have access to a floppy drive (PowerBook Duo and 100 owners, take note), but you do have a modem, simply log on to an online service and send yourself the data, or upload the file into a personal storage area on the service. You can download the data if you need it or delete it once you are able to copy it some other way. Watch out for hidden fees per byte of data transmitted or stored, however, especially over wireless links—it can add up quickly! And be sure to use a modem and protocol that verifies the data to make sure it does not become corrupted as it is sent.

- **Manually back up on the same hard disk.**

While this approach can help you recover from a corrupted or mistakenly deleted file, it gives you no protection whatsoever if your system is stolen or broken. I use it as a first-line defense, saving copies.

- **Manually back up to floppies.**

Simply remember to copy all your files and applications onto floppy disks at regular intervals. You don’t need to buy any special software—just use the Finder.

For extra security, use more than one set of disks and alternate between. Even better, rotate through more sets and keep at least one copy locked up at a different location.

Many people using this approach choose not to back up their applications, figuring they can reinstall them from the original disks. While this makes sense in most cases, consider how long this process will take and whether you'll be able to find all your serial numbers and remember all your application-specific settings. And what if your application disks go bad? Copyright law allows you to make one backup copy, and I recommend doing so.

- **Manually back up to another medium.**

This approach is fairly simple—just connect a SCSI hard drive or removable cartridge drive to your PowerBook and drag your files over. If you have a synchronization utility (see chapter 2), it can make the process even faster by copying only files that are new or have changed.

This approach also can be used in an office. You can copy files in the background to a fileserver or any Mac that allows you on for file sharing. I recommend getting permission from the network administrator or the Mac's user before doing this, however.

- **Use a backup program.**

These applications automate the process, keeping track of what files were backed up where and when. If you delete a file, they figure it out and remove the file from backups to conserve space.

I find that when all I have to do is push a button and stick in a bunch of disks, I'm much more likely to regularly back up than when I have to figure out what goes where by hand.

A backup program I've used is Dantz Software Inc.'s DiskFit Direct. I like the way it asks me to insert just the disks that need updating, because it keeps a directory of what files are on what disks or drives.

- **Use an archiving program.**

While conceptually similar to backups, these go further by retaining every version of every file. If you delete a file from your hard disk, a copy previously

added to an archive is preserved. If you change a file, the original is retained and the new one added.

This means you can go back to an archive to recover files that become corrupted or mistakenly deleted. But don't rely on being able to do this—what if your archive is rendered unreadable and you've deleted the original?

Many people use archiving programs to back up their data to tape. This works well because tape is relatively inexpensive per megabyte and a network archiving program like Dantz's Retrospect Remote can be used alongside a local backup program.

Backup Media

So now that you've decided to back up your data by one or more of the methods discussed earlier, where will you put the files? You can choose from many different storage media for your backups or archives. Here's some of the pros and cons of:

● **Floppy disks**

While floppies are universal and readable on every Mac that has a floppy disk drive, they are also small, capable of holding only a few files each. If you work with graphics or desktop publishing files you will almost certainly have to break them up into pieces and spread them out across floppies to fit. And if you do that and lose just one piece of a file, the whole file is generally unrecoverable.

If you're going to be traveling with your PowerBook, format a set of floppies in advance so that you can quickly back up or exchange files without wasting the power or taking the time to prepare the disks.

● **Removable cartridge drives**

Most removable media besides floppy disks require drives that are too large or power-hungry for convenient portable use. However, some people report success using 20M floptical disks in a drive not much larger than a floppy disk drive. Also, Iomega offers a Bernoulli drive that can run on battery power.

A removable cartridge drive can allow you to quickly back up your entire hard drive.

● Tape

PowerBook users should look to tape as a network or single-Mac backup solution for when their Mac is in an office or at home, not while on the road. While the capacity of tapes is fairly large (up to gigabytes or hundreds of megabytes), tape drives are cumbersome and slow, and generally do not work on batteries.

Backup Tips

There are a few things you can do that will make your backups more effective.

First and foremost, set up a backup regimen, a baseline “do at least this much” regimen of scheduled backups, either automatically or manually. You can always perform supplementary backups of critical files or the whole disk, but if you stick with a routine you’ll be able to minimize your data loss.

Always have multiple backup sets, so that if one set becomes corrupted you can switch to another. Keep one current set with a trusted colleague or friend at a different location. Watch out for “safe” deposit boxes—many, especially those at hotels, use magnetic locks that can erase data on magnetic media like floppy disks and cartridges.

Supplement your baseline backup with critical-file extra backups. Decide what’s important by the value of your time and how long it would take to re-create, and the cost of missed opportunities during the period when you don’t have access to the data.

Test your backups on a regular basis to make sure that they aren’t losing data and haven’t become corrupted.

Security and Encryption Software

There are a number of different approaches you can use to secure your home. You can lock the front door, but that doesn’t keep somebody from breaking in through a window. Or you could arrange the rooms in your house in a maze, so that if someone gets in, they can’t take anything. The same can be said about securing your computer system.

Password-access control systems are like locking the front door: You can keep people out, but they are easily circumvented. Encryption applications are similar to, but infinitely more practical than, the maze technique. They encrypt data so that it is unreadable without the password.

***Tip:** Remember that security software applications—particularly advanced packages such as Empower—do not take kindly to tampering. If you decide to protect your hard disk, you protect it from yourself as well. Although some packages offer override features, you save yourself a great deal of heartache if you remember your password. Pick something easy to remember but not obvious, such as your favorite pie flavor or your dentist’s social security number. Also, be sure to disable security programs before using software that deals with the disk at low levels, such as formatting or file recovery software.*

Password Control

Password access-control systems ask for a password you’ve previously entered and don’t let you do anything unless the correct password is entered.

These programs activate under a number of different circumstances. Some activate when you choose a command or press a key; others automatically kick in when you start your Mac, wake up the system from sleep, or wake up a screensaver.

The screensaver approach gives you additional security in that a passerby can’t see what’s on your screen. The security kicks in automatically whenever you don’t type or move the cursor for a period of time, or when you move the pointer to a particular corner of the screen.

For instance, Fifth Generation Systems offers DiskLock, a system extension that asks for a password when your system is started. If the correct password isn’t entered in three tries, it reverts to the “insert a disk” blinking question mark.

Some makers of security utilities are revamping their products to better serve PowerBook users. For example, Fifth Generation Systems offers DiskLock PB, a subset of the company’s DiskLock security utility, installs at the SCSI driver level. It secures a disk on sleep, shutdown, and restart.

A less-expensive option is MacPassword, a shareware program by Art Shumer. It offers hard disk and folder password protection, virus detection, screen blanking, and audio feedback.

Like DiskLock, Kent Marsh’s FolderBolt also can lock folders, but the two programs take a different approach. FolderBolt is a control panel with just three buttons: lock folder, unlock folder, and Help. Clicking Lock or Unlock brings you to a standard Open dialog from which you can designate three levels of folder

security—locked (you cannot open the folder), read only (you cannot change the contents of the folder), and drop box (you can add to the folder, but you aren't allowed to open it). FolderBolt's three folder types also can be made by programs such as FileGuard (discussed later) that use AppleShare file privileges for their folder protection, but FolderBolt's method is faster and easier for most users, especially those unfamiliar with System 7's file sharing or AppleShare.

With FolderBolt, you probably will avoid the simple control panel in daily use anyway because FolderBolt's shortcuts make it the most seamlessly integrated folder-locking program for the Mac. Double-clicking a locked folder causes the Mac to prompt you for the password; Shift-clicking a folder's close box lets you password-protect an unlocked folder.

With an administration program, you can set preferences for FolderBolt and open locked folders in case you forget the password. Your copy of FolderBolt Administrator acts as your "signature." Your FolderBolt Administrator prevents other people from using another copy of FolderBolt Administrator to override your passwords. As a result, it is very difficult for FolderBolt owners to lock themselves out of their own files. Because FolderBolt lends itself well to neophyte use, this extra program offers some assurance that you won't lock yourself out of your folders. FolderBolt Administrator, too, can be password-protected, though, so if you want to safeguard thoroughly against password loss, keep a non-password-protected copy in a safe place.

FolderBolt also can create folder sets that allow locking and unlocking of multiple folders with a single password. Although folder sets are immensely convenient, creating them is not. You must revert to the control panel and move the folders into the set. Given FolderBolt's normal transparency, this method is disappointing. A better solution is to add a menu item to the Finder's Special menu called Folder Set. This item would automatically create a new set when you selected a group of folders or a System 7 locking icon to which you could drag the folders you want protected.

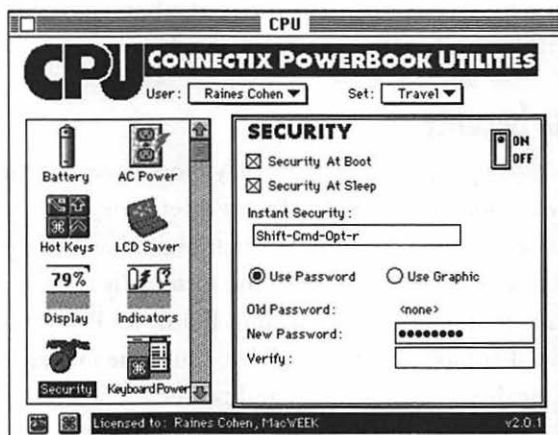
A one-trick pony in the stable of Kent◊Marsh security products, FolderBolt seems to have curtailed its features intentionally so that the utility doesn't cut into the sales of Kent◊Marsh's other products. FolderBolt cannot lock an entire hard disk because hard disk locking is the domain of Kent◊Marsh's Nightwatch program. You can come close by putting all your folders in a folder set and locking that set. This procedure, however, leaves anything on the desktop vulnerable. Although

FolderBolt's transparency outshines DiskLock's, FolderBolt does not encrypt files in any way because Kent Marsh's MacSafe II program handles that task.

FolderBolt lacks many of the bells and whistles of its more powerful competitors, but it remains much less complicated for the wear.

Most multifunction PowerBook utility packages also include a security module optimized for the PowerBook. For instance, Connectix's CPU 2.0 includes a security module (see figure 4.2) that gives users two options: enter a password to continue or click in a preselected "hot spot" on a picture it displays on the screen.

Figure 4.2
CPU's security module.



Most password-security systems are implemented as system extensions, so simply restarting the PowerBook with the Shift key held down (to disable extensions) will bypass the security. Some programs get around this by modifying the system (CPU 2.0 does this) or by changing the hard disk's driver so it won't start without the extension present. All of these approaches are slightly risky, because updating system software or the hard disk's driver can lead to data loss. Recovering data with a security system installed is particularly tricky.

Encryption

Encryption systems actually modify the data on your hard disk so that it is totally unreadable without the password. While this approach is more secure than a simple access-control password, it is more dangerous: Lose your password, and your chances of recovering your data are slim. If something goes wrong, finding lost files becomes even more difficult.

Encryption is always a trade-off between how thoroughly data is encrypted and how long the program takes to process the data.

Some encryption programs include Citadel with Shredder from DataWatch and ultraSecure from usrEZ Software.

Many disk formatters and compression utilities include encryption options as well.

If you use online communications, don't forget to secure your accounts and change passwords regularly. If you use AppleTalk Remote Access, require that all permanent accounts use the callback feature and set up only temporary accounts without callback for when you're at a hotel or other facility without a directly-dialable number that you know in advance.

Physical Data Security

Another approach is to physically block access to methods of extracting data from a PowerBook. The Duos and the PowerBook 100 have an advantage in this regard: if you can't pop in a floppy, it's that much harder to get data out; while this is a disadvantage when you're trying to actually use the machine, it is helpful when you're trying to keep others out. For other PowerBook models, you can turn to key-locks that block the floppy drive. On some PowerBooks, you can even remove the floppy drive, saving weight and power.

Viruses

Computer viruses are, for the purposes of this discussion, self-replicating programs that interfere with the operation of your PowerBook, leading to decreased reliability or the loss of data. In this category I lump together what some other people might call a worm or a trojan horse, because they have one key thing in common: They are bad.

Most of the Mac viruses to date aren't malicious in intent but they include programming errors that cause side effects: crashes, system freezes, and other irritating problems. The bugs often show up when you save, print or launch applications. A few intentionally erase files on your hard disk, usually on a particular date.

Viruses are most-frequently transmitted from Mac to Mac via floppy disk, removable cartridge or online service. Some viruses hitch a ride with files, while others hang out on the disk itself.

***Note:** Many system failures caused by user error, hardware failure, or poorly-written applications are incorrectly blamed on viruses.*

Viruses, or the threat of them, cause panic in people who use computers, especially the most important users—new ones. Shareware has a bad name because it allegedly is more susceptible to viruses, although major online services meticulously screen each new file for viruses.

In reality, viruses should be one of the last culprits you suspect for system anomalies, especially if you do not regularly exchange data with other Macintosh users. Certainly, extension conflicts and corrupted System files are far more common sources of strange behavior and crashes than viruses. Besides, only two or three Mac viruses still are widespread. Not coincidentally, those viruses were created before antiviral tools were widely available.

Fortunately, it is relatively easy to keep your system clean and virus-free by employing just a few measures:

- Use a virus detector.
- Keep unknown disks out of your PowerBook.
- Turn to known sources for software.
- Educate your friends, vendors, co-workers, and clients.

Use a Virus Detector

You can take advantage of the free program Disinfectant or turn to one of the dozen or so commercial programs to scan for and detect viruses, remove them, and try to repair the damage they've caused. Other commercial programs, such as Symantec Antivirus for the Mac, can monitor for virus activity and catch new viruses as they take hold.

Don't become complacent just because you're checking all the time. New viruses are always emerging, and virus authors seem to treat virus detectors as a challenge to specifically avoid. Also, programs like Disinfectant don't know about new viruses; software updates are required to combat each new virus as it appears. Make sure you have the latest version of your utility!

Keep Unknown Disks Out of Your PowerBook

A few Mac viruses can be transmitted by inserting a floppy disk, although most require that you install an extension or run an application to take hold. This is rarely a problem when you are running System 7, but I mention it here because some PowerBook users run System 6.0.8, which is vulnerable. If you must insert one, run Disinfectant first and scan it before the Finder sees it and activates any viruses present.

If you own a PowerBook 100 or Duo, now you know why not having a floppy disk drive in your system can be an advantage, not a disadvantage!

Turn to Known Sources for Software

Companies, user groups, and online services that have their reputations and good names at stake, take care to check for viruses and institute procedures to prevent infections in their distribution operations. While mistakes do happen and viruses occasionally slip through, these organizations are under a lot of pressure to keep things clean.

Educate Your Friends, Vendors, Co-workers, and Clients

If everybody you exchange with is regularly checking for viruses and practicing defensive practices, you have an extra layer of insulation. If they do the same with their colleagues, you'll be doubly fortified.

Symantec Antivirus for Macintosh (SAM) and Microcom's Virex are two remarkably similar de facto standards in the Mac world for combating the virus plague. Both have two components: an application that provides a place to do batch scanning and repair of infected files, and a control panel that monitors the PowerBook for suspicious virus-like activity.

Virex INIT's options are available through a pop-up menu; SAM Intercept's options appear as a series of buttons. Virex has a slight edge in control panel interface—it's less modal—but SAM has a decided edge in the application because its menus provide a direct method of choosing files or folders to diagnose. Virex's application selects folders and files only if you press modifier keys. Unfortunately, neither utility supports drag-and-drop diagnosis as does Norton Utilities for Macintosh.

SAM and Virex have additional similarities. You can configure either program to scan entire disks or just the System Folder at startup, at shutdown, or both. Both programs can scan floppies as you insert them and with both programs you can cancel a scan by pressing Command-Period. You also can specify which word processor can open program activity logs. Both control panels support online help, although, for the record, SAM is the only antivirus tool—and was one of the first utilities—to offer Balloon Help in addition to normal online help.

One of Virex's distinguishing features enables Virex to eliminate detected viruses from the notification dialog box. Another unique feature enables you to set default buttons for dialogs so that pressing Return activates either the Repair or the Deny Access buttons.

You also can access Virex through other programs, although you will be limited to merely detecting viruses. Microcom's Carbon Copy Mac screen-sharing program uses Virex to detect a virus on an incoming file. Berkeley Systems' More After Dark package, which requires the After Dark screen saver, can perform virus scans when the screen saver is activated.

Overall, SAM is the more configurable utility, although you access its wealth of options—some of which are notably obscure—from the Configure dialog. SAM can help prevent the spread of an undiscovered virus by alerting you when it detects different types of virus-like activity. SAM provides five levels of protection. The last level is Custom, in which you can choose from 14 different activities to have SAM examine. SAM also can place inoculation code in software to protect the software from viruses even without the SAM program running.

Insurance

So much risk! What can you do? Insure your PowerBook. While it won't prevent a theft, it can minimize the financial effect it has on you.

You can choose a computer-specific insurance policy or an add-on to your existing homeowner's, renter's, or business coverage. Either way, make sure you select "full replacement value" coverage so you get a new, not a used, replacement model.

Computer Policies

The most well-known computer insurance company, Safeware, has been around for years. It offers a variety of policies, most including data-recovery reimbursement as

well as many types of theft and damage. Another company, Computer Insurance Agency, offers discounts for user group members.

Non-computer Policies

You can insure your PowerBook as part of your homeowner's or renter's comprehensive package.

But many policies have restrictions limiting the value of coverage "off-premises," which is where many people use their PowerBooks. What's more, some include subtly-worded restrictions on coverage of business equipment, which will likely include the PowerBook from the point of view of the insurance adjuster.

The solution? Add a rider or a "personal effects policy" that covers named valuable equipment such as a PowerBook. Again, make sure full replacement value is specified. Accidental breakage and data recovery are usually not covered.

Business insurance is another story. Many large businesses choose self-insurance (in other words, no insurance) for "inexpensive" items like PowerBooks. If one is stolen, they just replace it if they need to.

What to Do if Your PowerBook Is Stolen

First, don't panic. Stop, and retrace your steps. Consider: Did you just leave it somewhere? Did somebody you know borrow it, with or without your permission? Did you hide it yourself?

Once you've eliminated all of the aforementioned possibilities, take action. Some things you can do include, in order of importance:

1. Look up the serial number. If you can't find a record of it, your dealer might have it on file. Apple's customer assistance center (800-SOS-APPL) might have it if you have sent it in for repairs. Having the serial number will expedite many of the following steps.
2. File a police report. However, don't expect a lot of assistance from the authorities, especially in an urban area where they're overburdened with the investigation of more-important crimes. Actually reporting the loss, however, is important for subsequent insurance claims and it establishes your ownership of the system in the unlikely event it is recovered.

3. Change passwords or temporarily disable your accounts on all online services that your PowerBook is set to automatically log onto. Don't forget to notify your long-distance and local phone company (if any telephone codes are on the system), cellular carrier (if a cellular phone was stolen with the system or is built in), and credit card companies (if your personal information including card numbers is on the system, unencrypted). You may even want to let friends and associates with personal information listed on your system that someone may have unauthorized access to their contact information.
4. Notify your insurance company. Some companies only honor claims made within a limited period of the loss. Most require a police report.
5. Notify Apple's repair hotline (800-SOS-APPL). If your PowerBook is sent in for repairs, Apple may be able to intercept it.
6. Notify central registries of stolen computers and used-computer brokers, including the Stolen Computer Registry at 212-777-1291. If somebody tries to sell your PowerBook through a participating dealer, these companies may be able to notify you.
7. Notify local user groups where your system was stolen (call 800-538-9696, extension 500, and supply a ZIP code to find a few nearby) and international user groups such as BMUG. Post notices on online services. The Mac community can spread the word in mysterious and wonderful ways, and just maybe help get your system back to you.
8. Offer a reward for the return of your system or information leading to its return. The local authorities can offer you advice on the effectiveness of this method and how to do it safely. If important data is on your hard drive, worth more than the PowerBook itself, it may even be worth your while to attempt to buy your Mac back! Again, use caution, work with the police, and don't get caught in a criminal scam or put yourself at risk if you choose this course of action.

While the above-listed actions will only occasionally get your PowerBook back, they will keep you busy and make you feel better, if nothing else.

Summary

I hope that this chapter hasn't led you to plan on locking up your PowerBook and never using it again, for fear that it will fail, develop a virus, suffer a hard disk crash and be stolen, all in one day. Consider each situation described here to be a "worst-case scenario," one you're unlikely to encounter in part or in its entirety.

However, if you are always prepared as though you are going to lose it all, you will be able to cope with fewer problems with much less stress and loss.

Part II

Putting the PowerBook to Use

Now comes the fun part: using your PowerBook to get stuff done. While setting up and configuring your system can be both interesting and fun, nothing beats the satisfaction of getting beyond the initial confusion and novelty and answering the question “But what does it *do*?”

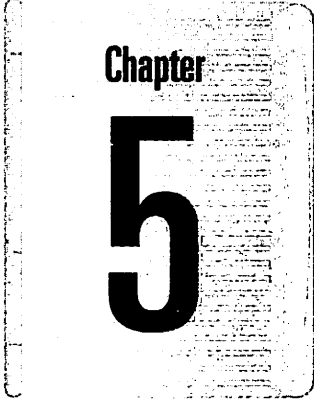
What people do with Macs, and especially with PowerBooks, ranges from the mundane to the insane. You can run a business, play games, schedule appointments, draft a new novel, calculate horoscopes, and much more. Just look at Apple’s recent “What’s on Your PowerBook?” publicity campaign, which in each advertisement juxtaposes two individuals who list numerous (and very different) activities accomplished with the aid of their PowerBooks.

Alas, this book doesn’t have the space for a complete catalogue of all the possible things you could do with your PowerBook. Instead, in the next few chapters, I’ll focus on the following categories of applications people use to get things done:

- Productivity applications: word processors, outliners and presentation programs.
- Personal Information Managers: contact managers, calendars, and alarms.
- Communications applications: networking, modem, and other connections.
- Unique uses: those applications that are tailor-made for PowerBook use.

You’ll have to take available RAM and hard disk space into account when choosing the programs you’ll use on your PowerBook, especially if you are using an older machine. This can make a big difference in your battery life, the speed at which you work, and in

general how much you enjoy your PowerBook. For example, if the program uses many disk-intensive operations such as large sorts in databases or saving to the hard disk frequently, it's probably not the best choice for PowerBook users. Read on for advice on how to choose and what some of your options are.



Chapter

5

Productivity Applications

If you find the title of this chapter a little intimidating, don't worry—we're not going to time your typing speed or measure your mouse movements (although there are programs that do so). Instead, we're going to talk about the basic applications most commonly used for getting things done:

- Integrated applications
- Word processors
- Outliners
- Presentation programs

We'll focus on the most commonly used programs in the main categories and how they best suit your PowerBook, both in general and in terms of the specific ways you can use them most effectively.

Integrated apps

Why start with a category of all-in-one programs that handle word processing, spreadsheets, and databases before we talk about each of the individual categories? Because for a PowerBook, a modular integrated application makes a whole lot of sense in terms of using RAM and hard disk space more efficiently.

Integrated software programs require less memory and hard disk space to perform similar word processing, spreadsheet, database, graphics, and communications tasks. Traditionally, the trade-off is that integrated applications tend to offer fewer features and capabilities than their standalone counterparts. But though standalone programs always boast features that integrated programs lack, integrated packages are improving. Some offer features not found in popular standalone programs.

Integrated applications comprise a product category that will see rapid evolution and competition in the months and years ahead. The preceding section compares and contrasts the current software crop, but here are some general principles you can use to evaluate new releases. You need to compare:

- **Integration.**

How well do the different pieces of the product work together? Do they share features and interface, or does it seem more like a glued-together collection of independent programs? If the latter is the case, beware—not only will it be a pain to use, but it probably will be relatively inefficient, with little or no common code shared between the modules. This makes for a program that requires both more RAM and more disk space.

- **Features.**

As stated above, the trade-off for most integrated packages can include the sacrifice of certain functions and capabilities; does the package you're considering include the features most important to you? Is it strongest in the feature(s) you need most? If the program does something new and different, is it useful to you?

- **Ease of use.**

In general, integrated software is easy to use because it's designed for beginners. Many of these programs, however, offer more advanced capabilities when you are ready for them. Consider whether the software offers a growth path. In other words, can you easily pick up a standalone program without having to relearn the basics? Also, can you easily do the things you need to do, or do you have to spend time figuring out how to make up for a feature that isn't included?

- **Portability.**

Does it work well on a PowerBook, treading lightly on your valuable system resources? Or is it a memory hog that wakes up the disk on a whim? Does the interface lend itself to trackball control? You'll never find out until you try it.

Notice that 'price' is not on this list. That's an intentional omission, because the difference in the street prices of the various packages right now is far less than the few dollars you'd save in the initial purchase of one over another. If you can find a package that both does what you need it to do and doesn't tax the resources of your PowerBook, then you've found a good deal.

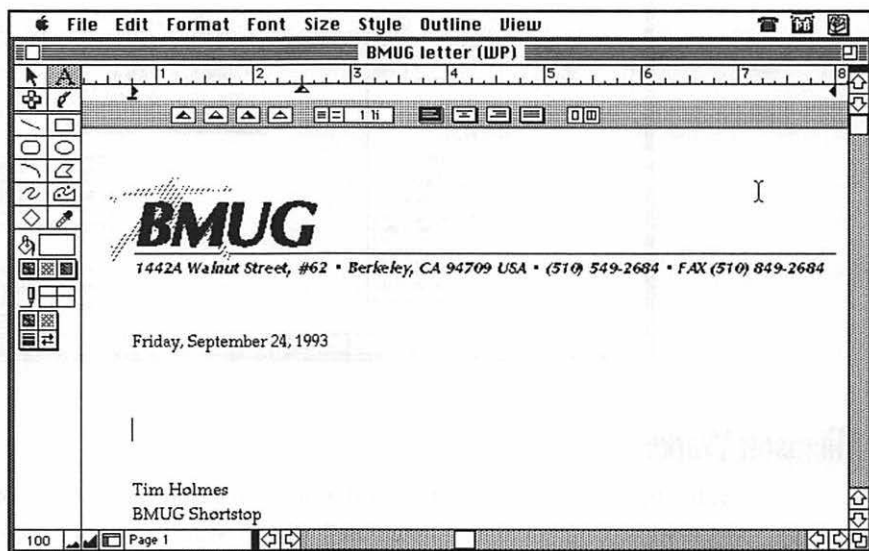
So let's take a look at the leading integrated Mac applications, and their suitability for the PowerBook.

ClarisWorks

One day, the way we work with all applications will look a lot like ClarisWorks. Claris Corp.'s ClarisWorks is currently the best-selling integrated program for the Mac and our number one pick overall. Its original release broke the mold of treating all the modules of an integrated package as separate mini-applications. ClarisWorks lets you select a word processing, drawing, painting or spreadsheet tool to create a frame in the middle of any page.

This frame interface enables you to embed a picture directly in a word processing document and edit it without having to deal with a separate file (see figure 5.1). Or when you use the customizable Shortcuts palette to create a table, it actually makes a spreadsheet frame. When you are working in a frame, the available tools and menus switch to those of the appropriate application.

Figure 5.1
ClarisWorks.



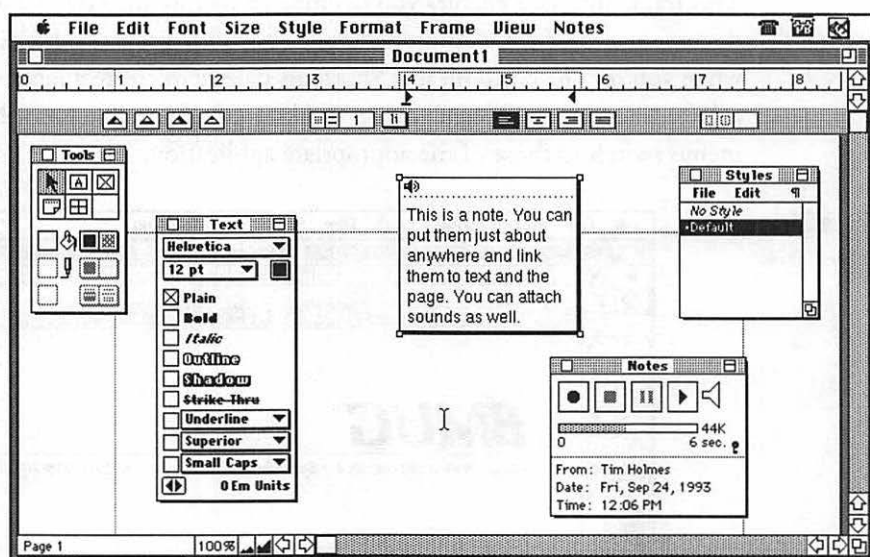
Power users will find ClarisWorks' modules well designed. The word processor boasts an integrated outliner that offers six standard formats for viewing and printing outlines. The word processor also enables you to wrap text around irregularly shaped objects, but the lack of a word count feature is frustrating. The superb drawing module enables the linking of text boxes to create simple newsletters, and can even create a decent slide show.

ClarisWorks' spreadsheet, like Claris' late Resolve, can create charts on the worksheet; the database offers pop-up menus with frequently used choices, just like its more powerful sibling, FileMaker Pro.

Another addition sure to be appreciated by new and advanced users is ClarisWorks' Shortcuts, a palette of buttons that change as you change modules. Tools can be edited within ClarisWorks and new shortcuts can be created with its built-in macro recorder. And, despite all its power, ClarisWorks' speed is acceptable on a PowerBook 100 and can operate in under 1M of RAM. The program's low memory requirements combined with its impressive features list serve to make ClarisWorks the most PowerBook user-friendly integrated package on the market.

Figure 5.2

MacWrite Pro offers a clean interface with several palettes.



Microsoft Works

Featuring a revamped interface and a new painting layer, Microsoft Works is a worthwhile upgrade for all those users of MS Works 2.0, but they may be even happier choosing one of the other packages.

The extent to which Microsoft has gone to ease the path for new users is laudable if sometimes misguided. Microsoft includes lots of example files and an excellent

HyperCard-based introduction that introduces the individual modules as well as some examples of using them together. The draw module, which can link text frames, uses animation to provide a great method for indicating the order of text frames.

The developers' nonstandard menu language, though, ranges from arbitrary to incomprehensible. The command to edit individual chart elements is labeled "Touch Up" while we had to turn on balloon help to decipher what "Vertex Snap" means. (It automatically closes polygons.)

Microsoft's modules still have some weaknesses, including limited chart and text formatting. Some of the draw layer effects are amateurish. And text won't automatically wrap as in ClarisWorks or WordPerfect Works.

GreatWorks

GreatWorks may be the least intimidating package of the bunch. Its brief menus and attractive interface rarely leave you guessing where to find a needed command. And even if they did, GreatWorks shares ClarisWorks' HyperCard-like online help.

GreatWorks' word processor has some nice touches. An envelope creation feature takes much of the guesswork out of printing envelopes and you can automatically place a border between columns. The spreadsheet and database modules are also solid. GreatWorks' compact tool selection palette can be positioned horizontally or vertically, but unfortunately does not offer new tools appropriate to the active module.

The drawing program's gradient choices are not as extensive as ClarisWorks', but they can spice up the average chart. For those with more technical drawings in mind, GreatWorks enables you to easily create dashed lines by choosing a dash pattern from a palette. For simple document-processing and occasional mailings, the product may well suffice, but make sure that its features suit your needs if you'll be relying on it as your workhorse.

WordPerfect Works

WordPerfect Works (WPW) is the rebirth of Beagle Bros. BeagleWorks, which WordPerfect Corporation acquired early in 1993. Like ClarisWorks, it can create

frames to ease mixing of data within a single document. Unlike ClarisWorks, you specify the contents of a frame after you draw it and then must save immediately. This runs counter to the Mac philosophy of picking a tool and then using it; it interferes with the creative process.

WPW's word processing module includes case conversion (upper case to lower case and back) and full-fledged paragraph styles that can retain ruler formatting as well as the mere character formatting of other packages. It can also uniquely divide a word processing document into multiple sections, each of which can have different margins and numbers of columns. Those requiring outlining or footnotes, though, will have to stop elsewhere.

The drawing module enables you to make multiple copies of an object and edit palettes and arrowheads, but does not support gradients or linked text frames. News is even worse in the abysmal database and charting modules, which have awkward editing commands. WPW's hierarchical New menu provides fast access to different modules. Its floating palette for quick access to commands is well-designed, but choices for the buttons are fixed.

Partly because it can dynamically exchange data among its many modules, WPW is chunky and slow. A virtual memory option enables the program to run in just under a megabyte, but will juice your PowerBook battery like it's a Florida grapefruit. If word processing is paramount in your integrated package, WPW is worth a look, but the other packages are probably more interesting.

Standing Alone

What if you don't like any of the integrated application choices on the market? They're all too limited, you say, or they don't use the same interface (or have the same feature you can't live without) as your favorite single-function application.

If this is the case, then you could do your own integration, combining several applications and treating them as a single unit. Some of the concerns you'll face will be:

- **File formats.**

If the programs you're trying to integrate can't read one another's native formats, you'll always have to remember to save documents in standard or translatable forms, such as Rich text Format (RTF) for word processing documents. In some cases, you may have to run an external application to do

the translation. Some applications aren't designed for this usage pattern, so they will bother you with extra "save your data" reminders.

- **Memory.**

Each application carries with it a certain amount of overhead—extra space that it needs for elbow room but which is unused most of the time. If you run several function-specific applications, each one will need its own elbow room, potentially using more total RAM than an integrated application with a single memory partition. On the other hand, with several independent applications you can choose to run only one at a time if you're running tight on space.

- **Interface.**

While Mac applications are known for their interface consistency, minor differences can become really annoying if you're frequently switching between programs. If you have to retrain your fingers or re-remember: "what does that button mean in this application?" then you can easily make mistakes that lead to the loss of data. For example, if pressing Command-D means "duplicate" in one application and "delete" in another, you could easily remove an important item and not notice until it is too late to undo.

While this may make it sound like integrating standalone applications is a painful process, it often isn't all that bad. Applications from the same developer tend to be consistent (for instance, look at the Claris and Microsoft application suites), with the same interface. In some cases, the applications share the same spelling-checking dictionaries and support files, saving you some hard disk space.

Also, new system software technologies, in particular AppleScript, Apple events, and OpenDoc, are encouraging the development of smaller, more modular applications that can communicate with one another in standard ways. Some pundits have predicted that eventually, the integrated software category will disappear as standalone applications begin to work more and more closely with each other.

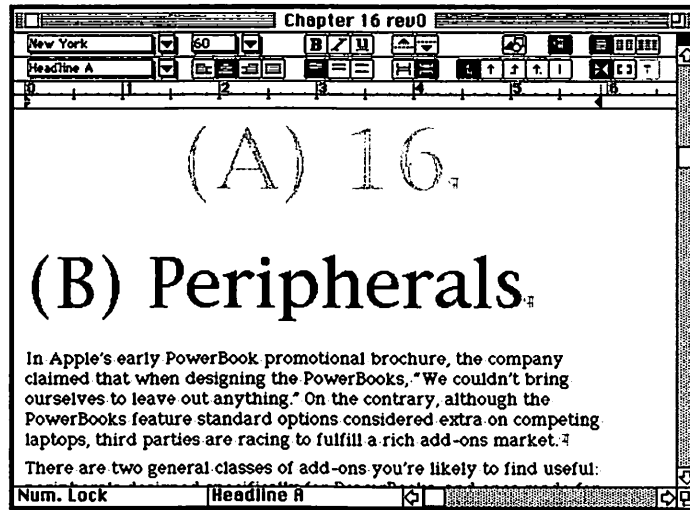
Word processing

For many PowerBook people, word processing is the number one application they use. If you write on your road, your word processor choice may do more for your comfort level than flying first class.

Microsoft Word

This granddaddy of Mac word processors keeps getting bigger and adding more features. I won't necessarily say "better," because the program's creeping "featuritis" has tended to both enhance the product (see figure 5.3) and also make it less suitable for PowerBooks in some ways.

Figure 5.3
Microsoft Word.



The program has hundreds of features that make it the standard of choice for many; this book was written in Microsoft Word. But some things that you should consider if you plan to use it on a PowerBook are:

- **Space.**

Word 5.0 and 5.1 are quite large, occupying a fair amount of hard disk space. Fortunately, you can choose which modules you want to install, but even without any modules it occupies a fair amount of space. Word 5.1 has a recommended PowerBook installation that consumes much less disk space than a full install.

- **Disk niceness.**

Word 4.0 had a nice option: you could choose to have it load the entire document and application into RAM. This disappeared with Version 5.0, which had a very annoying tendency to wake up the hard disk the first time you did even something as trivial as using the cursor keys or double-clicking

text. Word 5.1 got better in this regard; it is more PowerBook-aware and on better behavior. Perhaps to make up for past injustices, they even threw in a battery indicator in the ruler just for us!

MacWrite Pro

Claris' word processor, although a long time in coming to market, proved to be worth the wait, with many nice features for both casual and professional writers (see figure 5.2).

The program, a successor to the original MacWrite and MacWrite II, is closer than before to a publishing package. One nice new feature is the program's modularity—you can choose whether you need the table editor, for example, more than the disk space it occupies. The program does have some quirks and unexpected limitations, but has a more Mac-like interface than other word processors.

MacWrite Pro lacks some of Word's high-end features, such as tables of contents, index generation and even some time-saving amenities like envelope creation, drag-and-drop editing, and automatic bulleted lists. But its Frame feature and table editor are top-notch and far more versatile than their counterparts in Word. If you can live without some of Word's fancier features, it's a fine word processor.

WriteNow

At its introduction, many considered T/Maker's WriteNow to be a middle-of-the-road word processor, somewhere between MacWrite and Microsoft Word. The program's meager RAM requirements, sprightly processing pace, uninhibiting interface, and well-chosen feature set make the program attractive for the portable environment.

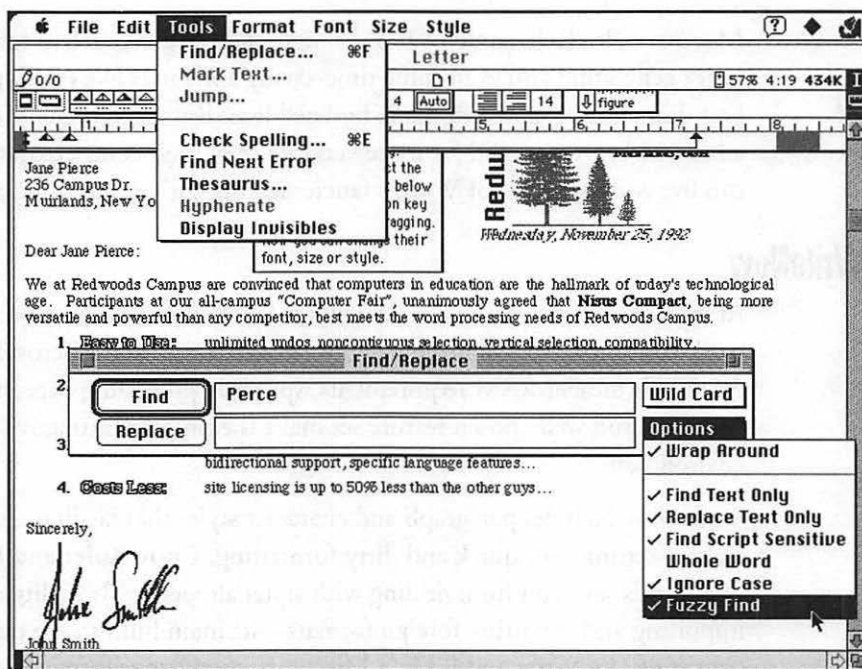
WriteNow includes paragraph and character styles that facilitate formatting text to custom settings. For quick and dirty formatting, **Copy Ruler** and **Paste Ruler** commands save you from dealing with styles altogether. It's a little weak on importing and exporting foreign formats—its main links to the outside world consist of MacWrite and RTF (a Microsoft interchange format). Its unique ruler is a separate window that changes when different documents are selected. WriteNow also has a rich variety of horizontal lines that can separate paragraphs, a quick and clickable spelling checker, and a page preview that enables you to see many pages as “thumbnails” on the screen. For those who need their word processor to be lean and mean, WriteNow is an excellent choice.

Nisus & Nisus Compact

Nisus Software (formerly Paragon Concepts) started out by developing a text editor popular among programmers. It extended this product into a full-featured, highly programmable word processor called Nisus. The program has a reputation for speed and power, with extremely flexible (albeit at times daunting in its complexity) searching features. It uses XTND to import files from a variety of formats.

Then, when PowerBooks came out, Nisus created a slimmed-down version, Nisus Compact, that better fit the memory and disk-space constraints of mobile Macs (see figure 5.4). The Compact version takes less than 400K of RAM and takes several steps to avoid battery-sapping disk access. The File Clerk feature can reach out to files via AppleTalk Remote Access. You can select a thicker I-beam (text selection) cursor to make it harder to lose your place on dim screens.

Figure 5.4
Nisus Compact.



Unfortunately, some key features of Nisus ended up on the cutting room floor when Compact was created: the spelling checker and thesaurus. You can add these as modules, however.

WordPerfect

No word processing roundup would be complete without a nod to WordPerfect. The Mac version of this multiplatform program is amazingly successful at being a hybrid creature, with a keyboard interface similar to that of the popular PC version but a decent Mac graphical user interface and continual revisions to take advantage of Apple's latest system software technologies, such as AppleScript and QuickTime.

WordPerfect is famous for its macro language and supports many other high-end features, including lists, tables of contents, style sheets, indexes, and outlining. It can't do tables like Word but comes close with a feature called parallel columns. Like Nisus, WordPerfect sells a "light" version of their mainstream word processor called "LetterPerfect."

WordPerfect for the Mac is a little on the beefy side, but it is quite appropriate for you if you are already familiar with PC versions of the program.

Word processing summary

Your choice of word processor is very much a matter of your individual style. Compare notes with people doing the same type of work you do and see what they prefer. Don't be overly swayed by vendor claims of popularity—many people are forced to buy one particular program by their corporate standards committees.

Look carefully at how well the program works on a PowerBook, and plan ahead: if you'll be working on complex documents within the year, get a word processor that can grow as you do.

***Tip:** Turn off auto-saving options (where present) in your word processor to conserve battery life by not waking up the hard disk as often. This does come at a risk, however; make sure that you do save your work from time to time!*

Outlining

It may have been Elvis himself who said, "Sometimes I can write down what I want without organizing it first, but other times I want a big ol' jelluh doghnut with extra glaaaaaze." Shopping lists, to-do lists, organizational relationships—all these and more can be expressed easily in a hierarchical structure. Outline processors facilitate the process of working with these sorts of structures.

Dyno Notepad

The first product to go tri-platform, with versions for the Macintosh, Microsoft Windows, and Apple's Newton handheld assistant, Portfolio's Dyno Notepad is the System 7-savvy version of a popular outlining program that enables you to organize your thoughts and plan agendas and projects.

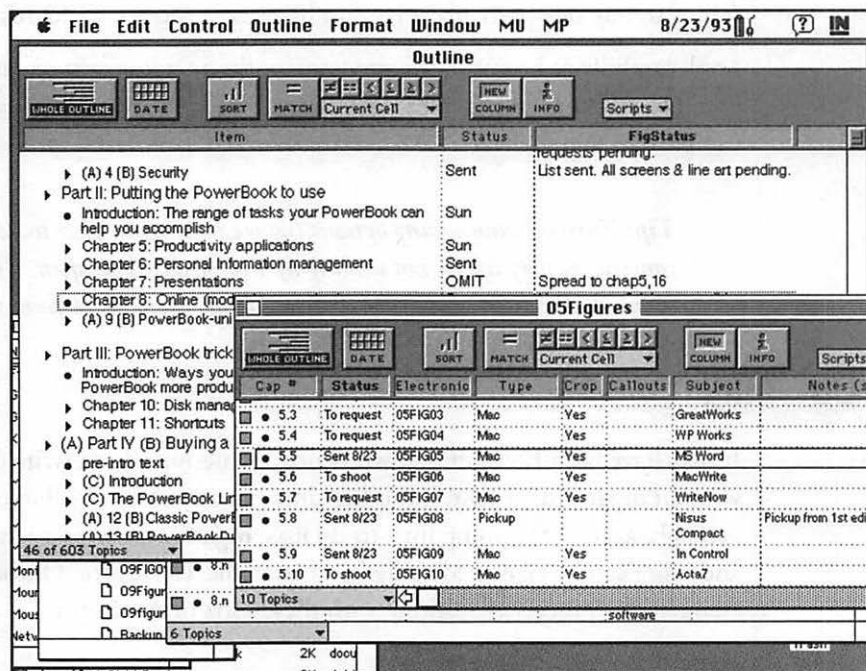
The program's unusual terminology of sisters, daughters, and aunts may take some time to understand, but its unobtrusive design helps you develop thoughts to flesh out later using your word processor, ideally through System 7's Publish and Subscribe features.

In Control

Attain's In Control outline processor is a hybrid between a spreadsheet and a word processor. Like an outliner, you can organize your ideas hierarchically but In Control is also good at organizing your data in tabular form (see figure 5.5). In Control can speed data entry through pop-up lists and "auto-typing," in which the program will finish typing a word for you if it recognizes enough of it. Sorting and searching are also provided, and you can even set up simple scripts to automate choosing layouts and printing.

Figure 5.5

In Control enables you to organize your thoughts in both outline and tabular form.



Although it is quite versatile, Attain undersells In Control as a “to-do list manager.” Clicking the Date button in the program’s tool bar reveals a two-week view in calendar format of any entry that has a date entered for it. Items that are checked off have a line through them. While not nearly as powerful as other PIMs, such as Now UpToDate, In Control’s calendar is serviceable. In Control is just one of those products that keeps reinventing itself with new uses; it’s only a matter of time before you’ll find one indispensable.

Inspiration

Inspiration Software’s namesake product is another hybrid. Inspiration combines strong outlining and good word processing with both unstructured and structured views of data. Ideas can be connected as if they were employees on an organizational chart (in some companies, ideas last longer than many employees, anyway) or in a freeform view of interconnected ovals and squares, leaving you to draw the relationships.

More than any other tool on the Mac, Inspiration allows the smooth flow of ideas from vague concept to completion, and its word processing tools are up to the task of producing a finished report. You can use numbers, symbols, even insert custom graphics to designate key points in your plan. It’s an outliner with the writer in mind.

Presentations

With video output now a standard feature on all-in-one PowerBooks and various Duo docks boasting diverse video output, creating and displaying presentations on PowerBooks has become *de rigueur*. So, for that matter, has the ability to create an onscreen slide show, one of the most popular uses of dedicated presentations applications. Among those who have presented in this new light are ClarisWorks, Microsoft Excel, the graphing powerhouse DeltaGraph Pro, and the page layout program Publish-It Easy by Timeworks. Here are some tips to keep in mind when shopping for presentation software.

- **Ease of use.**

Unfortunately, some presentation packages still haven’t figured out how to make presentations intuitive. Some programs put more of an emphasis on graphics tools while others concentrate on building from an outline. Pick the approach that’s right for you. A good presentation package should provide plenty of guidance as to what belongs where on the screen.

- **Quality of templates.**

Most, but not all, presentation programs include professionally designed templates. Do they communicate the image you want? Is the clip art included high-quality? Are there multimedia capabilities for driving home your message? If you're using a PowerBook for which the screen resolution is only 640 X 480 pixels, you might need to tweak the backgrounds of some of the templates.

- **Cross-platform capabilities.**

Perhaps a prospective client would like to review your presentation. No problem, you say. Perhaps she's running Windows. Problem, you say? Maybe not. Unlike word processors, which can trade file formats readily with the help of built-in and external translators, presentation programs don't trade file formats easily. Some programs can import others' file formats, but you may have to make some minor adjustments. Some vendors provide Windows versions of their software so you can trade presentations, while others offer presentation players for Windows.

Three outstanding presentation packages for the Mac are:

Persuasion

Version 2.1 of Aldus' long-dominant classic still has some punch left in it. Its charting module could use some work, but its AutoTemplates still provide a good way to ensure consistency among different slide types in a presentation. Like other programs in its genre, it can easily swap slide order or automatically generate handouts so your audience doesn't have to take notes.

Persuasion has some interface quirks. Charting—especially data entry—is awkward. And it doesn't give you as much guidance in slide generation as other packages. But loyal users should hold out before jumping ship. Aldus has a major upgrade on the way that should address most of the programs's ills, and add a few surprises as well.

PowerPoint

PowerPoint doesn't use the concept of different slides in a related style. Instead, Microsoft has emphasized quick placement of elements on a slide, resulting in an extremely easy-to-use program. The clip art is exceptional and the drawing tools can create complex shapes with one menu command. PowerPoint will even create color

coordination schemes for the taste-challenged. It has many transition effects between slides and can do some simple animation. Like the other products mentioned, it can handle QuickTime movies for realistic video, but playing QuickTime movies from a PowerBook can be a battery drain.

Clever Microsoft even includes a set of identical fonts with the Mac and Windows versions of PowerPoint, eliminating one of the most common causes of inconsistency across platforms.

Astound

At 17M of disk space fully installed, Astound won't be popular with the PowerBook 100 crowd, but this newcomer from Gold Disk will turn the heads of many who have wanted to incorporate multimedia into their presentations. In addition to offering the standard text, graphics, and chart insertion tools, Astound also offers sound and actor (animated clips) tools. While other programs can simply play QuickTime, Astound can perform simple edits on QuickTime movies.

In addition to many transition effects (one of which features your screen being eaten by a giant yellow PacBeing), any object in Astound can fly on and off the screen or "materialize" onto a slide as if the Enterprise had beamed it there. This feature can be used to build Director-type productions without learning a programming language. Astound's girth is due largely to its clip collection, which includes looping sounds and animated clips as well as your standard backgrounds. Astound ships with a player for the Windows version and can import Persuasion and PowerPoint files if you care to try it. And, if you want to add some pizzazz to your presentation, you should care.

Summary

The applications you choose to use will have a big influence on how much you enjoy using your PowerBook, how much battery life you get out of it, and, of course, how much you get done with it. Remember that, regardless of which applications you choose, operations like opening big files, importing large images, constant saving and sorting will chug at the disk. So will displaying large pictures or QuickTime movies.

In the next chapter we look at personal information managers, tools that help your PowerBook help you plan your life.



Chapter

6

Personal Information Management

Of the thousands of tasks a PowerBook can handle, one of the most mundane yet valuable ones is managing time and contacts while you're on the road. In particular, the small and lightweight PowerBook Duos lend themselves to keeping in touch when you're away from home and the office and working with the same data when you're back at your desk. The very announcement of the PowerBook created a surge in the number of products that can act as your personal traveling secretary.

Time and contact managers are sometimes called Personal Information Managers (PIMs). Included in this category are personal financial information managers, also known as accounting programs, and personal data trackers such as Nolo's Personal RecordKeeper and WillMaker.

Historically, most Macintosh software has concentrated on managing either time or contacts, but not both. This is changing as more integrated PIMs are developed. It becomes a matter of personal style to decide the answers to questions like these:

- Do you want one program, or separate ones?
- What type of information do you want to track, and how do you prefer to track it?
- Do you need to share data with other people?

Address Books

The Note Pad desk accessory probably was the Mac's first address book. As a last resort, you can always grab this simple DA from the Apple menu and enter a name and number. However, for more sophisticated tasks you may want to consider an address manager.

Address managers are specialized databases, a category of software that keeps track of information using records and fields. If you think of a Rolodex-like card file as a simple database, each individual card is a record and each piece of information on that card is a field.

In theory, if you had the inclination and expertise, you could create an advanced database to handle the features that address managers offer. However, it would take a great deal of time and effort to replicate the convenience and power of address managers.

Structured address managers typically have fields already set up for names, addresses, and phone numbers. Some contain special shortcuts that automatically format telephone numbers, saving you from typing those pesky parentheses. Many also feature options such as phone number dialing and painless printing of envelopes, fax cover sheets, and paper-based personal organizers such as Filofax and DayRunner. Address managers fall into two categories: free-form and structured.

Free-form address managers are well-suited to quickly jotting down personal phone numbers and other information. However, this flexibility comes with a price: they can't sort data or select sets of records as easily as structured databases, where you break up the data into fields.

If you are entering information into a contact-management database for the first time, I recommend using a structured database, simply because it is relatively straightforward to move data from a structured database into a free-form database, but not vice-versa.

Structured Contact Managers

Structured programs have the advantage of adding some organization to your data. By forcing you to break it up, they can store the data more compactly, retrieve and re-order it more rapidly, and export the data more efficiently.

However, most of these programs impose a limit on the number of fields, and they only let you change the data in a few. This can be a pain if you want to just jot down some notes about someone, or if you want to store different types of information about different sets of people in your database.

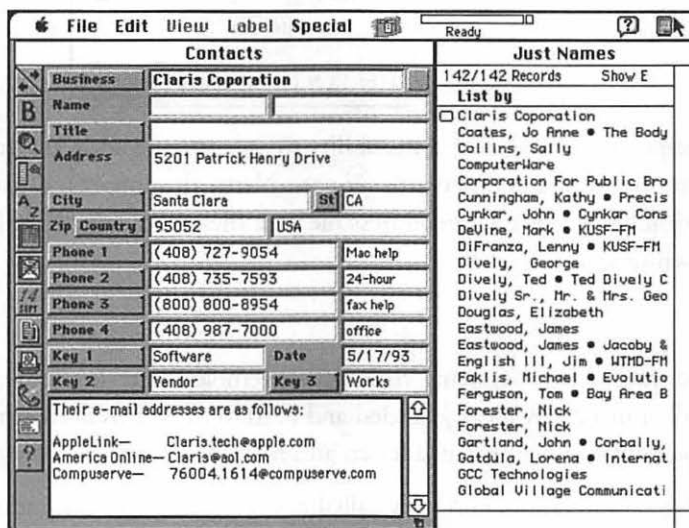
Dynodex

Portfolio System's Dynodex was the first structured address manager for the Mac, pioneering many features that the company's competitors have since imitated. It includes shortcut keys for data entry, double-sided printing of popular portable address book formats, advanced sorting features, and it enables you to perform multiple operations on a selection of records.

The compact design and blazing speed of Dynodex make the program almost as convenient (or more so) than unstructured desk accessories. It goes much farther in its printing capabilities because it can take advantage of its knowledge of the structure of the data to organize and format the individual fields more flexibly.

The interface may seem intimidating at first glance, with the bar of hard-to-decipher icons down the side (see figure 6.1), but nearly all the commands are available on menus as well and rolling the cursor over the icon bar with balloon help turned on provides a complete explanation of what it all does.

Figure 6.1
Dynodex.



Competition with other programs (notably Power Up's Address Book Plus and TouchBASE) has led Portfolio to keep improving Dynodex, adding features in version 3.0 such as file merging and robust Apple events support. In file merging, each record is tagged with the date and time it was last modified so the program can determine which copy has the most up-to-date information when joining two files.

TouchBASE

After Hours Software (now Aldus Consumer Division, itself formerly Silicon Beach Software) went after Dynodex with a simple-looking structured address manager (see figure 6.2). TouchBASE made it easy to quickly enter and look up addresses, without having to work with a confusing interface. You can view lists or browse through individual entries. The salesmanship of former Apple evangelist Guy Kawasaki attracted thousands of buyers.

Figure 6.2
TouchBASE.

The screenshot shows the TouchBASE interface for editing a contact. The title bar reads "ZCC Phonebook 9/15/93". The form contains the following fields and values:

- Salutation: _____ ☐ Marked
- Name: Stephen Howard
- Company: EDIT
- Title: Sr. Editor (Gateways)
- Address: 301 Howard St.
- 15th floor
- City: San Francisco
- State/Zip: CA 94105
- Country: USA (dhl)
- Phone 1: (415) 243-3531
- Phone 2: n/a
- Fax: (415) 243-3651

Navigation controls include left and right arrow buttons, a "Record 3 of 10" indicator, and "Find", "Cancel", and "Save" buttons at the bottom.

Subsequent revisions added the ability to open several address books at once, and file reconciliation, and network support. Network support means multiple people can simultaneously edit an address file on a fileserver. TouchBASE does not provide its own server.

Hello

Hello, from Atelier Systems, really goes overboard in trying to be easy to use. Big, chunky buttons are clearly labeled and hard to miss. It is fairly simple to add a contact, write a mail-merged letter, and make a call with this program.

The second iteration, curiously called not "Version 2.0," but rather "Fall '93," extends the program by adding a module that dials the phone, not just with a modem, but also with the Sophisticated Circuits Desktop Dialer or any Telephone Manager-compatible system. It also includes a mechanism so Atelier and other developers can write extensions, known as plug-in modules, that you just drop into a special folder to add functions to the program. Eventually, with enough modules, Hello could become a complete communications center, integrating all kinds of functions around your address book.

Human Envelopes

With its Human Envelopes program, WE Software also is trying to make it easy to manage addresses. The bright, colorful interface is especially oriented around printing envelopes, but some other data-management functions are built in as well.

Free-form Contact Managers

Casady & Greene's original QuickDEX program popularized the concept of free-form contact management because of its lightning speed. It loaded data into RAM and all you had to do was type a piece of text that was on any card and it would jump right to the cards of interest. You could type whatever you wanted into it, without having to stop and organize your data or try to cram long notes into short, fixed-length fields.

However, other companies stole away market share when they introduced free-form contact managers that didn't have the same limitations in data management.

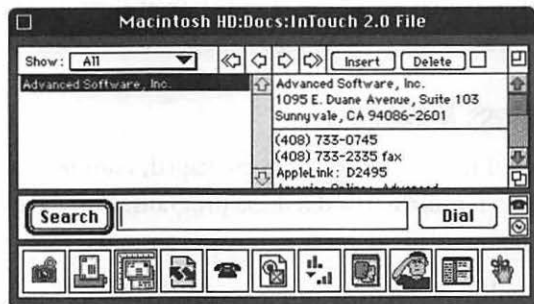
INTouch

Advanced Software's contact manager, INTouch, has grown a bit over the years, adding a number of capabilities and functions not usually associated with a free-form database.

The program originated as a competitor to Casady & Greene's QuickDEX, before QuickDEX II was available. (QuickDEX II is discussed later in this chapter.)

The DA uses windows divided into two parts: names and addresses on the left and phone numbers on the right (see figure 6.3). You don't have to constrict your data in quite this fashion, but if you do, INTouch can do some interesting things with the data.

Figure 6.3
INTouch.



For instance, INTouch can identify and dial phone numbers. Then you can zoom the phone field so it fills the entire window and enter notes during calls.

Another useful feature is the Snap control panel. It enables you to designate keys to automatically open an INTouch file and add a record, look up and dial a phone number, or paste address information. Using Snap with any word processor, you can type "John Smith," select it, and hit a key, thereby replacing the selected text with the full name and address from INTouch's database.

The DA is also handy for printing envelopes, including bar codes (it determines the ZIP code by looking at the address field). Version 2.0 added a sort command, and improved the program's already robust import and export functions (at last, you can delete the Advanced Software contact record).

INTouch also includes some interesting network capabilities. The program comes with a companion application, INTouch Server, which you can set up with an INTouch database on any spare Mac on a network. (It can run in the background in a relatively small RAM partition.) Local copies of INTouch can send queries to the server application in a highly efficient fashion, with only a few bytes passing over the network per transaction. This makes it fast even for low-bandwidth network connections such as AppleTalk Remote Access dial-up sessions. And INTouch Server automatically handles record locking (so two people can't try to modify a single record at once), and it supports two passwords per file: one to restrict all access and another that can prevent unauthorized modification of the data.

QuickDEX II

Casady & Greene's second-generation free-form contact manager remains quite simple to use: type data on cards in the main part of the window and type text you want to search for in the "Find" box at the top. It can identify and dial phone numbers.

Database Address Managers

If you'd rather not get a pre-packaged, commercial solution, you can develop an address template in a database program. You have complete flexibility when you set up the template yourself, and you can make sure it meets your very own needs.

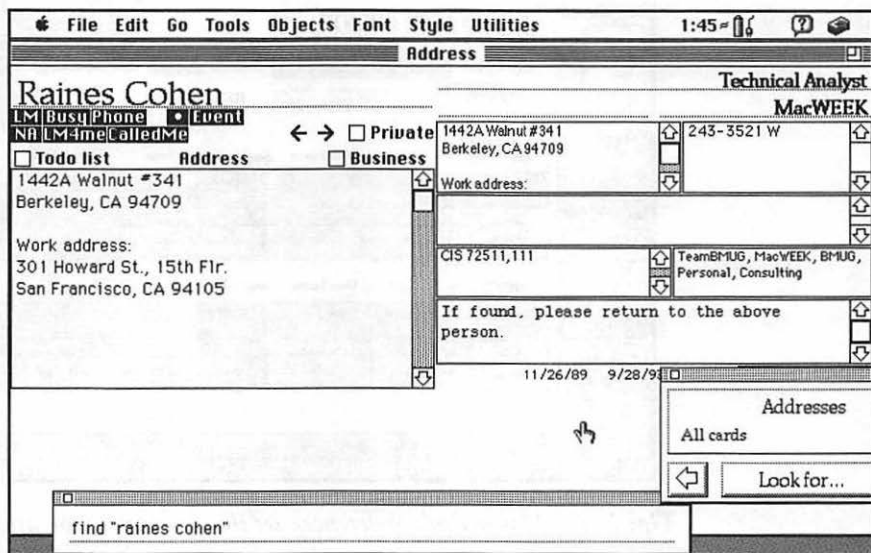
A number of database products are commonly used for address management. Here are some of the advantages and drawbacks of a few.

HyperCard

HyperCard has been described as a cross between a paint program, a programming language, and a Rolodex, so it should be no surprise that people are using it for address management. The program was originally an Apple product bundled with all Macs, later a Claris development tool, and it is now on its way back to Apple for a future as an AppleScript development environment. HyperCard comes with a simple address-management stack which users can customize to their own needs (see figure 6.4).

Figure 6.4

HyperCard can be used to create an effective contact management solution.



HyperCard stacks can do all kinds of useful things, such as dial the phone, create customized reports, and incorporate multimedia content such as graphics and QuickTime movies. While the environment is not a database, it can act much like one, searching for data and listing it out for you. The built-in HyperTalk scripting language lets you work with free-form databases in a structured fashion, but you may find that the resulting performance is too slow for comfort when compared to a dedicated address manager.

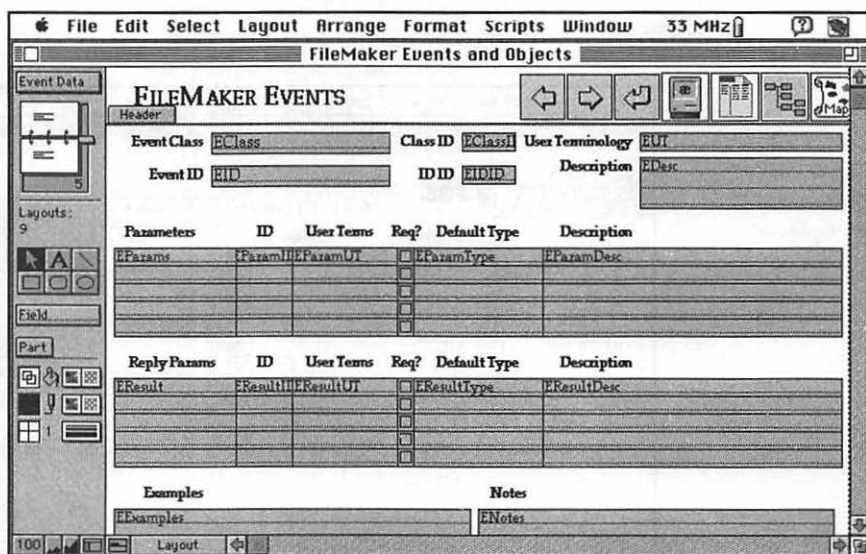
As of this writing, PowerBooks include a special version of HyperCard, HyperCard Player, that lets you run but not modify stacks. To customize stacks, you need the full-blown HyperCard development kit.

FileMaker Pro

Claris's database (see figure 6.5) is ideal for custom structured databases. You can create detailed reports and set up FileMaker Pro to automatically validate the data you enter—look up ZIP codes and check your entries to make sure they're consistent and not duplicates. While FileMaker Pro can find data quickly, some of its other operations can be slower.

Figure 6.5

FileMaker is ideal for relatively complex databases.



Tip: In FileMaker Pro's preferences, set the system to automatically save changes (write them to disk) at a large interval, like an hour, to keep FileMaker from waking up your PowerBook's hard disk every time you change an entry.

4th Dimension

Yes, you can build an address manager with a relational database, such as ACI US's 4th Dimension, but it is really overkill—using up quite a bit of RAM and disk space for the end result.

Some commercial packages, such as Rae Assist, are based on 4th Dimension. (Rae Assist is discussed later in this chapter.) However, they generally don't allow you to make changes in the structure or interface, even if you have 4D.

Evaluating Address Managers

To determine whether a particular address manager is what you need, ask yourself (or the company trying to sell you the product) questions like these:

- Is the program free-form or structured? Which do you prefer?
- Does the program have the capacity you need? What limits it—disk space or RAM? Will it consume too many resources on your PowerBook?
- Can you easily import existing data? Can you export data if you need it in another application (perhaps for a mail merge in your word processor)?
- Can you integrate the program with your other personal information management and productivity applications? Does it support standard Apple events, or is it limited to working with just particular programs?

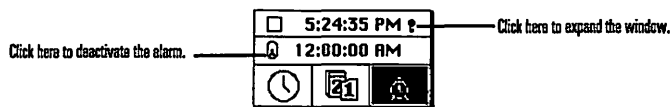
Alarms and Reminders

The first reminder program for the Mac was the Alarm Clock desk accessory. Alarm Clock enables you to set an alarm that beeps and flashes your Apple menu at a particular time. (Under System 7, it flashes the application menu on the right side of the menu bar instead of the Apple menu.) This has an unfortunate tendency to incite panic in new users who do not know how to turn off the alarm.

Tip: To turn off the alarm, open the Alarm Clock DA, click on the doohickey on the right hand side (see figure 6.6), click on the clock with lines coming out from it, and click on the left-hand doohickey.

Figure 6.6

The Alarm Clock desk accessory is the simplest—and most common—Macintosh reminder program.



Today's less-mysterious reminder programs have come a long way since then. Some of the features offered by programs include:

- alarms that can be set for a particular date
- alarms that can automatically repeat at preset intervals
- alarms that can be accessed by simply pressing a key
- alarms and events that can be shared between Macs
- individual alarms that can be associated with text, sounds, files, and more

You now face a bewildering array of choices: where you can select the reminder program of your choice based on features, ease of use, and even the artwork it uses!

Local Reminders Programs

The simplest, most affordable programs focus on helping you manage your personal schedule on your own Mac. They differ widely in interface and secondary features, but the core functionality is the same:

1. You set a time and date for an event.
2. You choose the type of alarm.
3. When the alarm sounds, you can either “snooze” (postpone it) or silence it.

The choice comes down to your personal preferences, how many steps it takes to set up, and what you think of the interface of the various programs.

Easy Alarms

Easy Alarms, from Essential Software, enables you to work with multiple calendars at one time. And, true to its name, it is fairly convenient to use and figure out without spending a lot of time studying the manual.

The program includes a user-scripting language that enables you to send Apple events to other programs. So you could, for instance, write a simple script that, after a particular alarm is triggered, launches your backup program and tells it to start backing up your hard disk. Easy Alarms may be the first time-management program for the Mac that not only reminds you to do something, but actually performs the task for you.

In Control

While the first version of Attain's application was more of a combination outline program and list manager, In Control was widely used for to-do list management because of its simplicity and flexibility. Version 2.0 added an integrated calendar and an alarms module, making it even more powerful.

The program enables you to quickly create outlines that also function as tables, with multiple columns per row. You can set it up for easy data entry, with common entries filled in as you type just the first few letters of each word.

The calendar link simply makes events appear on the date listed in the first date-time column it finds. If you re-arrange the column order so that, for instance, a due date is visible and comes before an estimated completion date, the event will appear on the calendar on the due date. If the item is checked off, it can appear "crossed out" on the calendar.

First Things First

Visionary Software's First Things First (FTF) takes a novel approach to setting reminders. The program is a system extension and you interact with it by double-clicking an animated analog or digital clock that floats above all the windows or the menu bar.

When you open it, FTF displays a dialog box that enables you to set reminders. It manages to-do lists and reminders in categories you specify, and it can filter the list to show you just the most urgent items or just items in particular categories.

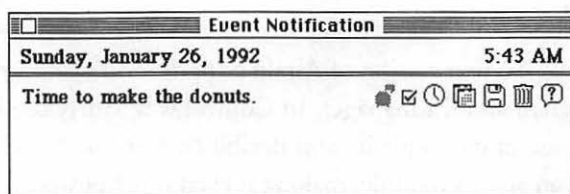
Alarming Events

CE Software's reminders program takes a more integrated approach than some other reminders products. Alarming Events's main calendar window can display an entire year or just a few months. Pressing Return while the main calendar window is open presents the Single Day window, which lets you enter reminders for a given day. However, your hands have to wander between the trackball and the keyboard to complete entering alarm data with all the program's pop-up menus.

The program has very nice notifications (see figure 6.7), and gives you a choice of appointment statuses: pop-up alarm, flashing alarm, timed event, to do, and done.

Figure 6.7

*Alarming Events's
notification
window.*



One unique feature of Alarming Events is that it tells you how many days late you are on overdue to-do items. This can be handy, but there are times when I'd rather not know how late I am, for fear that I'll be so overwhelmed with guilt that I won't get anything done.

CE also offers CalendarMaker, a program designed to display and print calendars.

Smart Alarms and Appointment Diary

JAM Software's Smart Alarms was the first commercial reminder program and it remains among the most configurable. Smart Alarms places two desk accessories in your Apple menu: Smart Alarms (the reminder DA/extension) and Appointments (the scheduling DA). You can convert appointments to Smart Alarms reminders using just a menu selection.

Reminders also can invoke a macro created with QuicKeys 2 or another macro program, or send text to pagers through Ex Machina's Notify program. The program allows a lot of control over details. For instance, you can tell it to postpone reminders when you're running particular programs that you've designated.

The Far Side Calendar

Amaze! Incorporated has taken a celebrity approach to contact management with its cartoon-of-the-day calendars. They feature a different cartoon for each day, like the popular paper-based calendars. You can buy refills when you run out of cartoons, and even pick a different strip.

For instance, the company's first offering, The Far Side Calendar by Gary Larson, features the well-known snakes, cows, insects, cave people, scientists, and nerdy kids that have long populated the perverse comic strip. Whenever you launch the program, there is a random chance that you will see equally funny animation. One example is a sequence in which a window cleaner gets splotted on your screen by a giant fly swatter, with the resulting mess being wiped away by another window cleaner.

The company also offers calendars designed around the syndicated cartoon strip “Cathy.”

Unfortunately, the program does not include an extension that alerts you to alarms and reminders due when the program is not running. And the 512K it requires makes it difficult to justify keeping the program open all the time on a resource-constrained PowerBook.

With its humorous cartoons, amusing animation, and distracting icons eating several megabytes of hard disk space, The Far Side may be one of the least practical calendar programs for the PowerBook. How could Larson have it any other way?

Remember?

This \$20 shareware DA and extension by Dave Warker is quite handy for simple alarms tracking. It enables you to set up multiple calendars for different types of reminders.

Network Scheduling

The task of not only managing your own time, but also coordinating the meetings of several people, can be quite a challenge. Fortunately, several Macintosh programs can help facilitate the process of finding times when several people who work together are free to meet. The programs enhance communication between people by providing a form of task-specific messaging: behind-the-scenes communication between people’s calendars.

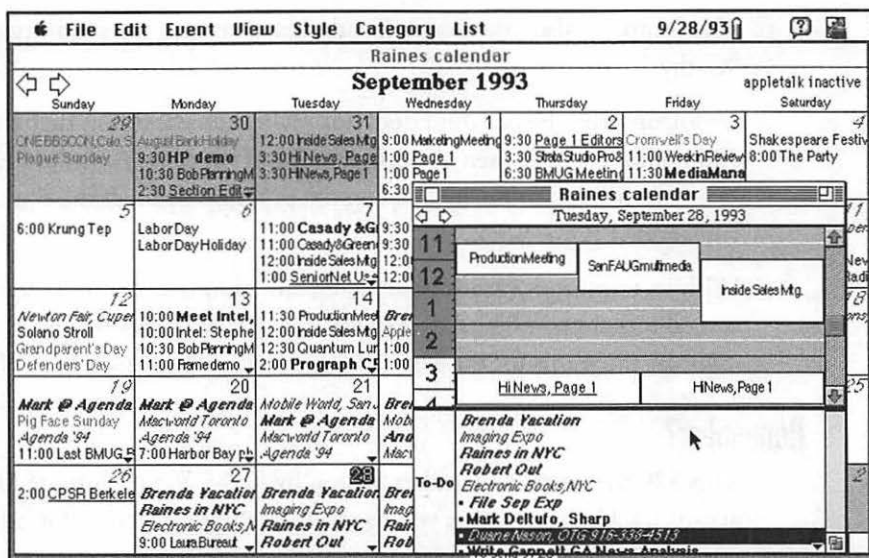
Now Up-to-Date

Now Software’s scheduling program is perhaps the finest personal scheduling tool for the Mac, and a wonderful tool for group scheduling as well.

Now Up-to-Date uses a traditional calendar metaphor that makes you feel right at home. You can enter appointments, reminders, and to-do items in year, month, and day views, and can drag items about to reschedule them (see figure 6.8). You can design your own categories (and sets of categories) and associate to them whatever formatting options you can think of, to produce not just onscreen calendars, but customized reports for your every need.

Figure 6.8

Now Up-To-Date enables you to drag meetings and appointments to other times to reschedule them.



An included extension displays a clock in the menu bar, flashes reminders on the menu bar, and provides a menu that enables you to open reminders without opening the application.

With Now Up-To-Date Server extensions running in the background on any Macintosh on a network, individual users can communicate and perform group scheduling just as easily as they set up their own calendars. Simply moving a category to a server makes it sharable (with password access control, if you want it) by other users.

The neatest thing about it for PowerBook users is this: if you change an entry in a shared category while you aren't connected to the network, the program remembers your change, reflects it immediately on your calendar, and updates the server the next time you connect. If somebody else changes an event, your calendar will automatically be updated. The transactions involve very little network traffic, so they are fast, even over a narrow-bandwidth AppleTalk Remote Access connection.

It would be nice if the program included some form of conflict notification; right now, it doesn't say a word if you (or a colleague) set up overlapping events in a single category. It also could be enhanced by the addition of messaging functions to tell people when new events have been added to their calendars.

The program now integrates with Now Contacts, the company's contact manager. You can link contacts to appointments and vice-versa, directly working with each program's data.

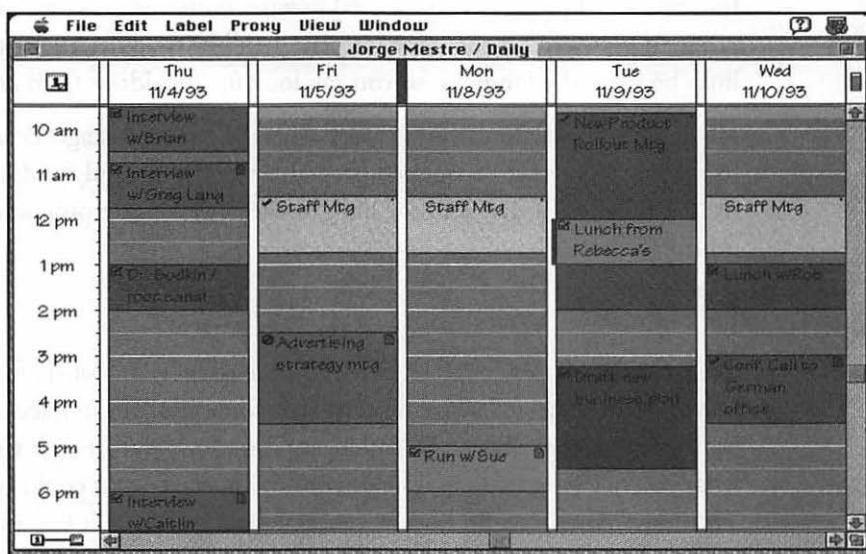
Meeting Maker

ON Technology's workgroup scheduling program is designed for people using Macs on a network, but the newer XP version, introduced in 1993, includes features especially helpful for PowerBook users who are often off the net.

While the original Meeting Maker (and updates through version 1.5) had to laboriously consult the server over an AppleTalk network to make an appointment or even to display your personal calendar, Meeting Maker XP (see figure 6.9) gained the capability to run much faster; also, users can now see and change appointments without being connected. The next time the remote user returns to the office or connects via AppleTalk Remote Access, the master calendar is automatically reconciled with the local copy.

Figure 6.9

Meeting Maker XP adds support for PowerBook users.



Meeting Maker uses a fairly elegant interface, in which you "propose" a meeting and "invite" the people and resources (such as a conference room) that you need for the meeting. The invitees are notified and can choose whether or not to enter the event on their calendars; you get a response indicating who can and can't attend.

Office Tracker

Milum's Office Tracker, while not strictly a personal information manager (more of a personnel information manager), tackles a different end of the problem, keeping tabs on who is in and who's out, like an office in/out board. You can set it to

automatically log you in when you connect your PowerBook and start up in the morning, and to punch out when you shut down at night.

Integrated Contact Managers

If you'd rather not worry about purchasing a zillion separate programs, each optimized for a tiny particular task, consider a different approach. You can turn to an integrated, do-everything program that will not only slice and dice your schedule, but also chop your addresses, or, you could instead do your own integration, combining your choice of programs that use newly emerging communications standards.

The all-in-one approach can make a lot of sense. You don't have to shop all over to find one set of programs guaranteed to work with one another. An integrated program typically has the same interface in all its modules and it generally includes links between the modules, so you can look up an address from an appointment.

However, in many cases you're stuck with the entire package, even if you only want to use one piece of it. Integrated programs can get ungainly and it is often difficult to transfer all your data and the links between to another program without losing information.

Rae Assist

This program, based in ACI US's 4th Dimension, is modeled after Apple's Newton line of personal digital assistants. Rae uses some similar interface constructions and it mimics Apple's concept of "intelligent assistance"—that is, it tries to figure out what you're trying to do and helps you. For instance, you could type "lunch Bob Thursday," and it would look at your database and what it knows about your habits to set up a meeting of type "lunch" at noon this Thursday, and to link the meeting to Bob Smith.

The modules in the program include a contact manager (with separate entries for companies and people in them), a calendar program, and several other linked modules. You can import and link in pictures such as maps, and interrelate data in all kinds of interesting ways.

ACT!

ACT! is aimed at the field salesperson—somebody who needs to keep track of a whole lot of contact data linked to appointments and all kinds of other information. If you evaluated the program when it first came out and rejected it, give it another shot. Version 1.1 is faster and more reliable in several respects and it provides a limited form of network connectivity.

DayMaker

Pastel Development's DayMaker started as a product integrating scheduling and reminder functions. Although the program was one of the first personal information managers to be announced, it didn't ship until a while later, and an address book module wasn't added until the second half of 1993.

DayMaker's interface enables you to change appointment times quite easily, but in other respects the program is not very intuitive. It is unique in offering Gantt charts and multiply-filtered schedules, features normally found only in expensive project management programs.

The address module, DayMaker ContactBook Extension, includes links between contacts and schedules, rapid selection of contacts by typing just a few letters of a name, telephone dialing, three-level sorting, and a variety of directory printing options.

Personal Financial Information Managers and Data Trackers

A different kind of personal information manager is an accounting program, one that keeps track of your finances. A related form of personal information manager is a personal data tracker, which is generally used to track a personal inventory for insurance purposes or a will.

The accounting program I really enjoy using is Intuit's Quicken (see figure 6.10). It handles all the math so all you need to do is enter and categorize transactions. (You don't even have to do the entering and categorizing if you get the Intuit's special credit card that provides statements on disk or by modem.) Quicken handles graphing, check printing, electronic transferring, and reporting.

Figure 6.10

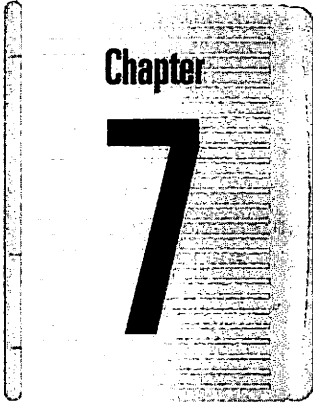
Quicken 4.0 can tell you how you're managing your money.

File Edit View Activities Reports Planning Settings 9/28/93									
Checking: Register						Copy of R&K books: Accou			
DATE	NUMBER	DESCRIPTION		PAYMENT		Account Name	Account Type		
		CATEGORY/CLASS	MEMO						
1/1	3102	Our Friends		20	00	Bonds	Asset		
1993		Gifts	garden			Checking	Bank		
1/2		Xfer-ATM				CleaningDeposit	Asset		
1993		[Savings]				Fidelity	Bank		2
1/2		Cash		100	00	Franklin	Bank		
1993		split				James O'Connor	Asset		
1/2	3108	The Landlord		1, 100	00	JC Penny	Credit Card		
1993		Rent Paid				Kandy Income	Asset		
1/5		Cash		100	00	Kandy Purse	Cash		
1993		split				Kandy's Mac+	Liability		
						MacWEEK Expense	Credit Card		
						MBNA MC	Credit Card		
						MPV	Asset		1
						NAUGC91	Bank		
						Raines Income			
Record Restore						Mem			
Classes				Transaction Groups			Payee/Description		
				Group	Due				
GreatBlue				Insurance	10/18/93		(Raines payroll)		
Mazda				Monthly rent	11/1/93		American Express		
Raines				Payroll	10/14/93		American Online Usage Fees		
Consolidated				Vehicle	10/22/93		AppleLink Services		
PPPB:							CalTrans		
Personal							Cash		
Project							Cellular One		
Work-related							Craig Valentine		
Tenants							CSAA		
Use New Edit Delete				Use New Edit Delete					

In the data tracker category, Nolo's Personal RecordKeeper tracks a different kind of personal information: where you have stuff and how much you have. It is very handy for inventory, insurance, and in case you are seriously injured or killed.

Summary

Personal information management can be one of the key applications of your PowerBook—something you use all the time and integrate into your daily routine. Or, if you choose a poorly matched program or programs, it could make your life even more disorganized, where you don't enter data in one place because it's too much trouble, so you end up with data in a zillion places and no one way of knowing how to find someone or where you need to be. Choosing a program or programs that you can work well with can make all the difference.



Chapter

7

Online Communications

Although other platforms have begun to approach its ease of use, the Macintosh family remains unique. Many people forget that the Macintosh remains the only broad family of personal computers that users can network (link together to share files and resources) without the need for additional hardware.

Alas, the majority of computers in the world are not Macs. Although there are ways to get Macs and PCs talking, many concerns about logistics and compatibility must be overcome when dealing with different types of computers.

This chapter discusses how you can use your PowerBook to communicate with other Macs, other types of computers, online services, bulletin boards, and even fax machines.

Terminal Emulation

When accessing some services, PowerBook users must resort to a character-based terminal emulation program to communicate with other types of computers. A terminal emulation program provides a common ground for transferring text and files between different types of computers. So even if you need to transfer data to an Apple II, Commodore Amiga, or Atari ST, you can always communicate via a terminal emulation program. Some online services—like GENie and Delphi—require that you have a terminal emulation program in order to log on.

Because terminal emulation programs are so generalized, you need to determine some obscure parameters before sending files. You need to know parameters such as bits per character, stop bits, and parity. If you don't know what settings you should use, a safe bet is 8 bits, 1 stop bit, and no parity (sometimes abbreviated "8,1,N").

Many fine terminal emulation programs let you reach out to character-based systems. Two of the most popular commercial ones are Software Ventures' MicroPhone II and Hayes' SmartCom II. Both feature easy-to-use interfaces, but

MicroPhone II boasts a powerful scripting environment that can automate accessing online services. While less powerful than either program, Alverson Software's shareware program ZTerm also has many fans.

The new terminal emulator on the block is Aladdin Systems' SITcomm. Designed for entry-level users, SITcomm will be the first Mac telecom program that incorporates the compression and expansion abilities of StuffIt, the archives of which invariably have the extension ".sit". Weighing in at about half a megabyte of disk space, SITcomm should prove popular with PowerBook users tight on disk space and RAM. SITcomm can be almost completely driven by an outside scripting language such as Userland Frontier or Apple's own AppleScript, so it can get along and easily trade data with other such scripting-savvy software.

With a communications powerhouse in your briefcase, you have access to some of the most useful, entertaining, and expensive online services the world has to offer. Connecting to an online service is, in principle, similar to connecting to any other type of computer.

Online services often are run from massive minicomputers that can tie into vast databases worldwide. Each of these dial-in services gladly sends you information about why you should spend your online time with them. The literature often covers the wealth of services you find online, including forums, files, shopping, electronic mail, "live" chats, and vendor support. The services, however, often are generalized because virtually any modem-equipped computer using terminal-emulation software must be able to access the services. Some services, however, require special software but provide graphical user interfaces.

Following, then, is a brief summary describing how to access various online services through a PowerBook, and what you might gain from the services.

AppleLink

AppleLink is the official online communications system of Apple Computer, Inc. Once the exclusive domain of Apple employees, Mac developers, and impresarios, it has grown to accommodate user groups, major customers, and now just anybody with a Mac.

The service is so valuable, especially in connection with your PowerBook, that we've included an AppleLink starter disk with this book! Details on the contents of the package are provided in appendix B, "The AppleLink Disk." Read on, however, for information about what AppleLink provides.

AppleLink includes many resources you may find helpful, including:

- **Mobile Systems folder**

This area includes many resources designed specifically for the PowerBook user. A PowerBooks Bulletin Board contains postings of the latest PowerBook information. HW & SW Products contains information about third-party products of interest to the PowerBook user. Mobile Publications provides information about publications designed to cater to the mobile computer user.

Perhaps most importantly, the Mobile Discussions area provides a forum where AppleLink members can share information with each other and discuss all things PowerBook. This can be an invaluable source of information regarding your PowerBook dilemmas.

- **Travel folder**

The Travel folder provides AppleLink members with information and services designed to make travelling easier. It contains a Travel News Bulletin Board, which includes information from Knight-Ridder/Tribune Information Services regarding news, trip ideas, and so forth.

The folder also provides services similar to those provided by auto clubs—at an additional price, which is charged to your credit card. A Road Trip Planner Bulletin Board provides driving instructions and information tailored to your destinations. The Worldview Bulletin Board enables AppleLink users to receive customized TripPlans, which provide details about restaurants, entertainment, special events, and so forth at your destination.

- **News Break folder**

AppleLink provides many different types of news, including world news, sports, financial news, weather, and computer industry news.

- **Technical documents and service notes**

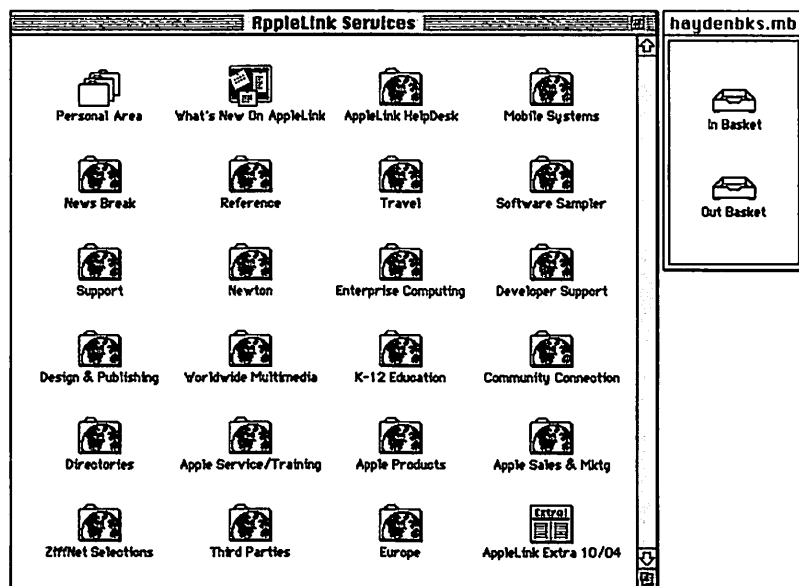
- **Direct connections with Apple and third-party developers**

You can go right to the source on AppleLink; nearly all developers are represented and all Apple employees are online. The trick is finding the right address to send to, given Apple's frequent reorganizations. Nevertheless, if you have a Macintosh question, there is someone on AppleLink who knows the answer.

AppleLink pioneered access to a service through a true Mac interface, although its novelty has stagnated in the wake of America Online and even CIM. After logging on, you're greeted with a window littered with folders (see figure 7.1) on topics of interest to Apple followers and employees. Folders include information on including press releases, developer support, a directory of Mac products by Redgate Communications, and Apple software updates. While a smattering of shareware and third-party demos exists, AppleLink incidentally provides the most extensive variety of electronic technical support in the Mac community since all Apple Certified Developers are required to have an AppleLink account.

Figure 7.1

AppleLink uses a graphical interface very similar to the Finder.



The service has a reputation for being pricey, but you get special rates when you sign up with the enclosed disk. AppleLink has an hourly fee of \$14.95 for 2400 bps access (\$24.95 for 9600 bps), and a startup fee of \$19.95.

CompuServe

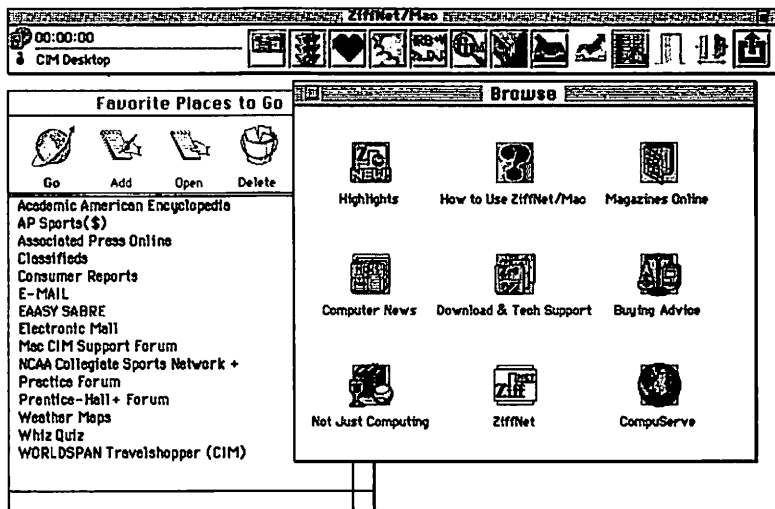
The CompuServe Information Service (CIS) is one of the oldest and largest online services in the world. Several thick tomes are available that are dedicated to describing what you can find online.

The service's Mac forums, collectively known as MAUG (Micronetworked Apple Users' Group) boast some of the most active and knowledgeable members of the Macintosh community. It rarely takes more than a day for an expert to answer even the thorniest question.

The service by itself is designed for a non-graphical interface that you can use with any type of computer and terminal emulator. But Mac users can choose from two different graphical front ends to make navigation of the information faster and more efficient: CompuServe Information Manager and CompuServe Navigator.

CompuServe Information Manager (or CIM) replaces many of the system's prompts with icons, menus, and dialog boxes (see figure 7.2). The interface can at times be slow, but it lets you navigate message threads in a unique way, by clicking on icons in a map that shows linked messages. The interface is not 100% complete; it reverts to a simple terminal emulation when you go to a part of the service not set up for an interface.

Figure 7.2
*CompuServe
Information
Manager (the
ZiffNet/Mac
version).*



CompuServe Navigator lacks CIM's intuitive approach, catering more to the needs of the advanced user. Navigator lets you graphically compose scripts that make the most of your time online. Using Navigator, you can automatically access new e-mail and forum messages, and read them at your leisure when CompuServe's billing clock isn't running. You can also compose messages offline and stay online just long enough to send the reply. Navigator costs more than CIM, but if you are a power CompuServe user who does a variety of routine tasks online, especially trading messages, it offers a speedy return on investment.

ZiffNet/Mac

ZiffNet/Mac (or ZMac) is accessed through CompuServe, with a subset of its services available in the ZiffNet Selections folder on AppleLink. If you join ZMac through CompuServe, you retain your user ID and can move transparently between

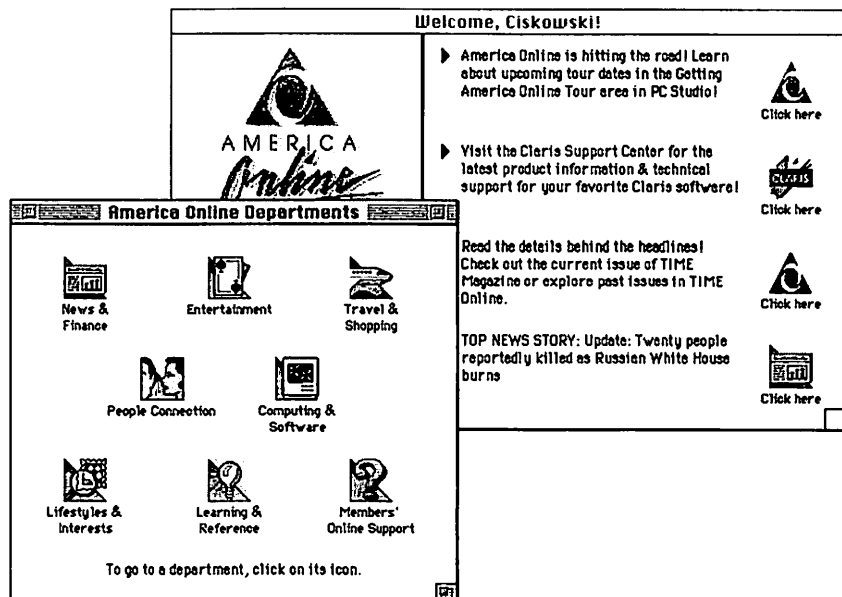
CIS and ZiffNet using terminal emulation, CIM or Navigator. If you use CIM specifically to access ZiffNet, you can even download a special version of the CIM Data file for use specifically with ZiffNet/Mac.

ZiffNet is the online arm of Ziff-Davis Publications, which include *MacWEEK* and *MacUser* (as well as four or five PC-based publications). Here you can access *MacUser*'s MiniFinder reviews, engage in online discussions with *MacUser* contributing editors, and even read the latest *MacWEEK* scoops before they're published the following week. You can download a few articles from current issues of *MacWEEK* and *MacUser* for free; others require searching an archival database and cost extra. ZiffNet/Mac has its own free buyers' guide, a limited but growing shareware library, commissioned utilities not available on other services, and Computer Database Plus, which has indexes of many popular computer periodicals online.

America Online

AOL's bright graphics (see figure 7.3) and amusing sounds endear it to Mac modem enthusiasts. It greets you by literally saying "Welcome!" and, perhaps, "You've got mail!". In the chat rooms, you can designate sounds that will play on others' Macintoshes if the sounds exist on their hard disks. When you leave the service, it will say "Goodbye!" AOL's members are as friendly as their service. Stop by in a chat area and you can find yourself inundated with private, instant messages.

Figure 7.3
America Online
2.0.



America Online steadily improves, while its rates remain reasonable. It provides the standard news, weather, and stock information people expect from an online service. Its Download Manager presents a great method for grouping and deferring file transfers. This year, AOL has attracted popular magazines such as *Omni*, *Time*, and *Wired* to its online fold. AOL is also looking to expand its access to and from the Internet (see below). But the service's message bases make it difficult to follow a train of conversation, and their failure to deliver a promise of 9600 bps access could shame even some politicians.

PowerBook users have a place all their own on America Online in the PowerBook Resource Center. Get there by choosing Keyword from the Go To menu and type "PowerBook." Ross is a forum consultant in the AOL PowerBook forum. You can reach him online by sending e-mail to "AFC Rubin." Road warriors may also find interest in the Nomadic Computing group in the Mac Communications Forum (Keyword: mcm).

Prodigy

Prodigy may just be proof that one million modem users can, indeed, be wrong. For about \$15 per month, Prodigy opens its DOS-like doors to a family-oriented mall sprinkled with pockets of message exchange; no files can be downloaded by Mac users on Prodigy. The service, which curtails costs by selling screen real estate to advertisers, has defended its right to limit electronic mail use and refuse posts and letters it considers offensive to any of its members, its advertisers, or even itself. The ads can be interesting, and they are often targeted based on your demographic profile and interests, but some frequent Prodigy users stick tape over the bottom of their displays to block out the ads.

While Prodigy offers its own access software for the Macintosh, it flies in the face of all Mac software design principles. Windows and icons are left behind; you can't even switch out of Prodigy under System 7. Even if you're a beginner, Prodigy's ugly face and slow speed (it's earned the nickname "Plodigy" for a reason) may make you grumble, but even its clunky graphics are better than none at all.

Bulletin Boards

In addition to the major commercial online services, there are thousands of local, regional, and national bulletin board systems (BBS's). These are often operated by an individual, running on a Macintosh also used for other functions, so they can

come and go without much notice. They are often free or charge a small membership fee, but only rarely an hourly access fee beyond what it costs for the telephone call (it is usually too much trouble for the small-time operators to handle the detailed billing required).

Some of these systems participate in networks, including:

- **OneNet.**

This links BBS's running the FirstClass server on Macs.

- **FidoNet.**

This connects all kinds of BBS's all over the world, with shared mail (sent in the middle of the night, when rates are low) and message conferences.

How do you find a BBS near you? There are lots of places you can find a list. Try computer stores and local magazines, as well as national services and national magazines such as Boardwatch. Once you find one local board, it can probably connect you to many more. Most inter-BBS networks also maintain their own lists of participants.

Some systems require that you register first, or that the system operator (known as a SysOp) call you back to verify your identity. Some provide access only to a limited group of people.

While many systems require you to use a terminal emulation program, like Microphone or ZTerm, and provide just a textual interface, others provide (or let you acquire through the service) a special program that provides a graphical user interface.

One such program which mimics the Mac desktop for online access is called FirstClass. The user group BMUG runs a network of FirstClass systems collectively known as Planet BMUG.

Other graphical-interface systems include Spider Island Software's TeleFinder and ResNova's NovaLink. Both can also be logged onto via terminal emulation or through specialized graphical access programs, and both are very popular among organizations and small business setting up their own BBSes.

TeleFinder is simpler to set up and maintain than First Class and closely mimics the Finder. For example, to download a file in TeleFinder, you drag it from the host's

window and copy it to your hard disk icon. TeleFinder BBSes tend to have less cluttered interfaces than their First Class cousins. Like TeleFinder, ResNova's NovaLink costs much less than First Class, although it is more of a hybrid between a text-based system and a graphical one. If TeleFinder acts like the Finder, NovaLink acts like HyperCard.

Internet

With the Internet all the rage in political circles these days, no mobile maven should embark on the road without some knowledge of how to connect to this vast "mother of all networks". How you get into the Internet will depend on what you want to get out of it. Joining just about any online service (or even bulletin boards connected via the FidoNet BBS network) will get you an Internet address that's good enough for most electronic mail. AOL, CompuServe, AppleLink, GEnie, and other services all have electronic mail access to the Internet. Prodigy access has been rumored for some time, but has yet to appear. America Online is on the verge of expanding its Internet services.

To take advantage of other Internet services, such as file transfer via the ftp program, you may want to subscribe to a dial-up service available through services such as Delphi nationwide, The Well on the West Coast, and The World on the East Coast. There are dozens more, each with their own pricing plans.

Tip: If you're really intent on surfing the Internet, may we suggest Adam C. Engst's Internet Starter Kit for Macintosh, published by Hayden Books, as your surfboard. It has everything you need to connect to The 'Net and should be available wherever you picked up this book.

Faxing

In business, fax machines have become almost as common a communications tool as the telephone itself on which it relies. Although a modem can also be used for transferring either data or faxes, the form the data takes on the other end is very different.

When your PowerBook sends a fax, it takes each page and converts it to a graphic image. These graphic images are then transferred to the remote fax machine, which acts as a medium resolution non-PostScript printer. The resolution of a fax machine

is approximately 200 dots per inch, higher than an ImageWriter II but not nearly as high as a LaserWriter or StyleWriter. And, unlike LaserWriters, faxes lack Adobe PostScript for producing high-quality graphics, so you must use TrueType or Adobe Type Manager to get good-looking text on the other end.

General principles

Although each vendor's fax software has some unique features, by and large, the steps you take to send a fax are as follows:

1. Create the document.
2. Open the Chooser and select the fax icon.

Most fax programs let you press a key to toggle between the fax driver and your normal printer driver. In others, this step is not necessary because you can directly choose a fax command in step 3.

3. Select your application's **Print** command.

Some fax software lets you skip step 2 and just hold down a modifier key while you choose the **Print** command to change it to a **Fax** command.

4. In place of the application's print dialog boxes, a fax dialog box appears.

This enables you to specify the phone number you want to fax to, the cover sheet (if any) you prefer, and whether to send the fax now or when you are connected to a phone line or when rates are lower. Most programs let you select entries from a previously-created fax phonebook or add your own entries on the fly.

5. The fax is sent in the background while you work.

Most fax software notifies you when a fax is sent or when repeated attempts to send it have been unsuccessful.

It is even easier than it sounds in most cases. Generally, a separate application or control panel lets you create cover sheets, configure the system, import phone books, and manage faxes.

If you don't have a printer with you when you're on the road, you can print by faxing a document addressed to yourself to the hotel's fax machine, often without having to make a (surcharged) outside call. Call the front desk to find out the extension and whether there's a charge for incoming faxes.

In general, fax software only works with a particular model fax modem, and it is bundled with that modem. However, in a number of cases you can choose fax software that works with several different brands and models, or replaces the software included with a particular model. For instance, Global Village now sells a version of its popular PowerPort software that works with the Apple Express Modem.

For a comparison of particular fax modems for PowerBooks, skip a few pages ahead, to the modems section. Keep reading on for tips about comparing fax software.

Options

Some of the basic features to look for in fax software include:

- Fax phonebook import.

This is especially important if you've been using a fax modem already, or you have a lot of fax numbers in a contacts database. If you have to re-enter all your fax numbers by hand one by one, you'll be much less likely to take full advantage of your fax modem.

Global Village's PowerPort software does this quite well; FaxSTF also does a decent job. There is no import function in Apple's fax software, as of this writing.

- Compatibility.

Find out, from people who actually have tried the software, how reliable the fax software is with the applications you use. Some fax programs consume so much memory and disk space when they are transmitting a fax that your applications become slow and unusable. Others are simply buggy (Apple's Duo Express Modem software has been notorious in this respect) that your PowerBook simply seizes up, forcing you to interrupt the power and reset the system. Some simply rely on system extensions that conflict with other essential system extensions, making them unusable for your particular environment. Discovering this when you're in the middle of trying to send someone an urgent fax message is not a pleasant experience, I can say with certainty.

Another aspect of compatibility is application-specific: some programs use nonstandard menu items for print commands, so the single-key shortcuts for faxing directly from the program without visiting the Chooser don't work. CE Software's QuickMail is a good test for this: it doesn't have a print menu item, but instead a print button in a window. Most fax software makes you take the "long way around" (selecting the fax modem in the chooser) to work with this sort of application.

- Features.

Does the software let you delay a fax to be sent at a later time? Do you see previews as it is imaging (printing to disk) your documents? From what file formats can you import pictures into cover pages? Can you maintain multiple identities, changing the header and cover sheets on your faxes without a whole lot of hassle?

Remote Possibilities

AppleTalk Remote Access (ARA) may be the most elegant software ever developed for connecting to a network from a remote site. And the best part about it is it's free, well, OK, it's not free, well, I mean, er, part of it's free, sometimes. When Apple first introduced the PowerBooks, ARA was included as a freebie. But seeking to raise its success to that of HyperCard or MacPaint, Apple stopped including ARA and began selling it separately for \$199 per three machines.

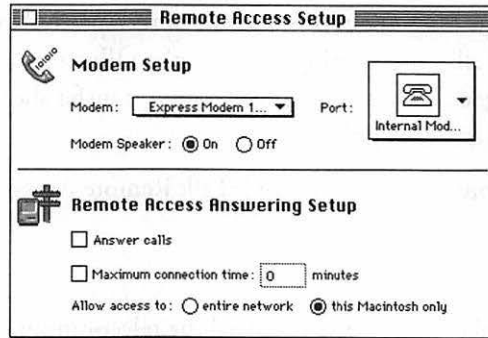
When Apple released the low-cost PowerBook 165, they decided to include ARA again, but only the part that lets the PowerBook call another network, not the part that lets another Mac call the PowerBook. This is probably what most Apple customers wanted anyway. Now that Apple has decided how to handle ARA, you can expect this policy to continue well into this afternoon.

So now that you know how you can get it, what does it do?

When fully installed, ARA enables you to prepare a Macintosh so that modem users can connect to it. Within the Remote Access Setup control panel (see figure 7.4), you can specify whether callers have access to just the machine running ARA or the whole network. It's generally a good idea to avoid the latter option if your network administrator's tendency to overreact rivals most professional wrestlers'.

Figure 7.4

The Remote Access Setup control panel enables you to designate just how remote users can connect to your Macintosh, and what they can do when they do connect.



Note that you don't need to even dedicate a Mac to the mundane task of answering phone calls, as Shiva's LANRover and Cayman's GatorLink can answer ARA calls.

Of course, once people connect to your machine (or network), they will probably want to at least print or exchange files. Printing is pretty simple because, once you connect with ARA, you have access to virtually all network services normally available in the Chooser.

You can trade files using programs like Farallon Computing's Timbuktu, which also allows you to control the screen of another Mac or PC running Timbuktu. To the surprise of no one, though, ARA is well-integrated with the file sharing built into System 7. When setting up your Users and Groups file for System 7 file sharing, ARA enables you to control whether a user can connect, and even specify a phone number the Mac can call back to ensure the person calling is the real McCoy. (ARA will not specify if it encounters a Hatfield.)

Dialing in the first time with ARA can be tedious if you're connecting to a file server that can work over ARA, such as AppleShare, System 7 file sharing, Novell Netware, or Banyan VINES. After ARA dials the number and establishes the connection, you must access the Chooser, click the AppleShare icon, select a file server, and, finally, a volume. You may then have to double-click a few more times to unearth your well-concealed folder with the important documents.

Those who have grown weary just reading these steps should take heart. Once you connect to the file server, you can make an alias to the volume and leave it on your desktop. From then on, clicking on that alias will automate the whole process. All you may need to enter is your password for the file server. Once connected, you can drag files back and forth in the Finder. Remember, though, that even the fastest

modems offer about one percent of the speed of even a slow network like LocalTalk. Transferring the Complete Illustrated Sports Encyclopedia is probably not a good idea, although feel free to transfer shorter documents such as Red Sox World Series Highlights.

For more discussion of AppleTalk Remote Access, see chapter 2, “Mobility.”

Modems

The ticket that gets you aboard the telecommunications express train is a modem. These devices handle the connection to the phone line, translating from the analog tones you hear to the digital language your PowerBook speaks.

There are so many different options available that we can only hope to skim the surface here, giving you a few pointers about what to look for when shopping for a modem.

PowerBook users right now can choose between two types of modems: internal and external ones. All the PowerBooks have an internal slot for a modem, but the slots are not the same among all the models, so, for instance, an internal modem for a Duo could not work in an all-in-one PowerBook. External modems plug into the printer/modem or modem (serial) port, and draw on external power or their own battery.

Internal modems have a lot going for them. They add only an ounce or two to the total weight of your PowerBook, and they take up no extra space. You don't have to worry about finding an electrical outlet or replacing a separate battery, as they draw power (just small amounts) from your PowerBook's circuitry. You can't leave one behind, and you don't have to think about it much: just plug in the phone cord to the back of your PowerBook or dock, and log on.

However, externals can be less expensive for a given feature set, and they are more easily installed (you just plug them in) and replaced as technology advances. You don't have to open up your PowerBook to put one in. (With the Duos, this can cost you up to \$75 to have done professionally; if you do it yourself, you run a high risk of breaking one of the many fragile internal components.)

Let's take a look at some of your options in each family.

Internal

A fair amount of competition has blossomed in the internal modem market since the first edition of this book. Where once could fit only a meager Apple offering, now dozens of third-party Powerbook modems flourish.

It's a different story for the newer PowerBook Duo line, however. Apple switched to a radically different interface, form factor, and technology for Duo modems, making it impossible to use any all-in-one PowerBook modem design. And Apple chose not to release the specifications, initially locking out any third-party options. Third-party products will soon arrive, however.

All-in-one PowerBooks

The overwhelming majority of 100-series PowerBooks that have a modem use an internal one. The small price differential between low-speed and high-speed modems has pushed people toward the speed limit as well. When the PowerBooks debuted, high-speed modems that moved data at 9600 bits per second (bps) were a luxury. Today, having a v.32*bis* modem capable of transferring over 14,400 bps is common, and they've thrown in fax send and receive, too.

Internal modems are available from a variety of vendors, including Apple (the Express modem, which won't work with the PowerBook 100, 140 or 170), Supra, Prometheus, Twincom, and PSI. Sometimes, getting two modems from disparate vendors to talk to each other makes Middle East peace accords look easy. Therefore, if you use a Supra or Global Village modem at a desktop Mac, consider using the same brand for your PowerBook.

With the exception of Global Village and PSI, who sell exemplary but proprietary fax software with their modems, most of the lower-priced modems are based on chips sold by Rockwell and work with FaxSTF, a thoroughly usable if sometimes less than elegant faxing program. Keep moving down the mail-order ad if you find a fax modem ships with QuickLink. It's odiferous.

Users report excellent consistency from PSI and Global Village Communications, although they may cost as much as \$100 more than cheaper brands. Still, if you're going to be a heavy telecommunciator, it's easily worth the peace of mind. Make sure to check out reports of fax software reliability and the quality of the vendor's ARA scripts. Companies crossing over from the DOS world such as Supra have had

a tough time getting their scripts to work well. While support from modem companies is generally abysmal, make a technical support call or two to test the waters.

Duos

Duo modem choices originally hearkened back to the Ford's Model T. You could get any brand you want—as long as it was from Apple. Global Village (and supposedly Twincom) will soon offer internal Duo modems also. When it was released, the Express modem had a great spot on the price-performance curve, offering v.32*bis* data transfer and send/receive fax for a little over \$300. Apple got there by implementing key features of the modem in software. That is, the Duo's CPU handles duties that would normally be carried out by extra hardware on the modem.

After a few false starts, the Express Modem software is relatively stable, but it still garners many complaints on everything from failing to connect to dropping connections. Others report smooth sailing with their Express Modems, but must often enter arcane AT commands (see below) for it to work with their favorite online service.

Alas, the Duo owner does have some choice when it comes to their faxing. Global Village has released a version of their premiere fax software for the Duos. While it provides a cleaner, more feature-packed interface than Apple's capable offering, it can't help reported problems with its reliability.

External

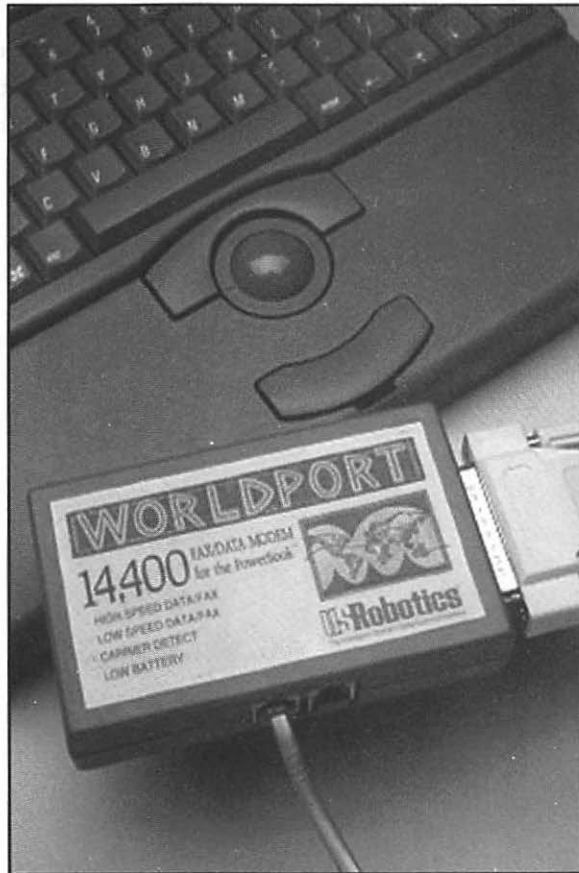
You have a wide range of choice in external modems for your PowerBook. The basic design has been standardized for years, and the vast quantities sold to people with not just Macs but also all kinds of PCs has led to an incredible amount of ongoing competition. And for you two-Mac families, you can switch externals from your PowerBook to your desktop with minimal fuss.

The basic standard in external modems is known as "Hayes-compatible" or "AT commands. All this means is that most manufacturers have patterned their modems and the command structure they use after that popularized by Hayes' modems years ago. The commands all start with the letters "AT", which stands for "ATtention modem, here comes a command," in this case. There have been some variants on this and some nasty battles fought in and out of court, but any reputable modem

for sale today should have a pool of users who can describe their experience. Standard cables available nearly anywhere can connect your PowerBook to most modems.

If you use your PowerBook on the road, you will probably seek out an external modem that is very compact and portable. Candidates include the Telebit QBlazer and USRobotics WorldPort (see figure 7.5). Glossy marketing photos can be deceiving, though. Does the power supply weigh a ton and block seven outlets? Do the cables become tangled easily? Can it fit your PowerBook's carrying case?

Figure 7.5
*The USRobotics
WorldPort external
modem.*



An increasingly popular type of modem is a battery-powered one, with its own (usually nine-volt) battery eliminating the need for an external power supply. While they let you work untethered, the batteries often can't last much longer than a typical PowerBook battery. That can mean lugging even extra gear around.

Summary

You can lead your PowerBook to an online service, but can you make it talk? If the answer isn't yes, go back and reread this chapter.

Seriously, communications is a challenging area, one in which the graphical standards common to other Mac applications have been slow to emerge. However, there has been a lot of competition in this area recently, and telecommunications promises to be an area with much innovation and progress in the near future.



Chapter

8

Unique PowerBook Uses

Although PowerBooks can run the same programs as desktop Macs, what's the fun in that? What's really exciting is the ability to run new kinds of programs that simply aren't practical or possible without the mobility and freedom provided by PowerBooks.

For example, PowerBooks equipped with the right software can help you find your way around town, or across the country. They can keep you not just in touch with the office, but rather, through wireless and dial-up communications, make it as if you were there.

While the function of a PowerBook as a note-taking assistant may seem obvious, there are particular programs and ways of using them that make it simpler and more efficient, and the ability to not just write your own creations but also read formatted books and documents means you can lighten your load and stay entertained while in transit.

Navigation

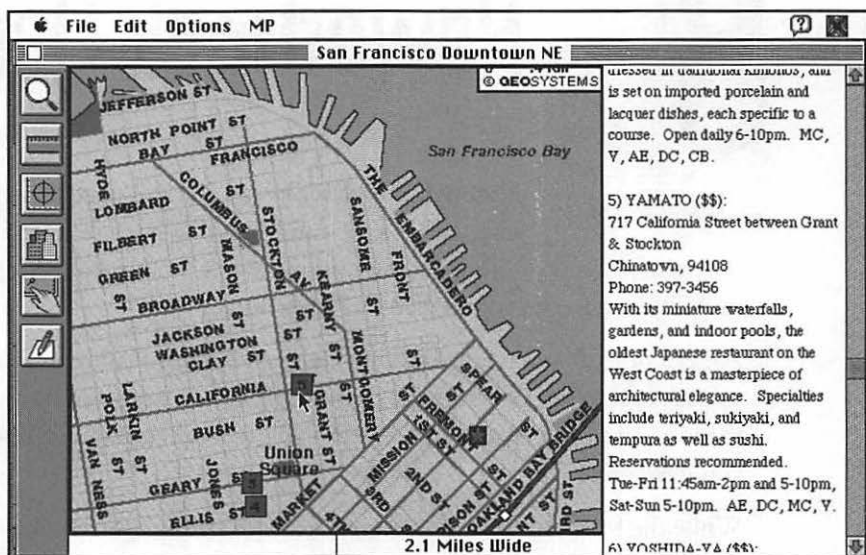
If your PowerBook is always under your arm, you can put it to use to help you find your way. A number of developers have converted maps, tour guides, and other navigational tools to a computerized form and, in some cases, have made these tools much more powerful in the process.

Local Expert

Strategic Mapping was well-known in the desktop mapping community for its mid- to high-level products for both editing maps and plotting data on maps.

But the company broke new ground when it licensed guidebook contents for dozens of cities and combined it with easy-to-read maps optimized for screen display. The result, Local Expert, really helps you become a “local expert” wherever you go (see figure 8.1).

Figure 8.1
Local Expert.



The program comes with general maps of the the world, the United States, and interstate highways. It can zoom in on an area by ZIP code or area code, show you time-zone differences, and calculate distances between locations.

But the real fun begins when you purchase the program’s add-on city modules by mail, fax, or phone (one city of your choice comes free with registration). For cities, it shows local street detail and you can search for restaurants, hotels, events, and attractions. For example, you can search for vegetarian resaturants in London and Local Expert will display a list of choices. It plots the places you find on the map and shows ratings, in terms of quality and cost, along with reviews.

The city modules are updated monthly and include information for a two-month period on cultural events, sporting activities, and the like. So you can not only find the stadium when you come to a town, but also discover what team is playing the night you’re there.

You can also import your own data files, tagged by ZIP code, and Local Expert can plot and analyze your data. So, for example, if you finish your work early while on a business trip, you can import your contacts database and locate the friends nearest to you.

Other Directories and Guides

Some other developers are publishing electronic guides and navigation tools. Some take the form of HyperCard stacks (these days often made into stand-alone applications) that you can browse and customize with your own data.

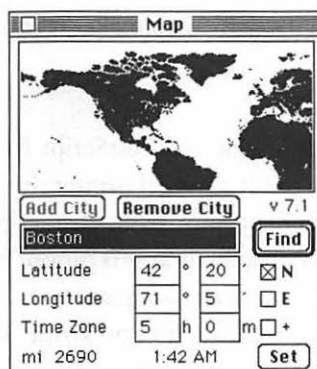
For instance, Digital Lantern publishes a guide to San Francisco restaurants based on reviews by the Precision Dining Association. The guide not only includes descriptions and numerical ratings of the service, food, atmosphere and other attributes of the 3,000 or so restaurants it lists, it shows you how late they are open and where they are on a city-wide or neighborhood map. It goes beyond just repackaging a set of information designed for print publishing, adding interactivity (plus sound samples) that lets you quickly decide where to go, anytime.

Even Apple is getting into the act, by making available several mobile-computing services on its AppleLink online service. See chapter 7 for more information on the weather, route-planning, and city information services available online.

Map Control Panel

Many PowerBook users overlook a piece of system software present on all Macs—the Map control panel (see figure 8.2). This program lets you look up the location and time in a number of cities, plus re-set your PowerBook's clock while you travel.

Figure 8.2
The Map control panel.



Reading

What is a PowerBook if not a form of book? The crisp screens, especially on active-matrix PowerBooks, make the systems suitable for computer-assisted reading of documents, books, and other materials.

While you can certainly read whatever you feel like reading on your PowerBook, certain programs are less distracting and help you focus on the text at hand. Others let you print existing documents to disk in a format suitable for viewing without the original application used to create them.

Expanded Books

Multimedia producer Voyager Company has made a niche for itself with both its own Expanded Books and the tools for other publishers to create their own books.

Expanded Books are specially-formatted HyperCard stacks created from Word documents and designed to be read online. The pages are sized to fit the screen. You can annotate the text, typing in your own margin notes and marking passages for later reconsideration. Several tools help you navigate around the text and see illustrations and related sections, as well as simply page through sequentially and mark your place when you need to take a break.

Voyager publishes a number of fiction and non-fiction Expanded Book titles itself; titles include *Crime and Punishment*, *The Pelican Brief*, and *Zen and the Art of Motorcycle Maintenance*. Other authors and publishers are now using Voyager's tools to create and publish their own content.

Expanded Books look their best on a crisp active-matrix PowerBook, like the 180. However, a lightweight Duo makes it easier for you to read in bed!

Adobe Acrobat

Adobe Systems developed a PostScript-based document viewing format and utility called Acrobat. With a special printer driver, PDF Writer, users can print to disk in "Portable Document Format," a PostScript-based format that preserves the appearance of a document as it is moved between computers with different fonts, imaging systems, and operating systems. A stand-alone application, PDF Distiller can create Acrobat files from PostScript documents.

You can use PDF Viewer to read the resulting document. What makes this interesting is that you don't need to have the original document's fonts to be able to see what it looks like formatted. It uses SuperATM's ability to mimic most fonts to recreate an approximation of the original document's layout.

Acrobat PDF Viewer and Player sell together for about \$100. A Windows version will follow, along with tools to help authors publish data in electronic form.

Other Paperless Publishing Options

The concept of "paperless publishing" really took off in 1993, and not just because of PowerBooks. All kinds of computer users were looking for ways to exchange information when not every recipient of the info had the same application—or even the same type of computer—as the originator. People were also seeking ways to conserve paper for environmental reasons, and to reduce clutter in their lives.

Most of these programs work more or less the same way as Acrobat: Users select a special print driver that "prints" the document to a disk file, rather than sending it to a printer. The resulting file is either a stand-alone application (self-contained viewer and document), or a document that can be opened with an inexpensive, widely-available viewer application.

As a PowerBook user, you can take advantage of the compact storage form these programs use to save disk space. These programs also (try to) retain the original layout of the document, even if you don't have the original fonts installed when you open the viewer, so you don't have to load up your hard disk with PageMaker and all the fonts in a document to read it if you've created a viewable document with one of these utilities.

No Hands Software calls the document format of its electronic publishing technology DigitalPaper, and even trademarks that name. Common Ground (the software that makes it work) stores images of the printed text in documents in several forms: text and font information, and bitmaps at resolutions of 200 dots per inch (for faxing), 100 dots per inch (for Windows systems), 72 dots per inch (for onscreen viewing) and optionally, 300 dots per inch (for printing). One of the page-size options in the program lets you create PowerBook-screen sized pages so you don't have to scroll around to see all the text.

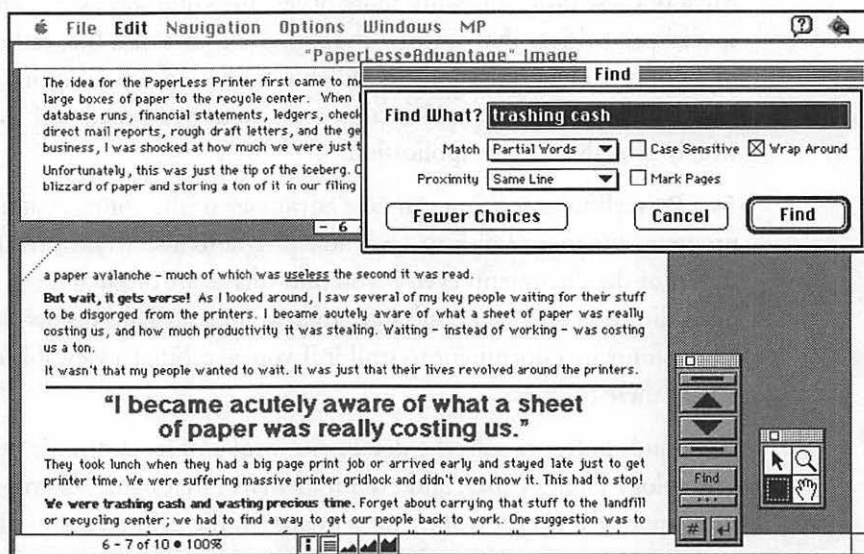
You can create DigitalPaper documents by selecting the Common Ground driver in the Chooser, or by using a special application that processes several at a time. Once you've created a document, the viewer lets you browse through, play an attached sound the creator used to annotate a file, and export the text. It also lets you create section guides to show it where columns of text are on a page so it can export and select text in order more accurately.

Future versions (after 1.0) are expected to add hypertext links, automatic table-of-contents generation, and user annotation and markup of documents.

Nine to Five Software's PaperLess Office offers similar functions (see figure 8.3). When browsing a PaperLess document, you can perform proximity searches, print several documents in sequence, and print just selected pages of a document. It relies on the system's built-in font substitution, rather than Acrobat's technique of mimicking font metrics.

Figure 8.3

The Paperless Office.



Every PowerBook comes with HyperCard Player, which lets you run HyperCard stacks. Stacks are documents that can include formatted text, graphics, and interactivity. The latter comes both in the form of links between cards (pages) in the stack, as well as miniature programs, called scripts, that can rearrange the screen, solicit your input through dialog boxes, activate other programs, and even play music.

Voyager's Expanded Books are HyperCard stacks, with a custom layout and scripts designed to make browsing easy.

If you have the full-blown HyperCard (in transition from Claris to Apple as of this writing), you can create your own stacks or adapt existing ones to suit your needs. You don't need to know how to program, but a sense of design (or the ability to copy a decent layout) can help improve the quality of your stacks.

Text Documents

Often, all you need to do while on the road is to read a text file that you've previously downloaded or go over your notes from a previous meeting. The TeachText text-editor that comes with your Mac is ideal for reading small-to-medium size documents (up to 30K), without waking up the hard disk. The next section includes more on the benefits of using TeachText.

Other word processors are also useful for reading text, but some (Microsoft Word seems to be the worst culprit) wake up the hard disk when you do something as innocuous as using an arrow key to move the cursor. Even if you put Word and the document you're viewing on a RAM disk, the program tries to read a preferences file from the hard disk. Turn back to chapter 5, "Productivity Applications," for advice on word processors well-suited for mobile operation.

Notetaking

As you might well suspect, this entire book was written on a PowerBook. But what you may find more interesting is the amount of note-taking, from interviews, phone conversations, online discussions, and background research, that the PowerBook made possible as well.

The key, as usual, is to pick the right programs to make it easy to take notes without having to take a lot of time to set things up beforehand. It is also useful to be able to keep on typing nonstop, without having to wait for the hard disk to spin up.

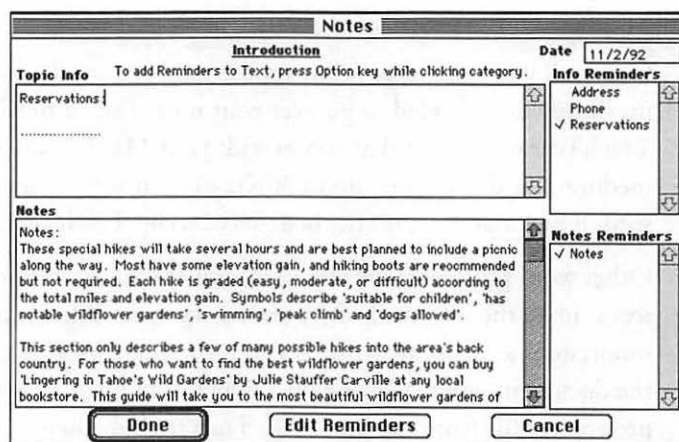
Spiral

This utility from Technology Works aims to help you take notes without waking up your hard disk, except when you want it to. You can program in abbreviations and have it automatically expand them, and rapidly navigate between text sections.

Notetaker

Notetaker Software offers a different approach to taking notes (see figure 8.4). Notetaker lets you use an outline to organize your thoughts as you take notes. You can set up guides to remind you to cover certain topics in a note or an interview, and attach reminders to outline items. It can collate your outline to prepare a presentation and export text.

Figure 8.4
The Notetaker interface.



Some outlining programs, such as In Control (see chapter 5, “Productivity Applications”) are also useful for on-the-road notetaking. Watch out for full-bore presentation programs like Aldus Persuasion, however—even though they include outlining functions, they can be quite large and unwieldy.

TeachText

The TeachText application that comes with your Mac is ideal for taking notes on your PowerBook. The program’s key benefits are:

- **It’s small.**

The program occupies only 36K of disk space and uses just 192K of RAM, so you can run it and several other programs at the same time.

- **It doesn’t wake up the hard disk.**

You can just type and type and type, up to 30K at a stretch.

- **You can’t beat the price.**

TeachText doesn't present any strange dialog boxes while you are working, so you can shut off the backlighting altogether and take notes as a meeting progresses. Don't worry about making spelling errors, just try to capture as much as you can and deal with cleaning up the text later. With the PowerBook on your lap or a table, closing the lid most of the way reduces the noise of fast-typing on your keyboard.

In my work for *MacWEEK*, I find I can capture nearly everything said in an interview, speech or conversation by typing as fast as I can, omitting obvious statements such as "I think that..." and liberally abbreviating. If you focus on listening to what the person is saying and put your fingers on autopilot, you can catch up during pauses if you fall behind. In an interview, abbreviate your own statements, or pre-type questions you plan to ask and insert just a question number when you ask it.

Do be careful when you go to save your work. If you have drained the battery to a very low level with the backlighting and hard disk off, the PowerBook's power manager can become confused when both come on at once, causing the system to immediately go to sleep. I have also lost data when a battery came loose in transit.

Writing in Other Programs

You can certainly use whatever program you like to take notes with on your PowerBook; I'm not about to stop you. But if you choose wisely, picking a program that avoids waking up the hard disk or using other power-hungry system resources unnecessarily, you'll be a happier camper.

Chapter 5, "Productivity Applications," includes recommendations on the most power-efficient ways to use mainstream word processors, including information on versions of word processors designed with the PowerBook user in mind.

Mobility Breeds New Applications

This chapter wasn't present in the first edition of this book, because, frankly, there weren't any PowerBook-specific applications out then. But if the number of new categories that have appeared in the short time since then is any indication, by the time you read this there will be dozens of new types of applications and many more entries in the categories listed here.

Some of the important things to consider when you are evaluating any new type of program are:

- **Practicality**

Does the PowerBook really add value to the task, or is it just a gimmick? Does it make it easier, faster, or less expensive? Could you get by without it?

- **Robustness**

Many first-generation products don't have the benefit of years of testing and experience with how they are used. As a result, be especially alert for design flaws and omissions, as well as outright bugs, in any product first in a new category. You may find yourself unexpectedly part of a paid-beta test program!

- **Resources**

How much hard disk space and memory does the program use? Could you better dedicate that space to something else?

Is there something you wish your PowerBook could do for you? Let the world know. Software developers are always looking for new opportunities, and you're in the best position to tell them what you would buy. If you design your dream application yourself, you can tailor it to match your needs as closely as possible.

Part III

Buying a PowerBook

Congratulations! If you're reading this section, chances are good that you're planning to buy a PowerBook. A fine decision, if I may say so. Even finer if somebody else is going to buy you a PowerBook, but certainly respectable enough if you are buying one for yourself (and even more impressive if you are buying one for somebody else).

I'll warn you right now, before we even start to explore the dizzying array of options, that buying a PowerBook can be a challenge. Just when you think you've got your choices nailed down, Apple adjusts the prices, introduces a new model, or discontinues an old one. Or Apple, in an oft-repeated move, drastically underestimates demand for one of its models, inducing a "temporary" shortage that seems to go on and on.

If buying a PowerBook is a challenge, writing about buying one is a really big challenge. Not only because every buyer's needs are unique, but also because by the time you read this, Apple likely will have released several new models. The prices change so rapidly that there is no point in listing them here, but I'll include background about the pricing histories of some models to help you predict where prices will go.

What I can do here is equip you with the understanding of not only Apple's current product offerings, but also:

- **Technology**

If you can understand what makes a PowerBook a PowerBook, and what makes the current models unique, you can figure out what's special about a new system when it is introduced.

- **History**

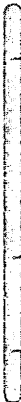
Even though prices always seem to be coming down and technology always marching onwards, you may find a better deal on a used model no longer sold by Apple. I'll fill you in on how the no-longer-made models compare to the current state of the art.

- **Trends**

I'll discuss future products under development, and the ways the technology is likely to evolve.

- **Purchasing process**

Where, when, and how you buy a PowerBook can make a big difference in how much you pay and the level of support you get afterwards.



Chapter

9

Classic PowerBooks

The design Apple employed in the first PowerBooks lives on to this day. I call it the “Classic” design, not because it has anything to do with the Macintosh Classic and its desktop siblings, but because I expect that we will see several more PowerBooks using the same basic design before Apple puts it out to pasture. I also use the term to distinguish the PowerBook

100, 140, 170, 180 and family from the Duo line, which is a second-generation PowerBook line and fodder enough for a whole separate chapter (see chapter 13). What I call a “Classic” PowerBook I’ve heard others call an “all-in-one” unit, as contrasted with the “docking” Duos.

The PowerBooks introduced in October, 1991 included the 100, 140, and 170. While those particular models are no longer manufactured, several systems only slightly different from the latter two are still popular today (see figure 9.1).

PowerBook Prehistory

To truly understand the PowerBooks as a product line and the relationships between particular models, you need to explore the catacombs of Apple’s history.

The company was changed immensely by the introduction of the Macintosh in 1984. Before that time, Apple’s main product was the Apple II, which had done well but was not powerful enough to compete with IBM’s then-new PC standard and the PC clones that were just-then emerging.

The Macintosh systems were radically different from what came before, featuring a graphical user interface and new types of applications not possible on character-based systems. Throughout the 1980s, this uniqueness carried with it an extra-high price tag, preventing Apple from capturing more than 10 percent of the burgeoning PC market.

Figure 9.1

*The basic
PowerBook shape.*



While the compact Macs (Plus, SE and SE/30, since supplanted by the Classic, Classic II and Color Classic) were fairly transportable, compared to most desktop systems, they were no more than portable by any stretch of the imagination. They weighed about 20 pounds, and included a bulky, fragile television-style monitor.

Some third-party developers took the pieces of a desktop Mac and repackaged them in portable form, but these solutions were largely hand-assembled, adding thousands of dollars to the price of the system. The company that pursued this route most successfully was Outbound Systems Inc., which offered first a ten-pound and then a six-pound laptop system before it ceased operations in early 1993.

In September, 1989 Apple finally released the Mac Portable. The heavy (seventeen pound), bulky system included a number of unique innovations, but it was ultimately successful in only a limited number of applications. Apple's long product-development cycle at the time prevented the company from being able to quickly respond to competitive pressures, at a time when other PC makers were offering ever-more-powerful laptop systems.

The company in early 1991 came out with a backlit version of the Mac Portable and reduced prices substantially. Some people and companies still use the units as a transportable Mac, and in areas where electrical power is unreliable. Believe it or not, they are even used aboard the space shuttle, for experiments designed years ago, before PowerBooks existed.

Early PowerBooks

You can think of the history through this juncture as a learning experience for Apple. The Portable taught the company that while the full Macintosh experience was important, weight and size also played a role. In October, 1992, at the Las Vegas Comdex show, Apple rolled out its PowerBook line.

Each of the systems is unique, although most of them are based around a single design concept. Here follows the background and history of that first generation and the variants Apple developed.

PowerBook 100

Although the PowerBook 100 was introduced alongside two other models in October, 1991, it is generally thought of as the first PowerBook because it was less powerful than other systems introduced at the same time and because it represented an unusual experiment for Apple. Apple turned to consumer-electronics manufacturer Sony Corporation to actually produce the PowerBook 100, at a time when it performed nearly all of its own manufacturing for other Macs.

The system used the same internal architecture as the Mac Portable, but a physical design similar to other first-generation PowerBooks. It was smaller than other systems, and lighter, in part thanks to another experiment: the PowerBook 100 had no internal floppy disk drive, although users could add one externally.

The PowerBook 100 did not sell as well as the company expected so Apple discontinued selling the product through regular computer dealers in 1992 and unloaded its supply of the systems by slashing the prices below \$1,000 and selling them through electronics mass-merchandisers.

Many people still prefer the 100 to the other PowerBook models, because of its light weight and small size. Although it is slow by comparison to other PowerBooks, it certainly suffices for note-taking and many other tasks.

PowerBook 140

The mid-range entry in Apple's initial crop of PowerBooks, the 140 featured a 16-MHz 68030 processor and a passive-matrix black-and-white display. It has since been replaced in Apple's lineup by the PowerBook 145B and 160.

PowerBook 170

The 170 was Apple's most successful first-generation PowerBook, with buyers choosing it above all the other entries because of its high speed and crisp black-and-white active-matrix screen. It became, briefly, a status symbol in certain circles, until it was discontinued in late 1992 with the introduction of the 180.

The 140, 170, and 145 shared the same logic board, making possible some interesting third-party upgrades to speed up and otherwise enhance a 140 and make it as fast as a 170.

PowerBook 145

The 145 combined the performance of a 170 with the screen of a 140. It was, until the introduction of the 145B, the entry-level PowerBook. Apple experimented with selling it through its mail-order catalog as well as through traditional computer outlets.

PowerBook 160

Apple's mid-range "classic" PowerBook, introduced in late 1992, took the design of a PowerBook 145 and added video output, a built-in microphone, and a gray-scale passive display. Like the 140 and 145, it lacks a floating-point coprocessor.

The 160 and 180 comprise a sort of 1.1 version of the original PowerBook 140 and 170 design—changed a bit, but not enough to call it a new generation. The internal workings were rearranged just enough to force most makers of third-party expansion cards, notably RAM cards, to redesign their products to fit the new systems.

The PowerBook 160 was discontinued in August of 1993 in favor of the PowerBook 165.

Current Classic PowerBooks

At the time of the printing of this edition of *The PowerBook Power Book*, Apple was in the process of filling the gaps in its PowerBook product line. Until recently, you had to make hard choices: An active-matrix or a color screen? Light weight or fast performance? Low price or a full-featured system?

Now, of course, the choices are pretty straightforward: the more you pay the more you get. There are still trade-offs between systems, but these are evening out over time. For more discussion on trade-offs and comparisons, see chapter 11, “Comparison Shopping.”

PowerBook 145B

The 145B, introduced in June, 1993, is identical to the 145 in nearly all respects, except that it costs less than the 145 ever did, has 4M of RAM soldered to the logic board (as opposed to on a separate card), and it does not include system software disks. It is the first PowerBook to sell for a street price of less than \$1,000 before being discontinued.

As it did with the 100, Apple experimented with having another company make the PowerBook 145. In this case, Apple had The Acer Group, a Taiwan-based manufacturer with divisions in the United States, manufacture some systems, so that it could quickly produce large numbers of the entry-level unit to satisfy sudden demand.

PowerBook 165

The PowerBook 165 is an updated version of the PowerBook 160. It increases the clock speed of the CPU to 33 MHz (from 25 MHz), improving processing speed. The PowerBook 165 is also bundled with a collection of software called the PowerBook Software Solutions and Sampler, which includes such tools as AppleTalk Remote Access Client, a PowerBook edition of AppleLink, and demonstration versions of much third-party software.

PowerBook 180

The PowerBook 180 replaced the 170, offering the features of the 160 plus a math chip and processor speeds of up to 33 MHz, and a very attractive gray-scale active-matrix display that kept demand high for many months after it was introduced.

This model remained popular even after the 165c was introduced, because the high price and washed-out pastels of passive-matrix color just didn't cut it with high-end users addicted to active-matrix screens.

PowerBook 165c

When Apple introduced its very first PowerBooks at the Comdex trade show in Las Vegas in October, 1991, other notebook-system makers were already demonstrating flashy active-matrix color systems elsewhere on the show floor. Over the following two years, color notebooks became widespread, so Apple's first color PowerBook was a bit of a letdown when it finally hit the streets in early 1993, at Macworld Expo Tokyo.

The PowerBook 165c is basically a PowerBook 180, with a passive 8-bit color display instead of an active-matrix gray-scale screen. Apple made a number of small changes to the 180's system design to accommodate the larger screen and its heftier power demands.

So who needs color, anyway? Apparently, not that many people, given the lackluster sales of the system at its initial price. The 165c's screen is too poor for presentations, so for most purposes a separate monitor or projection panel connected to a 160 or 180 would suffice.

PowerBook 180c

Now, active-matrix color is another story. The PowerBook 180c, introduced in June, 1993, made color in PowerBooks attractive for the first time.

The 180c is, in all respects besides the screen, essentially the same as a 165c.

Future Classic PowerBooks

Apple will continue to evolve its successful classic PowerBook design, and may even have done so by the time you read this.

Look for newer PowerBooks to be lighter and more powerful, taking advantage of some of the engineering lessons Apple learned in creating the Duos.

Apple may introduce a 68040-based PowerBook once it is able to reduce costs on the high-end CPU now used in most desktop Macs. Motorola's low-power 68LP040 chip, designed for portable applications, will bring even more processing power to the PowerBook line, at even lower prices.

More coprocessors, such as Digital Signal Processors, will find their way into PowerBooks. These will add functions such as speech recognition and synthesis as well as videoconferencing. This innovation may be closer than you think; the DSP chip Apple is using in some of its desktop systems is already a low-power design suitable in many ways for a portable environment.

More and more communications functions will be built-in as PowerBooks evolve, starting with modems. Look for wireless cellular communications, paging systems, and personal digital networks to emerge first as external peripherals, then cards inside the box, and eventually, in the case of the technologies that are widely adopted, as part of standard PowerBooks.

Miniaturization will continue to be the theme in PowerBook storage technology, with larger and larger-capacity drives getting smaller and smaller. The more significant trend, however, will be the move to solid-state low-power technology such as credit-card-sized memory cards preloaded with programs. Sooner or later you'll see PowerBooks with built-in CD-ROM drives.

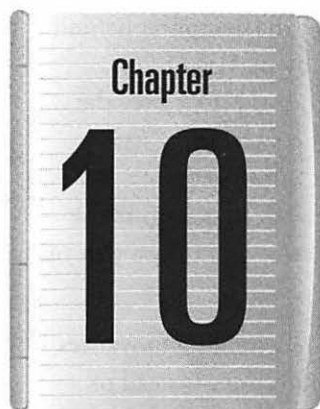
Apple will borrow from its Newton personal digital assistant line the TrimBus design, a variant of the industry-standard PCMCIA (Personal Computer Memory Card International Association) architecture.

Both battery technology and the PowerBook's power-management circuitry will help PowerBooks work longer off of batteries that are lighter and less likely to develop a mind or memory of their own.

Eventually, the advanced PowerPC Reduced Instruction Set Computing (RISC) chips that Apple, Motorola and IBM are co-developing will find their way into PowerBooks.

Summary

The all-in-one PowerBooks provide a simple yet powerful way to carry a full-fledged Macintosh wherever you go. If you can handle the weight, they offer a convenient way to work wherever you are. We'll look at how the various models compare to other systems in chapter 11, after a brief interlude with the second-generation PowerBook family, the Duos.



PowerBook Duos

Apple first showed the second generation, or 200 series of PowerBooks, in October, 1992. These systems were unlike any that had come before in that they separated out many input and output components into separate units, called docks.

A *dock* is a desktop unit that the PowerBook Duo can connect to. The docks contain many of the system components that aren't absolutely necessary on a mobile computer—floppy disk drives, video monitor support, networking setups, full-size keyboards, and the like. By moving a number of pieces out of the main system box, Apple could produce notebooks that were extremely small and light (4.2 pounds). The systems can slide into an Apple or third-party dock at home or work, or use small, portable docks for on-the-road communications or presentations.

The Duos represented a chance for Apple to learn from its experience with the first-round PowerBooks, creating a new architecture without some of the limitations and inconveniences of the all-in-one models. And the company did make a number of improvements, making Duos not just lighter but also sturdier, more reliable, and more predictable than the all-in-one models. And Apple was able to manufacture them more efficiently, and so make more profit while selling Duos for less than all-in-one models with equivalent features.

Last but not least, the docking connectors of the Duos provided a unique way to expand the systems, adding new connectivity options and power not available in other PowerBooks.

Apple is able to make the systems so light and small by leaving the floppy disk drive, most input/output ports, and the related circuitry out of the box. The Duos have, instead, a single 152-pin connector used to connect to docks containing ports, video circuitry, floppy drives and other useful-but-not-always-essential functions. Turn to the next section if you just can't wait to learn about the range of docks available or on the way.

A Duo can be more than an all-in-one notebook system, because you can attach it to the dock of your choice, and select different docks for use at home, at work, or while traveling. You don't have to assemble the one system that meets all your needs at once; instead, you can add new docks as you need them.

People were skeptical of this new concept of leaving part of the computer behind. The concept of docking had been implemented so poorly by makers of PC-compatible notebooks (notably Compaq, Toshiba, Zenith, and NEC) over the years that it still left a sour taste in some mouths. A docking system was seen as “crippled,” less than a desktop and less than a notebook at once. And most PC-compatible docking systems required the user to do extra work to configure the system, and added expansion as an afterthought, rather than as an integral part of the notebook system design.

Apple seems to have gotten it right, however (with only a few minor annoyances remaining). The Duos’ docks provide a single point of connection. Instead of tangling up a rat’s nest of intertwined cables for disk drives, power, printer, modem, monitor, and so on, Duo users just slide in the computer. It makes it easy to come and go as you please, taking your computer with you.

Current Duos

The Duo 210 and Duo 230, the first PowerBook Duos Apple introduced, are identical (see figure 10.1), save for the label on the box and the speed of the processor inside. The 210’s 68030 runs at 25 MHz, while the 230 cruises along at 33 MHz. Their other specifications are shown in table 10.1.

Figure 10.1

*The PowerBook
Duo shape.*

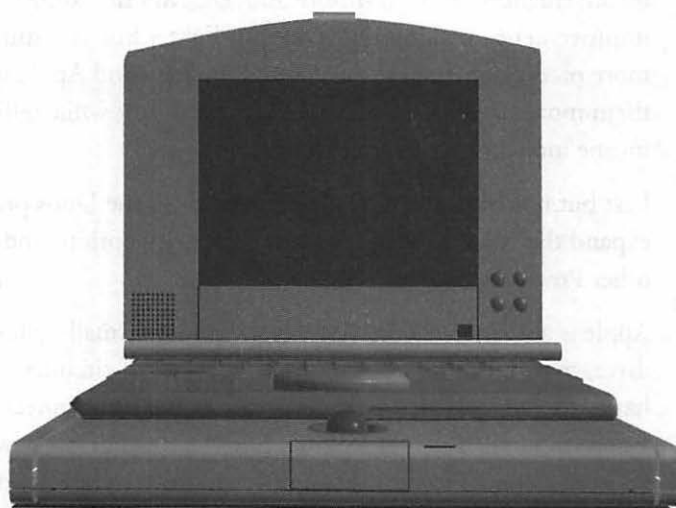


Table 10.1**PowerBook Duo 210/230 features**

<i>Component</i>	<i>Specification</i>
CPU	68030
Maximum RAM	24M
Display size	9-inch diagonal
Display type	Passive LCD
Display level	16 grays
Display speed	200 ms
Display pixels	640 by 400
Trackball size	19 mm
Height	1.4 inches
Width	10.9 inches
Depth	8.5 inches
Weight	4.2 pounds

The Duos include a built-in microphone (between the keyboard and the display) but offer no other audio or video input or output without a dock attached.

The Duos introduced a new type of battery technology to PowerBooks: nickel-metal-hydride, known as NiHy (pronounced “nigh-high”) batteries. This kind of battery delivered more power per pound than the all-in-one PowerBooks’ nickel-cadmium (NiCad) batteries, and was less vulnerable to the “memory” effect that could reduce the time a PowerBook could be used in a session. The Duos included improved charging technology that dramatically reduced the time needed to fully recharge a battery.

The Duos include a magnesium frame designed to both absorb shocks and cool the system. The frame keeps the system from flexing, making it possible to reliably dock with external devices over and over, thousands of times.

The first people to try the systems were impressed with their light weight and many other changes Apple made to improve usability over the first-generation PowerBooks. However, sales were initially slow for a number of reasons.

To start with, the active-matrix screens of the 180, and later the colorful 180c, were so crisp and tempting that they were hard to resist. And with desktop systems rapidly declining in price, it became more economical for many users to have both a desktop and a notebook system, instead of a single Duo that served both needs.

The 210 and 230 faced an uphill battle from the start. The Duos were in short supply, and the docks were even harder to come by, especially in the months before third-party alternatives were available.

As a result, some users could get Duos but no docks, and others docks but no Duos. In the former situation, using them was possible, albeit awkward, but installing applications ranged from difficult to impossible (see the next section for some of the methods that were discovered).

Delays in the only available internal modem for the Duos, the Express Modem from Apple, didn't help impress people with the machines. The modem software used some new internal techniques to save costs, and as a result it turned out to be slow and buggy. The line's reputation was further tarnished. And Apple chose not to release the specifications that would allow other companies to make internal modems.

The keyboards on the first Duos were so mushy that some would drop characters if a user typed too fast, or repeat characters. Apple eventually switched to a slightly noisier but more-reliable keyboard.

However, Apple certainly believes in the Duo concept, and it is investing tremendous resources in improving the line to the point where it matches and then exceeds the power and versatility of the all-in-one PowerBooks. The company learned from its experience with the first-generation PowerBooks to make the Duos easier and less expensive to manufacture. The company is expected to eventually bring its leading-edge technology, including pen input, to the Duo platform first.

Dockless Duos

Without a dock, a Duo has only a limited range of connectivity. It has a single serial port, which doubles as a LocalTalk network connection, and systems equipped with internal modem cards include a phone jack for online communication and faxing.

Some people using Duos feel they can get by without a floppy disk drive, if they have network connections or a dial-up server and other people's drives available to them. But if you try this and you unexpectedly need to reinstall a fresh copy of your system, you'll need to hook up a floppy drive, somehow.

If you don't have another Mac, this, combined with the lack of a floppy drive, could be a serious obstacle to loading your applications and documents into the system, or getting them out when you're done. If you do have another Mac, you can load up a dock-less Duo using your choice of two methods:

- **File sharing**

You can easily set up any Mac running System 7.0 or 7.1 to share a folder or a disk so that the Duo can get to the files over a permanent or improvised network. You don't even need to turn on file sharing if you can plug into a network with a server already running.

- **Dial-up**

AppleTalk Remote Access can be used to transfer information, too. If the Duo has an internal modem (and the modem's software is already loaded), or an external modem compatible with ARA, and there is an ARA server available, you can connect to the network or another Mac through a dial-up connection to transfer software. This technique is much slower than a directly-connected network, however.

Your best bet is to borrow somebody's dock—perhaps your dealer can help—to load up your software from floppy, hard disk, or whatever media it is on.

Duo Docks

Since the Duos were introduced in October, 1992, the range of docking options has greatly expanded. Where once users were placed on waiting lists to get one of the few Apple options, there are now a number of readily available choices for home, office, and on-the-road use.

Some docks block the serial, power, or modem ports on the back of the Duo; if they do, they generally provide a "pass-through" connector that provides the port's function on the dock. Apple's Minidock and Duo dock block the entire rear of the machine, while the floppy and SCSI adapters block no ports.

Alas, there's no way to add memory through the docks. However, docks can add video RAM, coprocessors, accelerators, caches, ports, interfaces, and some other types of devices.

Most docks are multifunction in nature, because you can only plug in one at a time; others offer only a few functions, but are inexpensive, small, and light. Developers always try to both make their products unique and at the same time satisfy existing needs. That said, here are a few of the general categories of docks available and on the way:

- **Desktop docks**

These docks transform the Duo into a full desktop computer, with slots, a monitor, disk drive, SCSI output, and the like. You slip in the Duo like a tape into a videocassette deck, and do just about everything you could do with a desktop Mac.

As of this writing, the Apple Duo Dock is the only entry in this category, although many people use the MiniDock and other docks for this purpose.

- **Transportable docks**

Many lightweight docks add video and audio output, a SCSI port, and a printer port. These docks slip behind (or, in the case of Apple's MiniDock, behind and under) the Duo, so you can continue to use the built-in screen (unlike the DuoDock, where it is folded out of sight).

Examples include the SuperMac [E-Machines] PowerLink Presenter and RasterOps DuoMate.

- **Adapters**

These tiny devices simply bring out one or two of the ports not included on the Duo. Most use the same crescent-shaped plastics Apple uses for its external-floppy disk drive adapter.

The main third-party example to date is Newer's SCSI adapter, made by Computer Care.

This small design may end up being used by the makers of docks that add acceleration or RAM disks.

Some users have many docks; others get by with one, or in some cases, none. A list of some of your choices follows.

Apple Duo Dock

Your primary option for making a Duo into a desktop Mac is Apple's Duo Dock (see figure 10.2). The system is about as heavy as a IIx, and larger than many desktop systems.

Figure 10.2

Apple's Duo Dock.



It accommodates the Duo, two Nubus slots, a floppy disk drive, a number of internal expansion options, and a full set of external ports. One slightly unusual aspect is that it includes an HDI-30 (PowerBook-standard) SCSI port, instead of a DB-25 (desktop Mac standard) port.

While you can add a video card tailored to a particular monitor, the built-in video supports the monitors and sizes listed in table 10.2

Table 10.2

Duo Dock Video Modes

<i>Monitor</i>	<i>Color Depth</i>	<i>Color Depth(with VRAM installed)</i>
12-inch Mono	256 grays	256 grays
12-inch RGB	256 colors	32,767 colors
13-inch RGB	256 colors	32,767 colors
14-inch color	256 colors	32,767 colors
16-inch color	256 colors	32,767 colors
Portrait	256 grays	256 grays

You can enhance the Duo Dock by adding a math coprocessor (a Motorola 68882 FPU) and 512K of extended video RAM (in addition to the 512K already present).

When you slide the Duo inside, it docks itself under automatic motor control. This way, you don't have to flick any levers to be sure of getting a solid connection between the Duo and the dock.

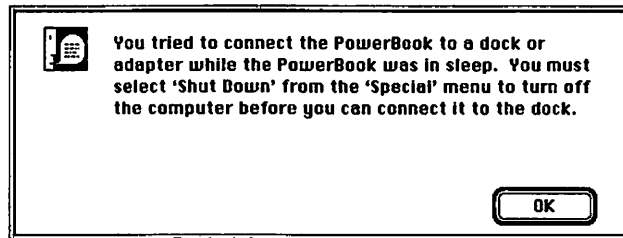
A button on the front ejects the Duo if it is off. If it is on, the button triggers a polite shutdown, asking if you want to save your open documents and quitting your active applications, before shutting down and spitting out the Duo. You can use the system's key-lock to prevent anyone from taking your Duo (without taking the entire dock, as well as to prevent anyone from sticking strange Duos in your dock when you and your Duo are away.

Most people use the Duo Dock in the same physical configuration as they do desktop systems—with a monitor on top and a keyboard and mouse in front.

You can't put the Duo to sleep while it is in the current Duo Dock (skip ahead to the next section to learn more about a future Duo dock), but normally this isn't a problem. If you attempt to dock a system while it is asleep, the DuoDock kicks it right back out at you. When you wake up the system, you get the message shown in figure 10.3. Most other docks don't have this limitation.

Figure 10.3

You can't dock while sleeping!



Although the Duo Dock has two NuBus slots, installing a card is much more difficult than in any desktop Mac model. You need to remove the entire main board of the dock (and several attached pieces) and slide the card in below it, and then reassemble the system. Fortunately, the only tool you need is a screwdriver. Don't try this without reading the Duo Dock's manual carefully.

A few NuBus cards, particularly some older network and video cards, don't fit the cramped space under the Duo Dock. This isn't generally a problem with newer cards, which have to fit into tight spaces on some desktop Mac models as well.

The design of the Duo Dock's main board and its case makes it clear that a future Duo Dock will include built-in Ethernet support VRAM, caches, and bigger hard disks. Also look for higher-end systems with built-in video RAM and math chip (right now they are optional add-ins), as well as a larger-capacity internal hard drive included.

Future Duo Docks should also support the features of second-generation Duos, including the capability to dock and undock without shutting down the Duo (so you don't have to lose the contents of your RAM disk and wait while your system loads extensions and starts up).

Duo MiniDock

This handy bar, made by Apple, gives you a full set of ports, including video output and audio input and output, while letting you retain full use of your Duo's screen. It blocks all the Duo's ports but gives you connectors for power, SCSI, a floppy drive, a monitor, Apple Desktop Bus (the connection for keyboards and mice), printer, modem, and audio input and output. Its phone line connector is active only if you have an Express Modem in your Duo.

Unlike the Duo Dock, the MiniDock has no motorized latching mechanism. Instead, to dock the Duo, you need to align the connectors and push down on a lever. To undock, you need to shut down the Duo or put it to sleep, pull up on the lever, and then pull up on it again to fully release the latch. Unfortunately, the instructions are covered by the Duo when it is docked, leading to some users engaging in wrestling matches with their MiniDocks in dangerous attempts to wrench free their Duos.

You can connect a Kensington security standard-compatible lock to the MiniDock. However, it does not lock the docking-control lever, so even a casual thief can wander off with your Duo.

The MiniDock is ideal for a number of locations, including:

- **Work**

The MiniDock is much less expensive than Apple's Duo Dock, yet it provides all the connection functions you will probably need. Simply add a floppy disk drive, monitor, keyboard, and mouse (so you can type comfortably for long periods of time at a stretch), plus a network interface if you need one.

● Home

If you have a Duo Dock at work, the MiniDock will give you all the connections you need to work at home. With the MiniDock, you get separate printer and modem ports, so you don't have to fiddle with the settings to go back and forth between communications and printing (as you do if you don't have an Express Modem). If you dial in using AppleTalk Remote Access, your co-workers can easily be fooled into thinking you are there with them, as you can access the file server, electronic mail, printers, and other network functions at work.

● On the road

The MiniDock is light enough to take with you while you travel. You can stuff it into a separate case from your Duo, to help balance your load between shoulders and let the Duo fit a compact, easily-accessible case.

You can dock a Duo to a MiniDock while the system is asleep, but you need to restart the system before it can recognize that an external monitor is attached. Apple says that you also need to restart to get the Duo to recognize a hard disk or other SCSI device attached to a MiniDock, but you can instead use a utility like the SCSIProbe control panel to scan the bus and mount any drives it finds. The other ports are all active if you simply dock while the Duo is sleeping.

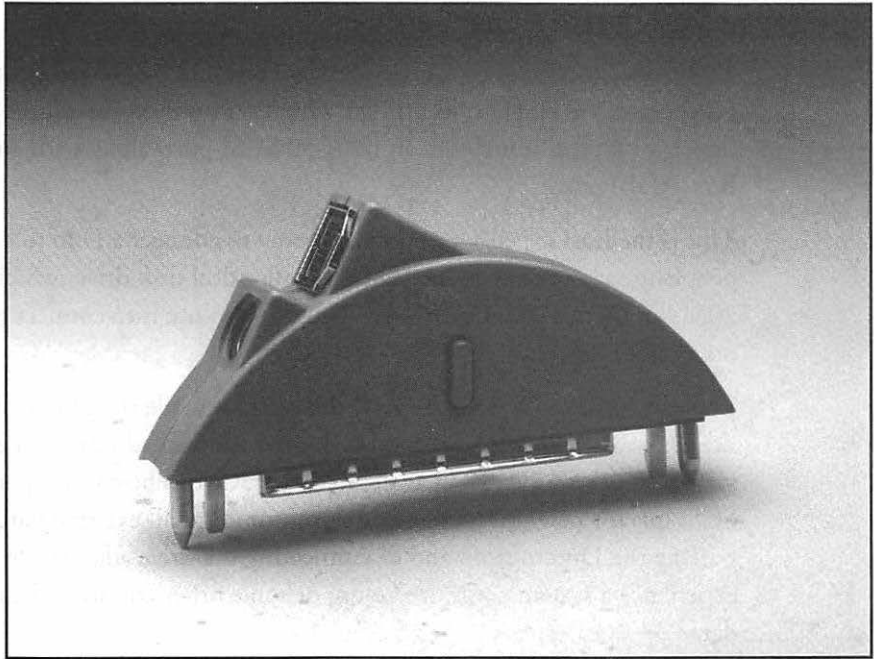
***Tip:** As of this writing, AppleTalk Remote Access could not handle answering the phone through the MiniDock if a server was set to call you back. Hopefully, this bug has been remedied by the time you are reading this.*

The Duo Floppy Adapter

This least expensive dock of all adds just two ports: Apple Desktop Bus and floppy disk drive (see figure 10.4). It is a minimal solution, appropriate for someone who really doesn't need a dock but wants to use an external mouse or keyboard or needs to install software or read or write floppy-disk files.

Figure 10.4

The Duo Floppy Adapter clips onto the back of the Duo.



The Apple-supplied adapter also has a security port, that, like the MiniDock's port, prevents the Duo from wandering away when it is locked. However, the floppy disk drive is not secured at all.

The PowerLink Line

E-Machines (now part of SuperMac Technology) shipped two lightweight docks for the Duo in early 1993.

The PowerLink Presentor adds support for eight-bit video output on large-screen displays, television sets, LCDs and projection devices. The ten-ounce \$499 device also includes Apple Desktop Bus, floppy disk drive, power, and stereo output ports.

The E-Machines DeskNet includes built-in twisted-pair (10Base-T) and thin (10Base-2) Ethernet connectors. It will let Duos display eight-bit color on RGB (red, green, blue) monitors. The 19-ounce DeskNet also will offer ports for power; a floppy drive; stereo input and output; security; and SCSI, ADB, and two serial devices.

The Newer SCSI Dock

This device, designed by Computer Care but sold by Newer Technology, uses the same plastics as Apple's floppy disk adapter. However, instead of the HDI-20 floppy-disk port, it includes an HDI-30 SCSI port, along with an Apple Desktop Bus (ADB) port.

This is the least expensive and lightest way to connect a Duo to a hard disk. Some people use it to connect their Duos to a floptical disk drive, which reads and writes 20M floppy-disk-sized cartridges. You can also use it to connect to scanners and other SCSI devices.

You can connect (and disconnect) this adapter while the Duo is sleeping. However, the Duo won't know that a hard disk drive is attached until you either restart the system or use a utility such as the freeware SCSIProbe control panel to scan the SCSI bus for new drives. Remember to unmount all external hard disks before putting the Duo to sleep and disconnecting the drive adapter, or you could experience a system crash, freeze-up, or some other confusion leading to the loss of data.

Envivio Dynamic Duo

The Envivio video adapter squeezes 16-bit video and stereo sound capabilities into a dock about as large as a deck of cards. The 5-ounce Dynamic Duo delivers more than 32,000 colors in displays up to 13 inches at 640-by-480-pixel resolution and 256 colors in 16-inch displays at 832-by-624-pixel resolution. Envivio also offers a \$200 NTSC (National Television System Committee) option that lets users output to a television or VCR.

This floppy-adapter sized dock does not include desktop bus or a floppy connection.

RasterOps Duomate

The RasterOps Duomate includes 1M of video RAM, so it can drive displays as large as 12 inches in 24-bit color, 16 inches in 16-bit color and 21 inches in eight-bit color. It also supports VGA video output, composite video with convolution, and NTSC or PAL (European) output. The dock includes a stereo audio-out port and an Apple Desktop Bus port, as well as a pass-through button for the Duo's power switch. Unlike some other docks, it does not block the Duo's ports.

The DuoMate can run on the Duo's battery power alone, without an external power source, to drive NTSC, PAL, or 12- or 13-inch screens.

Other Docks

The docking concept provides a really incredible number of expansion options for Duo users. And the number of docks will rapidly increase, as third-party developers realize that it is less expensive to build a dock than an internal PowerBook expansion card because it doesn't have to be as small or as power-thrifty. Here's some of the new types of docks you can expect:

Communications Docks

AIR Communications of Sunnyvale, California, as of this writing is working on a lightweight Duo dock that includes all the components of a cellular phone and a modem. The integrated package has the potential to be much lighter and more convenient than a cellular modem and separate data-capable cellular phone.

Other companies will add mobile pager interfaces in dock form and other wireless communications options.

Battery Docks

A multifunction dock like the Minidock could easily extend out under the Duo and have room for one or more additional batteries, so you could keep on computing during a long presentation or trip without power.

RAM and PCMCIA Docks

I'm still working to convince people that an ideal dock would include a RAM disk. While the current Duo architecture makes no provision for directly adding RAM through a dock, adding an externally-backed-up RAM disk that uses less-expensive RAM would provide an upgrade path much more affordable than adding miniature high-density low-power chips to the Duo.

Plus, you could use this RAM disk as the backing store for virtual memory, effectively gaining much more usable memory than you could easily fit inside the case.

A RAM disk in a floppy adapter-sized dock could be combined with a dock adding a couple of PCMCIA (Personal Computer Memory Card Industry Association) card slots. These credit-card-size devices, already a standard for many DOS laptops, can add RAM, ROM, storage and communications functions. Users could choose for themselves, and swap resources at a moment's notice.

Math Chip Docks

For many people who use scientific and technical applications, the Duo is not an option. Why not? Because there's no math coprocessor (also known as a floating-point unit, or FPU) in it.

While this makes very little difference in performance for most Mac applications, some programs, notably mathematical, scientific, and computer-aided design (CAD) applications, rely heavily on the chip. Some run ten times as slow without it; others simply won't budge unless they find a math chip installed.

While you can add an FPU to the Duo Dock, this is little consolation to users trying to escape from their desks. Apple may remedy this omission at some point in the future, but for the meantime these users will have to go for an all-in-one PowerBook.

I've heard the suggestion that the maker of an adapter-style dock such as Apple's floppy adapter, Envisio's video adapter, or Newer's SCSI adapter could easily add an FPU without raising the price much. Whether they will do this depends on demand, so if having an FPU with you at all times is all that's keeping you from buying a Duo, then, by all means, let them know!

How to Buy a Dock

Given the growing number of docks now available, choosing one is increasingly difficult. Every dock represents a trade-off between portability, power, flexibility, and cost. What you need to do is to evaluate and predict your needs, and plan your purchases accordingly.

Look at whether you go to different places every day, or if you regularly use the PowerBook in just one or two spots. If you only need the connectivity functions of a dock in one location, such as your primary workplace, consider whether you can make do without a dock when you work in other places.

Decide whether your needs can best be met by several single-function docks, for instance a SCSI adapter and a video adapter, or if you'd be better off with a single multifunction dock.

The Latest Duos

The fall of 1993 is bringing many new options to the Duo line. Color and grayscale Duos are already being manufactured in preparation for a fall release, along with improved docks. But the real excitement comes over the course of the next couple of years, as Duos get much, much faster, and more versatile in a number of ways.

PowerBook Duo 250

The same type of screen that PowerBook 180 users enjoy — active-matrix with 16 levels of gray — is due out soon (as of this writing) on the Duo 250. Sure, it'll cost more, but ask any 180 user if she minded paying more than the cost of the 160.

The other price you may pay is slightly reduced battery life, because active-matrix screens draw more power than passive-matrix screens. However, you may find that you can get by with lower backlighting levels thanks to the extra visibility of active-matrix screens, making up the difference. Battery life per charge will stay within about 15 percent of what the Duo 230 provides.

PowerBook Duo 270c

Apple probably learned from the poor sales of the passive-matrix 165c to skip that option and go directly for active-matrix color. The Duo 270c does just that.

The color screen on the 270c is thicker and so requires a new Duo Dock top; it also is slightly heavier, bringing the total system weight closer to five than four pounds. And it will definitely drain the battery even faster, reducing battery life by as much as 30 percent compared to a Duo 230.

The screen on the new unit, like the 180c's screen, measures a full 640 by 480 pixels, as opposed to the 640 by 400 on the 165c. The 270c still comes factory-equipped with only 4M of RAM, however.

Future Duos

Apple's commitment to the Duo concept means that even more advanced Duos are under consideration. The following are some concepts that are sure to get a lot of attention.

68040-based Duo

The middle of 1994 is expected to bring a super-Duo: a system with a 68040 processor and a 16-bit (thousands of colors) active-matrix color LCD.

The system will use a new low-power version of the Motorola 68040 processor. The new chip uses only 3.3 volts, rather than the 5 volts other 68000-family chips use. It will give off less heat than the full-blown 68040, making a bulky heat sink unnecessary. And, it will use a static design, so that the Duo's power manager doesn't have to keep it refreshed to keep it from forgetting what it is doing. Built-in sleep circuitry will let Apple further simplify the power-management system.

However, the chip, like the inexpensive 68LC040, will not include a floating-point unit, making even this Duo inappropriate for users of some design, drawing, CAD, and mathematical applications.

The new system is expected to include the capability to dock while sleeping. The Duo 210 and 230 require a shutdown to dock or undock a system from the Duo Dock.

RISC-based Duo

Looking as deep as I can into my crystal ball, I see Apple rolling out a Duo using RISC (Reduced Instruction Set Computing) as early as the end of 1994. The system will use the power-efficient PowerPC 603 chip jointly designed by IBM, Apple, and Motorola. You probably will be able to use this system with some but not all current docks. In particular, docks that include coprocessors, busses, or accelerators will probably not work with it, while docks with functions similar to Apple's Duo MiniDock probably will work.

New Technologies in Duos

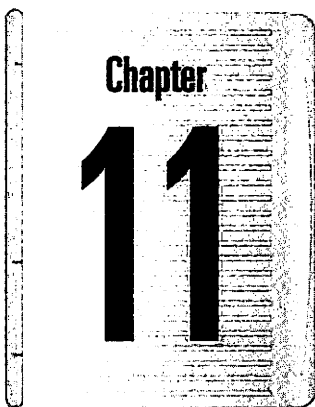
As the aforementioned systems make it to market, Apple will undoubtedly keep current with emerging portable computing technologies. Look for new expansion options, like PCMCIA card slots built in. Hard disks will get smaller and lighter while growing larger in capacity; in some systems, they will disappear, as other non-rotating media becomes more economical. Battery technology will improve, helping Duo users work longer and charge faster.

Summary

The Duo line gives you plenty of options to choose from, and the opportunity to simultaneously get more done and carry less. Before buying one, ask yourself:

- Do you get any advantage from docking?
- Can you live without all your ports all the time?
- Is an internal floppy disk drive essential?
- How much does the system's weight matter?
- Do you want a PowerBook with an upgrade path?

Some users may be better off with a low-end all-in-one PowerBook plus a more-powerful desktop system. But for the inside skinny on how to decide, turn to chapter 11.



Comparison Shopping

Decisions, decisions! So you want to buy a PowerBook? Well, if you've read chapters 9 and 10, you hopefully have a fair idea about the range of choices available to you right now and in the future. And you understand the basic terminology, if not the underlying technology.

Apple certainly isn't making your job any easier. The problem is, these days, you have so many choices! Just to start with, you need to evaluate and decide:

- Would you prefer a Duo with a dock or an all-in-one PowerBook?
- What size of display do you need and what type of technology can you afford: grayscale? active-matrix? color?
- Which is truly a better deal: a used or a new PowerBook?
- Should you look at notebook computers other than the PowerBook?
- Would a desktop Mac be a better investment?
- Do you need a PowerBook at all?

This chapter will address the nuances of all these questions, so you can map out the answers appropriate for your own situation. I won't try to make a flat-out statement that one or another is the best deal or just the right system for you. I know that everybody's needs change over time, and the rapid pace of change of economics and technology makes it impossible to rank every system and configuration without making this book out of date even faster than it would naturally age.

Comparing PowerBooks

Macintosh PowerBooks have evolved quite a bit since the line was introduced in 1991. However, the new technologies found in the latest models don't always add enough value to justify the price difference.

The design of a notebook computer is always a set of compromises, balancing battery life, weight, size, screen clarity, performance and features.

Let's look at some of the basic criteria you can use to compare PowerBooks.

Duos vs. All-in-One

Should you go for a PowerBook that stands by itself, or a Duo that can't be expanded without a dock? It depends on your mode of work.

If you want the lightest possible system to carry with you, and you often take your PowerBook on the road, a Duo may be your best bet. While you will need to add a dock to expand the system or connect it to another Macintosh, competition among third-party dock makers has driven prices down to the point where a simple dock won't add much to the cost of your Duo.

The Duos are especially well-suited for people who need to connect to existing Macs or use peripherals such as monitors at more than one location, because with appropriate docks connecting is an easy, single-step operation.

Display comparisons

What's the cash value of your eyesight? Skimping on display technology can be a bad decision when the eventual result is more-rapid deterioration of your eyes.

Which particular screen type is right for you is generally a matter of individual preference. Careful adjustment of contrast and brightness levels can go a long way towards making a less-expensive display look better than a pricier one.

An important factor is the effect of the display on your overall system. Some types of displays are thicker, heavier, and more power-hungry than others, making PowerBooks containing them more unwieldy or less portable in general.

Remember, you don't always need to use the built-in display. Many PowerBooks and docks now include video output, so you can use the same monitors and projection devices made for desktop computers. This approach is common with the Duos, even mandatory in some situations: Apple's DuoDock requires the use of an external monitor, as the Duo is folded up inside it when it is in use.

Active-matrix vs. Passive-matrix

Apple has always tried to set apart its high-end PowerBooks from the rest of the line by offering a different display. To justify the high prices of the PowerBook 170,

180 and 180c, and the Duo 270c, these models have included active-matrix displays, a step above the passive-matrix LCDs used in other models.

Active-matrix displays include a transistor (electronic switch, more or less) behind every single pixel, producing a crisper, clearer image than other techniques. Active-matrix screens are also more legible from extreme angles, so if you have one you may end up turning off the backlight for privacy when working in a public place so people sitting next to you can't see what's on your screen.

The design of active-matrix screens is such that individual pixels can become "stuck" either on or off if the transistor behind them fails. Apple's current policy is that a certain number of pixels has to be stuck on or off before it will repair or replace a display under warranty. You can easily count pixels by running the PowerBook screen tester program.

Some sneaky users have created programs that simulate additional stuck pixels in order to fool Apple service into replacing their screens. I don't recommend this, as Apple now knows how to circumvent these attempts.

Pixels can become temporarily stuck if an active matrix display is left on without the PowerBook sleeping for more than 24 hours at a time. As Apple's manuals and dialog boxes warn, the longer an active-matrix PowerBook is left on without sleeping, the longer it will have to sleep to recover. It sounds like it is like me—when I stay up more than 24 hours I need lots of extra sleep to recover. For this reason, an active-matrix PowerBook might not do that well as a continuously-operated server like a file server or database host.

Black-and-white vs. grayscale

The original PowerBooks (100, 140, and 170), along with the derivative 145 and 145B, have simple black-and-white displays. The 160, 180, 210 and 230 introduced gray-scale, with 16 shades of gray.

Gray-scale screens add a level of subtlety to PowerBook displays. While it is very difficult to make out what a color picture looks like on a black-and-white screen, you have a fighting chance with grayscale. Windows and icons take on an added dimension with just a few extra bits of gray-scale information.

Grayscale vs. color

The PowerBook 165c introduced color to the line, but the 180c, with its crisper active-matrix color display, made it truly popular.

Color systems are always the highest-end and priciest, so if you don't really need color all the time, you should seriously consider whether it is worth the added expense. Many PowerBooks and docks include video-output options, so if there is a color monitor or projection system where you need it (say, at your office and client sites), you may well be able to make do without color in your built-in screen.

Color screens use three layers of pixels (one each for red, green, and blue pixels) to create the illusion of full color, the same way monitors and TV screens do. Because light has to pass through all three layers (versus just one for black-and-white and grayscale LCDs), you may find that you need a higher level of backlighting brightness with a color screen. And because higher backlighting levels require more power, this reduces battery life.

Even without the extra backlighting, color screens themselves use more power than non-color systems, and many people who bought the PowerBook 165c and 185c say there are dissatisfied with the short battery life: 1-2 hours in typical use.

Color screens are also thicker than non-color displays, making color PowerBooks less convenient to carry. The extra thickness is one of the reasons the PowerBook Duos took about 9 months longer to get color than the all-in-one systems.

The first PowerBook color displays are also smaller than the traditional PowerBook screens, making them a little harder to read text on.

While it may seem like I'm beating up on color displays here, I have to admit I'm just as envious as everybody else. After all, you can get a much higher score on most Mac arcade games with a color display.

New vs. Used

As tempting as those shiny new PowerBooks at the corner store may be, you might be able to find a better deal on what you may euphemistically call a "pre-owned" PowerBook. Let's just say that a system that's been, well, "broken in," has some potential advantages, as well as some disadvantages. Let's take a look.

Used PowerBooks can cost less than new systems, but not always! Why is this the case? Because Apple is constantly lowering the price of the new systems as it introduces more-powerful models, and somebody who bought a system just before prices went down doesn't want to lose money on the deal!

You should seriously evaluate Apple's current and near-term offerings before buying a used PowerBook. It is often the case that adding the features you need (such as

video output) to an older PowerBook model will end up costing you more than a new system that has the features built in.

When contemplating purchase of a pre-owned PowerBook, prudence is in order. Arrange for an independent third-party inspection of the system before you finalize the purchase. Obtain the original proof-of-purchase documents and notify Apple of the transfer to retain any warranty coverage and receive service notices. If the serial numbers aren't present on a used system you're considering purchasing, be extremely suspicious. At the very least check with Apple's repair line and a national computer registry to see if the system is listed as stolen.

PowerBooks vs. Other Notebooks

Apple is facing some serious competition now from the makers of other notebook computer systems. This wasn't the case as recently as 1992, when the PowerBooks' ease-of-use, display quality, and overall system integration set them apart from the rest of the crowd.

Since that time, Microsoft Windows has become ubiquitous, other companies have imitated Apple's innovations and come up with a few of their own, and the tremendous competitive pressure in the PC notebook market has driven prices down dramatically and triggered a number of innovations.

For instance, it used to be the case that to use a graphical user interface environment like Microsoft Windows on a PC-compatible notebook while in an airplane, you would have to either run the mouse (if one was available) down your thigh or your seatmate's thigh to move the cursor. Since then, systems have come out that include an integrated pointing device, in some cases a trackball like the PowerBooks but at times something more innovative like a tiny joystick located in the middle of the keyboard. Many still require a clip-on trackball, however.

What it really comes down to is this: do you want a Mac? If you do, then get a PowerBook. I'm not going to try to do Apple's job here and sell you on the advantages of the Macintosh.

PowerBooks vs. Personal Digital Assistants

The newest field of computer-like devices is the Personal Digital Assistant, or PDA. Apple's Newton MessagePad (see figure 11.1) is the most visible of these devices; it was released amid much anticipation in August, 1993.

Figure 11.1

The Newton MessagePad has added another choice to the mobile computing field.



The Newton—or any other PDA—is not a Macintosh. It isn't even a computer, in the traditional sense. PDAs are designed to provide you with some very specific functions, in a very small package. PDAs usually provide a means to take notes and to manage addresses and a personal schedule; other functions are available, but are very limited compared to the capabilities of a notebook computer. Because PDAs are a very new category, their potential hasn't yet been fully explored. However, as the technology develops, PDAs may become an interesting alternative to the PowerBook and other notebook computers.

PowerBooks vs. Desktop Macs

Do you really need a PowerBook, or would a desktop system do? There is a basic issue here: desktop Macs get cheaper faster than PowerBooks, for a given level of features and performance. And new features, like Digital Signal Processors (DSP), are added first to desktop systems and only later—if at all to PowerBooks.

This is because mobile computers require all kinds of compromises: power, space, weight. The first renditions of most new technologies are often power-hungry and heavy; only later do the chipmakers optimize them for portable systems.

So if you need the latest and greatest, you probably need a desktop system. One option is to get a relatively inexpensive low-end PowerBook and use it in conjunction with the high-end desktop system. Another approach is to use a Duo dock and add in Nubus cards and peripherals that add the functions you need.

PowerBooks also make good desktop Macs, with a couple of added benefits: you're immune from power failures (although you may run into problems if you have a Duo in a dock or external peripherals like monitors and hard drives plugged in), and you have the ultimate in flexibility: anytime you need to, you can pick up and go elsewhere and keep working. The Duos with docks are especially well-suited for this type of operation, but if you don't mind connecting a few cables when you start your day, the video-output-equipped all-in-one PowerBooks, or older systems with third-party video-output options, will do just fine.

Summary

So whatever PowerBook you decide to get, have fun! Just as with buying any computer, the available range of options can be daunting. However, this is actually to your advantage—you decide what features you need and then find the computer that supplies them, rather than choosing the lesser of two evils.

Part IV

Enhancing Your PowerBook

Suffering from a RAM cram? Are you waiting for your PowerBook to catch up, rather than vice versa? Do you need to reach out to your colleagues in ways you didn't know existed when you bought your PowerBook?

You can choose from a multitude of methods to take your PowerBook beyond its original configuration: peripherals, upgrades, and services.

Peripheral devices and accessories help connect your PowerBook to the world, make it easier for you to use, and expand upon the resources available to the system. For instance, an external hard drive can supplement your system's internal drive, enlarging your data-storage capacity. Generally, you can do these yourself, without professional help.

Upgrades either replace internal PowerBook components with faster or larger-capacity equivalents or add new ones that boost capacity. For instance, adding memory (RAM) would be a system upgrade. These generally require help from a dealer or other trained installer.

Services provide either you or your PowerBook itself with access to information and applications that help you make your system more fun to use. These include newsletters, magazines, user groups, and online services.

So read on for the next few chapters to explore the dizzying array of options available to you. Prices change so quickly that I can't say what conditions will be when you read this. But right now, it is often more economical to buy a minimally-configured system from Apple and add to it after the fact, with RAM, modem, and hard disks from third-party vendors.

Chapter

12

Peripherals

In Apple's early PowerBook promotional brochure, the company claimed that when designing the PowerBooks, "We couldn't bring ourselves to leave out anything." On the contrary, although the PowerBooks feature standard options considered extra on competing laptops, third parties are racing to fulfill a rich add-ons market.

There are two general classes of add-ons you're likely to find useful: peripherals designed specifically for PowerBooks, and ones made for Macs in general that happen to work well with PowerBooks. I've lumped them together here, organizing by category, pointing out devices that have some particular advantage (or disadvantage) for mobile computing use.

Skip ahead to the next chapter for information on internal expansion options: memory, accelerators, and the like. Skip back to chapter 7 for information on connectivity: modems, network connections and so on. And go all the way back to chapter 1 to find out about power-related items: batteries, external chargers, and so on.

Video

Even if your PowerBook (or your Duo's dock) doesn't include a video output port, there are ways to get the image out, using special software and a hardware device attached to the SCSI port. Because it took Apple a year from the introduction of the first PowerBooks to build in video output, the pent-up demand led several third-party developers to make both displays and interfaces that could add video output.

If you are fortunate enough to have a PowerBook with video output, you can take advantage of the thousands of monitors and projection systems designed for desktop use; often, you can simply plug in to whatever monitors are available at someone else's office when you are there to give a presentation.

Direct-connect displays

There are way too many different display devices available to list here. Instead, I'll describe the subcategories, monitors and projection systems, and list some principles you can apply when purchasing either sort of product.

Nearly all of these same rules come into play when you buy a display for use with a SCSI video adapter described below.

See chapters 9 and 10 for a look at which PowerBooks have built-in video output.

Desktop displays

When you buy a monitor for either a desktop Mac, a dock, or a PowerBook, the most important factor is comfort. Make sure it feels good to look at for extended periods of time. If you'll be using it for presentations, check the range of angles and distances you can view it from; is it large enough to see clearly? Is there any shimmer or wiggle in the image? A monitor with an unstable picture can lead to serious eye irritation and fatigue if you use it for long periods of time.

One factor to consider is the device's compliance with Swedish MPR safety standards for very low frequency electromagnetic radiation. While the nature of the hazard, if any, from the display circuitry's emissions is not known at this time, many experts and Apple are counseling "prudent avoidance" until science is able to better understand the interaction of electromagnetic waves with the human body.

Projection systems

If you're trying to make a presentation to more than one person, a PowerBook display just doesn't cut it; you need a monitor. For more than four people, most monitors won't suffice (just squeezing in the chairs around your desk can be a challenge); instead, you should look at a video projection system.

Prices have come down and quality improved dramatically among projection systems in the last few years. Most, though, are ineffective for large groups (unless you want to spend upwards of \$20,000) and require a darkened room to be truly visible.

The least expensive are the VGA systems, which are designed for PCs but can work with Macs with the addition of a low-cost adapter such as James Engineering's MacVGA.

You can either choose a projector with a built-in light source, or an LCD panel that fits atop an overhead projector. While the former are self-contained, they tend to be bulky, expensive, and heavy, plus fairly fragile, making them difficult to transport. LCD panels can often fit in a handheld bag, and do the job if you know an overhead projector will be available at your destination.

Don't forget to scout out a smooth, light-colored surface suitable to project onto. Portable movie screens are available, but in a pinch you can always simply tape several sheets of paper to a wall.

SCSI Video

A popular and relatively inexpensive approach to getting video out of PowerBooks, desktop Macs and docks that lack a video port is through the SCSI bus. There are two different approaches used to do this: a separate video adapter that connects to any ordinary monitor or projection system, or a monitor that includes a SCSI port.

Video output using this method can be slower than you're used to with direct-connect desktop Mac displays; in particular, QuickTime movies and animations with a high frame rate tend to play poorly on SCSI adapters and displays.

SCSI Video out

A couple of external boxes make the connection between your PowerBook's SCSI port and ordinary desktop Mac monitors. Some of the options include the Radius PowerView, Aura Systems' ScuzzyView, and Lapis' DisplayServer SCSI.

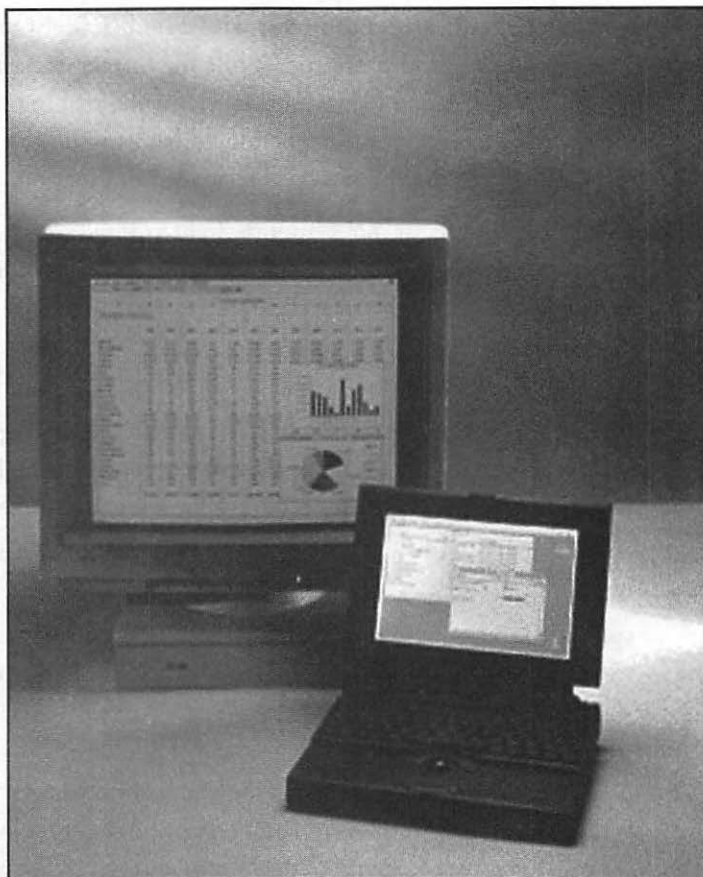
Both weigh several pounds and require external power supplies. Also, the performance leaves a lot to be desired, especially in video mirroring mode, where the device replicates the contents of your PowerBook's screen so you control a presentation with your built-in screen while your audience is intent on the larger monitor.

SCSI Monitors

If you need a display at your desk but your PowerBook has no video output, investigate a SCSI monitor. These, including the RasterOps ClearVue/SD21, Sigma Designs' PowerPortrait single-page black-and-white unit, Mirror Technologies' ViewPort gray-scale full-page display and the Lapis Two-Page SCSI Display (see figure 12.1), include video acceleration software that makes them faster than the independent SCSI video adapters.

Figure 12.1

*Lapis Two-page
SCSI Display.*



SCSI Video input

Last but certainly not least is the flip side of the video equation: getting images in to the system. While the hardware for digitizing full-motion video does not fit well with PowerBooks, by and large, it is not hard at all to grab a few frames with a SCSI slow-scan video grabber such as the MacVision.

Hard Copy

However rich your visions may be of kicking the paper habit with the acquisition of your new PowerBook-based mobile office, you're likely to find that at some point the need will arise to interact with actual physical documents, not just the virtual ones on your computer. You will need to either print out information so that you can gain access to it without your PowerBook, or scan in information so that you can access it on your PowerBook.

Portable printing and scanning technology is finally catching up to the PowerBook, with a growing variety of offerings available to make it easy to get data into or out of your system without bulky equipment or the need for additional power supplies.

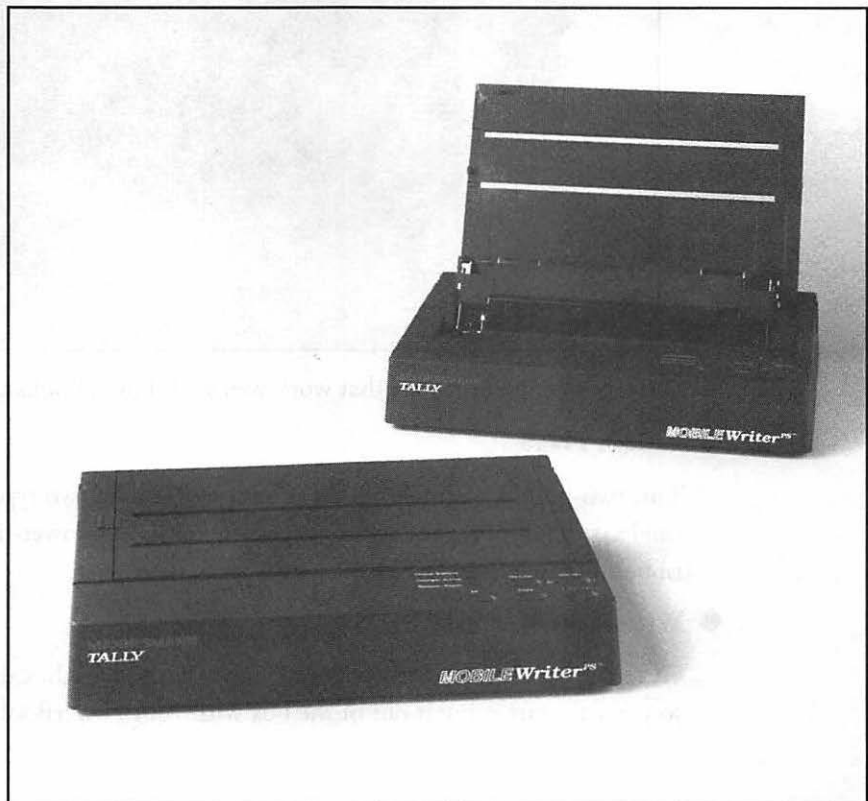
Output

When you're on the road, the ideal printer is as mobile as your PowerBook, providing the speed and functionality you'd expect on a desktop system without costing a lot more, but also offering freedom from power supplies and a form-factor small and light enough to carry.

While the above may be an unrealistic fantasy, a couple of offerings come close. Mannesmann Tally offers MOBILEWriterPS, a PostScript printer for PowerBooks (see figure 12.2). It can print as fast as six pages per minute, emulates an Apple LaserWriter IINT, and supports AppleTalk, yet it fits in a desk drawer.

Figure 12.2

The MobileWriter PS provides a mobile output option.

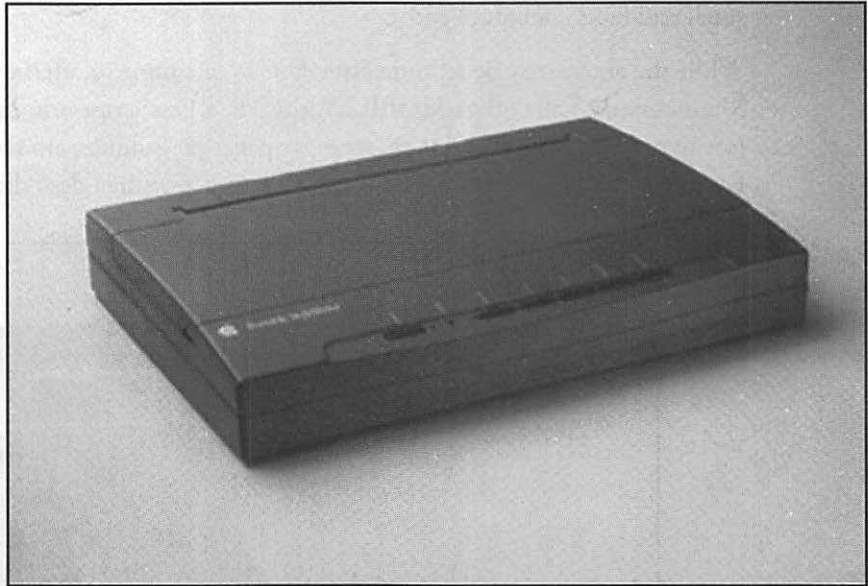


The thermal transfer printer uses ribbons good for 150 letter-size pages in a row; the rechargeable NiCad battery is good for about that many pages as well. You can get an auto adapter for the charger as well as the AC-powered charger.

Apple has also put together a variant on its lightweight low-end StyleWriter printer: the Mobile StyleWriter (see figure 12.3). While it is not PostScript, it does support 300 dots per inch printing, and TrueType fonts (or PostScript Type 1 fonts if you have Adobe Type Manager installed) do look quite nice.

Figure 12.3

*Apple's Mobile
StyleWriter.*



Other battery-operated printers that work well with PowerBooks include:

- **Citizen PN48**

This two-pound thermal transfer printer works with two types of ribbons: a single-strike ribbon good for 25 pages, and a slightly-lower-quality multistrike ribbon that ought to last 70.

- **WriteMove II**

GCC's version of the Citizen PN48 comes with the right cable and software so you can start using it out of the box with your PowerBook.

● Kodak Diconix

This inkjet weighs in at just under four pounds; a battery is supposedly good for around 30 pages.

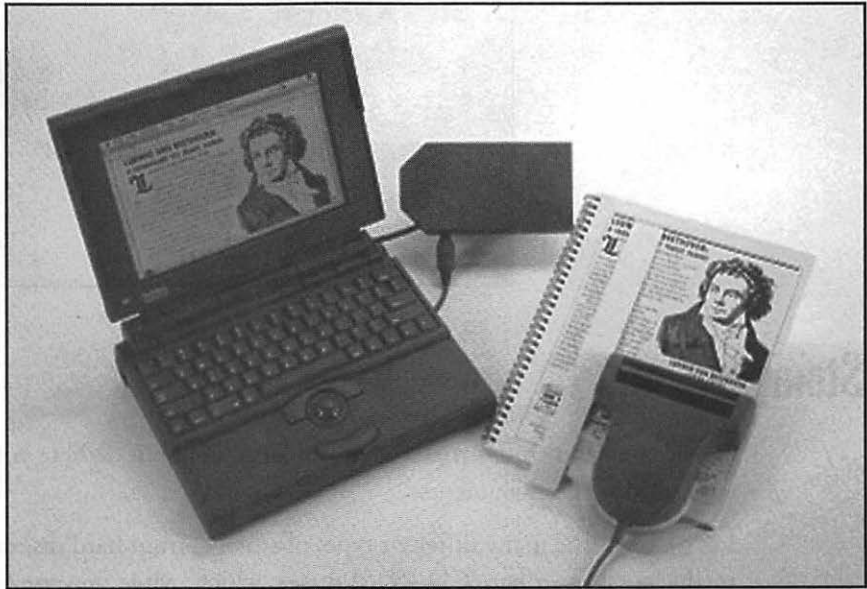
A wider range of portable printers is available, if you are willing to plug in the printer or run it off of a car power adapter.

Scanners

Your PowerBook (or Duo with an appropriate dock) can take advantage of any of the thousands of desktop scanners out there. But you can also take advantage of the many hand-held scanners designed specifically for PowerBook and portable computer users.

For instance, Thunderware offers the Thunderware Portable Scanner, a handheld SCSI scanner (see figure 12.4).

Figure 12.4
*Thunderware
Portable Scanner.*



To capture images of three-dimensional objects, you can use a video camera in conjunction with the Macvision SCSI video input box mentioned earlier, or a digital camera like the Fotoman (see figure 12.5). The Fotoman stores images on mini diskettes that can be read into the PowerBook with a separate external drive.

Figure 12.5

The Fotoman enables you to quickly digitize images of 3-D objects.



Storage

A place for your stuff—that's what storage is all about. Where you store your applications and documents.

Let's look at the many different types of storage, from hard disks to removable media; we'll cover here CD-ROM drives, which, while they are not storage devices in the conventional sense, connect to the PowerBook and are used in a similar manner.

Turn to the next chapter for coverage of internal hard disks that replace the internal hard drive, which require cracking open the case of the PowerBook and so are classed as upgrades. But do read this next section for general information on hard disks, some of which applies to internal drives as well.

External hard disks

Sure, you can attach just about any desktop Mac hard disk. But you'd be surprised at the number of drives designed for portable use, either by their small size or use of batteries.

Some of the brands to look for include:

- **Liberty**

The company sells a family of hard drives that weigh less than two pounds, hold up to 256 Mbytes, and run up to three hours on their own batteries.

- **LaCie**

The PocketDrive draws power from the Apple Desktop Bus port, so it'll drain your PowerBook's battery faster than usual.

- **APS**

This mail-order firm sells the Companion, a line of drives as large as 200-some M; some models are battery-powered.

- **Adambyte**

The PowerBox clamps on to the bottom of a PowerBook, with room for several drives and its own battery.

In any brand, look at the maker of the internal mechanism. Is it a known, reliable brand? Do you trust the company selling the drive? Your "lifetime" warranty won't do you much good if the company is out of business next year.

Look at the type of connectors on the drive—are they the desktop Mac-standard 25-pin connectors, or the PowerBooks' HDI-30 square ones? If it uses the former, you'll need an adapter cable (unless you have a Duo dock that uses the desktop style port).

Removable media

A popular method of adding storage in a modular fashion is through the use of removable media, that is, devices that give you the flexibility of a floppy drive with the capacity of a hard disk. The most well-known media in this category is the SyQuest line of 45M (and now 88M) cartridge drives, but now magneto-optical, floptical, and other removable storage technologies are becoming more common.

These devices are generally not designed for portability, but there's no reason you couldn't connect one to your PowerBook (or your Duo's dock) via the SCSI port, as long as you have an outlet to plug in the drive.

CD-ROM

While CD-ROM drives are not technically storage devices because you can't write to them (that is, store data), they are a removable media and the same types of issues apply to connecting them as any other SCSI device.

The amount of data available on CD-ROM is growing rapidly. Text, collections of graphic images, multimedia presentations; all are available. Also, more and more software is available on CD-ROM, both as individual packages (one CD-ROM is much cheaper than eight or ten floppy disks) and as collections of software that you can purchase over the phone. (You're given a code to unlock the software you purchase.)

I'll leave the details on brand comparison of CD-ROM drives to the Mac magazines and books on that topic; there are so many issues that we don't have the space to go into any of them here. Some of the things to look for are:

- **Access time.**

Measured in milliseconds. 300 is slow; 150 or better is "fast."

- **Spin rate.**

Look for multi-spin drives, which speed up when they are reading computer data (as opposed to audio CD's).

- **PhotoCD compatability.**

Can it read Kodak PhotoCD discs? Can it handle the "multi-session" discs—those discs that contain more than one batch of images?

- **Included software.**

How many CD's are thrown in? Don't look at their retail price, but do think about how valuable they are to you, and which ones you will actually use.

Apple's PowerCD (see figure 12.8) is one of the slowest drives but intriguing because of its unique design and its ability to play PhotoCD discs without a Macintosh attached. It can run on battery power.

Figure 12.6

*Apple PowerCD
runs on battery
power.*



Summary

As you can see by the wide variety of coverage in this chapter, you can hook nearly anything to a PowerBook. Sure, some things fit more easily than others, and it helps if the things have SCSI ports on 'em, but now you know: A PowerBook really is a Macintosh at heart.

When you make up your peripheral shopping list, do keep in mind the principles of mobility outlined in chapter 2. If all the doodads you lug along double or triple the weight of your total system and make it into a tangled octopus-like mess of cables, adapters, and transformers, maybe you'd be happier with a PowerBook with the features you really need built in, or with a desktop Macintosh.

Chapter
13

Upgrades

While your PowerBook may appear to be a closed box, devoid of opportunities for internal growth, there are actually a number of changes you can make to speed your system, add memory, and otherwise enhance it.

Not all of these upgrades are Apple-sanctioned; some, in fact, will definitely void your warranty. You will be better off for most of these upgrades if you turn to professional help rather than attempting to do it yourself. But I'll supply the basics here so you can decide if it is worth it for you to risk damaging your system to save a few bucks.

If you're interested in adding communications by dropping in an internal modem, turn to chapter 7, "Online Communications."

Memory

The more RAM in your PowerBook, the more applications and documents you can open at once, the bigger the documents you can open, and the faster you can make your system (by cranking up the disk cache, allocating more memory to applications, and setting up a RAM disk—see chapter 2, "Mobility," if you've forgotten all these techniques).

The amount of RAM that can fit varies by model of PowerBook (see table 13.1).

Table 13.1

<i>PowerBook</i>	<i>Starts with</i>	<i>Can fit up to</i>
100, 140, 145, 170	2M	8M
145B	4M	8M
160, 165, 165c, 180, 180c	4M	14M
Duo 210, 230, 250, 270c	4M	24M (32M for 270c)

Unfortunately, not every PowerBook uses the same type of RAM, and physical changes Apple has made as the line evolved have proved challenging to RAM-card makers, who have to develop new cards on short notice. This is the biggest hazard of buying PowerBook RAM right now: making sure that the modules you get are appropriate for the particular PowerBook you've got. There are some configurations that appear to fit and actually work but can slow down your system significantly. For instance, many RAM cards designed for the PowerBook 140 and 170 will work in a 160 or 180, but only cards that run at a higher speed will let a 160 or 180 run unfettered at top speed.

Look at the chips on RAM cards: 100 nanosecond chips will do for most models, with 85 nanosecond chips required for 160 and higher, and 70-nanosecond chips necessary for the Duos.

Be sure to evaluate the reputation and support of your supplier. Some provide the tools to do it yourself, and installation instructions (in at least one case, in the form of a video). A local dealer may be able to do the installation (even of non-Apple RAM) for about \$30.

Duos: Adding RAM to a Duo is a relatively easy thing to do, compared to most other PowerBook modifications. With a Torx T8 screwdriver, you simply remove three screws on the back, pop out the keyboard, slide in a RAM card, and put it back together.

Hard drives

Running out of space all the time? Do you feel you have to delete files to make room for new ones? Do you find yourself unable to do the graphics or multimedia or sound work you want, because there simply isn't enough elbow room for your data? Consider a larger hard drive.

Apple uses a variety of different brands, sizes (40 to 213M), and types of hard drives in its PowerBooks. Third-party developers supply a wide range of alternatives, all in the same 2.5-inch microminiature form factor.

Replacing the drive does require opening the PowerBook case (and disassembly of the computer), and it does void your warranty.

If you buy a drive that is specifically designed for the PowerBook, from a reputable company, it ought to work. The key thing is to make sure that the drive is the right

physical size, comes with the right mounting bracket, has the right type of connector, and uses power the right way. There's three aspects to this last item:

- **Total power.**

Make sure that the new drive you're dropping in does not take too much power; if it does, at the least it'll drain your battery faster. At the worst, it could blow a fuse or a circuit on your logic board.

- **Sleep mode.**

The drive should be able to handle going to sleep and waking up when the PowerBook tells it to. Some drives not specifically intended for portable use (fairly rare these days, but be careful) get confused when they start up fresh.

- **Startup power.**

If the drive draws too much power to start spinning, before the PowerBook is ready for it, it could blow a fuse. Some drives have timing delays built in specifically to prevent this problem.

You should also make sure that the drive parks the head when it is not in use, or at least when it is asleep (so that if the computer is dropped or jarred the sensitive read-write head won't bump into the disk platter, causing data loss).

Beyond the essentials come conveniences: Look at not just the price but the reliability of the model and manufacturer; the length of the warranty; technical support policies and facilities; and the spin-up time (how long it takes the drive to get going when it wakes up).

Capacity and power consumption fit into that equation too, but you'll be happy to find out that larger-capacity drives sometimes use less power than smaller drives because the tracks on the disk are packed closer together and the drive doesn't have to move the head as far to read and write a given amount of data.

Apple uses drives from a variety of vendors, including Conner and IBM, believe it or not. Third-parties expand your choices to include Quantum and Toshiba, among others. The latter drive companies won't sell you a product, but dealers, including Microtech and APS as well as many other mail-order companies, will not hesitate to resell you drives.

***Duos:** You can add an internal 3.5-inch hard drive to the DuoDock; Apple ships one model of the dock with a 230M drive pre-installed.*

A small industry has formed around the question: what do you do with the leftover drive after you've replaced it? Rather than stick it on a shelf and think of it as a backup unit, you can put it to use right away by either passing it to a friend with an even smaller-capacity drive (or a defective one). Or, you can preserve it for use yourself, as an external drive; cases and power supplies can be purchased from some vendors.

Acceleration

Desktop Macs get more choices than PowerBooks do in this department. Nearly any model of desktop Mac can be made much faster by simply dropping in a card; in some cases, you can even move to a faster processor in this manner.

The power, space, and weight constraints in the PowerBook world make it much harder to upgrade. However, Apple offers a few opportunities for you to replace the entire heart of the system—the logic board—with one that thinks faster. And some inventive developers have figured out how to tweak your system to take advantage of “a back door” for less expensive acceleration.

Table 13.2 describes the base capabilities of all the current PowerBook models:

Table 13.2		
<i>PowerBook</i>	<i>Speed (MHz)</i>	<i>Math chip?</i>
100, 140	16	No
145, 145B, 160	25	No
165, 165C	33	Yes
170	25	Yes
180	33	Yes
Duo 210	25	No
Duo 230	33	No
Duo 250	33	No
Duo 270c	33	Yes

You can choose either Apple or third-party upgrades for acceleration; the two approaches are very different. Let's take a look.

Apple options

Apple's upgrades are quite simple: the entire logic board in your PowerBook is replaced with a different one. This is offered for only a few models.

Apple doesn't trust you to install the upgrades yourself; generally speaking, you have to find a local dealer willing to do one or send in your PowerBook for Apple to upgrade.

The upgrades are fairly pricey, as of this writing; check to make sure it wouldn't be cheaper to simply buy a new PowerBook first.

Third-party options

Apple has left open a few opportunities for third-party PowerBook acceleration because of a few things it has done to save money on PowerBook design. Because Apple uses the same logic board for some similar PowerBook models, it is possible for enterprising third-party companies to change just a few parts to speed up or enhance your system.

One thing these companies can do is replace the crystal that controls the speed of the system. For instance, because a Duo 210 logic board is designed to also work in a Duo 230, all the parts on it should (we'll get back to this uncertainty in a moment) be able to run at 33 MHz just as well.

You don't see Apple offering this kind of upgrade because it is not economical for them to go in and do individual-component operations on circuit boards. By treating the entire circuit board as a single unit, it can more efficiently repair, test, and stock parts without the hassle of working by hand on the hundreds of individual chips and components that go on the boards.

Digital Eclipse and Empire Engineering both offer a variety of upgrades: speeding and adding math chips (in some cases, just one of the upgrades is practical) for the PowerBook 140, 145, 160, 170, and 180.

Apple doesn't make it easy for these guys; some would say it intentionally changes things when it introduces new models to make their job harder or impossible. For instance, when Apple introduced the PowerBook 145B, it changed the internal

arrangement of parts in such a way that the machine's internal RAM occupied the space where a math chip could fit in the 140 and 145, forcing third party upgrade providers to scramble for new solutions. Did it have to? Probably not. But it did, maybe to save a few cents in manufacturing costs.

Check with the individual companies for their terms; I know Digital Eclipse offers same-day turnaround (for an extra fee), so you don't have to be without your PowerBook for more than a day. Both supply guarantees that they'll fix any damage they create.

While you might be able to change the processor or add a math chip to your PowerBook yourself, I wouldn't recommend it even for technically sophisticated users; one slip, and you not only break your PowerBook but you void your warranty. Look in chapter 14, "Services," for references to some sources for further information.

***Duos:** You can put standard Macintosh Nubus accelerator third-party cards in a DuoDock, but these are obviously only useful when the Duo is in the Dock. You can also add a math chip (supplied by Apple or a third party) to the dock. In both cases, the upgrade is simple enough that a technician is not required; you should be able to do it yourself, with no tools besides a screwdriver.*

Summary

So now you can see that you aren't necessarily stuck with what you got when you bought your PowerBook. You can make it faster, expand its capacity, and otherwise fiddle with the insides.

But before you cram your system full of extra stuff, consider:

- **Will it void your warranty?**

Although Apple upgrades and most RAM upgrades will not, most other upgrades will make it so that Apple warranties and extended warranties (such as AppleCare) will not be honored. While this may not bother you if your warranty has already expired, it might affect the resale value of your system if you try to sell it to somebody less technically-inclined.

- **How will it affect your battery life?**

Some people who use faster systems, like the Duo 230, set them to run at the slower processor speed (the equivalent of a Duo 210) whenever they aren't plugged in, to squeeze every last bit of power out of the battery (see chapter 1, "Power Management," if you've forgotten how to do this by now).

So before you upgrade your processor, figure out if that extra speed is really worth it. And make sure your power-saving software will still work.

If you're adding RAM, find out how much power it will draw and compare it to what you have now. Saving a few bucks on RAM can cost you lots of time in battery life.

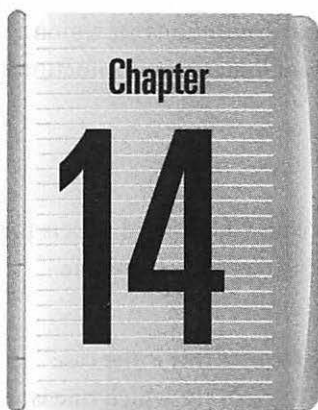
- **Would it be cheaper to simply trade up?**

Apple hasn't done much to preserve the resale value of PowerBooks, with frequent price cuts designed to help it sell more systems. Even so, it is worth investigating, before you spend more on an upgrade: will it actually add value, or might it be less expensive to sell your system and buy a new (or used) more powerful model.

- **Do you really need it?**

Have you tweaked the software and settings you use to get the most out of your current hardware configuration? Try running with your processor at full speed if it seems too slow. Try running just one program at a time if you run out of memory, or switch to a more-efficient program. Use disk-compression software or jettison unneeded files if you're out of disk space.

If you carefully consider all these factors, and then make your purchase decision based on detailed comparisons, you'll be a happier camper—and your PowerBook will be, too.



Services

This book is not meant to be the be-all and end-all guide to everything PowerBook. The very fact that this is a second edition that bears little resemblance to the one that preceded it by less than two years should tell you something about the dynamic, ever-changing nature of the computer industry.

As we go to press, there are dozens of really neat projects and products that were not quite finalized enough to write about here. And I'm certain that by the time you pick up this book, Apple will have changed its plans once again, making it impossible to foretell here exactly what the future line-ups will be like.

Fortunately, there are plenty ways to keep up-to-date, and supplement this book, through:

- user groups
- online services and BBSes
- publications

Let's take a look at some of these options.

User groups

I won't be shy about it: I've learned just about everything I know about computers not through formal instruction or through painful experience, but rather through the shared learning of computer user groups. I've joined user groups, volunteered in them, directed them, and even helped start a couple. There's quite a lot to be gained by doing these things.

These helpful associations take many forms, but they have one unifying principle: they involve people helping each other. They do this generally with volunteer labor, not in the pursuit of profit but rather in the interest of exchanging information and learning by teaching.

While most groups are local, linking Mac users within your community or region, some cross borders to form national or even worldwide conglomerations, sometimes linked to a particular subtopic or interest.

Local

Your first stop should be to try to find a user group near you. Check local papers for listings, ask at computer stores, post queries online, and call Apple to track one down—it will be well worth your while.

In many metropolitan areas there is more than one user group; if this is the case where you live, make a point of visiting all the groups so you can see which one is most helpful for your particular needs and most fun to participate in.

If there isn't a user group, you can start one. Apple and most major user groups can give you some guidance in this matter; Apple's User Group Connection (now a separate organization) publishes a book called "Just Add Water" with many helpful hints.

If nothing else, you can simply try to link up with other PowerBook and Mac users you run across, for some informal networking (the social kind, not the physical kind), and the exchange of information. This is the way most user groups get started—friends helping each other out, growing to help more and more people over time.

When you're traveling you should find out the contact information for a user group in the cities you'll be in on your trip. That way, if you run into a problem, you can tap on the informal support network out there for assistance.

International

BMUG, based in Berkeley, California, is known mostly for its massive "newsletter," a 300-400 page tome with no advertising that lands with a thud in the mailboxes of its 15,000 or so members, in several countries, twice a year. It also holds weekly meetings in Berkeley and monthly meetings in nearby cities (San Jose and San Francisco), plus special interest group (SIG) meetings nearly every night. It runs a couple of graphic-interface (FirstClass) Bulletin Board Systems collectively called Planet BMUG, with one in Berkeley and the other near Boston.

A number of the active volunteers in the group are avid PowerBook users, and they write about what they use (and make recommendations based on their testing

experience), so there is a lot of useful PowerBook-related information in the “newsletter,” plus an active PowerBook discussion on their bulletin boards.

The Boston Computer Society is an umbrella organization with hundreds of special interest groups. The BCS/Mac subgroup has made a name for itself in the Mac community through its large membership and informative monthly newsletter, *The Active Window*. It also runs a graphical-interface (FirstClass) BBS.

Online support

A different kind of user group can be reached only with the help of a modem: the online kind. Local BBSs and commercial online networks provide a “home away from home” for people who want to reach out to find out more than their local group can provide or simply to interact with a different community.

Bulletin board systems

A surprising number of Mac users have dedicated computers and phone lines to serve as Bulletin Board Systems (BBSs). These brave souls open up their systems (typically, but not always, a second machine, like an old desktop Mac no longer used after they got a PowerBook) to just about anyone with a Mac and a modem.

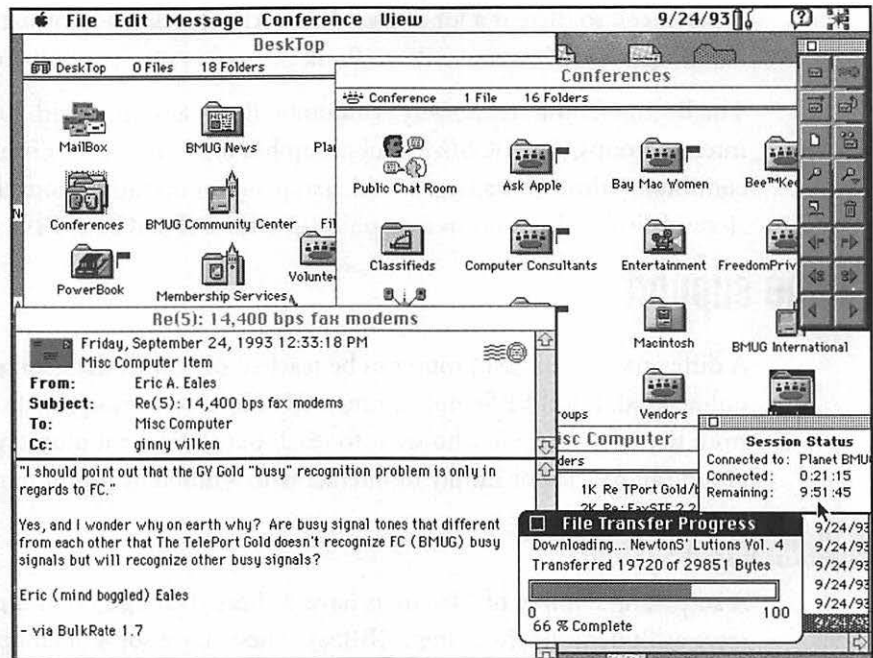
Check local user groups, newspapers (especially computer-related publications), and dealers for referrals to BBSs in your area. You can also look up listings on online services (see below) and on many other BBSs, so if you find one that costs you too much too call, if you spend your time looking for listings, you may be able to find one closer and get off quick, keeping your phone bills down.

Tip: Only go by recent listings, as the average life of a BBS is measured in months, and you don't want your modem to scream in the ear of someone who just got a new phone number. If there is any doubt that a number is a BBS, call it by hand first and listen, so you can apologize if you reach a human being.

A number of systems use special terminal software, known as *client software*, so they can display a graphical user interface (see figure 14.1). This sort of BBS is typically much easier to use than one without a GUI, because you can simply click on folders to open them, rather than remember cryptic text-based commands that rapidly scroll by on your screen.

Figure 14.1

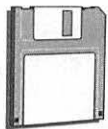
Planet BMUG, a FirstClass-based bulletin board system.



A PowerBook discussion is carried on many FirstClass BBSs that participate in a worldwide network called OneNet.

Online services

If you're willing to pay for it, you can gain access to a much wider range of discussion and software through commercial online services. Like BBSs, each one has its own personality—the result of its interface, its management, and its users. For more information about online services, check out chapter 7, "Online Communications."



This book comes with a special sign-up for AppleLink, Apple's own online service. For more information, see appendix B, "The Harried Traveler's Guide to AppleLink."

Publications

If you'd rather not get involved in the expense and hassle of using a modem, fear not: there are quite a few paper-based resources to help guide you. There are newsletters specific to the PowerBook, plus newspapers and monthly magazines to keep you in touch with the latest developments.

Newsletters

MacPower Magazine claims to be “the only magazine devoted exclusively to the Macintosh PowerBook and Newton.” While I can't verify that claim as of this writing because the first issue isn't out yet, the people involved with this upstart monthly publication seem quite enthusiastic, prepared to provide product reviews, regular columns on telecommunications, software problems, hardware problems, business applications, system setup, games, utilities and more.

Subscriptions include a shareware disk with utilities and access to the MacPower BBS. MacPower also promises a special card good for discounts on hardware and software products. Subscriptions are \$25.95 for one year, \$36.50 for two.

A more regional focus is the aim of *On The Go: Northern California's Guide for Mobile Mac users*. The newspaper-style publication, started in 1993, was going to focus on home computing, but well-funded competition led founder Duane Nason to start a PowerBook-related publication instead.

The first few issues have had some useful and insightful articles on various news and PowerBook products-related items.

Magazines

One way to stay current on all things Macintosh is to subscribe to a general Mac magazine. Once again, I'll put my obvious biases right out on the table: I write for *MacWEEK*. And *MacWEEK* is owned by Ziff-Davis Publishing, which also owns *MacUser*. But I think you'll see from my advice here that I wouldn't hesitate to candidly discuss what really is useful, even if it does come from a “competitor” in some sense of the word.

MacWEEK is a controlled-circulation weekly newspaper for Macintosh Volume Buyers, that is, people who buys lots of Macs for businesses. If you aren't one of these, you can't get it for free, but you can get it by paying \$99 a year.

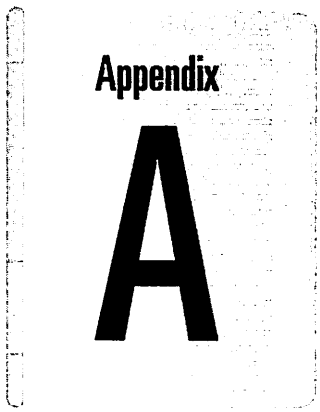
MacWEEK contains the most up to date information about PowerBook product news (sometimes months before it is in print elsewhere), plus reports on problems (like RAM upgrades that didn't work with certain models of PowerBooks). It also carries reviews and comparisons, plus special reports (on occasion) on Mobile Computing.

Macworld magazine has a fine column on PowerBooks written by Cary Lu, author of the *Apple Macintosh Book* and others since then. Also look for new PowerBook announcements not that long after they are released (sometimes the same week, thanks to product previews granted by Apple) plus good general Mac coverage.

MacUser is much the same, with a mobile computing column and even more reviews. While *Macworld's* coverage is geared more towards trends and overviews, *MacUser* leans towards more product reviews. There's quite a bit of overlap, however, so you should check out both magazines and see which one best fits your requirements.

Conclusions

The important thing for you to remember as you enjoy your PowerBook is: You're not alone out there! Don't hesitate to reach out to others in your backyard and across the world. The very technology we celebrate in the PowerBooks can help us build bridges and communicate our knowledge to one another. Please share in what you know; you will be rewarded many times over with the knowledge that you have made a positive contribution to the community.



Appendix

A

How to Use the Power Disk

Attached to the inside back cover of the *PowerBook Power Book* is a disk chock full of special tools useful for the PowerBook owner. Also included on the disk is an electronic version of selected portions of the *PowerBook Power Book*. This is provided so that you can always have the most crucial sections of this book on hand when you need them—that is, when you’re using your PowerBook.

Using the Disk

The files on the disk are compressed, so you’ll need to extract them and save them on your hard disk in order to use them. Before using your disk, slide the write-protect slider so that the hole on the disk is open. This will prevent you from accidentally erasing the disk; you’ll always have a backup, just in case.

To extract the files, double-click on the “Hayden’s Power Disk.sea” icon. Click on the Continue button that appears; soon, a normal Save File dialog box will appear. Choose a location on your hard disk to save the folder, then click on the Save button. The self-extracting archive will expand itself onto your hard disk, and the files will be ready for use!

Hayden’s PBPB Essentials

The excerpts from this book are saved as a standalone application, created by the shareware program DOCMaker. (Note: the excerpts aren’t shareware—just the program used to create other standalone documents.) This means that you don’t have to have any special word processor to read the text.

To read the excerpts, double-click on the “Hayden’s PBPB Essentials” icon. The standalone document will launch. You can scroll through the first chapter just as you would with any word processor. You can move to the next chapter by making a

selection from the **Contents** menu. You can also use the Find function to find a phrase you are looking for.

Portions of the following chapters were included in Hayden's PBPB Essentials:

- Chapter 1: Power Management
- Chapter 2: Mobility
- Chapter 3: Uninterrupted Computing
- Chapter 4: Security
- Chapter 7: Online Communications
- Appendix A: How to Use the Disk
- Appendix B: The Harried Traveler's Guide to AppleLink

PowerBook Utilities

We've collected some of the best shareware and freeware utilities available for the PowerBook, and included them on our disk. Each of the utilities described below comes with documentation and instructions from the author, so we won't try to duplicate that information here. What we will do is tell you a bit about what each utility does, and how to install it.

ClickLock 2.0

ClickLock is a control panel, created by Andreas Atkins, that enables you to (electronically) lock down the button on your trackball. This can help you when you're moving things around in the Finder, scrolling through a long document, or whatever. Simply hold down a modifier key as you click, and the PowerBook will pretend you're holding down the trackball button until you click the button again.

ClickLock is a control panel, so it must be installed in the Control Panels folder inside the System folder.

ClickLock is PostcardWare: if you use it, send the author a postcard! His address is:

Andreas Atkins
P.O. Box 1554
Cupertino, California 95015-1554

Edison 1.0

This freeware application, created by Jaime C. Villacorte, provides you with a host of information about the status of your PowerBook. It displays the current battery voltage, processor speed, and charging state; tells you whether or not the AC adapter is plugged in, and tells you how long it's been since your last charge (in both power-on time and elapsed real time).

Edison is a standalone application, so you can launch it at any time. The author recommends placing it (or an alias to it) in the Startup Items folder, inside your System folder. This will ensure that Edison is running whenever you use your PowerBook.

Newer 1.2

Newer, created by George Touchstone, is a shareware application that enables you to back up your hard disk, with a variety of options. It also enables you to “synch” files between two computers, making sure that you're always working on the latest version of a file.

Newer is an application, so you double-click on it to run it, just as with any other application. It's well worth your time to read the documentation, as Newer has quite a few options.

Newer is \$25 via shareware, so if you use it, please pay for it. The author can be reached as follows:

George Touchstone
29 Sacramento St.
Cambridge, MA 02138

PB Sleeper 2.0

PB Sleeper, which comes as an extension, is a freeware utility from Kristofer H. Cruz. It provides a simple but useful function: it plays a sound when your PowerBook goes to sleep. (Kristofer used a highly appropriate yawn sound.)

PB Sleeper is easily installed. The extension has to be installed in the Extensions folder, inside the System folder. See Kristofer's documentation for more details.

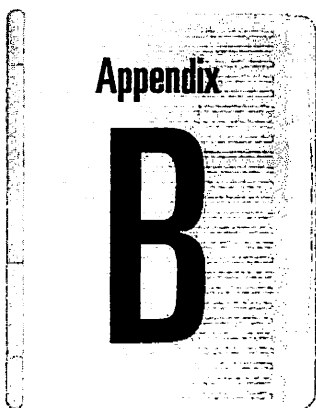
Volts 1.3.1

Volts is a shareware application, created by Lawrence Anthony, that provides you with a digital readout of the current voltage of your PowerBook battery. (In this respect, it is similar to Edison, but there are differences between the two applications that may make one or the other more attractive to you.)

Because Volts is an application, you simply double-click on it to launch it; however, the author recommends that you place it (or an alias to it) inside the Startup Items folder, inside your System folder. This ensures that Volts will run whenever you start up your PowerBook.

Volts is shareware. If you use Volts, please send \$5 to:

Lawrence Anthony
Keck Laboratories
Caltech 138-78
Pasadena, CA 91125



The Harried Traveler's Guide to AppleLink

Included with the *PowerBook Power Book* is a special connection offer from AppleLink, and the AppleLink software, which is included on one of the two disks attached to the back cover of the book. This appendix describes how to use AppleLink and how to take advantage of the connection offer.

What is AppleLink?

AppleLink is an online service run by Apple Online Services that started as company's internal communications system. Its forte is being a great resource for internal Apple literature and technical support from a wide variety of third parties. Often, Apple software is available on AppleLink weeks or months before it's available on other Apple services.

AppleLink enables you to send and receive electronic mail (including an Internet gateway that enables you to exchange mail with people on the Internet, and with CompuServe and America Online members) and to participate in discussion forums. It also provides a growing number of reference services such as news feeds from Reuter's, sports news, weather, past issues of and exclusive software from *MacUser* and, of course, a discussion section on mobile computing.

AppleLink Rates

You get special rates when you sign up with the enclosed disk. AppleLink has an hourly fee of \$14.95 for 2400 bps access (\$24.95 for 9600 bps), and a startup fee of \$19.95. This is a discount of 40 percent off the current charges. Only credit cards are accepted, and Internet messages are \$.50 each.

Signing On

To sign up for AppleLink access, you must request an account. Call AppleLink Account Administration at the 800 number listed below. Alternatively, make a copy of the form at the end of this appendix, fill it out, and mail or fax it in.

Apple Online Services can be reached at:

AppleLink Account Administration

Apple Computer, Inc.

P.O. Box 10600

Herndon, VA 22070-0600

Voice: (800) 877-8221

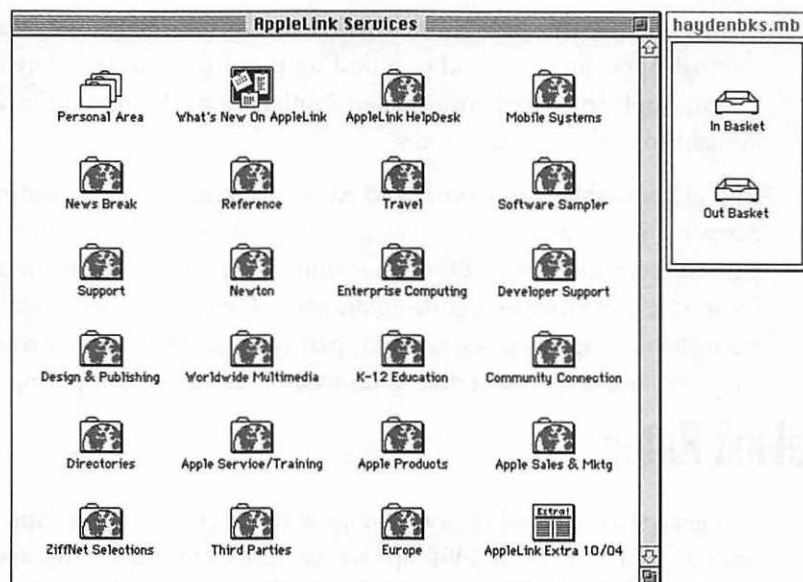
Fax: (703) 318-6701

Getting Around AppleLink

More than any other online service, AppleLink resembles the trusty Finder. Like a typical Finder window, on AppleLink window is littered with folders (see figure B.1). AppleLink folders, however, cannot be dragged within a window like Finder folders.

Figure B.1

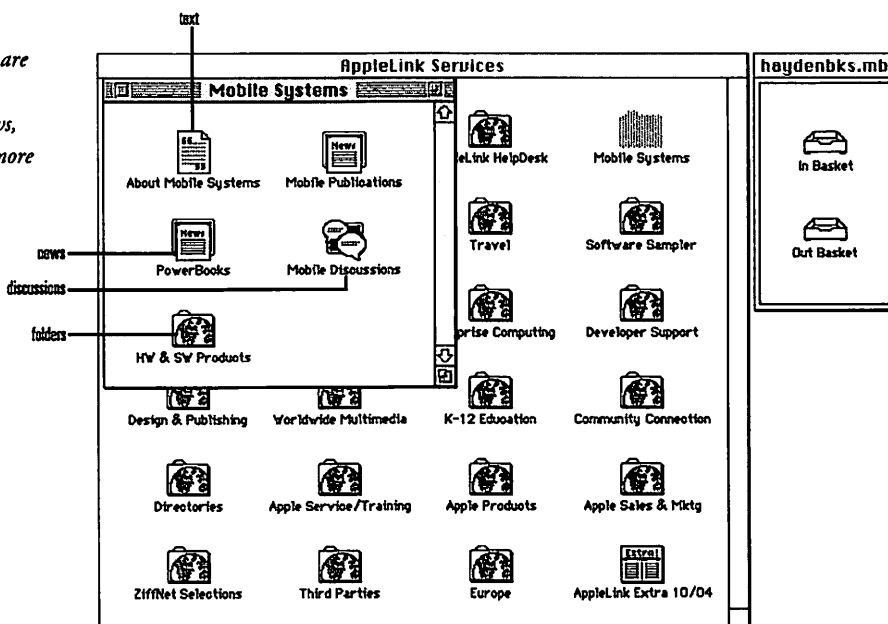
The AppleLink interface displays folders, much like the Finder.



Instead of holding files, AppleLink folders contain bulletin boards, discussions, and news postings, all indicated by an appropriate icon (see figure B.2). To open any of these, just double-click the icon. Figure B.3 displays the Mobile Discussions area. Individual messages are indicated by a boxed “T,” while threads—groups of related messages—are indicated by a folder icon. Simply double-click on the message you want to read. The interface works just like you’d expect it to (as it should—after all, it comes from Apple).

Figure B.2

Different icons are used for text, discussions, news, and folders of more information.

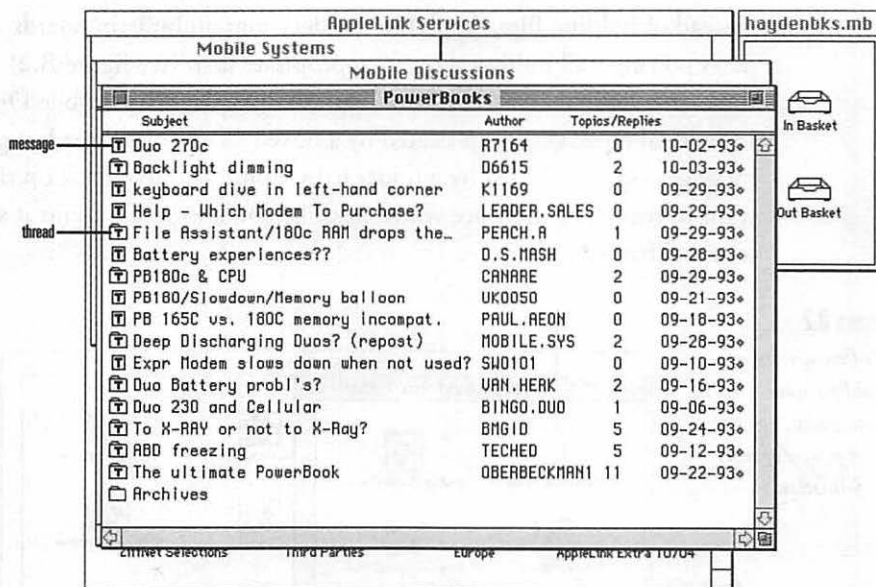


Resources

AppleLink provides many resources of interest to the PowerBook user. This includes information about PowerBooks and their associated hardware and software, and information of use for travellers.

Figure B.3

The PowerBook discussion—a part of the Mobile Discussions area—includes many different “threads,” or groups of related messages.



Some of the areas of interest include:

- **Mobile Systems folder**

This area includes many resources designed specifically for the PowerBook user. A PowerBooks Bulletin Board contains postings of the latest PowerBook information. The HW & SW Products folder contains information about third-party products of interest to the PowerBook user. The Mobile Publications area provides information about publications designed to cater to the mobile computer user.

Perhaps most importantly, the Mobile Discussions area provides a forum where AppleLink members can share information with each other and discuss all things PowerBook. This can be an invaluable source of information regarding your PowerBook dilemmas.

- **Travel folder**

The Travel folder provides AppleLink members with information and services designed to make travelling easier. It contains a Travel News Bulletin Board, which includes information from Knight-Ridder/Tribune Information Services regarding news, trip ideas, and so forth.

The folder also provides services similar to those provided by auto clubs—at an additional price, which is charged to your credit card. A Road Trip Planner Bulletin Board provides driving instructions and information tailored to your

destinations. The Worldview Bulletin Board enables AppleLink users to receive customized TripPlans, which provide details about restaurants, entertainment, special events, and so forth at your destination.

- **News Break folder**

AppleLink provides many different types of news, including world news, sports, financial news, weather, and computer industry news.

- **Technical documents and service notes**

- **Direct connections with Apple and third-party developers**

You can go straight to the source on AppleLink; nearly all developers are represented and all Apple employees are online. The trick is finding the right address given Apple's frequent reorganizations. Nevertheless, if you have a Macintosh question, there is someone on AppleLink who knows the answer.

Of course, many other areas of AppleLink may prove useful to you. The easiest way to learn more about the information available on AppleLink is to browse. Because moving around AppleLink is similar to moving through the Finder, exploring the services offered is not hard.

Searching Libraries

Occasionally, you may encounter an icon that looks like a small group of books on a shelf. These areas are called *libraries*. They contain too much information to browse through, so AppleLink asks you for keywords to narrow the scope of documents it displays.

Just type words related to your subject and press Return. For example, if you are in a technical library and seek information on PowerBook modems, type PowerBook and modem and press Return. AppleLink searches for documents that contain these words and presents them in a list suitable for perusing or printing.

Mail

To send mail in AppleLink, you must first type out your missive. To save money, wait until you're offline (not connected) and choose "New Memo..." from the File menu. After you've created your note, click the Send Memo icon on top of your memo window. This will bring up the memo addressing window.

You can send memos to a number of people, or simply send them a copy of the memo. If you know the AppleLink ID of the person to which you're sending, type it into the To: field. Alternatively, if you have entries in your address book of frequently accessed addresses, you can double-click an address book address to enter it into the To: field.

If you don't know the AppleLink ID of the person to which you wish to send the note, you can (while online) click on the Find Address button. You can search AppleLink for a specific name, or even part of a name.

Exchanging Files

On AppleLink, files are generally attached to a posting or e-mail message. If this is so, the word "Enclosure" and its accompanying icon above the message are black; you can click on the file to retrieve it. A standard save file dialog box will appear. Select the folder to which you want the file to be saved and click on the Save button. The file will be transferred as a progress meter monitors the speed of the transfer. Remember that large files will take a long time to transmit, even with a fast modem.

To attach a file, click on the Add Enclosure icon after choosing New Memo from the File menu. You will be prompted by a modified Open File dialog box to select the files you wish to send.

You'll also note that in the bottom of the file selection dialog box is a checkbox called "Don't compress." If you don't select this check box, AppleLink will combine your files into an archive and compress them into a single file; this will reduce your time spent sending it. On the other hand, AppleLink packages are not as tightly compressed as archives created by dedicated compressors such as StuffIt Deluxe, StuffIt Lite, Now Compress, and Compact Pro. If you have one of these compressors, use it to combine all your files into an archive and select the Don't Compress checkbox, because your files are already compressed.

Of course, AppleLink's compressor does have one advantage in that you can be assured that the receiver has the capability to decompress your files—AppleLink handles the task itself. If you do not know if the recipient has the same compression product you do, be sure to send the file as a self-extracting archive. Your compression program's documentation has information on how to do this.

Getting Help

If you've ever opened a folder, you're taken a first step toward becoming an AppleLink master, but as any two-year-old or Neil Armstrong will tell you, even first steps sometimes require a lot of help. If you get stuck online, you can pay an online visit to the AppleLink Help Desk or send e-mail to ASK.HELPLINE. For difficulty connecting or other problems not easily resolved online, call the AppleLink Hotline at (408) 974-3309 from 5:00 AM through 6:00 PM Pacific time, Monday through Friday.

AppleLink Account Request Form

Customer Information

Last Name (print) _____ First Name _____

Company/School/Organization _____

Mailing Address _____

City _____ State ____ Zip _____

Business Phone _____ Home Phone _____

Last four digits of your Social Security number (for password security) _____

Requested ID

List three choices, each beginning with a letter, and up to 12 characters in length. Use any combination of letters, numbers, and periods (".")—but no spaces or other punctuation. If you use your name, it's wise to use a first initial and a surname ("J.SMITH.") to avoid confusion if someone else has the same last name.

First Choice: _____

Second Choice: _____

Third Choice: _____

Billing Information

AppleLink billing will be handled via credit card only. Apple Online Services accepts Visa and MasterCard.

_____ Visa _____ MasterCard

Account number _____ Expiration Date _____

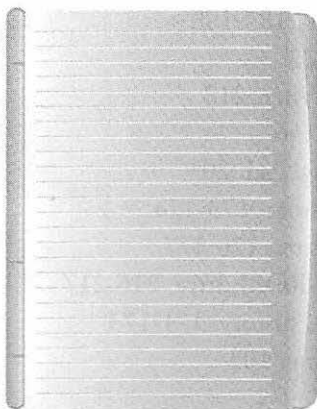
Authorized Signature _____

Please complete this form and mail or fax it to:

AppleLink Account Administration
Apple Computer, Inc.
P.O. Box 10600
Herndon, VA 22070-0600

Voice: (800) 877-8221

Fax: (703) 318-6701



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About the Disks

The Power Disk

This disk provides you with a collection of tools for your PowerBook. It also provides you with text from this book, so that you can keep the essentials with you at all times.

Hayden's PBPB Essentials

Excerpts of the text are provided as a standalone application, so that you'll always have them near at hand on your PowerBook. Hayden's PBPB Essentials includes excerpts from: chapter 1, "Power Management;" chapter 2, "Mobility;" chapter 3, "Uninterrupted Computing;" chapter 4, "Security;" chapter 7, "Online Communications;" appendix A, "How to Use the Disk;" and appendix B, "The Harried Traveler's Guide to AppleLink."

PowerBook Utilities

We've collected some of the best shareware and freeware utilities available for the PowerBook, and included them on our disk.

ClickLock 2.0

Enables you to lock down the button on your PowerBook's trackball.

Edison 1.0

Provides a host of information about the status of your PowerBook, including the current battery voltage, processor speed, charging state, and more.

Newer 1.2

Enables you to back up your hard disk, with a variety of options. It also enables you to "synch" files between two computers, making sure that you're always working on the latest version of a file.

PB Sleeper 2.0

Provides a simple but useful function: it plays the sound of a yawn when your PowerBook goes to sleep.

Volts 1.3.1

Displays a digital readout of the current voltage of your PowerBook battery.

AppleLink Disk

This disk contains the AppleLink 6.1 software, from Apple Computer, Inc. AppleLink is an online service that enables you to access information and services, particularly of interest to PowerBook users; to send e-mail, and much more! As part of this arrangement, Apple is offering special rates for connection time. See appendix B, "The Harried Traveler's Guide to AppleLink," for more information about both AppleLink and the special offer.