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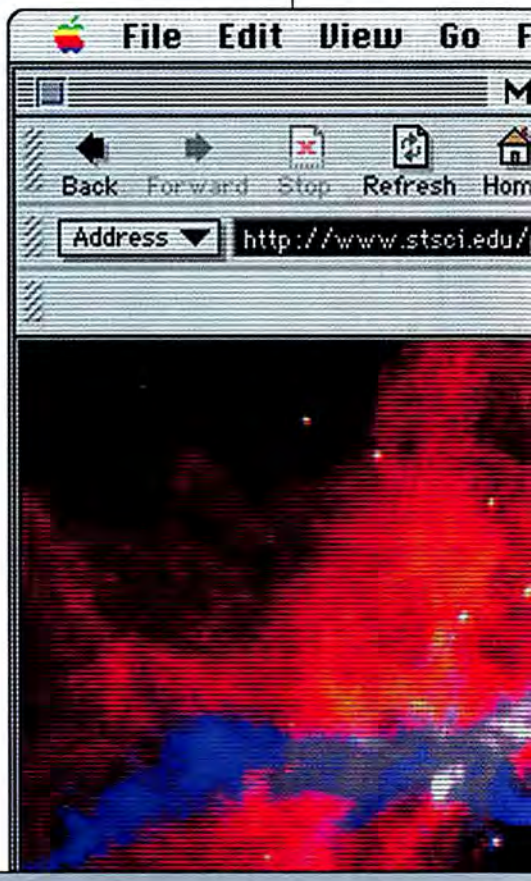

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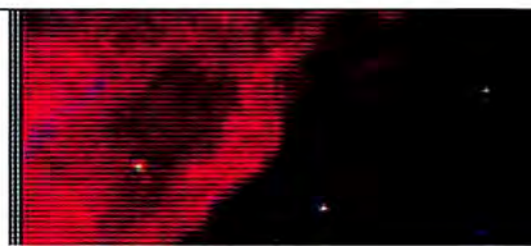

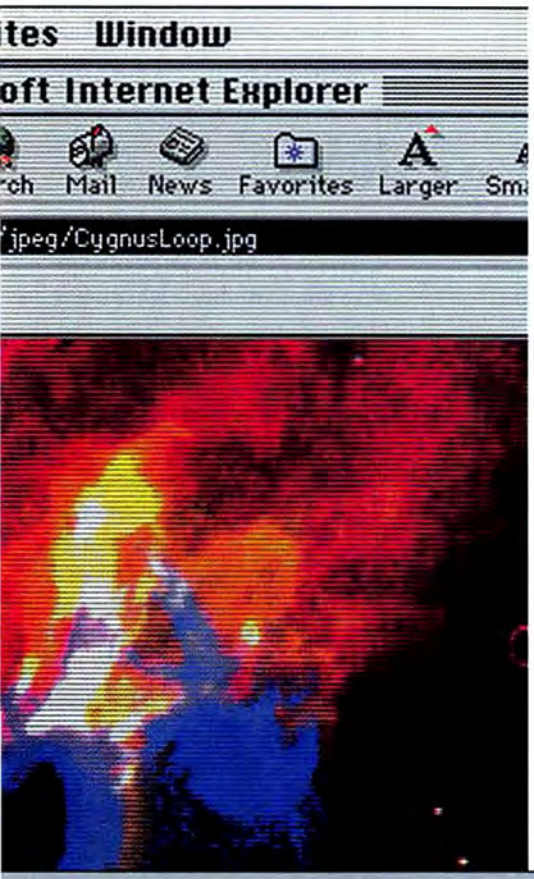

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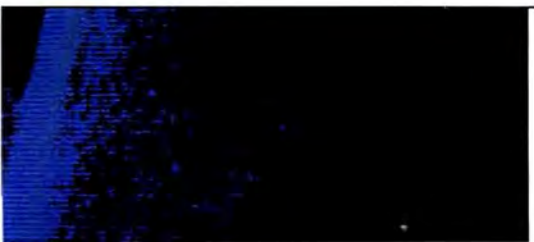

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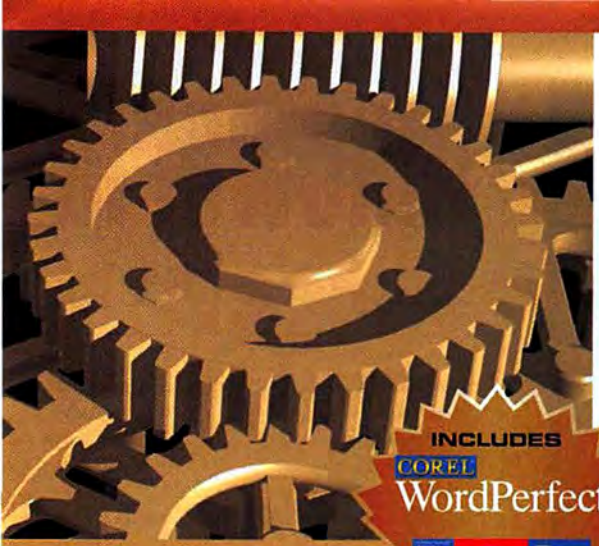

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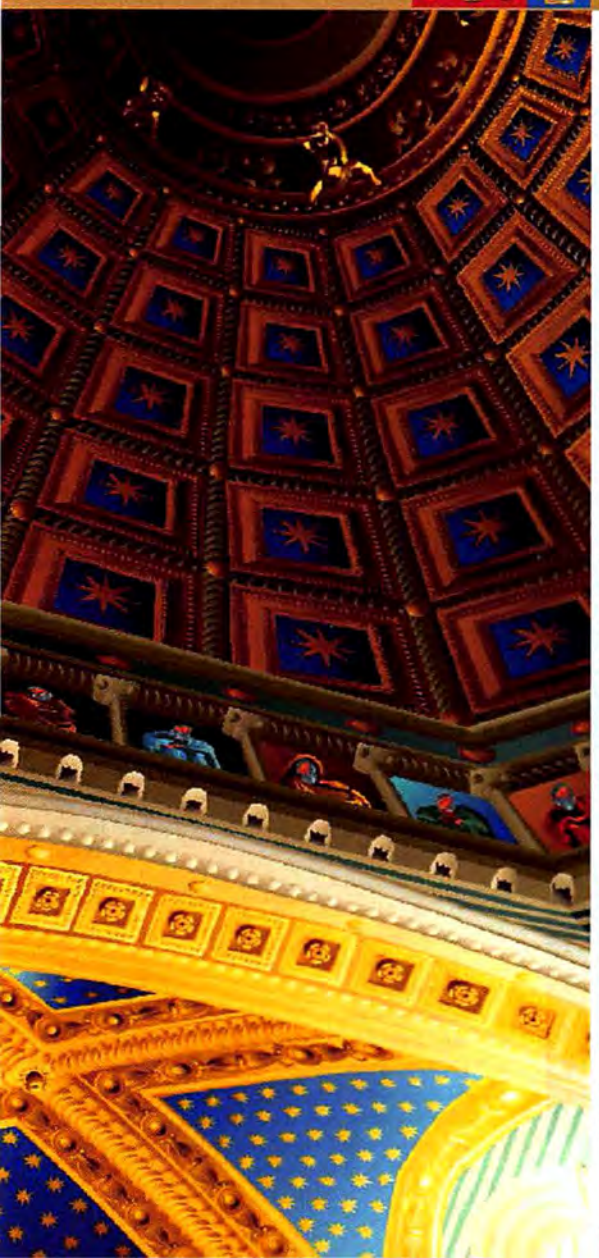

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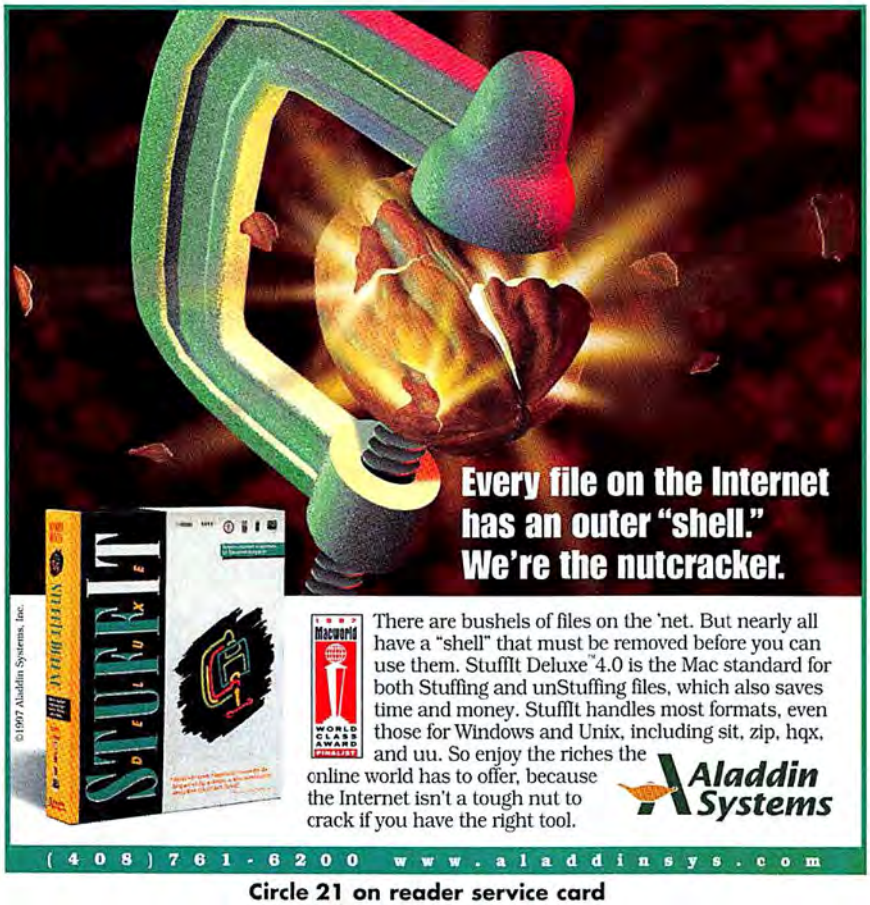

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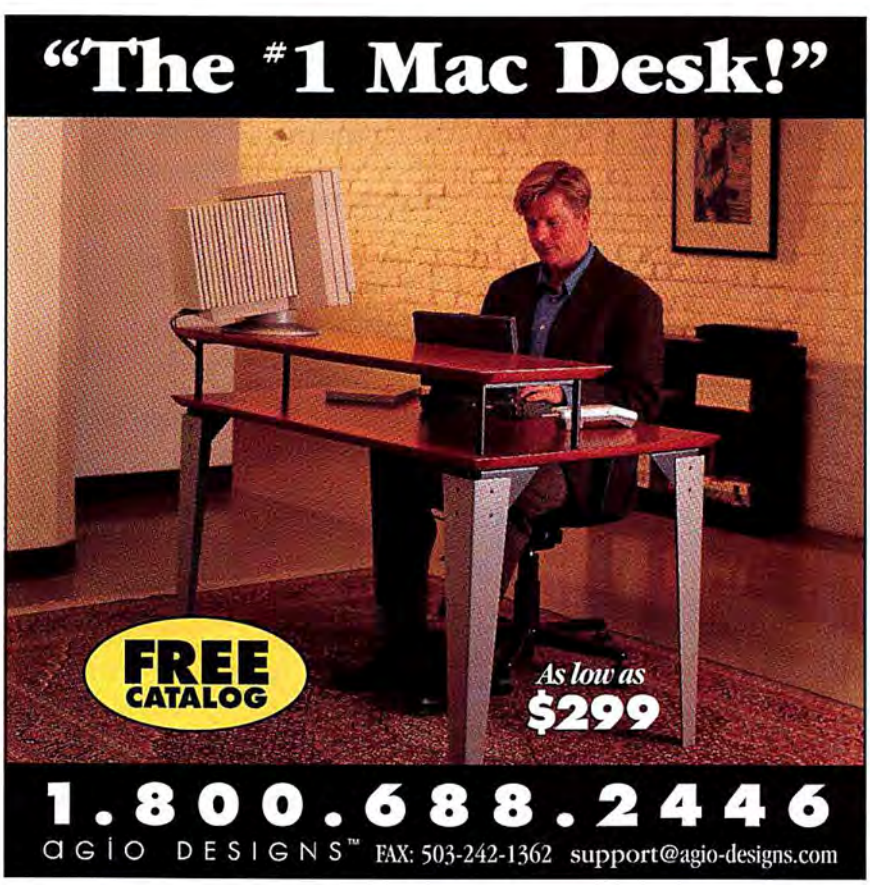

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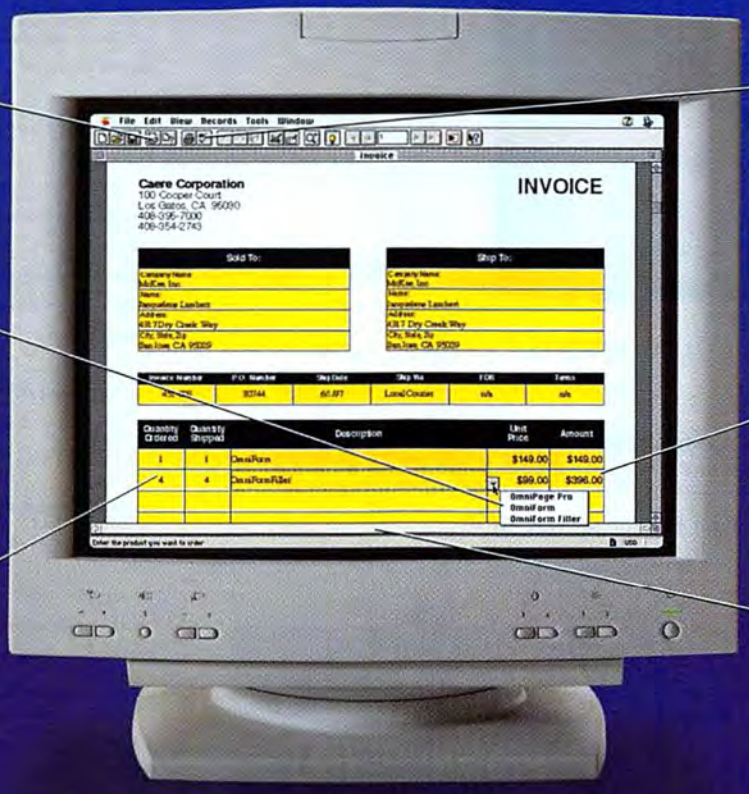

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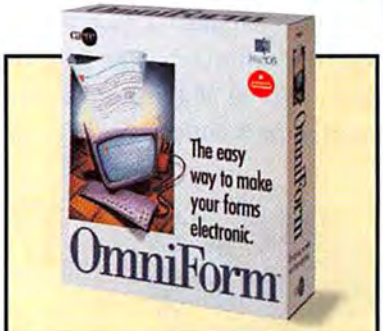

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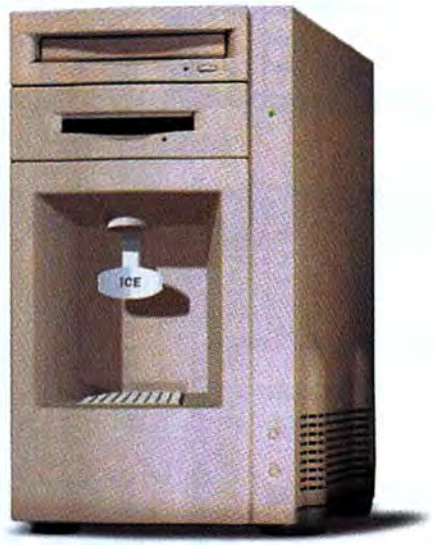

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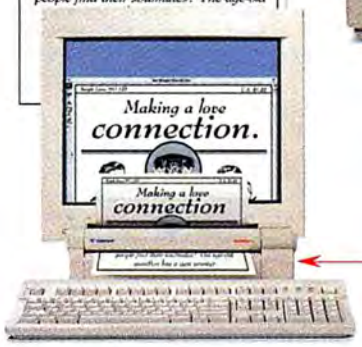

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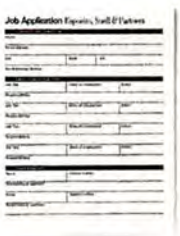

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APRIL 1997

Letters

Waiting for My Money

I PURCHASED AN IOMEGA ZIP DRIVE AND sent in for the $50 rebate in October 1996. After no results two months later, I started checking. I am caught in a labyrinth of automated voice, e-mail, and fax-back messages. Even my retailer is giving me the shrugged-shoulder thing. It's not the 50 bucks, but there is something unsettling about faceless nonservice. Is there a number I can call that doesn't cost $14.95 only to be told I don't have a technical problem?

MARTIN OLSON
Golden, British Columbia, Canada

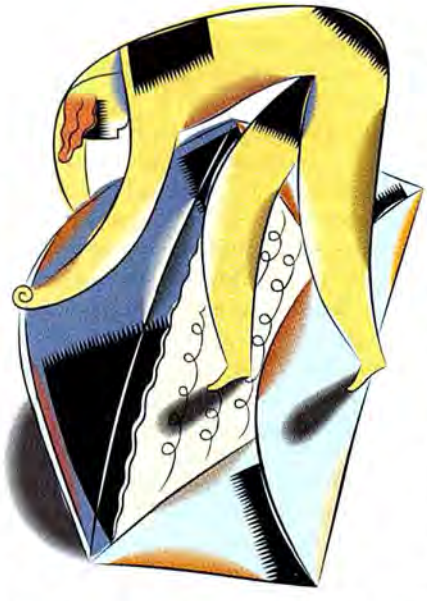
According to an Iomega spokesman, the Zip rebate was far more popular than the company anticipated. The company has now cleared through the backlog of pending rebates; users who have waited more than eight weeks for their rebate should call 800/697-8833.—Ed.

Printing Secrets

JOSEPH SCHORR'S *SECRETS* ARTICLE, "Good-bye, Chooser" (January 1997), states that if you drag several files at the same time to a printer icon, you need only confirm your request once in the Print dialog box, and all your jobs will print.

Would that it were so! I just finished printing 24 two-page files that had to be printed via manual feed in order to take advantage of the straight paper path on my printer. I dragged all the files at once, and proceeded to select manual feed and click on the Print button 24 times, as the system in turn opened each file, opened the Print dialog box, and then spooled the pages. Am I doing something wrong?

BLAIR SANDLER
San Francisco, California



JEFF NEUMANN

Only if you're using Word 6. Seriously, in Word 5 you need only confirm your request once in the Print dialog box when you drag several files at the same time to the printer icon. But as you found out, it doesn't work with every application. Word 6 insists you confirm each and every print job (another improvement, no doubt).—Ed.

Junk-Mail Jihad

I AGREE WITH MATT HENDERSON THAT junk e-mail should be illegal (*Letters*, January 1997). Like many others, I've started using a bogus return address on my Usenet posts to avoid junk mailers who harvest e-mail addresses from Usenet, which, unfortunately, makes it inconvenient for anyone who has a legitimate need to respond to a Usenet post or who asks a question via Usenet. Here are some other ways to stop junk e-mail.

• Check the return address and complain to the system administrator (root and/or postmaster at the junk mailer's domain). Spammers often use a bogus return address. In that case, display full headers in your mail program and look for an X-Sender header, which usually has the real e-mail address. You should also see one or more Received From: headers, which also tell who sent the e-mail.

• If you want to find out who provides the mailer's Internet access or domain name, go to *http://rs.internic.net* and search for the domain name.

• Get a utility like MacTCP Watcher 1.1.2 (freeware from Peter N. Lewis; available from Macworld Online [*http://www.macworld.com*] or on America Online [keyword *Macworld*]) and use the traceroute function to find out who provides the mailer's Internet connection and complain to the appropriate people at that Internet provider.

• Another Web site I find very useful is *http://kryten.eng.monash.edu.au/gspam.html*, which provides a form that lets you use many tools, including domain-name lookups and a traceroute function, to identify the offending Net abuser.

It's time for us to take the Internet back from the spam advertisers.

MIKE COHEN
Casper, Wyoming

Love Me, Love My PowerBook

I AM PUZZLED BY THE APPARENT INCONsistency of a favorable description and unfavorable rating given to the PowerBook 1400 (*Reviews*, January 1997). The gist of the review is that the screen is larger in size and better in quality than in previous models, the keyboard arrangement and feel have been improved, and the innards are better organized. The thrust of your unfavorable rating is that the 1400

continues

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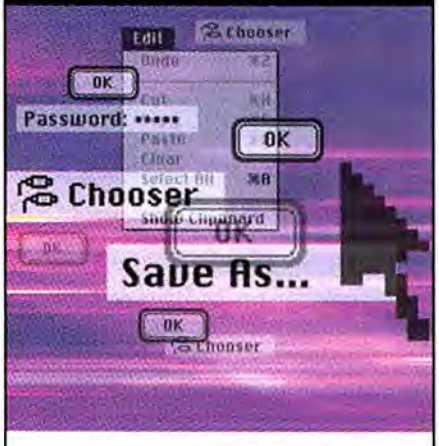

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Circle 170 on reader service card

CORRECTIONS

- *Digital Chisel://HTML can convert sounds and video to HTML* (Reviews, *January 1997*).
- *Users can align individual points in FreeHand Graphics Studio 7* (Reviews, *February 1997*).

is not any faster than the previous model.

I wonder if it wouldn't be more fair to review equipment based on what it is, rather than how *Macworld* would like it to be. I have a sneaking suspicion that inscrutable Apple intentionally committed this sin to keep the price down for people who don't wish to pay for speed they won't use. Perhaps we have lost sight of the PowerBook's original purpose.

Television ads suggest PowerBooks are used only in airports, and that stewardesses are mightily impressed by, and socially inclined toward, the suits using them. But the makeup of the Apple-user population has changed remarkably because Macs have become less expensive and easier to use, and perhaps Apple and *Macworld* haven't yet adapted to this new base. There is a vast army of retired people marching over the hill; they want to use e-mail and the Internet, and for this group, ease of use, stability, and cost are much more important than speed.

BOB BRADFIELD
Orinda, California

Using a PowerBook to pick up women—never thought of that.—Ed.

Doomed!

I BOUGHT PATHWAYS INTO DARKNESS from Bungie Software more than one year ago. Recently, I acquired Doom II. Both games are really nice. My problem is that I want to finish both games, but I am simply not able to do it. I acquired the official Pathways into Darkness hint book, but that was not enough. Please, if somebody knows a code, a keyword, or a specific manner to bypass the mortality of the player, let me know.

CARLOS CONDE-REYES
Rio Piedras, Puerto Rico

Isn't bypassing the mortality of the player the latest concern among baby boomers? In any case, point your browser toward David Coufal's Pathways into Darkness Web page (http://methane.mit.edu:8001/user/coufal/pid/index.html)*: it's got FAQs, cheater files, and game maps.*

I didn't find any one supreme Doom II page, but for cheat codes try IDDQD *for a little omnipotent action, or* IDBEHOLD+V*—as in in-Vulnerability. Use* DOOM II cheat *on a service like Yahoo to search out sites with the full list of Doom II, ah, enhancements.—Ed.*

Evangelical Apple

FOR YEARS, THE MAC COMMUNITY HAS routinely bashed Apple for its failure to get the message out. Isn't it only fair to recognize the company when it does something right?

The free product literature, videotapes, and decals Apple makes available (see the Why Macintosh? Web site at *http://www2.apple.com/whymac*) are terrific! I have used these materials to convince three coworkers to purchase Macintoshes. Thanks and congratulations, Apple, for a good idea done well.

STEPHEN C. WATTS
Bloomington, Illinois

Illustration Challenge

YOUR REVIEW OF THE BIG FOUR ILLUSTRATION programs was very thorough, and I applaud the emphasis on usability, not features, as grounds for testing ("The Illustration Challenge," January 1997). While your evaluations were dead-on, they took the perspective of the power user—someone with lots of experience using illustration programs. As a consultant in a multimedia center using both Macromedia FreeHand and Adobe Illustrator, I must say that no review of the programs is complete without mention of the supporting documentation.

Macromedia has opted for the online CD-ROM format (at least when you purchase FreeHand with Graphics Studio), while Adobe wisely chooses the more expensive paper copy. The FreeHand online manual and tutorial are unwieldy and slow, and prove extremely difficult to print (the inevitable course of action). The online tutorial is difficult to run with FreeHand open and yet doesn't make sense without it.

As my old usability engineering professor used to say, "You get the feeling

continues

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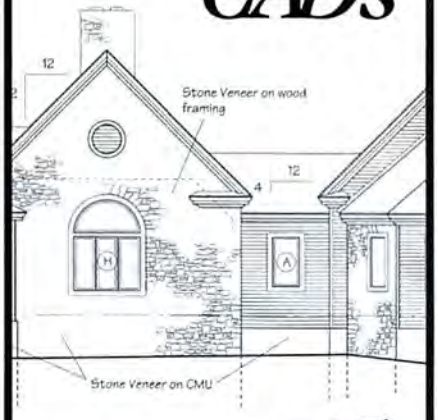

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they spent more time on the hypertextual links than on writing a good manual." It is not an exaggeration to say that the Illustrator manual is more useful when you're working in FreeHand (thanks to similar interfaces) than the FreeHand online manual is. FreeHand's dismal manual will keep third-party how-to books in business for a long time.

KOBY SNYDER
Charlottesville, Virginia

FreeHand 5.5 did indeed opt out of providing printed documentation, a deficiency that we called out in our review (February 1996). Thankfully, FreeHand 7 has remedied this omission.—Ed.

I APPRECIATED DEKE MCCLELLAND'S well-written article "The Illustration Challenge." However, in the second paragraph under "Zooming and Scrolling," he says, "FreeHand's sole failing is that it doesn't let you save custom views." Unless I'm misunderstanding what he means, I believe the program *does* let you save and recall custom views every time you open the program. Under the Document category of the Preferences palette, you can check the box labeled Restore Last View When Opening Document. You can then save a document while zoomed in on a detail at, say, 800 percent. When you open the document again, you will find yourself looking at that same object at 800 percent.

DALE SANDERSON
Aurora, Colorado

FreeHand is the only program that doesn't let you save a cadre of custom views that you can call up and revisit any time while working with the program. While remembering the last view from one session to the next is useful, custom views let organized users quickly navigate to places where they've been in the past.—Deke McClelland

Better, Smaller Web Browser

I HAD JUST DECIDED THAT IT WAS TIME to replace my old and beloved Mac SE with a newer Mac so I could use one of the standard browsers to surf the Net. Feeling rather like someone looking for a vet to put their old hound to sleep, I purchased the December 1996 *Macworld* to read the Mac reviews.

There I found Charles Seiter's "Better, Faster Web Searching" and read about MacWeb (*NetSmart*). Hallelujah! Sure enough, MacWeb has enabled my antique Mac to get me anywhere in the world I want to go. Since I am cruising the Web for information instead of sensory input, MacWeb actually suits my needs better than the bigger, more commonly used browsers.

The only, yet rather large, problem is that since EINet, MacWeb's original publisher, has merged into TradeWave, the MacWeb online help page is no longer available. You pointed that out in the article, but I wonder if there is any chance the help page might live on somewhere else. If not, are there any other sources to help me figure out some of the program's features?

JOHN BREUER
Vancouver, Washington

*That's right; TradeWave is no longer supporting MacWeb or its PC twin, winWeb, outside of its corporate-oriented package, TradeVPI. Some information is available at the company's Web site (*http://www.einet.net/EINet/MacWeb/MacWebHome.html*), but your best bet for help and advice is the Usenet group* comp.infosystems.www.browsers.*—Ed.*

Ignorami

NOT THAT I'M USUALLY THE CHAMPION of large pizza corporations, but I think a magazine ought to pay attention to small details, even if they're not exactly computer related. Your review of Origami: The Secret Life of Paper (*Holiday Gift Guide*, January 1997) should have said that the pizza company with the clever pterodactyl commercial is, of course, Little Caesars. Domino's, like Apple, wouldn't know a clever ad if one fell on their head along with free twisty bread and a two-liter bottle of Jolt!

ERIC MILLER
Norwalk, Connecticut

Letters should be sent to *Letters*, Macworld, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically to CompuServe (*70370,702*), MCI Mail (*294-8078*), America Online (keyword *Macworld*), AppleLink (*Macworld1*), or via the Internet (*letters@macworld.com*). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*.

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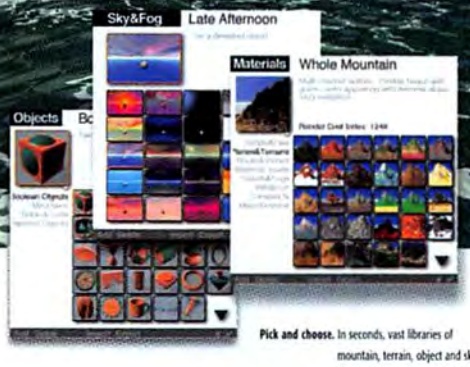

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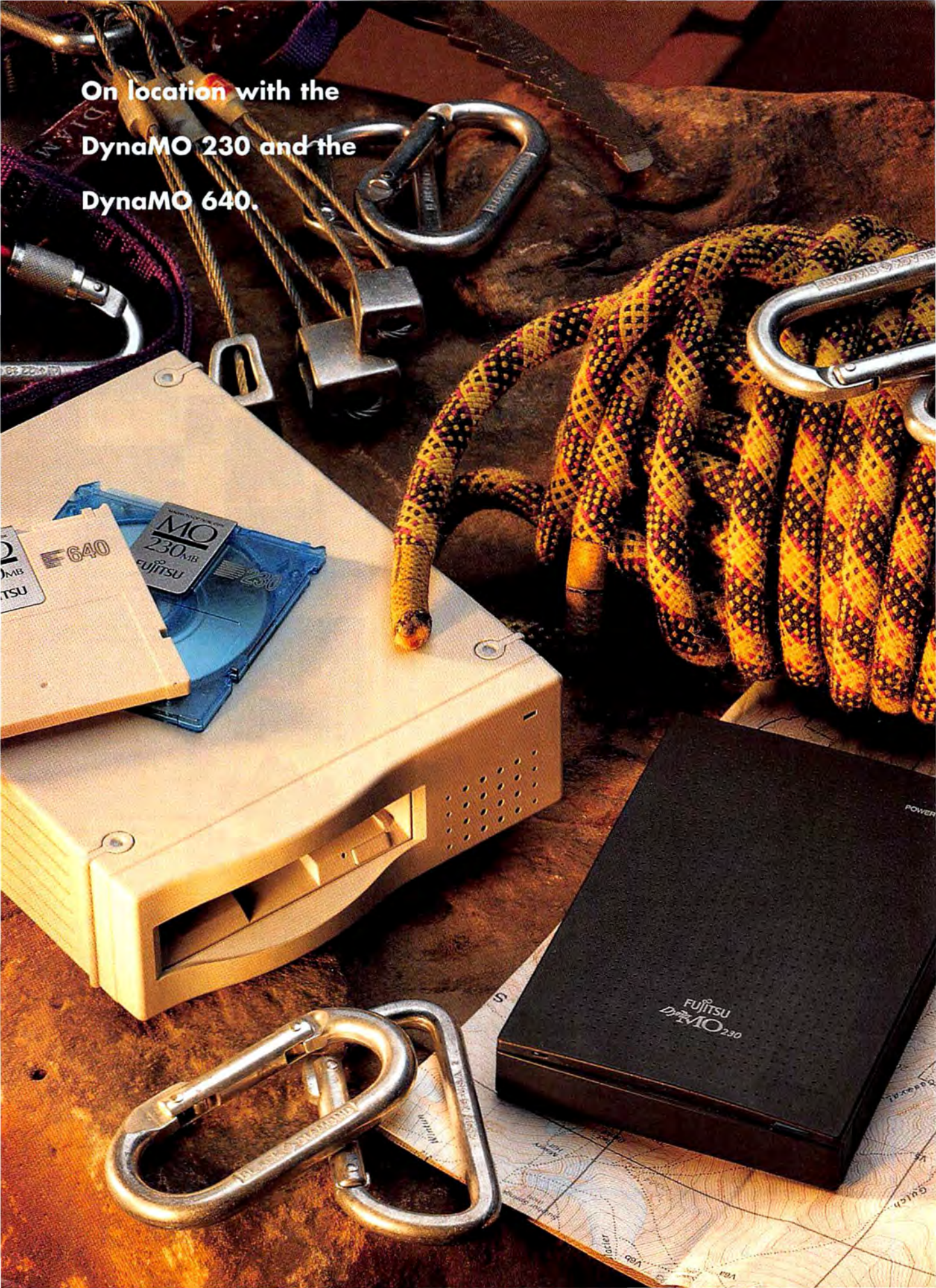
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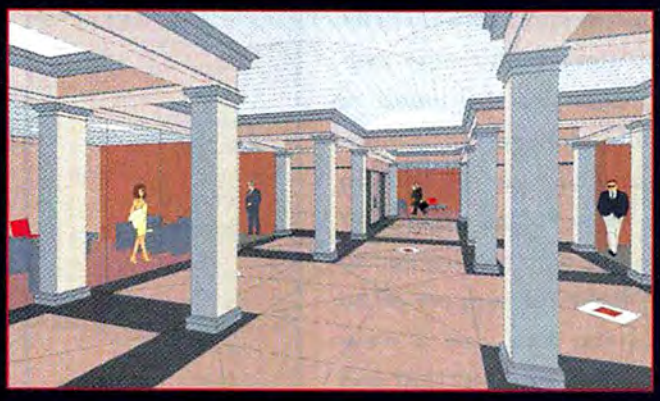

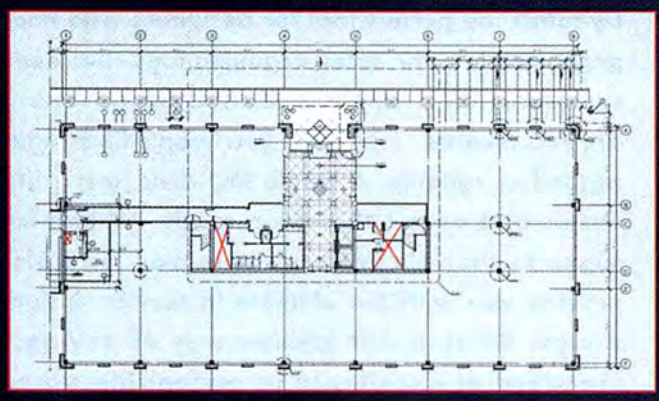

Way to Design

—Audience Vote at the Designers CAD Shoot-Out

The general-purpose MiniCad went toe-to-toe against industry-specific CAD programs nearly six times as expensive—and came out on top—at the first-ever Designers CAD Shoot-Out for Architectural CADD Systems. In this advent of "architecture as a spectator sport," the audience at Boston's World Trade Center awarded MiniCad 6, fittingly, six first-place awards:

- Most Cost Effective
- Easiest to Use
- Best at Cross-Platform Operation
- Best Floor Plans
- Best Elevations
- Best Sections

MiniCad also placed a close third in the Overall Winner category (garnering 21% of the audience vote compared to Arris' 25% and ArchiCad's 24%), beating out AutoArchitect, Microstation Triforma, AllPlan, Architrion, and DataCAD. Even more impressive: MiniCad was the only software program running on both a Macintosh and a Windows machine during the event. This recent success is not surprising. For years MiniCad has been the top-selling CAD program on the Macintosh, winning industry awards worldwide. And the reviews for the recently released Windows version have all been emphatic.

To find out more about the CAD Shoot-Out or how professionals in more than 80 countries have used MiniCad—designing everything from a guitar to a zero-gravity manufacturing device; building houses, luxury high rises, shopping centers, and hockey arenas; planning the stage set and lighting for worldwide Metallica tours; even helping reconstruct Shakespeare's historic Globe Theatre—check out our web page (www.diehlgraphsoft.com) or call 1-800-413-0935.

MiniCad has a suggested retail price of $795, and it comes with 18 months of free tech support and a 30-day money-back guarantee from participating dealers. MiniCad 6 supports Windows 95, NT, 3.1, and Macintosh OS.

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Above building designed by David A. Bruhnke, Herring & Trowbridge Architects.

MiniCad 6—The only thing small is the price.

Circle 46 on reader service card

by Adrian Mello

Casting Out the Blue Meanies

APPLE MUST LEARN TO COMMUNICATE EFFECTIVELY

IT'S BEEN A YEAR SINCE GIL Amelio took over the role of chairman and CEO of Apple Computer and began a crusade to turn the company around. In the last year Amelio has made significant improvements to Apple, but a cloud still hangs over the company. Accountability is being pushed down into the organization, the company is managing its business more professionally, and it has a good technology plan. But people still worry about Apple's health. And this compounds its problems because people who worry about Apple are afraid to buy Macs.

Apple's biggest problem is its continuing inability to manage perceptions about its prospects for the future. Apple must aggressively confront this problem if it is to clear the cloud of doubt that is slowing the rejuvenation of the company. I and most other Mac advocates are sick of smug naysayers. It's time to combat the blue meanies.

Simplify the Terms for Success

Apple has failed to articulate a clear and persuasive message about how it will move beyond its current difficulties. Until people understand Apple's formula for success, all the company's efforts will be hindered by lingering doubt. This is a challenge because Apple's business is so complex. I think Apple and everyone else gets lost in all the complexity.

My advice is to keep the message simple. Most of Apple's revenue comes from selling computers. Beyond that, Apple's business also depends on the overall health of the Mac market. Apple needs to explain how it's going to grow the Mac market overall and how it's going to make a profit selling Apple-branded Macs. Apple says it can succeed by offering the best computers and the best operating systems for publishing, multimedia authoring, education, and a few other target markets. I think it's right, but it needs to make sure everyone understands this by clearly explaining why.

Take Communications Seriously

Apple must devote resources and orchestrate its message as if its life depended on it. The communications plan can't be the kind of reactive, fly-by-the-seat-of-the-pants approach characteristic of the past. It must be understood and supported by company executives—not just delegated as an annoyance to lower-level managers.

The company must identify key influencers that can help turn perceptions around. My short list includes the media, Apple's existing customers, developers, and investors. I put the media first because Apple and all of its constituencies are affected by how the media portray the Mac's health and well-being. Recent stories in the *Wall Street Journal*, the *New York Times*, and the *San Francisco Chronicle* tell me that Apple is still having problems convincing reporters that it is on the road to health. My advice is simple: figure out why they don't understand or believe Apple's plan, then convince them that the plan is a good one.

HANK OSUNA

Clarify the OS Plan

Finally, Apple often fails to explain its technology in terms that are meaningful to customers. The most recent example of this is how Apple handled the communication of its new plans for the OS. It's a good plan, but customers have a hard time relating to jargon like "Yellow Box," "Blue Box," and "Pink Box," "symmetrical multiprocessing," and "preemptive multiprocessing." Confusion breeds doubt. The danger is that customers who worry about future compatibility with the new OS may unnecessarily hold off on buying computers and software. This slows down sales and ends up contributing to stories about the poor health of the Mac market.

For example, here's a recent e-mail from a reader: "My boss uses a Centris 610 (of which she is terrified) that runs on System 7. She's agreed to upgrade, but I wonder if we're better off waiting for the new OS in a year or two. What does buying a new computer now mean in terms of upgrade ease once Rhapsody is released and becomes commonplace? I'm a little confused."

Apple has good answers (see *News* in this issue), but it isn't getting them across. First, the company has committed to updating and supporting System 7 for the foreseeable future, so System 7 users won't be abandoned. Second, System 7 applications will run on the same computers as apps written for Rhapsody (the new OS), at the same time, and without rebooting. Third, all currently sold Macs will run Rhapsody when it arrives.

Simply put, this means you can go ahead and buy a new Mac without worrying too much about compatibility problems. Apple needs to send this message loud and clear. **m**

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See pages 158-159 in this issue for more information about M•Power Systems and APS peripherals.

News

systems

What the New OS Strategy Means to You

NO EFFECT ON CURRENT MACS OR SOFTWARE PURCHASES

by Galen Gruman

GORDON STUDER

The dust is finally beginning to settle on Apple's plan for bringing a new operating system to the Mac. Based on the OpenStep OS acquired when Apple bought Next for $400 million in December (see "What's Next for the Mac OS?" in *News*, March 1997), the future OS has users and developers alike asking what it will mean for their current Mac hardware and software and for their future investment decisions. The good news is that little changes for today's decisions.

Apple's Goals Explained

With the acquisition of Next and its OpenStep OS, Apple has charted an ambitious plan to move the Mac from the current Mac OS to the OpenStep OS while retaining compatibility with today's Mac OS programs. By providing compatibility with the current Mac OS, Apple hopes to get users to accept the NextStep OS and begin to use OpenStep programs instead of Mac OS programs. Apple's current design calls for three OSs—OpenStep, Mac OS, and Java—running simultaneously. The goal is to make them run together transparently so users don't realize that there are actually three OSs running. (This is similar to how 680X0 and PowerPC programs coexist on today's Power Macs.)

To do so, Apple is creating what it calls the Mac OS compatibility environment (code-named the Blue Box). This is the Mac OS running on top of the kernel, which is the software that translates OS instructions into commands the Macintosh hardware and peripherals understand. OpenStep (code-named the Yellow Box) would likewise run on the kernel, as would Java applications. Apple's hope is that users won't see three OS windows on their desktop, but simply the same unified desktop that the Mac OS has today, with three kinds of programs available with a simple double-click.

The whole project—OpenStep, Java, the Mac OS compatibility environment, and the kernel—is code-named Rhapsody.

Current Decisions

Apple is still making decisions on details, but the following key issues are clear.

Time Line Apple expects to have a developer version of Rhapsody available by mid-year, with the first general release of Rhapsody, called Rhapsody Premier, available in January 1998; neither of these releases would include the Mac OS compatibility environment.

In mid-1998, Apple hopes to have the full Rhapsody available, including the compatibility environment.

At the same time, Apple is enhancing the current Macintosh OS, with plans to ship a version code-named Tempo in July 1997, a version code-named Allegro in January 1998, and a version code-named Sonata in mid-1998. The mid-1998 Rhapsody release would integrate the Sonata version of Mac OS 7 in its compatibility environment.

What Kernel? After evaluating several options, Apple announced in February that it will adopt a version of Mach, the kernel used by OpenStep.

Program Compatibility Because the Mac OS compatibility environment will be the actual Mac OS 7 running on the Rhapsody kernel, almost every System 7–compatible program will run under Rhapsody. Exceptions are system extensions and programs that deal directly with the Mac hardware, since they will not know how to work through the new kernel.

Still, this is better compatibility than Apple's previous Copland effort promised; Copland would not have supported any extensions. And many Mac OS 7 programs would have had trouble running under Copland because Copland was to have used a rewritten version of Mac OS 7 that would likely have

continues on page 42

SUZANNE ROADY

Toshiba is one of many vendors now offering LCD monitors.

display

LCDs Hit the Market

PRICES STILL TOO HIGH FOR MASS CONSUMPTION

by Stephen Beale

The future of display technology is here. LCD monitors for desktop Macintosh systems, nearly nonexistent only a year ago, are suddenly available from a host of vendors. Nearly every major developer of CRT display systems has announced an LCD product.

Early Adopters These vendors are clearly banking on tomorrow. For all their advantages over CRTs—smaller footprint, less power consumption, a flat screen that eliminates many kinds of distortion—LCD displays are costly, with the least-expensive active matrix units priced just under $3000.

Vendors are looking to a handful of niche markets to spur initial interest in the new displays. These include financial traders, who need to maximize desk space, and the medical profession, for which some equipment cannot be operated near CRTs and their powerful magnets. Eventually, the vendors reason, demand will increase and manufacturing costs will decline.

The Players Nearly every major CRT vendor has announced an LCD display for desktop machines. The first wave hit at fall Comdex in Las Vegas, which featured LCD product announcements by Eizo Nanao (310/431-5011, *http://www.eizo.co.jp/welcome*), Fujitsu (408/922-9000, *http://www.fujitsu.com*), Hitachi (770/279-5600, *http://www.hitachi.com*), NEC Technologies (630/775-7900, *http://www.nec.com*), Panasonic (201/348-7000, *http://www.panasonic.com*), Sharp Electronics (201/529-8731, *http://www.sharp-usa.com*), Toshiba America (714/455-2000, *http://www.toshiba.com*), and ViewSonic (909/869-7976, *http://www.viewsonic.com*).

Noteworthy among these were Panasonic's $2800 PanaSync LC40, which is 2.5 inches thick and features a 14-inch-diagonal viewing area, maximum resolution of 1024 by 768 pixels, and 24-bit color depth. Sharp's QD-101MM, priced at $2995, features 640-by-480-pixel resolution and a 10.4-inch-diagonal viewing area. ViewSonic's PV140, priced under $2500, features 1024-by-768-pixel resolution, 24- bit color, and a 14-inch-diagonal viewing area.

At Macworld Expo in January, Portrait Displays (510/227-2700, *http://www.portrait.com*) announced the PageMaster and PageView LCD displays, both based on a 15-inch Sharp panel. Expected to ship by May, both displays have dual-orientation capabilities—they can be used in portrait or landscape mode. The PageMaster uses a pivoting mechanism to switch between portrait and landscape, while the PageView must be removed from its stand and remounted. Both offer maximum resolution of 1024 by 768 pixels, a 15-inch-diagonal viewing area, and the ability to display up to 65,000 colors.

Unlike most other LCD displays, which are based on active matrix technology, the Portrait displays are based on less expensive passive matrix technology. While final pricing has not been set, Portrait says the PageView will be priced no higher than $1500, with the PageMaster coming in below $1800.

MAC OS IN FOCUS

APPLE HAS FINALLY RELEASED MAC OS 7.6 AND MACINTOSH JAVA RUNTIME, BUT ARE THEY RIGHT FOR YOU? MACWORLD PRESENTS A SPECIAL MAC OS UPDATE ON PAGE 34.

online

How to Crash a Web Server

TYPO BRINGS DOWN WEBSTAR WITH NETCLOAK PLUG-IN

by Jim Heid

Every Web surfer has mistyped a URL only to get an annoying error message. But for Macintosh Webmaster Jeff Gold, frustration turned to alarm when he realized that a mere typographical error

continues

caused his entire Mac-served site to crash.

Gold encountered the problem on Web servers running StarNine Technologies' WebStar 1.3.1 and 2.0 with the plug-in version of Maxum Development's NetCloak 2.1, a popular WebStar plug-in that adds dynamic elements to Web pages. He discovered that adding certain characters to the end of a URL crashed NetCloak, bringing down the server. To protect the thousands of sites served by the WebStar/NetCloak combination, neither Gold nor *Macworld* will publicly reveal the character sequence, but it's one that would not be too difficult to enter.

In *Macworld* tests, the problem surfaced only when a WebStar server was running the NetCloak plug-in. Using the NetCloak CGI with the plug-in removed generated only an error message.

Quick Fix Maxum quickly posted an update, NetCloak 2.1.1, on its Web site to fix the problem. Maxum also said that it tested both the CGI and plug-in versions of NetCloak 2.1 with Apple Personal Web Server, Microsoft Personal Web Server, and Quid Pro Quo, and was unable to duplicate the problem.

Maxum can be reached at 630/830-1113, *http://www.maxum.com*; StarNine Technologies can be reached at 510/649-4949, *http://www.starnine.com*.

ROBERT PERRY

A Refreshing Display

When you're throwing millions of pixels on a computer screen, you need every speed advantage you can get. The PT813 Professional Series monitor from ViewSonic (909/869-7976, *http://www.viewsonic.com*) is a 21-inch display that features an 85Hz refresh rate at 1600-by-1200-pixel resolution and 99Hz at 1280 by 1024. Targeted at color graphics, publishing, and digital-video applications, it uses aperture grille technology for precise color reproduction. Other features include on-screen controls, ViewMatch color calibration, and an antireflection, antiglare screen treatment. The street price is $1895.—STEPHEN BEALE

display

New Digital-TV Standards Bode Ill

COMPUTER USERS WILL BE DISAPPOINTED

by Cary Lu

The new, advanced television standards, widely heralded for bringing TV into the digital, high-definition era, have turned sour for computer users. This isn't a complete surprise, considering that television standards have lasted for more than 50 years, while computer standards often last less than 50 months.

The four television-industry groups that originally made competing proposals for high-definition television standards joined forces to create a Grand Alliance digital-television standard, complete with prototypes that were tested in 1995. The complex Grand Alliance proposal specifies 18 video formats, many of which carry compromises of the past into the digital age. Some formats are interlaced—a frame is broken into two alternate fields of even and odd lines. Others have nonsquare pixels—the number of pixels per inch is different in horizontal and vertical directions—a severe problem for flat-screen displays. And the highest frame rate is a flicker-prone 60Hz.

Then the computer companies (including Apple and Microsoft) joined the fray, arguing that the Grand Alliance proposal clashed with the computer companies' vision of a convergence of computers and television, since interlacing, nonsquare pixels, and 60Hz frame rates were all abandoned years ago for computer displays. But the computer companies built no equipment and offered no specific alternatives; some argued that video standards should be decided by the marketplace.

In December, the Grand Alliance and the computer companies agreed to what was called a compromise: the Grand Alliance method for broadcasting bits would be used, but without any specific video formats. The compromise retained the Dolby AC-3 sound format. Many reports proclaimed that the computer companies had won.

TV 1, Computers 0 In fact, the compromise was a complete victory for the Grand Alliance. The first groups to get enough advanced TV sets out to the consumers will set a de facto standard. So the Grand Alliance TV makers (Philips/Magnavox, Thompson/GE/RCA, and Zenith) will sell Grand Alliance sets, with their 18 video formats, just as they had planned all along. These TV sets will receive only those 18 fixed formats; they will not be upgradable like a computer.

Technically, the compromise allows broadcasters to send programs in any video format, but there's no reason for them to use anything but a Grand Alliance format rather than a computer-friendly one. Computer industry proponents suggest that a program might be sent in both Grand Alliance and computer formats simultaneously (a single digital VHF or UHF channel can carry multiple programs), but that's unlikely to happen, since broadcasters will make more money by sending two separate TV programs.

continues

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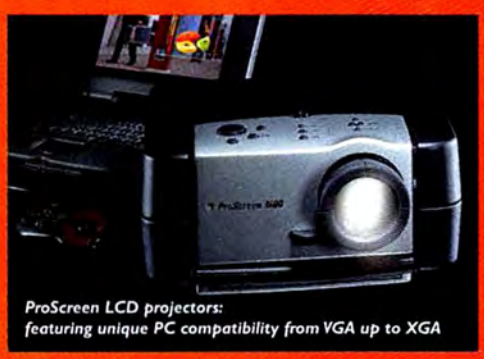

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NEWS FLASH

Apple Reorganizes Again

OUTSIDERS GAIN KEY POSITIONS IN THE COMPANY

by Stephen Beale

Reeling from a $120 million quarterly loss and an admission that the company was still a half year away from sustained profitability, Apple announced yet another corporate restructuring on February 4. The new structure anticipates a smaller Apple, with a tighter focus on the Mac OS and other core product areas. It centralizes decision-making authority, which CEO Gil Amelio says is needed as the company deals with its latest crisis. Eventually, he says, Apple may go back to a more decentralized divisional structure.

Under the old organization, announced last May, all key product divisions, plus marketing and sales, reported to Chief Operating Officer Marco Landi, while Chief Technology Officer Ellen Hancock led the Mac OS development effort. Under the new structure, Landi and Hancock both have diminished roles. Landi now heads worldwide sales and support, while Hancock retains only responsibility for reliability and quality, the chief scientist, Apple fellows, and the Advanced Technology Group. Both still report to Amelio.

The Mac Takes Center Stage Leading Apple's product development efforts will be two respected newcomers. Avie Tevanian, formerly head of Next's operating-system group, heads Mac OS development, while Jon Rubinstein, former chief operating officer of FirePower Systems, a developer of PowerPC-based workstations, and a veteran of Next's hardware business, leads Mac hardware development. The new organization puts the Mac system hardware and OS groups as Apple's main focus.

In a strange twist, Apple's highly profitable Imaging Division, which handles printers, scanners, and monitors, is part of the Operations Group rather than a peer to Apple's systems groups. This is further evidence of the company's new focus on its troubled core systems business.

New Marketing Focus In a conversation with *Macworld* before the reorganization announcement, Amelio said that he would make Mac marketing a strong priority in 1997, after a year of confused and absent messages about the Mac's strengths. The new organization should help Apple deliver on that priority. Apple's marketing functions have been consolidated into a new group led by Guerrino De Luca, formerly chief at Claris. (Claris, now part of Landi's sales operation, is led by Dominique Goupil, who had managed Claris's sales and marketing.)

Pippin on the Chopping Block Missing from the new chart is a home for the Pippin Internet-TV device and the Newton PDA. Amelio said in late January that Apple would drop Pippin—and hinted that Newton could also be on the chopping block—but during the February 4 announcement, Chief Administrative Officer George Scalise said that no final decisions in these areas had been made. However, Bandai Digital Entertainment, which has licensed Pippin from Apple, has already announced that it will support the technology on its own.

Operations, Administration Largely Unaffected Chief Financial Officer Fred Anderson will lead the Finance and Administration Group, while Scalise will head the Operations Group, which is responsible for human resources, government relations, and legal matters. Except for Scalise's new responsibility for the Imaging Division, these two executives had only minor changes to their responsibilities.

Inferior Video Therefore, the relatively poor quality of video that appears on today's computer screens will remain with us for several decades. Although Grand Alliance pictures look much better than NTSC television (the current standard), the quality is much lower than what is possible with today's technology. A computer-friendly picture format—no interlacing; square pixels; a high, 72Hz frame rate—makes for better television. DemoGraFX (*http://www.earthlink.net/~demografx*), a small company in Santa Monica, California, has a working system with such improvements that produces significantly better pictures—at lower cost—than the best the Grand Alliance can deliver.

Why the rush to a weak compromise? TV broadcasters want a second VHF or UHF channel for digital broadcasting without paying any spectrum fees; they want to get free access to those channels before Congress decides to auction them off. The broadcasters simply wanted an agreement—any agreement—so they could press for their new channels immediately.

Weak Arguments The computer companies are in a weak position because they've presented no convincing scenario for a convergence of computers and TV. Apple Fellow Don Norman suggested that digital TV would allow viewers to browse a batter's stats interactively during a baseball game—a terrible idea from a broadcaster's stand-point. Viewers are supposed to watch commercials; why give them a way to do something else?

To persuade the broadcasters, computer companies should have been promoting interactive commercials.

At least the Grand Alliance follows in the tradition of industry-led television standards. The original television standard, supported by RCA, called for only 441 lines and a small, 2.5MHz video bandwidth. Only after a major fight did RCA accept a big improvement to 525 lines and a 4.2MHz video bandwidth in 1941. The first color television standard, promoted by CBS and approved by the Federal Communications Commission in 1951, was a sequential color system that was incompatible with monochrome television. It was a disaster; CBS abandoned the system after five months.

RCA later introduced its NTSC color system with monochrome compatibility.

The Grand Alliance formats look so much better than NTSC that they won't be a five-month wonder. When the first Grand Alliance TV sets arrive in 1998, few people will know enough about the process to understand how much better the pictures should have been. And they won't hear about it from anyone in the Grand Alliance or the computer companies that were a party to the compromise: under the terms of the compromise, all the parties agreed not to criticize any video formats or do anything that might jeopardize the broadcasters' getting their second channels for free.

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Mac OS IN FOCUS

What's New in Mac OS 7.6

UPDATE OFFERS CONVENIENCE AND BUG-FIXES, BUT FEW NEW FEATURES

It's finally here. Apple has released Mac OS 7.6, its latest system software update, along with Macintosh Java Runtime, which allows you to run Java applications on your Mac. In this special report, *Macworld* examines these latest software releases and what they mean for Macintosh users.

Should You Buy Mac OS 7.6?

SOME MAY WANT TO WAIT FOR TEMPO

by Franklin Tessler

Mac OS 7.6 is the first in a series of updates to the system software that Apple plans to ship through at least 1998, when the next-generation OS is scheduled to debut (see "What's Next for the Mac OS?" *News*, March 1997). But a dearth of new features, and the promise of a far more comprehensive upgrade (code-named Tempo) in July, make Mac OS 7.6 (formerly known as System 7.6) a less-than-compelling investment for many users, particularly since it costs as much as $129 to upgrade.

What's New

Although Mac OS 7.6 provides several interface enhancements, many of the changes involve components that are seldom used. For example, Apple's new Installer leads you through the installation process, and it's easier than ever before to see exactly what is being installed. However, there is still no way to prevent the Installer from cluttering your hard drive with drivers and modem scripts that you don't want or need.

Also new to Mac OS 7.6 is a revamped Extensions Manager, which adds several welcome features, including the ability to display information about control panels and extensions. But the new version still doesn't come close to replacing Casady & Greene's $75 Conflict Catcher (408/484-9228, *http://www.casadyg.com*), which lets you troubleshoot start-up file conflicts.

The system also sports handy new screen-capture functions: ⌘-shift-4 captures any rectangular area that you select, and ⌘-shift-4–caps lock creates a PICT file of any window. You can also save the captured area or window to the Clipboard by holding down the control key.

A fun new feature is Talking Alerts, which lets you have the Mac speak aloud error messages and other dialog boxes that display for more than a user-defined time. This comes in handy if you get distracted from your Mac and something goes wrong.

Mac OS 7.6 will let your Mac speak to get your attention when an error message appears.

The new Extensions Manager displays extensive information about start-up files.

For Your Convenience

Many of the software components that ship with Mac OS 7.6—including OpenDoc, Cyberdog, QuickDraw 3D, and QuickDraw GX—are readily available online, either from Apple's Internet sites or on commercial services like America Online, for the price of your online time. Still, Mac OS 7.6 avoids the time and expense of downloading multimegabyte files, and installation is much easier than doing several separate updates.

However, the version of Open Transport that comes with Mac OS 7.6 isn't the latest: version 1.1.2 has been shipping since December, but Mac OS 7.6 comes with version 1.1.1. More important, Mac OS 7.6 comes with QuickDraw 3D 1.06, not the 1.5 version available since November.

When doing a custom installation of Mac OS 7.6, you can specify that you want extra features such as OpenDoc and Cyberdog, but you must go through separate steps to add these components; if you do a standard installation, the extras are added along with the rest of the OS.

On the positive side, Mac OS 7.6 also offers a few components that are making their

first appearance in a general Macintosh OS release. For example, Apple's Remote Access client lets you dial in to AppleTalk networks, and version 8.1 of MacLink Plus from DataViz (203/268-0030, *http://www.dataviz.com*) provides a suite of file-translation tools. Also included in the package is version 1.2 of Apple's Internet Connection Kit.

Behind the Scenes

Not surprisingly, Mac OS 7.6 incorporates a slew of under-the-hood tweaks and bug-fixes. Virtual memory performance is said to be improved (the new system requires virtual memory if you have less than 16MB of physical RAM installed). Apple also claims that the system's improved Resource Manager makes the Mac faster and more responsive, although I wasn't able to verify the improvement with my prerelease copy. Mac OS 7.6 also ships with version 8.4.2 of Apple's LaserWriter driver,

ILLUSTRATIONS BY PETER HOEY

which is faster and more functional than previous versions. Other enhancements of interest to a minority of users include the ability to access volumes larger than 4GB on non-PCI systems and support for multiple processors.

Although Mac OS 7.6 is compatible with most 68030- and 68040-based Macs, it won't run on the Mac IIx, IIcx, or SE/30. And a bug in Apple's CFM-68K Runtime Enabler extension prevents certain software—including OpenDoc, Cyberdog, LaserWriter 8.4, and America Online 3.0—from running on 680X0 Macs. (At press time, Apple was working on a fix.)

System 7.5 users can upgrade to Mac OS 7.6 for $69 (CD version) or $99 (floppy version) by providing proof of ownership. That's too bad: Apple could have garnered much-needed goodwill by selling Mac OS 7.6 for a nominal processing fee. If your Mac is functioning well, especially if you have a 680X0 machine, you're probably better off waiting for Tempo, and downloading System 7.5.5 and the newest versions of QuickDraw, OpenDoc, and Cyberdog from the Internet or America Online.

Apple Runs with Java Runtime

SOLID IMPLEMENTATION WILL APPEAL TO USERS

by Charles Seiter

You've heard about it for months: Java, Java, Java. Now, Java is real, and it's on the Mac. Apple has made available Macintosh Java Runtime as a free download (*http://devtools.apple.com/mrj/*), and

with it you can run Java programs, no matter what platform they were originally written for, since Java is a platform-independent language that promises to let utilities and even whole suites of programs be written once and be used unmodified on PCs, Macs, and workstations.

Most Macintosh users are already familiar with a virtual machine—one is the software package that lets Power Macs run older programs of 680X0 instructions, another is the SoftWindows program that emulates a Windows PC on a Macintosh.

Java Apps Ready to Run

The new virtual machine in the Macintosh world is Macintosh Java Runtime, a rework of software elements licensed from the original Java source, Sun Microsystems, and the first Mac Java development system provider, Natural Intelligence.

As a first major step in the construction of Java building blocks for the Mac OS, it's simple from the user's point of view. Java applets now run as if they were Mac apps—you no longer need to run them within an Internet browser or other special program.

The key element is a system extension for the Mac OS (7.5.5 or later) that implements just-in-time Java applet compiling, a technique that translates portable Java code into Mac-specific instructions. Instead of waiting for a complete system overhaul, Apple has realized it can significantly update the Mac's position in the Web world with some components that are ready to go immediately, such as this Java runtime software.

Apple has also announced, as another immediate system detail, new Java-based OpenDoc parts, perhaps the last best hope for OpenDoc to have a real commercial impact (see *NetSmart*, *Macworld*, March 1997).

In practice, Macintosh users have been able to run Java applets in Netscape Navigator 3.01, but the Navigator virtual machine hasn't won awards for either speed or stability. The Macintosh Java Runtime module, however, is fairly advanced—Apple's in-house Java team has had a year to tinker with the details of two implementations of Java Runtime software. It runs applets three to eight times as fast, depending on content details, as Navigator does (which I measured with a test suite of graphics-oriented applets developed in Symantec Visual Café and parts of the Sun applet pack in the Software Developer's Kit from Java).

Tools for Java Developers

For developers, the Macintosh Java Runtime toolkit provides a set of applets (which can be edited in SimpleText) that amount to a fairly complete tutorial in simple applet development. Beyond this, a downloadable Java Software Development Kit is available that contains not just code libraries but code for sample applet viewers, both PowerPC and 680X0 versions, built for use with the Metrowerks development environment.

Not quite all Macintosh users are invited into the Java cafe: *680X0* in the developer's toolkit means 68030 or 68040. There are no plans at Apple to make provisions for running applets on older 68000 or 68020 systems. In Apple's grand plan to position the Mac as the obvious first choice for the Web, there isn't much argument for making the old models try to compete as Internet workhorses with new, low-cost 160MHz 604e systems.

Java on Tap

Now that Java is on the Mac, you might wonder where to get Java programs. In 1996, the majority of the Java applets available from collection sites (such as *http://www.gamelan.com* and *http://www.partbank.com*) could have been characterized as "Web-site special effects": animations, scrolling banners, fades/dissolves, and other visuals.

Corel's Office for Java suite, which includes old Windows standbys like the Quattro Pro spreadsheet (shown here), has not yet been ported to the Mac. But the Java version runs on the Mac as is.

But in 1997, a larger number of small text editors, simple spreadsheet-like modules, data-entry forms, database links, and other real-office software elements have started to appear, and these are going to be integrated rapidly into more sophisticated applications that fulfill much of the original aim of OpenDoc, with the advantage that Java-based applications will run on all common platforms, not just the Mac. Examples include Corel's Office for Java (*http://officeforjava.corel.com*) and Digital Harbor's Wav (*http://www.dharbor.com/wav/*).

Sneak PEEK

SiteWeaver: Nice Design but a Little Threadbare

BY GEOFF DUNCAN

Today, HTML editors and Web-site–management programs show a distressing tendency to bloat, offering a vast array of features, but often at the expense of elegance, performance, and common sense. So I was excited to learn about SiteWeaver from Miracle Software (315/265-0930, *http://www.miracleinc.com*), maker of the popular HTML editor World Wide Web Weaver (see *Reviews*, March 1997).

SiteWeaver operates from a simple premise: you point it at a folder containing your Web site, and it builds an outline of the site's HTML files, images, CGIs, and more. From SiteWeaver's outline you can edit files; check links; rename, move, or delete items; and create new files and directories. SiteWeaver quickly identifies files that contain invalid links to other files on your site, generates useful reports of your site's links and "dead files" that no other item refers to, and offers pop-up menus of links in your files. It's also easy to move files (and entire directories) to new locations in your Web site. Simply drag to the new location, and SiteWeaver zips through your site, updating all links and references.

A Little Too Lean However, SiteWeaver falls short in many, often obvious areas of interface and functionality. The outline can't sort or expand and collapse directories, making it difficult to work with large groups of files; and it won't let you select multiple items, so you have to move the files in a directory one at a time. Furthermore, the outline doesn't display any file information (such as size, creator, date, or even an icon), which makes double-clicking an adventure if you built your site with various authoring tools. You can edit all HTML files using World Wide Web Weaver, but not with other editors like Claris Home Page or B3Edit; and you can only preview pages in Netscape Navigator.

Not So Fast All this might be forgivable if SiteWeaver had a low overhead and was blindingly fast—but that's not always the case. There's a RAM-hungry option to cache Web-site data for faster access, but SiteWeaver can still be annoying to use with large sites or over a network, particularly since SiteWeaver reprocesses the entire site every time you switch back to it.

It's likely that Miracle Software will clean up SiteWeaver before its release, since many of these shortcomings are not uncommon in early betas. SiteWeaver could become a svelte, utilitarian tool; I hope it gets the chance.

SiteWeaver can display a pop-up of an HTML file's links: links in red are broken, links in blue can't be checked (usually because they're to external sites), and links in black are fine.

storage

New Storage Interfaces to Merge

AARON DRIVES MAY BE READY BY LATE 1998

by Howard Baldwin

Facing the possibility of competing serial storage interfaces—one known for its reliability and the other for its speed—executives from IBM, Seagate, and Adaptec have called a truce and plan to merge the two specifications by the end of this year.

Serial storage architecture (SSA) is promoted primarily by IBM (914/642-3000, *http://www.almaden.ibm.com/storage*) and Pathlight Technology (607/266-4000, *http://www.pathlight.com*).

FibreChannel Arbitrated Loop (FCAL) is promoted by Seagate (408/438-6550, *http://www.seagate.com*), Quantum (408/894-4000, *http://www.quantum.com*), and most other storage vendors.

Although it was initially reported last fall that the merged serial storage specification would be called FibreChannel Enhanced Loop (FCEL), protests from the SSA engineers led the ANSI standards committee to temporarily adopt the benign but meaningless name Aaron for the technology.

Speed Confusion SSA proponents claim speeds of up to 80MB per second, while FCAL proponents confusingly claim speeds of up to 1 gigabit per second (which roughly translates to 125 MBps). Both architectures are designed to work best in networks with multiple drives, such as RAID or digital-video applications. This is because SSA can read from multiple disks simultaneously, while FCAL offers a faster signal rate across the cable.

Hank Watson, president of Pathlight Technology, which manufactures SSA controllers, says that the ANSI committee is striving to make sure that drives using current specifications will be compatible with the future merged specification. However, if you want to take full advantage of the specification's speed improvements, you will need to purchase an Aaron-compatible controller.

Don't Hold Your Breath Drives based on the new specification will not be available until late in 1999, estimates Grant Saviers, president of Adaptec (408/945-8600, *http://www.adaptec.com*), another controller manufacturer. He adds that on the Macintosh, the technology will likely show up in server-based multimedia applications such as video servers.

PETER HOEY

IBM has been shipping SSA drives since mid-1996, primarily in its Unix-based servers. La Cie (503/520-9000, *http://www.lacie.com*) and Microtech (203/468-6223, *http://www.microtech.com*) have been shipping SSA drives in video-specific servers since last fall.

Seagate began shipping its first FibreChannel-based drives, the Cheetah line, late last year.

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HOW THE WORLD AGREES

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Circle 15 on reader service card

Special REPORT

A Third Act for Acrobat

ADOBE'S PORTABLE-DOCUMENT TECHNOLOGY ENJOYS MIXED SUCCESS

Adobe's (408/536-6000, *http://www.adobe.com*) Acrobat technology is the closest we've come to a standard format for portable documents. In this special report, *Macworld* examines Acrobat's strengths and weaknesses, while offering a look at the many Acrobat add-on products now available.

Plugging In to Acrobat

by Cathy Abes

Along with the recent release of Adobe Acrobat 3.0 has come an army of third-party plug-ins that extend its capabilities while keeping the dominant portable-document program ahead of its few remaining competitors.

• DigiDox's (616/954-9500, *http://www.digidox.com*) DigiDozen consists of 12 Acrobat 3.0 plug-ins that include DigiTools, a set of editing tools; TickTOC, which creates bookmarks and hypertext links for table-of-contents entries; Scraper Personal Edition, which corrects recognition errors in PDF pages; and MultiDest, which assigns multiple destinations to a hypertext link.

Due in March, DigiDozen retails for $169, and is bundled with a single-license copy of Acrobat 3.0 for $295.

• Luminous Technology (206/689-6700, *http://www.luminous.com*) has added Acrobat 3.0 support to Luminous OPEN 1.1, the company's workflow-automation software for prepress operations. Acrobat support allows OPEN to automate production of PDF files for online publishing and printing.

Users can automate a variety of repetitive tasks, such as converting PostScript documents into PDF files and logging them into OPEN-aware databases, preparing PostScript files for raster image processing, and optimizing PDF files dropped into a hot folder.

Due by April, Luminous OPEN 1.1 will cost $795. Due later, Luminous OPEN Network 1.1 will cost $4495.

• Ivy International Communications (801/226-5555, *http://www.ivyintl.com*) will incorporate Acrobat 3.0 into Ivy Binder, software that allows online and CD-ROM publishers to organize information for easy search and retrieval and to update previously released data.

• Visioneer's (510/608-0300, *http://www.visioneer.com*) PaperPort Deluxe software provides a PaperPort Ready Link to Acrobat 3.0, which will enable users to convert scanned documents into PDF files or create a PDF file that contains an image of the scanned page, making any recognized text on the page searchable—even if it's hidden behind the image. It is expected to ship in early February for an estimated street price of $80.

• CoreDossier System2 from Electronic Submission Publishing Systems (215/654-9122, *http://www.esps.com*) now has integrated support for Acrobat 3.0. The software enables producers of large documents for regulatory agencies to design, manage, and publish their data over intranets. CoreDossier runs on Windows NT servers but supports Mac clients for document authoring and viewing.

• VerTec Solutions (910/855-9555, *http://www.vertec.com*) plans to release software tentatively titled PopHelp that provides balloon help for users of Acrobat forms. It can also be used to define an action through Acrobat's hyperlinks function. It's expected to ship by mid-February and retail for $14.95 for Power Mac only.

Acrobat Climbs Higher on the Web

by Stephen Beale

Acrobat has always been a mixed blessing for users whose lives revolve around the World Wide Web. For content creators, Acrobat has provided one of the easiest ways to convert graphically rich documents for inclusion on the Web. But for Web clients, Acrobat has been counterintuitive. Instead of simply viewing Acrobat PDF documents on the Web, you had to download them, then run Acrobat Reader to actually see them.

A Seamless Process? Acrobat 3.0, finally released in late fall, was supposed to address this problem by allowing you to view PDF documents directly from your browser. This is accomplished through a Netscape PDF Viewer plug-in that comes with the free copy of Acrobat Reader.

Unfortunately, viewing PDF files, even with Acrobat 3.0, is not a seamless process. Instead of waiting for the PDF file to download, you wait for a viewable document to download, after which the plug-in launches Acrobat Reader. It may happen faster than it did under Acrobat 2.1, but the experience hasn't changed all that much.

This means the Acrobat equation hasn't changed much either. If you want an easy way to place existing documents on the Web, Acrobat is a good choice, especially with the new features in 3.0, which include page-by-page downloading and embeddable URLs. However, if you want to maximize the number of users who view that document, consider an alternative that doesn't require plug-ins—such as straight HTML.

Good News for Print Ironically, while Acrobat's Web capabilities have gotten almost all the attention, Acrobat 3.0 may prove to offer its biggest benefits for print rather than online applications.

ILLUSTRATIONS BY PETER HOEY

PDF is based on the same imaging engine used in Adobe's PostScript language. While PostScript packages this engine in a programming language, PDF packages it in an object-oriented structure designed for interaction. As it turns out, this object-oriented structure provides some advantages over PostScript as a print production technology.

PDF treats each page as a separate entity, while PostScript handles each page as part of a larger data stream that must be processed in sequence. As a result, PDF lends itself to distributed processing operations, in which each page in a prepress workflow is processed on a separate RIP. In addition, the process of converting PostScript files to PDF removes many of the conditions that lead to PostScript errors.

Acrobat 3.0 includes several print-oriented enhancements, such as halftone screens and new color spaces, that place it on par with PostScript as a prepress imaging technology. In Adobe's Supra printing architecture, which it announced last year, documents can be freely converted between PostScript and PDF, depending on the needs of a particular job.

It seems that Adobe can't get away from its origins in print production. For all the new Web-oriented features in Acrobat 3.0, the biggest benefits may still be reserved for those who place ink on paper.

graphics

Extending Photoshop's Reach

PLUG-INS ADD NEW CAPABILITIES

by Stephen Beale

One of Adobe Photoshop's many strengths is its plug-in architecture, which has spawned a cottage industry of vendors offering products that extend the image editor's capabilities. Recently we've seen a new wave of Photoshop plug-ins, from established vendors as well as some newcomers.

Eye Candy One of the most popular plug-in collections, The Black Box from Alien Skin Software (919/832-4124, *http://www.alienskin.com*), has undergone a face-lift and a name change. Now called Eye Candy 3.0, it adds 11 new filters to the original 10, including Fire, Smoke, Weave, Water Drops, Squint, and Fur. Eye Candy's new 3-D interface—those who prefer can switch back to the old one—provides zoomable and resizable previews, autopreviewing, and a thumbnail navigational tool. The software costs $199; upgrades are $49.

Test Strip This $149 plug-in comes from Vivid Details (805/646-0217, *http://www.vividdetails.com*), a company best known for its stock-photo packages. It provides powerful color-correction functions using a relatively simple interface; the company describes it as "Photoshop variations on steroids." Test Strip separates your image into multiple strips, showing incremental variations in color balance, exposure, saturation, and other elements. You can also print images on a color-proofing device, along with labels identifying the settings for each strip. In addition to providing greater precision than the Photoshop Variations function, Test Strip shows a full-screen, full-resolution version of the image.

Vertigo 3D Dizzy You can add 3-D models to your artwork using this $88 Photoshop plug-in from Vertigo 3D (604/684-2113, *http://www.vertigo3d.com*), which the company may also release as a stand-alone application with drag-and-drop capabilities. The plug-in brings up a preview window through which you can import models in Apple's QuickDraw 3D format. You can change a model's size, orientation, and position, as well as add a variety of texture maps and lighting and shadow effects. The software ships with 400 3DMF models from Vertigo and ViewPoint DataLabs.

PhotoCell, PhotoSpot ct PhotoCell is a $59 plug-in from Second Glance Software (360/692-3694, *http://www.secondglance.com*) that converts Photoshop layers into QuickTime movies or animated GIFs. The program's filmstrip interface offers control over frame rate, transparency, and looping options. PhotoSpot ct lets you create continuous-tone separations using spot-color inks instead of CMYK process colors. You can choose any color that dominates part of the image from any color-matching system supported by Photoshop, including Pantone. The list price is $595.

MC-P/CoCo, Channel 24 These Photoshop color-correction plug-ins were developed by Visu Technologies, but are now distributed exclusively by Pantone (201/935-5500, *http://www.pantone.com*). MC-P/CoCo uses algorithms rather than lookup tables to perform color correction. You can select a single color—such as the red in a sports car—and modify it without changing other colors in the image. You can also simulate the effects of paper color and accommodate non-CMYK ink setups, such as Pantone's six-color Hexachrome technology. And you can independently correct up to 16 color channels in each image. For $1195 you also get Channel 24, which can create DCS 2.0 files with up to 24 separate channels.

Primatte S-100 This $799 utility from PhoTron (408/261-3613, *http://www.photron.com*) helps create seamless blends between background and foreground objects in composited images. Its Auto Setup Mode can handle much of the cleanup job, removing edge spill from subjects shot against any solid-color background; a manual mode allows further cleanup.

MetaTools on Its Own

While these vendors seek riches in the plug-in market, one of the most successful plug-in developers, MetaTools (805/566-6200, *http://www.metatools.com*), is moving in the other direction: toward stand-alone graphics products. The company is preparing to release Soap, a $49 consumer-level photo retouching program that could be as big a hit as Kai's PowerGoo. Soap uses a new interface metaphor in which you access each section of a program through a door. According to MetaTools' technology chief Kai Krause, most of the company's product line will be rewritten to conform to the new interface, making it easy to exchange an image among different MetaTools programs.

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Circle 82 on reader service card

online

Make the Net Come to You

NEW WEB SERVICES AUTOMATE DELIVERY OF CUSTOMIZED DATA

by Tova Fliegel

Sit back, enjoy that second cup of coffee, and wait for the news, weather report, and even astrology forecasts to come to you. You don't need to remember a specific URL, have one bookmarked, or go through the wait-and-see process of initiating an FTP session. America Online (703/448-8700, *http://www.aol.com*), BackWeb Technologies (408/437-0200, *http://www.backweb.com*), and PointCast (408/253-0894, *http://www.pointcast.com*) are inspiring a new way to surf as they deliver Internet "push" technology with Macintosh versions of AOL's Driveway, and the eponymous BackWeb and PointCast.

AOL in the Driver's Seat AOL's Driveway delivers information to users offline at preset times determined by either the user or AOL's default controls. The service delivers e-mail messages; customized versions of Top News; the AOL Guide, daily updates from 25 subject areas on AOL and the Internet; customized updates of favorite Web sites using FirstFloor's Smart Bookmarks software; and daily features from 10 of AOL's content providers, including its sports, news, and entertainment partners. Users determine the number of days they want to keep information on their hard drives to prevent overload.

AOL plans to make components of Driveway, in particular the AOL Guide, available to nonmembers in the future. AOL says it will release the Macintosh beta of Driveway in March and ship the final product by the end of June. Driveway will be free to members; pricing for nonmembers has not been determined.

Back to the Web BackWeb sends information through specific channels, to which you subscribe. The information appears in a pop-up window (called an InfoFlash) over your application. You can ignore the window and it will eventually go away, or you can click on it to display the full contents, expanding it into an InfoPak. InfoPaks can include text, graphics, and QuickTime and QuickTime VR movies, and you can display them as a screen saver or desktop wallpaper.

Set to ship as a Mac beta by the end of March, the BackWeb client software will be free, but the Channel Server, which can deliver up to 25,000 InfoPaks per month and requires a Sun or Intel Solaris machine, costs $10,500. General Motors, The Weather Channel, and InfoSeek are among the companies with BackWeb channel servers. By year's end, The Wall Street Journal Interactive Edition and SportsLine USA will be added to the list.

A Cast of Thousands PointCast has been available on the PC for several months; the company says it will introduce version 1.0 of its Macintosh client by April. PointCast replaces your flying toasters with news, weather, and the latest from Wall Street, posting this information from its PointCast Network as a screen saver on your desktop. The PointCast client software is free, while the Windows NT server software, which can support about 500 clients, costs $995.

PETER HOEY

printing

Color Lasers on the Cheap?

FORTHCOMING ENGINES, CONTROLLERS MAY BREAK $3000 BARRIER

by Stephen Beale

Get ready for a new round of price wars in the market for color laser printers. At present, the typical color laser will set you back about $6000, with the cheapest models going for about $5000. But vendors anticipate that forthcoming print engines and controllers—expected this year—could drive prices as low as $3000 for continuous-tone output and $2500 for halftone output. Some believe this timetable is overoptimistic, but there is little doubt that color laser prices will eventually plummet.

Narrowing the Gap The $2500 price point is significant because it considerably narrows the gap between color and monochrome laser technologies. At the low end of the printer market, monochrome lasers are already taking a beating from color ink-jet printers. Given the option of buying a color laser for just $1000 to $1500 more than a monochrome laser, many customers will go for color.

One company singing the praises of low-cost color lasers is Peerless Technology (310/536-0908, *http://www.peerless.com*), a developer of print controller components for such companies as Canon, Hewlett-Packard, Konica, Kyocera, Olympus, Riso, Tally, and Texas Instruments.

Peerless has developed a suite of hardware and software technologies designed to enable low-cost color printing. These include Memory Reduction Technology, software that reduces the printer's memory requirements; and the QuickPrint 1800, a coprocessor that incorporates color graphics acceleration, compression-decompression, and other controller functions.

Too Optimistic? David Fournier, vice president of sales for Peerless, says this low-cost controller technology, in combination with low-cost engines he expects to see later this year, will drive color laser prices to the magic $2500 threshold. Executives with Tektronix and QMS—two major suppliers of color laser printers—agree that such a scenario is likely, while adding that the cheaper lasers will probably require technology compromises, such as slower print speed.

However, Charles LeCompte, a printer industry analyst who publishes the *Hard Copy Observer* newsletter, believes that Fournier is too optimistic in his price forecasting. "It's a safe assumption that prices will come down," he says. "What's in doubt is the time frame." In 1997, he says, prices won't fall much below $5000.

"WHAT THE NEW OS STRATEGY MEANS TO YOU"

continued from page 29

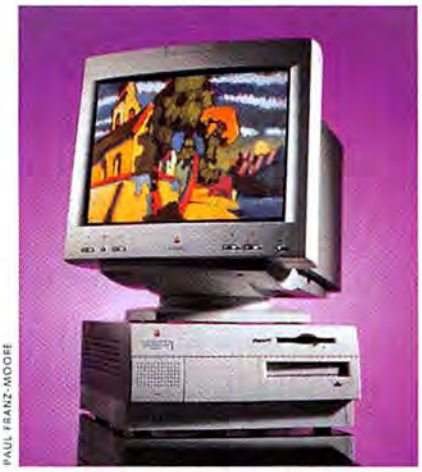
included coding changes on which current programs would stumble.

Mac Compatibility Macs shipping in 1997 and later—from Apple and the clone makers—will run Rhapsody and the three versions of System 7 being developed in the next two years (Tempo, Allegro, and Sonata).

Current compatible systems include the existing Apple Power Macintosh line—the 5260, 5400, 6400, 7200, 7500, 7600, 8500, and 9500; the Apple Performa 6360 and 6400; the new Power Macs—the 4400, 7300, 8600, and 9600; the Apple PowerBook 1400 and the new 3400 (for more details on the new notebooks and Power Macs, see "PowerBook with a Punch" and "More Mac for Your Money" elsewhere in this issue); the DayStar Digital Genesis MP series; the Motorola StarMax 3000 and 4000 series; the Power Computing PowerBase, PowerCenter, PowerTower, and PowerTower Pro series; the Umax SuperMac C500, C600, J700, and S900 series; and systems from other companies based on the StarMax design (this currently includes APS Technologies' MPower line and PowerTools' Infiniti line).

Apple is determining whether it will be able to support earlier systems, such as the Apple Power Mac 6100, 7100, and 8100; the Apple Performa 5000 and 6000 series; the Apple PowerBook 5300; the Power Computing Power and PowerWave series; and the Radius 81/110 and System 100. It is too soon to promise that these systems will run Rhapsody.

Multiprocessing Macs will run using the current DayStar asymmetrical multiprocessing software under the Mac OS compatibility environment, and using true symmetrical multiprocessing under OpenStep.



PAUL FRANZ-MOORE

Apple says that all Macs being sold today—including systems from OS licensees—will be able to run the new Rhapsody OS. The Power Mac 7300 is shown here.

Like Copland, Rhapsody will not run on 680X0-based Mac systems.

Key Technologies Apple has said it will port most key Mac OS technologies to OpenStep, including the following: QuickTime, QuickTime VR, QuickTime IC, QuickDraw 3D, ColorSync, OpenDoc, AppleScript, Apple events, HotSauce, Java, and FutureShare (the new version of AppleShare expected to ship later this year). Any technology that runs under System 7 will run in Rhapsody's Mac OS compatibility environment, Apple says.

Decisions to Be Made

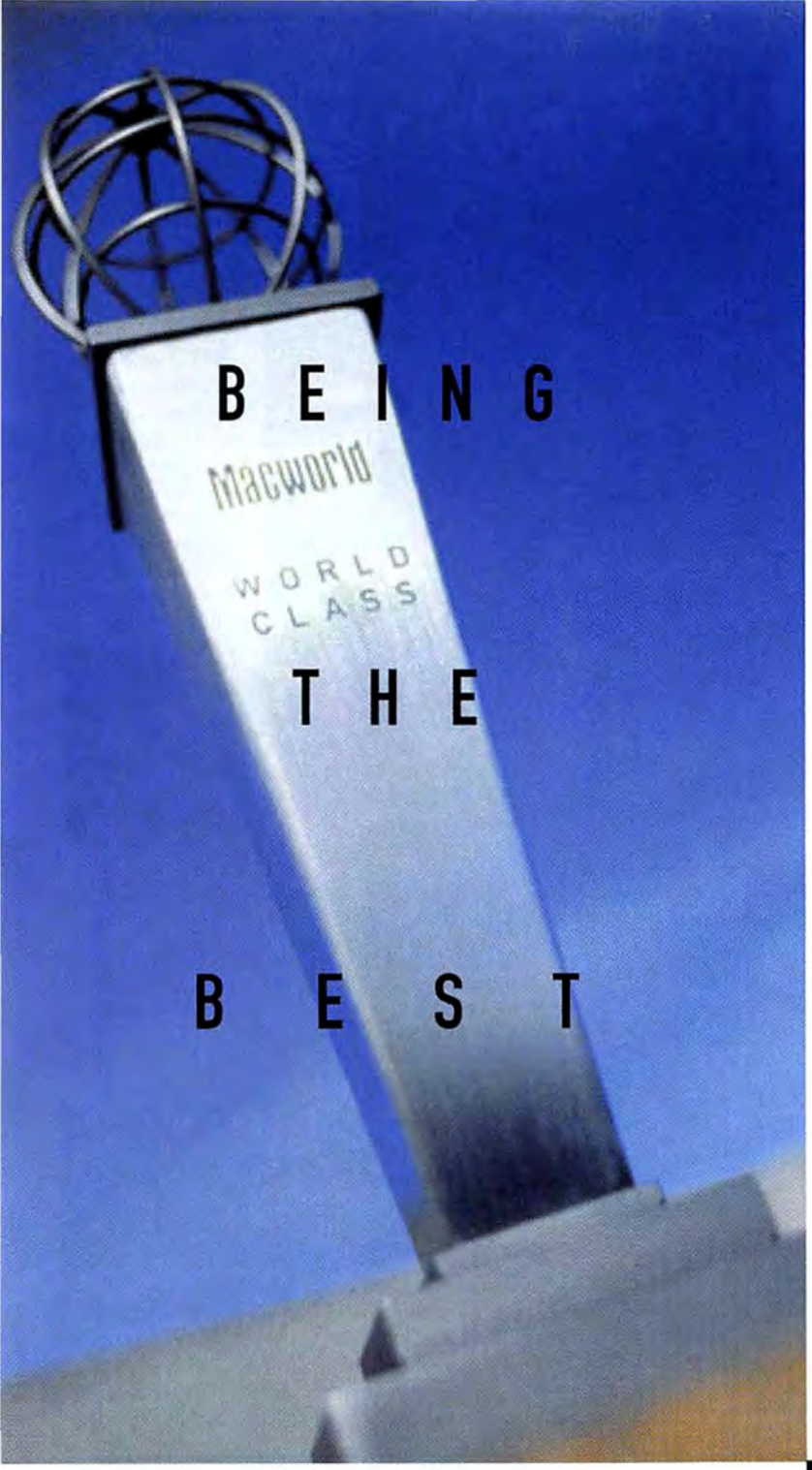
Among the technology decisions Apple has yet to make are the following:

- Whether the Mac OS compatibility environment will run in its own window or invisibly within Rhapsody (only the menus would change as you switched from an OpenStep program to a Mac OS program). The odds are better for a separate window, at least in the first full version of Rhapsody.
- How to handle the graphics engine for OpenStep. Apple wants to port at least parts of QuickDraw GX to the OpenStep engine, which is based on Adobe Systems' Display PostScript.
- Contrary to initial reports, Apple has not committed to porting its Open Transport networking architecture to OpenStep (Open Transport would still run in the Mac OS compatibility environment). OpenStep offers similar services, so Apple may adopt those and perhaps try to provide a translator so Open Transport–aware programs would work with little or no modification with the OpenStep networking architecture.
- Apple has not said how it will support its MacinTalk text-to-speech technology and WorldScript multilingual software; OpenStep uses the Unicode multilingual system that Copland was also supposed to adopt.
- Surprisingly, Apple hasn't decided whether to call Rhapsody *Mac OS*. With two operating systems from Apple running simultaneously under the Rhapsody plan—the Mac OS based on System 7 (which Apple recently renamed Mac OS 7) and a new version of OpenStep—Apple has to decide whether the name *Mac OS* would remind people too much of the old Mac OS 7 or become quickly identified with the new, OpenStep OS. My bet is that the Mac OS, or at least Apple OS, name is here for a long time.

SUZANNE ROADY

A Trackball in Orbit

New from the mouse-meisters at Kensington (415/572-2700, *http://www.kensington.com*) is the Orbit Trackball, which features a translucent blue ball that's smaller than most other trackballs for easier fingertip control. You also get MouseWorks software, which lets you assign tasks to the trackball's buttons. List price is $70.—STEPHEN BEALE



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Close the Photoshop® gap

This "metamorphosis" effect required the careful blending of two images. The artist first applied a layer of fire over a layer of hair. Then, the UltraPen®'s pressure-sensitive eraser was used to progressively remove portions of the fire layer to reveal the hair below. The eraser's pressure-sensitivity allowed the fine control necessary for this technique.

See how the sky shows through the water? The artist pressed lightly to bring in a transparent clone and hard for a fully opaque clone, without having to break concentration or work flow.

Photoshop's *smudge* tool was used to create a smooth transition from water to garment. Wacom's pressure-sensitive UltraPen® lets the artist selectively apply more or less of the *smudge* effect simply by pressing hard or soft, on the fly, without going back and forth between the art and the dialog box.

Artwork created with a Wacom tablet by Steve Belcher, digital artist & Marcus Swanson, photographer

Fire up Photoshop and you'll immediately see something beautiful, tantalizing and extraordinary – eleven pressure-sensitive Photoshop tools that you simply can't use to full advantage unless you've got a Wacom graphics tablet. The instant you install a Wacom, all eleven tools are automatically enabled, instantly alive. All waiting at your fingertips in the exclusive Wacom UltraPen® with its pressure-sensitive, batteryless technology. Customer-tested and refined for over a decade, it's used by more than 100,000 Photoshop artists the world over.

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Circle 146 on reader service card

New Products

THE LATEST MACINTOSH RELEASES

COMMUNICATIONS

Bare Bones Client

BBEdit, the text editor that launched a thousand Web pages, was just the beginning: Bare Bones Software (617/676-0650, *http://www.barebones.com*) has an Internet e-mail client, code-named Bluto, due in March. The $49 POP3/SMTP client features a database that allows users to quickly organize, search, retrieve, and sort stored messages. Other functions include text transformations, powerful search-and-replace features, a spelling checker, and mail filters.

DISPLAY

Lightweight Projectors

Business presenters on the go should check out the latest crop of lightweight LCD projectors.

• The $4995 PolaView 10 from Polaroid (716/256-4436, *http://www.polaroid.com*) is just under 10 pounds and supports resolutions up to 640 by 480 pixels. Brightness is 200 ANSI lumens.

• The $6995 VP800 from Lightware (503/641-7873, *http://www.lightware.com*) weighs just under 10 pounds and offers 800-by-600-pixel SVGA resolution and the ability to project a 40- to 200-inch-diagonal image.

LiteGo 320

• The $5999 LiteGo 320 from InFocus Systems (503/685-8888, *http://www.infocus.com*) weighs 9 pounds and offers 800-by-600-pixel resolution at 200 ANSI lumens.

• The $7995 NoteVision XG-NV1U from Sharp Electronics (201/529-8731, *http://www.sharp-usa.com*) weighs 15.4 pounds and displays up to 832 by 624 pixels at 400 ANSI lumens.

GRAPHICS

Flashy Picture Factory

Eastman Kodak's (716/724-4000, *http://www.kodak.com*) PixFactory is a suite of six modules based on the FlashPix graphics format (see "FlashPix Format Gains Momentum," *News, Macworld,* December 1996).

• The $499 Media Converter converts TIFF, JPEG, and other image formats into FlashPix.

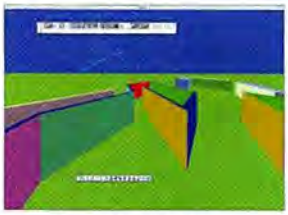
• The $1995 Media Cataloger embeds FlashPix images with non-image data, such as the date, time, and photographer's name, making it easier to search for images.

• The $1995 Media Streamer for Solarise and the $995 Media Streamer for Windows NT are Web-server plug-ins that let users share low-resolution versions of FlashPix images across networks and over the Internet, while maintaining links to the high-res originals.

• The $9995 FlashPix DataBlade allows users of the Informix Universal Server to search for and retrieve FlashPix files. There's also a $499 Media Viewer.

Get Virtual

The world-builders among us now have a tool for creating online virtual environments. ParaGraph's (408/364-7700, *http://www.paragraph.com*) Virtual Home Space Builder lets those without VRML coding experience create 3-D worlds complying with the VRML 2.0 specification. A rendering engine provides a quick view of the 3-D environment under construction. The program ships with a library of textures, images, animations, sounds, and sample 3-D spaces. It is available as a $30 download from the ParaGraph Web site or on CD-ROM for $50.



Virtual Home Space Builder

INPUT DEVICES

A Clean Slate

New from CalComp (714/821-2000, *http://www.calcomp.com*) is the UltraSlate, a graphics tablet with a cordless, pressure-sensitive pen that requires no batteries. The $165, 4-by-5-inch version is bundled with Fractal Design Dabbler software, and the $340, 6-by-9-inch version comes with Live Picture SE.

MULTIMEDIA

Faster 3-D

Want to add some bounce to your 3-D graphics? Several vendors are offering new QuickDraw 3D accelerators, which boost performance in 3-D graphics applications that support Apple's Rave technology.

• The Xtreme-reZ3D, a $999 card from Integrated Micro Solutions (408/369-8282, *http://www.integratedmicro.com*), uses a TwinTurbo 128-3D graphics controller with 8MB of VRAM to speed up 2-D and 3-D graphics and QuickTime video. Integrated also offers the $169 TurboTV card—a TV tuner and viewer with video-capture capabilities. The same PCI card works in both Macs and PCs.

• Radius (408/541-6100, *http://www.radius.com*) is shipping the $3399 Thunder 3D, which uses a 500TX Glint chip from 3D Labs. The board offers maximum display resolution of 1600 by 1200 or 1920 by 1080 pixels and supports the HDTV aspect ratio.

• The RenderPix hardware accelerator from Newer Technology (316/943-0222, *http://www.newertech.com*) comes in two versions: the $2195 PCI/500, with 2MB of VRAM and 8MB of RAM, and the $3645 PCI/502, with 8MB of VRAM and 32MB of RAM.

In the Cards

Everyone is marching to the Web these days, Allegiant Technologies (619/587-0500, *http://www.allegiant.com*) included. SuperCard 3.0 is an upgrade to its HyperTalk-based authoring tool that boasts Web delivery functions and a refined interface. A new Project Editor combines a project overview with screen-layout and -editing functions. Other features include a browser-emulation mode; new Tools and Color palettes; enhanced visual effects; continuous audio playback; and import of GIF, JPEG, BMP, and ART-compressed graphics. SuperCard 3.0 sells for $329 ($130 to schools).

Devious Effects

Want to create professional-quality special effects on a desktop budget? Scitex Digital Video (415/369-5111, *http://www.scitexdv.com*) has introduced the DveousFX video-effects card for MicroSphere, the company's digital-video–editing system. You get high-end tools, such as a wipe generator, luma and chroma keyers, and picture-correction controls, along with a variety of special effects. Due to ship by early March, a fully loaded version of the DveousFX will be priced at less than $10,000.

NETWORKING

Shiva Dances into the Open

Shiva's (617/270-8300, *http://www.shiva.com*) LANRover, LANRover

continues

New Products

Access Switch, and Netmodem/E product lines now support Apple's Open Transport/PPP extension. Both LANRover products let users dial in to their corporate networks and intranets remotely. Shiva also supports third-party PPP clients.

ONLINE

Noisy Java

It seems as if everyone's offering a new Web development program, but this one is different. Coda from RandomNoise (415/437-0321, *http://www.randomnoise.com*) is written entirely in Java. It lets you position and configure text and objects using such controls as sound, cell- and path-based animation, floating windows, drop shadows, and scrollable content areas. The program's Action palette lets you make objects interactive by choosing an action from a pull-down list. Due to ship in March, Coda will sell for $350.

The Java Bazaar

You've set up your home page. Now how do you keep track of users visiting your Web site? Bazaar Analyzer Pro from Aquas (408/737-7122, *http://www.aquas.com*) is a Java-based Web monitoring and analysis tool that tracks the number and duration of hits, specific pages accessed, user demographics, disk usage, and bandwidth. Mac and AIX versions are expected to ship early this year for $999.

More Surf for Your Dollar

Tired of fighting over who gets to surf the Web? Maybe it's time for SurfDoubler from Vicom Technology (415/691-9520, *http://www.vicomtech.com*). This $149 software package aimed at the consumer market allows users on two networked computers to simultaneously browse the Web through a single modem and Internet account. The software runs on a Macintosh, but the second machine can be a Mac or PC.

WebWhacker at the Forefront

It sounds like a way to take out your Internet frustrations, but WebWhacker 2.0 from ForeFront (713/961-1101, *http://www.ffg.com*) is nothing more than a $70 browsing application that captures and downloads preselected content from the Web to your hard drive, letting you view it offline. It also monitors preselected sites to download new information as they are updated.

Extensis Freebie

You couldn't ask for a better price for the Mac-based CyberViewer Web utility from Extensis (503/274-2020, *http://www.extensis.com*): it's free. CyberViewer works with Netscape Navigator to maintain a visual history of visited Web sites. A floating palette displays each page you visit as a text listing or graphical thumbnail; double-clicking on the palette instantly returns you to a site. Download CyberViewer from *http://www.extensis.com/products/CyberViewer*.

PRODUCTIVITY

Forms to Go

Several vendors are moving us closer to the paperless office with these new forms packages.

• Caere (408/395-7000, *http://www.caere.com*) is shipping OmniForm for Macintosh, a $199 OCR package that automatically converts text from paper forms into editable text for on-screen data entry. Scanned tables become minispreadsheets that are capable of performing simple calculations. The forms can be filled out in OmniForm Filler, a $99 companion program.

OmniForm

• FormTyper for Macintosh, from Visioneer (510/608-0300, *http://www.visioneer.com*), is a $19.95 forms-scanning add-on for the PaperPort Vx. It identifies blank spaces on the form, allowing users to tab from one field to the next.

• Shana's (403/433-3690, *http://www.shana.com*) Informed 2.0 forms-design program includes built-in routing lists; the ability to designate FTP servers as form-distribution centers; support for form attachments; Windows and Mac cross-platform functionality; and support for Oracle, Sybase, and ODBC-compliant databases. The $295 package includes Informed Designer for creating forms, and one copy of Informed Filler for completing them. Informed Filler alone costs $195.

A New Dimension

The 4th Dimension is the Internet, as far as ACI US (408/252-4444, *http://www.acius.com*) is concerned. Version 6, the long-awaited upgrade to the 4th Dimension relational database, converts forms to HTML on the fly, allowing users to enter, query, and modify data in their Web browsers. The upgrade also features hundreds of new commands, enhanced development tools, and a new debugger. The $299 price tag includes five Internet connections.

PUBLISHING

Beyond Utility Status

The latest version of BeyondPress from AstroByte (303/861-4861, *http://www.astrobyte.com*) goes beyond its origins as a QuarkXPress-to-HTML conversion tool. Version 3.0 is billed as a Web authoring tool that preserves your XPress document's text formatting and layout, converting TIFF, PICT, and other formats into GIF, JPEG, and the new PNG format. It also imports QuickTime, Java, RealAudio, and Macromedia Shockwave files. When you export the document as a Web page, all files are automatically embedded into the HTML code.

SCIENCE/ENGINEERING

On the Map

The $1195 ArcView 3.0, desktop-mapping and geographic-information-system (GIS) software from ESRI (909/793-2853, *http://www.esri.com*), has enhanced thematic mapping; customizable tool bars; new map-editing tools; improved color management, including standard geographical color coding; support for SQL queries through the ODBC standard; and plug-in support. Upgrades from 2.1 are $375 for a limited time.

ArcView 3.0

STORAGE

Raiding the Desktop

Conley's (212/682-0100, *http://www.conley.com*) SoftRAID 1.5 is a $300 software package that allows you to create and maintain single-disk and RAID volumes using an optimized native-PowerPC driver for fast drive performance. Other features include weighted striping; support for 16 disks per stripe; drag-and-drop creation of RAID 0, RAID 1, and Macintosh HFS volumes; the abilities to take over existing RAID volumes and create multiple HFS volumes on one disk; and Apple Guide online help.

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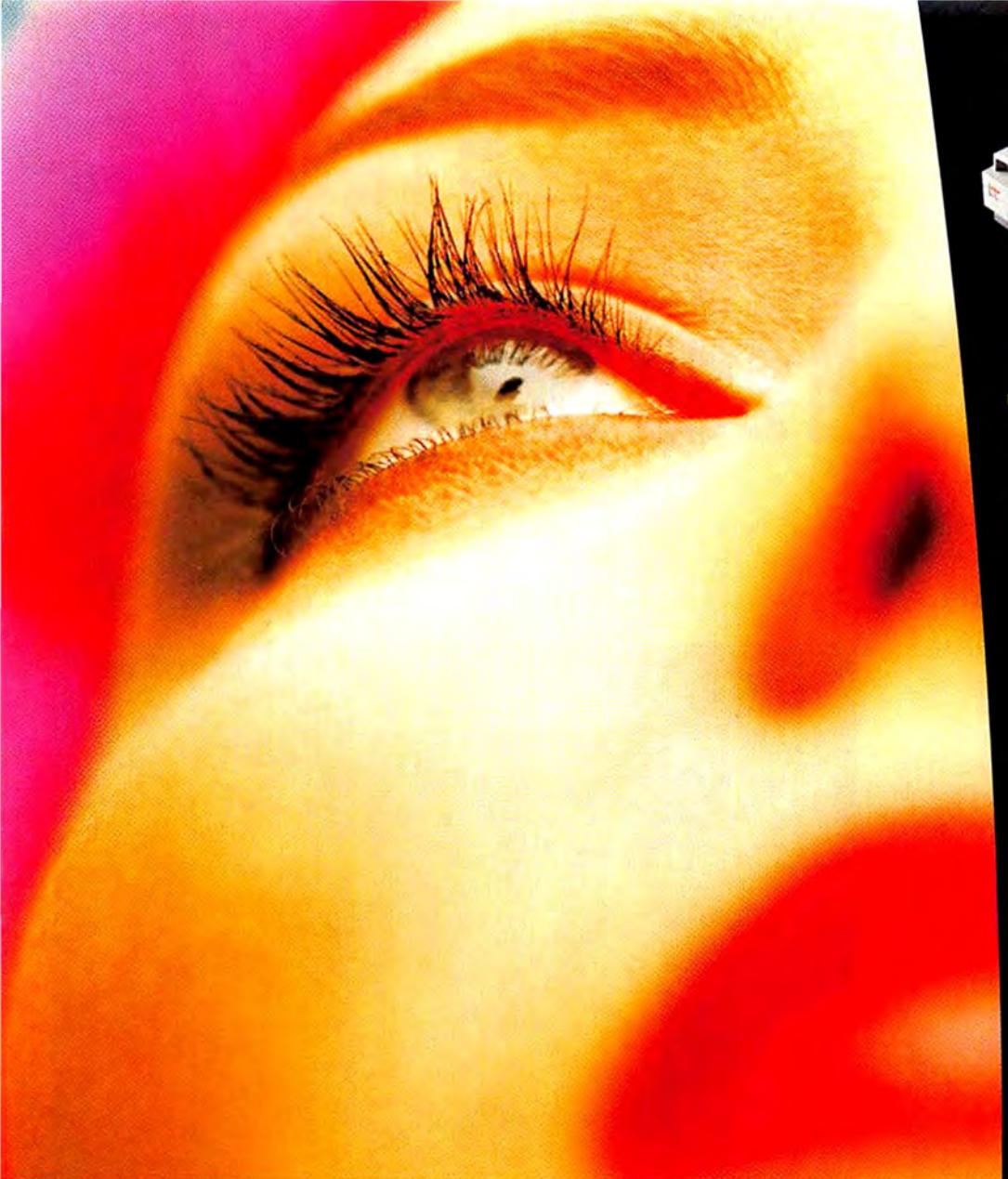

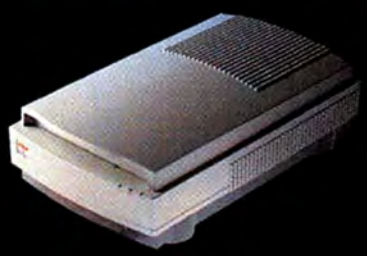

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Reviews

Pilot

POCKET PDA IS SMALL, SWIFT, AND SWEET

ROBERT PERRY

THE LONG-ANTICIPATED ELECtronic organizer from the Palm Computing division of U.S. Robotics has finally arrived, and the verdict is simple: it's terrific. A Pilot accompanied me through a month of meetings and Macworld Expo, and it quickly became as indispensable as my cell phone. I found it amazingly convenient to have fast access to my calendar and phone numbers when I was out of the office; when I returned, I could synchronize the data on the Pilot and my Macintosh with a push of a button. The Pilot's software could be better, but this pint-size, battery-operated gem will quickly earn a place in your pocket.

Honestly Portable

About the size of a 3-by-5 card, the Pilot fits easily in your hand or shirt pocket. It's less than an inch thick and weighs about six ounces with batteries. Most of its front is taken up by the touch-sensitive screen (it's not backlit, making it difficult to read in dim light); below is a row of buttons corresponding to the four built-in applications. Pressing any of these buttons turns on the Pilot and opens the application. You can also press a button on the front of the unit to start the Pilot; the display comes alive immediately and brings up the last active screen. A small stylus slips into the right side of the unit (though in a pinch you can use a fingernail to operate the Pilot).

The writing area, below the main LCD display, consists of an outlined box cleverly divided in half: everything written in the left half of the input box is interpreted as characters, and everything on the right as numbers. The Pilot uses Palm Computing's Graffiti technology, a unique handwriting-recognition system that lets you write any letter, number, or punctuation mark with a single stroke. It took me about a half-hour to get used to the system, but after that I was able to write quickly and accurately. You can also enter data using the on-screen keyboard.

It's easy to share data between the Pilot and a Mac. All you have to do is place the Pilot in its cradle, which connects to your Mac's serial port, and press the HotSync button on the cradle. The entire process takes about 30 seconds, depending on what you're downloading.

The Pilot is available in two models, differing only in RAM capacity: the 1000 has 128K of RAM, and the 5000 has 512K. The 1000 is sufficient for most people; it holds about 500 addresses, 600 appointments, 100 to-do items, and 50 memos. But the 5000—which holds about four times as much data and costs only $50 more—is the smart choice. The 5000's extra RAM also lets you load pro-

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Outstanding ★★★★★ = 9.0–10.0 Very Good ★★★★ = 7.0–8.9 Good ★★★ = 5.0–6.9 Flawed ★★ = 3.0–4.9 Unacceptable ★ = 0–2.9

grams now available for the Pilot, such as drawing programs, games, and utilities (see "Pocket-size Copilots"). Your data is kept in RAM, which is fueled by the unit's two AAA batteries. (Data survives about five minutes without batteries.) Palm Computing claims that the battery life is between 8 and 12 weeks with normal use; I got my Pilot 1000 with used batteries, never needed to change them, and still have a half charge.

OK, So the Software's Not So Hot

The Pilot doesn't try to be a general-purpose digital assistant, focusing instead on just the information most of us need to carry around with us. That's why its built-in applications are limited to a datebook, for managing calendars and appointments; an address book; a to-do–list manager; and a memo pad. There's also a four-function calculator that's nicely sized for use with a fingertip.

When you buy a Pilot that you intend to link with your Mac, you also have to spring for the separate MacPac, a $14.95 package that includes the Pilot Desktop software for the Mac and an adapter for the cradle's data cable. It also includes InstallApp, a utility for loading additional software onto the Pilot. Unfortunately, this clunky utility feels like a bad Windows port: loading a program involves three dialog boxes, which queue the files to be sent to the Pilot at the next HotSync. You can't see or change the contents of the queue, and InstallApp occasionally has problems recognizing Pilot applications on your hard disk.

The Pilot Desktop software isn't quite as exciting as the hardware; this bare-bones PIM is really more a Mac-based interface to the Pilot than an actual productivity program. Its four sections correspond to the main Pilot applications. The Date Book has daily, weekly, and monthly views, and you can create an event by clicking and dragging across a block of time in the daily or weekly view. Although you can set alarms, they're activated only on the Pilot; they're not transferred to the Mac. You can't import events from an existing calendar program into Pilot Desktop, and there's no system menu for events or contacts.

The Address Book fares a bit better: importing tab-delimited text files from other PIMs is easy, and there are enough fields to handle most people's contact information. The remaining applications—To Do List and Memo Pad—are simple, but they get the job done.

Fortunately, we'll soon have alternatives to Pilot Desktop. Now Software (*http://www.nowsoft.com*) has announced a version of its Now Synchronize software that will link the Pilot to Now Up-to-Date & Contact, and other PIM vendors appear to be following suit.

The Last Word

The Pilot is just what most people need: a small, light electronic organizer that's easy to use, holds all the data you want, and doesn't torture you with constant battery changes or recharging. The Pilot 5000 could cost a bit less, but it does better than my old Newton MessagePad 100 (which cost a lot more). The Pilot is a winner.—TOM NEGRINO

RATING: ★★★★/7.8 **PROS:** Truly portable; Graffiti handwriting software makes for easy input; effortless synchronization of data with your desktop Mac; frugal with batteries. **CONS:** Pilot Desktop software isn't an especially capable PIM; installer application is brain-dead. **COMPANY:** Palm Computing (415/237-6000, *http://www.usr.com/palm/*). **LIST PRICE:** Pilot 1000 $249; Pilot 5000 $299.

Pocket-size Copilots

IN THE SHORT TIME SINCE the Pilot was released, shareware and freeware applications, utilities, extensions, and games for it have proliferated on the Web. The U.S. Robotics Pilot page (*http://www.usr.com/palm/*) has links to "unofficial" Pilot information; one of them leads to Adam Deaves's Pilot Software Archive (*http://www.inforamp.net/~adam/pilot/*), a great source of tiny (1K to 29K) apps for the PDA. I downloaded a few dozen of the most intriguing-looking programs from the 100 or so in the archives. Here are my favorites.

Applications Dinky Pad 0.92b (DaggerWare; $5 shareware) lets you use the entire Pilot screen as a canvas. You can create works of art using five drawing tools in five thicknesses, then save your scribbles to individual files. This mini paint program even supports scrolling, giving you an effective canvas height of 14 times the height of the Pilot's screen.

Pilot Application Launcher 1.22 (Dovcom; $12 shareware) turns your applications launcher into multiscreen, user-definable groups of applications, utilities, extensions, and games. It lets you choose whether battery usage is displayed with the default thermometer, by volts, or by percent, and adds tappable icons for resetting, locking, and turning off your Pilot.

Utilities As its name implies, Scott Ludwig's freeware Graffiti Help 1.5 is designed to help users learn to write Graffiti-style. Four screens show how the standard alphabet, punctuation, extended punctuation, and accent characters should be formed. An essential utility.

The simple but practical freeware Found Me? 0.11 displays a smiley-face icon with the words "Found Me?" The idea is that someone who has found your lost Pilot will tap the icon, see the message you've entered, and return the Pilot to its bereft owner.

AlarmHack 1.0 (ScumbySoft; $5 shareware) extends the Pilot's alarm function. The standard Pilot alarm has a preprogrammed sound, rings once for two seconds, and displays a dialog box; AlarmHack lets you choose a different sound, modify its duration, and specify a repeat interval (so if you don't hear the alarm the first time, you'll get another chance). It even modifies the OK button to fill the entire screen, so you can acknowledge an alarm without taking the Pilot out of its case (or your pocket).

Extensions If you find it frustrating to tap on the bottom of the Pilot screen to activate the menus, then choose a menu item from the top of the screen, check out DaggerWare's MenuHack 1.1. This simple freeware extension lets you tap on any application's menu bar to activate it.

To use MenuHack or any other HackMaster extension, you'll need to install DaggerWare's HackMaster 0.9 ($5 shareware). Like an Extensions Manager for the Pilot, it lets you enable and disable any HackMaster extensions.

Games Inspired by the classic arcade game Asteroids, Roger Flores's freeware Reptoids 1.0 lets you blow up asteroids and alien ships as you float in space. This game shows off the Pilot's excellent animation capabilities.

If you liked Space Invaders, you'll love Scott Ludwig's Invaders 1.0. The object of this freeware action game is to blow up rows of bomb-dropping aliens. It even has sound effects. And for those who don't like to blow things up, his PocketChess 1.0, also freeware, is a classic game in which you pit your skill against that of your Pilot (or a friend).—JEFF SACILOTTO

HP ScanJet 5p

MARRED BY SLOW SCANS, LIMITED SOFTWARE

REPLACING THE SCANJET 4P AS the entry-level contender in Hewlett-Packard's product line, the ScanJet 5p offers few improvements. In addition to its lower price, the ScanJet 5p is attractively packaged in a smaller case, with some interesting design features that simplify setup and use. Unfortunately, there are trade-offs to its convenience.

Marginal Performer

In subjective tests, I found the ScanJet 5p to be not much different in terms of image quality from its predecessor, the ScanJet 4p (see *Reviews*, July 1996). On the test bench, Macworld Lab found that the ScanJet 5p generates a greater amount of image noise than do competing scanners, which affects the ability to fine-tune your scans.

Scanning speed is a mixed bag. Using HP's PictureScan 3.0 application, the ScanJet 5p is faster than the 4p for final color scans. If you bring your image directly into Adobe Photoshop using the TWAIN Acquire function—as most operators do—it's dramatically slower than the 4p, and other competing scanners (see "ScanJet 5p's Photoshop Dilemma"). At press time, HP was investigating a fix for this problem; check Macworld Online (*http://www.macworld.com/april.97/hp5p.html*) for updated information as it develops.

For basic scans, PictureScan gets the job done, but its cropping rectangle isn't always accurate. Clearly, HP's programmers didn't intend for users to change many settings, because you can't do much more than sharpen the image and adjust resolution. HP originally had promised a 5p-aware version of its more sophisticated DeskScan II for spring release, but now has no plans to do so; you'll have to spend extra time in Photoshop getting your images right.

Visioneer's bundled PaperPort software provides optical character recognition (OCR) capability, albeit awkwardly. You first scan your document with PictureScan, then open it within

SUZANNE ROADY

PaperPort to convert the artwork to editable text. If you plan on doing lots of OCR, you're better off with a dedicated program, such as Caere's OmniPage Pro or Xerox's TextBridge (see *Reviews*, June 1996).

In addition to PaperPort and PictureScan, HP also bundles Adobe Photoshop LE to let you fine-tune your scanned artwork. All software comes on a CD, though; if you only have a floppy drive, you'll have to shell out $5 for disks, and an additional $39.50 for Photoshop LE.

Smart Design

Despite its drawbacks, the ScanJet 5p offers some intelligent touches. Once the scanner is powered on, you can simply press the Scan button at the front of the unit, and PictureScan software launches automatically. Installation is clever as well: because you have to unlock the scanner's optical assembly before you can plug in the power cord, HP reduces the risk of damage by overanxious users.

Even SCSI termination is practically foolproof. If the scanner is the last item on its SCSI chain, it's automatically terminated, and if other devices are on the chain after the scanner, termination is left off. (If the ScanJet isn't going to be the only device on the chain, you may need to visit your dealer to get cables for use with its SCSI-2 jacks.)

A getting-started booklet gets you up and scanning in minutes, and a well-written user's guide offers detailed help. The ScanJet 5p's biggest omission is its lack of an automatic document feeder, a fairly standard option in this product class.

The Last Word

Clever design choices make the HP ScanJet 5p attractive, but its deficiencies in scanning speed and software are hard to ignore. Even harder to ignore is the fact that you can get better quality at a lower price from Umax's Vista-S6E scanner, an Editors' Choice in our recent roundup of low-cost scanners ("Scanning for the Rest of Us," March 1997).—GENE STEINBERG

RATING: ★★/4.9 **PROS:** Clever design; excellent manuals. **CONS:** Average scan quality; limited software; slow final scans within Photoshop; lacks automatic document-feeder option. **COMPANY:** Hewlett-Packard (800/722-6538, *http://www.hp.com*). **LIST PRICE:** $530.

Macworld LAB TEST

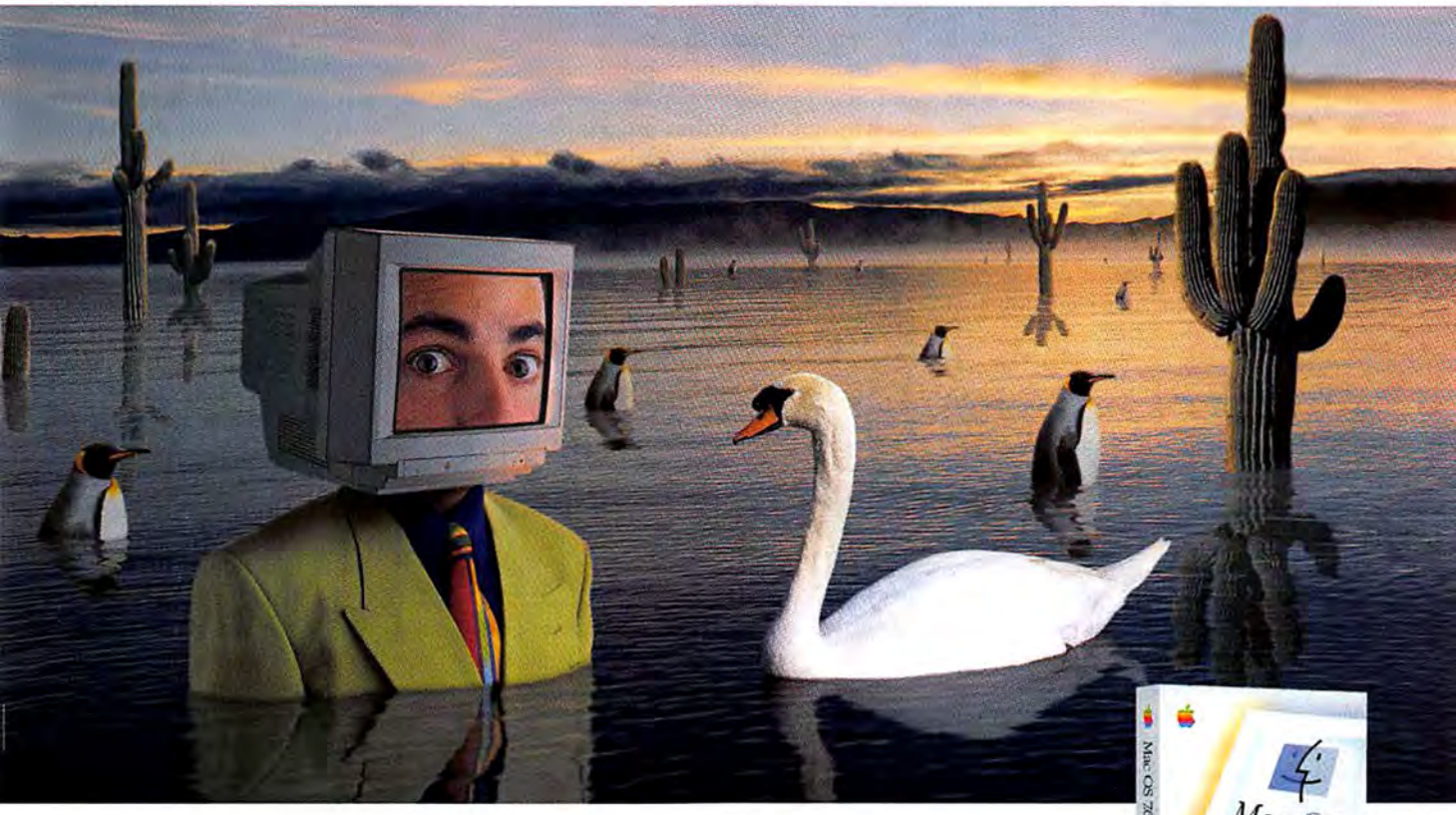
ScanJet 5p's Photoshop Dilemma

Best result in test. Times are in seconds. Shorter bars are better. Products are listed alphabetically.

*Using PictureScan application. ** Using Photoshop TWAIN Acquire module.

Behind Our Tests For information on how we tested, see "Scanning for the Rest of Us," March 1997.—Macworld Lab testing supervised by Jeff Sacilotto

The new Mac OS 7.6. Now, wherever your mind goes your computer will follow even faster.



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Acrobat 3.0

FORMS FEATURES GIVE ACROBAT A NEW MISSION

ADOBE ACROBAT HAS ALWAYS struck me as bloated, slothful, and not terribly useful. But just as Microsoft evolved the awful Windows 1.0 over a period of nine years to create the serviceable if unoriginal Windows 95, Adobe Systems has devoted four years to making its portable-document program the standard way to send documents electronically and have them look the same regardless of the system used to view them or the installed fonts. Version 3.0 brings Acrobat closer to that goal, with an added mission that might give it a useful niche.

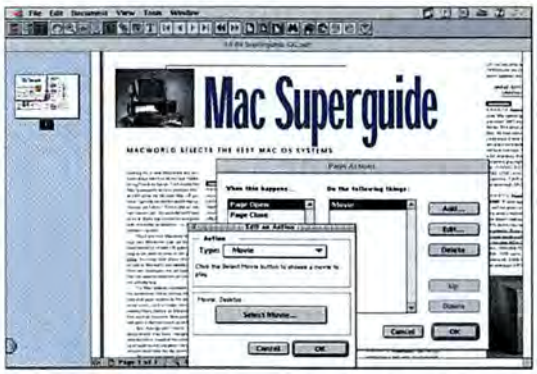
Most of what Acrobat 3.0 offers was in the previous version: Exchange, which lets you edit Acrobat documents; Distiller, for batch-converting PostScript files into Acrobat format; PDFWriter, a printer driver that allows other programs to export Acrobat files; and plug-ins that let readers find content easily in your Acrobat documents. A Reader program lets you distribute Acrobat files freely to Mac and Windows users.

Where you'll find most of the enhancements is in Exchange, which now allows forms creation, the addition of dynamic controls, enhanced Web-display options, and enhanced display of images and text. Also new to Acrobat is a browser plug-in that makes it easier to read Acrobat files on the Web.

Forms "R" Us

Acrobat 3.0's major new mission is electronic forms. You can modify documents to include fields that readers can fill out; the completed forms are then delivered for processing via Acrobat's Web-link capabilities. To add form fields, you simply create text boxes and choose the font, action, and so forth from menus and palettes. Ditto for buttons, which are basically graphics with actions tied to them.

Remember that Acrobat is essentially a document postprocessor—you create Portable Document Format (PDF) files in a word processor or page-layout program, for example, then load them into Acrobat Exchange to add the form fields, Web hyperlinks, and buttons that help users navigate the document and submit completed forms. Contrast that with a forms program or multimedia authoring tool like QuarkImmedia (see *Reviews*, December 1996), with which you actually create an interactive document rather than simply apply interactive features to a document created elsewhere. So why not use a forms program in the first place? The only possible answer is that Acrobat PDF has become a Web standard, so readers might be equipped to deal with the PDF forms you create.



Added Actions Acrobat lets you assign dynamic controls so that the reader's actions trigger links, movies, menu functions, or sounds.

Acrobat 3.0 also adds a host of interactivity features: you can set a document to open on a specific page, to open linked PDF files within the same window, or to play a sound or movie as a user opens or closes a page or clicks on a button (see "Added Actions"). You can have the menus disappear for specific documents so users don't realize they're running Acrobat. These are welcome additions for kiosk-type applications, self-running demos, and online documentation. In fact, Acrobat seems to be moving toward interactive documents rather than trying to replace Web pages and the printed page. Acrobat files may still be an alternative to HTML and print, but in the context of interactive rather than static documents.

Paddling the Web Currents

But Adobe hasn't given up on the Web, as evidenced by several new Web-related features. One is a freely distributable browser plug-in that makes downloading Acrobat files from the Web seem less time-intensive: it displays the current page on screen as the rest of the file continues to download, and displays graphics and text progressively. The only Acrobat files that take advantage of this progressive downloading are those saved in Exchange with Acrobat's new optimization feature. Unfortunately, that optimization is lost if you save your document—you have to do a Save As each time and make sure the optimization option is checked.

As an authoring environment, Acrobat adds welcome interactivity features to an already strong set of editing and composition tools. Other improvements include a lower price (it dropped from $595 to $295, a bargain compared with the $995 QuarkImmedia) and more consistent color across monitors and printers.

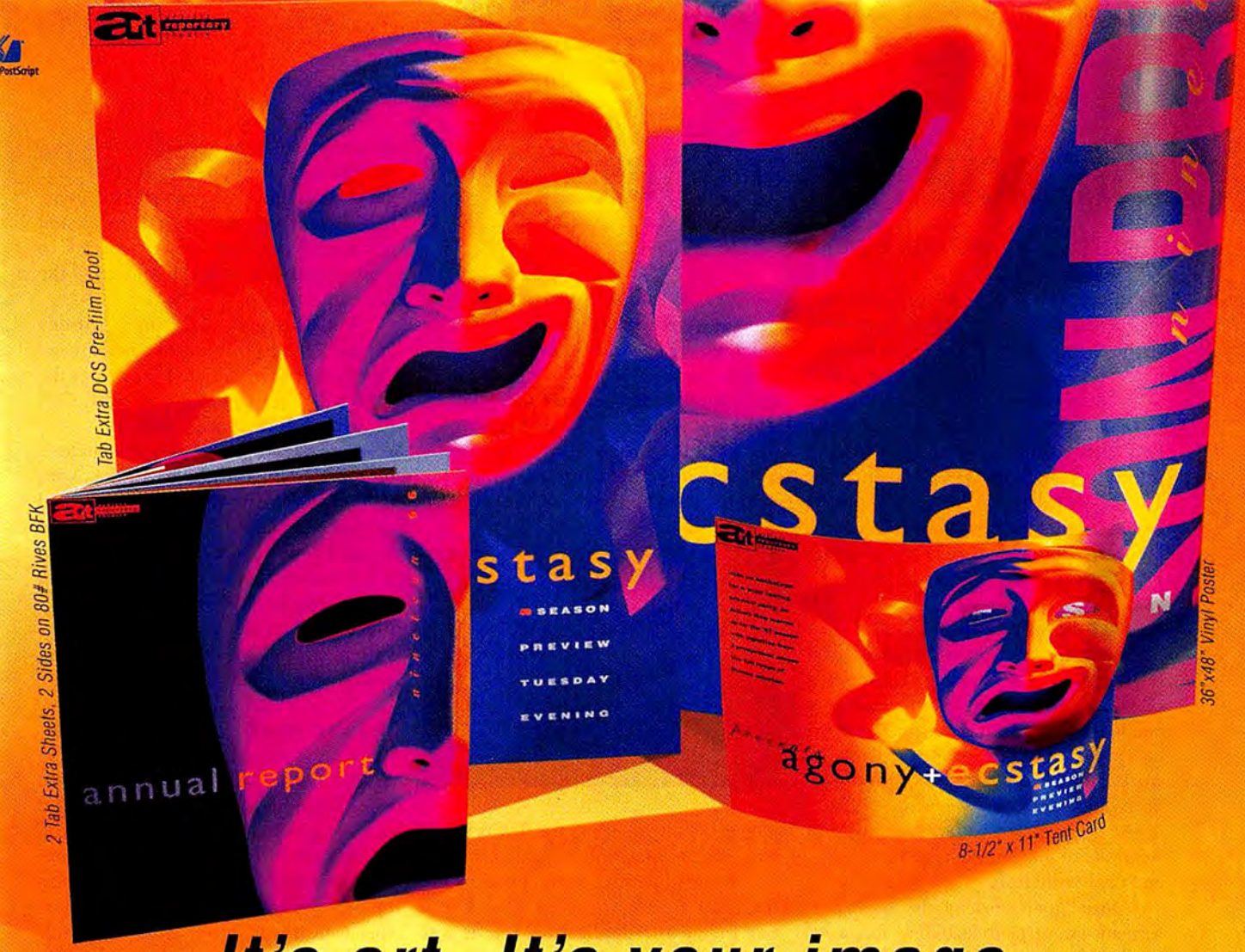
Some of Acrobat's earlier awkwardness remains, however. The program is still uneven when it comes to supporting non-Adobe fonts; compare the title in the screen shot with the real thing in this issue's *Mac Superguide*. And because PDF files are still enormous, Acrobat may be widely used only for CD and intranet distribution.

Finally, in its zeal to ship Acrobat by the end of 1996, Adobe left out several promised features: it lacks support for Japanese text and plug-ins for importing images, directly controlling scanners, performing character recognition on scanned images, and generating automatic search indexes on OCR'd files.

The Last Word

If you use Acrobat now, you'll like the upgrade. Unfortunately, its utility remains limited despite Adobe's attempt to appeal to print, multimedia, and Web authors.—GALEN GRUMAN

RATING: ★★★/6.2 **PROS:** New forms- and kiosk-oriented features are solidly implemented; faster Web-page display; new low price. **CONS:** Not as efficient as programs designed for creating interactive documents; font display is still uneven; Web-optimization feature is too easily overridden; lacks some promised features. **COMPANY:** Adobe Systems (408/536-6000, *http://www.adobe.com*). **LIST PRICE:** Single user $295; ten users $1595.



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Pinnacle Micro Apex

KING-SIZE REMOVABLE OFFERS RESPECTABLE SPEEDS

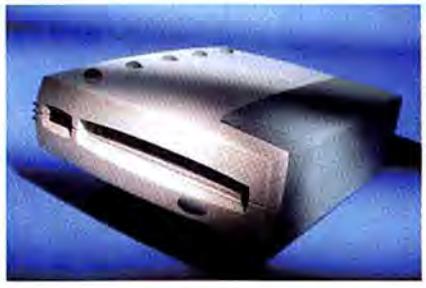
FOR LONG-TERM DATA ARCHIVING, magneto-optical drives have been the product of choice due to their reliability. Unfortunately, MO drives have also traditionally been slow, and thus ill-suited to accessing the large files created for desktop video and multimedia. Pinnacle Micro's Apex 4.6GB MO drive addresses the shortcomings of its medium, promising near–hard-drive speeds and large storage capacity tailor-made for multimedia work.

As Fast As a Speeding Drive?

My first exposure to the Apex was a bit troublesome. The first time I inserted a cartridge, it failed to mount and then jammed inside the mechanism. The manual's suggestions on ejecting media didn't work, and I had to obtain a second test unit. This replacement performed flawlessly through multiple insertions and removals of media, extensive formatting, and read-write tests.

Once I got it working, the Apex's performance was true to its billing: its speeds come fairly close to those of regular hard drives in some cases. In standard Macworld Lab storage tests, the Apex came closest to hard drive speeds when opening large Adobe Photoshop images (see "Apex Speed a Mixed Bag"). It didn't fare as well when copying files, however: Apex took three times as long to duplicate a file as a Quantum 2GB hard drive (partly due to the fact that optical drives make double passes when writing data). The Apex 4.6GB also had trouble keeping up with our baseline hard drive when performing database searches, but compared to that of older, slower hard drives, its performance is quite respectable.

I tried using the Apex as a start-up drive on my Power Mac 9500, which proved difficult because Pinnacle Micro's disk formatter forces the media to eject at restart. Start-up time was only slightly longer than it was using the 9500's internal drive. In Finder file-copying tests, the Apex offered performance similar to the Iomega Jaz drive's (*Reviews*, June 1996), but in the file-duplication test it was almost twice as slow.



ARNOLD TSOLIS

Nuts and Bolts

You can configure the Apex vertically or horizontally. Its rear panel has two SCSI-2 jacks rather than the standard 50-pin type found on many drives, so you may need an extra cable if you intend to put this drive into a busy SCSI chain. A black push-button switch is used to set SCSI ID, and a second red switch controls 16 options, including active-termination, termination-power, and write-verification settings. The manual covers both Macintosh and PC users, and while it's serviceable, it lacks a good quick-start section—you're forced to read a good deal of it before putting the drive into service.

The drive uses a 5.25-inch cartridge about 0.25-inch thick, with a large metal shutter at the top. Inside the cartridge the Apex's disc resembles a two-sided CD; each side is formatted separately.

Pinnacle Micro's software includes a system extension to mount the Apex media, and a cartridge-formatting and -partitioning utility. This program's Auto Setup function can initialize the media in a few seconds, but a full low-level format lasts nearly an hour and takes over your Mac. Once set up, the drive runs with a soft purr, and makes a soft chugging sound when it spins up or accesses data.

The Last Word

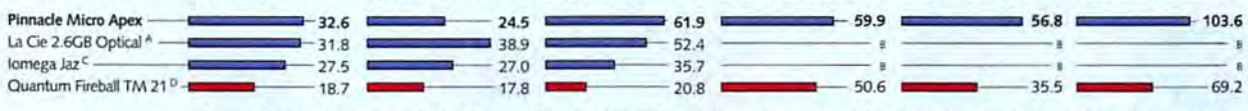
With a list price just shy of $2000, the Apex is not a casual purchase, but if you store large files you'll find that its cost per megabyte declines rapidly as you accumulate cartridges. More important, its media appear robust, the mechanism operates quietly, and the drive offers speeds nearly as fast as those of a traditional hard drive for some tasks. If you do graphics and multimedia work, Apex deserves serious attention.—GENE STEINBERG

RATING: ★★★★/7.0 **PROS:** Near–hard-drive speeds; huge capacity; robust media. **CONS:** Dense manual; complex setup options. **COMPANY:** Pinnacle Micro (714/789-3000, *http://www.pinnaclemicro.com*). **LIST PRICE:** Drive $1995; cartridge $169.

Macworld LAB TEST

Apex Speed a Mixed Bag

Best result in test. Times are in seconds. Shorter bars are better.



A Editors' Choice, "Best Buys in Optical Drives," October 1996. B Due to changes in our test methodology, these previously tested products' times are unavailable. C Tested with Disk Verify off; reviewed June 1996. D 2GB hard drive.

Behind Our Tests Tests were performed on a Power Macintosh 7500/100 with 32MB of RAM using Adobe Photoshop 4.0 and Claris FileMaker Pro 3.0.3. All drives were tested via the Mac's built-in external SCSI connection.—**Macworld Lab testing supervised by Matt Clark**

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Max. resolution	1600 x 1200	1600 x 1200	1600 x 1200	1600 x 1200	1360 x 1024
Scan frequency	31-96 KHz 50-160 Hz	31-89 KHz 50-160 Hz	30-82 KHz 50-120 Hz	31-92 KHz 50-120 Hz	30-64 KHz 47-104 Hz
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Circle 74 on reader service card

Nisus Writer 5.0

RENEGADE IS LONG ON INNOVATION, SHORT ON BASICS

MICROSOFT WORD 6'S BLOAT and sluggishness destroyed its status as the only pro-level word processor worth considering. With the throne awaiting a nimbler, more smartly designed program, Nisus Writer's small but enthusiastic band of fans had every hope that their favorite would steal the crown.

Version 5.0.1 of this perennial underdog is much improved, having finally shed the quirky interface elements and cascade of manuals that prevented its professional acceptance. Macintosh users willing to put their faith in this independent candidate are in for some nice surprises.

Nisus Can Be

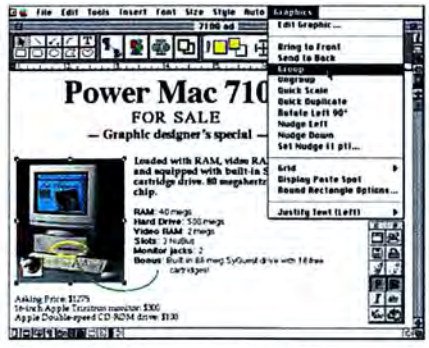
Your jaw will drop when you sit down with Nisus Writer. Its list of features stretches to the moon and back, and the interface is clean and intuitive. (Microsoft fans: Floating tool palettes are available if you must have them; fortunately, they're hidden until summoned.)

Take Nisus's touches for everyday writing: unlimited undos; true Macintosh drag and drop; multiple noncontiguous text selections; smart cut-and-paste; control-key–triggered balloon help; Apple Guide; a speedy, keyboard-controllable spelling checker; and synchronized scrolling for comparing side-by-side documents. And what other program lets you rename an open document without closing it, save and close all documents with a single keystroke, or hear your document read out loud—not just in English, but in French, Italian, German, or Spanish? Power users will appreciate Nisus Writer's potent indexing commands, new style-sheet functions, table of contents generator (one level only), equation editing, footnotes or endnotes, and so on. The program also has an outstanding drawing layer, complete with text wrap around graphics, grouping, rotation, and transparency commands.

Meanwhile, Nisus Writer's traditional strengths still stand out. No program is better at handling multiple languages, even those whose typing proceeds from right to left or bottom to top. Likewise, the Power Find feature blows away all rivals; it lets you find and replace fancy patterns not just in the current document, but in all open documents—even inside *closed* files on your hard drive. You can now export your document as HTML code, ready for posting on the Web. Finally, Nisus Writer offers two macro features: a "watch-me" mode for simple tasks, and a full programming language capable of reformatting databases, launching Web addresses, and more.

Downhill from There

Unfortunately, several of the program's chronic weaknesses remain. Some standard features are simply missing: despite 18 months of passionate user requests in Nisus's online areas, for example, there's still no integrated outliner. Other missing functions include grammar checking; automatic envelope printing; and zoom in, zoom out. And the self-launching but separate table-making program still can't create tables that span a page break.



Nisus Writer in Action Nisus Writer's graphics layer lets you integrate graphics with your text; its operation is surprisingly smooth and solid.

Other features are only half-implemented. You still can't vary the number of columns in a document. The abbreviation-expansion feature doesn't complete words as you type, as in Word 6 or TypeIt4Me; you have to use an additional command to expand them. And although the MacLink filters import and export other word processors' files smoothly, including those from Word 4, 5, and 6 and WordPerfect, you lose style sheets and other data in the translation.

Unfortunately, rather than fixing those shortcomings, Nisus put a lot of effort into making its program the first commercial OpenDoc "container." This fledgling plug-in technology from Apple was designed to fight the feature bloat of today's behemoth applications. The CD version of Nisus Writer comes with OpenDoc modules for graphing, drawing, game playing, database access, and Web browsing—just drag one from the desktop to embed it in any Nisus document. But as the "read me or else" file warns, "Because OpenDoc is such a new technology, you may experience problems, including crashes. . . . Save your work early and often, and don't be too surprised at unusual behavior." That's the understatement of the year; all six OpenDoc components I tried crashed or acted buggy when in a Nisus document.

Is this instability Nisus's fault? After all, as a container program, Nisus inherits the bugs of each component inside it. Yet these same OpenDoc parts worked fine in another container program (Cyberdog). Furthermore, integration between OpenDoc and the rest of Nisus is lacking; because OpenDoc elements lie on a separate layer of your document, they can't interact with your graphics or your typing.

The Last Word

As a professional document processor, Nisus is uneven. For every stunning, exclusive feature, it lacks something basic: it offers two programming languages, but no zoom command; ten editable clipboards, but no phone number for tech support; serious book-making features, but increasing sluggishness as documents get longer (especially on older Macs).

As a result, Nisus Writer 5 isn't the Word 6 killer the ads claim it to be. Overall, however, it's an extremely powerful and likable word processor. And it has great potential: if Nisus Writer can shed its rough spots without bloating its conservative RAM and disk requirements, the next version could escape nichedom and enter the mainstream.—DAVID POGUE

RATING: ★★★/6.6 **PROS:** Vast feature list; clean design; outstanding graphics layer; multiple undos and clipboards. **CONS:** No outliner, zoom commands, or multiple-column flexibility; OpenDoc component is buggy and incomplete. **COMPANY:** Nisus Software (619/481-1477, *http://www.nisus-soft.com*). **LIST PRICE:** $249.

4-Sight Fax 4.0

FLEXIBLE, RELIABLE FAXING ON YOUR NETWORK

ALMOST EVERY COMPANY CAN REalize time and cost savings by providing fax capabilities to all of its employees, but equipping every Mac with its own fax modem is rarely practical. Filling this gap, 4-Sight Fax 4.0 enables users on networked Macs to send faxes through a centralized server that handles imaging, queuing, and sending and receiving. Users will find 4-Sight Fax's client software easy and useful, and network administrators will find the server software—which supports multiple fax lines, custom accounting fields, and e-mail/database integration—a rock-solid foundation for serious business solutions.

4-Sight Fax's server application can run on a dedicated system or coexist with other applications. Server requirements are modest: 4-Sight suggests a Macintosh IIci or better with 8MB of RAM, though gray-scale faxing requires an additional 4MB. More expensive multiline versions require a NuBus or PCI multiport serial card to be installed in the server. The server also requires an ADB security dongle, a truly distasteful little gadget that's easy to install but also too easy to lose or damage.

Simple Installation

I installed and tested the 4-Sight Fax server on both a Centris 650 and a Power Mac 6100/60. Though the interface is spotty at times, server setup is easy enough; I configured a server without difficulty in about an hour.

4-Sight Fax uses a series of spartan dialog boxes to let you configure the modem; fax queues; and printing, archiving, font-handling, and accounting features. You can manually create server-based shared address books or import them from text files. 4-Sight Fax supports up to 14 cover pages, though you have to create a PICT file in another application, then an extremely basic editor to position data fields atop the image.

Once the server is configured, you create Users and Groups in much the same way as you would on an AppleShare server. Administrators can define permissions to limit a user's ability to view queued messages, send priority faxes, perform fax broadcasts, or receive inbound faxes. As in AppleShare, Groups can provide a set of permissions to a range of users, and administrators can import user lists, automating the account-creation process.

Fax from the Desktop

Client software is easy to install and use, and makes modest resource demands: a IIci or better running System 7, with 1MB of free disk space and 300K of available RAM. Fax configuration, creation, and monitoring are all handled by a 4-Link menu added to your menu bar. As with most other fax solutions, you send faxes by printing a document to the fax print driver; you may select this driver via the Chooser or the 4-Link menu, or by holding down a modifier key—shift, option, or ⌘—before selecting Print. If you need to combine several documents of different types within one fax transmission, you can drag and drop them onto the included Fax Draggin applet to create a single fax message.

Full Fax Management 4-Sight Fax's client software displays and manages Incoming and Outgoing fax queues.

The 4-Sight Fax dialog box allows you to specify print quality, priority, cover sheet, and transmission delay. After this, simply select one or more addresses and send the fax off to the server. The 4-Link application allows you to view and manage the current fax queue.

Overall, I found 4-Sight Fax's performance to be good. Messages offload to the server quickly, and fax transmission times are comparable to those of standalone fax modems. Fax quality was on par with my Global Village Teleport fax modem, and—unlike some fax software packages I've used—4-Sight Fax was rock-solid reliable.

Custom Stuff

What's truly exciting, though, is that 4-Sight Fax goes beyond being simple fax software—its extensibility makes it ideal for sophisticated solutions. Custom accounting fields allow administrators to track not only who is sending faxes, but also what projects or clients they're working with. Fax creation and delivery can be integrated with popular e-mail applications such as CE Software's QuickMail or StarNine Technologies' Quarterdeck Mail. 4-Sight Fax's client software is Apple event–aware, and can be integrated via AppleScript with other applications such as Quarterdeck's WebStar and Claris's FileMaker Pro. On the receiving end, 4-Sight Fax offers transparent links to a variety of optical character recognition packages, including Caere OmniPage and Xerox TextBridge, to translate incoming faxes into editable text.

4-Sight Fax offers even more advanced features using optional hardware and software. Using the FaxPack development kit from Soft Solutions (770/457-9400), I integrated 4-Sight's fax capabilities into an existing ACI US 4th Dimension database in less than an hour. 4-Sight's PC-Link software provides support for Windows clients, and 4-Sight Fax supports inbound routing of faxes to the recipient's workstation via 4-Link or e-mail with installation of a special router and voice-capable modem, eliminating the need for an administrator to manually format each one.

The Last Word

Priced just below $800 for ten users, 4-Sight Fax 4.0 isn't cheap; it is, however, a good value. 4-Sight Fax is easy enough to use for simple faxing jobs, and powerful enough for sophisticated ones. Even more important, it works reliably, saving your company time and money.—J.W. DAVIS

RATING: ★★★★/8.8 **PROS:** Reliable; strong administration and accounting features; excellent extensibility. **CONS:** Server dongle required; interface weaknesses; expensive. **COMPANY:** 4-Sight (515/221-3000, *http://www.4sight.com*). **LIST PRICE:** $795 for ten users on a single line.

UniQorn 1.2

DESKTOP PUBLISHING MEETS JAVA

LAST YEAR'S CHALLENGER TO Adobe PageMaker and QuarkXPress, UniQorn 1.0, delivered high-end typographical features and color controls but was woefully buggy and unpolished (see *Reviews*, August 1996). With version 1.2, SoftPress Systems has cleaned up the product and added a dozen new features that make it easy to turn traditional print documents into Java-powered Web pages. But in spite of its innovations, UniQorn remains largely sluggish and quirky.

A New Approach to Java

With PageMaker and QuarkXPress, you use plug-in filters to export text as HTML. UniQorn takes a completely different approach: its new Java Export command lets you save UniQorn documents as Java applets. The program converts graphics to JPEGs or GIFs, creates a page-description file in a proprietary format, and generates Java code that displays the page description in a browser. The advantage of converting to Java rather than to HTML is that fonts, formatting, and page geometry are preserved more precisely; the drawback is that not all browsers can read the resulting Java (you need Netscape Navigator 3.0 to view the files on a Mac).

Another Web-publishing enhancement is a new palette that lets you attach a URL to any selected text or frame. The embedded URLs don't appear when you print the page, but when you export the page they become live hypertext links. Because UniQorn doesn't export HTML, however, the embedded URLs don't automatically appear as colored, underlined text on your Web pages; you have to format the text manually within UniQorn to make it recognizable as a link. By layering transparent, URL-embedded frames over frames containing graphics, you can in effect build image maps.

Another tool that helps you prepare print documents for the Web is UniQorn's flexible presentation feature, which lets you define page geometry in relative rather than absolute terms. That means instead of specifying a frame's exact size as you would in QuarkXPress, you can define its size and position relative to the page (and to other objects on the page). When you change a document's page size or orientation—as you might when converting a traditional print document into electronic form for the Web—UniQorn automatically scales text and picture boxes and positions them to maintain the balance of the original composition. The flexible presentation features are a bit complex, but the approach works well once you understand how to define a frame's size and position in relative terms.

A Real Knockout UniQorn offers typographical controls you don't find in most page-layout systems. For example, selecting Knockout from the Colors palette makes text transparent, allowing underlying images to appear within the text itself.

The GX Factor

UniQorn's QuickDraw GX support remains a mixed blessing. While the typographical results are admittedly stunning, giving you precise control over each character's slant, weight, and spacing, they're only possible with GX fonts—and only a few of those are included with the program. (Fortunately, version 1.2 fully supports Type 1 fonts as well.)

Until recently, QuickDraw GX wasn't simply an *option* with UniQorn; it was required to run the program. You can now use Apple's GX Graphics Extension, which lets you run GX-dependent programs without installing the full version of QuickDraw GX. The catch—and it's a big one—is that you can't *print* from UniQorn using the GX Graphics Extension. That can be a drawback for many users, considering that the full version of GX requires more RAM and is less than stable on some systems. Indeed, shortly after I installed GX to run UniQorn, I experienced considerably more than the usual number of freezes and lockups.

Other Improvements

The upgrade offers other noteworthy improvements, including support for a wider range of file formats—you can import and export GIF and JPEG files directly, for example. You can now apply tints of existing colors, and improved frame controls let you wrap text (up to 255 characters) along a path or around the edge of a frame for more sophisticated text effects. One of the better enhancements is a new text color called Knockout, which allows an underlying graphic to show through text in a frame (see "A Real Knockout").

Despite the improvements, some of UniQorn's traditional desktop publishing features are still weak. For example, there's no easy way to group and ungroup multiple objects on a page, the Align command can't distribute space evenly between a series of selected objects, and support for gradient fills and drag-and-drop text editing is missing. And UniQorn's buttons and menu commands are still poorly organized—for example, you adjust a frame's border, size, and rotation using the Modify Frame command and adjust the frame's text inset using Modify Text, when it would make more sense for the two to be grouped. UniQorn is also slower than its competitors—even simple formatting changes and text searches are sluggish on a Power Mac.

The Last Word

UniQorn's Java-powered Internet publishing tools are impressive, but for creating Web content a dedicated tool like Adobe PageMill is a better choice. As a traditional page-layout program, UniQorn still trails its competitors; on the other hand, if you need to create both traditional and Web versions of your documents—and you're willing to run QuickDraw GX—UniQorn may be just what you need.—JOSEPH SCHORR

RATING: ★★★/6.3 **PROS:** Exports Java-based pages; powerful typographical controls. **CONS:** Slow performance; cluttered, confusing interface; requires QuickDraw GX. **COMPANY:** SoftPress Systems (415/331-4820, *http://www.softpress.com*). **DIRECT PRICE:** $449.

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Integrated Keyboards

TRACKBOARD/NUMPAD COMBO BEATS THE GLIDEPOINT BY A FOOTPRINT

USING A SEPARATE MOUSE OR trackball isn't practical for most PowerBook users, who often have to work in close quarters. But does a keyboard with a built-in pointing device make sense on the desktop? To find out, I auditioned keyboards from Alps Electric and Datadesk. Both products offer distinct advantages, as well as some drawbacks.

Key Strokes

Alps Electric's GlidePoint Keyboard looks like a conventional keyboard, apart from a 7-inch-wide bulge at the front to accommodate the integrated touchpad, which is a modified version of Alps' standalone GlidePoint (see *Reviews*, February 1996). Like the Datadesk TrackBoard's, the GlidePoint's pointing device is located on the right, so it's not suitable for southpaws. The GlidePoint Keyboard's key layout is similar to the arrangement on Apple's Extended Keyboard, with function keys at the top, a numeric keypad on the right, and arrow and secondary function keys in between.

GIBSON

Datadesk's TrackBoard and NumPad (top), and Alps Electric's GlidePoint Keyboard.

The only unconventional feature of the GlidePoint Keyboard is the spacebar, which is split into two unequal parts: the longer section works normally, while the smaller one duplicates the function of the delete key. Although this is supposed to make it easier to correct typing mistakes, I found myself deleting characters unintentionally. Fortunately, you can use the GlidePoint's control panel to program both sections to space. The GlidePoint also comes with a contoured plastic wrist rest that fits snugly against the keyboard.

Colorful Design

Datadesk's TrackBoard is more of an eye-grabber, with violet (yes, violet) escape, function, and power keys that stand out even more than its integrated trackball. (If you really want to make a splash, the TrackBoard comes with replaceable colored caps for the ⌘, option, enter, and arrow keys.) To conserve space, the keyboard sports single control, ⌘, and option keys, and some keys (the enter, backslash, and arrow keys) have secondary functions that you access by pressing the control key at the same time. The TrackBoard's narrow border also contributes to its small footprint.

Instead of an integrated numeric keypad, Datadesk sells a separate unit called the NumPad that connects to the main keyboard using a supplied cable. You can set the keypad off to one side when you're not using it, or you can save $40 by not buying it at all.

Even with the keypad installed, the TrackBoard takes up far less space on the desk than the GlidePoint, mostly because of its smaller depth. In my home office, for example, the TrackBoard was compact enough to let me write in comfort when I pushed it up against my computer, something I couldn't do with the GlidePoint.

Pointing the Way

The GlidePoint's built-in touchpad is similar to the advanced TrackPad in Apple's newest PowerBooks. You position the cursor by running your fingertip over the surface, and you click by tapping your finger; to drag, you click twice and slide your finger along the pad. With a little practice, operating the GlidePoint is as easy as using a mouse, although it takes some concentration to keep your finger relaxed to avoid fatigue.

Buttons at the bottom and sides of the pad can be programmed to click from one to three times, drag lock, or enter simple keyboard shortcuts like ⌘-option-X. You can even program the buttons to perform no function at all, a handy option if you find yourself pressing them accidentally with your hand, as I sometimes did.

Although it's not difficult to use, the TrackBoard's pointing device is less capable than many stand-alone trackballs on the market (see *Reviews*, February 1997). The ball's small size and mass make it difficult to position the cursor accurately, and you have to use Apple's limited control panel to adjust cursor response. I was also disappointed to discover that you can't reprogram the TrackBoard's three buttons or add keyboard shortcuts, as you can with the GlidePoint and most competing trackballs.

The Last Word

After using both keyboards for a few weeks, I wasn't about to toss my mouse. The GlidePoint's touchpad is the better pointing device of the two. However, I prefer the smaller TrackBoard for entering text, partly because the protrusion on the front of the GlidePoint sometimes interfered with my typing. (I also prefer the feel of the TrackBoard's key switches, but that's mostly a matter of personal taste.) Even without the trackball, I'd be happy to use the TrackBoard as my primary keyboard.—FRANKLIN TESSLER

GlidePoint Keyboard

RATING: ★★★/5.2 **PROS:** Full complement of keys; intuitive touchpad pointing device. **CONS:** Large footprint; buttons can be pressed accidentally; bulge on front can interfere with typing. **COMPANY:** Alps Electric (408/432-6000, *http://www.alpsusa.com*). **LIST PRICE:** $139.95.

TrackBoard and NumPad

RATING: ★★★/5.9 **PROS:** Small footprint; separate numeric keypad. **CONS:** Small trackball; no way to program buttons. **COMPANY:** Datadesk (206/842-5480, *http://www.datadesk1.com/datadesk*). **DIRECT PRICE:** $139.95 for both; $99.95 for TrackBoard alone.

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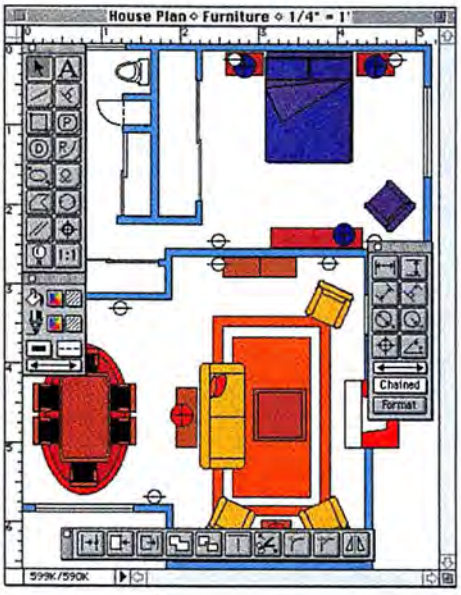

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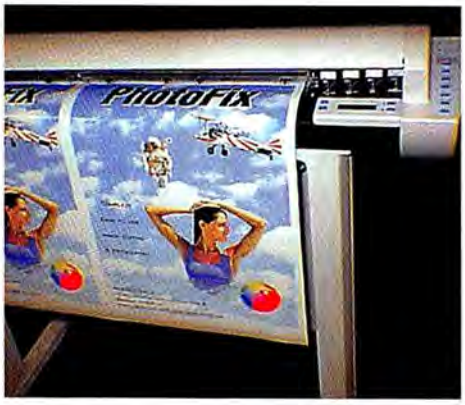

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WebStar 2.0

BETTER, STRONGER, FASTER

MORE THAN 10,000 PUBLICLY ACcessible Web sites are dished out by Macs, and this crowded solar system is centered around a single star: WebStar, from Quarterdeck's StarNine Technologies division. The simple fact that WebStar dominates the Mac OS world would make the arrival of version 2.0.1 noteworthy, but this upgrade also happens to be faster and more powerful than its predecessors (and the competition).

WebStar's list price is unchanged from that of version 1.3, but now you get more for your money. WebStar 2.0.1 includes the WebStar/SSL Security Toolkit, which allows you to set up an authenticated server—for online commerce, for example. (To use WebStar's Secure Sockets Layer features, you have to purchase a digital identification from VeriSign.) Also included are Adobe PageMill 2.0 and a CD-ROM packed with 300MB of third-party software.

Beam Me Up, WebStar WebStar 2.0 supplements the WebStar Admin utility with Web-based administration features that let you tweak and even monitor the server from afar.

Performance is paramount for Web servers, and WebStar 2.0.1 is dramatically faster than its predecessors. Because WebStar contains a cache that copies details about frequently accessed files to memory, it doesn't have to delve into the Mac's sluggish file system to get that information. A new plug-in module caches the contents of frequently used files so that when a cached file is requested, WebStar can serve it directly from RAM. And the new version supports the HTTP 1.1 draft specification's KeepAlive extension, which allows multiple requests to be sent over a single TCP connection for faster downloading.

Plug-in Party

WebStar 1.3 introduced server plug-in modules, which perform tasks typically associated with CGI (Common Gateway Interface) programs. Plug-ins improve performance by eliminating the need for a CGI to communicate with WebStar via the Mac OS's Apple events mechanism.

WebStar 2.0.1 includes a dozen or so new plug-ins. One is a server-side includes (SSI) module that lets you create page counters, display the current time and date, show or hide HTML based on a visitor's browser, and more. WebStar's SSI features don't measure up to those of Maxum Development's NetCloak (see *Reviews*, January 1997), but they're good enough for basic tasks.

Another new plug-in offers terrific remote-administration features that let you adjust server settings and monitor the server's load from any Web browser, using an interface straight out of *Star Trek* (see "Beam Me Up, WebStar"). If you prefer down-to-earth (and faster-loading) controls, you can use a text-only interface.

Other noteworthy plug-ins include a byte server that dishes out Adobe Acrobat 3.0 PDF files, a Java virtual machine that can run server-side Java applets, a directory indexer that provides a user interface for transferring files to and from your site, and a mail plug-in that lets WebStar send the contents of a form.

Some of the plug-ins have minor bugs, but a WebStar 2.0.2 release should be available by the time you read this. Other quibbles: the manual is only a bit better than previous versions' (although an extremely active mailing list takes up the slack), and the user interface could use some polishing, particularly in the suffix-mapping dialog box.

The Last Word

Given a choice between eye candy and performance, any sane server administrator will choose the latter. The new WebStar delivers where it counts, and continues to shine brightly in the solar system of Mac-based Web sites.—JIM HEID

RATING: ★★★★/7.7 **PROS:** Excellent performance; expanded features; lots of bundled goodies. **CONS:** Weak manual; minor plug-in bugs; crude user interface. **COMPANY:** StarNine Technologies (510/649-4949, *http://www.starnine.com*). **LIST PRICE:** $795.

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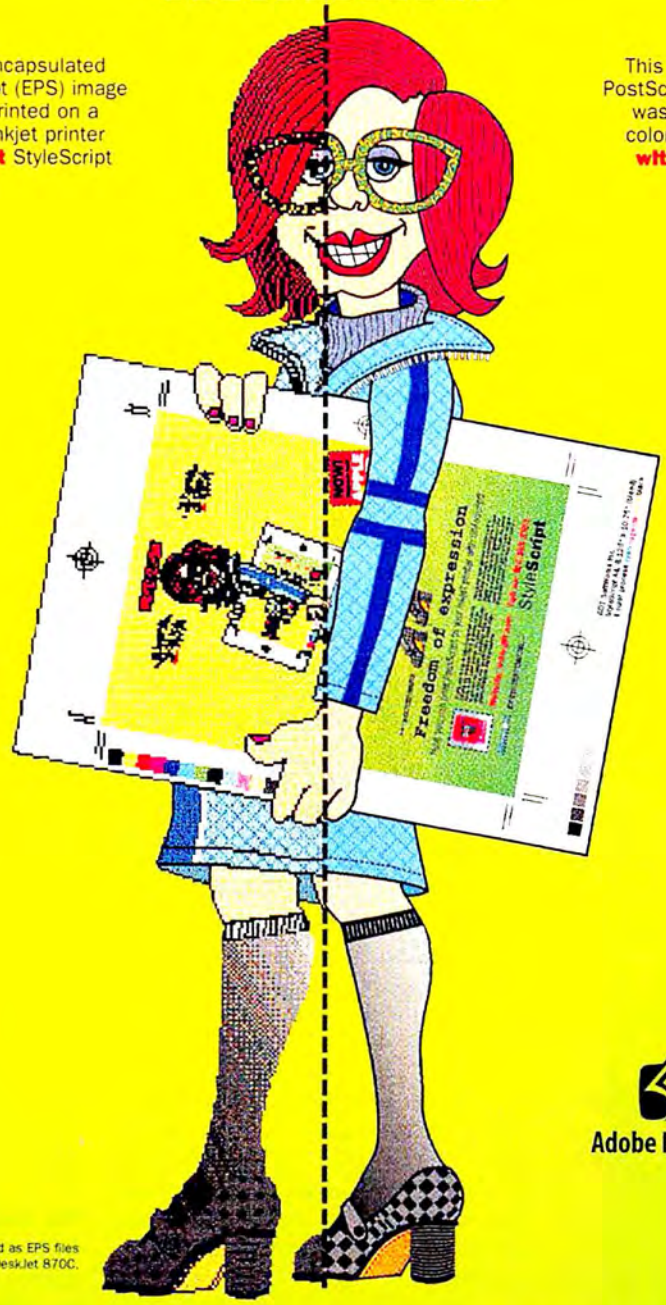

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Mac OS 7.6 Ships

System upgrade includes Talking Alerts, OpenDoc support

Mac OS 7.6, also known as Harmony, ships to retailers today. It should be available to end users within a week, according to Apple Computer.

For an evaluation of the new features, see "www.macworld.com /daily/daily.982.html> Should You Buy Mac OS 7.6?"

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TruPhoto

DIGITAL PRINTER CREATES INSTANT SNAPSHOTS, DELAYED GRATIFICATION

NO MATTER HOW MUCH INTEREST and excitement I generate when I'm preaching the benefits of digital cameras, I know it's just a matter of time until I hear the dreaded question, "So how do you print these things?" And no matter how cheerfully I explain that a virtual slide show consumes no shelf space and its colors are brighter and more vivid, the conversation comes to an abrupt end as my listener loses interest and tactfully changes the subject.

Thank goodness for a new group of snapshot printers, including the Panasonic TruPhoto. Costing less than most digital cameras, the TruPhoto outputs 3¼-by-5-inch continuous-tone images for about 75 cents a shot. That's still relatively expensive compared with traditional film photos, but it's significantly more affordable than comparable dye-sublimation output.

DEKE McCLELLAND

Snapshot-Quality Printer The TruPhoto printer invariably exaggerates the amount of cyan (as shown in this output sample) even after 20 minutes of meticulous corrections in Photoshop.

The TruPhoto prints on light- and heat-sensitive paper with a resolution of 144 pixels per inch. Having no need for halftoning or dithering, the printer creates the fluid transitions associated with standard photos. This isn't to say TruPhoto images are indistinguishable from 35mm prints—the garish colors and gummy detail are a dead giveaway—but the output is a darn sight bigger and better than Polaroid-type instant snapshots, even if producing it is slightly more laborious.

The TruPhoto takes almost four minutes to print an image, making a separate pass for the yellow, cyan, and magenta exposures. I spent most of my time color-correcting pictures, though. A typical uncorrected digital photograph—which looked fine on my calibrated monitor—came out too dark, with soft focus and an extreme cyan cast. Panasonic's printer driver offers gamma controls for adjusting the amount of primary colors, but they go undocumented and are ultimately insufficient to achieve reliable results. Although it took a bit of technical know-how, I found it easier to create adjustment layers in Adobe Photoshop that simulated the printer's color peculiarities.

The printer also has a habit of making JPEG compression artifacts more pronounced than they appear on screen (most printers produce the opposite effect). On a more positive note, once you achieve a satisfactory print, it's yours for keeps. I placed a few prints in direct light on a windowsill, and a month later, I saw no evidence of fading, unlike prints from other products, which deteriorate in a matter of days. The prints are likewise impervious to scratching or tearing.

The TruPhoto is a serial printer with two ports, one for PCs and the other for the Mac. When I first received the printer, I used its Mac port, but after encountering a series of printing errors that required me to reboot the printer *and* my computer—a problem Panasonic claims is unique to a few (as yet undetermined) models of Macs—the company shipped me a conversion cable for the printer's PC port. This workaround ended my reboot errors but made it impossible to start one print job until the other had completely finished. None of this was debilitating, but it *was* pretty irritating.

The Last Word

Once I got the hang of the TruPhoto and learned to anticipate its idiosyncrasies, I was able to churn out about ten pictures an hour. Sure, it takes less time to drop off some film at a photo lab, but with digital pictures you know what the picture looks like before you print. Despite its errors and oddities, the TruPhoto is a reasonably capable first attempt that has a world of potential.—DEKE McCLELLAND

RATING: ★★★/5.7 **PROS:** Affordable, continuous-tone output; prints resist fading. **CONS:** Middling color fidelity; exaggerates compression artifacts; some design flaws. **COMPANY:** Panasonic Interactive Media (408/653-1888, *http://www.panasonic.com*). **LIST PRICE:** $479.95.

PHOTOTOOLS MAKES PHOTOSHOP SO PRODUCTIVE YOU'LL HAVE PLENTY OF TIME LEFT TO KERN.

Pinch yourself, this isn't a dream (more like a dream-come-true). Thanks to the Extensis PhotoTools collection of plug-ins, the time has finally arrived when you can create and format text in Adobe Photoshop. We don't mean typing a couple of words, we're talking multiple text blocks, character styles, font sizes, leading, scaling — you know, all the stuff you expect to do with type.

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MacUser AWARDS Editors' Choice 1996 Winner

Artist TOP product 1996

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Source: 1087

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Globetrotter 1.1

HTML . . . WHO NEEDS IT?

AKIMBO SYSTEMS' PHILOSOPHY—that if you don't need to learn PostScript to use a laser printer, you shouldn't need to learn HTML to publish Web sites—is apparent in Globetrotter 1.1.1. This Web authoring tool shields you entirely from HTML; you work in a WYSIWYG page view, and the program generates HTML code after the pages are complete. Unfortunately, Globetrotter's stability problems outweigh this innovative approach.

Akimbo has built a lot of intelligence into Globetrotter. If you enter a partial URL, for example, the program completes it and turns it into a link; it also updates links automatically when you rename a document. A nice set of button styles makes it easy to create navigation bars. If you use symbols or a special font, Globetrotter either inserts the HTML 3.2 **<FONT FACE>** tag or converts the text to a graphic. The program supports tables (though not frames), and you can also include multimedia files or Java applets in your site. To add an image, simply drag it in; the program converts it to a GIF or JPEG and scales it appropriately. Image maps (either client-side or server-side) are a breeze to create, as are forms—the program automatically creates a CGI script in Perl to handle a form's information.

Because the program uses word processor–like style sheets, you can change a style in one place and have it propagate throughout your site. Different sections automatically become separate Web pages. Globetrotter can also track additions to your pages and insert a "New!" icon next to them. And when you're ready to unveil your pages, Globetrotter FTPs the entire site to your server.

Despite all these glorious-sounding capabilities, Globetrotter has serious problems. First, Akimbo states that the program is incompatible with the Modern Memory Manager (MMM) component of the Memory control panel in systems prior to 7.5.5. On my Power 100, even with System 7.5.5 installed, I needed to turn MMM off to get Globetrotter to run without crashing. I was also unable to run the program if I had Now Menus and Now WYSIWYG Menus installed. Akimbo's tech support, though responsive, was unable to reproduce my problems. And surprisingly for a new release, Globetrotter isn't Power Mac native.

Because Globetrotter can't import existing HTML documents, it's better suited to page creation than to maintenance. Akimbo suggests re-creating your pages by dragging graphics and text from Netscape's browser window to a Globetrotter window, then reformatting the page. Not only is this process tedious, it tends to bring Globetrotter crashing back to the Finder with a type 25 error. This ungraceful behavior also occurred when I tried to bring in large images.

Page Previewed Globetrotter lets you create pages in a near-WYSIWYG fashion (left), then view the rendered page in a browser window (right).

The program can make collaboration on a Web site difficult; its HTML-less approach assumes that one person will have control over the entire site, which may not be the case in the real world. Globetrotter also comes with extensive documentation but no tutorial, virtually assuring that new users will miss key aspects of this feature-rich program.

The Last Word

The ideas behind Globetrotter are sound, particularly with Web authoring moving toward site-oriented, content-focused programs such as Net Objects' Fusion and the recently announced CyberStudio from GoLive. Unfortunately, Globetrotter's execution doesn't quite match its conception. The stability problems alone are enough to persuade me to wait for the next version before I trust my sites to Globetrotter.—TOM NEGRINO

RATING: ★★/4.1 **PROS:** Shields user from HTML; smart forms, tables, and styles; automatic link management. **CONS:** Buggy; incompatible with common extensions and system software; no tutorial. **COMPANY:** Akimbo Systems (617/776-5500, *http://www.akimbo.com*). **LIST PRICE:** $99.

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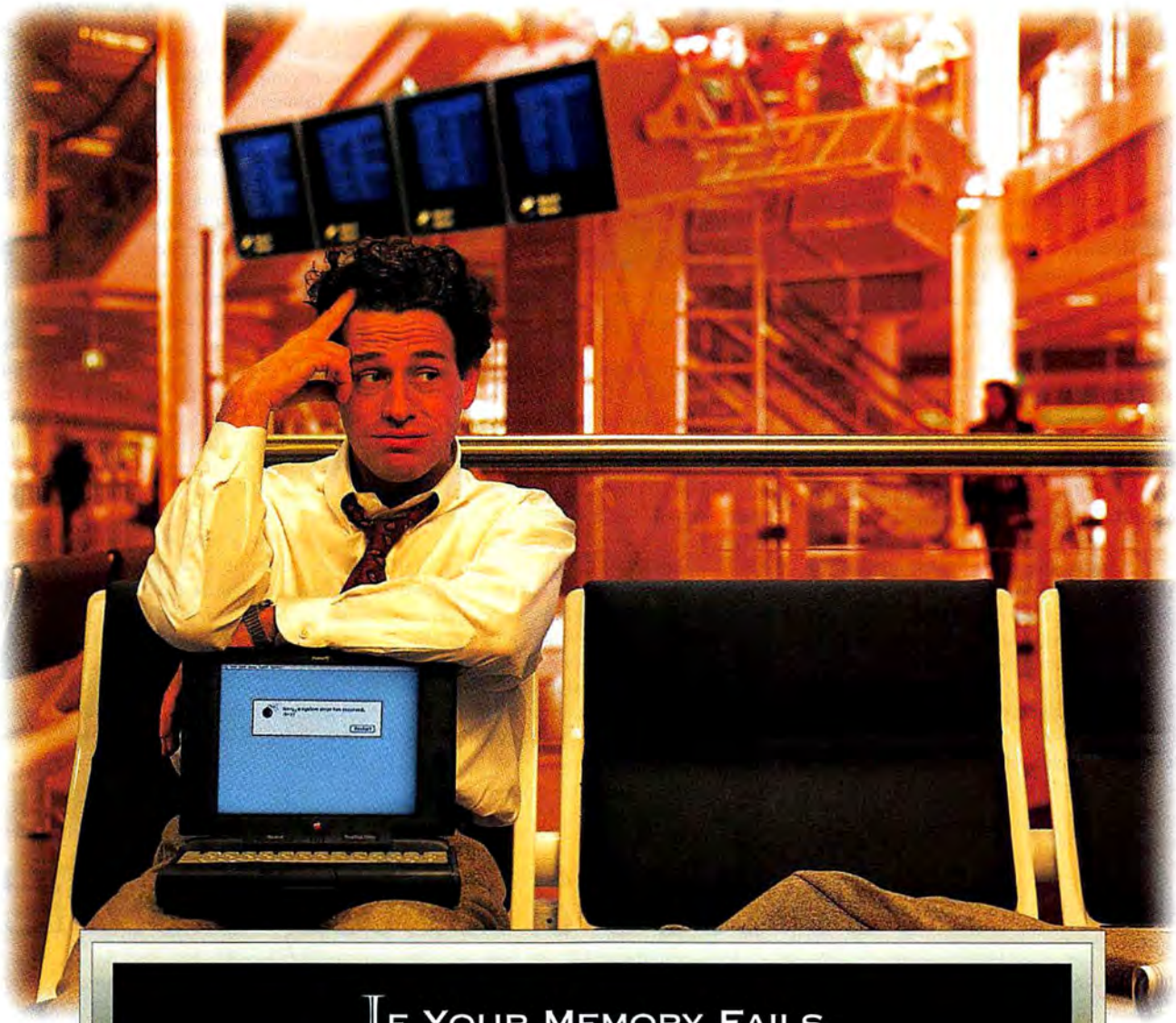

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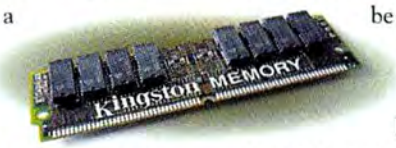

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Bolero

WEB-SITE LOGGING FOR PROS

ONE OF THE CHALLENGES FACING Internet-oriented businesses is figuring out which communications elements are most effective on the Web. A logging, reporting, and analysis tool can help you understand what happens at your site, providing information such as where visitors go, how much time they spend in each area, and how they got there. One such tool is EveryWare's Bolero 1.0, a professional-level program for making large-scale Web sites more effective. It assumes some knowledge of databases, and it's not cheap, but at the moment it's the best way to monitor Web-site activity.

Bolero logs user activities at a site into an SQL file that you can import into an industry-standard database, such as Butler SQL, Oracle, Informix, Sybase, or FoxPro. Although that approach makes data management more complex, it gives Bolero two important advantages over programs like WebThreads and Bien Logic's SurfReport, which log activities into a text file. First, the data is organized into hourly, daily, weekly, and monthly SQL records that you can search, sort, and report in a variety of formats using the forms included in the package (see "Who Did What?"). Second, because the database includes the URL trail of everyone who accesses your site, you can make frequent changes in the site's presentation details—such as frames, text elements, graphics, and JavaScript interactivity—to see how users respond.

Who Did What? Bolero displays a continuously updated site report in a browser window.

The database's richness means you won't simply install Bolero and forget about it; at both of the high-volume sites I tested, the database and reporting details were tinkered with almost every day. Bolero makes it easy to track which external links are leading to hits on your site, for example, so you can determine which search sites are worth advertising on.

But Bolero is a professional-level tool that assumes the user is familiar with SQL databases and ODBC conventions and is managing a WebStar server that's getting thousands of hits per day to justify the cost. The documentation, therefore, is not a tutorial or quick-start guide, but rather an administrator's manual that demands a working knowledge of EveryWare's Butler SQL database and Tango query tool (the necessary parts of which are bundled with Bolero).

The Last Word If you're a Web-site administrator who wants to gather all the demographics you can from your site, Bolero is the best tool available. If your background is in HTML and Java rather than SQL and database reporting, though, Bolero will involve a fairly long learning process.—CHARLES SEITER

RATING: ★★★★/7.0 **PROS:** Complete, flexible tool set. **CONS:** Can be difficult to master; prohibitively expensive for smaller sites. **COMPANY:** EveryWare Development (905/819-1173, *http://www.everyware.com*). **LIST PRICE:** Bolero Bronze $995 (single WebStar server); Bolero Silver $1795 (unlimited WebStar servers); Bolero Gold $4995 (unlimited WebStar servers; supports direct links to Oracle and SQL Server databases).

There's a faster, cleaner

Houston, we have liftoff. Presenting the Apple® Internet Connection Kit. Everything you need to blast onto the Internet, browse the web, and send e-mail in one simple to install, no hassle package. So what do you get? Well, the kit comes complete with Netscape Navigator™ 3.0 and Claris Em@iler™ Lite software, plus QuickTime® VR Player, RealAudio™ Player, Macromedia Shockwave, Adobe™ Acrobat™ Reader, Farallon's Look@Me, and a host of other software that installs easily in just minutes. As if that weren't enough, Apple Internet Dialer will even help you select an Internet Service Provider, and set up an account with just a few clicks of your mouse. And if you have any problems, Apple Guide online help can answer any Internet related questions you may have —

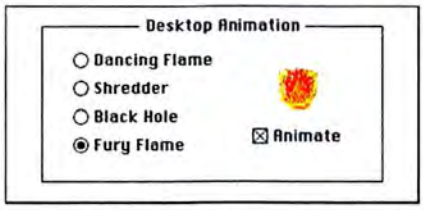
Burn It

INEXPENSIVE BUT FLAWED SECURITY

YOU MIGHT NOT EXPECT MUCH value in a package of four utilities priced under 30 bucks, and when it comes to software you generally get what you pay for. Syncronys Softcorp's Burn It 1.0 is no exception. It offers a convenient way to obliterate sensitive documents and protect the files you want to keep, but unfortunately its usefulness is limited to its core file-deletion capability, and its bundled options are less than stunning.

Most folks know that emptying your Mac's Trash isn't enough to destroy a sensitive document—you can still retrieve trashed documents with file-recovery programs until you overwrite them with another file. If you want the Mac's equivalent of a paper shredder, you need something more, and Burn It fits the bill—for this specific task.

Burn It erases sensitive documents so that file-recovery utilities such as Norton Utilities can't find them. A bundled utility, KeyDisk, purports to lock sensitive documents away from unauthorized prowlers. Two additional programs, Hide-it and Show-it, shield folders and files from prying eyes, and make them visible again.



Your File Will Self-Destruct . . . Burn It lets you display one of a variety of amusing animated icons as it destroys your sensitive documents.

Burn It works as advertised. A user-selected animated icon appears when documents are wiped from your drive (see "Your File Will Self-Destruct . . . "). I was unable to recover any documents destroyed with this program.

Burn It's bundled utilities are another story. Using KeyDisk, you create a password for an encrypted document, or have an encryption key recorded on a floppy disk, which you insert to unlock the file. Although documents are essentially protected, the level of security isn't terribly robust. A programmer managed to open a protected test document in 30 minutes flat, not by cracking the encryption algorithm—a relatively difficult process—but by simply finding the hidden encryption key within the file itself. Syncronys representatives stress that KeyDisk isn't designed to withstand an attack by a professional hacker, emphasizing that the Key Diskette feature—where the encryption key is stored on a separate floppy—provides a greater level of protection, and that future versions of the software may allow users to choose to remove the key altogether.

Nor was Hide-it very useful or robust. Although you can make any document or folder invisible, you can still see the file plain as day with programs like Apple's ResEdit and PrairieSoft's Disktop.

The Last Word Considering its low price, Burn It delivers an economical solution to very basic security needs, but Norton Utilities already has a file-shredding program that works as well or better. Since file trashing is the core of Burn It, I didn't give much weight to its other utilities when I was determining its score, and neither should you—consider them useful only until you can buy a more sophisticated security package.—GENE STEINBERG

RATING: ★★★/6.0 **PROS:** Low cost; easy installation. **CONS:** Unsophisticated file protection; file-hiding features easy to bypass. **COMPANY:** Syncronys Softcorp (213/340-4100, *http://www.syncronys.com*). **COMPANY'S ESTIMATED PRICE:** $29.95.

way to get on the Internet.

like, "This was so easy, why didn't I do this sooner?" The days of plodding along with complicated connections are over. With Apple, getting on the Internet now happens at warp speed. Visit your nearest Apple reseller, or order by calling 1-800-950-5382, ext. 1401. Apple. The power to be your best.

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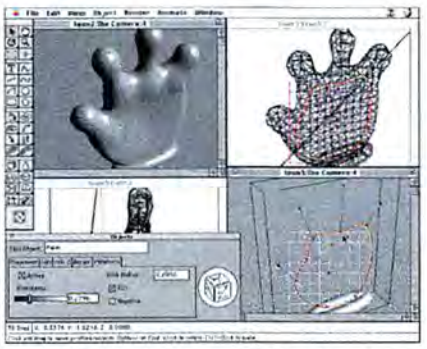
Extreme 3D 2.0

3-D DESIGN PROGRAM GETS SUITE-ER

THE RECENT RELEASE OF FREEHAND Graphics Studio 7 featured brand-new versions of several Macromedia programs, with the conspicuous exception of Extreme 3D. Version 2.0 of this excellent modeling, rendering, and animation package is now available—separately or as part of the $449 suite (*Reviews*, February 1997)—and it was worth the wait.

Among the improvements in Extreme 3D 2.0 are new tools and controls for greater modeling and rendering versatility. One of those tools generates user-defined particles from any object, letting you create a variety of effects—from tree leaves to running water to fireworks. Another new tool lets you build user-definable globular shapes from outlines (see "Blobs on Demand"); you can combine multiple outlines to create complex, flowing organic shapes, or draw out individual globules from a shape to produce an animated effect.

Extreme 3D's Materials browser now has transparency and luminosity controls for all basic shaders, and you can define the effects by color values or bitmaps. The program lets you edit ambient lights in the Lights browser, and adds controls for shadow resolution and fuzziness to spotlights and distant lights.



Blobs on Demand Extreme 3D's Metaform tool lets you create free-form, organically shaped objects from simple outlines (lower right), as in this sample file of a 'toon's hand. You control the blobbiness of the rendered object (top left) using a slider in the Objects browser (lower left).

With the new version you can choose either QuickDraw 3D or Extreme 3D's own interactive renderer. The fast Phong renderer (for final rendering) now includes controls for gamma correction; it can also combine material transparency with shadows to produce effects normally possible only with ray tracing. In addition, Macromedia has rewritten Extreme 3D's renderer to take advantage of the Power Mac's floating-point processing. While that makes for more efficient rendering, it also makes the program Power Mac–only.

Version 2.0 incorporates the Macromedia Open Architecture and Information Exchange protocols, which brings a common extensions architecture to the programs in the suite and improves file transfer among them. In addition, the new version supports several Internet file formats (GIF89a, Progressive JPEG, PNG, and xRes LRG), along with 3DMF and VRML files. You can also attach URLs to objects from within the Objects browser.

The Last Word As with any 3-D program, mastering Extreme 3D takes time—and a large RAM partition (at least 19MB to work comfortably). Nonetheless, alone or as part of FreeHand Graphics Studio, Extreme 3D 2.0 is an excellent tool for print, animation, Web, and multimedia production.—CARLOS DOMINGO MARTINEZ

RATING: ★★★★/8.1 **PROS:** Excellent modeling, rendering, and animation tools; built-in cross-platform, distributed rendering. **CONS:** Pro-level RAM requirements. **COMPANY:** Macromedia (415/252-2000, *http://www.macromedia.com*). **COMPANY'S ESTIMATED PRICE:** $399.

PowerBuilder 5.0

KEY CROSS-PLATFORM DATABASE TOOL

THOUGH ACI US 4TH DIMENSION and Claris FileMaker Pro rule the Mac small-office market, large-scale databases from Oracle, Sybase, Informix, and DB2 run the show in big business. With PowerBuilder 5.0, PowerSoft (now part of database giant Sybase) puts the Mac's large-scale SQL database application development skills on nearly equal footing with those of Unix and Windows NT systems.

PowerBuilder offers an icon-driven system for SQL database application generation, within a program-building format reminiscent of Mainstay's VIP-C. Its PowerBar and PowerPanel provide numerous tools for building query forms and generating reports, but what makes PowerBuilder popular is the amount of power in each tool—used together, the Data Window painter and the Query painter are sufficient to generate fast report forms loaded with reusable, easily modifiable objects for exhibiting selected SQL data.

PowerBuilder solves the sometimes vexing problem of connecting to existing databases with a giant set of canned interfaces and connection routines. PowerBuilder also ships with libraries of .pbl files covering a wide range of standard business query examples; studying the provided examples and making minor tweaks would nearly certify you as a business database guru. Although you must understand a certain amount of Unix and Windows to grasp PowerBuilder's organization and file naming, you can run your Mac-developed applications on other platforms without a hitch—a big plus in the corporate world.

Elementary With PowerBuilder's complete set of tool icons for application-element objects, you can build and test simple applications in hours, not days.

Version 5.0 includes PowerSoft's latest work in defining *distributed objects;* any object in an application can reside on any computer on the network. PowerBuilder developers can investigate performance improvements by trying different distributions of application objects instead of the typical arrangement—interface and logic code on the client and data on a server.

PowerBuilder 5.0 recognizes that the World Wide Web has changed the client-server landscape forever. You can save displays as HTML files, and the new DataWindow plug-in allows any Web browser to view PowerBuilder reports. PowerBuilder's Mac version, however, still lacks Web.pb, a key part of the program's Internet tool kit—an odd oversight given the Mac's strong Web position.

The Last Word PowerBuilder 5.0 is one of the few Macintosh products that supports rapid application development for large corporate database environments. Considering its scope, PowerBuilder is remarkably easy to learn and use, and requires much less attention to cross-platform detail than programming in C++ or most SQL dialects.—CHARLES SEITER

RATING: ★★★★/7.6 **PROS:** Easy interface for generating layouts and reports; near-universal connectivity to major databases. **CONS:** Mac version lacks key Internet functions. **COMPANY:** PowerSoft (508/287-1500, *http://www.powersoft.com*). **LIST PRICE:** $2995.

4:45 PM Sending my 48 meg file to be printed.
Color calibrating? Three clicks, all done.
Traps and overprints? They all showed up.
Revisions? OK, so I'm a little obsessive.
The comp? It actually matches the screen.

5:00 PM What's next? I'm out of here.

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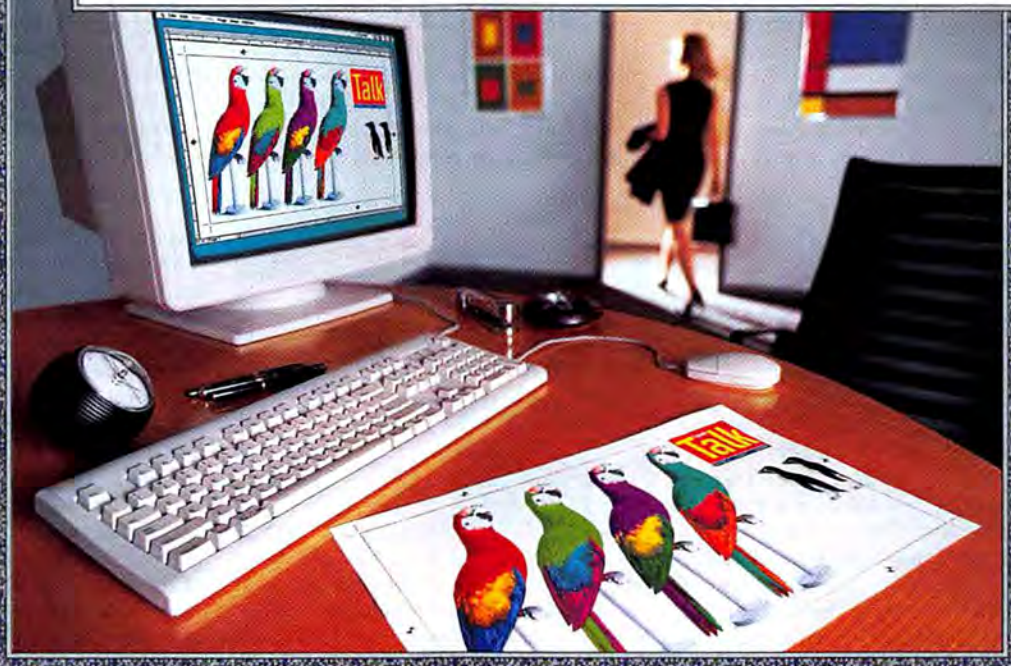

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MovieTools 1.5

SIMPLE, PRECISE QUICKTIME MOVIE PROCESSING

NOT ALL TASKS CALL FOR A BLOATed Swiss Army Knife of a program; sometimes a sharp pocketknife is all you need. At least that's the theory behind McQ Software's MovieTools, a set of utilities for carving QuickTime movies into broadcast condition. While MovieTools has many features that are either built into or accessible from Adobe Premiere, the program takes much of the work out of preparing basic QuickTime effects, animations, and composites.

A classic example of a repetitive task that would benefit from batch processing is compensating for the digital resolution variations between computers and videotape. Because some nonlinear editing systems and programs are designed to work with 640-by-480-pixel video and others with 720 by 486, editors often encounter an annoying discrepancy in picture size. MovieTools automates the process of stretching or shrinking the image between 13-inch RGB monitor resolution and digital broadcast resolution with minimal distortion (it also works with PAL and film resolutions).

Ready for Prime Time If you find yourself with a QuickTime movie that isn't quite ready for prime time because of aspect ratio or interlacing problems, MovieTools can get your pictures in shape.

MovieTools' other talents include video interlacing between two QuickTime movies (for viewing with LCD stereoscopic glasses), deinterlacing, alpha-channel extraction, chroma key compositing, and half a dozen video effects, including one that simulates stressed celluloid. Another useful feature converts animations from 24 frames per second to 30 fps, allowing video tests to be previewed at the correct playback rate.

McQ has also released an updated version of MoviEffects, a $59.95 utility aimed at multimedia rather than broadcast producers. MoviEffects 1.2 includes motion and transition effects that MovieTools doesn't, but it lacks broadcast-specific procedures. One of its useful batch-processing features is a Movie Assembler mode that compiles up to 600 clips; another nice addition is the ability to animate a series of static title screens into a scroll or crawl, an effect that higher-priced products overlook.

Most conspicuously missing from both MovieTools and MoviEffects is the ability to apply multiple procedures to a movie in a single pass. Another gripe is the absence of user-definable resolutions in addition to user-definable compression settings, a feature that would make the applications far more flexible for different delivery formats. Compatibility with Adobe Photoshop plug-ins would also be a welcome addition.

The Last Word While I admire McQ's straightforward approach to QuickTime movie processing, I confess that I crave a few more blades on my knife. If you're hoping to find the DeBabelizer of QuickTime video utilities, MovieTools may leave you underwhelmed.—AVI HOFFER

RATING: ★★★/5.4 **PROS:** Useful batch-processing features; alpha-channel processing; stereoscopic interlacing and deinterlacing. **CONS:** No support for multiple-process scripts; no variable resizing of image resolution. **COMPANY:** McQ Productions (415/348-1344, *http://www.mcqpro.com*). **LIST PRICE:** $195.

Ascend 4.0

AN INFORMATION MANAGER ONLY THE FRANKLIN FAITHFUL COULD LOVE

THE RELEASE OF ASCEND 4.0 MARKS the revival of a personal information manager that went unrevised for nearly three years. But although Franklin Quest has done a good job of integrating Ascend more tightly with its line of popular paper-based organizers, the Franklin Day Planners, it failed to improve the basic PIM functionality enough to make Ascend 4.0.1 competitive with programs such as Claris Organizer and the Now Up-to-Date/Now Contact combination.

The Franklin time-management philosophy revolves around stating values, setting goals, and scheduling tasks to achieve those goals. Ascend replicates the look of the Franklin Planners with a Day Planner window and a series of Values and Goals windows (see "Day in a Nutshell"). The CD-ROM offers tools for creating and prioritizing tasks, along with inspirational daily quotes. With one click, the program can now launch your e-mail program and create a blank message. And Ascend 4.0.1 improves on the earlier versions' printing abilities by supporting all the Franklin Planner paper sizes and many of the system's specialized forms.

Day in a Nutshell You can see everything about your day in Ascend's Day Planner window. Detailed notes on tasks and appointments appear in the useful Daily Record of Events; you can also add thoughts, journal entries, and goals.

But while Ascend fits well into the Franklin family, it falls short in comparison with other PIMs. One shortcoming is the absence of a system menu that lets you access and add contact and schedule information from within any application; you must have Ascend open to get to your data. The program must also be running (at least in the background) for event alarms to work. Although you can link a contact to an event, you have to go through a cumbersome dialog box instead of simply dragging a contact onto the event in your calendar. This overreliance on dialog boxes extends throughout the product and is just one of Ascend's interface problems; you're also forced to switch between mouse and keyboard, deal with annoying alerts, or click very precisely on a screen object.

Most annoying is the lack of data-entry aids. Users have come to expect automatic capitalization of words in names and addresses, pop-up menus for state names, and formatting of phone numbers with parentheses and hyphens. Ascend has none of these features. You can't even use more than one file with the program, and the data file must be named ASCENDDB for Ascend to access your information.

The Last Word If you already use a paper-based Franklin Day Planner, you'll probably find the transition to the electronic version seamless. But because Ascend lacks so many of the features found in most other PIMs, it's simply not a compelling choice for the average user.—TOM NEGRINO

RATING: ★★/4.2 **PROS:** Works adequately as an adjunct to Franklin Day Planners. **CONS:** Virtually no data-entry aids; awkward interface. **COMPANY:** Franklin Quest (801/975-1176, *http://www.franklinquest.com*). **LIST PRICE:** $99.95.

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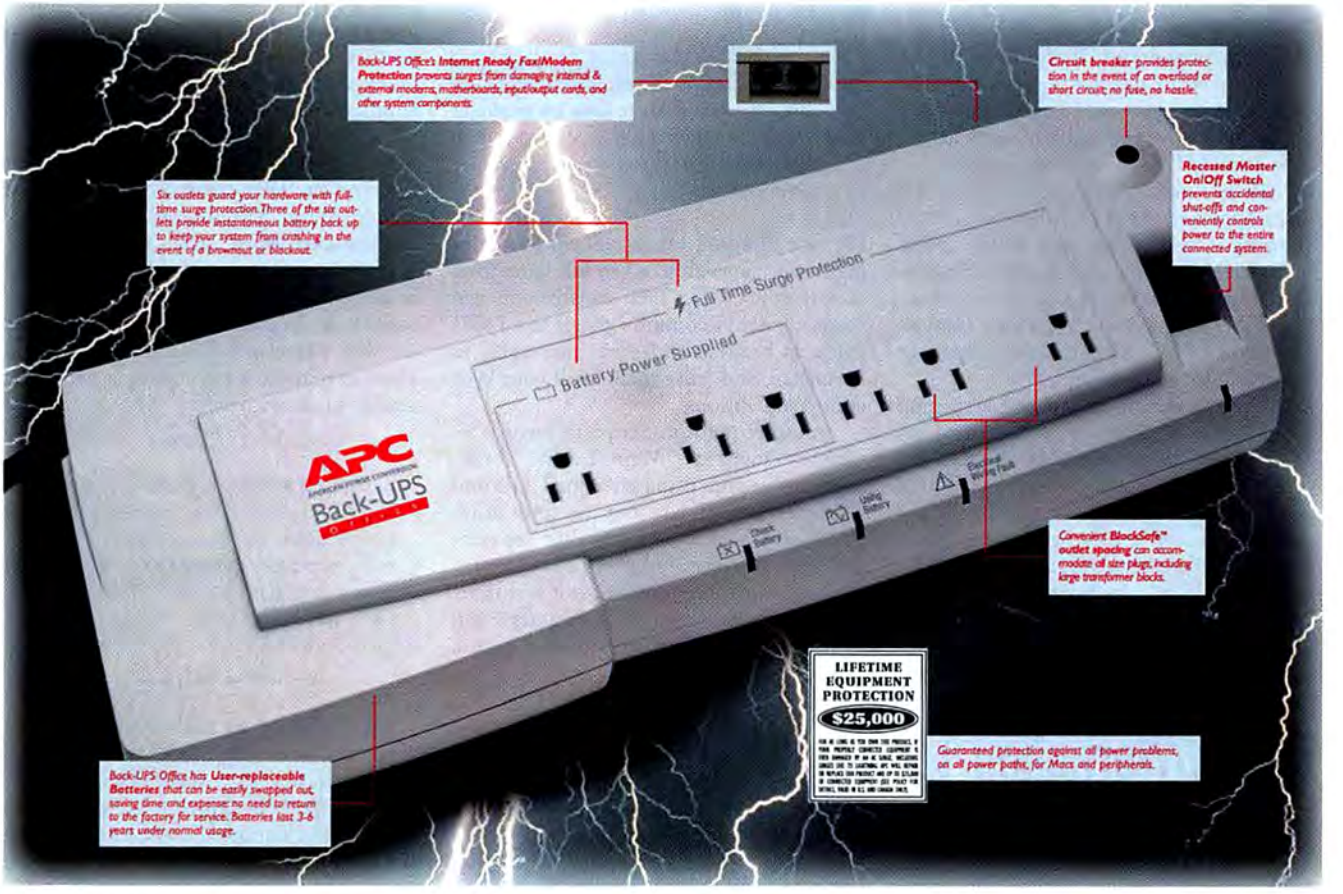

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Back-UPS Office's compact design installs easily on desktop, floor or mounts to wall.

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Scripter 2.0

APPLESCRIPT GETS A DAY JOB

FRANKLY, APPLESCRIPT HAS ALWAYS had a problem. Although it's a great alternative to Perl and other Unix-derived script languages, it can leave you wondering if the rewards are worth the effort needed to master it. Last year, for example, would you have found a bigger market for your skills in AppleScript, or in basic HTML, JavaScript, or Java?

Main Event Software's Scripter 2.0 takes AppleScript out of its hobby niche by showing it to be a fast, easy way to create interactive Web sites using CGIs (Common Gateway Interfaces). If you have a Mac-based Web server, you can create CGIs just by following the Mac-friendly advice in Scripter's documentation.

The new version extends the debugging capabilities of Scripter 1.0.1 (*Reviews*, March 1996), which were already the best in the industry, by integrating them with a superior Object Map browser. But the big news in version 2.0 is ScriptBase, Main Event's database for script values and objects (see "Solid Base"). It's not just the addition of ScriptBase—previously available only as a separate product—that's noteworthy; it's

Solid Base If you're going to write the dozens of scripts needed to "interactivate" a Web site, you'll appreciate the fact that Scripter 2.0 offers ScriptBase for organizing them.

the fact that you can use ScriptBase elements as "superglobals" in implementing scripts for CGIs. That means you can store elements common to all the CGIs (such as headers and error messages) in ScriptBase and reuse them in all your Web control operations.

Another point in Scripter's favor is its ties to Dogpatch, Main Event's forthcoming message dispatcher for CGIs and Apple events (if you buy Scripter now, you'll get a discount on this separate product). Because AppleScript is designed to service only one user request at a time, its performance as a CGI language can degrade when many users crowd onto a Web server. Dogpatch load-balances the requests by routing them either to copies of your CGIs running on networked machines or to multiple copies of the CGIs on a single CPU (essentially running in a simulated multitasking mode).

Scripter 2.0 does assume that you know what you're doing. Although the documentation on Scripter's new Web-oriented uses is clearly written, it won't make much sense to you unless you're already familiar with scripting and CGIs. It would help if Scripter's floppy included a collection of examples, but you can always find them on the Web (search on AppleScript at *http://www.info.apple.com*).

The Last Word Main Event has positioned Scripter 2.0 as a key Web tool instead of an operating system convenience. With ScriptBase, it's the easiest way to make CGIs work on a Mac-based Web site, and a good alternative to Java for making a site interactive.—CHARLES SEITER

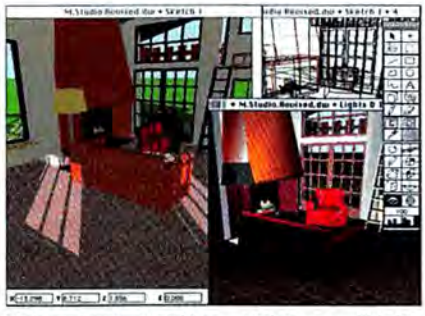
RATING: ★★★★/7.4 **PROS:** Improved debugger; includes ScriptBase; excellent CGI connection. **CONS:** Assumes good working knowledge of scripting. **COMPANY:** Main Event Software (202/298-9595, *http://www.mainevent.com*). **LIST PRICE:** $199.

DesignWorkshop 1.5

COMPETENT MODELER GRAFTS ON QUICKDRAW 3D RENDERING

ARCHITECTURAL MODELERS WERE once fairly common, but today few remain to challenge high-end stalwarts Architrion and ArchiCAD. One is DesignWorkshop, a 3-D, floating-point–precision solids modeler geared toward architectural design. Version 1.5 is Power Mac compatible and adds QuickDraw 3D support for enhanced rendering. Unfortunately, this otherwise capable modeler is hampered by a clumsy implementation of QD3D. And DesignWorkshop derives only a minor boost from its Power Mac compatibility, feeling as sluggish on a 7100/80 as version 1.0 did on 680X0 Macs.

DesignWorkshop offers a competent and approachable modeling environment. To build construction blocks, walls, floors, and ceiling slabs, you extrude 2-D objects into 3-D forms you can reshape into almost any configuration. You create curved shapes, such as domes or spires, using the Arc tool with the Repeat function. Other tools slice objects, punch holes, and produce user-defined section cutaways. The Space Jump feature moves the cursor to the handles of



Night or Day? QuickDraw 3D lets you add lighting and texturing to DesignWorkshop 1.5 constructions, as in this sample model (right). Daylight and shadows (left) are available only with flat-shaded, modeling-window renderings.

selected objects anywhere in 3-D space.

DesignWorkshop's QD3D support lets you add lighting and textures to objects. Unfortunately, to see the effects, you have to open a separate, display-only Light & Textures (QD3D) window in which you can neither build nor manipulate models (see "Night or Day?"). The QD3D window doesn't automatically update modeling-window changes; this forces you to redraw the entire image and makes for slower–than–real-time rendering. And the program's daylight and shadow effects aren't available in the QD3D window.

As opposed to the standard QD3D approach, where the model is manipulated and the viewpoint is static, DesignWorkshop lets you change your viewpoint and walk around a model. This is a wise decision for an architectural modeler, but moving around a scene (the shaded modeling or QD3D window) can be painfully slow.

DesignWorkshop lets you record saved views in sequence as QuickTime movies, producing slide-show–style walk-throughs. And from the QD3D window, you can save models in 3DMF and merge 3DMF objects with the scene. However, merged QD3D files aren't introduced into the modeler; you have to align and position objects (using a QD3D modeler) at their intended scene coordinates before merging them.

The Last Word Despite an awkward implementation of QD3D, DesignWorkshop offers very competent modeling tools. It's an excellent, lower-priced alternative to high-end architectural design packages.—CARLOS DOMINGO MARTINEZ

RATING: ★★★/6.3 **PROS:** Easy-to-use modeling tools; approachable interface. **CONS:** Lackluster implementation of QD3D; uninspiring performance. **COMPANY:** Artifice (541/345-7421, *http://www.artifice.com*). **LIST PRICE:** $595.

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ActionLine 1.1

JAVA JIVE FOR BEGINNERS

ALTHOUGH YOU COULD THEOretically do just about anything with Java, in practice it's most often used to add simple visuals like scrolling text, slide shows, and animation to Web pages. If that's all you want to do with Java—and you'd rather avoid programming and scripting—check out Interactive Media's ActionLine 1.1. The program is great for whipping up interactive Web pages, but given that its competition is free, you may decide you can live without it.

Essentially, all you ever do with this program is drag and drop text, graphics, sound, and controls into "portals"—ActionLine windows that model the Web page you're designing—to create an applet that uses ActionLine's prewritten Java code. ActionLine's canned repertoire includes GIFs that fade into each other, Forward and Back buttons, text banners that scroll, and musical backgrounds (partly because of its musical talents, ActionLine needs QuickTime 2.5 just to load). The program translates your actions into Java code, which you can preview in a browser or in ActionLine's own viewer. The package also includes the ActionLine Editor, where you do most of your work, and the Java Viewer, a useful utility for checking out applets in general.

ActionLine's Action Lines It's easy to set up fancy visuals in ActionLine, but the level of complexity in the diagrams that describe the resulting "portals" makes modification difficult.

Like most other visual-programming tools, ActionLine makes it easy to create diagrams that represent plain-text Java as icons but that are nearly as complex as the code itself (see "ActionLine's Action Lines"). Another unfortunate by-product of the visual approach is that it's easier to create a set of pages than to change them later; tracing small changes through pages of diagrams can be more time-consuming than simply starting over.

Another drawback is that ActionLine competes with Macromedia's free (but admittedly more limited) AppletAce (*http://www.macromedia.com/software/powerapplets*) and with GIFBuilder (*http://www.macworld.com/software*), a freeware utility for creating animated graphics. Interactive Media's attention to the details of Java class distribution gives ActionLine better online performance than the free packages, however. The Java Viewer uses 54 classes altogether, but ActionLine edits your code to include only the classes used in a particular applet; the result is page groups that typically need only 12 to 18 small classes (don't worry, you don't have to know anything about classes to use ActionLine—the program takes care of it for you). In plain English, that means your moving graphics will download faster in Navigator or Internet Explorer than the average site's static logo.

The Last Word If you want to get in on the Java action without actually programming, ActionLine is a good choice. You'll run into its limitations fairly early, but it's the fastest route to adding pizzazz to your Web page.—CHARLES SEITER

RATING: ★★★/6.6 **PROS:** Lets beginners create Java applets quickly; no programming required. **CONS:** Complex pages are difficult to modify; similar products are free. **COMPANY:** Interactive Media (415/948-0745, *http://www.imcinfo.com*). **LIST PRICE:** $99.

Audiotracer

AUDIO CD CREATION FOR THE MASSES

WHEN THE EARTH WAS YOUNG, vinyl records were the audio format of choice, and custom cassette compilations of favorite songs were commonplace. As time passed, CDs replaced records, and although the quality of the source media increased dramatically, the quality of the destination cassette remained relatively low.

Today, CD-Recordable (CD-R) hardware and media are quickly becoming affordable enough for consumers, but there is another limiting factor in creating your own audio CDs: the need to create an empty partition on your hard disk equal to the size of the final disc—up to 747MB for a 74-minute CD. Since few consumers have a spare gig drive for CD-R mastering, Optical Media's Audiotracer 1.0 should be a welcome alternative.

Unlike Astarte's Toast and similar CD-R mastering programs, Audiotracer is designed specifically for creating audio CDs. It eliminates the final premastering stumbling block, allowing would-be DJs to create custom compilation audio CDs on the fly by recording directly from the source CD to the destination CD, bypassing the premastering hard disk entirely.

The Name Game Audiotracer comes with a customizable database containing titles and track names for 700 popular CDs.

Audiotracer comes preconfigured with profiles for many CD-R drives, although my Toshiba unit wasn't one of the models listed. The interface is simple enough, with separate windows for the source CD player and destination recorder. The product includes a CD Catalog database containing titles and track names for 700 popular CDs (see "The Name Game").

When you insert a source disc into the CD player, title and track names appear as untitled in the CD player window, unless the CD is included in the database; you must type at least the title to add your source disc to the CD Catalog database. After this preliminary step, creating a custom CD is as easy as dragging tracks—or the entire CD—from the source window or CD Catalog to the destination window. (Oddly, though, you have to hold down the ⌘ key to select multiple contiguous tracks and the shift key to select noncontiguous tracks—exactly the opposite of the Macintosh standard.)

Audiotracer exhibited problems at first, crashing with Type 11 system errors. Though the documentation offered no troubleshooting section nor any mention of conflicts, tech support suggested disabling Modern Memory Manager, which solved the conflict (its on-the-fly memory reallocation interferes with Audiotracer).

The Last Word Gone are the days of custom-mix tapes on scratchy cassettes, their high frequencies baked away from living in a car's glove box summer after summer. If you own a CD-R drive and enjoy making custom CDs, Audiotracer is an indispensable addition to your software arsenal.—FRED DILISIO

RATING: ★★★★/7.5 **PROS:** Direct recording from CD without premastering; simple, easy-to-use interface. **CONS:** No troubleshooting section in user guide; conflict with Modern Memory Manager. **COMPANY:** Optical Media (408/376-3511, *http://www.microtest.com*). **LIST PRICE:** $99.

"My Microtek ScanMaker® III Pays For Itself Everytime I Use It."

— C. David Piña, designer

Main Title Design by C. David Piña
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The Deadline. Less than a month before air date. You are the designer for a major awards telecast. You will design every graphic and logo used in the program to be seen by millions of people around the world. You don't have time to waste. You need to rely on a fast, solid color scanner to come through in the clutch.

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Mathcad Plus 6

THE WORD 6 OF MATH PROGRAMS

COMPARED WITH THE MAGISTERIAL magnificence of Mathematica or the graduate-seminar orientation of Maple, MathCAD 3.1 (see *Reviews*, June 1993) was a practical, problem-oriented numeric math program that focused on standard engineering topics. After a three-year hiatus (and having skipped a few version numbers), MathSoft's Mathcad is back on the Mac. But despite an impressive assortment of new features, Mathcad Plus 6 is a Windows port that needs refinement.

Improving on the programming-code look of earlier versions, Mathcad Plus offers on-screen notation that's almost typeset quality. MathSoft has also expanded the program's statistics capabilities to include time-series treatments and random number generation in common distributions (normal, Poisson, Weibull, and others), a must for exploring the newer, more computation-intensive statistical methods. Mathcad offers excellent "canned" problem solvers for ANOVA and other common stats procedures, along with 200 or so other typical engineering and physics calculations (see "Step-by-Step"). It also supports actual programming, through both its new procedural operators and an interface that lets you import functions written in C. And new 3-D graphics make Mathcad more competitive with other high-end math programs, offering display options normally found only in business presentation packages.

Step-by-Step Mathcad's QuickSheets not only let you attack complex problems quickly, but all together they constitute a well-designed tutorial in mathematical methods.

On the Web front, Mathcad's File menu lets you specify your Internet connection settings so you can connect directly from Mathcad, and the ability to post Mathcad worksheets to Web sites makes working with remote collaborators effortless and efficient. (It also gives MathSoft a way to provide continuous online enhancements and upgrades to Mathcad; pretty soon all math packages will be providing this kind of Web-based support.)

Mathcad's problems arise from the state of porting technology. In my review of Microsoft's Visual C++ 4.0 Cross-Development Edition (see *Reviews*, July 1996), I noted that C++ was capable of turning a small Windows utility into a multimegabyte behemoth on the Macintosh. That's what happened with Word 6, and now with Mathcad. While Mathcad is fast even on a 66MHz 486, the Mac version is hobbled by an awkward, crawling interface. Computation speed on numerical problems isn't bad; it's the choppy scrolling and drawing functions that become annoying in day-to-day use. Another indication of MathSoft's level of commitment to the Mac is that most of its online engineering handbooks and other key products (including Axum and S-Plus) are still only for Windows and Unix.

The Last Word If it weren't a port of a Windows product, Mathcad Plus 6 would be a must-have program. As it stands, even with its innovative features it probably won't tempt many users of other math packages to switch.—CHARLES SEITER

RATING: ★★★/6.9 **PROS:** Excellent tool kit; professional statistics capabilities; can link to Mathcad worksheets on the Web. **CONS:** Choppy scrolling and drawing functions; awkward interface. **COMPANY:** MathSoft (617/577-1017, *http://www.mathsoft.com*). **LIST PRICE:** $349.

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3D Landscape 2.0

ARMCHAIR GARDENING MADE EASY

UNTIL NOW, LANDSCAPE JUNKIES who use a Macintosh had two options for designing gardens: wrestling with graph paper, a pencil, and a gardening book, or buying a PC to run a Windows landscape program. With Books That Work's 3D Landscape 2.0, Macintosh users can finally build their dream gardens the easy way.

3D Landscape 2.0 (1.0 was available only for Windows) isn't much harder to use than a pencil and graph paper. The program opens to an empty yard and a spiral-bound landscaper's book; you simply choose an object from the notebook and click in the yard to place it. For added realism, you can assign ages to plants—older plants are bigger—and specific sizes to structures. Double-clicking on a structure brings up a read-only dialog box displaying its dimensions; double-clicking on a plant pops up details on its species, age, and general characteristics. The program comes with a database of 2200 plants (you can add to it if you don't find what you're looking for). If you don't have a specific plant in mind but know that you want shade-tolerant ground cover, you can choose from a list of plants that meet those specifications.

Ready, Set, Garden! After you've embellished that backyard pond with trees, bulbs, and some brick edging, you can take a peek at what to expect in the spring.

All this sculpting and arranging takes place in the 2-D view. When you switch to the 3-D view, 3D Landscape builds your project from the polygon up. The Walk-About feature, which promises a "virtual tour through your garden," is nothing more than navigation arrows for moving around a scene. More useful is the ability to simulate what your landscape will look like in a specific season and where shadows will fall in your planned wonderland.

3D Landscape betrays its Windows heritage in a number of interface quirks. You can drag an edge to resize most objects, but not all. You can't resize all objects from the Details button; some only let you set how high off the ground the object appears (a handy feature if you're planning a levitating greenhouse). Worse, you can't simply drag and drop objects. 3D Landscape also lacks an Undo command, requires a Power Mac, and demands lots of memory (close to 17MB in the 3-D view).

The Last Word With 3D Landscape, you can see not only what your plant picks will look like from season to season, but what you can expect from your garden after several years of growth and maturation. Despite some interface quirks, 3D Landscape could be just the tool armchair gardeners have been waiting for.—SUZANNE COURTEAU

RATING: ★★★/6.1 **PROS:** Modifiable database of common yard plants; shows seasonal growth changes; 3-D view. **CONS:** No undo; no drag and drop; RAM-intensive. **COMPANY:** Books That Work (415/326-4280, *http://www.btw.com*). **COMPANY'S ESTIMATED PRICE:** $60.

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Alley 19

BOWLING GAME FOR THE NOSTALGIC

SAY YOU'RE TRYING TO MARKET a popular sport-simulation game these days. Your instincts might suggest something trendy—hang gliding, jet skiing, or car racing, for example. But Starplay's Alley 19 is the first and only Mac bowling simulation. Bowling? Wasn't that the game whose trendiness peaked decades ago? For exactly that reason, Starplay sets its virtual bowling alley in the 1950s—with a vengeance.

Everything in Alley 19's gorgeously designed retro alley is accented in chrome and accompanied by original fifties tunes that play as you bowl, so long as the Alley 19 CD is inserted. Players can choose from four characters—two bobby-soxers and two greasers—to represent themselves on screen, and up to four bowlers can play in each round (one player can be the computer).

To bowl, you aim the ball at the pins gleaming at Alley 19's far end by dragging the mouse as you thrust it forward. When you release the mouse button, the ball leaves your character's hand. By varying the mouse movement, you can actually lend some curve or spin to the ball's course.

Sound and Sense You can't tell from a screen shot, but the best part of the Alley 19 experience is the audio: crowd, pins crashing, rumbling balls, and the swingin' tunes of the fifties.

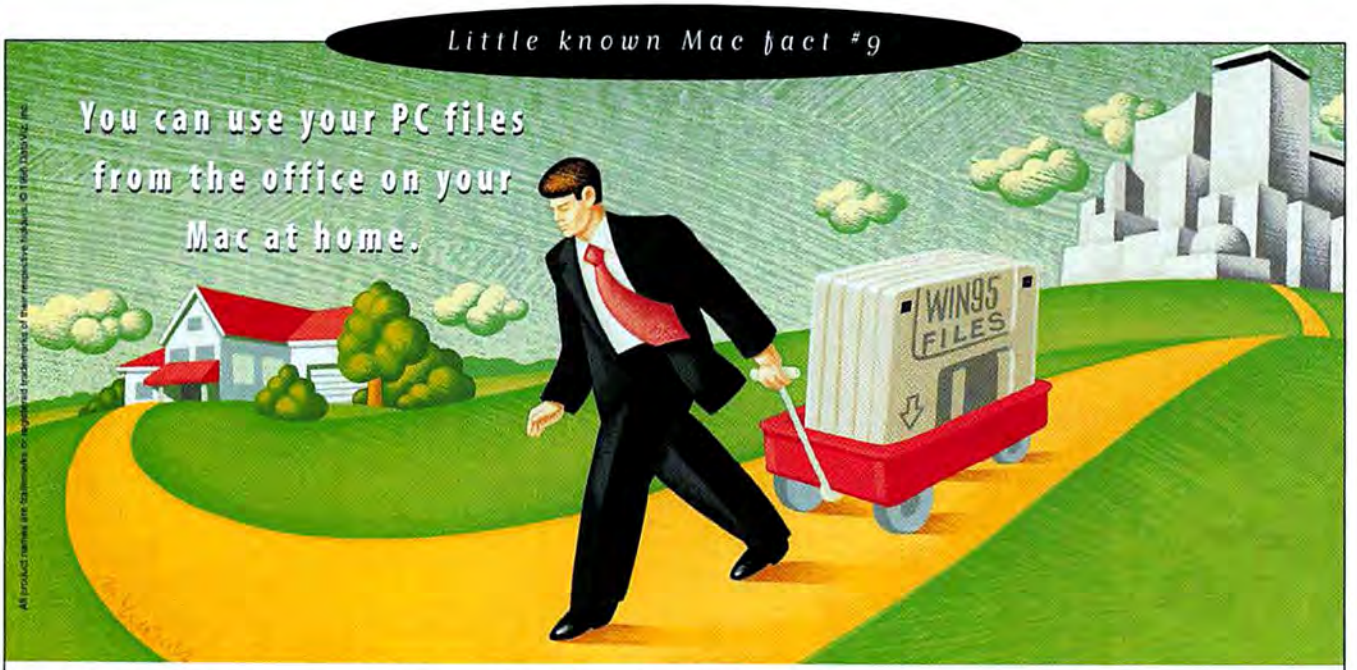
Alley 19's realism is nearly perfect: you can see the ball roll as it zooms away from you; the pins go down according to the laws of probability and physics; and your virtual pals mutter things like "Aw, bad split!" and "*Ba*-by!" In the unlikely event that you bowl three strikes in a row—a "turkey," in bowling slang—a trio of animated, oven-ready turkey breasts can-can across your screen. (I had to disable some of my extensions, however, to see my prancing poultry without crashing.) Few sports are as audio-intensive as bowling, and Alley 19's sound effects are especially outstanding. You're treated to the sounds of ball hitting wood, pins crashing together, ball landing in gutter, pin-resetting machine lowering, and so on.

Alley 19's only flaw is, unfortunately, the players themselves. In this day of smooth QuickTime movies, it's inexcusable that these digitized characters move and walk at four frames per second, looking like distant ancestors of Max Headroom.

And because fans of the shareware version of Alley 19 quickly discovered that the brunette female character scores a strike every time just by bowling slow and straight, this version features an unrealistic touch: if you bowl slow and straight, an invisible cosmic force deliberately gives your ball a shove off course. It's an Alley 19 catch-22.

The Last Word You might wonder what could possibly sound more dull than a computerized version of bowling, but Alley 19's fun music, superb continuous sound-effects track, and smooth animation—the bowlers themselves excepted—enhance its fifties-era novelty.—DAVID POGUE

RATING: ★★★/6.3 **PROS:** Great sounds and music; supports up to four players; gleaming fifties-deco design. **CONS:** Jerky bowler animation; impossible to bowl a slow, straight shot. **COMPANY:** Starplay (303/447-9562, *http://www.starplay.com*). **DIRECT PRICE:** $39.95.



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Software

BUSINESS

★★★★/8.9 **Analytica,** Decisioneering, 303/534-1515, $795. Financial-modeling tool helps you assess business decisions. *Mar 97, p. 72*

★★★★/7.9 **Big Business 2.0,** Big Software, 408/725-7200, $199 to $999. All-in-one business application integrates sales, marketing, ordering, and accounting. *Jan 97, p. 64*

★★★/6.5 **Butler SQL 2.0.2,** EveryWare Development, 905/819-1173, $695. This SQL database is well suited for serving data over the Internet. *Oct 96, p. 104*

★★★★/8.1 **Claris Organizer 2.0,** Claris, 408/727-8227, $69. Solid upgrade is worth the wait. *Jan 97, p. 62*

★★★★/8.4 **ClarisWorks 4.0,** Claris, 408/727-8227, $129 (estimated). The program has speed, a clean design, and low resource requirements. *Jun 96, p. 98*

★★★/5.4 **Day-Timer Organizer 2.1,** Day-Timer Technologies, 415/572-6260, $79.95. All-in-one PIM improved, but not perfect. *Mar 97, p. 72*

★★★★/7.1 **Kiplinger TaxCut '96,** Block Financial, 617/428-1119, $29 to $39. Tax software offers friendly interview process. *Mar 97, p. 56*

★★★★/7.7 **MacInTax Deluxe '96,** Intuit, 520/295-3110, $44.95. CD-ROM includes comprehensive state tax modules. *Mar 97, p. 56*

★★★/6.3 **Map Factory,** ThinkSpace, 519/858-5047, $996. Unique raster-based mapping program. *Nov 96, p. 70*

★★★/6.9 **Mariner Write 1.3,** Mariner Software, 502/222-6695, $69.95. Word processor stresses speed and elegance. *Mar 97, p. 63*

★★★★/7.1 **Microsoft Excel 5.0,** Microsoft, 206/882-8080, $295 (estimated). Although it's the only game in town, Excel 5 is a glutton for RAM and disk space. *Jun 96, p. 98*

★★★/6.7 **Microsoft Word 5.1,** Microsoft, 206/882-8080, $320 (estimated). Fast, sleek, stable, and probably the most widely used Mac word processor on earth. *Jun 96, p. 98*

★★★★/8.9 **Personal RecordKeeper 4.0,** Nolo Press, 510/549-4660, $49.95. Database helps you keep tabs on personal information. *Mar 97, p. 83*

★★★★/7.2 **PhoneDisc PowerFinder 2.2,** Digital Directory Assistance, 301/657-8548, $129. CD-ROM telephone directory offers instant response times. *Nov 96, p. 74*

★★/3.0 **Phone Search USA 2.0,** DeLorme Mapping, 207/865-1234, $49. Inexpensive but bare-bones telephone directory on CD-ROM. *Nov 96, p. 74*

★★★/6.9 **Quicken Business Law Partner 2.0,** Parsons Technology, 319/395-9626, $49. Suffices if you want to get the job done with a minimum of fuss. *Feb 97, p. 84*

★★★★/8.7 **Quicken Deluxe 7.0,** Intuit, 520/295-3220, $59.95. Indispensable financial manager. *Feb 97, p. 64*

★★★★/8.8 **Sculpt 2.0,** Interactive Simulations, 619/658-9462, $895. Molecular modeling at blazing speeds. *Oct 96, p. 84*

★★★★/7.2 **Select Phone 4.0,** Pro CD, 508/750-0055, $99. Reliable telephone directory has nice interface. *Nov 96, p. 74*

★★★★/7.6 **Small Business Legal Pro Deluxe 2.0,** Nolo Press, 510/549-1976, $59.95. A great value if you want to be fully informed. *Feb 97, p. 84*

★★/4.5 **Street Atlas USA 3.0,** DeLorme Mapping, 207/865-1234, $79. Map program update is better and cheaper, but still flawed. *Nov 96, p. 100*

★★★/5.1 **TakeNote 1.0,** Academix Software, 415/493-3003, $79.95. Reference tool goes halfway to replacing the familiar index card. *Jan 97, p. 88*

★★★★/7.1 **Timeslips 4.0,** Timeslips, 214/248-9232, $299.95. Time-tracking and -billing package is unnecessarily complex. *Jan 97, p. 86*

★★★★/7.4 **WordPerfect 3.5,** Corel, 613/728-8200, $129 (estimated). In speed, interface efficiency, and Macintosh integration, WordPerfect beats all competitors. *Jun 96, p. 98*

EDUCATION/ENTERTAINMENT

★★★★/8.2 **Afterlife,** LucasArts, 415/507-4545, $45. Wacky simulation mixes Dante, Milton, and P.T. Barnum. *Jan 97, p. 130.* **Editors' Choice** for best simulation game.

★★★★/8.7 **Amber: Journeys Beyond,** Changeling, 512/419-7085, $70. Think Myst à la Stephen King. *Jan 97, p. 130.* **Editors' Choice** for best adventure game.

★★★★/7.1 **America Rock,** Creative Wonders, 800/543-9778, $39.95. CD-ROM capitalizes on the solid learning theories of the original *Schoolhouse Rock* TV spots. *Jan 97, p. 54*

★★★★/8.8 **Bad Mojo,** Pulse Entertainment, 800/264-0325, $40. A sickeningly delightful experience: you become a cockroach. *Jan 97, p. 130.* **Editors' Choice** for best role-playing game.

★★★/6.5 **Blizzard's Holiday Jamboree,** Brøderbund, 415/382-4400, $19.95. Wild West-themed holiday activity kit with a goofy attitude. *Jan 97, p. 54*

★★★★/7.1 **Capitalism,** Interactive Magic, 919/461-0722, $54.95. Money talks in this financial simulation game. *Feb 97, p. 96*

★★★★/7.2 **Chess Mates,** BrainStorm, 888/427-2467, $34.95. Entertaining instruction for fledgling chess nerds. *Jan 97, p. 54*

★★★/6.1 **Corel All-Movie Guide 2,** Corel, 613/728-

continues

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Star Ratings

8200, $25.95. Handy CD is the next best thing to having a cinema buff inside your computer. *Jan 97, p. 54*

★★★★/7.8 **Digital Lab,** Philips Media, 303/739-4131, $44.99. An entertaining, hands-on project kit for budding wire-heads. *Jan 97, p. 54*

★★★★/8.5 **Flight Unlimited,** Looking Glass Technologies, 617/576-3310, $50. Puts you in touch with what makes flying special. *Jan 97, p. 130.* **Editors' Choice** for best flight simulator.

★★★★/7.2 **Green Eggs and Ham,** Living Books, 415/352-5200, $29.95. A charming, lighthearted adaptation of the classic Dr. Seuss book comes to CD. *Jan 97, p. 54*

★★★/6.9 **Gryphon Bricks,** Gryphon, 619/536-8815, $30. Virtual Lego bricks for your inner cyber-child. *Jan 97, p. 54*

★★★★/8.4 **IndyCar II,** Sierra On-Line, 800/757-7707, $55. This champion of race games has just about everything you can think of. *Jan 97, p. 130.* **Editors' Choice** for best sports game.

★★★★/8.3 **Interactive Physics 3.0,** Knowledge Revolution, 415/574-7777, $249. Nearly automatic physics instruction. *Mar 97, p. 86*

★★★★/7.7 **Leonardo the Inventor 2.0,** SoftKey, 617/494-1200, $29.95. CD-ROM illustrates da Vinci's life and inventions. *Jan 97, p. 54*

★★★★/7.9 **Origami: The Secret Life of Paper,** Casady & Greene, 408/484-9228, $39.95. Tutorial CD teaches you how to to recycle paper with style. *Jan 97, p. 54*

★★/3.0 **Police Quest: SWAT 1.0,** Sierra On-Line, 206/649-9800, $49.95. Sierra's action-adventure game misfires. *Mar 97, p. 88*

★★★★/8.7 **Spaceward Ho 4.0,** Delta Tao Software, 408/730-9336, $59. Interstellar empire building relies on strategy, not brute strength. *Jan 97, p. 130.* **Editors' Choice** for best network game.

★★★★/8.1 **Spycraft: The Great Game,** Activision, 310/479-5644, $45. Spycraft is better than a le Carré novel. *Jan 97, p. 130.* **Editors' Choice** for best multimedia game.

★★★★★/9.0 **Step On It,** Casady & Greene, 408/484-9228, $40. Addictive arcade game will drive you mad until you solve it. *Jan 97, p. 130.* **Editors' Choice** for best arcade game.

★★★★/7.0 **Sundial: The Original Timelapse Desktop,** John Neil & Associates, 415/905-3000, $29.95. A control panel that syncs outdoor scenery to your Mac's clock. *Jan 97, p. 54*

★★★/6.1 **Virtual Pool,** MacPlay, 714/553-6655, $39.95. Billiards simulator guarantees to improve your game. *Jan 97, p. 95*

★★★★/7.7 **Warcraft II: Tides of Darkness,** Blizzard, 714/955-1382, $55. Impressive strategy game is a wonderful clash between humans and Orcs. *Jan 97, p. 130.* **Editors' Choice** for best strategy game.

★★★★/7.8 **Where in the World Is Carmen Sandiego? 3.0,** Brøderbund, 415/382-4400, $39.95. Classic geography adventure adds new crime-solving fun. *Jan 97, p. 54*

★★★★/7.8 **Williams-Sonoma Guide to Good Cooking,** Brøderbund, 415/382-4400, $39.95. A domestic gift that won't gather dust alongside that unused crockpot. *Jan 97, p. 54*

★★★★/8.9 **You Don't Know Jack XL,** Berkeley Systems, 510/540-5535, $40. Gloriously irreverent, borderline-tasteless send-up of every bad game show. *Jan 97, p. 130.* **Editors' Choice** for best party game.

GRAPHICS

★★★★/7.1 **Adobe Illustrator 6.0.1,** Adobe Systems, 415/961-4400, $595. Efficient and well-organized drawing program doesn't surpass FreeHand 5.5. *Jan 97, p. 112*

★★★/5.7 **Canvas 5.0,** Deneba, 305/596-5644, $599.95. Midrange graphics program has professional price. *Jan 97, p. 112*

★★/4.8 **Chromatica,** Chroma Graphics, 415/375-1100, $149.95. Handy but limited Photoshop plug-in. *Feb 97, p. 80*

★★/4.6 **CorelDraw 6 Suite,** Corel, 613/728-8200, $595. Graphics suite lacks solid image-editing and drawing programs. *Jan 97, p. 112*

★★★★/8.9 **Detailer,** Fractal Design, 408/430-4000, $449. Wonderful imaging tool lets you paint directly on 3-D models. *Feb 97, p. 72*

★★★★/7.8 **ElectricImage Broadcast 1.0,** Electric Image, 818/577-1627, $2495. 3-D animation tool gets new price, new features. *Nov 96, p. 88*

★★★★/8.6 **Expression 1.0,** Fractal Design, 408/688-5300, $449. Object-oriented natural-media drawing arrives—at last. *Mar 97, p. 50*

★★/4.7 **Fastedit/Deluxe,** Total Integration, 847/776-2377, $249. Photoshop plug-in lets you edit quickly, but is expensive. *Nov 96, p. 92*

★★★★/7.5 **Form-Z RenderZone 2.8,** Autodessys, 614/488-9777, $1995. Impressive 3-D modeler gets rendering know-how. *Oct 96, p. 75*

★★★★/8.7 **FreeHand 7,** Macromedia, 415/252-2000, $399. Near-perfect draw program. *Feb 97, p. 56*

★★★★/7.9 **FreeHand Graphics Studio 7,** Macromedia, 415/252-2000, $449. Suite provides professional-level power at an affordable price. *Feb 97, p. 56*

★★★★/8.3 **Full Pixel Search 2.0,** Avian Systems, 201/568-9494, $295. Image-analysis program finds a pixel in a haystack. *Mar 97, p. 84*

★★★★/7.9 **Infini-D 3.5,** Specular, 413/253-3100, $649. Approachable, practical mix of 3-D design ingredients. *Jan 97, p. 70*

★★★★/8.3 **Kai's Power Goo,** MetaTools, 805/566-6200, $49.95. Family image-editing software that pros will use. *Jan 97, p. 84*

★★★★/8.9 **Painter 4.0,** Fractal Design, 408/688-5300, $549. Most artists should own Painter 4.0; its painting and special-effects capabilities simply can't be beat. *Jun 96, p. 78*

★★★★/8.3 **Photoshop 4.0,** Adobe Systems, 415/961-4400, $895. New version cements image editor's position as the top product. *Feb 97, p. 132*

★★★/5.7 **PhotoTools 1.0,** Extensis, 503/274-2020, $99.95. Useful Photoshop plug-in. *Feb 97, p. 80*

★★★★/8.1 **Poser 2.0,** Fractal Design, 408/430-4100, $249. Human models in 3-D (clothing optional). *Mar 97, p. 76*

★★★★/8.2 **PowerCADD 3.0,** Engineered Software, 910/299-4843, $795. Fast, pro-level drafting program gets some refinements. *Jan 97, p. 74*

★★/4.4 **Power/Pac 1,** Auto F/X, 603/875-4400, $249. Macros for Photoshop are useful but restrictive. *Feb 97, p. 80*

★★★★/8.9 **ScanPrepPro 3.1,** ImageXpress, 770/564-9924, $695. Photoshop plug-in puts image processing on autopilot. *Mar 97, p. 80*

★★★★/8.1 **Slicer 1.0,** Fortner Research, 703/478-0181, $695. View 2-D slices of 3-D images. *Nov 96, p. 98*

★★★/6.5 **Stencil It 1.0,** Kaetron Software, 713/298-1500, $99. Low-cost program is good for charts, but not for art. *Jan 97, p. 72*

★★★★/8.2 **Stylist 1.0,** Alien Skin Software, 919/832-4124, $199. Plug-in adds graphic and text style sheets to Illustrator. *Oct 96, p. 64*

★★★★/7.4 **TurboCAD 2D/3D 3.0,** IMSI, 415/257-3000, $149. Nearly high-end CAD program with educational-software price. *Dec 96, p. 61*

MEDIA

★★★★/7.1 **3D Web Workshop 1.0,** Specular International, 413/253-3100, $249. Instant Internet presence in 3-D. *Oct 96, p. 68*

★★★★/8.2 **AD-1 Pro Audio Analyzer 2.0,** Intelligent Devices, 410/744-3044, $349 to $449. Audio meters for the discriminating producer. *Dec 96, p. 84*

★★★★ **Adobe PageMaker 6.0,** Adobe Systems, 206/622-5500, $895. Page-layout program's upgrade includes practical and powerful improvements. *Nov 95, p. 60*

★★★★/7.1 **Adobe Persuasion 4.0,** Adobe Systems, 408/536-6000, $395. Presentation application makes the leap to the Web. *Mar 97, p. 52*

★★★★/7.4 **Adobe Premiere 4.2,** Adobe Systems, 415/961-4400, $795. Video editor offers significant enhancements, including CD-ROM Movie Maker plug-in. *Mar 96, p. 90*

★★★★/7.5 **Boris Effects 2.0,** Artel Software, 617/566-0870, $350 to $695. Inexpensive, multichannel digital-video-effects program is a worthwhile investment. *Jan 97, p. 76*

★★★/6.8 **ClickWorks 1.0.2,** Pitango, 617/280-7163, $985. Presentation program is a solid choice. *Feb 97, p. 74*

★★★/6.7 **Digital Chisel://HTML 2.1.3,** Pierian Spring Software, 503/222-2044, $109 to $995. Multimedia authoring doesn't make it on the Web. *Jan 97, p. 78*

★★★★ **FrameMaker 5.0,** Adobe Systems, 408/975-6000, $895. This page-layout program is a good choice for technical-document creation. *Nov 95, p. 63*

★★★★/7.4 **Movie Cleaner Pro 1.2.1,** Terran Interactive, 408/278-9025, $189.95. First-rate movie compression utility is a must-have. *Jan 97, p. 81*

★★★★/7.2 **MovieFlo' 2.0.2,** The Valis Group, 415/435-5404, $699. Image-distortion software for pros. *Jan 97, p. 92*

★★★/5.5 **MovieStar 1.5,** Intelligence at Large, 215/387-6002, $149.95. Easy QuickTime moviemaking and animation for the Internet. *Feb 97, p. 92*

★★★★/7.3 **mTropolis 1.1,** mFactory, 415/548-0600, $1195. This sophisticated authoring environment is a terrific tool for game developers. *Feb 97, p. 74*

★★★★/7.8 **Pro View 1.3,** E-magine, 800/603-1474, $99.95. Back-to-basics presentation tool. *Nov 96, p. 95*

★★★★/7.0 **PageTools 2.0,** Extensis, 503/274-2020, $99.95. Plug-ins add power and precision to PageMaker. *May 96, p. 65*

★★★★/8.0 **QuarkImmedia 1.0,** Quark, 303/894-8888, $995. An easy move from print to multimedia. *Dec 96, p. 57*

★★★★/7.8 **QX-Tools 2.0,** Extensis, 503/274-2020, $99.95. Winning collection of XTensions gets even better. *Mar 97, p. 65*

★★★/5.3 **UniQorn 1.01,** SoftPress Systems Limited, 415/331-4820, $895. Page-layout program has QuickDraw GX support—but not much else. *Aug 96, p. 56*

★★★/5.1 **Xdream 1.0,** Vision's Edge, 904/386-4573, $149. Xdream comprises 24 tools ranging from useful to indispensable. *Jun 96, p. 50*

★★★★/7.1 **XPert Tools 1.0,** XChange, 415/864-7592, $99 to $169. If you need to go beyond Quark's feature set, XPert Tools will take you there. *Jun 96, p. 50*

continues

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Star Ratings

UTILITIES

★★★/6.7 **After Dark 4.0,** Berkeley Systems, 510/540-5535, $30 to $40. Glitzier, but not necessarily better, than previous versions. *Feb 97, p. 76*

★★/4.1 **At Ease 3.0,** Claris, 408/987-7000, $49. Can be easily defeated with a Disk Tools floppy or separate start-up disk. *Nov 96, p. 146*

★★★★/7.9 **BorderGuard Access Router,** Network Systems, 612/424-4888, $1700. Transparent encryption of AppleTalk and TCP/IP that lets you use the Internet instead of a private WAN. *Nov 96, p. 146*

★★★★/7.6 **CanOpener 3.5,** Abbott Systems, 914/747-4171, $65. Reliably recovers text and graphics from damaged files. *Feb 97, p. 88*

★★★/6.2 **cypherPad,** usrEZ Software, 714/756-5140, $49. Easy setup and usage; good basic security. *Nov 96, p. 146*

★★★★/7.3 **DiskGuard 1.5,** ASD Software, 909/624-2594, $79. Good combination of low price and easy installation. Solid, basic protection. *Nov 96, p. 146*

★★★★/7.9 **DiskLock 4.0,** Symantec, 541/984-2490, $129. Easy automatic setup makes this a snap to configure; has most protection features you need. *Nov 96, p. 146*

★★/4.9 **DiskWorks 3.0.2,** MicroNet Technology, 714/453-6100, $299. Disappointing hard-drive formatter has an awkward interface. *Dec 96, p. 62*

★★★/6.1 **Dr. Solomon's Anti-Virus Toolkit 7.61,** S&S International, 617/273-7400, $85. Antivirus utility can check DOS disks. *Dec 96, p. 60*

★★★/6.0 **Empower 5.0.4,** Magna, 408/879-7907, $129. Decent design, but overpriced for features offered. *Nov 96, p. 146*

★/1.8 **Executor 2.0,** Abacus Research & Development, 505/766-9115, $249. Mac emulator for PCs falls far, far short. *Feb 97, p. 78*

★★/3.9 **Faxstf 3.2,** STF Technologies, 816/463-1412, $99 to $295. Faxing application suffers from its revision. *Oct 96, p. 66*

★★★★/8.0 **FileGuard 3.0,** ASD Software, 909/624-2594, $139. Most of the features you need, combined with ease of installation, reliable performance, and robust protection. *Nov 96, p. 146.* Editors' Choice for best desktop security software.

★★★/6.6 **Font Box 1.8.3,** Insider Software, 619/622-9900, $79.95 to $169.95. Font fixer could use some repairs. *Nov 96, p. 90*

★★/4.9 **FoolProof 2.5,** SmartStuff Software, 503/231-4300, $39. Decent design, but lacks features and is too easy to defeat. *Nov 96, p. 146*

★★★★/7.0 **Hard Disk ToolKit 2.0.1,** FWB, 415/463-3500, $199. Reliable hard-drive formatter can actually tweak a drive to run faster. *Dec 96, p. 62*

★★★★/8.5 **HSM ToolKit 1.0,** FWB, 415/325-4392, $79. Infinite storage made infinitely more simple. *Oct 96, p. 77*

★★★/6.8 **KeyQuencer 2.0,** Binary Software, 310/449-1481, $39.95 direct. Macro program for speed addicts and control freaks. *Dec 96, p. 59*

★★★★/7.8 **KeyServer 4.1,** Sassafras Software, 603/643-3351, $800. Easy-to-install tool enforces usage thresholds and lets you track applications. *Nov 96, p. 146*

★★★★/8.3 **Mac Manager 3.1,** ELS, 352/375-0558, $299. Provides both safe and impenetrable access protection and data encryption. *Nov 96, p. 146*

★★★★/7.5 **MATLAB Statistics Toolbox 2.0,** The MathWorks, 508/647-7000, $395. Statistical analysis tool on steroids. *Dec 96, p. 77*

★★★★★/9.3 **MATLAB Wavelet Toolbox 1.0,** The MathWorks, 508/647-7000, $895. Powerful wavelet-analysis tool. *Dec 96, p. 77*

★★★★/7.7 **McAfee VirusScan 2.0,** McAfee Associates, 408/988-3832, $65. World-class virus protection has little impact on Mac's performance. *Dec 96, p. 60*

★★★★/8.1 **NetShade 1.1,** Atemi, 217/352-3689, $299. Easy to install and configure, it scrambles data and foils all but the most determined sniffers. *Nov 96, p. 146*

★★★★/8.1 **Network Security Guard 3.1,** Mr. Mac Software, 619/453-2845, $289. Scans your network for unintentional guest access, poorly chosen passwords, and other security loopholes. *Nov 96, p. 146*

★★★/6.4 **Now Utilities 6.5,** Now Software, 503/274-2810, $89.95. Incremental feature upgrades are no substitute for stability. *Mar 97, p. 74*

★★★★/7.1 **On Guard 2.1,** Power On Software, 216/735-3116, $70. Easy install, attractive Finder-like configuration menu; low-priced. *Nov 96, p. 146*

★★★★/8.2 **QuicKeys 3.5,** CE Software, 515/224-1995, $119. QuicKeys exists to make macros easier. *Dec 96, p. 59*

★★★★/8.6 **RAM Doubler 2.0,** Connectix, 415/571-5100, $99. Control panel now triples your RAM. *Dec 96, p. 67*

★★★/6.4 **SAM 4.5,** Symantec, 408/253-9600, $69.95. Industrial-strength virus protection. *Feb 97, p. 86*

★★★/6.1 **SecretAgent 3.0,** AT&T, 847/405-0390, $249. An overpriced one-trick pony; its advantage is cross-platform compatibility. *Nov 96, p. 146*

★★★★/7.8 **Spell Catcher 1.5.6,** Casady & Greene, 408/484-9228, $59.95. Resurrected Thunder 7 is still much more than a spelling checker. *Dec 96, p. 73*

★★/4.0 **Startup Manager 7.0,** Now Software, 503/274-2810, $55. Extension-management tool simply can't compare to the competition. *Mar 97, p. 61*

★/2.7 **StellarFax 1.1,** TechPool, 216/291-1922, $249. Sends inferior-quality faxes faster. *Feb 97, p. 90*

★★★★/7.3 **StuffIt Deluxe 4.0,** Aladdin Systems, 408/761-6200, $129.95. Same compression format, but faster and with a brilliant Finder twist. *Oct 96, p. 61*

★★/4.6 **Turbo Toolkit 1.0,** FWB Software, 415/463-3500, $79. Disk utility offers minor speed-up. *Mar 97, p. 74*

★★★★/7.0 **ultraSecure,** usrEZ Software, 714/756-5140, $239. A textbook of required security features, hampered by so-so manual and complex installation. *Nov 96, p. 146*

★★★/6.4 **ultraShield,** usrEZ Software, 714/756-5140, $149. Mixed combination of terrific features with complex installation and multiple warnings about use with other software. *Nov 96, p. 146*

★★/4.3 **UnderCover,** SmartStuff Software, 503/231-4300, $39. A slightly buggy one-trick pony. *Nov 96, p. 146*

★/2.1 **ViaCrypt PGP 4.0,** ViaCrypt, 602/944-0773, $129. Hard to install, hard to use; few saving graces. *Nov 96, p. 146*

★★★/6.9 **Virex 5.6.7,** Datawatch, 508/988-7000, $100. Fast scanning, but caused general system slowdown. *Nov 96, p. 146*

★★★★/7.0 **WebLock 1.0,** Maxum Development, 708/830-1113, $195. Gives your Web server access protection via password log-in to protect private pages. *Nov 96, p. 146*

★★★★/8.5 **WebStar SSL 1.2.4,** Quarterdeck, 310/309-3700, $1295. Lets you use transparent encryption to exchange sensitive data safely with security socket layer-capable Web browsers. *Nov 96, p. 146.* Editors' Choice for best network security.

★★★/6.5 **Working Papers,** Dominion Software, 617/332-1144, $199.95. Manage your documents with OCR program and document organizer. *Feb 97, p. 94*

Hardware

DIGITAL CAMERAS

★★/3.9 **Casio QV-100,** Casio, 201/361-5400, $599. Camera produces poor-quality images with blown highlights. *Mar 97, p. 112*

★★★/5.8 **Casio QV-10A,** Casio, 201/361-5400, $399. Blown highlights and color cast problems mar images from camera. *Mar 97, p. 112*

★★★/6.6 **D-200L,** Olympus Image Systems, 516/844-5000, $599. Digital camera offers good image quality and a built-in flash. *Mar 97, p. 112*

★★/4.6 **DC20,** Kodak, 716/724-4000, $350. Pint-size camera contains no extras whatsoever. *Mar 97, p. 112*

★★★/6.8 **DC50,** Kodak, 716/724-4000, $979. Good color, expandability, and an excellent zoom lens set the DC50 apart. *Mar 97, p. 112.* Editors' Choice for best entry-level digital cameras.

★★★/6.0 **Epson PhotoPC,** Epson, 310/782-0770, $499. Digital camera's viewfinder doesn't show the whole image. *Mar 97, p. 112*

★★★★/7.1 **Fuji DS-7,** Fuji Photo Film, 914/789-8100, $699. Camera makes framing and reviewing photographs child's play. *Mar 97, p. 112.* Editors' Choice for best entry-level digital cameras.

★★★★/7.9 **PDC-2000/40,** Polaroid, 716/256-4436, $3695. Difficult to use and not inexpensive, but extremely high-quality images. *Mar 97, p. 112.* Editors' Choice for best entry-level digital cameras.

★★★/6.2 **QuickTake 150,** Apple Computer, 408/996-1010, $739. Oversized camera downloads images quickly. *Mar 97, p. 112*

★★★/5.8 **RDC-2,** Ricoh, 702/352-1600, $999. Fair-to-middling image quality detracts from this camera's extras. *Mar 97, p. 112*

MISCELLANEOUS HARDWARE

★★★★/8.9 **3M Precise Mousing Surface,** 3M, 612/733-1110, $15. Throw out your neoprene pad and treat your mouse to a deluxe surface. *Jan 97, p. 56*

★★★★/8.2 **AirCommunicator Lite,** Air Communications, 408/567-8000, $695. Cellular fax modem with flair offers a complete solution. *Nov 96, p. 79*

★★★★/8.5 **AlphaSmart Pro 2.1,** Intelligent Peripheral Devices, 408/252-9400, $269. Intelligent keyboard works as stand-alone input device. *Mar 97, p. 82*

★★★★/7.5 **DynaTek CDM 4001,** DynaTek Automation Systems, 902/832-3000, $2889. Hard drive/CD-R combo unit simplifies CD-ROM mastering. *Mar 97, p. 78*

★★★★/8.8 **MicroWorks,** Cambridge SoundWorks, 617/332-5936, $349. In terms of price for performance, speaker system is in a class by itself. *Dec 96, p. 66*

★★/3.1 **Midi Land S35/818 Systems,** Midi Land, 909/592-1168, 818 desktop speaker $79.95, S35 subwoofer $239.95. Speaker system has mediocre sound quality. *Nov 96, p. 72*

★★★/6.0 **NovaModem 288 1.0,** NovaLink Technologies, 510/249-9777, $229. Decent performance from PowerBook PC Card modem. *Nov 96, p. 94*

★★★★/7.8 **Sagem Planet ISDN GeoPort Adapter,** Sagem, 408/446-8693, $395. ISDN terminal adapter breaks serial port speed barrier. *Mar 97, p. 66*

★★★★/7.6 **SoundWorks,** Cambridge SoundWorks, 617/332-5936, $219.95. High-quality audio product at an affordable price. *Dec 96, p. 66*

★★★/5.5 **Stingray 4.0,** CoStar, 203/661-9700, $55. Trackball offers flexible design but limited programmability. *Feb 97, p. 70*

continues

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Star Ratings

★★★★/7.0 **Supra Simple Internet 33.6 1.0,** Diamond Multimedia, 360/604-1400, $159.95. Modem makes Internet access quick and easy. *Jan 97, p. 90*

★★★/5.2 **TrackMan Marble,** Logitech, 510/795-8500, $99. Restrictive design and unimpressive software. *Feb 97, p. 70*

★★★★/8.5 **Turbo Mouse 5.0,** Kensington, 415/572-2700, $110. MouseWorks software makes programmable trackball a standout. *Feb 97, p. 70*

★★★/6.9 **Viewpoint Model 100,** Lightware, 503/641-7873, $5795. Much light, some sound in a surprisingly small projector. *Nov 96, p. 85*

★★★/6.4 **WebRamp,** Trancell Systems, 408/988-5353, $899. ISDN router is easy to use, but missing some features. *Mar 97, p. 70*

★★★★/7.1 **Yamaha System 45,** Yamaha, 714/522-9240, $249.95. Speakers give you decent sound at a decent price. *Nov 96, p. 72*

PRINTERS

★★★/6.9 **Apple Color StyleWriter 1500,** Apple Computer, 408/996-1010, $249. Lackluster performance and image quality mark this color ink-jet. *Feb 97, p. 140*

★★★★/7.5 **Apple Color StyleWriter 2500,** Apple Computer, 408/996-1010, $349. Relatively fast color ink-jet has fair image quality. *Feb 97, p. 140*

★★★★/7.3 **BJC-4550,** Canon Computer Systems, 714/438-3000, $499. Ink-jet produces beautiful images with optional photo ink kit. *Feb 97, p. 140*

★★★/6.5 **Canon CLBP 360PS,** Canon USA, 516/328-5000, $12,500. Color laser printer had good text output, but other tests were mediocre. *Nov 96, p. 157*

★★★/6.7 **Color LaserWriter 12/600 PS,** Apple Computer, 408/996-1010, $6989 (estimated). Slow speed but excellent text output. *Nov 96, p. 157*

★★★★/7.8 **DeskJet 870Cse,** Hewlett-Packard, 408/246-4300, $499. Outstanding color ink-jet for inexpensive office printing. *Feb 97, p. 140*

★★★/6.9 **DeskJet 1600CM,** Hewlett-Packard, 408/246-4300, $1999. Expensive ink-jet printer offers good speed and crisp text. *Feb 97, p. 140*

★★★/5.9 **DeskWriter 600,** Hewlett-Packard, 408/246-4300, $199. Decent speed and average print quality at a nice price. *Feb 97, p. 140*

★★★★/7.2 **DeskWriter 680c,** Hewlett-Packard, 408/246-4300, $279. Color ink-jet offers above-average image quality. *Feb 97, p. 140*

★★★★/7.2 **Digital Science 8650 PS,** Eastman Kodak, 800/235-6325, $10,795 plus $995 for Ethernet. Top performance and solid image quality highlight Kodak's newest dye-sub printer. *Oct 96, p. 60*

★★★/5.1 **HP Color LaserJet 5M,** Hewlett-Packard, 408/246-4300, $9195. Inferior output; slow; messy consumables. *Nov 96, p. 157*

★★★/5.8 **LaserWriter 12/640 PS,** Apple Computer, 408/996-1010. $1599 to $1829. Workgroup printer is slower—but cheaper—than HP's LaserJet 5M. *Oct 96, p. 62*

★★★/6.6 **magicolor CX/32,** QMS, 334/633-4300, $7999. Unexceptional output for this color laser printer. *Nov 96, p. 157*

★★★/5.4 **MD-2010,** Alps Electric, 408/432-6000, $499. Low-end color printer is slow, with poor-quality output. *Feb 97, p. 140*

★★★★/7.0 **Optra C,** Lexmark International, 606/232-2000, $6849. This color laser printer has easy-to-use controls; good text and graphics output. *Nov 96, p. 157*

★★★★/7.9 **Phaser 350,** Tektronix, 503/682-7377, $3495. Solid-ink printer delivers laser-quality output. *Nov 96, p. 67*

★★★★/7.6 **Phaser 550,** Tektronix, 503/685-3067, $6995. Fastest color laser printer tested; superior output; true 1200-dpi resolution. *Nov 96, p. 157.* **Editors' Choice** for best color laser printers.

★★★★/7.8 **Stylus Color 500,** Epson America, 310/782-0770, $279. Good price, output, and speed, but this color ink-jet is messy. *Feb 97, p. 140*

★★★★/7.2 **XPrint 4915 Plus,** Xerox, 716/442-4028, $4995. Top-notch graphic output; a great color laser printer value. *Nov 96, p. 157.* **Editors' Choice** for best color laser printers.

★★★/6.9 **XPrint 4925 Plus,** Xerox, 716/442-4028, $8995. Color laser printer's graphics results are among the best, but speed was unimpressive. *Nov 96, p. 157*

SCANNERS

★★★★/7.5 **Agfa StudioStar,** Agfa, 508/658-5600, $989. Graphics pros will treasure scanner's high-quality scans and powerful software. *Feb 97, p. 62*

★★/4.8 **Apple Color OneScanner 1200/30,** Apple Computer, 408/996-1010, $799. A big disappointment; offers little advantage over its lower-priced predecessor. *Feb 97, p. 62*

★★/3.7 **ArtiScan Z1-600,** Tamarack Technologies, 714/744-3979, $499. Slow, unimpressive machine makes a rumbling noise while scanning. *Mar 97, p. 131*

★★/3.3 **ArtiScan Z1-1200,** Tamarack Technologies, 714/744-3979, $699. Slow, unimpressive, noisy scanner can scan at 600 dpi and 30 bit. *Mar 97, p. 131*

★★★/5.1 **Color OneScanner 600/27,** Apple Computer, 408/996-1010, $549 (estimated). Sleek and compact, but can't compete with less-expensive models. *Mar 97, p. 131*

★★★★/8.4 **Epson Expression 636,** Epson America, 800/922-8911, $899 as tested. Low-cost color scanner gets the nod for all-around use. *Feb 97, p. 62*

★★/ 3.8 **ImageReader Elite,** Info, 408/538-2500, $399. Small, inexpensive scanner delivers mediocre performance. *Mar 97, p. 131*

★★/3.8 **ImageReader FB,** Info, 408/538-2500, $549. Painfully slow scanner with anemic software and awkward case design. *Mar 97, p. 131*

★★/3.8 **ScanAce II,** PacificImage Electronics, 310/214-5281, $899. Bulky scanner performed well in color, gray-scale, and resolution tests. *Mar 97, p. 131*

★★/4.9 **ScanJet 4P,** Hewlett-Packard, 208/323/2551, $615. Outstanding color fidelity, but large, heavy scanner has weak software. *Mar 97, p. 131*

★★/3.8 **ScanMaker E3,** Microtek Lab, 310/297-5000, $329 (estimated). Inexpensive, but disappointing speed, color, and gray-scale test results. *Mar 97, p. 131*

★★/3.7 **ScanMaker E6,** Microtek Lab, 310/297-5000, $599. 30-bit color, but otherwise no better than the ScanMaker E3. *Mar 97, p. 131*

★★★/5.9 **ScanTouch 110,** Nikon Electronic Imaging, 516/547-4355, $299 (estimated). A relatively fast scanner, with good color fidelity and an attractive price. *Mar 97, p. 131*

★★★/5.3 **ScanTouch 210,** Nikon Electronic Imaging, 516/547-4355, $699 (estimated). Slower and more expensive than the ScanTouch 110, but 600 dpi. *Mar 97, p. 131*

★★★★/7.1 **SilverScanner Pro,** La Cie, 503/520-9000, $499. Great low-cost scanner with compact design, and good software. *Mar 97, p. 131.* **Editors' Choice** for best low-end scanners.

★★★/6.9 **SnapScan,** Agfa, 508/658-5600, $389 (estimated). Quiet, fast scanner has good scanning software. *Mar 97, p. 131*

★★★★/8.4 **Vista-S6E,** Umax Technologies, 510/651-4000, $345 (estimated). Inexpensive scanner did well on most of our tests, has good software. *Mar 97, p. 131.* **Editors' Choice** for best low-end scanners

★★★/6.6 **Vista-S12E,** Umax Technologies, 510/651-4000, $649. Fast, with minimal image noise, but the Vista S-6E is a better choice. *Mar 97, p. 131*

STORAGE

★★★★/7.6 **2.6GB Optical,** La Cie, 503/520-9000, $1999. Low price for this format, great software, and high-performance Sony mechanism. *Oct 96, p. 141.* **Editors' Choice** for best optical drives.

★★★/6.2 **640MB MO Optical,** La Cie, 503/520-9000, $599. Decent performance, low media cost; but no performance match for Iomega's Jaz drive. *Oct 96, p. 141*

★★★★/7.1 **8× External CD-ROM Drive for Mac,** La Cie, 503/520-9000, $199 (estimated). Price/performance leader with well-implemented audio software. *Dec 96, p. 145.* **Editors' Choice** for best CD-ROM drive.

★★★/ 6.6 **8 Plex,** Plextor, 408/980-1838, $539. Uses its own mechanism, FWB driver software, but costs more than other bundles. *Dec 96, p. 145*

★★★/5.8 **Advantage 8× External CD-ROM,** MicroNet Technology, 714/453-6000, $249 (estimated). Performed well, but lacks power-on light and external audio-control buttons. *Dec 96, p. 145*

★★★★/7.2 **APS PD4,** APS Technologies, 816/483-1600, $499.95. Excellent low-priced, small-footprint unit, bundled with APS PowerTools, PowerCD. *Oct 96, p. 141.* **Editors' Choice** for best optical drives.

★★★/6.9 **CDS658PSD,** Dynatek, 902/832-3000, $349. Nicely designed; offers speedy performance and superior driver software. *Dec 96, p. 145*

★★★/5.9 **Cheetah Plus,** Plasmon Data, 408/474-0100, $2575. Minimal documentation, mediocre performance reduce this drive's appeal. *Oct 96, p. 141*

★★★★/7.4 **DisKovery 2600MO,** Optima Technology, 714/476-0515, $2395. Reasonable price, great software, and uses a high-performance Sony mechanism. *Oct 96, p. 141*

★★★/6.7 **EZFlyer 230MB,** SyQuest, 510/226-4000, $299; cartridges $29.95. SyQuest's new removable drive tries (again) to outzip Iomega. *Oct 96, p. 56*

★★★/5.4 **HammerDisk 230,** FWB, 415/325-4392, $769. Overpriced; uses older, slow technology. *Oct 96, p. 141*

★★★/5.0 **HP SureStore Optical 2600FX,** Hewlett-Packard, 970/635-1000, $2995. Poor performance in its class, a lead brick of a case, and overpriced. *Oct 96, p. 141*

★★/4.9 **LF-7300A,** Panasonic Communications & Systems, 201/348-7000, $2995. Overpriced and slow; it can't compete with a 2.6GB MO drive. *Oct 96, p. 141*

★★/4.8 **PCA80SC,** Philips Electronics, 408/773-1304, $299. Disappointing performance, though excellent audio software. *Dec 96, p. 145*

★★★/6.9 **PD/CD,** Plasmon Data, 408/474-0100, $620 (estimated). This dual-purpose drive is worth considering if you need a CD-ROM drive. *Oct 96, p. 141*

★★★/5.2 **PD/CD-ROM,** Panasonic Communications & Systems, 201/348-7000, $649.95. Nonstandard connectors, DIP SCSI ID settings, and poor documentation bring this drive down. *Oct 96, p. 141*

continues

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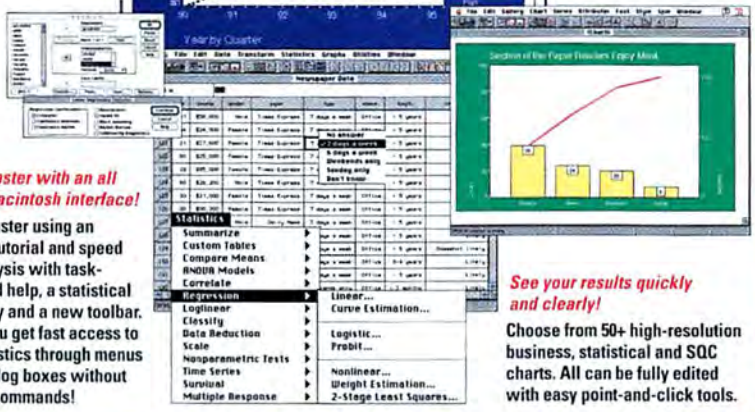

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Star Ratings

★★★/6.4 **Phasewriter Dual PD,** Toray Marketing & Sales, 415/341-7152, $649 (estimated). Neither price nor performance can keep pace with the competition's. *Oct 96, p. 141*

★★★/6.8 **PowerMO 2600,** Olympus Image Systems, 516/844-5000, $2199 (estimated). Reasonable price and a two-year warranty, but middle-of-the-pack performance. *Oct 96, p. 141*

★★★/5.5 **SCSI Express CD37,** Micro Design International, 407/677-8333, $505. Slightly slower than the 8× drives, this 6.7× drive offered sturdy design and well-designed driver software. *Dec 96, p. 145*

★★★/5.8 **T4-2600,** Maxoptix, 510/353-9700, $2425. No formatting software included and slow performance in its class. *Oct 96, p. 141*

VIDEO/DISPLAY

★★★/6.3 **Diamond Pro 91TXM,** Mitsubishi Electronics America, 714/220-2500, $1699. Pricey for an average product, with below-average image quality. *Jan 97, p. 125*

★★★/6.1 **G200,** IBM, 914/766-1900, $1469. Easy-to-use display, but below-average image quality. *Jan 97, p. 125*

★★★★/7.6 **G810,** ViewSonic, 909/869-7976, $1595. A great price for a top pick in both usability and image quality. *Jan 97, p. 125.* **Editors' Choice** for best two-page monitors.

★★★/6.7 **Multigraph 445Xi,** Nokia Display Products, 415/331-4244, $1899. A little pricey for a monitor that offers only medium image quality. *Jan 97, p. 125*

★★★/6.7 **Multiple Scan 20,** Apple Computer, 408/996-1010, $2149. Good overall image quality, but pricey for its category. *Jan 97, p. 125*

★★★/6.6 **MX21F-M,** Mag InnoVision, 714/751-2008, $1699. Average price for average usability and image-quality scores. *Jan 97, p. 125*

★★/4.7 **P201,** IBM, 914/766-1900, $2635. Poor image quality and hard to use. *Jan 97, p. 125*

★★★/6.2 **PanaSync S21,** Panasonic, 201/348-7000, $1899. Good controls, but a little expensive for below-average image quality. *Jan 97, p. 125*

★★★/5.8 **PrecisionView 21,** Radius, 408/541-6100, $2749. Overpriced for only average test scores and a one-year warranty. *Jan 97, p. 125*

★★★/6.9 **Pro P810,** ViewSonic, 909/869-7976, $1745. Superb image quality, but costlier than its sibling, the G810. *Jan 97, p. 125*

★★★★/7.4 **RasterOps SuperScan Mc20,** Hitachi NSA, 617/461-8300, $1599. Good bargain for an overall good performer. *Jan 97, p. 125*

★★★/6.6 **RasterOps SuperScan Mc801HR,** Hitachi NSA, 617/461-8300, $2199. A bit costly for only above-average image quality, mediocre controls. *Jan 97, p. 125*

★★★/6.4 **SyncMaster 21 GLs,** Samsung Electronic America, 201/971-0400, $1959. Expensive unit for overall average performance. *Jan 97, p. 125*

★★★/5.6 **Ultra 20-M,** Princeton Graphic Systems, 714/751-8405, $1249. Inexpensive, but you get what you pay for—not high quality. *Jan 97, p. 125*

★★★/6.4 **VisionMaster 21,** Iiyama North America, 215/957-6543, $1945. Overall a good unit, but not good enough to justify the price. *Jan 97, p. 125*

★★★★/8.3 **VisionMaster Pro 21,** Iiyama North America, 215/957-6543, $1995. Top overall image quality with clear on-screen controls. *Jan 97, p. 125.* **Editors' Choice** for best two-page monitors. m

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Mac Superguide

MACWORLD SELECTS THE BEST MAC OS SYSTEMS

Looking for a new Macintosh but confused about which of all the new models to buy? Look no further. Each month, the *Mac Superguide* section provides *Macworld*'s picks for the best Mac OS systems. Typically we recommend three top choices: an Editors' Choice winner and two runners-up. Occasionally we'll have more or fewer top choices in categories with unusually competitive—or uncompetitive—options.

You'll also find *Macworld* Star Ratings and Macworld Lab performance benchmarks for all Mac OS systems shipping as we went to press in late January 1997. You may read about other Mac models in *Macworld* and elsewhere, but those are prototypes not yet available—the only systems rated here are those you can actually buy.

For Mac systems reviewed earlier, the summaries below include the issue date and page number of the article. In some cases, such as faster versions of existing Macs, there is no full review and thus no cross-reference. New systems are indicated in the benchmark by the ▶ icon.

Star Ratings and Editors' Choice designations may have changed since previous issues, based on the current lineup of systems and any price changes; the winners listed here are the current ones.

All prices but Power Computing's are company-estimated street prices; actual price may vary. Power Computing sells direct, so the prices listed here are the ones you would actually pay. Unless otherwise noted, all systems include a keyboard and mouse, but not a monitor or modem. Apple systems do not include a keyboard except for Performa and PowerBook models. DayStar systems do not include a hard drive, RAM, keyboard, or mouse, although we add their cost in determining the prices reported here.

For price comparisons, figure on spending about $800 for a 17-inch monitor and, if they're needed, $175 for a modem, $100 for an extended keyboard, $50 for a mouse, $400 for a 2GB hard drive, $175 for 2MB of VRAM, and $100 for 16MB of RAM.

OFFICE SYSTEM

EDITORS' CHOICE

★★★★/7.3 **PowerCenter 150** A great price, plus more expansion and better performance than Apple's Power Mac 7600/132, make the PowerCenter 150 minitower the ideal general-purpose office Mac for most people. Power Computing does skimp on the video RAM but is generous on the cache. Power Computing (512/388-6868): $2195, 16MB RAM, 512K cache, 1MB VRAM (4MB maximum), 1.0GB hard drive, 8× CD, 3 free drive bays, 3 PCI slots. *Dec 96, p. 106*

EDITORS' CHOICE

★★★★/7.0 **Power Macintosh 8500/180** Now that Apple has dropped the price $1000, this soon-to-be-discontinued speed demon is a great buy even for office use. Apple Computer (408/996-1010): $2699, 16MB RAM, 256K cache, 2MB VRAM (4MB maximum), 2.0GB hard drive, 8× CD, 1 free drive bay, 3 PCI slots. *Dec 96, p. 106*

★★★/6.7 **Power Macintosh 7600/132** Thanks to a recent price reduction, Apple's flagship office Mac is now $400 less than the PowerCenter 150, since Apple is phasing out this system in favor of the new 7300. While the 7600 is a bit slower and less expandable than the PowerCenter, it is nonetheless a strong performer. An added bonus for some people is the built-in video-input circuitry. Apple Computer (408/996-1010): $1799, 16MB RAM, 256K cache, 2MB VRAM (4MB maximum), 1.2GB hard drive, 8× CD, 1 free drive bay, 3 PCI slots. *Dec 96, p. 106*

Apple's Performa 6400/200 offers good speed at a good price for home and small-business users.

PORTABLE SYSTEM

EDITORS' CHOICE

None Apple's portables have been lackluster recently, despite the introduction of the PowerBook 1400 series in late fall 1996 and the 3400 in February 1997. None warrants the ultimate recommendation of an Editors' Choice award.

★★★/6.4 **PowerBook 1400cs/117** Apple's newest notebook accommodates an optional CD-ROM drive. The result is a better system than the old 5300 series, but no barn burner. The new, larger LCD screen is nice, even though it's passive matrix. Apple Computer (408/996-1010): $2495, 12MB RAM, 750MB hard drive, optional 6× CD, 11.3-inch passive matrix LCD, 1 drive bay, 2 PC Card slots ($3500 model 1400c/117 has active matrix LCD and 1.0GB hard drive). *Jan 97, p. 58*

SMALL-OFFICE/HOME-OFFICE SYSTEM

EDITORS' CHOICE

★★★★/7.3 **PowerBase 200** Pro-level performance for a price less than that of Apple's Performa 6400/200, plus a strong selection of features and greater expansion capability, make this minitower system a great buy for consultants and small businesses. Also, unlike its 240MHz cousin, this model is actually available in quantity. Power Computing (512/388-6868): $1895, 16MB RAM, 256K cache, 2MB VRAM (4MB maximum), 1.2GB hard drive, 8× CD, 3 free drive bays, 3 PCI slots. *Jan 97, p. 60*

★★★★/7.1 **Performa 6400/200** Good performance contrasts with limited internal expansion. But a good price makes this tower more attractive despite its limitations. A unique feature is its TV tuner slot. Apple Computer (408/996-1010): $2119, 16MB RAM, 256K cache, 1MB VRAM (1MB maximum), 2.4GB drive, 8× CD, 1 free drive bay, two 7-inch PCI slots, TV/FM tuner slot, 28.8-Kbps modem. *Dec 96, p. 106*

A great price and solid performance make Power Computing's PowerCenter 150 the top office pick.

EDUCATION SYSTEM

EDITORS' CHOICE

★★★★/7.3 **PowerBase 180** Strong performance, low price, good expandability, and features such as 3-D video acceleration make this tower a great buy for cash-strapped schools and students. Power Computing (512/388-6868): $1495, 16MB RAM, 256K cache, 2MB VRAM (4MB maximum), 1.2GB hard drive, 8× CD, 3 free drive bays, 3 PCI slots. *Jan 97, p. 60*

EDITORS' CHOICE

★★★★/7.1 **Power Macintosh 5400/180** This all-in-one Mac—available only to schools—eliminates the need for several cables that could get damaged or stolen in a school setting. Rich in features—including a good monitor—and moderate in speed, the 5400 is a good classroom Mac. Apple Computer (408/996-1010): $1999, 16MB RAM, 1MB VRAM (1MB maximum), 1.6GB hard drive, 4×

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PHOTOGRAPHS BY KEVIN CANDLAND

CD, no free drive bays, 7-inch PCI slot, TV/FM tuner slot, Ethernet card, internal stereo speakers, monitor included.

IMAGE-EDITING AND 3-D GRAPHICS SYSTEM

EDITORS' CHOICE

★★★★/8.0 **Power Macintosh 9500/180MP** A solid second in performance at half the price—a terrific deal for pros who need a multiprocessor system. The case doesn't hold as much as the Genesis MP's, and it's not as easy to add internal peripherals. Its prices have dropped dramatically because Apple is phasing it out in favor of the new 9600/200MP. Apple Computer (408/996-1010): $3999, 32MB RAM, 512K cache, 2MB VRAM (4MB maximum), 2.0GB hard drive, 8× CD, 2 free drive bays, 6 PCI slots. *Dec 96, p. 120*

EDITORS' CHOICE

★★★★/7.4 **Genesis MP 720+** The ultimate Mac system speeds through multiprocessor (MP)–enabled programs like Adobe Photoshop and Strata Studio Pro Blitz. The oversize tower leaves room for everything you might need: you could equip it with an internal RAID system and a recordable CD-ROM drive and still have free bays. DayStar Digital (770/967-2077): $10,714, 16MB RAM, 512K cache, 4MB VRAM (4MB maximum), 2.0GB hard drive, 8× CD, 7 free drive bays, 6 PCI slots. *Dec 96, p. 120*

DayStar's Genesis MP 720+ is the ultimate image-editing and rendering Macintosh.

★★★★/7.2 **Genesis MP 360+** Like the Genesis MP 720+, the MP 360+ features a cavernous tower case to hold an impressive array of peripherals. Like the 9500/180MP, it offers strong performance at a lower price than the 720+. But the 9500/180MP is a better deal unless you need the internal expansion. DayStar Digital (770/967-2077): $7814, 16MB RAM, 512K cache, 4MB VRAM (4MB maximum), 2.0GB hard drive, 8× CD, 7 free drive bays, 6 PCI slots. *Dec 96, p. 120*

PUBLISHING AND DESIGN SYSTEM

EDITORS' CHOICE

★★★★/8.2 **PowerTower Pro 225** The fastest single-CPU Mac offers the top performance needed for publishing pros. A recent price reduction of $700, combined with an increase in included RAM from 16MB to 32MB, put this decked-out configuration of the PowerTower Pro 225 far out front in the price/performance race. Power Computing (512/388-6868): $4295, 32MB RAM, 1MB cache, 8MB VRAM (8MB maximum), 2.0GB hard drive, 8× CD, 6 free drive bays, 6 PCI slots. *Dec 96, p. 120*

EDITORS' CHOICE

★★★★/8.0 **SuperMac S900/225** Nearly as fast as Power Computing's same-priced PowerTower Pro 225, but with fewer free drive bays, the SuperMac S900/225 is a solid second choice for an expandable, high-performance system. The S900/225 also has an easier-to-upgrade case design than competing Apple and Power Computing towers. Umax Computer (510/226-6886): $4295, 16MB RAM, 512K cache, 8MB VRAM (8MB maximum), 2.1GB hard drive, 8× CD, 4 free drive bays, 6 PCI slots. *Dec 96, p. 120*

★★★★/7.9 **PowerTower Pro 200** The second-fastest single-CPU Mac offers the high performance needed for publishing pros. And for $500 less than a comparably equipped PowerTower Pro 225, it's a better price/performance deal: a 13 percent lower price for 8 percent less performance. Power Computing (512/388-6868): $3295, 16MB RAM, 1MB cache, 2MB VRAM (8MB maximum), 2.0GB hard drive, 8× CD, 6 free drive bays, 6 PCI slots. *Dec 96, p. 120*

MULTIMEDIA AND VIDEO CREATION SYSTEM

EDITORS' CHOICE

★★★★/7.4 **Genesis MP 720+** The ultimate Mac system speeds through multiprocessor (MP)–enabled programs like Adobe Premiere and After Effects. Its oversize tower case's high expandability means you could equip it with an internal RAID system and a recordable CD-ROM drive and still have free bays. DayStar Digital (770/967-2077): $10,714, 16MB RAM, 512K cache, 4MB VRAM (4MB maximum), 2.0GB hard drive, 8× CD, 7 free drive bays, 6 PCI slots. *Dec 96, p. 120*

WEB AND INTRANET SERVER SYSTEM

EDITORS' CHOICE

★★★★/8.2 **PowerTower Pro 225** The fastest single-CPU Mac offers the top performance needed for Web serving. A recent price reduction of $700 puts this system far out front in the price/performance race. Its only drawback is the clumsy case design, which makes upgrading difficult. Power Computing (512/388-6868): $3795, 16MB RAM, 1MB cache, 2MB VRAM (8MB maximum), 2.0GB hard drive, 8× CD, 6 free drive bays, 6 PCI slots. *Dec 96, p. 120*

Macworld LAB TEST

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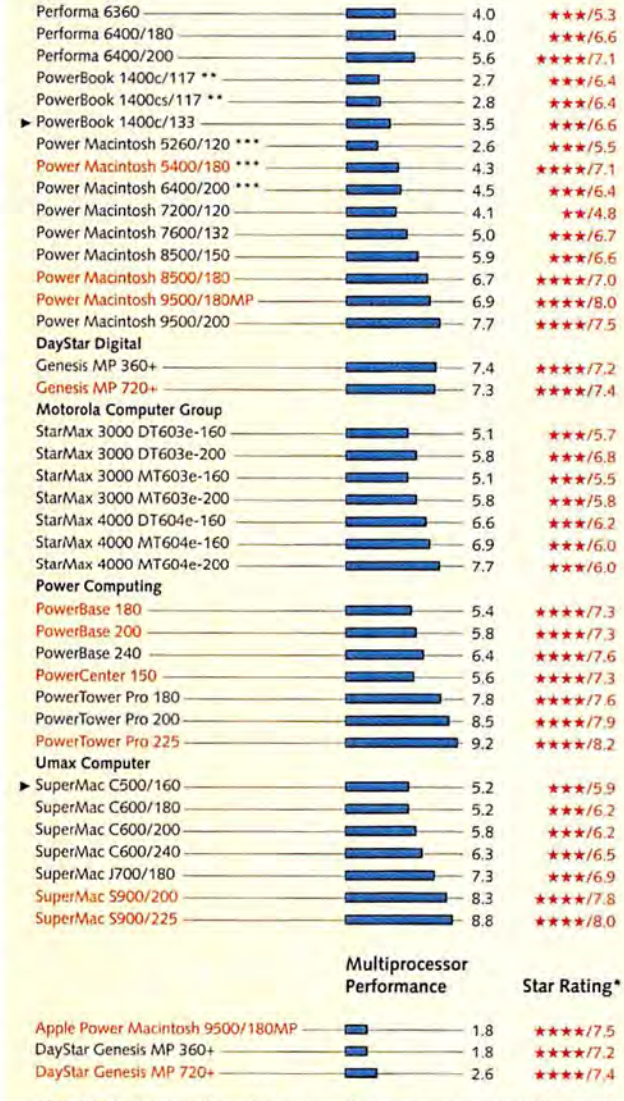

**Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.) **Had less than 32MB of RAM, so some tests were conducted with virtual memory, which slows performance. ***Available only to educational institutions.*

Behind Our Tests

For details on our methodology, see *Mac Superguide*, January 1997.—**Macworld Lab testing supervised by Mark Hurlow**

EDITORS' CHOICE

★★★★/7.8 **SuperMac S900/200** With great performance at a good price, plus a simple-to-upgrade case design and plenty of expansion capability, this system is well suited to being a departmental intranet or moderate-demand Web server. Umax Computer (510/226-6886): $3795, 32MB RAM, 512K cache, 8MB VRAM (8MB maximum), 2.1GB hard drive, 8× CD, 4 free drive bays, 6 PCI slots. *Dec 96, p. 120*

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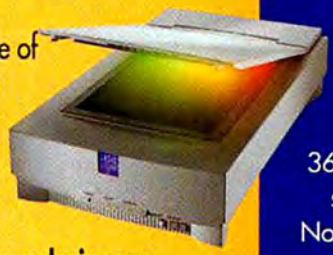

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Circle 52 on reader service card

New Team From left to right: Power Mac 9600, 7300, and 8600.

MORE MAC FOR YOUR MONEY

Apple's new systems respond to the competition with fresh design and better value

by Tova Fliegel

Macworld LAB TEST

Apple Computer is finally starting to listen to its customers. That's not a claim *Macworld* makes often, and it certainly isn't one we make casually, but in at least one area—its new Power Macintosh line—Apple gets high marks for offering users more of what they've been clamoring for. While Apple probably could have gone further in adjusting its price point, users will see a better-than-ever price/performance ratio across the line, with a new low-end PowerPC 603e–based Power Mac, the 4400, anchoring this overall price/performance boost. And at the high end, Apple has made its expandable machines, well, truly expandable. As important as industrial design is, this isn't just design for design's sake: the new Power Mac 8600 and 9600 (which replace the 8500 and 9500, respectively) offer revamped design that is both sleek and useful.

Apple (408/996-1010, *http://www.apple.com*) is also beginning to learn when more features are better and when less is more: with a few exceptions, the new Power Macs standardize on more of the features that users have come to expect: Apple has bumped the entire line, including its general-use business systems, to 200MHz, and all the systems now ship with keyboards. Plus, the new Macs shed some of the little-used features that cluttered—and raised the costs of—their predecessors, along with the raised costs that resulted.

Clones Spur Apple's Changes Apple's listening to customers also means the Mac-clone competition is coming in loud and clear. In the last year, Apple has gone through several rounds of speed increases trying to keep pace with competitors who keep raising the speed bar by offering faster CPUs.

Of course, CPU speed alone doesn't make a system fast; for example, when *Macworld* evaluated the 150MHz Power Mac 8500/150 against Power Computing's 166MHz PowerTower 166, the Power Mac actually came in ahead because of Apple's faster disk drive (see "The New Speed Champs," July 1996). Still, in the months since then, Power Computing and others came out with even faster systems that surpassed Apple's 8500 and 9500, while Apple's line remained static.

Apple should be the innovation leader in the Mac systems market since it really controls the technology advances,

PHOTOGRAPHS BY PAUL FRANZ-MOORE / SCREEN IMAGES BY TONY STONE IMAGES

but for the past year, Power Mac revisions haven't broken much new ground, being essentially speed increases. At the same time, clone makers have been circumventing technical limits by offering additional value, like improved video circuitry and more slots in general-business systems, in addition to beating Apple in price and performance.

Apple is still behind the speed curve, but if it's possible to offer a feature set and a design that are simultaneously sensible and sexy, Apple does it in this latest round of Power Macs, set to ship February 17 following the Macworld Expo Tokyo show. *Macworld* evaluated prototypes of these units.

New Power Mac Commitment These new Power Macs also strongly suggest revised thinking on Apple's part when it comes to product mix. For two years now, Apple has been surprised by increased Power Mac sales, and even more surprised by the popularity of multiprocessing capability within the 9500 line. It's been unable to meet demand for the high-end machines, adding to the company's financial shortfalls.

But the increased vitality with which Apple is infusing the Power Mac line may mean that the company has finally figured out these Macs could become the bread and butter of its sales force.

New Heights at the Low End

In many ways, the star of the new lineup is the Power Mac 4400, which brings 200MHz 603e performance to the desktop at a solid price, although it is not a runaway value leader.

Wealth of Features For $1749, you get 16MB of RAM, expandable to 160MB; a 1.2GB hard drive; an 8× CD-ROM drive; two PCI expansion slots (one short 7-inch and one standard 12-inch); 2MB of video RAM, expandable to 4MB; a 256K cache card; and an Ethernet card in the Comm slot.

Power Computing's PowerBase 200, with one more PCI slot and an upgradable CPU, rivals the 4400 in terms of value at $1795 ($1895 for a minitower enclosure, which offers more expansion), but for the 4400's price you get Apple's usually top-notch quality control.

Although the 4400 trailed slightly behind other 603e-based systems like the Performa 6400 in FPU- and CPU-intensive tasks (see the benchmark, "Apple Moves Up the Performance Line") and its CPU is not upgradable, the 4400 offers more than enough power for most users, at the right price. Apple will roll out a version of the 4400 within its Performa line later this year.

Room for Improvement The 4400 is

THE NEW MACS' TRUE EXPANDABILITY

NO MORE SCARRED FINGERS IN INSTALLING CARDS AND RAM

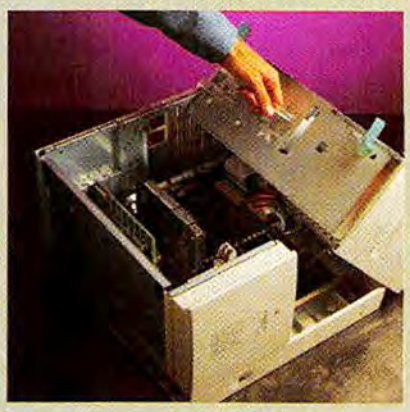
Those of you who cussed and fussed while expanding older Power Mac 8500 and 9500 systems will appreciate the new design of the Power Macintosh 8600 and 9600, which makes adding memory and swapping PCI cards so much easier. Here's a step-by-step look at improved expansion.

STEP 1

Flip off the side panel, which can be locked with a padlock for security, by simply depressing the handle. The panel comes right off.

In older systems, you had to unscrew the back panel to slide off the case, remove the ribbon cables connected to the drive bays, and remove all PCI cards. Oh, and that was just Step 1.

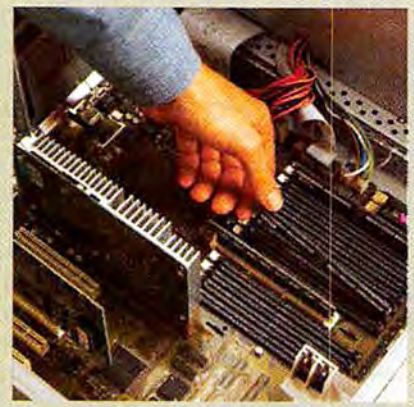
STEP 2



With the system open, you lay the 8600 or 9600 side down and depress two levers on a new hinged part of the case containing the floppy and CD-ROM drive bays. Simply swing this part of the unit out of the way.

In the older machines, once you had detached all the cables and removed PCI cards, you would have then unscrewed the panel that held the motherboard in the case. Even Macworld Lab, which has taken apart more Macs than we like to think about, lost capacitors doing this.

STEP 3



You have achieved access! Add in as much memory and as many cards as your system can handle—all without needing the dexterity of a surgeon.

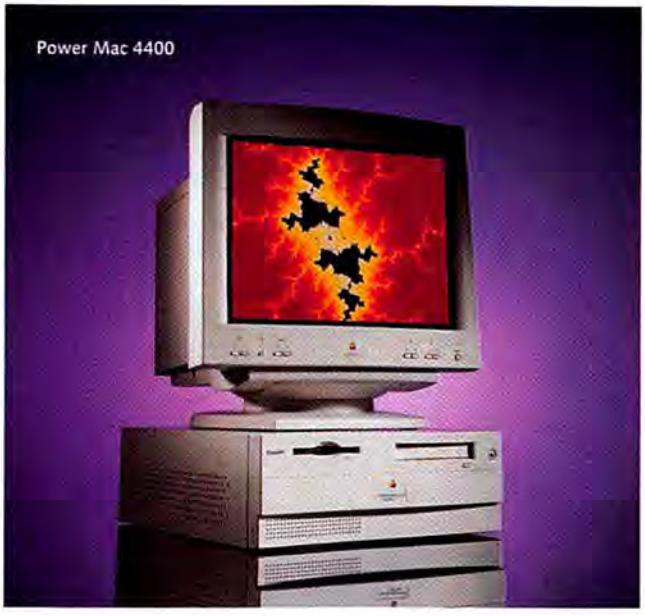
not without room for improvement, however. It comes with a 15-pin Mac port for your monitor, so you can't use standard VGA connectors. It really is time for Apple to use standard VGA connectors across its lines, as many of the Mac-clone makers are doing. Users deserve a wider choice in monitors.

The 4400 also uses the 3.3-volt DIMMs found in Motorola Computer Group's StarMax systems, instead of the 5V DIMMs used in other Apple Macs (see "A New Memory Standard Debuts," *News*, January 1997). That means you won't be able to migrate the 5V DIMMs from your older systems. Apple says the rest of the industry is moving to 3.3V DIMMs, the type of memory that Apple intends to use throughout future generations of its lines. However, Motorola Computer Group chief Dennis Schneider has told *Macworld* that he sees the 3.3V DIMMs as an interim stop on the way to the eventual implementation of faster synchronous dynamic RAM (SDRAM) in systems based on the Common Hardware Reference Platform (CHRP). (*Macworld* has also recommended the use of SDRAM in future systems; see "The Mac Reborn," September 1996.)

The U.S. version of the 4400 ships with an 8× CD-ROM, while the Japanese version comes with the 12× drive that Apple has standardized on throughout the remainder of its Power Mac line—both here and in Japan. Although there isn't much of a perceptible difference between 8× and 12× CD-ROM drives, it would have made sense to ship the 4400 with a 12× CD-ROM drive.

We were also annoyed to find that Apple hasn't moved away from using a short PCI card—it's the only Mac vendor that does. This is another area in which we'd like to call for greater conformity with industry standards.

Finally, the 4400 ships with System 7.5.3 and not 7.5.5 (which won't run on a 4400) or a 4400-capable revision of Mac OS 7.6 (formerly known as System 7.6). Apple includes a coupon with the shipping systems so buyers can upgrade to the 7.6 revision, which should be available in April for $24. (The Mac OS 7.6 version that shipped in late January won't run on a 4400. This is an unfortunate side effect of Apple's new three-year OS-release strategy.)



At only $1749, this 603e-based Power Mac is a strong value

Ethernet Compatibility The 4400 is the only current model in the new Power Mac line to rely on the Comm slot or a PCI card to provide Ethernet capability. Apple says that because the 4400 is based on the Tanzania motherboard it doesn't have the Ethernet-compatibility problem that occurred with Macs based on the Alchemy motherboard (commonly used in the Performa series).

Alchemy-based Macs, which do not have built-in Ethernet but rely instead on PCI cards, cannot use classic networking protocols. These include the MacIPX, DECnet, LAT, and MacOSI protocols that let users take advantage of higher-level functions such as Token Ring, Fast Ethernet (also known as 100BaseT), and FDDI. However, users can run AppleTalk and Ethernet regardless of whether Ethernet is implemented on the motherboard, a PCI card, or the Comm slot.

Apple says vendors of the classic networking protocols—Novell and Digital Equipment—need to rewrite them to be Open Transport–capable. In the meantime, users of Alchemy-based Macs can download an Apple fix from Macworld Online's Software Collection (*http://www.macworld.com/cgi-bin/software.pl/AppleSoftware/Software.888.html*).

Apple has tested an Apple-branded Ethernet card—the only card available, according to the company—in the 4400's Comm slot and experienced no problems running Fast Ethernet or Token Ring. However, Macworld Lab was not provided with a card for testing to verify this claim. (The Apple spokesman was not sure about FDDI capability; however, since FDDI is used as a network's backbone, this is less of a concern with the consumer-oriented 4400.) Apple also provided a list of six PCI networking cards that work with the 4400, a few of which provide Fast Ethernet or Token Ring. The company says these cards—from Apple, Asanté Technologies (408/435-8388, *http://www.asante.com*), Dayna Communications (801/269-7200, *http://www.dayna.com*), and Farallon Communications (510/814-5100, *http://www.farallon.com*)—passed rigorous tests, but again Macworld Lab was unable to do any hands-on testing.

The Upper Middle Class

Superseding both the Power Mac 7200/120 and the 7600/132 is the Power Mac 7300 series, a midrange 604e-based Mac aimed at the business and education markets. Because it is based on the same motherboard as the 7600 (which will continue to be sold only in Japan), the 7300's design suggests that Apple is beginning to standardize on motherboard implementations and will reduce the number of system designs, as promised by Gil Amelio when he first became Apple's CEO more than a year ago.

Standardized motherboard implementations should mean lower prices for customers because Apple will have reduced inventory costs and will be able to use identical parts in more models, buying them at volume discounts. Fewer

parts will be wasted, and inventory-maintenance costs should go down.

Sensible Features In the United States, the 7300 ships with 180MHz and 200MHz CPUs—a real speed increase for business buyers. It is likely to come in a third configuration, 166MHz, for Asian markets. Even though it's just a tad pricier than the 7600/132, which sold for $2299, the 7300 ($2799 for the 200MHz model and $2399 for the 180MHz model) provides performance unheard of in a midrange, business-oriented Apple Mac.

The 7300 is essentially a merger of the old 7200 and 7600. The 7200 had no video-input circuitry and no upgradable CPU, while the 7600 had both. The 7300 drops the video-input circuitry but keeps the upgradable CPU—evidence that Apple is adapting its standard feature set to match user demand more closely. The 7300 comes with a 12× CD-ROM drive, and unlike its lower-end cousin, the 4400, uses the standard 5V DIMMs, as does the rest of the new Power Mac line.

The 7300 ships with System 7.5.5, as do the 8600 and 9600. Users of 7.5.5 can upgrade to Mac OS 7.6 for $69.

Apple Catches Up in Speed In terms of performance, the 7300 ranked not far below the now-discontinued 200MHz PowerTower from Power Computing. This is a step up for Apple, whose earlier systems fell further below the competition in our speed tests. And the Power Mac 7300 outshone its older, far more expensive performance predecessors (the 8500/180 and 9500/200), which sold for $3699 and $4199, respectively. The 7300 is a solid entry-level choice for business users.

THE RIGHT OPTIONS: APPLE'S NEW LINEUP

Company	Product	Star Rating[B]	Price[C]	CPU Type 604e	CPU Type 604	CPU Type 603e	SPEED-RELA FEATURES CPU Speed
Apple Computer	Power Macintosh 9600/200MP	not shipping	$4799	2			200MHz
408/996-1010	Power Macintosh 9600/200	not shipping	$3799	●			200MHz
	Power Macintosh 8600/200	not shipping	$3299	●			200MHz
	Power Macintosh 7300/200	not shipping	$2799	●			200MHz
	Power Macintosh 7300/180	not shipping	$2399	●			180MHz
	Power Macintosh 5260/120	★★★/5.5	$1499[E]			●	120MHz
	Power Macintosh 5400/180	★★★★/7.1	$1999[E]			●	180MHz
	Power Macintosh 6400/200	★★★/6.4	$1899[E]			●	200MHz
	Power Macintosh 4400/200	not shipping	$1749			●	200MHz
	Performa 6400/200	★★★★/7.1	$2199			●	200MHz
	Performa 6400/180	★★★/6.6	$1899			●	180MHz
	Performa 6360	★★★/5.6	$1499			●	160MHz

● = yes. [A] *Unless otherwise noted, all include the following ports: one ADB, two serial, one external SCSI-1, two 16-bit stereo I/O, and include keyboards.* [D] *All systems without on-board video come with a PCI video card installed.* [E] *Available only to educational*

More Value at the High End

Apple categorizes the 8600 and 9600 in the same niches it defined for the 8500 and 9500. Apple says the 8600 is intended for media authoring, while the 9600 is tailored to publishing professionals.

The 8600's Media Value In keeping with its goal of hitting the media-authoring market, the 8600 includes an internal Zip drive as standard, a feature that none of the clone makers is offering yet (although Power Computing offers these drives as an option across most of its line) and a first for the Power Mac line. Like its 8500 predecessor, the 8600 includes video-input and -output circuitry and three PCI slots.

NEW SYSTEMS EASE OUT THE OLD

FAST PACE OF TECHNOLOGY MEANS EVER-CHANGING CHOICES

The fast pace of new PowerPC CPUs from IBM and Motorola has meant a hyperkinetic pace for new Macintosh systems. But even as Mac makers announce faster systems, they're dropping models to keep their product lines manageable.

Apple To make way for the new Power Mac 7300, 8600, and 9600 systems, Apple (408/996-1010, *http://www.apple.com*) will drop the 7200, 7600, 8500, and 9500 lines, making way for the new machines with fire-sale pricing. The 7200/120 now costs just $1349, from $1599; the 7600/132 is $1799, from $2299; the 8500/150 is $2199, from $2999; the 8500/180 is $2699, from $3699; the 9500/180MP is $3999, from $5199; the 9500/200 is $3199, from $4199.

Out with the Old New models like Umax Computer's SuperMac S900/240 (left) and Power Computing's PowerTower Pro 250MP have forced Mac makers to get rid of several older models.

And as it introduces the high-end PowerBook 3400 (see "PowerBook with a Punch," in this issue), the company has axed the PowerBook Duo 2300c. This marks the end of Apple's subnotebook line. To clear remaining inventory, the 2300c has been available at fire-sale prices ($1899 compared with the usual $4699 for the version with a 1.1GB drive and 20MB of RAM) from several mail-order catalogs.

		MEMORY			VIDEO DISPLAY			STORAGE						EXPANSION [A]					COMMUNICATIONS	
		RAM			VRAM			Hard Drive		CD-ROM Drive						Internal Bus				
Cache	Bus Speed	32MB	16MB	RAM Slots	(standard/ maximum)	On-Board Circuitry [D]	Free Bays	1.0GB–1.9GB	2.0GB–4.0GB	12×	8×	Other	Case	PCI Slots	SCSI-2	SCSI-1	EIDE	Modem	Ethernet
512K	50MHz	●		12	8MB/8MB		2		4.0GB	●			tower	6	●				●
512K	50MHz	●		12	8MB/8MB		2		4.0GB	●			tower	6	●				●
256K	50MHz	●		8	2MB/4MB	●	1		2.0GB	●			tower	3	●				●
256K	50MHz	●		8	2MB/4MB	●	1		2.0GB	●			desktop	3	●				●
256K	45MHz		●	8	2MB/4MB	●	1		2.0GB	●			desktop	3	●				●
none	40MHz		●	2	1MB/1MB	●	0	1.2GB				4×	all-in-one	0			●		
none	40MHz		●	2	1MB/1MB	●	0	1.6GB			●		all-in-one	1			●		●
256K	40MHz		●	4	1MB/1MB	●	1		2.4GB		●		tower	2		●[F]			●
256K	40MHz		●	3[G]	2MB/4MB	●[H]	0	1.2GB			●		desktop	2			●		●
256K	40MHz		●	4	1MB/1MB	●	1	1.2GB			●		tower	2[I]		●[F]		●	
256K	40MHz		●	4	1MB/1MB	●	1	1.6GB			●		tower	2[I]		●[F]		●	
256K	40MHz		●	2	1MB/1MB	●	0	1.2GB			●		desktop	1			●	●	

and one Mac video port. [B] Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings *section for full explanation.) [C] All prices are Apple's estimates institutions. [F] Allows only one drive to be connected. [G] Uses 3.3-volt DIMMs, which are not compatible with other Macs' 5V DIMM slots. [H] Has only VGA video connector. [I] Short (7-inch) cards only.*

With a 200MHz 604e CPU, a keyboard, a new design, an internal Zip, and a price of $3299, the 8600 is a much better buy than the $3699, 8500/180. (See the sidebar "New Systems Ease Out the Old" for a list of Apple's discount pricing on soon-to-be discontinued models.)

It's also worth noting that while the 7300/200 outperformed the 8600/200 in most operations, the 8600 includes the niceties that a media-authoring whiz will want, and the 8600/200 still came in ahead of the 9500/200 in our speed tests.

The 9600's Publishing Persona Lacking the built-in video circuitry of the 8600, the 9600/200 and 9600/200MP come with the Integrated Micro Solutions TwinTurbo 128, a video card that other Mac makers (including Umax Computer and Power Computing) offer in their high-end systems. Apple says the new cards should improve 2-D and 3-D graphics performance over the old card, but Macworld Lab was unable to find a measurable difference in its testing. (These tests did not include 3-D video display, however.)

The 9600/200 outperformed all Mac models running at the same speed, ranking second only to the 225MHz PowerTower Pro from Power Computing, and again coming in at a price below the most recent prices for older models.

Power Computing With perhaps more models coming and going than anyone else, Power Computing (512/388-6868, *http://www.powercc.com*) has set a pace that can be dizzying for buyers to follow.

The company has dropped the PowerTower series, just about six weeks after it began shipping PowerTower versions with 180MHz and 200MHz 604e CPUs. Replacing the PowerTower series are the tower versions of the PowerCenter series, formerly a desktop-case-only series. Now that Power Computing has a 180MHz 604-based (not the faster 604e) version of the PowerCenter in a tower case, the PowerTower no longer made sense as a separate line. Like the PowerTower, the PowerCenter has three PCI slots.

Power Computing continues to offer its six-slot PowerTower Pro series with 604e CPUs running at speeds of 200MHz and 225MHz, plus it expects to ship a new dual-processor 250MHz version of the PowerTower Pro around the time you read this.

Power Computing has also canceled plans to ship the PowerCenter 166, leaving two speeds in the 604-based PowerCenter lineup: 150MHz and 180MHz.

Umax Computer Changing its product line before some models even shipped, Umax Computer (510/226-6886, *http://www.supermac.com*) has also cut some models. Gone is the SuperMac S900/180DP, a dual-processor tower system using 180MHz 604e's. That product had shipped in limited quantity for just a few weeks. A new 200MHz dual-processor tower replaces it.

The PowerPC 603e–based SuperMac C500 entry-level desktop system, which shipped just as this issue went to press (see *Mac Superguide*, in this issue), has had a speed increase, from 140MHz to 160MHz, before the product ever reached a customer.

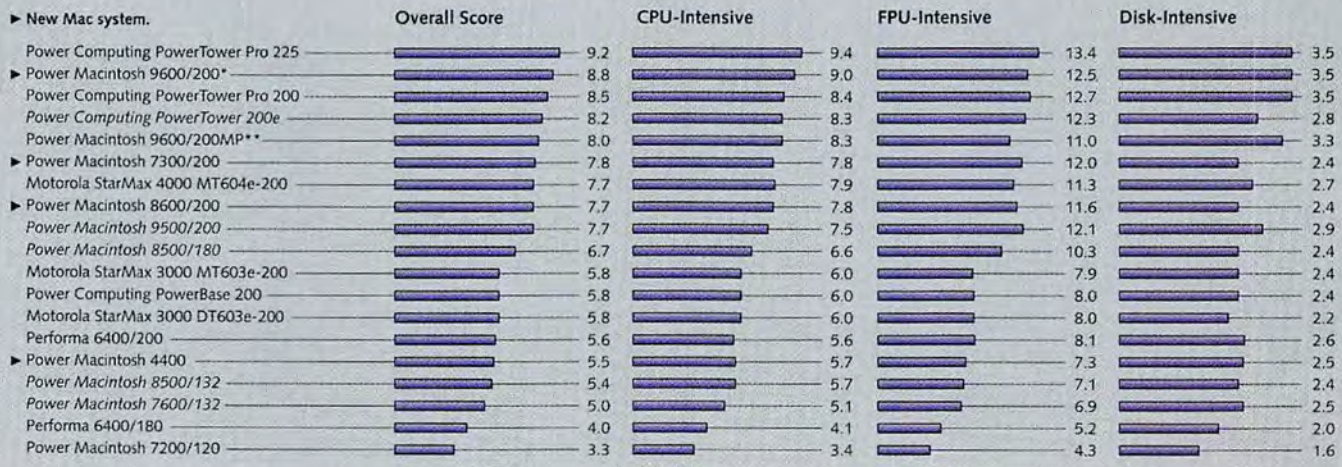
Also gone is the 150MHz S900/150 tower, which Umax had shipped for about five months. With the introduction of a 240MHz 604e-based SuperMac S900 system (expected to ship around the time you read this), the 150MHz model no longer made sense. Umax continues to offer 200MHz and 225MHz S900 models. A 150MHz version of its J700 desktop also exists.—GALEN GRUMAN

Macworld LAB TEST

Apple Moves Up the Performance Line

The new Power Mac 9600/200, with interleaved memory, edges out the PowerTower Pro 200 despite having the same CPU speed and disk performance. The 8600, with slower disk speed (which affects overall performance), falls behind the PowerTower Pro 200e, but both the 9600 and 8600 significantly outperform the models they replace, the 9500 and 8500. The new Power Mac 7300 also does extremely well against similar-class machines. The Power Mac 4400 desktop system is equivalent in overall speed to the Performa 6400/200 tower system, which it will compete with. Note that Macworld Lab tested late prototypes of the new Power Macs and that performance may vary slightly on shipping systems.

Longer bars are better. Results are times as fast as a Centris 650 (Centris 650 = 1.0). Products are listed from fastest to slowest overall. Discontinued Macs are in italics and presented for comparison.



** At press time, Apple was deciding whether to ship a 233MHz system, but such a system was not available for testing. ** Multiprocessor Macs run a bit slower on common operations, as shown here, but show significant speedup when running programs written to take advantage of multiprocessing.*

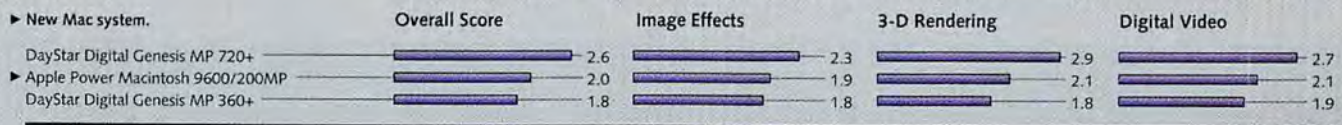
Behind Our Tests

For details on our tests, see *Mac Superguide*, January 1997.—**Macworld Lab testing supervised by Mark Hurlow**

Apple Leads in Dual-Processing Systems

Although DayStar Digital continues to offer the fastest multiprocessing system, Apple takes the lead in affordable MP systems with its new Power Mac 9500/200MP, which outperforms the Genesis MP 360+ by 11 percent but costs just two-thirds the 360+'s price.

Longer bars are better. Results are times as fast as a Power Mac 9500/150 (9500/150 = 1.0). Products are listed from fastest to slowest overall.



Behind Our Tests

Macworld Lab evaluates multiprocessing performance by using a series of 40 filters and imaging effects in Adobe Photoshop 3.05, a 3-D rendering in Strata Studio Pro Blitz 1.75, and assembling and compressing a QuickTime movie in Adobe After Effects 3.0. All tests use tasks that have been optimized for multiprocessing.—**Macworld Lab testing supervised by Mark Hurlow**

This is a significant gain for Apple.

At press time, Apple was uncertain whether it would ship the 9600 with a 200MHz or 233MHz CPU. A 233MHz unit was not available for testing.

Joyful Expansion The best thing about both the 8600 and 9600 is an improved tower design that makes adding memory and swapping PCI cards a near-joy. We're sure those of you who labored with trying to expand older systems, wishing you had hands the size of a six-year-old's (while hoping your six-year-old wasn't around to hear you curse), will ooh and ahh over this new design. We did. (For a step-by-step look at this innovation, see the sidebar "The New Macs' True Expandability.")

The 7300 has the same flip-up chassis for eased upgrading that the 7500 and 7600 had.

The Last Word

Macworld has criticized Apple's lack of innovation in the past, and now we applaud its movement forward. While still trailing in the speed race, Apple has narrowed the performance gap considerably. Plus, the company is getting smarter about which features it puts in and which it leaves out. And now that Mac makers are looking to the PC world to set price points, Apple is also becoming more price-competitive than ever before. It's all about giving users what they want, and with a few exceptions, Apple is starting to do just that with its new Power Mac lineup. **m**

Senior associate editor TOVA FLIEGEL covers systems technologies for *Macworld*.

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TextureScape

1994 Eddy Award NewMedia Awesome

Collage

MacWEEK 4-Diamonds MacUser UK 4-Mice

BackBurner

Replicas

Faster The PowerBook 3400c is built for speed.

POWERBOOK WITH A PUNCH

APPLE UPS THE ANTE WITH A 240MHZ PORTABLE

Macworld LAB TEST

Until now, PowerBook buyers who needed—or merely wanted—a high-performance computer have been out of luck. Apple Computer's (408/996-1010, *http://www.apple.com*) new PowerBook 3400c changes that.

People who do serious graphics editing, frequently sort large databases, or crunch a lot of numbers finally have a PowerBook that can do these jobs handily. The 3400c targets engineers, multimedia developers, and others who are willing to pay the price for high performance—$1800 to $2800 more than comparably equipped PowerBook 1400c models.

For the money, you get a 180MHz, 200MHz, or 240MHz 603e CPU with a 256K cache; a high-performance internal PCI-based slot; a direct memory addressing interface for all ports, which offers greater speed; and up to 144MB of RAM. You also get four speakers, a stereo high-frequency pair plus a low-frequency pair; full-screen display of TV images; a lithium-ion (LiIon) battery; a 1.3GB to 3GB hard drive; an industry-standard IrDA infrared interface; and a provision for an external dock with full-size PCI slots—a first for a non-Duo PowerBook.

Apple will offer four versions of the 3400. All come with a floppy drive and 16MB of RAM, and all but the stripped-down model have an internal 10BaseT Ethernet/33.6-Kbps modem PCI card. The high-end $6500 model, with a 240MHz CPU, 3GB hard drive, and 12× CD-ROM drive, will ship in March, according to Apple. The other three models should be available in February: a 200MHz version for $5500 with a 2GB hard drive and a 6× CD-ROM drive; a 180MHz version for $5000 with a 1.3GB hard drive and a 6× CD-ROM drive; and finally, the stripped-down 180MHz model for $4500 with a 1.3GB hard drive but neither a CD-ROM nor an Ethernet/modem card.

The 200MHz 3400c performs similarly to the Power Macintosh 9500/132 (a 132MHz 604 CPU is equivalent to a 200MHz 603e). Macworld Lab tested a prototype 200MHz unit and found that the 3400c also outperforms a PC portable; see the benchmark, "Apple Rivals the PC with a Truly Faster PowerBook."

Because the CPU is soldered on the motherboard, the CPU cannot be upgraded—a major drawback. Consequently, you'll have to replace the 3400c to change speed. The 240MHz version is the fastest for this PowerBook design, because the 603e CPU can run up to six times the 40MHz bus speed.

The 3400 uses the power-saving EDO (extended data out) memory common in PCs; the motherboard has 16MB and you can add a single large memory card—with up to 128MB capacity, for a total of 144MB. Apple ships all 3400's without a memory card.

The 3400c is the first PowerBook to have a fan. The fan rarely turns on in normal usage; when it does, the air flows out under the front of the computer.

PCI Makes a Mixed Debut

The 3400c has space internally for two cards—the memory board and a mini PCI card (see the photo "Unique to the 3400c").

Preinstalled Ethernet and Modem The mini PCI card is designed to be installed by Apple or a dealer. In fact, the three higher-end 3400c configurations ship with the mini PCI slot already filled with a card from Asanté Technologies (408/435-8388, *http://www.asante.com*) that combines 10BaseT Ethernet with a 33.6-Kbps modem. A single connector jack works as a modem if you plug in a telephone cable, and as a network card if you plug in 10BaseT. A dongle allows simultaneous use.

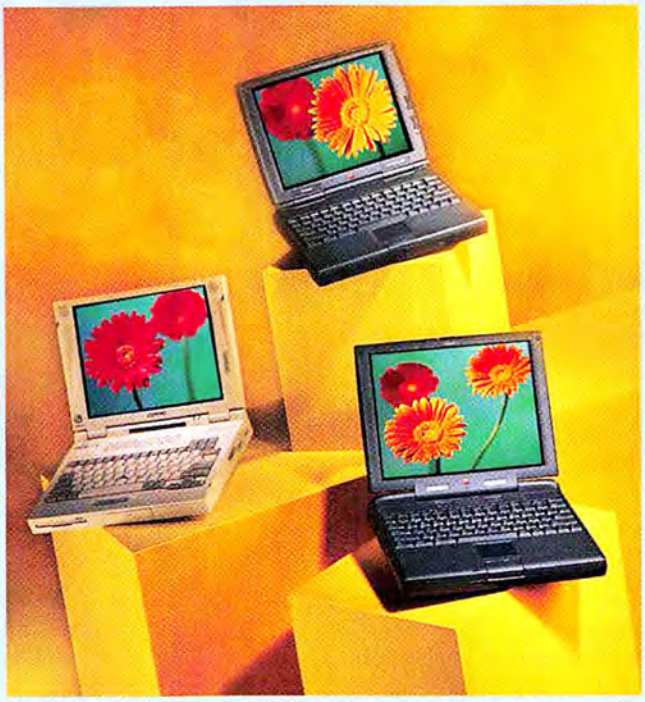
The Cons While the internal mini PCI slot boasts the highest performance capability of any notebook's, its implementa-

BY CARY LU

THE STATE OF THE POWERBOOK

Although the 3400c sets new performance standards for a PowerBook, it doesn't change Apple's overall PowerBook strategy, which represents the last vestige of the "old" Apple: Only Apple makes Mac laptops; no clone makers need apply.

For a while, this strategy worked; the early PowerBooks did phenomenally well, partly because of good design, partly because of pent-up demand. Apple led the industry in laptop market share, and the PowerBooks were the most profitable models in Apple's product line.



Wake-Up Call Apple needs a new laptop strategy if it wants people to choose a Mac portable, like the PowerBook 1400c (top) and the 3400c (right), over a Windows alternative like the Compaq LTE 5400 (left).

The Downfall

But over time, the strategy weakened; Apple produced only a few basic PowerBook types, which could not meet every requirement. Laptops are, after all, *very* personal computers; individual preferences and needs vary more than for desktop computers.

Apple's strategy led to disaster with the PowerBook 5300 in fall 1995, first in the famous battery fires and then in flawed motherboards and case hinges. For long periods in 1996 there were no new PowerBooks available for purchase.

The problems with the 5300, while serious, weren't all that unusual. Major companies such as Compaq, IBM, and NEC have also had serious problems with laptops, including flawed electronics, battery fires, and recalls. In a backhanded tribute to Apple's visibility, however, only the PowerBook's problems made the business news pages around the country. The failure of the 5300 cut Apple's laptop market share by half and removed more than $100 million from Apple's bottom line.

If you are dissatisfied with an IBM laptop, you might buy a Toshiba model instead and perhaps return to IBM in the future. With Apple's take-it-or-leave-it PowerBook policy, leaving it means a Windows computer, and the buyer may never come back to the Macintosh.

If PowerBook clones had been available during the 5300 episode, customers could have remained Macintosh users and Apple would have at least gained licensing revenue rather than losing everything.

There are, of course, many more Windows laptops than PowerBooks to choose from. Those choices are narrower than they first appear, however, because many Windows laptop computers are poorly executed, me-too designs.

Yet the best Windows laptops collectively offer a wide range of credible choices—you can weigh battery life against performance, screen size against portability. And you can choose from several pointing devices and many keyboard layouts.

PowerBooks still hold their own in key areas. Apple has kept the number of battery types to a minimum, so third-party batteries are readily available for older models. Apple's consistent architectural design means that PowerBooks are free of the compatibility problems that have always plagued Windows hardware. And the traditional Mac advantages, such as multiple-monitor support (until the 3400!) and the ability to start from any storage device, remain powerful.

No Subnotebooks

For now, the PowerBook 1400 and 3400 series target the main laptop market, yet also leave an obvious gap. Apple has no subnotebooks (under five pounds), now that the Duo 2300c has been discontinued. The Duo itself cannot be upgraded further; it's built on a 68030 bus and has no provision for PC Cards.

While the subnotebook market is only a tenth of the overall laptop market, this market segment consists of active buyers, mostly experienced computer users who happily dispense with CD-ROM and floppy disk drives to save weight and bulk.

Last fall, Apple announced a joint project with IBM to develop a subnotebook for the Japanese market; Apple says it has not yet committed to selling an actual product. There is a whole class of subnotebooks available in Japan, such as the very small (6.25-by-4.5-by-1.25-inch) 1.3-pound IBM Palm Top PC 110, that are not sold elsewhere. These miniature laptops have very small keyboards that a touch typist cannot use (few Japanese can touch-type because of complications in dealing with their language). Power Computing tried to adapt the IBM Japanese subnotebook for the American Mac market but found the technology was not adaptable.

Apple says that its next subnotebook might be another joint-development project or simply might be turned over to another company to design and produce. Either way, a new subnotebook will not arrive until 1998, about the time when the 3400c's replacement arrives. That's a long time to go without a cornerstone in the crucial laptop field, particularly when Windows subnotebooks such as the IBM ThinkPad 560 and Sharp WideNote are available, offering attractive options and comparable pricing.

Let the Clones In

If Apple truly wants to promote the Macintosh platform, it has to allow laptop clones as well as desktop clones. Power Computing says it plans to introduce a laptop based on a desktop motherboard design later this year—provided that Apple gives permission. Apple should: its policy of no laptop clones has already been proven a failure.

tion has drawbacks. The slot will not accommodate desktop PCI cards, and the slot's design differs from a recent proposal for an industry-standard "small PCI card."

Also, Apple discourages card makers from developing miniature cards based on existing PCI designs by filling the slot in most 3400 models. Card companies worry this is yet another proprietary slot that will be used only on this specific PowerBook model. Those companies that built internal cards for the PowerBook 5300 lost a lot of money when sales of 5300's fell far short of Apple's predictions. Bottom line: I didn't find any company willing to make a card that takes advantage of this PCI slot.

Video Advances, a Display Setback

All 3400c's come with a 12.1-inch active matrix LCD that shows 800 by 600 pixels in thousands of colors, at 83 dpi. Because of the resolution, the screen is a bit scrunched compared with the typical 70 to 75 dpi for desktop monitors.

Adapt to VGA The video-out circuit uses a standard Chips & Technologies video controller popular in high-end Windows laptops. The video-out connector is a VGA type (high-density; 15 pins in 3 rows); Macintosh monitors need a plug adapter. Older fixed-sync Mac monitors will work. Windows video circuits don't support multiple monitors, so the 3400c is the first high-end Macintosh with a video port that supports only a single logical display.

With an external monitor connected, your choices are:

- built-in LCD only,
- external display only (built-in LCD screen dark) with 640 by 480 and 800 by 600 pixels in thousands of colors, 832 by 624 or 1024 by 768 pixels in 256 colors (the VGA modes come in a choice of refresh rates, up to 75 Hz), or
- mirror mode, called SimulScan in the control panel, with the LCD and external display showing the same image at 800 by 600 pixels in thousands of colors.

In mirror mode, the external display runs only at 800 by 600 pixels; you can't drive an older 640-by-480-pixel LCD projector unless you turn off the built-in screen. You must restart the computer when you connect an external monitor.

Zoom Video The 3400 has Zoom video input, also called Zoomed Port Video. Zoom video works through a modified PC Card interface, sending video directly to the video controller for immediate display with full-screen, full-motion video at 30 frames per second (fps).

The simplest Zoom cards—about $300—produce images from an analog video input. A Zoom card with a TV tuner turns the 3400 into a full-screen LCD color television set; the card handles interlacing by doubling the lines in each field. You can also capture the video to disk or RAM, although at only 8 fps. MPEG Zoom video cards decode an MPEG video stream from a hard disk or CD-ROM for the screen. All Zoom video cards will need a driver for the 3400c.

Expansion Options

On the outside, the 3400c expansion bay looks like the expansion bay of the PowerBook 5300 and 190. It takes the same devices—Apple's floppy disk and CD-ROM drives, plus hard, magneto-optical, and Zip drives from VST Technologies (508/263-9700, *http://www.vsttech.com*). The obvious difference is a small flap that folds away to accept the CD-ROM drive, which is too wide to fit into a PowerBook 5300 or 190. To save power and reduce component size a bit, the portable CD-ROM drives are 6× instead of the 8× now common on desktop computers.

Sorting Out EIDE Interfaces All these drives connect to a secondary EIDE interface; the internal hard drive connects to the primary EIDE interface. While EIDE allows two devices per interface, one master and one secondary, Apple's current software supports a master drive but not a slave drive on each of the two EIDE interfaces. This approach optimizes performance and lets you turn off a drive to save battery power. Either an EIDE or an external SCSI drive can start up the computer.

You can swap drives without putting the computer to sleep, although you should unmount the drive by putting the drive icon in the Trash or using ⌘-Y. If you don't unmount first, a screen message will ask you to reinsert the drive and unmount properly. Other expansion-bay devices developed for the 5300 and 190 (but not the 1400) will also work with the 3400.

Unique to the 3400c Contrast the mini 10BaseT/modem PCI-based card with the large memory card, both installed under the keyboard. Note that a small flap in the storage expansion bay folds up when you insert a CD-ROM drive.

DMA Benefits Internally, the expansion-bay connector is improved over the 5300's. Two pins convey direct memory addressing (DMA) signals from the expansion-bay device. DMA-enabled drives require less attention from the CPU and can perform up to twice as fast as non-DMA drives. VST's expansion-bay drives work as DMA drives on the 3400 and as non-DMA drives on the 5300 and 190. Older VST drives without DMA will work in a 3400, and can be upgraded to DMA by VST for about $100.

Docking Plans The other change in the expansion-bay connector is a software switch that changes the connector from IDE

POWERBOOK SUPERGUIDE

FINDING THE RIGHT ONE FOR YOU

With Apple's limited offerings of PowerBooks and their not-inexpensive price tags, a used PowerBook might be a better answer for your needs and budget. Apple has produced nearly 30 different PowerBook models since 1991; all remain practical computers, although the older models naturally have more limited uses today. This guide gathers specifications for all the PowerBooks and lists what *Macworld* considers a fair price. Prices are for a common configuration with a battery in working condition and an AC power adapter.

Shopping Tips

Gauge the Wear and Tear Buying a used computer always has some risks, especially for a laptop, which might get rough handling. If the PowerBook shows any sign of having been dropped or if any plugs are loose, you should pass it up. Keyboards with faulty keys, batteries with short lives, and problem hard and floppy drives can all be replaced, but the price should be reduced by the replacement cost.

Know the Parts Inventory Apple does not supply many service parts; a dead backlight for the screen often cannot be repaired except by replacing the entire screen, which is almost never cost-effective. Although I don't normally consider Apple Care a good buy, a PowerBook that is under or qualifies for

Comparison Shopping: What Each PowerBook Offers

		CPU					RAM	STORAGE				VIDEO DISPLAY	
Product	Fair Price (RAM/drive capacity) [A]	603e	68040	68030	68000	Speed	Standard/Maximum	Hard Drive	CD-ROM	SCSI Disk Mode	Screen Size (in inches)	640 by 400 pixels	640 by 480 pixels
PowerBook 100	$300 (4MB/40MB)				●	16MHz	4MB/8MB	20MB–80MB		●	9.0	●	
PowerBook 140	$235 (4MB/40MB)			●		16MHz	4MB/8MB	20MB–80MB			10.0	●	
PowerBook 145, 145B	$275 (4MB/40MB)			●		25MHz	4MB/8MB	40MB–80MB			10.0	●	
PowerBook 170	$475 (4MB/80MB)			●		25MHz	4MB/8MB	40MB–80MB			10.0	●	
PowerBook 150	$300 (4MB/120MB)			●		33MHz	4MB/40MB	120MB–250MB			9.5		●
PowerBook 160	$500 (4MB/120MB)			●		25MHz	4MB/14MB	40MB–120MB		●	10.0	●	
PowerBook 165	$525 (4MB/120MB)			●		33MHz	4MB/14MB	40MB–120MB		●	10.0	●	
PowerBook 180	$675 (4MB/120MB)			●		33MHz	4MB/14MB	80MB–120MB		●	10.0	●	
PowerBook 165c	$375 (4MB/160MB)			●		33MHz	4MB/14MB	80MB–160MB		●	9.0	●	
PowerBook 180c	$625 (4MB/160MB)			●		33MHz	4MB/14MB	80MB–160MB		●	8.4		●
PowerBook Duo 210	$300 (4MB/80MB)			●		25MHz	4MB/32MB	80MB		w/dock	9.0	●	
PowerBook Duo 230	$400 (4MB/120MB)			●		33MHz	4MB/32MB	80MB–120MB		w/dock	9.0	●	
PowerBook Duo 250	$535 (4MB/200MB)			●		33MHz	4MB/32MB	200MB		w/dock	9.0	●	
PowerBook Duo 270c	$580 (4MB/240MB)			●		33MHz	4MB/32MB	240MB		w/dock	8.4		●
PowerBook Duo 280	$675 (4MB/240MB)		●			33MHz	4MB/40MB	240MB		w/dock	9.0	●	
PowerBook Duo 280c	$875 (4MB/320MB)		●			33MHz	4MB/40MB	320MB		w/dock	8.4		●
PowerBook Duo 2300c	$1500 (8MB/750MB)	●				100MHz	8MB/56MB	750MB–1.1GB		w/dock	9.5		●
PowerBook 520	$750 (8MB/160MB)		●			25MHz	4MB/36MB	160MB		●	9.5		●
PowerBook 520c	$950 (8MB/160MB)		●			25MHz	4MB/36MB	160MB		●	9.5		●
PowerBook 540	$1200 (8MB/240MB)		●			33MHz	4MB/36MB	240MB		●	9.5		●
PowerBook 540c	$1400 (8MB/320MB)		●			33MHz	4MB/36MB	320MB		●	9.5		●
PowerBook 190/66	$750 (8MB/500MB)		●			33MHz	8MB/40MB	500MB		●	9.5		●
PowerBook 190cs/66	$1025 (8MB/500MB)		●			33MHz	8MB/40MB	500MB		●	10.4		●
PowerBook 5300/100	$1150 (16MB/500MB)	●				100MHz	8MB/64MB	500MB		●	9.5		●
PowerBook 5300cs/100	$1700 (16MB/500MB)	●				100MHz	8MB/64MB	500MB–750MB		●	10.4		●
PowerBook 5300c/100	$2100 (16MB/750MB)	●				100MHz	8MB/64MB	500MB–750MB		●	10.4		●
PowerBook 5300ce/117	$2600 (32MB/1.0GB)	●				117MHz	32MB/64MB	1.1GB		●	10.4		
PowerBook 1400cs/117	$2900 [E,F] (12MB/750MB)	●				117MHz	12MB/64MB	750MB	●	●	12.1		
PowerBook 1400c/117	$3500 [E] (16MB/1.0GB)	●				117MHz	16MB/64MB	750MB	●	●	12.1		
PowerBook 1400c/133	$4000 [E] (16MB/1.0GB)	●				133MHz	16MB/64MB	1.0GB	●	●	12.1		
PowerBook 3400c/180	$5000 [E,G] (16MB/1.3GB)	●				180MHz	16MB/144MB	1.3GB	●	●	12.1		
PowerBook 3400c/200	$5500 [E] (16MB/2.0GB)	●				200MHz	16MB/144MB	2.0GB	●	●	12.1		
PowerBook 3400c/240	$6500 [E] (16MB/3.0GB)	●				240MHz	16MB/144MB	3.0GB	●	●	12.1		

● = yes. [A] *Fair price is for used unit in good condition; these prices may be lower than prevailing prices.* [E] *Up to 17-inch monitor, 832 by 624 pixels at 256 colors; except for one 3400, which has up to a 19-inch computer.* [F] *$2500 with no CD-ROM drive and 12MB of RAM.* [G] *$4500 with no CD-ROM drive.*

Apple Care has an advantage.

Screens Matter A black-and-white screen (no grays) is not suitable for Web browsing; a gray screen usually works adequately for Web browsing, but a color screen, internal or external, is much better. Passive matrix screens are much maligned today but work adequately for text and light-duty graphics. Some recent color passive matrix screens, such as the 1400's, work quite well, although active matrix screens still have a wider viewing angle and faster updating. However, if you want to run your PowerBook on the deck or beach, note that color screens are unreadable in strong sunlight.

Buyer Beware As with any computer purchase, exercise caution. If at all possible, see and test what you're getting before you buy it. Ask questions about the machine's history and any warranties. Bring an expert with you. Remember, laptops are easily damaged. I would not buy a laptop sight unseen from a private party, and only with a money-back guarantee from a dealer. Use a credit card if you're buying through mail order. Talk to dealers, ask your user group, peruse classified ads, and get a feel for what's out there. Then go shopping; there are many well-cared-for PowerBooks that still have useful lives looking for a home.

Best Things to Add

If you have or buy a PowerBook, you should consider the following additions:

Memory—up to 40MB or as much as the PowerBook allows—aids today's applications.

A larger-capacity hard drive, especially on older PowerBooks with less than 200MB. Large capacity—over 500MB—internal SCSI hard drives are hard to find, but ArtMedia (408/980-8988) is developing 1GB and 1.4GB SCSI drives by modifying IDE mechanisms from IBM. Those models that take IDE drives (the 150, 190, 1400, 2300, 3400, and 5300) accept large-capacity drives easily.

A replacement battery may be essential for older Power-

	OTHER FEATURES									
800 by 600 pixels	Active Matrix	Passive Matrix	Color	Gray Scale	Black and White	Video Port [B]	Weight (in pounds)	Battery	PC Card	Pointing Device
		●			●		5.1	100 lead acid		25mm trackball
		●			●		6.8	140–180 NiCd		30mm trackball
		●			●		6.8	140–180 NiCd		30mm trackball
	●				●		6.8	140–180 NiCd		30mm trackball
		●		4			5.5	140–180 NiCd		30mm trackball
		●		16		●	6.8	140–180 NiCd		30mm trackball
		●		16		●	6.8	140–180 NiCd		30mm trackball
	●			16		●	6.8	140–180 NiCd		30mm trackball
		●	256			●	7.0	140–180 NiCd		30mm trackball
	●		256			●	7.1	140–180 NiCd		30mm trackball
		●		16		w/dock	4.2	Duo NiMH		19mm trackball
		●		16		w/dock	4.2	Duo NiMH		19mm trackball
	●			16		w/dock	4.2	Duo NiMH		19mm trackball
	●		256/1000s [C]			w/dock	4.8	Duo NiMH		19mm trackball
	●			16		w/dock	4.2	Duo NiMH		19mm trackball
	●		256/1000s [C]			w/dock	4.8	Duo NiMH		19mm trackball
	●		256/1000s [C]			w/dock	4.8	Duo NiMH		tappable TrackPad
	●			16		●	6.3	500 NiMH	[D]	TrackPad
	●		256			●	6.4	500 NiMH	[D]	TrackPad
	●			64		●	7.1	500 NiMH	[D]	TrackPad
	●		256/1000s [C]			●	7.3	500 NiMH	[D]	TrackPad
	●			16		optional	6.0	190, 5300, 3400 NiMH	●	tappable TrackPad
		●	256			optional	6.3	190, 5300, 3400 NiMH	●	tappable TrackPad
		●		16		●	5.9	190, 5300, 3400 NiMH	●	TrackPad
		●	256			●	6.2	190, 5300, 3400 NiMH	●	TrackPad
	●		1000s			●	6.2	190, 5300, 3400 NiMH	●	TrackPad
●	●		1000s			●	6.2	190, 5300, 3400 NiMH	●	TrackPad
●		●	1000s			optional	7.1	1400 NiMH	●	tappable TrackPad
●	●		1000s			optional	7.0	1400 NiMH	●	tappable TrackPad
●	●		1000s			optional	7.0	1400 NiMH	●	tappable TrackPad
●	●		1000s			●	7.4	3400 LiIon	●	tappable TrackPad
●	●		1000s			●	7.4	3400 LiIon, NiMH	●	tappable TrackPad
●	●		1000s			●	7.4	3400 LiIon, NiMH	●	tappable TrackPad

monitor, 1024 by 768 pixels at 256 colors, and thousands at 800 by 600. [C] *256 colors at 640 by 480, thousands at 640 by 400.* [D] *Adapter goes in left battery bay.* [E] *Apple's estimated price for new*

TABLE CONTINUES →

books, and is useful for any PowerBook model.

An internal modem or PC Card slot makes telecommunications on the road easier, even if the model is limited to 14.4- or 19.2-Kbps internal modems. You can connect a faster modem through the serial port when at your desk.

An Ethernet interface allows smoother connection to desktops. Built-in Ethernet is best, followed by a PC Card or SCSI adapter. Serial-port Ethernet adapters are too slow.

A second AC power adapter makes packing the PowerBook easier—leave one adapter at your desk and the other in your travel case.

Processor upgrades make sense for some PowerBook models. The 500-series PowerBooks can be upgraded with a 117MHz PowerPC processor card from Newer Technology ($679 with no RAM, $779 with 8MB of RAM). And for $675, Newer offers a 200MHz 603e processor card with a 128K cache for the PowerBook 1400.

Product	Strong points	Weak points
PowerBook 100 PowerBook 140 PowerBook 145, 145B PowerBook 170 PowerBook 150	These early models make sense only if they're really cheap.The 100 works well on RAM disk; the 170 has a nice screen for text.	A limit of 8MB of RAM and black-and-white screens restrict you to text work; Web browsing is difficult. Batteries charge slowly. The 100 has a poor trackball and a lead acid battery. The 150 has no ADB port.
PowerBook 160 PowerBook 165 PowerBook 180 PowerBook 165c PowerBook 180c	Have a video-out port. Acceptable for Web browsing, especially with an external monitor. Internal 28.8-Kbps modem available.	Some software requires a faster or later processor. Internal screens do not show full 640-by-480 image except on the 180c. Slow-charging batteries.165c and 180c have a short battery life.
PowerBook Duo 210 PowerBook Duo 230 PowerBook Duo 250 PowerBook Duo 270c PowerBook Duo 280 PowerBook Duo 280c PowerBook Duo 2300c	Light and compact. Early Duos can be upgraded to PowerPC. The 250 and 280 have excellent monochrome screens; the 2300c has the best color screen.	Have poor battery contacts and no PC Card support. The fastest internal modem is 14.4/19.2 Kbps. Older models need keyboard replacement. The color screens in the 270c and 280c are small. Docks add to cost.
PowerBook 520 PowerBook 520c PowerBook 540 PowerBook 540c	Have built-in Ethernet, and are upgradable to PowerPC. Make a good replacement for desktop Mac.	The fastest internal modem is 14.4/19.2 Kbps. Screen hinge screws may need tightening.
PowerBook 190/66 PowerBook 190cs/66 PowerBook 5300/100 PowerBook 5300cs/100 PowerBook 5300c/100 PowerBook 5300ce/117	The 190s are effective laptops, with passive matrix screens,for a modest price. Once reworked, the 5300 usually performs well. The 190 and 5300 accept 3400-series expansion-bay drives (except CD-ROM drives).	Need to be reworked by Apple, with reports of problems even after some initial rework. Require PC Card for Ethernet. 190 needs optional video card for external monitor.
PowerBook 1400cs/117 PowerBook 1400c/117 PowerBook 1400c/133 PowerBook 3400c/180 PowerBook 3400c/200 PowerBook 3400c/240	Internal CD-ROM drive available. The passive matrix screen 1400cs is acceptable; the active matrix screen version updates faster for multimedia. The 133MHz 1400 has a 128K cache. The 3400, the fastest PowerBook, has a 256K cache.	The 1400 requires a PC Card for Ethernet. You have to add video output; and the keyboard doesn't tilt. The bulky 3400 supports only one logical monitor.

to PCI signals. Newer Technology (316/943-0222, *http://www.newertech.com*) plans an under-$1000 dock that connects to the expansion bay, scheduled to ship in April.

Mapping the Ports

The 3400 has connectors on two sides. On the left side are the stereo audio-in and -out ports, and an ADB port hides behind a small fold-down door. The expansion bay for a CD-ROM or floppy drive is on the right.

Audio-In Advances The audio-in port takes line-level signals, as all PowerBooks starting with the 500 series do. In addition, the port finally includes the extra-deep receptacle with a power contact for the PlainTalk microphone (not included with the 3400); it also accepts a standard stereo miniplug. The audio-in circuit supports playthrough from the audio-in port or CD audio from the CD-ROM drive, so you can hear what's fed into the port.

Better Built-in Speakers The four speakers built into the 3400 are another step forward. Two 15mm (0.6-inch) stereo speakers that sit just above the keyboard produce the high frequencies. Two 50mm (2-inch) monaural speakers behind the screen produce lower frequencies; the sound comes out through narrow grilles on the edges of a bulged-out screen cover. These will no doubt be mistakenly described as subwoofers, but by stereo-speaker standards, these are midrange speakers.

The four speakers together produce peak output at 3KHz with considerable falloff even at 1KHz; the low frequencies are pretty much gone by 250Hz. Even with no real bass, the 3400 has the best speaker system yet built into any laptop and meets its design goal—adequate sound for multimedia demos.

Industry-Standard Infrared The infrared port for the first time supports IrDA protocols, the standard among Windows laptops, although communication is possible only with a suitable driver; at press time, driver support was uncertain. The port also supports Apple's earlier IRTalk protocol for connecting to a LocalTalk network; this does not support an infrared connection to a Newton MessagePad.

PC Card with DMA The PC Card interface supports the usual two Type II cards or one Type III card. Because the PC Card interface now uses DMA, it requires updated drivers; all the companies that support PowerBooks plan to offer new drivers. The PC Card interface does not support CardBus, an enhanced PC Card interface with PCI features.

Other Ports RJ-45 Ethernet/modem, serial, HDI-30 SCSI, and video-out ports reside behind a fold-down door in the back. Under pressure, the door falls off without damage. The lone serial port includes GeoPort functionality, so you can connect an ISDN adapter or transfer images fast from a QuickTake camera. The 3400 supports SCSI disk mode.

The Power Behind It All

The 3400 uses the same power connector as the Duos and the 1400; all run off 24 volts. AC adapters and car-battery adapters are interchangeable among all three PowerBook models, except that the 1.04- and 1.5-amp AC adapters made for the Duo can either charge or run a 3400 (and 1400) but can't do both at the same time. The 3400 comes with a 1.88-amp AC adapter that's essentially identical to the adapter for the 1400.

Apple says improvements in battery technology increase performance rather than battery life, so the 3400c runs no longer

than earlier PowerBook models. All 3400's come with a LiIon battery good for two to four hours of operation, according to Apple. Although the battery slot is physically compatible with batteries for the 5300 and 190, the LiIon battery will neither operate nor charge in the earlier PowerBooks.

The original LiIon batteries that Apple recalled at the introduction of the 5300 will not work in a 3400. But batteries sold for use in the 5300 and 190—all nickel-metal-hydride (NiMH)—will work in the 3400.

VST expects to have a high-capacity $200 NiMH battery for the 3400 (compatible with the 5300 and 190) available in March; VST says the battery will run a 3400 for up to five hours. But NiMH batteries are heavier than LiIon and have a higher self-discharge rate, so they lose power more quickly during storage.

VST has a new version of its $180 external battery charger for the 5300 and 190 to charge 3400 batteries; the charger will have a revised ROM for the LiIon batteries and two power connectors to accommodate both kinds of AC power adapters.

System Software and More

Apple ships System 7.6 (see "Should You Buy Mac OS 7.6?" in *News*, this issue) with the 3400c and includes a valuable PowerBook utility called Location Manager that will work with all earlier PowerBook models except the PowerBook 100.

Location Manager lets you define the computer's configuration for different locations—for example, home and office. When you select the location (information saved as a file) Location Manager automatically configures the computer, including communications and power options.

Other bundled software includes the Apple Internet Connection Kit 1.2, Apple Remote Access 2.1 client, Claris Organizer 2.0, and ForeFront's WebWhacker 2.0.

Shape and Weight

The 3400 is quite a handful to carry—the weight and thickness cry out for a handle or a carrying case. Users who don't do multimedia presentations might wish that Apple had skipped the lower-frequency speakers, leaving the top flat instead of bulging.

Once opened, the 3400 is straightforward to use. It has retractable legs to incline the keyboard, an advantage over the 1400. The keyboard size and layout remain unchanged from those of the PowerBook 500 series and all models in between. The keyboard has the same cumbersome cursor-key layout and still lacks page-up and page-down keys.

With a traveling weight of 8.4 pounds with CD-ROM drive (7.4 pounds for the computer, 1 pound for the AC adapter and power cord), the 3400c falls into the middleweight range for high-performance laptop computers.

The Last Word

The 3400c delivers the goods: if you want a fast PowerBook, you won't be disappointed. Its guts—up to a 240MHz CPU, PCI-based slot, DMA interface, and up to 144MB of RAM—are designed to push performance. Its case, like that of other laptops with large LCD screens, is large, so you're in trouble in coach class if the seat in front is reclined. But if you're making presentations, the 3400c produces the best multimedia demonstrations yet seen in a laptop. **m**

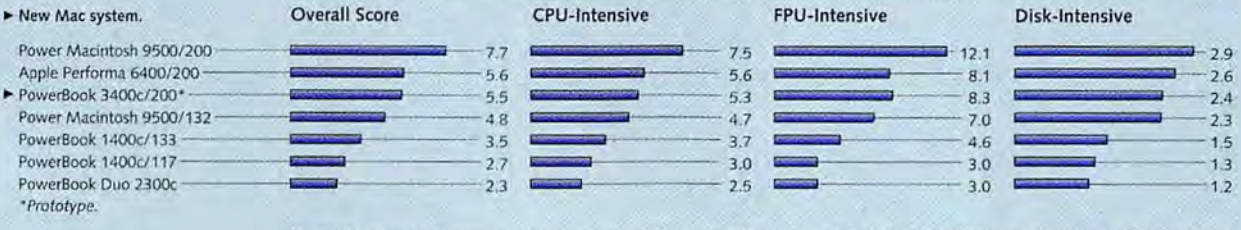
Contributing editor CARY LU has covered PowerBooks since they came to be.

Macworld LAB TEST

Apple Rivals the PC with a Truly Faster PowerBook

The PowerBook 3400c is designed for speed: its 180MHz-to-240MHz 603e CPU, 256K cache, and other hardware improvements, including an internal PCI-based slot, push its performance. The 200MHz prototype we tested outperformed other shipping PowerBooks by a huge margin.

Longer bars are better. Results are times as fast as a Centris 650 (Centris 650 = 1.0). Products are listed from fastest to slowest overall.

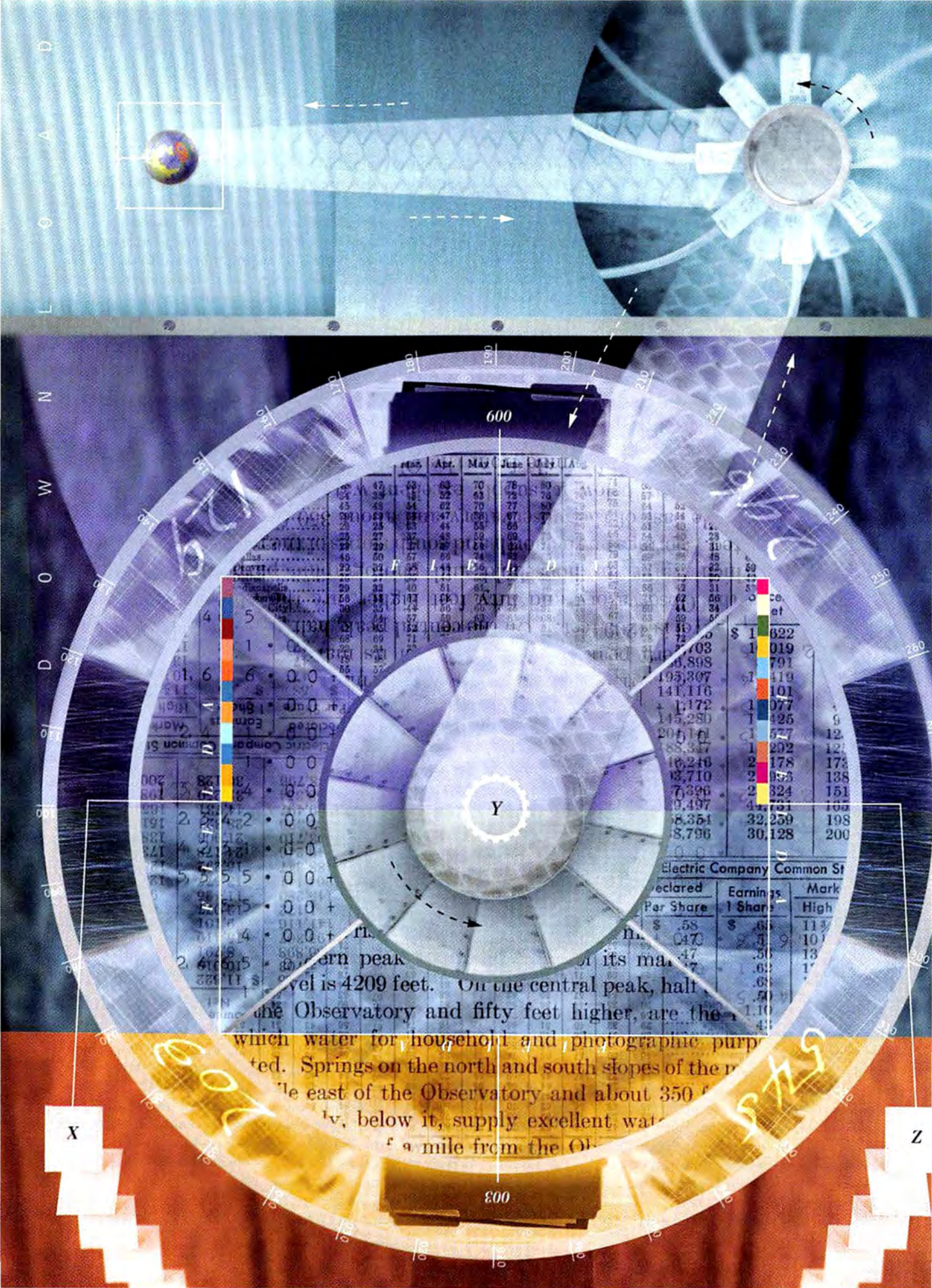


The 3400c gives its Windows rivals a run for the money: a first for the PowerBook. The 3400c/200 prototype outran the Compaq LTE 5400, a 150MHz Pentium notebook, in most operations we tested. No 200MHz Pentium notebook was shipping when we performed our tests; we expect that the 3400c would still be faster in most FPU- and CPU-intensive tasks—with the exception of Microsoft Excel, which ran much faster on the PC. The only area where the PC beat the 3400 easily was in FileMaker Pro searching and finding. The PC's more efficient I/O subsystem also helped it outperform the Mac in launching applications, although only by a slim margin.

Longer bars are better. Results are times as fast as a PowerBook 3400c/200.

Behind Our Tests

For details on our Mac-only tests, see *Mac Superguide*, January 1997. To compare platforms, Macworld Lab tested cross-platform applications on the PowerBook 3400c and the Compaq LTE 5400 to determine real-world performance for three critical performance areas: CPU-, FPU-, and disk-intensive tasks. We average the results to determine the overall score. Note: these results are not comparable to other *Macworld* benchmarks. The software included Microsoft Excel, Fractal Design Painter, Adobe Photoshop, Wolfram Research Mathematica, Specular Infini-D, Fractal Design Ray Dream Designer, and Claris FileMaker Pro.—**Macworld Lab testing supervised by Mark Hurlow**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BY JIM HEID

ONLINE ON TIME

DATABASE-DRIVEN WEB SITES DELIVER DYNAMIC, ULTRA-TIMELY CONTENT

DATABASES AND WEB SITES ARE A MARRIAGE made in heaven. It's no wonder: databases store information, and Web sites deliver it. Databases enable people to search for tidbits that are relevant to them, while the most appealing Web sites are timely and customized to meet visitors' needs and tastes. ••• Is your Web site a candidate for the Web-database connection? The answer is yes if you're using a database to store anything your customers or coworkers might find useful—from price lists to inventory to softball-team schedules. By tying your database to your Web site, you enable people to access it directly: they get the most updated information immediately without human intervention. You eliminate the need to export information from the database and then manually create HTML pages. ••• On a company intranet, database linking can also save money. Rather than buying a copy of the database manager for every employee, you buy one for only those employees who need the program's rich report-printing features and the fastest performance. Casual users delete, update, and add records to the database through a Web browser.

Pardon the pun, but Web-database publishing is a hot field. In the Macintosh world, most of the action centers around Claris's (*http://www.claris.com*) FileMaker Pro. This is partly because of FileMaker Pro's dominance among Mac database managers: Web database publishing requires third-party products, and developers of these products want the largest possible market. But FileMaker Pro is also the Web database of choice for the same reasons it's the Mac database of choice: it's easy to use, reasonably priced, and powerful (if you're working with client-server databases, see the sidebar, "Beyond FileMaker Pro: Alternative Web-Database Options").

To find out what works best with FileMaker Pro, I tested six freeware and commercial database packages for it—programs that Web developers use to Web-enable FileMaker Pro databases (see the table, "Database Links: Getting FileMaker Pro Talking to the Web"). These key

ILLUSTRATIONS BY STUART BRADFORD

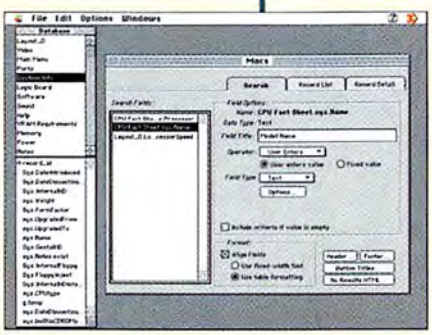
Three Steps to the Tango

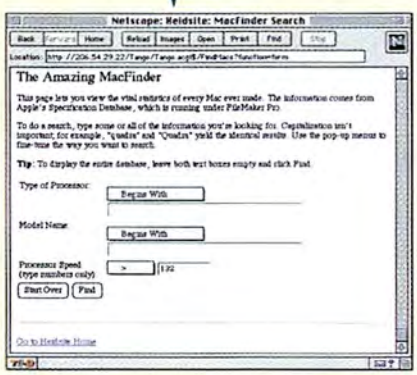
EveryWare's Tango Editor lets you drag and drop your database into the Web. Here, the program's Query Builder mode is being used to Web-enable a database of Macintosh-model specifications.

STEP 1

What You Do

In step 1, build a search screen by dragging field names from the Database palette. Use the buttons in the lower-right corner to customize the page's header, footer, button titles, and other elements.





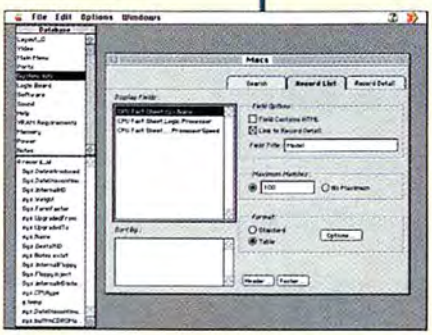
What It Looks Like

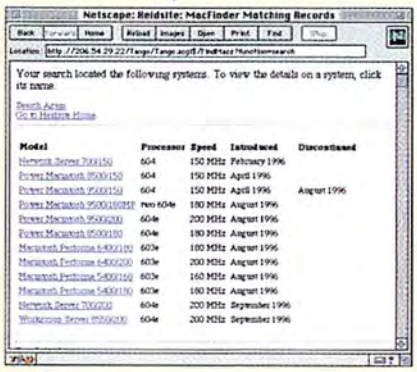
Each field you drag into the Search Fields list becomes available for searching. Tango Editor combines the custom HTML you entered with the search fields to generate a search page. Here, a search for all Macs with processor speeds over 132MHz has been specified.

STEP 2

What You Do

In step 2, specify the fields you want to appear in the search results page. For faster performance, include only a few fields in this screen—just enough for visitors to identify the record that they're looking for. Then, use the Link to Record Detail box to enable visitors to click on the record whose details they want to view.





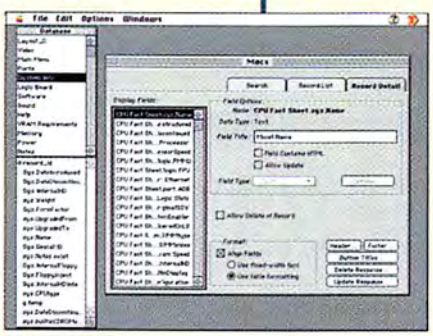
What It Looks Like

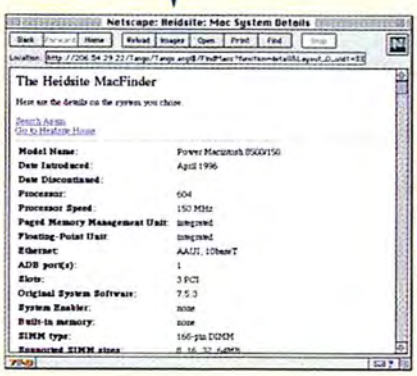
The search results page shows the records that meet the search criteria. The Model column's entries are hyperlinks that enable a visitor to view a found record's contents.

STEP 3

What You Do

In step 3, specify which fields you want to appear in the Record Detail page. To enable a visitor to delete or update a record, check the Allow Delete of Record or Allow Update box.





What It Looks Like

The Record Detail page shows the fields you specified. It's a good idea to include a link in the page header that enables visitors to conduct another search or branch to a different area of your site.

components in the Web-database connection are known as CGI (Common Gateway Interface) programs—they're the intermediaries that essentially enable Web surfers to operate the server's copy of FileMaker Pro by remote control. (As the table indicates, some are implemented as server plug-in modules, which are generally faster, and some products include both CGI and plug-in versions. Here, I use CGI to refer to both, for brevity's sake.) CGIs process data that users enter into browser-based forms; they find, delete, and add records; and they route found records to the Web server, which blasts the records to users' browsers (see the diagram, "Three Steps to the Tango").

Using a Power Mac 8500/132 as a testbed, I Web-enabled a variety of databases to see which CGI tools provide the easiest setup, the broadest array of features, and the fastest database access. The results are a mixed bag of strengths and weaknesses: your choice depends on your own requirements for speed of development, ease of access, and upgrade path.

Assembling the Pieces

The marriage of a database and a Web site may be a happy one, but like any union, it requires planning and cooperation. And there's a dowry: the lovebirds won't talk to each other without an investment in time and additional software. Let's run down the bridal registry.

For starters, you need a Mac running Web-server software and a copy of FileMaker Pro 3.0. StarNine's (*http://www.starnine.com*) WebStar is the Macintosh world's most popular Web server, but all of the products I tested also work with any Mac Web server that uses the WebStar Apple-event mechanism or supports WebStar plug-ins (and most do).

The FileMaker Pro database-publishing camp is divided equally between freeware and commercial products. Each of the freeware offerings has its strengths, but all force you to sacrifice either performance or features. Competition among the three commercial CGIs is furious; new versions of all three products shipped as I researched this article.

Every marriage ceremony is different, and every database-publishing product takes a unique path down the aisle. The most dramatic differences between products lie in the steps you take to unite database and Web site.

Some CGIs require you to modify your database in order to Web-enable it—specifically, by adding calculation fields containing HTML that the CGI uses to process and format data. CGIs that take this approach include Web Broadcasting's (*http://www.macweb.com*) $245 Web-FM 3.0; Russell Owen's (*http://rowen.astro.washington.edu*) freeware ROFM 4.1; and Claris's own FileMaker Pro CGI. Blue World Communications' (*http://www.blueworld.com*) $299 Lasso 1.1 and its freeware Lasso Lite 1.0.6, along with EveryWare Development's (*http://www.everyware.com*) $349 Tango 2.1.1 for FileMaker Pro, don't require modifications to

the database, but instead they rely on separate files that control formatting.

Each approach has its strengths. Calculation fields are fast, and using them enables you to tap FileMaker Pro's array of text-handling and number-crunching functions.

But calculation fields aren't for the faint of FileMaker—if you haven't mastered them, use a product that relies on external format files, such as Lasso or Tango for FileMaker Pro. Also, in institutional settings, individuals may not be permitted to modify a database's structure. And even if yours is a one-person shop, you might simply prefer to keep your database files pure rather than blurring the lines between FileMaker Pro's duties and the CGI's.

Comparing Development Features

You use a database-publishing package's development features to Web-enable a specific database: to specify which fields you want to be Web-searchable; whether surfers can add, modify, or delete records; and how the data that surfers locate appears on their browsers.

For fast development and a gentle learning curve, you can't beat EveryWare Development's Tango for FileMaker Pro. Its Tango Editor utility makes database publishing a click-and-drag proposition (see "Three Steps to the Tango").

Tango Editor allows you to build query documents, which the Tango CGI uses to display search forms and found records. To help you build the most common types of query documents, Tango Editor provides wizardlike windows called Query Builders. With the Query Builders you can put a database on the Web in less than a minute—I timed it. The resulting screens aren't visual feasts, but windows that hold custom HTML for headers, footers, and overall page formatting are just a click away. If you use an HTML editor such as Adobe PageMill, you can use it to design page elements and then drag and drop their HTML into Tango Editor.

When you need more-sophisticated query documents, such as ones that perform calculations on database information or that perform different activities depending on a condition, you use Tango Editor's visual programming mode. Tango's gentle learning curve becomes a much steeper slope here. You'll need to learn a new Tango-specific vocabulary and master a flock of option dialog boxes.

Tango's query documents also work with EveryWare's Tango Enterprise 2.1.1 (pricing begins at $995), which Web-enables high-end, client-server databases as well as FileMaker Pro. This not only gives you a growth path to the enterprise databases that many big businesses and institutions use, but it also enables you to mix and match data from disparate data sources on a single screen—unique among the products I tested.

Neither Lasso nor Web-FM offers the immediate gratification of Tango Editor. With Lasso you create format files containing Lasso-specific tags and com-

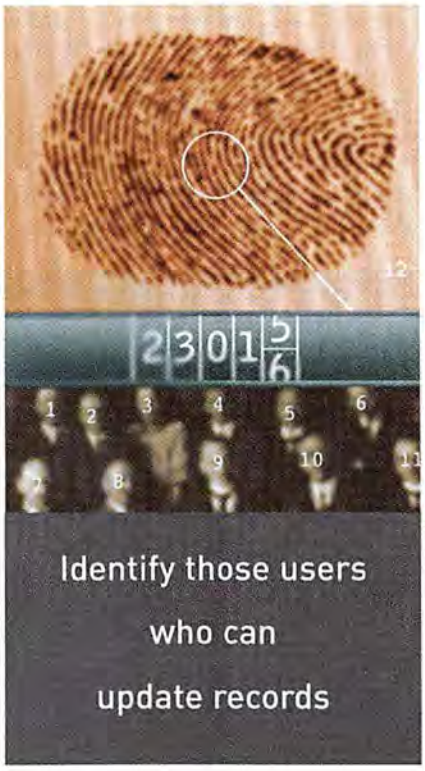
mands that control the CGI. A separate format file is required for each page that presents data from the database; this contrasts with Tango, in which one query document can handle both search summaries and search details.

You create Lasso format files using any HTML or text editor. Lasso includes a utility, FM Link, that provides palettes from which you can drag and drop Lasso tags, database field names, and so on. But FM Link doesn't provide the hand-holding of Tango's Query Builders; it just cuts down on typing. Lasso 2.0, scheduled to ship this spring, will include a Java applet that provides an interface similar to FileMaker Pro's for creating format files. If the final version is as impressive as the demonstration I saw at January's Macworld Expo, Lasso 2.0 may approach or exceed Tango's ease of use.

As for Web-FM, Web Broadcasting is working on a utility, called Tag-FM, that will create calculation fields for you and also tie in to HTML editors; it was not available for testing.

And what about the freeware packages? Russell Owen's ROFM requires you to edit the database file. For each field in the database, you must create a calculation field that will hold the HTML-formatted versions of the data that ROFM will return.

Click-and-drag database publishing it isn't. Lasso Lite works with Blue World's FM Link. Claris FileMaker Pro CGI provides no development-streamlining aids; indeed, it's sparsely documented and requires you to do some AppleScript programming. ROFM or Lasso Lite is a better alternative.



FileMaker Advanced Feature Support

Getting up to speed is one thing; what you can do when you get there is another. If you're a FileMaker Pro guru, you might be using scripts to automate tasks, and you might be linking FileMaker Pro with other programs via Apple events. Many of the commercial CGIs enable you to extend these advanced features to a Web site (none of the freeware programs support these features). Similarly, if your database relies on advanced FileMaker Pro features, you'll want a CGI that supports the features you need. Examples include support for repeating fields (which hold multiple values), for picture fields (which hold graphics), and for relations and portals (which link data files and enable one file to display or reference information in another).

Of the commercial offerings, Lasso and Web-FM provide the best support for advanced FileMaker Pro features. Both programs enable you to display, update, and add to repeating fields. Both also support relations and portals, but Web-FM edges out Lasso by enabling you to add and update related records; Lasso enables you only to display them. Tango doesn't support relations, although you can display portals through a cumbersome process. All three programs support FileMaker Pro scripts, and Tango can send

Beyond FileMaker Pro: Alternative Web-Database Options

Claris FileMaker Pro dominates the Macintosh world, but the Mac doesn't exactly dominate the computer world. Big business and other institutions rely on what I call alphabet-soup databases: ones built around SQL (structured query language, an industry-standard language for structuring and accessing relational databases) and ODBC (Open Database Connectivity, a Microsoft-created standard for database access).

If you want to Web-publish data stored in one of these databases, you need a Web-enabling tool that supports your database. EveryWare's Tango Enterprise 2.1.1, which is mentioned in the main article, can Web-enable SQL, ODBC, and FileMaker Pro databases—all with the identical click-and-drag simplicity of Tango for FileMaker (see the screen shot "High-Stepping Tango"). Tango Enterprise's unique ability to unite enterprise and FileMaker Pro databases breaks down the walls between various database engines: it enables you to mix and match data sources on a single Web page, and it allows you to create search forms that access disparate databases. EveryWare also sells the Macintosh-based $695 Butler SQL.

StormCloud Development (206/812-0177, *http://www.ndev.com*) offers the $595 Web-DBC, which Web-enables ODBC and SQL databases.

Some developer-oriented Macintosh database-management packages are putting their own unique spin on the Web: rather than connecting to a server package such as WebStar, they're acting as servers themselves. ACI US's (408/252-4444, *http://www.acius.com*) $299 4th Dimension 6.0, scheduled to ship by the time you read this, will enable Web visitors to access 4D databases and convert 4D's on-screen forms into HTML on the fly.

You can also Web-enable 4D databases through WebStar or other Web-server packages by using Foresight Technology's (817/731-4444, *http://www.fsti.com*) $89 NetLink/4D. The new version, 2.0, supports Netscape cookies, does automatic character translation (converting special characters so they can be sent across the Internet), and operates as a WebStar plug-in.

Blyth Software (415/571-0222, *http://www.blyth.com*) has Web-enabled its $999 Omnis 7 relational database with its Omnis Web RAD (short for rapid application development). Omnis Web RAD translates Omnis reports into HTML and converts graphics stored in Omnis databases into GIF and JPEG formats.

Apple events to other applications.

Tango 2.1.1 and Lasso 1.1 can serve up PICT images stored in a FileMaker Pro database by converting them into JPEG images on the fly. Tango handles graphics conversion better than Lasso, which relies on Yves Piguet's freeware (*http://iawww.epfl.ch/*) clip2gif utility—a kludgy approach. Web Broadcasting's $125 PICT-FM utility adds graphics conversion to any FileMaker Pro CGI.

Database Links: Getting FileMaker Pro Talking to the Web

Product	Company	Star Rating *	Price	Contact	CGI	Server Plug-In
Freeware CGIs						
FileMaker Pro CGI	Claris	★★★/5.3	free	408/987-7000	yes	no
Lasso Lite 1.0.6	Blue World Communications	★★★/6.5	free	206/313-1051	yes	no
ROFM 4.1	Russell Owen	★★★/6.5	free	*http://rowen.astro.washington.edu*	yes	no
Commercial CGIs						
EDITORS' CHOICE						
Lasso 1.1	Blue World Communications	★★★★/7.2	$299	206/313-1051	yes	yes
EDITORS' CHOICE						
Tango for FileMaker Pro 2.1.1	EveryWare Development	★★★★/7.3	$349	905/819-1173	yes	yes
Web-FM 3.0	Web Broadcasting	★★★★/7.0	$245	415/329-9676	no	yes

**Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.)*

Safe and Sound

Security is a common concern in the database world. You may want to give some users modification privileges and others browse-only privileges. Or you may want to hide some fields (such as a personnel database's salary field) from unauthorized users.

Most FileMaker Pro Web publishing tools support these as well as a variety of Web-specific security features. In all three commercial programs you can specify whether visitors can update or delete a found record. Controlling updates and deletions is easiest in Tango for FileMaker Pro, where you can simply check a box in Tango Editor to designate whether users can delete or update a record.

But Web-FM and Lasso provide a more complete array of security features than does Tango. With Tango, you can't specify that some users be allowed only to browse and others be allowed to modify. In Web-FM and Lasso, you can.

Bells and Whistles

Most CGIs also provide features specific to the Web world. User-identification features let the CGI keep track of users as they access the database, to track the kinds of information they're requesting or maintain security logs. Lasso, Web-FM, and Tango all provide logging features.

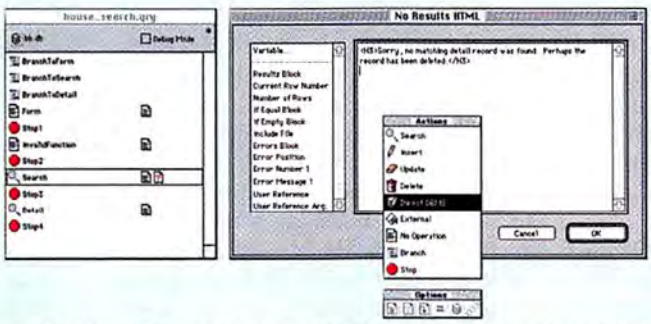
All three products also enable you to retrieve and store information about a user's browser, such as the browser name and version and the user's IP address or domain name. You can combine this capability with the IF-THEN conditional features all three programs provide to tailor page display to take advantage of browser-specific features, for example, or to control which fields are displayed based on a visitor's domain address.

All three programs also provide *variables*, which enable you to store and track

Different Strokes

There's also a set of products that put their own spin on the database-Web connection. TecSoft (212/229-9400, *http://www.tecny.com*) has created a unique application, called HTML Generator, that links FileMaker Pro with Canto's Cumulus multimedia-database application, which stores images as well as audio files, QuickTime movies, and other media types. With HTML Generator you can build the kinds of dynamic Web sites that were formerly the province of high-end, object-oriented databases.

Purity Software's (512/328-2288, *http://www.purity.com*) $495 WebSiphon incorporates a proprietary scripting language and a Web-optimized database manager called Verona. WebSiphon is an excellent tool for creating dynamic site features such as shopping carts, online polls, and conferencing boards, as well as for jobs such as delivering browser-optimized pages.



High-Stepping Tango Tango Enterprise's Query Editor provides an iconic programming scheme that lets you build SQL queries, such as this one for a house-search application (left window). The right-hand window shows how you can customize the messages Tango displays by entering HTML into a window.

Canto (415/905-0300, *http://www.canto-software.com*) offers a CGI that Web-enables databases stored in Canto's Cumulus media database. With the Cumulus Internet Image Server, you can enable Web users to search and download from databases containing stock photography, clip art, music clips, and other media types. You must also own the Cumulus Network Image Database, which starts at $1995.

Pacific Coast Software's (619/675-1106, *http://www.pacific-coast.com*) $695 WebCatalog is a solid, if difficult-to-learn, package for creating online shopping systems. WebCatalog provides shopping-cart features and can also display rotating advertising banners. (EveryWare also offers an online shopping system, the $4995 Tango Merchant.) Finally, Pacific Coast has created PhotoMaster, a $99.95 Web image-database application.

information as a user navigates a database application. Variables, also called tokens or cookies, are important ingredients in online shopping-cart applications, where you might use them to store order numbers or customer IDs as visitors shop.

For some tasks, you might want to have a copy of a newly entered record e-mailed to a specified address—for order verification, for example. Among the commercial database publishing packages, only Blue World's Lasso provides built-in e-mail forwarding features; you can graft e-mail forwarding onto Web-FM with a free Web Broadcasting utility, FMailer. The freeware ROFM also provides e-mail forwarding.

Speed Counts

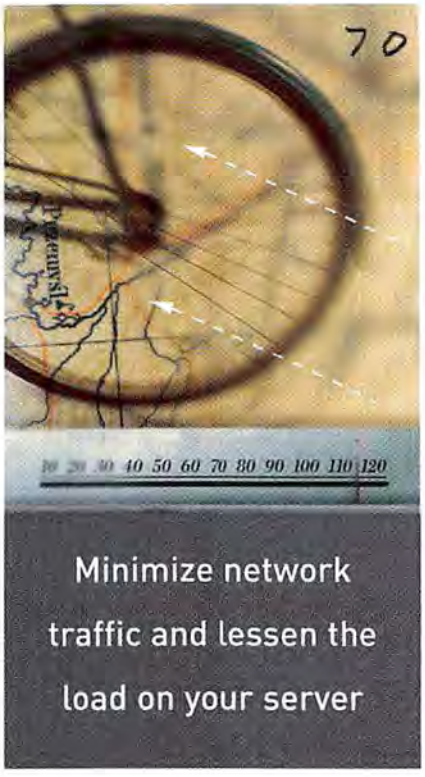
Ultimately, your site's users don't care how long it took you to Web-enable your database. They care how long it takes them to work with it: how quickly they see the records they're looking for and how quickly your site responds when they delete, update, or add records. As with any network application, much of the performance equation is out of your hands.

But some performance aspects are under your control. One is the way you design search summaries, those lists of records that meet a user's criteria. Never include more fields in this summary than are necessary for a user to identify which record he or she wants to view. This minimizes network traffic and speeds your server.

Also, all of the CGIs I tested except for the Claris FileMaker Pro CGI enable you to return found records in small chunks—say, ten records at a time. You've seen this scheme in search sites such as Yahoo: only 10 or 15 hits appear on a page, and hyperlinks let you view the next or previous batch. Returning data in small chunks improves perceived performance and avoids clogging the network with data that users may never need.

The performance of the CGI itself also affects your site's response time. Most freeware CGIs are written in the AppleScript scripting language (with the exception of Lasso Lite). Scripted CGIs are generally slower than compiled CGIs, which are written in high-level programming languages such as C.

All the commercial CGIs are compiled. Of the three I tested, Lasso was the fastest. Previous versions of Tango were slow at adding to and updating databases, but EveryWare has fixed this problem.



The Last Word

The broad selection of Web-database products illustrates just how strong the Mac is in the Web publishing world. And it's only getting stronger. By the time you read this, ProVue Development (714/841-7779, *http://www.provue.com*) should be shipping its $295 WebVue, which Web-enables ProVue's lightning-fast Panorama database manager (see *Reviews*, *Macworld*, June 1996). The preliminary version of WebVue I examined sported an approachable interface and some slick features, including the ability to preview forms without requiring a server—something no FileMaker Pro CGI permits.

Which FileMaker Pro database tool is for you? The freeware CGIs are a great way to test the database-publishing waters or Web-enable a database without taxing your budget. Blue World's Lasso Lite is the most polished freeware CGI, but it does not allow record updating or deletion and it lacks security features. However, its format files also work with its commercial cousin, Lasso, which does provide these features. This eases your upgrade path.

If you want surfers to be able to edit and add to a database, the best freeware CGI is Russell Owen's ROFM 4.1. (Note that ROFM requires the $29 Acme Script Widgets, a shareware AppleScript extension from Acme Technologies [203/969-1335, *http://www.acmetech.com*]).

As for the commercial FileMaker Pro Web enablers, each has unique assets. If you need to develop basic Web-database applications quickly—or if you anticipate migrating to an enterprise database system in the future—Tango for FileMaker Pro is the best choice. If you're a tag-oriented person, Lasso is for you. To tap the power of FileMaker Pro's calculation fields, get Web-FM.

Choosing among these three isn't easy, but fortunately you can try before you buy. Free trial versions of the products are available on their developers' Web sites; put them through their paces with your own databases to find the CGI that best meshes with your needs, your data, and your development tastes.

As for the high-end products, none provide the combination of power and simplicity of FileMaker and a Web-enabling CGI—a combination that, when you think about it, is what the Macintosh world is all about. **m**

Contributing editor and *Media* columnist JIM HEID is the author of *HTML & Web Publishing Secrets* (IDG Books Worldwide, 1997). Technical assistance by DEBORAH SHADOVITZ, a Los Angeles–based FileMaker Pro developer.

EDITORS' CHOICE

Fast Development

★★★★/7.3 **Tango for FileMaker Pro 2.1.1** From zero to Web in under a minute: there isn't a faster way to Web-enable a FileMaker Pro database. Its compatibility with Tango Enterprise provides a growth path to high-end databases. **Company:** EveryWare Development (905/819-1173, *http://www.everyware.com*). **List price:** $349.

Powerhouse Features

★★★★/7.2 **Lasso 1.1** With excellent support for advanced FileMaker Pro features, outstanding formatting control, fast performance, and thorough documentation, Lasso is a database-publishing demon. **Company:** Blue World Communications (206/313-1051, *http://www.blueworld.com*). **List price:** $299.

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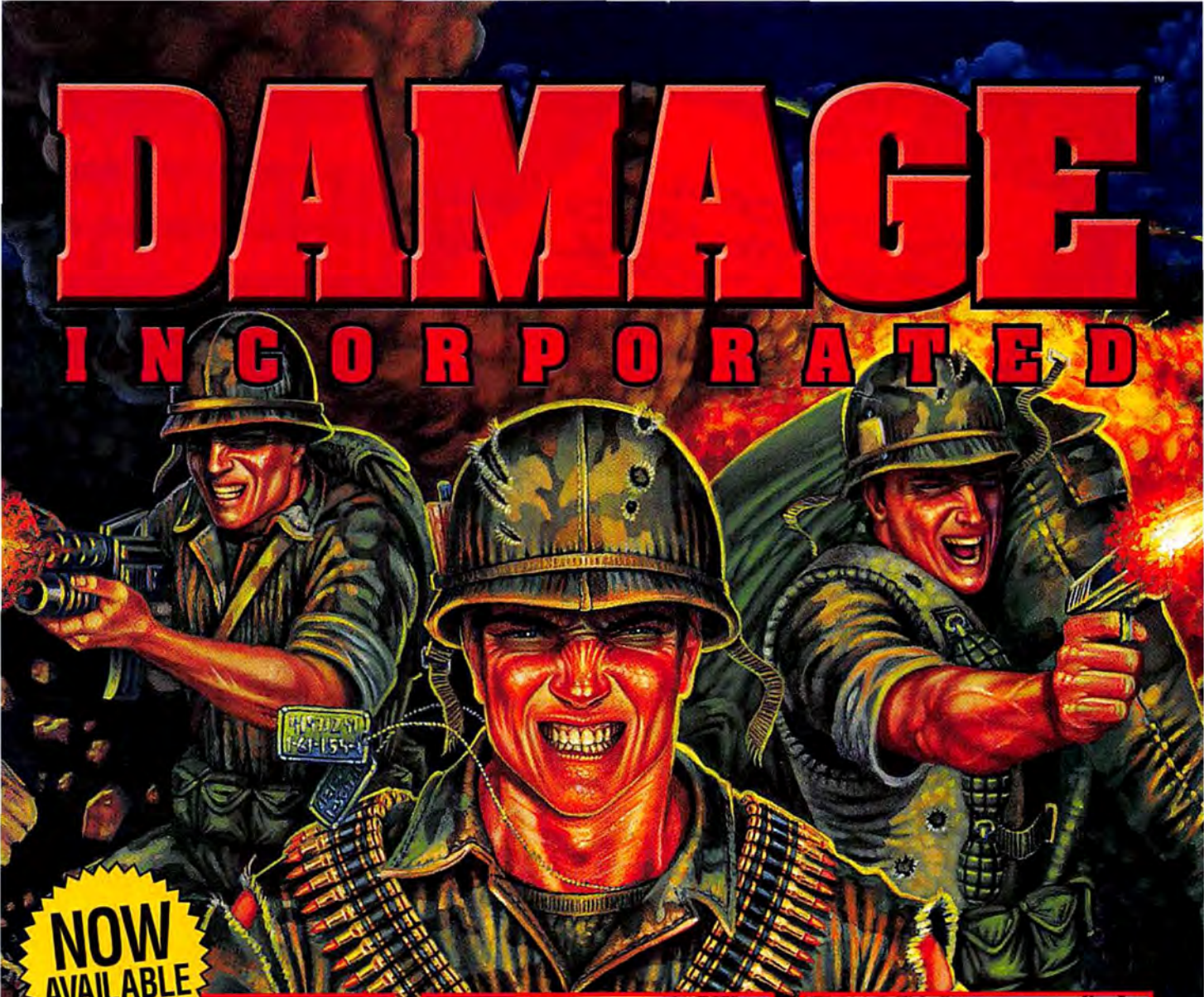

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BY DEAN ANDREWS

Beyond 28.8

ARE THE NEW 33.6-KBPS MODEMS REALLY FASTER?

MACWORLD LAB TESTS NINE MODELS TO FIND OUT.

THERE'S BEEN A LOT OF TALK LATELY ABOUT the World Wide Wait—that frustrating period of time you spend waiting for a graphics-heavy Web page to crawl across your screen. With an ever-increasing number of people logging on to the Internet, the traffic jams in cyberspace are bound to continue. To help reduce the time you spend waiting, many modem manufacturers have replaced 28.8-Kbps modems with new models that deliver up to 33.6-Kbps speeds.

But do 33.6 modems truly offer any significant advantages over 28.8 modems, or is the speed increase too small to notice? Do the new modems always outperform the older ones, or just under limited circumstances? And should those who already own 28.8 modems consider upgrading to the faster models? To find out, Macworld Lab evaluated nine 33.6 modems in terms of performance, software, and other features.

For Whom Do These Modems Ring?

The new 33.6 modems aren't the only game in town for high-speed connectivity. ISDN (Integrated Services Digital Network) lines and modems can deliver transmission speeds—up to 128 Kbps—that are significantly faster. But ISDN modems, such as Farallon's Netopia (company's estimated price, $329; 510/814-5100, *http://www.farallon.com*), cost nearly twice as much as 33.6 modems.

Meanwhile, cable networks and modems promise a stunning transfer rate of up to 10 megabits per second. But two-

Macworld LAB TEST

ROBERT CARDIN

way cable networks are currently available in only a handful of U.S. cities. In the realm of more traditional modems, 56-Kbps analog transmission is the next step. A few telecommunications vendors, such as U.S. Robotics (*http://www.usr.com*) and Diamond Multimedia Systems (*http://www.diamondmm.com*), have announced plans to offer modems (or upgrades) in early 1997 that deliver up to 56-Kbps speeds when they're downloading information (not when uploading). For the time being, though, there is no agreed-upon standard for achieving 56-Kbps speeds. As a result, the 56-Kbps modem you purchase now may require a flash ROM or chip-set upgrade later to be compatible with the high-speed protocol that's ultimately agreed upon. For most people in the market for a new modem, then, a 33.6 model is the easiest, most affordable option.

Will You Notice the Difference?

In our evaluations, we set out to answer three main questions about 33.6 modem performance, especially as it compared with that of 28.8 modems.

• Are 33.6 modems noticeably faster than 28.8 models? As a rule, yes. The 33.6 modems comply with the International Telecommunications Union's enhanced V.34 specification, called V.34 Plus, and are capable of transferring data 17 percent faster than 28.8 modems—not a huge improvement, but nothing to sneeze at, either. In our tests, the top-performing U.S. Robotics Sportster 28.8/33.6 Faxmodem connected 57 percent of the time at speeds faster than 28.8.

• Do 33.6 modems always run faster than 28.8 models? No. The key difference between the two modems is that the newer models use the V.34 Plus transmission standard, which has been optimized to automatically compress data more efficiently *before* transmission to achieve faster throughput. But if a file you're downloading has already been compressed with a utility such as Aladdin Systems' StuffIt—as many utilities and files you download off the Internet have been—the V.34 Plus standard's enhanced compression and error-correction protocols can't do their job. As a result, the 33.6 modem's transmission speed will drop down to 28.8 Kbps or even lower. And regardless of compression, the modem that you're communicating with must be capable of 33.6-Kbps speeds as well in order for your modem to achieve top speed.

• If you already own a 28.8 modem, should you buy a 33.6 model? In most cases, no. Unless your Internet service provider or online service has upgraded to 33.6 modem technology, you won't see much benefit when connecting to the Internet or going online. Also, some 28.8 modems, such as Diamond Multimedia Systems' SupraFaxModem 288 and Archtek America's SmartLink 2834A (*http://www.archtek.com*), incorporate flash ROM, which lets you bump up the modem to 33.6 with software upgrades.

From Phone Line to Finish Line

In our test results, which included scores for reliability and throughput, and an overall average (based on both reliability and throughput), the U.S. Robotics Sportster 28.8/33.6 Faxmodem tied for first place with the Diamond Multimedia SupraSonic 336V+ (see the benchmark, "Are 33.6-Kbps Modems Really Faster?"). The Sportster topped our charts with the best score for reliability, meaning it was able to transmit data at high speeds over impaired lines with minimal problems. Because reliability is the most important quality for a modem, the Sportster's top score in this area earned the modem the Editors' Choice.

In throughput tests, Boca Research's MV.34MA (*http://www.bocaresearch.com*) was the clear winner. The slowest 33.6 modem, the SmartLink, was only marginally faster than the Motorola PowerClass

Macworld LAB TEST

Are 33.6-Kbps Modems Really Faster?

We found that 33.6 modems perform better than 28.8 modems, but the differences are, in some cases, small. Of the 33.6 modems we tested, U.S. Robotics' was the most effective at navigating through impaired telephone lines. The Archtek SmartLink was only slightly more reliable than a 28.8 Motorola PowerClass. In terms of throughput, Boca Research's MV.34MA was the clear winner. The slowest 33.6 modem was only marginally better than the Motorola 28.8 model.

Best result in test. Longer bars are better. Products are indexed in comparison with the top performer in each category and listed in decreasing order of overall performance.

Tests how well modems handle impaired lines at high speeds while using compression and error correction.

Tests pairs of identical modems as they transfer files over ideal line conditions.

Averages results of reliability and throughput; scores indicate overall performance.

**A 28.8 modem, included for the sake of comparison.*

Behind Our Tests

Macworld Lab used a Telecom Analysis Systems telecommunications-network simulator to evaluate modem performance. We ran all tests with pairs of identical modems attached to the network simulator. For reliability, we tested over numerous line conditions, representing 95 percent of all line conditions in the United States. We tested for throughput using five files of varied size and compressibility; the results show how well each modem implements V.42bis compression. File types were a numbers-only vector graphics document; a WordPerfect text file; a portion of an executable file; output from a 64-bit random-number generator; and an archive containing several files of various types.—**Macworld Lab testing supervised by Matt Clark**

Fax-Modem Software:

THE SOFTWARE THAT SHIPS WITH A FAX MODEM IS ALMOST AS IMPORTANT AS THE MODEM'S PERFORMANCE

Making a Judgment Call

HERE'S A LOOK AT THE SOFTWARE that ships with each of the nine 33.6 products we evaluated, along with STF Technologies' Faxstf, an off-the-shelf software package. These programs are arranged in descending order of our preference.

GlobalFax

Global Village's GlobalFax, which works only with the company's TelePort and PowerPort modems, is the most complete and powerful fax-modem program we tested. The new Setup Helper quickly guides you through installation and queries you for all relevant information, such as your name and fax number, which it preloads into its GlobalFax templates. The sophisticated, easy-to-use address book efficiently manages contact information, including e-mail and street addresses and billing account codes. You can easily fax documents from within any application by holding down the option key while selecting Print from the File menu. And unlike other packages, GlobalFax provides a graphical display that lets you follow the status of a connection from within any application. Along with GlobalFax, the TelePort Internet Edition 33.6 includes a helpful bundle of software and utilities for Internet surfing and e-mail, including Netscape Navigator.

Faxstf

If your work involves a lot of faxing, consider STF Technologies' Faxstf (company's estimated price, $69; 816/220-0100, *http://wwwstfinc.com*), a stand-alone fax-modem package that supports more than 400 modems. Faxstf offers features that aren't available in the other utilities we evaluated, among them fax forwarding, which sends received faxes automatically to other locations; password protection; call blocking; BinHexFax, which quickly converts faxes for transmission over the Internet; and FaxExchange, which translates faxes into image file formats such as PICT. The program sports a friendly interface and a helpful, clearly organized manual. Faxstf doesn't support voice mail (unlike Diamond Multimedia Systems' Faxcilitate voice module, which does support it), nor does it have the powerful address-book features of GlobalFax. Still, this is a robust fax-modem package at a reasonable price. (See *Reviews, Macworld*, October 1996, for a more extensive review.)

StartFaxing

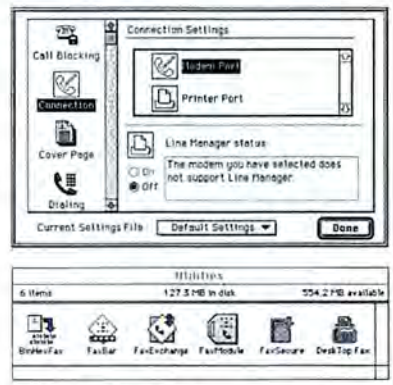
Even though this is a whittled-down version of Faxstf, StartFaxing (included with Zoom's V.34X Plus modem) contains attractive features such as calling-card support and address-book searching that you won't find in its closest equivalent, MacComCenter. And it includes a host of useful global settings for sending and receiving faxes, including the ability to determine the number of rings before pickup; volume control; and send and receive speeds. StartFaxing falls short, though, with a limited number of address-book fields and no drag-and-drop capability.

MacComCenter

Smith Micro Software's utility is certainly the most ubiquitous fax-modem program: it's included with six of the nine modems we tested, the exceptions being Global Village's TelePort Internet Edition 33.6, Zoom Telephonics' (*http://www.zoomtel.com*) Zoom V.34X Plus, and Diamond Multimedia Systems' SupraSonic 336V+.

That doesn't mean MacComCenter is the best program of its kind, however. The features it offers are useful but basic. MacComCenter maintains an archive for storing your faxes and a convenient log for tracking faxes sent and received, for example, and you can drag and drop a file onto the program's icon to send a fax quickly. The address-book features aren't nearly as sophisticated as those of Global Village's GlobalFax or Faxstf, though; you can't add details such as e-mail and postal addresses, for instance. If all you want is a simple, bare-bones fax-modem utility, MacComCenter should fit the bill, but those with more demanding needs are dialing the wrong number.

Logicode's Quicktel II-C 33X-ASP-C-M includes a special voice-capable version of MacComCenter. The voice features are more basic than those of Diamond's Faxcilitate (see below) but allow for setup of multiple voice-mailboxes, each with a separate greeting. A reply feature offers automatic callback for caller ID–capable modems, such as the Quicktel.



Fax to the Max For heavy fax use, check out STF Technologies' Faxstf off-the-shelf package, which provides advanced security features such as call blocking and password protection (top), along with BinHexFax (bottom) for converting faxes to send over the Internet.

Faxcilitate

This program, which ships with Diamond Multimedia's SupraSonic 336V+, combines voice and fax capabilities. Though not as intuitive as GlobalFax, Faxcilitate offers the power of broadcast faxes, customizable fax cover sheets, and international dialing options. The voice-mail module is cumbersome to set up, but making and answering calls is a cinch.

The Facts on Fax Modems

Company	Product	Star Rating *	List Price/Company's Estimated Price **	Phone	Warranty (in years)	Flash ROM Upgradable
Archtek America	SmartLink 3334AV	★★/4.5	$209/$170	818/912-9800	5	no
Best Data Products	SmartOne 336FLXMac	★/2.7	$179/$129	818/773-9600	5	no
Boca Research	MV.34MA	★★★/5.3	$236/$109	561/997-6227	5	no
Diamond Multimedia Systems	SupraSonic 336V+	★★★/6.7	NP/$249	360/604-1400	5	yes
Global Village Communication	TelePort Internet Edition 33.6	★★★/6.5	NP/$169	408/523-1000	5	yes
Logicode Technology	Quicktel II-C 33X-ASP-C-M	★★★/6.6	$319/$249	805/383-2500	lifetime	yes
Multi-Tech Systems	MultiModemZDXV	★★/4.8	$269/$199	612/785-3500	10	no
	EDITORS' CHOICE					
U.S. Robotics	Sportster 28.8/33.6 Faxmodem	★★★★/7.1	NP/$179	847/676-7010	5	no
Zoom Telephonics	Zoom V.34X Plus	★★/4.9	$199/$139	617/423-1072	7	no

*NP = Not provided. * Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.) ** Actual price could be higher or lower than the estimated street price provided by the company.*

28.8, a 28.8 modem we included for comparison's sake (it was the top performer in our tests of 28.8 modems for the December 1995 article "Fast Fax Modems"). The SupraSonic 336V+ performed well in both tests—it even edged out the Sportster in our throughput trials. But with a company estimated price of $249, it was one of the most expensive 33.6 modems we evaluated. If you're looking for a modem with telephony features, though, the SupraSonic 336V+ is a compelling choice (more on that later).

Logicode Technology's Quicktel II-C 33X-ASP-C-M (*http://www.logicode.com*) modem tied with the Sportster in reliability and throughput, but its street price is also $70 higher than the Sportster's. Bringing up the rear were Best Data Products' SmartOne 336FLXMac (*http://www.bestdata.com*) and the Archtek America SmartLink 3334AV—both performed only slightly better than the PowerClass 28.8.

Bells and Whistles

Speed issues aside, a number of vendors have added extras to their 33.6 modems to keep them competitive. Among the added attractions: software for connecting to the Internet or online services (such as America Online); telephony capabilities that let you use your modem as a telephone and your Mac as an answering machine; caller ID, for identifying incoming calls; liquid crystal displays (LCDs) that provide more information about connection and transmission status than the traditional blinking lights; and flash ROM upgradability. Here's a quick look at the most noteworthy features.

• **Telephony** Of the modems we tested, the SupraSonic 336V+ had the most sophisticated set of telephony features. The voice-mail module of the SupraSonic's Faxcilitate software is difficult to set up, but using the modem to make telephone calls, via the included earphone-and-microphone headset, is easy. The Logicode Quicktel, which features a built-in, two-way speakerphone, is a good second choice. But beware Archtek's SmartLink 3334AV and Multi-Tech Systems' MultiModemZDXV (*http://www.multitech.com*) if it's telephony features you seek: neither company currently provides the necessary Mac software to take advantage of its modem's telephony hardware.

• **LCDs and Caller ID** With its innovative hardware design, the Logicode Quicktel takes top honors in this category. The modem's LCD provides status information, connection rate, and caller ID. Best of all, the display can be adjusted up to 90 degrees for optimal viewing. The SupraSonic 336V+ offers the same features, but without an adjustable display.

• **Upgrades** It's a comforting feeling to know you can upgrade your modem to the next standardized speed available with the easy loading of a software module. If upgrading is important to you, the flash ROM features of the SupraSonic 336V+, the Logicode Quicktel, and the Global Village TelePort Internet Edition 33.6 (*http://www.globalvillage.com*) should make these modems easy to upgrade via software. By the time you read this, U.S. Robotics should be offering hardware upgrades to 56 Kbps for its Sportster modems; upgrade pricing wasn't set at press time.

The Last Word

Later this year, the first 56-Kbps modems will hit the market (prices were still being determined at press time), along with cable-modem services. But if you need to get online now, your best bet is still a 33.6 modem. These models cost about the same as 28.8 modems did a few months ago; most are extremely easy to set up and use; and some offer compelling features such as telephony and caller ID.

With modems, though, the most important feature is always performance. In this regard, the U.S. Robotics Sportster tied with the SupraSonic 336V+, with Logicode's Quicktel just behind them. But when other factors were considered, namely its superior reliability and attention to detail, the Sportster earned the Editors' Choice. The Sportster ships with a Communications Control Language (CCL) script for running ARA (Apple Remote Access), all the necessary cables, and a five-year warranty. For $179, the Sportster is our pick for connecting to the digital world. **m**

DEAN ANDREWS, the former usability manager of the PC World Test Center, writes frequently about Mac and PC products.

EDITORS' CHOICE

★★★★/7.1 **Sportster 28.8/33.6 Faxmodem** The most reliable modem in our roundup is also upgradable to 56-Kbps technology and is attractively priced. **Company:** U.S. Robotics (847/676-7010, *http//www.usr.com*). **Company's estimated price:** $179.

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Secrets

Control Strip Obedience School

HOW TO PUT THOSE DESKTOP CONTROLS IN THEIR PLACE

by Joseph Schorr

The Control Strip—that slender ribbon of tiles that pokes out furtively from the corner of your screen—is supposed to make your life easier by letting you adjust certain settings on your Mac without opening any control panels. (The Control Strip, you may recall, originally started out as an accessory for PowerBooks, but Apple decided the idea was good enough to include on all Macs, so it became a standard part of System 7.5.3.)

And yet, to be honest, the Control Strip hasn't endeared itself to everyone. When it's open, it always seems to be overlapping something you need, such as an Excel tool bar, or an icon you've dragged to the corner of your desktop. And even when it's collapsed, that distracting little gray nub clings to the corner of your screen like a barnacle. There's got to be a better way.

There is. Familiarize yourself with these tricks to massage the Control Strip into a system component that not only helps you get your work done, but doesn't get in your way.

Stripping It Down

Each tiny tile on the Control Strip corresponds to a module file stored in the Control Strip Modules folder in the System Folder. This means you can pare down the total length of your Control Strip by simply removing the module files you don't really use from the Control Strip Modules folder. For example, if your Macintosh isn't connected to a multiple-scan monitor (or if you never change the resolution of your monitor), you can safely dispense with the Monitor Resolution module, which allows you to switch resolutions from the Control Strip. If you have only one printer connected to your network, you can remove the Printer Selector module that appears when you install Desktop Printing 2.0. The more judicious you are about what you include in the Control Strip, the easier it will be to access the modules you actually use.

Control Strip Controls

You don't have to go through life with the Control Strip anchored to the lower-left corner of your screen. If it seems to get in your way there, you can move it up or down the side of your screen by option-dragging it. You can also option-drag the Control Strip clear across the screen, anchoring it to the right instead of the left. You can even drag the Control

continues

Teach Your Control Strip New Tricks

SYSTEM 7.5.5 COMES WITH A HALF-DOZEN STANDARD CONTROL STRIP MODULES TO HANDLE TASKS such as toggling File Sharing and adjusting your Mac's sound volume. But Apple designed the Control Strip to be easily expandable: you can add new functions simply by dropping new module files into the Control Strip Modules folder. There are dozens of such modules available via the Internet and through online services such as America Online (go to keyword *QuickFinder* and search for *Control Strip*). Here's a sampling of tools to manage your Control Strip, all available from Macworld Online (*http://www.macworld.com*) or America Online, keyword *Macworld*.

1

1 Calendar CSM (freeware, Young-Jin Kim) adds a pop-up monthly calendar to the Control Strip, with the current date displayed in bold. You may want to use ResEdit to change the holidays, which are set for South Korea—the settings are in STR# resource 257. (For more on using ResEdit, see *Quick Tips*, January 1997.)

2

2 BunchOApps (freeware, Patrick McClaughry) lists recently used applications for quick launching. The module also lets you list selected applications permanently, so you can create a Control Strip–based launching menu.

3

3 Control PPP (freeware, Richard Buckle) lets you connect or disconnect MacPPP and open the TCP/IP and ConfigPPP control panels. The icon on the Control Strip indicates whether your PPP connection is open or not. The module can also be set to display a timer showing how long you've been online.

Strip onto another monitor, if you have more than one monitor connected to your Macintosh.

And, of course, you can resize the Control Strip so that not all the modules are exposed at the same time. Drag the sizing tab at the end to reveal as much or as little of the Control Strip as you want. Clicking on the tab, on the other hand, collapses the whole thing, hiding all the modules and all that Control Strip clutter.

Best of all, you can change the order of the Control Strip components by option-dragging them into a new sequence. Combine this technique with careful resizing, and you can customize the Control Strip to show just those components you use, in exactly the order you want. If you want to use the Control Strip only to change your monitor's bit depth and to turn AppleTalk on and off, you can create a compact Control Strip that provides access to those two controls only (see "Trimming Control Strip Fat"). Say goodbye to resizing, scrolling, or searching for the right module in a long, cluttered strip of tools.

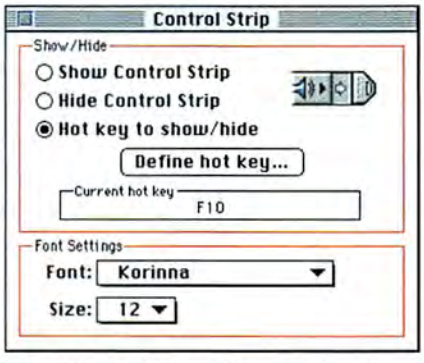
Trimming Control Strip Fat The Control Strip becomes more useful if you install only the components you really use and resize it accordingly. For instance, take the Control Strip as it installs from System 7.5.3 (top) and remove the modules you don't use to get a compact Control Strip—like this two-module strip from which you can toggle AppleTalk on or off and change the bit depth of your monitor (bottom).

Hiding the Control Strip

If all this seems like too much trouble, or if you don't want the collapsed Control Strip tab peeking out from the side of your screen, you can set up a keyboard shortcut that allows you to make the Control Strip appear and disappear. This is particularly handy if you find yourself constantly having to collapse the Control Strip or drag it around because it is obstructing an icon or scroll bar (see "In Control").

To hook up a keyboard shortcut, open the Control Strip control panel, click on the Hot Key To Show/Hide radio button, then click on the Define Hot Key button and choose a key combination, which must include either the ⌘ key or a function key. Notice too that the Control Strip control panel lets you change the font used in control-panel menus, and gives you the option of *permanently* hiding the Control Strip. If you choose to permanently hide the Control Strip, you are better off removing it completely—or turning it off with Extensions Manager—reclaiming more RAM in the process.

After you've set up a hot key and closed the control panel, configure the Control Strip with all the modules you want showing and drag the whole thing into a convenient location on screen. Then use your shortcut to hide it. From now on, to access any of those modules, press the keyboard shortcut you've defined, and the Control Strip will appear, uncollapsed and ready to use. After you've fiddled with the module you want, you can zap the strip back into oblivion, leaving you a clear, unobstructed screen once more. **m**



In Control Use the Control Strip control panel to set up a show/hide hot key that completely removes the Control Strip from the screen.

Contributing editor JOSEPH SCHORR is coauthor of *Macworld Mac Secrets*, fourth edition (IDG Books Worldwide, 1997).

Quick Tips

Tips, Tricks, and Shortcuts

by Lon Poole

What's your favorite way to put a PowerBook into sleep mode? Shane Rooks of Seattle once favored using the power key's Restart/Sleep/Shut Down alert box on his PowerBook 520 (if you're not familiar with this technique, see "Power-Key Turnoff"). He never took to pulling down the Finder's Special menu, and he finds the Control Strip just plain inconvenient. But he discovered yet another means of achieving the same end. Control-clicking the menu-bar battery icon also puts the PowerBook to sleep. Of course, option-clicking the menu-bar clock toggles between date and time, and clicking the same area without pressing any keys alternately shows and hides the clock as well as the battery icon. Control-clicking puts the PowerBook in sleep mode only when the battery icon is visible.

If you're more of a keyboard person, you might prefer the method that Lloyd Kim of Westminster, South Carolina, discovered: press ⌘-shift-0 (zero). On a desktop Mac that's capable of sleep, Ken Pence of Nashville found you can press ⌘-option-power to make it sleep.

Desktop Picture

Q I want to import a funky picture into the Desktop Patterns control panel and have it displayed in its entirety, instead of in miniature 20 times. How can I do this?

JOHN VELLA
Boston, Massachusetts

A Instead of a desktop pattern, you can display a desktop picture (see "Desktop Unbound") with Peirce Software's DeskPicture (shareware, $19.95; *http://www.peircesw.com*), or Décor by M. François Pottier (shareware, $10). All products can completely replace the desktop pattern with a picture. DeskPicture and Décor also let you scale and crop a picture to fit the screen, and they can change the picture periodically. Only DeskPicture lets you adjust picture size and placement to create a montage of up to 16 pictures on one or more monitors. Décor requires a 68020 or better processor, whereas DeskPicture also works on 68000 systems.

Why stop with a still picture? Sundial from John Neil & Associates (415/905-3000, *http://www.jna.com*) replaces your desktop pattern with a 24-hour time-lapse QuickTime movie of a scenic viewpoint, synchronized to the actual sunrise and sunset at your location (see *Macworld*'s "Holiday Gift Guide" in the January 1997 issue for a mini-review of the four-star Sundial). The product comes with ten California scenes, and the company plans to publish a way to make your own, although the photography required is not trivial.

Computer Speed

Q My wife and I are totally confused regarding the speed of various Macs. Apparently the processor doesn't give a total picture of the computer's ultimate speed. The review of the PowerBase series in the January 1997 issue states that the fastest PowerBase, the 240MHz model, is roughly equivalent in speed to a Power Mac 8500 with a 150MHz processor. What do these numbers relating to the speed of the chip really mean? We need a consistent measure of the computer performance that users will experience. For example, when Cray released its supercomputer, it measured speed in terms of floating-point operations per second to give a fair measure of its real speed.

KEN RYAN
La Mirada, California

A Processor speed measures how quickly the processor executes its instructions, but some processors can simultaneously execute more instructions than others. A PowerPC 604 processor, which the Power Mac 8500/150 uses, can simultaneously execute more instructions than a PowerPC 603e processor, which the PowerBase series uses. Furthermore, many other factors heavily affect overall system performance, including the amount of regular RAM and Level 2 cache RAM; hard drive performance; the Memory control panel's disk cache and virtual memory settings; the System version; and the particular system extensions and applications you use. Benchmark tests that measure floating-point operations

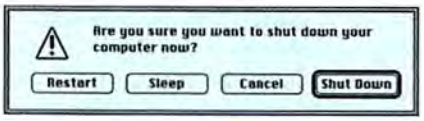
continues

JEFFREY PELO

per second or other raw performance don't always correlate to real-world experience using applications. That's why Macworld Lab measures performance with a consistent set of real application tasks. To compare the performance of various Mac OS computers, use the Core Mac Performance number in the *Mac Superguide* now in every issue of *Macworld*. You can also compare those numbers with the overall scores in individual product reviews and feature articles.

Efficient Browser Cache

TIP Several individuals have written to Mac magazines describing a method of storing a Web browser's cache files on a type of RAM disk—actually a disk image file—created by the program ShrinkWrap, which was formerly freeware and is due by now to be a commercial product from Aladdin Systems (408/761-6200, *http://www.aladdinsys.com*). Everyone always says to put the disk image file into the Startup Items folder so that ShrinkWrap will mount the disk image as a RAM disk at start-up, making the cache files available then. This is all well and good if you go online directly after start-up, but is a terrible waste of memory if you do not. You can avoid the memory waste by using the Script Editor program included with System 7.5 to record an AppleScript program that mounts the disk image file and then opens Navigator. Save the AppleScript program as an application with a name like Navigator With RDC (*RDC* meaning RAM Disk Cache), selecting the Never Show Startup Screen option in the Save dialog box. In the Finder, copy and paste the Web browser's icon into the Get Info window of the script application.



Power-Key Turnoff You can turn off a computer that's using System 7.5.1 or later by pressing the power key on the keyboard, notes Jay Grant of Santa Barbara, California. Even a PowerBook whose keyboard lacks a power key (for example, one of the PowerBook 100 series) responds to the power key of an attached external keyboard. Pressing the keyboard power key brings up an alert that lets you choose to make the computer shut down, restart, or sleep (if it's capable of sleep).

Before creating the script application, you must open ShrinkWrap and create the Internet Cache disk image file, or you won't be able to save the script application successfully. Before running the script application for the first time, you must mount the disk image, open your Web browser, and change the location of its cache to the mounted disk image. Note that if you subsequently open the Web browser directly, without first mounting the disk image, the browser resets the cache to its default location and you have to set it back to the mounted disk image again.

ROLF BRAKVATNE
Fargo, North Dakota

For best results, the AppleScript program should set the ShrinkWrap preference for mounting disk image files as RAM disks. Instead of recording an AppleScript program, use Script Editor to enter and save the following as a script application.—L.P.

```
tell application "ShrinkWrap™"
    activate
    set RAM Disk of preferences to true
    mount alias "Macintosh HD:Internet
Cache" with unlocked
    quit
end tell
activate application "Netscape Navigator™
3.0"
```

Start-up Messages

TIP Do you like to have reminders at start-up, but don't want to use Stickies? Create a clipping file of your notes, and place an alias of it in the Start-up Items folder. Rename it to be alphabetically last, so it opens after other start-up items. At start-up the Finder does not have to launch an application to display the note, which you can easily dismiss with ⌘-W. If you keep the clipping on your desktop, you will be able to view it anytime you want within seconds. You can use a start-up clipping in a lab setting, for example, where many people use a single Mac, to display general notes, updates, disclaimers, warnings, and so on.

To edit a clipping file directly (without dragging it to the Note Pad or some other application), get the shareware application and extension Finder Note.

STEVE DEMOTT
Darien, Connecticut

Desktop Unbound Replace your desktop pattern with a picture by installing DeskPicture or Décor.

Quick Bits

• If you felt the "Mac and Windows Networking" item was incomplete in January's *Quick Tips*, you weren't alone. We inadvertently omitted the following information from the end of the answer: You can directly connect two computers equipped with 10BaseT Ethernet ports by using a crossover cable; Global Computer Supplies (310/635-8144) carries them in 3-foot, 12-foot, and custom lengths for less than $10. You can accommodate more computers and Ethernet-capable printers by plugging them into the port of an Ethernet hub. Prices start at around $80 for a generic five-port hub and go up for more ports and a name brand. Another option: you can connect up to eight 10BaseT devices without a hub by using Farallon's EtherWave family of transceivers and adapter cards; prices range from $90 to $250 (510/814-5100, *http://www.farallon.com*).

• If you changed Netscape Navigator's six directory buttons as described in "Custom Netscape Buttons" (*Quick Tips*, January 1997), then you may be in for a little surprise. David Boike of Dike, Iowa, reports that in Navigator 2.02 the Directory menu no longer works correctly. Four items in Navigator 2.02's Directory menu take you to the new URLs you specified for Directory buttons. You can use ResEdit to fix the item names in the Directory menu and optionally change the other four menu items into special bookmarks. This problem doesn't affect Navigator 3.0X, since its Directory menu URLs are completely independent of its Directory buttons, but you can use ResEdit to repurpose all eight items in the Directory menu as special bookmarks. Alternatively, you can remove the Directory menu altogether from either version of Navigator. This is especially helpful

with old computers like Boike's Classic II, where the many Navigator menus crowd out the System menus at the right end of the menu bar.

To change Navigator 2.02's Directory menu, edit MENU resource 135. Rename menu items 2, 3, 6, and 7 to correspond to directory buttons 1, 2, 5, and 4, respectively. You can turn the rest of the Directory menu items to your use by renaming them, then making changes to the URLs in STR# resource 4000. Strings 1, 2, 3, 5, 6, 7, 8, and 9 correspond to the menu items (not including the separator line, which would be 4; you can't turn the separator line into a working menu item).

To repurpose Navigator 3.0X's Directory menu, edit the menu item names in MENU resource 135 and the URLs in STR# resource 4000, items 1, 2, 3, 5, 6, 7, 8, and 9.

To get rid of the Directory menu entirely, open MBAR resource 128, click the label 8) ***** to select it (a box appears around it), and then press delete. Save the changes, and that menu will never appear again.

• You don't have to use ResEdit to customize the directory buttons in Netscape Navigator. Mike Davis of Greenwood, Indiana, found two utilities that do the job with less fuss. Netscape Buttons by Scott Barnham (freeware) works with Navigator 3.0X and includes a patch that lets you open JPEG and GIF images by dragging them to the Navigator icon or window. Navigator Button Editor by Skylar Stein (shareware, $5) doesn't have the drag-and-drop patch, but it works with Navigator 1.1N, 2.02, and 3.0X (although it doesn't fix the pesky Directory menu problems in Navigator 2.02 described above). **m**

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld System 7.5 Bible*, third edition (IDG Books Worldwide, 1994).

Shareware mentioned in *Quick Tips* is available from Macworld Online (*http://www.macworld.com*) or America Online (keyword *Macworld*).

We pay from $25 to $100 for tips on how to use Macs, peripherals, or software. Send questions or tips to *quicktips@macworld.com* or Macworld Quick Tips, 501 Second St., San Francisco, CA 94107. All published submissions become the sole property of *Macworld*. Due to the high volume of mail received, we can't provide personal responses.

Windows and DOS Extensions

Puzzled by Windows and DOS file extensions (you know, the three characters after the period at the end of a file name)? Every day at work, people ask John Impallomeni of Albuquerque, New Mexico, to decode extensions, so he put together this list of the most popular types of files.

.bmp	Windows or OS/2 bitmap graphic
.cdr	CorelDraw document
.com	application program
.dbf	database file (various spreadsheet and database applications)
.doc	Microsoft Word document
.dot	Microsoft Word template (beware, this could be infected with a macro virus)
.eps	Encapsulated PostScript file
.exe	self-extracting Zip file or application
.gif	GIF graphic
.htm or .html	Web page
.il5	Adobe Illustrator document (the number is the application version)
.jpg	JPEG compressed graphic
.pct	PICT graphic
.pcx	PC Paintbrush graphic
.pdf	Adobe Acrobat document
.pm6	Adobe PageMaker 6 (the number is the application version)
.ppt	Microsoft PowerPoint document
.prn or .ps	PostScript files
.psd	Adobe Photoshop document
.pt6	Adobe PageMaker 6 template file (the number is the application version)
.pub	Microsoft Publisher document
.qxp	QuarkXPress document
.rtf	Rich Text Format word processing document (open in a word processor or place file in PageMaker)
.sam	AmiPro document
.tbl	Adobe table editor
.tif	TIFF graphic
.txt	plain text
.wk1	Lotus 1-2-3 spreadsheet (the number is the application version)
.wks	Microsoft Works document
.wmf	Windows Metafile graphic
.wpd	Corel WordPerfect document (version 6.1 and higher)
.wpg	Corel WordPerfect graphic
.wq1	Quattro Pro spreadsheet (the number is the application version)
.wri	Microsoft Write document
.ws2	WordStar document (the number is the application version)
.xls	Microsoft Excel spreadsheet
.zip	compressed file (PKZip format)

While you're sitting there, something is happening in the world. It's called "the news." With PointCast, the Internet news network, you can get it broadcast straight to your desktop; weather updates, world news, sports, stocks, industry news and more. And suddenly your computer screen is transformed into a dynamic, multi-colored newswire complete with flying headlines, vibrant graphics and scrolling stock ticker. The PointCast Network is completely customizable so you can get exactly the news you want. CNET awarded it the "Best Internet Application of 1996" and *The Wall Street Journal* gives PointCast "'must-have' status for in-the-know computer owners." Download the Macintosh version free at www.pointcast.com.

Your live [news] feed from the world

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PointCast Your desktop newscast.

Of Death and Taxes, the Lesser Evil

by Charles Seiter

Some two centuries after Benjamin Franklin uttered his famous observation about death and taxes, the gloomy truth of it prevails. On the Web, a search on the index site infoseek (*http://www.infoseek.com*) pops up nearly half a million references to each, although death appropriately holds a slight edge. If both are inevitable, you may as well prepare yourself. Setting death aside for the moment, let us bravely face taxes.

All the tax information you could possibly want is available on the Net (including the standard admonishment that you should have looked it all up and started your tax planning back in January of *last* year). From e-mail addresses of individual CPA tax specialists in Ketchum, Idaho, to all the Internal Revenue Service tax forms—it's out there on the Web.

The Feds

One good place to gather your tax info carries the ominously Orwellian name of FedWorld. This site, at *http://www.fedworld.gov*, branches to all linked government activities. Scroll down the page to FedWorld-Hosted Web Sites and pick Internal Revenue Service (*http://www.irs.ustreas.gov*), which includes links to both the IRS advice site and tax FAQs. This is also the source for downloadable tax forms coded in Adobe Acrobat Reader PDF or PostScript format (*http://www.irs.ustreas.gov/plain/forms_pubs/forms.html*). Please note: use a laser printer if you plan to mail in these downloaded forms.

Now, here's a pleasant surprise: the IRS site is easy to use, friendly, and shockingly hip, and has an excellent scrolling index. And though you might be skeptical of tax tips from the Internal Revenue Service, thinking they're unlikely to favor you, the advice is in fact quite neutral. The same recommendations appear on other sites that bill themselves as taking the taxpayer's side aggressively.

The IRS site has separate areas of forms and advice for businesses and individual tax filers. Even if you don't file electronically (businesses typically don't), it's useful to take a look at the forms so you understand your deductions and expenses.

The Easy Way In: AOL

If you don't feel like surfing around to collect your own tax database, America Online's Tax Planning forum in the Personal Finance area has already done a good basic job for you. It has all the IRS forms along with the appropriate reader software. For tips and advice, AOL offers Ernst & Young's best-selling Tax Guide online, plus a help service called TaxLogic with exceptionally clear explanations of the tax laws. A support area for Kiplinger's TaxCut and an information stand staffed by the National Association of Enrolled Agents (accountants and others specially credentialed for IRS work) round out the AOL package.

Commercial Tax Software

The Mac now has only two full-scale personal income tax packages: Intuit's MacInTax and Kiplinger's TaxCut. You can order these products directly from the companies' Web sites—*http://www.intuit.com* and *http://www.conductor.com*—with next-day Fed Ex delivery if you've been dawdling. Even if you're not using their products but just scribbling your numbers into forms you found at the post office, you can take advantage of the nicely organized piles of good advice Kiplinger and Intuit have thoughtfully posted free for all takers. You have to look around a bit to find MacInTax—the Intuit site billboards its Windows product, TurboTax. Go to the Quicken Store page option for information on MacInTax. That's also where you order state tax forms.

Filing Your Forms

Electronic filing is not as straightforward as you might hope. You can't simply download forms, fill them in, and e-mail them back to the IRS site—not this year, anyway. This is mainly because the IRS has to take certain pre-

continues

JOHN HERSEY

Expert Advisers

Tax services, columnists, law firms, and others have posted tax advice and explanations of IRS rulings. In general, these postings offer more useful information, in a more concentrated form, than the two Usenet newsgroups *misc.taxes* and *misc.taxes (moderated)*, which sometimes feature long threads about arcane issues. The tax CPAs I recruited to review help found the following sites particularly impressive.

- *http://www.scubed.com/tax/tax.html* offers the helpful and amusing journal (well, amusing for a tax journal) Taxing Times 1997, as well as easy-to-understand answers to common questions.
- *http://www.handrblock.com* is the advice site for tax giant H&R Block. One of the consequences of the company's investment in CompuServe was this first-rate Web site.
- *http://www.dowjones.com/smart* gives the contents of the *Wall Street Journal's* monthly magazine *Smart Money*. At the end of the year, and of course in the glorious springtime, this publication features excellent tax tips.
- *http://www.amgnet.com/taxtips1.htm* is a page of to-the-point tips from the Chicago law firm Altschuler, Melvoin and Glasser.
- *http://www.ey.com/us/tax/* is the home of the tax section of the giant international accounting firm Ernst & Young. A standout resource is the "25 Most Common Tax Preparation Errors" list; send me an e-mail if you've never made one of these mistakes!
- *http://www.taxprophet.com* catalogs the Tax Prophet, a *San Francisco Examiner* column. For your further edification, the Prophet has links to the Web's other tax resources, at *http://www.taxprophet.com/surfing/surfing.html*.

Shareware PICKS

THERE REALLY IS NO SHAREWARE equivalent of MacinTax or TaxCut (I guess few people write tax programs for sheer amusement), but there are plenty of programs to help you with one of the more onerous tax-related tasks, documenting deductions. The more proof you have of your expenses, the better your prospects of getting along comfortably with the IRS. It won't help your 1996 return much to download these tax forms today, but you may as well start looking ahead. You can get them from the Info-Mac archives or from *http://www.shareware.com*.

When you're considering deductible business expenses, don't overlook your Mac. You can deduct the cost associated with the use of your Mac for your own (not your employer's) business, but you need records to prove what you're using your Mac for. So get a copy of **Logger 1.0.1**. This $20 shareware program by Eric Preston keeps track of how much time you spend at your Mac and for what purpose, in a way that follows IRS accounting guidelines.

Another worthwhile shareware program is **home-office-invoice** (Chris Moody; $2). In addition to giving you a variety of forms for billing for services you provide from your home office, it has forms for logging auto-related deductions (notably mileage at 30 cents a mile, for this year) and for keeping track of home-office expenses in formats the IRS accepts.

Finally, if you're serious about running a home-based business and doing the tax part right, look into **NetBooks 2.6.2**, a complete shareware ($49) accounting package from Symmetry Software that includes links to tax tables. This program will tell you whether you're running a real business or just a hobby that's meant to justify buying a new printer every two years.

cautions to make sure the data coming down the wire is actually coming from you.

MacInTax and TaxCut both come with an automatic dial-up routine to an IRS-certified filing site. You can also file through America Online's filing service if you've downloaded your forms directly from the IRS. All of these services provide you with a password or registration number that gives the IRS the guarantee it needs.

It's not yet clear whether the IRS will have implemented electronic filing for the rest of us by April 15, 1997. Last year's procedure was to mail your disk-based return—that's right, via snail mail—to an approved electronic filing center, which then transmitted it to the IRS. The Feds fully realize there has to be a better way, but you'll have to check *http://www.irs.ustreas.gov* to see what they finally decide to do.

Bottom Lines

It's great to have access to all this tax information, but remember, if you're called in for an IRS audit, the Web—friendly and helpful as it is—won't hold your hand, or stand up for you in court. If your taxes are at all complicated, a live human tax professional is well worth considering. After all, just think how good you would be if, heaven forbid, it were your job to prepare a few thousand returns for other people.

On the other hand, if your taxes are simple and straightforward—the W2 standard-deduction type—the IRS site offers TeleFile, an extremely simple system that lets you file using a touch-tone phone.

One last point: if you think the lines at the post office on April 15 are bad, think what the electronic queues at these Web sites will be like. Start early on filing your taxes electronically. **m**

CHARLES SEITER has written a number of books for IDG on Web matters, and consults for Bay Area companies on Web searching.

REACHING MACWORLD ONLINE

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Media

When CD-ROMs Meet the Web

OPTIONS FOR COMBINING THE BEST OF BOTH WORLDS

by Jim Heid

Although the World Wide Web gets most of the ink these days, the lowly CD-ROM is far from dead. In fact, the Web has injected new life into the silver platter—which, unlike the Web, has been getting steadily faster over the past few years. CD-ROMs and Web sites can work together, and it's becoming common to find them doing just that. Each medium has unique strengths that help compensate for the weaknesses of its partner. A CD puts nearly 700MB of data in a relatively fast storage medium, but that data is frozen and can't be updated. A Web site offers up-to-the-moment timeliness but can't deliver huge amounts of data quickly. This month, I spotlight the ways CD-ROMs and Web sites can work together. For more information, visit *http://www.heidsite.com*.

CD-ROMs Accessing Web Sites

The most popular method of CD-ROM and Web integration involves creating a companion Web site for a CD-ROM title, a place where the CD's users can download updates, read current information, and interact on discussion boards. There are several ways to unite the CD and the site.

Downloadable Updates The easiest method involves putting information that changes often—say, the latest additions to a stamp collector's catalog—on a Web site where people can download it.

Design your CD project so that it sets up a folder on the user's local hard drive and works with data stored in that folder. (This approach also boosts a project's performance.) Then instruct users to download the latest data from your Web site and store it in that folder—better yet, if you are familiar with the black art of writing software-installation routines, create an installer that retrieves and stores the updates. They're automatically available the next time the CD launches.

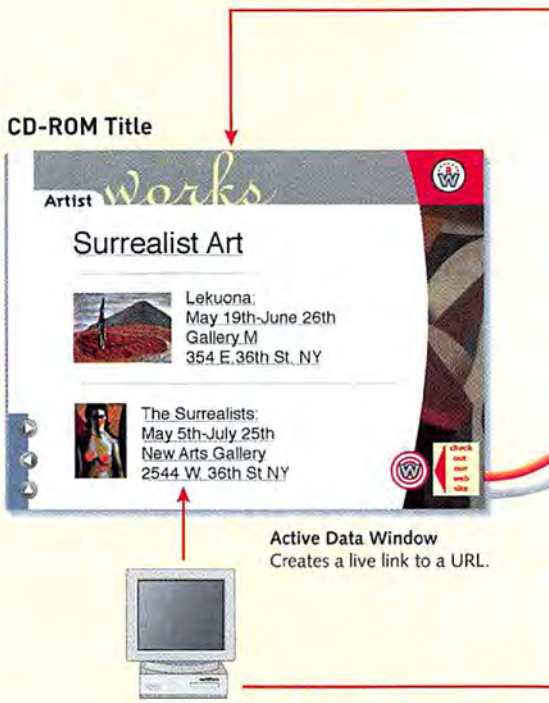
Active Data Windows A more advanced approach is to integrate Web-site data directly into a CD title: to include a current weather-satellite image in a meteorology CD, to put current standings and player statistics into a sports title, or to have a current-events calendar within a travel title.

These kinds of applications require an Internet-savvy authoring program. Now, don't confuse *Internet-savvy* apps with plug-ins such as Macromedia's

continues

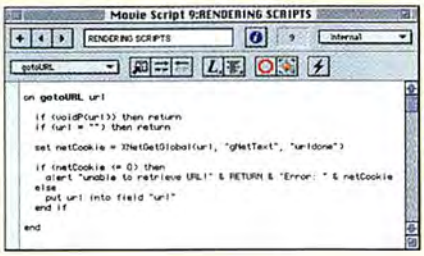
CD-ROM, Meet the Web . . . Web, Meet the CD-ROM

THE MOST SOPHISTICATED way to marry CD-ROMs and the Internet is to integrate elements from a Web or FTP site directly into a CD-ROM title. But a CD can also be a vehicle for delivering high-bandwidth data—high-res graphics, sound, movies—and your Web site can tap this material to avoid download delays. In the hypothetical union shown here, the CD title joins current exhibit dates, downloaded from the Web, with images of paintings, located on the CD. The same CD-ROM–based photos dress up an art museum's Web site for visitors who also own the CD.



ACTIVE DATA WINDOW

The XtraNet add-on for Macromedia Director provides a full complement of connectivity options. The script segment at right is part of a Lingo script that retrieves a URL. XtraNet's power goes well beyond this simple example; you can also use it to create multiuser games, client-server applications, and custom Web browsers. But only experienced Lingo programmers need apply.



DOWNLOADABLE UPDATE

The WebLink plug-in included with Pitango's ClickWorks makes simple Web integration a cinch. Here, WebLink is being configured to retrieve and display the contents of a text file automatically each time this screen opens.

Shockwave, which lets you compress Macromedia Director projects and run them within a browser. By itself, Shockwave has nothing to do with CD-and-Web integration (at least not yet). In this context, Internet-savvy means that the authoring program can make its own connections using common Internet protocols, such as File Transfer Protocol (FTP) and HyperText Transfer Protocol (HTTP). By taking advantage of this ability to connect, you build communications features directly into your project, enabling it to communicate with a server, or in the case of Internet-based multiuser games, with other copies of your project running throughout the world.

Several authoring programs are now Internet-savvy, thanks in part to third-party developers. If you use Director, you can add connectivity to your projects using Human Code's $399 XtraNet (published by g/matter, 415/243-0394, *http://www.gmatter.com*), a Director Xtra (plug-in) that adds more than 20 commands to Director's Lingo language.

XtraNet teaches Director about the Net by extending the Lingo language. Using XtraNet's high-level support for HTTP and FTP, you can perform relatively simple Web-integration tasks—such as downloading and displaying an image or text file from a Web or FTP site—with just a few Lingo commands.

XtraNet also provides low-level TCP/IP support, enabling you to develop custom protocols for *peer-to-peer* projects. A peer-to-peer project doesn't access a server to download files. Instead, it lets multiple copies of a project interact across the Internet or an intranet. Examples include multiuser network games, on-screen whiteboards, and workgroup-collaboration applications.

You say you don't use Director? Alle-

Web Sites Living on CD-ROMs

CD-ROMS ARE AN ideal medium for distributing Web sites to people who don't have an Internet connection. Put your company's Web site on a CD and distribute it at a trade show. Or if you've spent time converting company manuals to HTML for an intranet site, zap them onto a CD and send it to your field offices.

Recipients can use their own Web browsers, to explore your content, or you can license a browser and include it on the CD. Microsoft offers a terrific free licensing program for Internet Explorer; see *http://www.microsoft.com/ie/ieak/*.

Creating a Web site that runs entirely from a CD-ROM isn't too different from creating an ordinary site. But you need to follow a few rules. Here are some tips for creating a Web site that can run from a local CD or from a Web server.

- Use relative rather than absolute URLs. Don't include a fully qualified domain name in links and file references; use relative references. For example, to refer to a graphic stored in a folder named Images, use **<img src="images/dog.jpeg">, not <img src="http://www.mysite.com/images/dog.jpeg">**.
- Use client-side image maps. Server-side image maps don't work when there isn't any server, so be sure all your image maps have client-side support. For details on client-side image maps, see *Media*, August 1996.
- Omit pages that rely on Common Gateway Interfaces. If parts of the site rely on CGIs for processing—for example, a search page, a guest book, a shopping cart—omit those portions from the CD-ROM, where CGIs don't work.

LOCAL CD-ROM CONTENT

In a multiplatform world, calling up content from a CD-ROM is tricky because of differences in how you refer to CD-ROM drives. The HTML excerpt shown here relies on JavaScript to determine whether the user is running the Windows 95 or Mac version of Netscape Navigator, and then to execute the appropriate movie-embedding command.

```
<SCRIPT language="JavaScript">
A.  <!--Navigator for Windows code -->
    if (navigator.appVersion.indexOf("Win95") !=-1) {
      document.write('<embed src="file:///D:/movies/ocean
.mov" height=264 width=320 autoplay=true>')}
B.  <!-- Navigator for Mac OS code -->
    else {if (navigator.appVersion.indexOf("Macintosh") !=-1) {
      document.write('<embed src="file:///My%20Hot%20Title /
movies/ocean.mov" height=264 width=320 autoplay=true>')}
    <!-- This is some other version; display an error message -->
    else {document.write("Sorry, this feature works only on the
Mac OS and Windows 95 platforms.")}
    }
</SCRIPT>
```

A.
This Windows 95 code assumes that a user's CD-ROM drive is mapped to drive d:, which may not be the case. It takes more advanced programming to determine which drive letter to use on a specific system.

B.
On the Mac OS, no clunky drive letter is necessary: you can simply refer to the CD-ROM by name. But if the CD's name contains spaces, you must indicate them using the %20 code as shown here.

giant Technologies' (619/587-0500, *http://www.allegiant.com*) SuperCard 3.0 ($329 estimated street price) provides outstanding Web support through Allegiant's Roadster browser plug-in, which enables cross-platform playback of SuperCard projects. SuperCard's full support for user interface controls, its powerful SuperTalk scripting language, and its ability to play QuickTime movies and audio files make it a formidable development tool for the Web and for Web-CD hybrids. Allegiant also sells Marionet ($219 estimated street price), an external command (XCMD) that lets programs that support XCMDs (SuperCard, Apple's HyperCard, and Director) interact with the Internet. Marionet even lets you add Internet access to AppleScript-savvy productivity programs, such as Claris FileMaker Pro and Microsoft Excel.

The tools described so far require you to write small programs, or scripts, to add Internet access. If you're not the scripting type, consider using Pitango's (617/229-5809, *http://www.pitango.com*) $985 ClickWorks (see *Reviews*, *Macworld*, February 1997). This relative newcomer to the authoring scene provides a no-scripting interface for Web content. ClickWorks' WebLink feature can't handle advanced tasks such as multiuser games, but it's ideal for displaying Web-based images or text files.

Web Sites Accessing a CD-ROM

Turn the CD-Web picture around, and you have another way to combine the two: a Web site that accesses a CD-ROM containing movies, audio, high-resolution graphics—or even good old text.

With this scheme, the Web site provides the user interface and navigation elements, and the CD acts as fast, local storage for data that would otherwise download slowly. This scheme even provides a weird form of copy protection for a Web site: if you store key portions of the site, such as graphics for navigation buttons, on a local CD, only people who have the CD will be able to fully use the Web site.

HTML mavens know that you can refer to a local file by using a file URL, as in *file:///drivename/foldername/filename.html*. With some planning and a bit of effort, file URLs can refer to files stored on a CD-ROM.

But there's a catch: when a user clicks on a link for a CD-based item, the Web browser copies the item from the CD to the browser's cache, losing some of the performance advantage of local storage. The larger the file, the longer the delay. With QuickTime movies, you can minimize the delay by using the QuickTime plug-in's fast-start feature, which lets movies begin playing as they download. Movies created with QuickTime 2.5 are automatically fast-start encoded. You can use Apple's free Internet Movie Tool (available at *http://quicktime.apple.com/sw/sw.html*) to convert movies created in earlier versions.

The links between CD-ROMs and the Internet are still being forged. As authoring tools get smarter about the Internet and Web browsers get smarter about CDs, combining the best of both worlds will get easier. Now's the time to start experimenting. **m**

Next month: Adobe After Effects Secrets

JIM HEID's latest book is *HTML & Web Publishing Secrets* (IDG Books Worldwide, 1997), a collection of tips for Web developers.

INFOGRAPHIC BY BELINDA CHLOUBER; CD-ROM AND WEB SITE SCREENS BY ANDREW FAULKNER

Publishing Workshop

PageMaker Tips and Tricks

by Olav Martin Kvern

Upgrades. It seems to me that I receive an upgrade notice in the mail right around the time I've finished installing the current version of a program. As soon as you really know a particular feature or program, your knowledge becomes obsolete. Having written an entire book about Adobe PageMaker 6.0 that I couldn't get published before PageMaker 6.5 was to appear, I may feel the pain of this process more acutely than most.

The best antidote to the pain of upgrades is having a good supply of timesaving tricks—the more you know, the more likely it is that a large percentage of them will survive the upgrade process.

Here are several of the best tricks I know for PageMaker—most of them work in both PageMaker 6.0 and will work in 6.5 (when it's available). Think of this column as a free upgrade.

The Basics

Some PageMaker shortcuts seem so well known that tips sessions fail to cover them. Let's review the basics.

- To scroll without touching the scroll bars, hold down the option key as you drag any tool.
- Press ⌘-spacebar to change to the magnifying-glass tool, then click-drag the tool to select the area you want to zoom to.
- Hold down ⌘ and *tap* the spacebar to switch from any tool to the pointer. Hold down ⌘ and tap the spacebar again to switch back. Note that this shortcut also deselects any selected object.
- To cancel a Place operation, click the loaded Place icon on any of the tools in the Toolbox.
- To select one object from a set of grouped objects, ⌘-click on the object. You can move or format the object without removing it from the group. If you want to edit or format text, it's even easier—just click on the text with the text tool.

Now check out these more advanced shortcuts.

Closing Dialog Boxes Quickly

To close a series of nested dialog boxes, hold down the option key and click on the OK button (or press option-return). PageMaker closes all the dialog boxes and applies your changes. If you don't want to apply the changes, hold down the option key and click on the Cancel button (or press option-escape).

Rotating around an Object's Center

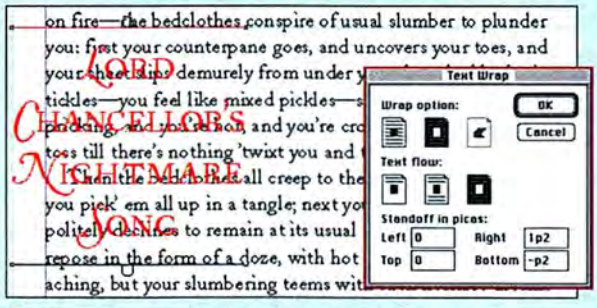
To rotate an object around its geometric center point, you simply hold down the ⌘ key as you drag the rotation tool. If you don't, rotation centers on the point at which you started dragging.

Selecting through Stacks of Objects

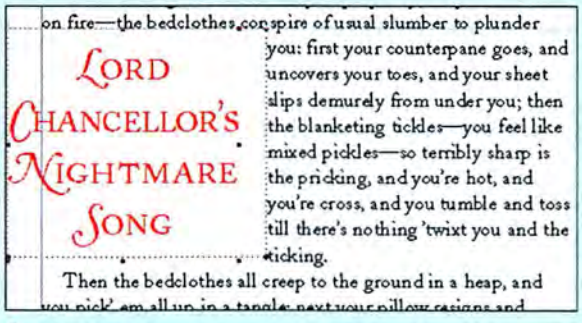
To select an object that's behind another object, hold down the ⌘ key and click on the stack of objects. The first click selects the top object; a second click selects the next object down. Keep on ⌘-clicking through the stack and you eventually cycle back to the topmost object.

Wrapping Text around Text Blocks

EVER WANT TO WRAP TEXT around a text block—say, to create pull quotes for a newsletter? In PageMaker 6.5, of course, you can put text inside a text frame, then apply a text wrap to the text frame—but there's an easier way that works in both versions.



1. Select the text block and press ⌘-G to group it (yes, you're grouping a single object). Choose Text Wrap from the Element menu. Set up the wrap.



2. The text now wraps around a rectangle containing the group, turning that text into a pull quote.

Extending Undo

If you've used PageMaker for long, you've probably noticed that its undo feature isn't particularly robust. In fact, some actions—applying a font change, for example—can't be undone *at all.* If you're tired of seeing Cannot Undo in the Edit menu, you can use PageMaker's minisave feature (which performs a quick save every time you turn a page or paste) to take quick snapshots of your work.

1. From the Windows menu, choose Scripts to display the Scripts palette.

2. Choose New Script from the pop-up menu.

3. Enter a name for your script and press return or click on OK. PageMaker displays the script-editor dialog box.

4. Enter **minisave.** In PageMaker 6.5 you can press the enter key to close the script-editor window. Don't do this in 6.0; pressing Enter places an invisible character in your script that may cause an error.

5. Create another new script and enter **revert minisaved.** Close the script editor.

The scripts now appear in the Scripts palette. Double-click on your first script to take a snapshot. Double-click on your second script to revert to the most recent snapshot of your publication.

But remember: if you change pages or paste an object into your publication, you are changing your snapshot, and the Revert to Snapshot command takes you back to that point. ■

Designer, illustrator, and software developer OLAV MARTIN KVERN is coauthor of *Real World PageMaker 6.5*, soon to be published by Peachpit Press.

Exporting Graphics

IT'S ALWAYS BEEN EASY to get graphics into a PageMaker publication. Getting them *out* again is another matter. Ever receive a PageMaker file containing images (TIFFs, mostly) to edit, only to find that you don't have the original image files? In PageMaker 6.5, you can export graphics in TIFF, JPEG, GIF, and DCS formats.

When might you use this feature? If you've received a catalog publication full of RGB TIFF images, for example, you can export the images as preseparated DCS files, using PageMaker's excellent color-management system to create the separations—and you can then specify that each DCS replace the original RGB TIFF. On the other hand, if someone has given you a publication full of images that have been cropped, you can reduce the file size by exporting only the visible area of the cropped images.

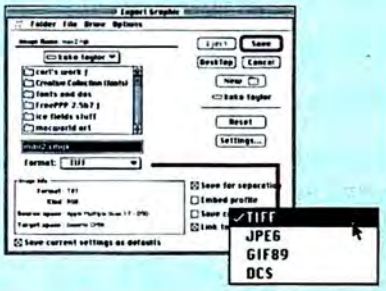
Select the graphic, then choose Graphic from the Export submenu of the File menu **(1).** PageMaker brings up the Export Graphic dialog box. Choose a format from the pop-up menu **(2).** To set export options for a graphic, click on the Settings button.

PageMaker displays a dialog box containing options relevant to the file type you selected.

Note that the DCS format is available only if you've specified a source profile for the image using PageMaker's color-management system.

1.

2.



FIXING KEYBOARD SHORTCUTS

WHICH KEYBOARD SHORTCUT do you use most often in PageMaker? For most of us, it's the one for Fit in Window, because we navigate by quickly zooming in and out. In the old days, PageMaker used ⌘-W, a shortcut that's easy to press with one hand. Unfortunately, ⌘-W became the Mac standard for Close Window. To "fix" this problem, Adobe chose ⌘-0 (zero) for Fit in Window—an awkward shortcut that can be a stretch for one hand. You can use ResEdit to make ⌘-W work the way you want it to (in both PageMaker 6.0 and 6.5).

1. Start ResEdit and open a copy of the resource file named PM6.5 RSRC (PM6.0 RSRC in version 6.0). You'll find these files in your PageMaker folder. (Working on a copy means you can always go back to the original if you make a mistake.)

2. Find and open the MENT resource class.

3. Delete the resources ID 2 and ID 9 (ID 63 in version 6.0).

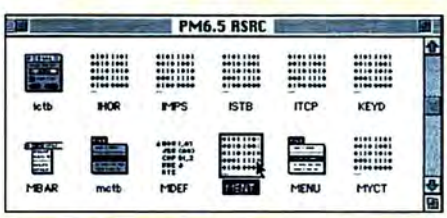
4. Open the MENU resource class. Double-click on the resource defining the File menu (ID number 2). Select the menu item named Close.

5. Enter a new keyboard shortcut for the Close command in the Cmd-Key field (or delete the existing shortcut). Close the resource.

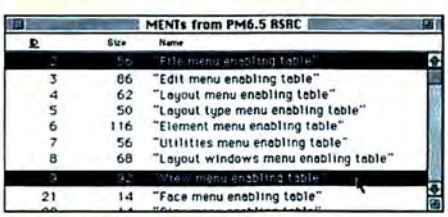
6. Open the MENU resource defining the View Menu ID (ID 9 in version 6.5, ID 63 in 6.0). Select the Fit in Window menu item. Enter **W** in the Cmd-Key field.

7. Save the resource file.

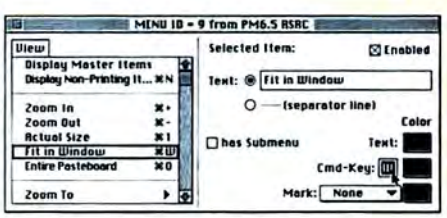
The next time you open PageMaker, pressing ⌘-W zooms you to the Fit in Window view—just like it used to. In addition, pressing ⌘-W in the Story Editor will close the Story Editor window (just like it used to).



To "fix" ⌘-W, open the MENT resources.



You must completely remove two MENT resources.



Finally, you reassign the Fit in Window command.

Graphics Workshop

Special Effects with Live Picture's Distort Brush

by Cathy Abes

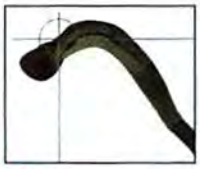
ARTIST San Francisco photographer John Lund's digitally manipulated photographs have appeared in such publications as *Professional Photographer*, *Computer Artist*, and *Design Graphics*. Examples of his work can be viewed on his Web site, *http://www.teamdigital.com*.

HOW IT WAS DONE Known for producing such fanciful imagery as flying pigs, Lund used Live Picture to fashion a photo-realistic dragon from photos of an iguana. Live Picture's Distort brush made it easy to accomplish what would otherwise have been a daunting task: to subtly alter the shape and perspective of various parts of the photo to produce an entirely different photographic image that doesn't look digitally manipulated. To transform the iguana into a dragon, he used the Distort brush to stretch and skew a copy of the iguana's tail, which then became the elongated neck and shoulders of the dragon. The spines on the iguana's back did double duty: Lund resized and reshaped them—first to add spines along the dragon's neck and then to make several rows of sharp teeth.

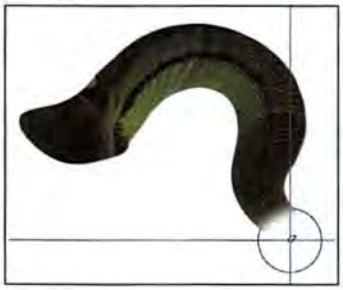
As he worked, Lund varied the size of the Distort brush, depending on the size of the area he was manipulating and the coarseness or fineness of the detail he was editing.

TOOLS **Hardware:** Grande Vitesse–configured DayStar Genesis MP with 200MB of RAM, two fast SCSI cards, and an internal 8GB array; Grande Vitesse docking bay with built-in 200MB SyQuest drive plus three removable hard drive ports; Magnavox 21BA 21-inch color monitor; ScanView Scan-Mate 5000 drum scanner. **Software:** Live Picture 2.5. **m**

1 To begin building the neck, Lund created an image-distortion layer into which he inserted a section of the iguana's tail.



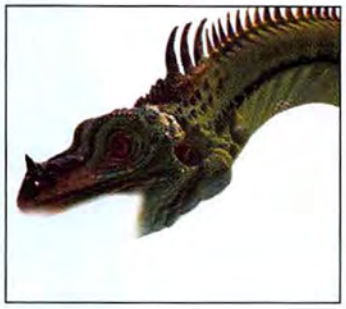
2 Using the Distort brush's freehand tool at a reduced sensitivity setting of 30 percent enabled him to subtly push the neck into the shape he wanted.



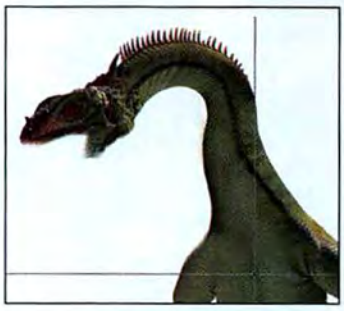
3 Being careful not to overuse the Distort brush, which could cause the image to break up and lose detail, Lund continued shaping the dragon's neck by erasing the extraneous portions of the distorted tail section.

4 To build the lower neck and upper shoulder, he inserted a copy of the original tail section and superimposed it over the already distorted tail at 80 percent opacity, so he could more easily align it with the tail section underneath.

8 Again with the Distort brush, he reshaped and flattened the top of the iguana's head to begin transforming it into a dragon's head.



7 Lund next inserted a photo of the iguana's head into another distort layer, resizing and positioning it to blend with the top of the neck.



5 Lund inserted a photo of the iguana's back and spines in another distort layer at 80 percent opacity, then resized and positioned it over the previously distorted neck.

6 After pushing the spines into position along the edge of the neck, he erased the entire back area, leaving only the spines.

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Monitors	◯	2	◯
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Storage Devices	◯	4	◯
Networking/Data Communications	◯	5	◯
Internet/Intranet products/services	◯	6	◯
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graphics/design	◯	8	◯
interactive publishing/ multimedia	◯	9	◯
entertainment	◯	10	◯
education	◯	11	◯
other software	◯	12	◯
Any other products	◯	13	◯

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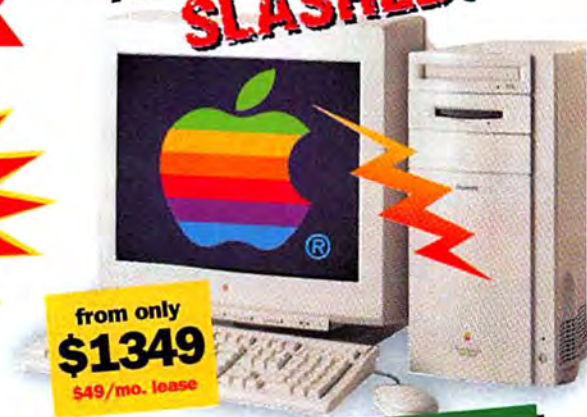

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4550MB	7.9ms	7200rpm	512K	MC4345W	5yr	$999	$1129
9091MB	8.5ms	7200rpm	512K	MC3391W	5yr	$1739	$1869
WIDE SCSI A/V							
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4550MB	7.9ms	7200rpm	512K	MC4345WAV	5yr	$1159	$1289
9091MB	8.5ms	7200rpm	512K	MC3391WAV	5yr	$1939	$2069

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2150MB	8ms	7200rpm	1024K	ST32171W	5yr	$779	$909
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4550MB	8ms	7200rpm	512K	XP34550S	5yr	$929	$999
9100MB	8ms	7200rpm	512K	XP39100S	5yr	$1539	$1609
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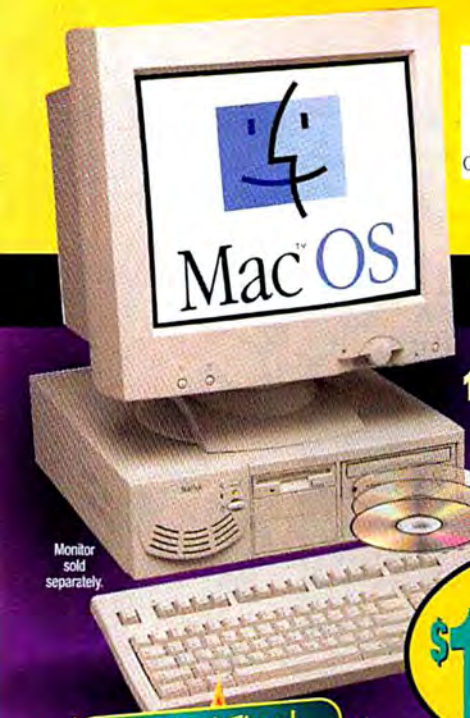

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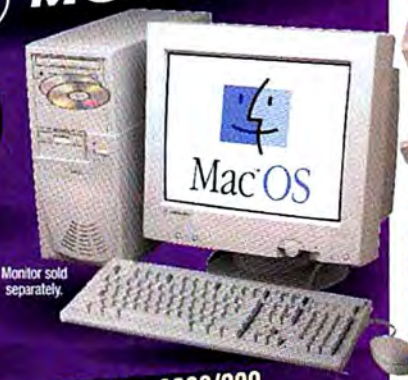

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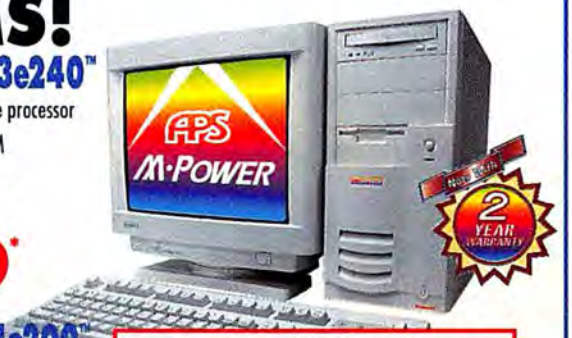

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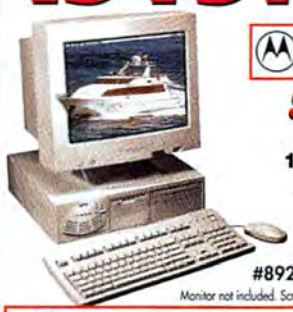

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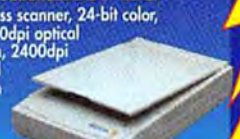

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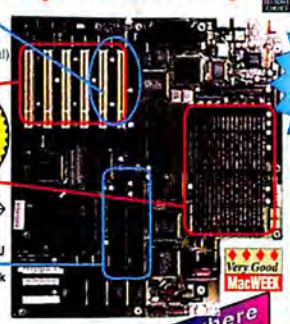

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7600/132	604	Desktop	16MB	1.0GB	2MB	8X	197

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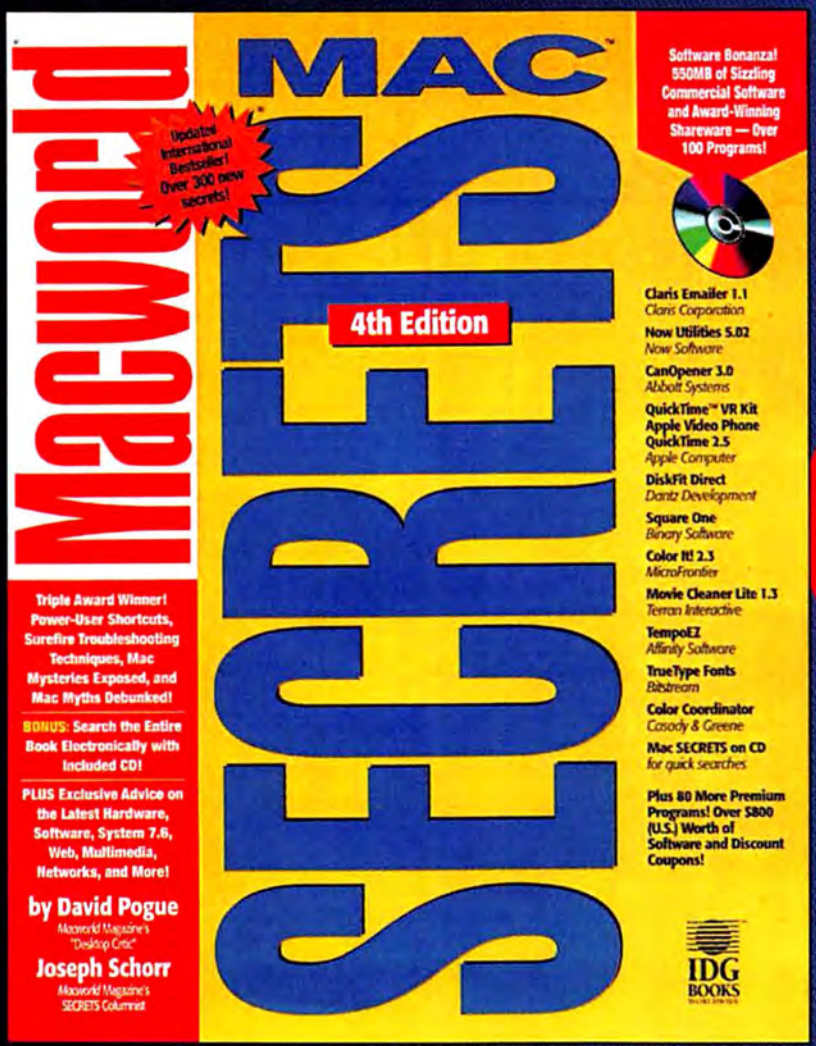

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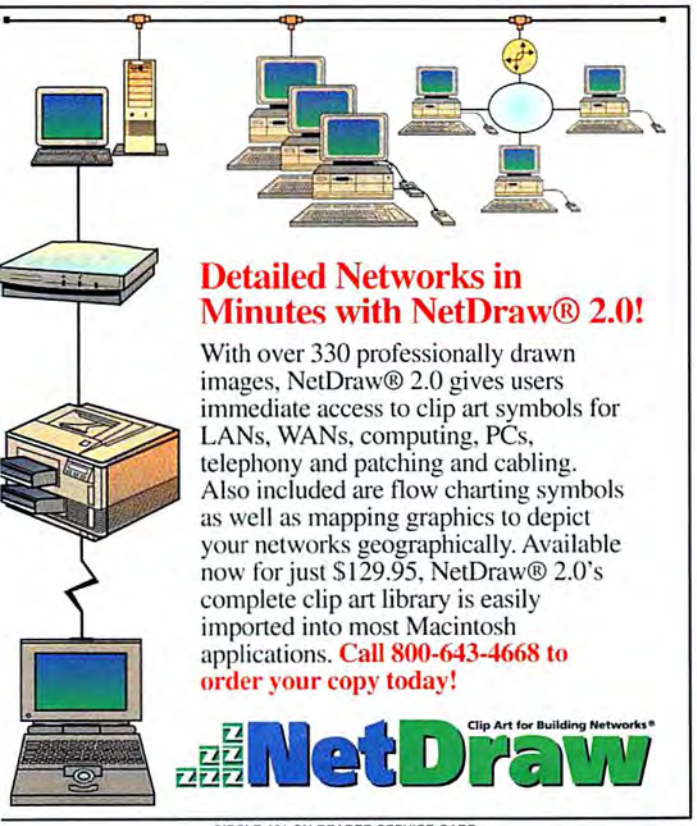

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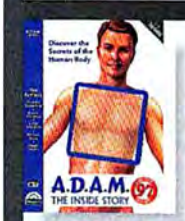

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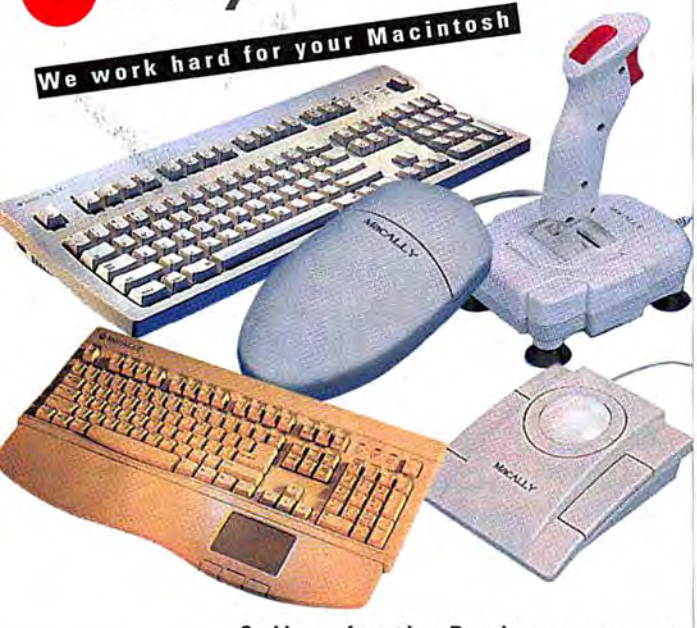

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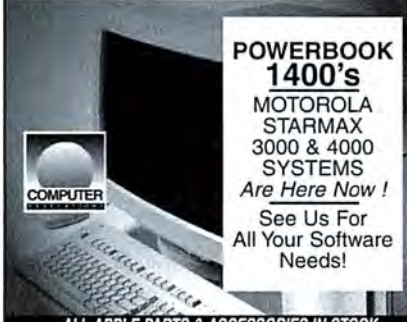

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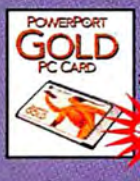

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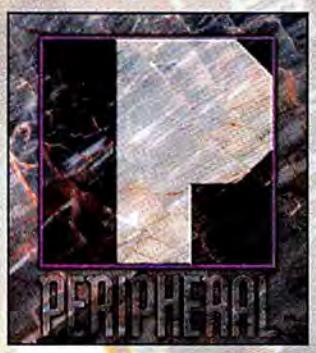

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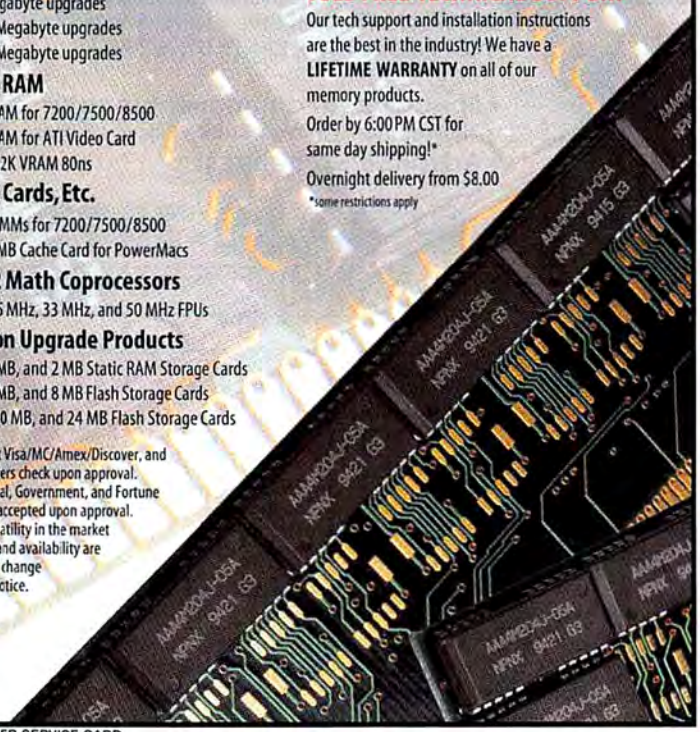

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ting out two hours of upload time. Brilliant!

I dial up the Internet address he gives me. My screen says: "Welcome to the Transgender Forum." My wife walks by with a quizzical look. "Long story," I mutter.

I find the secret folder Sue's husband set up for me and start downloading.

Sunday, 8 p.m.

I've got the Quark files from Nancy and Acrobat Exchange from Sue. Bullwinkle, my eccentric cocker spaniel, shares my excitement; he jumps onto my lap, and from there onto my desk.

Unfortunately, Nancy forgot to send the book fonts with the Quark files. Worse, I'm having no luck making those and ⌘ symbols show up in the e-book. The font, called Chicago Laser, works only if it's installed in the System Folder. But the book's readers shouldn't have to install a font. I'd much rather embed the font into the e-book itself. Of course, embedding a font is one of Acrobat's specialties—but you can't do so *after* the Acrobat file has been created. It's too late for the 30 chapters from Convert-O-Corp.

I try installing Chicago Laser directly into the big Acrobat file using the ancient Font/DA Mover program. It doesn't work.

Monday, 3:30 a.m.

Long into the night, I wrestle with the accursed font. Finally, I give up: I'll have to make the book's readers install the font after all. To make it easier, I create an installer using Aladdin Installermaker. An hour into my new project, a strange, low-pitch rumble emanates from the Mac's direction.

"Oh, no!" I cry, clutching its case. "Don't die on me now!"

But the sound isn't coming from inside the Mac. Brow furrowed, ear cocked, I trace the sound. At the far end of the desk, I find the source. It's Bullwinkle, snoring happily.

Monday, 10 a.m.

I've been checking AOL all night long; at last, I receive the fonts from Nancy. I frantically download the 2MB bundle. "Hurry *up!*" I yell at the Mac. "File's done!" it finally yells back.

I try unstuffing the downloaded file. *Beep!* "The data fork is damaged. Do you want to continue working with it?" Horrified, I click on Yes—and the StuffIt file promptly deletes itself. Some hiccup, some burst of static, has corrupted the fonts file—and with it, any hopes of winning this insane race against time. I'm devastated.

I'm about to try downloading the fonts again—when I notice another waiting e-mail. I don't recognize the address, but the title is The Missing 3 Chapters.

It's from Convert-O-Corp . . . from Brian! It's Plan B, come to save me! Late last night, he arrived home, got my 59 messages, and stayed up all night preparing the missing chapters. Way to go, Bri!

As the clock ticks down, Acrobat Exchange merges the three new chapters into the main e-book . . . my local service bureau burns the new master CD in 20 minutes . . . I bolt to Fed Ex . . . and that baby gets airborne.

The Upshot

Ever have trouble getting online? Ever stay up all night trying to meet a critical deadline? Ever wonder if the technology revolution has even occurred yet?

You will. **m**

Contributing editor DAVID POGUE is coauthor of *Macworld Mac Secrets*, fourth edition; e-book included.

Circle 11 on reader service card

by David Pogue

48 Hours in Cyberhell

EVER BATTLE A DEADLINE WHEN NOTHING WORKS RIGHT? YOU WILL.

YOU'VE GOTTA LOVE those AT&T commercials. "Ever sent a fax from your wristwatch? Ever watched TV inside your contact lenses? Ever sent e-mail in the shower? You will." No, you won't. The weekend I've just had suggests that we're not quite ready to start glorifying technology.

Here's the setup: Fellow columnist Joe Schorr and I had just written a 1200-page book. The highlight of the accompanying CD-ROM was to be a searchable electronic version of the book (for people who'd rather carry around a 16-meg data file than a 16-pound book).

So, how do you make an electronic file out of a paper book? The publisher sent the book's QuarkXPress files to a company I'll call Convert-O-Corp. They used Adobe Acrobat to turn the Quark files into a searchable edition on CD. Which left 48 hours for a simple wrap-up process: I would approve the final CD master; a duplication plant would bind the CDs into the books.

That was the plan, anyway.

Saturday, Noon

Whooping happily, I grab the CD prototype out of the Fed Ex man's hand. I race up to my attic office and whip the CD into my Mac, double-click on the electronic book file, and crash. Not the Mac—me.

One glance has revealed the horrible truth: Brian, the guy at Convert-O-Corp who created the e-book, has *left out* 3 of 33 chapters. Way to go, Bri.

To make matters worse, the 42 million and ⌘ symbols show up throughout the book as Ü and Ô characters. Can you say *missing font?*

The cover letter says that the disc must be at the CD plant, 3000 miles away, by the end of Monday, ready for duplication. If not, the book will miss its heavily promoted bookstore debut.

But do I panic? No way! Tight deadlines? Ha! I've got Macintosh—the power to be my best!

I am pumped.

Saturday, 4 p.m.

I am bummed. I've realized how dismal my odds really are. Convert-O-Corp used Adobe Acrobat to create the e-book. To edit an Acrobat document, I need something called Acrobat Exchange—which I don't have. Furthermore, to re-create the missing chapters, I need the original QuarkXPress files—plus the correct fonts. I don't have those, either.

I call Nancy, the publisher. She says she'll e-mail the files and fonts to me. Next I call coauthor Joe. Bingo—he's got Acrobat Exchange! He says he'll e-mail it to me. Suddenly I'm a software pirate. At this point, I don't care: overnight mail order's not fast enough.

Plan A: Once I have the fonts, files, and Acrobat Exchange, I'll generate the missing chapters. Monday morning, I'll dash to a local service bureau, burn a new master CD, and use Fed Ex's same-day delivery to ship it to California, expense be damned. It's a crazy, way-out plan, but it *just might work.*

Saturday, 11 p.m.

Six hours later. Still no e-mail from Joe or Nancy on America Online. Where could they be?

I start formulating a Plan B—for Brian. I leave frantic messages at Convert-O-Corp, at his home, everywhere. I speed-dial his beeper number every 15 seconds. If he's wearing that beeper and he's sitting in a theater somewhere, I've just made him the most hated man in America.

Sunday, 8 a.m.

Still no files from Joe or Nancy. I read the explanation in the *New York Times.* I've apparently managed to have my cybercrisis on the exact day America Online adopted its flat-rate, unlimited-use pricing scheme. The article says that yesterday, AOL recorded 8 million attempted dial-ins—fascinating, since AOL only *has* 7 million members. I get the feeling Joe's and Nancy's e-mail didn't make it past the deluge of chat room–crazed teenagers.

Sunday, 2 p.m.

"A huge storm is brewing," Nancy says through bursts of static. "The phone lines are so noisy, I can't get online at all." She says she'll try again to send the Quark files and fonts.

But Joe's gone for the weekend. Great. Where will I get Acrobat Exchange? I call Susan, a desktop-publishing queen. "Please, Sue, please tell me you have a copy of Acrobat." She does. But it's a big file; there's no time for her to upload the file (two hours) and for me to download it (two hours). I suggest we go modem-to-modem. But wait: she's got a better idea. Her husband runs a Web site off his computer there at the house; I can dial in to retrieve it, cut-

continues on page 217

CHRIS LENSCH

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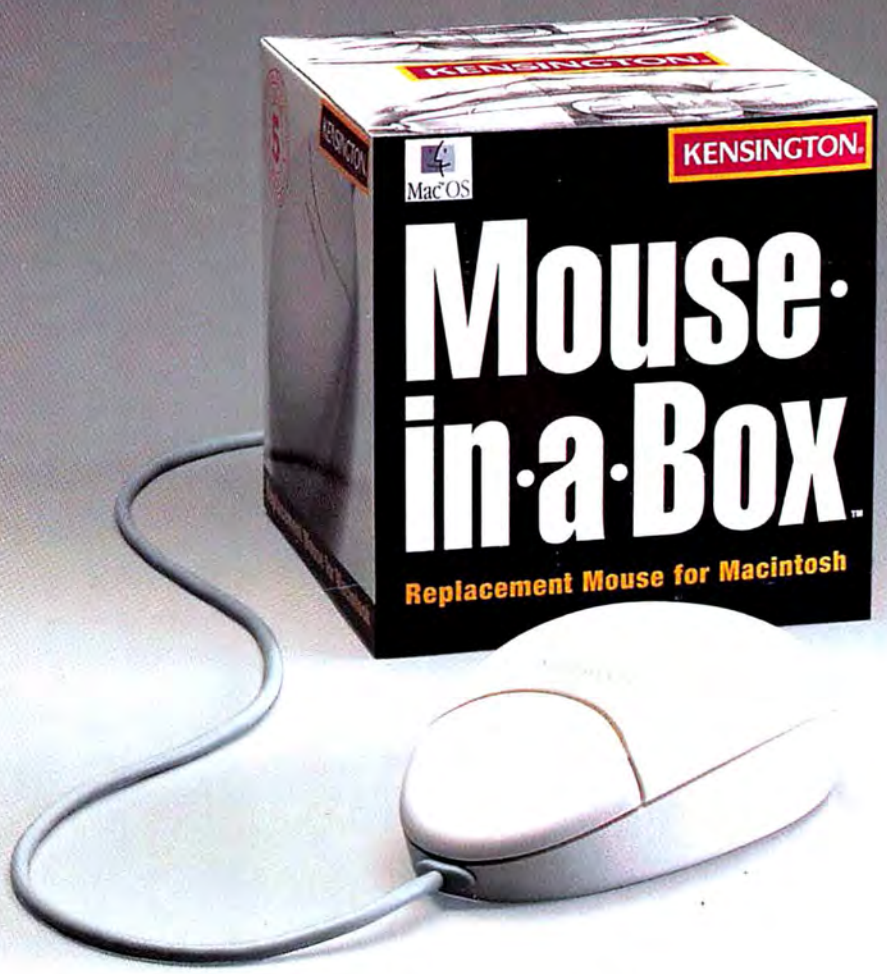

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