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MacUser

New 630 Series

Media Macs

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Play CD-ROMs

Tune In TV

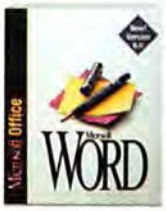
PLUS

Connect Your Mac to the Internet

New System 7.5: What's in It for You?

Power Mac Apps: How Many? How Fast?

New Microsoft Office 4.2 for Macintosh and Power Macintosh includes new versions of Microsoft Excel, Word, PowerPoint and a Mail workstation license.

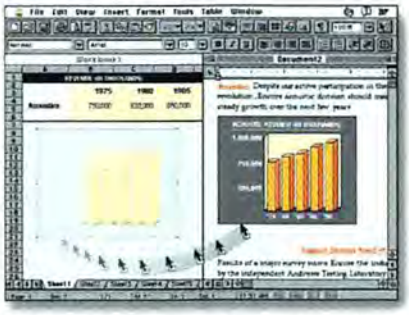


WOULD YOU SETTLE FOR

New Microsoft Office 4.2

Granted, everything in your life may not always come together. But on your Macintosh®, it's another story. Because now there's a family of leading, full-featured programs for the Mac® that truly work together like one.

New Microsoft® Office 4.2.



It's never been this easy to move data between programs. All you do is drag and drop.

Think of Office as programs that look alike. Programs that act alike. Programs with links between them. And finally, think of Office as programs that work so closely together, you'll feel like you're using just one.

But experience is the best teacher. So prepare a monthly report to your boss. You'll begin, of course, with Microsoft Word, our intuitive word processor.

And if you make a common typo along the way, don't worry. Word can fix it automatically, thanks to IntelliSense™ technology. It senses what you want to do, then helps you do it. Making everyday tasks automatic and complex jobs a lot easier.

Back to your report. Let's say you're making a point about sales growth. Why not add a sales chart from Microsoft Excel? Simply drag the chart into Word and let go. It's that easy.

You can even make changes to the chart, right where you are. Click on the chart and instantly all your spreadsheet tools appear. Without leaving Word.

Talk about being connected.

But wait, you forgot you have a big presentation tomorrow morning. No problem. You're

Teh→The

Now you see it. Now you don't. Set AutoCorrect to instantly fix your common typos.

at one with your Mac. Just click a button in Word and automatically turn your document into a persuasive presentation in PowerPoint.®

The fact is, the walls are down. Gone. You're now free to

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PERFECT HARMONY IN YOUR MAC?

combine words, numbers and pictures with ease, without leaving your document. Letting you focus on your work. Instead of the programs you're using.

One click turns your Word document into a PowerPoint presentation.

Better yet, no matter what you're working on, you're always working smart.

Because as we just pointed out, IntelliSense technology lends you a hand. Whether you need a quick tip in Microsoft Excel. Step-by-step assistance as you build a newsletter in Word. Or help putting together a PowerPoint presentation.

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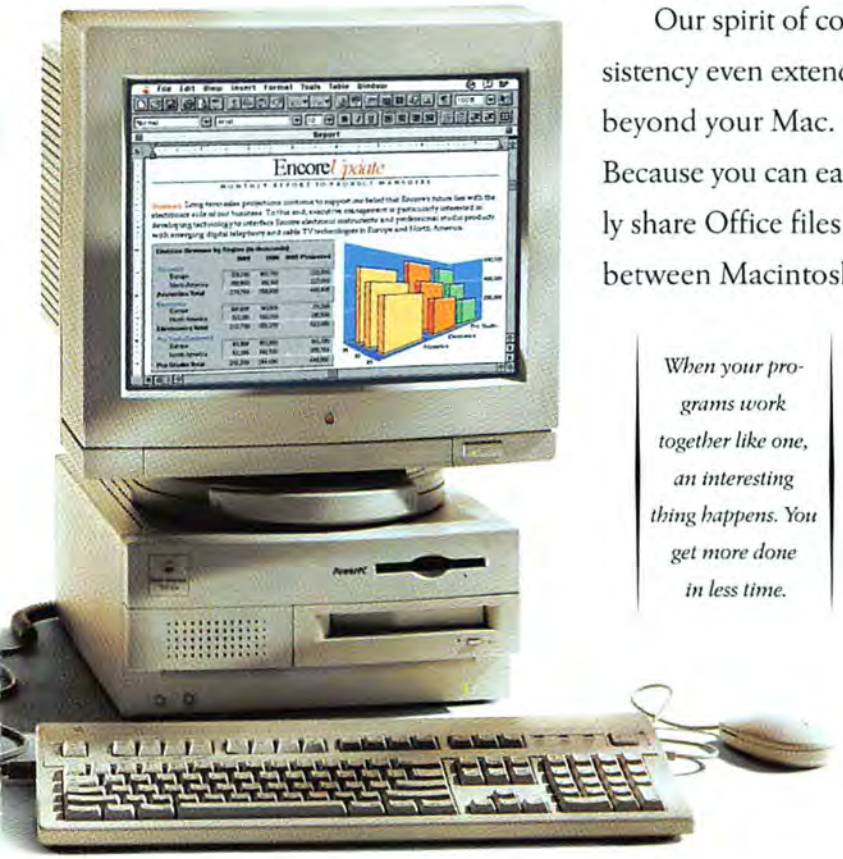
There's even more support built into Office. Or behind it, to be exact. Our unlimited product support is available to you at no service charge.* So whenever you have a question or need help, just call.

But first, call (800) 709-3787, Department YP4, to locate the retailer nearest you. They'll help you learn all about the new Microsoft Office Standard 4.2 in versions for both Macintosh and Power Macintosh™.

So give us a ring.

Then give your Macintosh something most people spend a lifetime searching for.



When your programs work together like one, an interesting thing happens. You get more done in less time.

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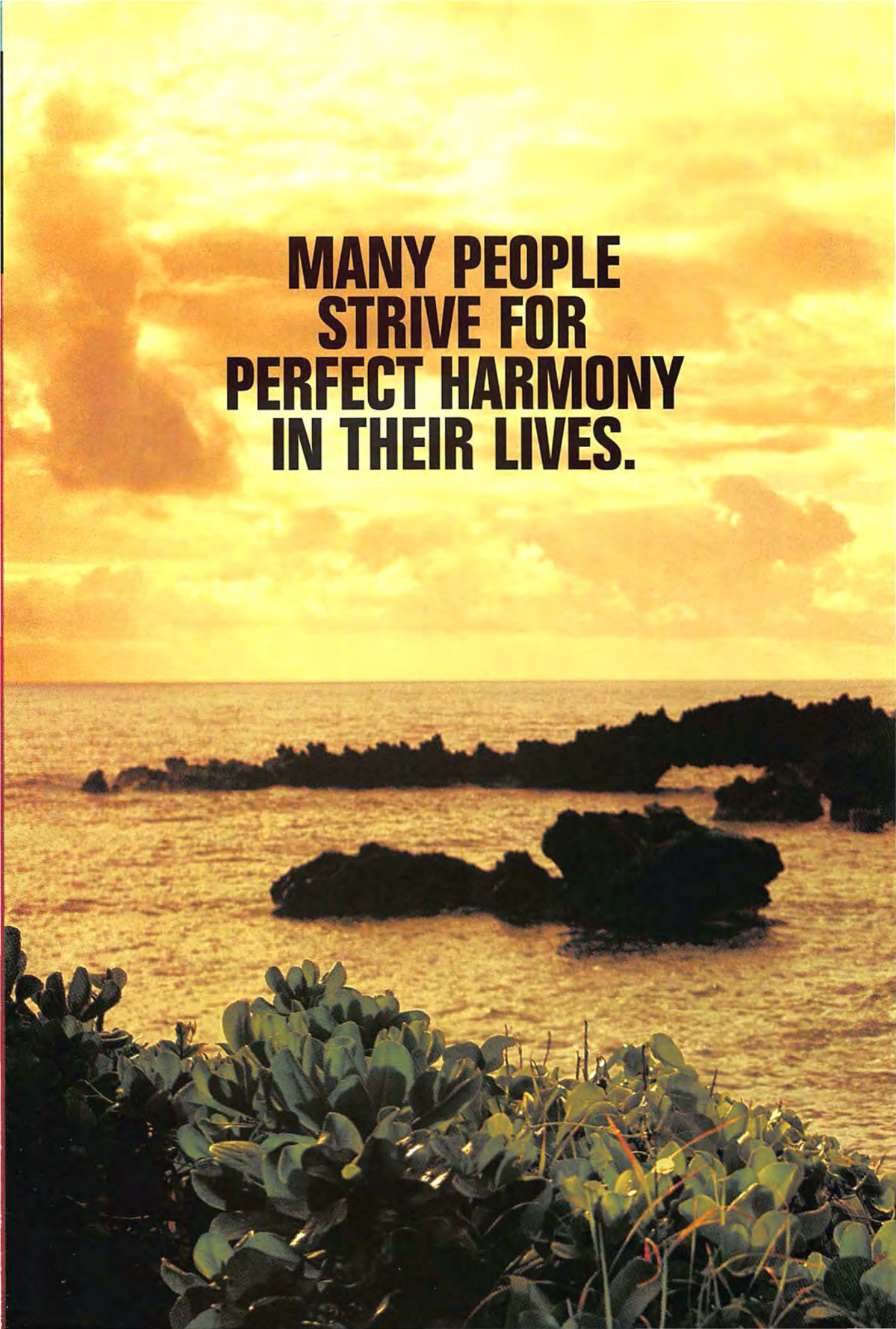
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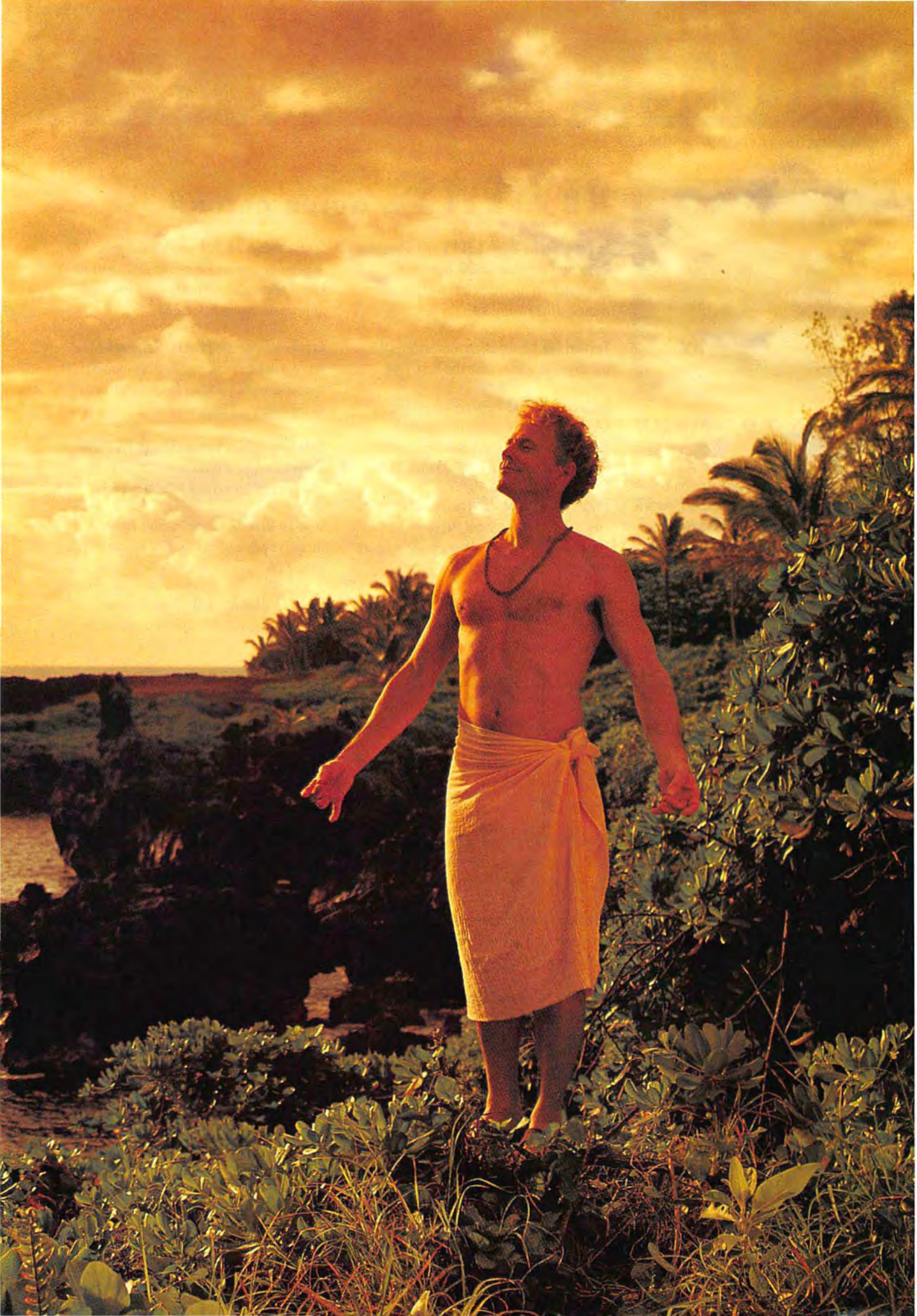

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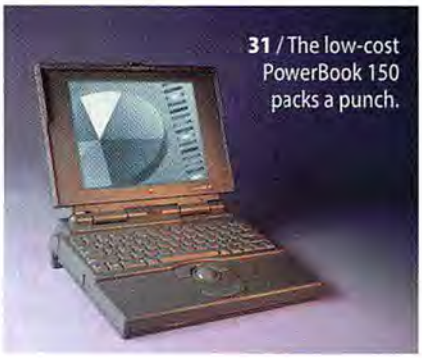

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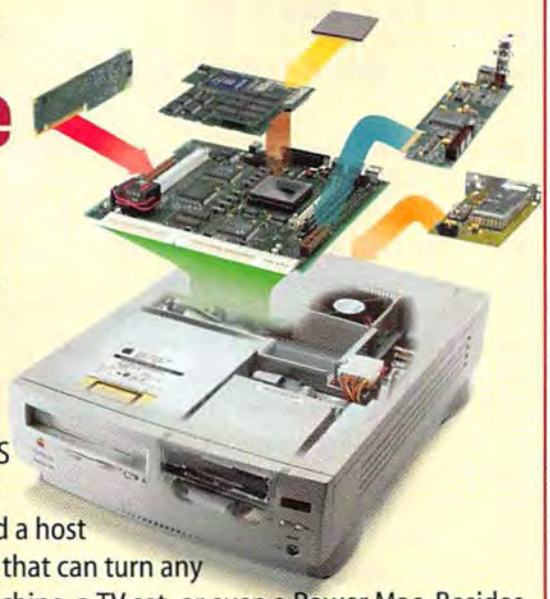
Versatile Values

Apple's newest 68040 Macs offer AV, CD, and even TV.



MacUser/ZD LABS THE 630-SERIES Macs feature a modular board design and a host of easy-to-install add-ons that can turn any 630 into a multimedia machine, a TV set, or even a Power Mac. Besides being versatile and affordable, the new Macs are fast: MacUser Labs' 630-series benchmark tests reveal speeds as fast as a Quadra 800's.

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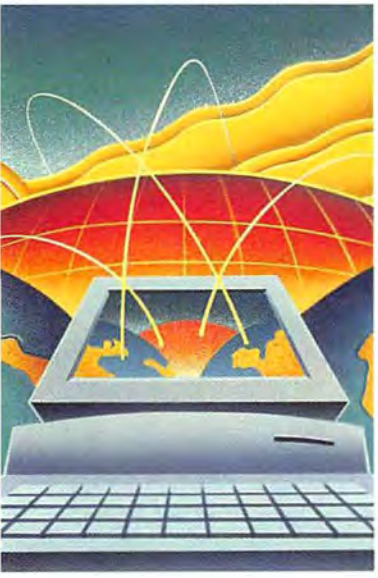
Apple's New System 7.5

FINALLY, A MAJOR SYSTEM UPGRADE. No, it's not System 8, but Apple's new System 7.5 does incorporate several nice new and nearly new technologies, including AppleScript, PowerTalk, QuickDraw GX, Macintosh Drag and Drop, plus the latest in help systems — Apple Guide. BY HENRY BORTMAN / **79**



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MacUser (ISSN 0884-0997) is published monthly by Ziff-Davis Publishing Company, L.P., One Park Avenue, New York, NY 10016. Editorial Offices: 950 Tower Lane, 18th Floor, Foster City, CA 94404. Telephone: 415-378-5600. U.S. subscription rates are $27 for 12 issues, $45 for 24 issues, and $62 for 36 issues. Additional postage for Canada: Add $16 per year to the U.S. rates for surface mail. Single-copy price is $2.95 (Canada, $3.95). Canadian GST registration #R-123669673. Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 278521.

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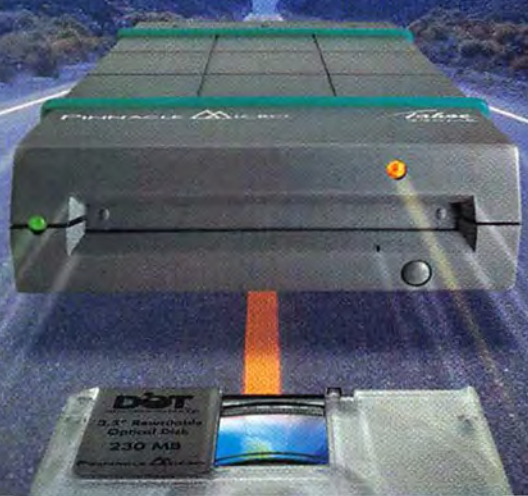

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The trackpad's ultrasensitive surface senses the touch of your finger, tracks it across the pad and moves the cursor across the screen accordingly.

This intuitive method of moving the cursor, combined with the new dual-scan and active-matrix screens, gives you much more precise control over the location of the cursor and makes extremely detailed work

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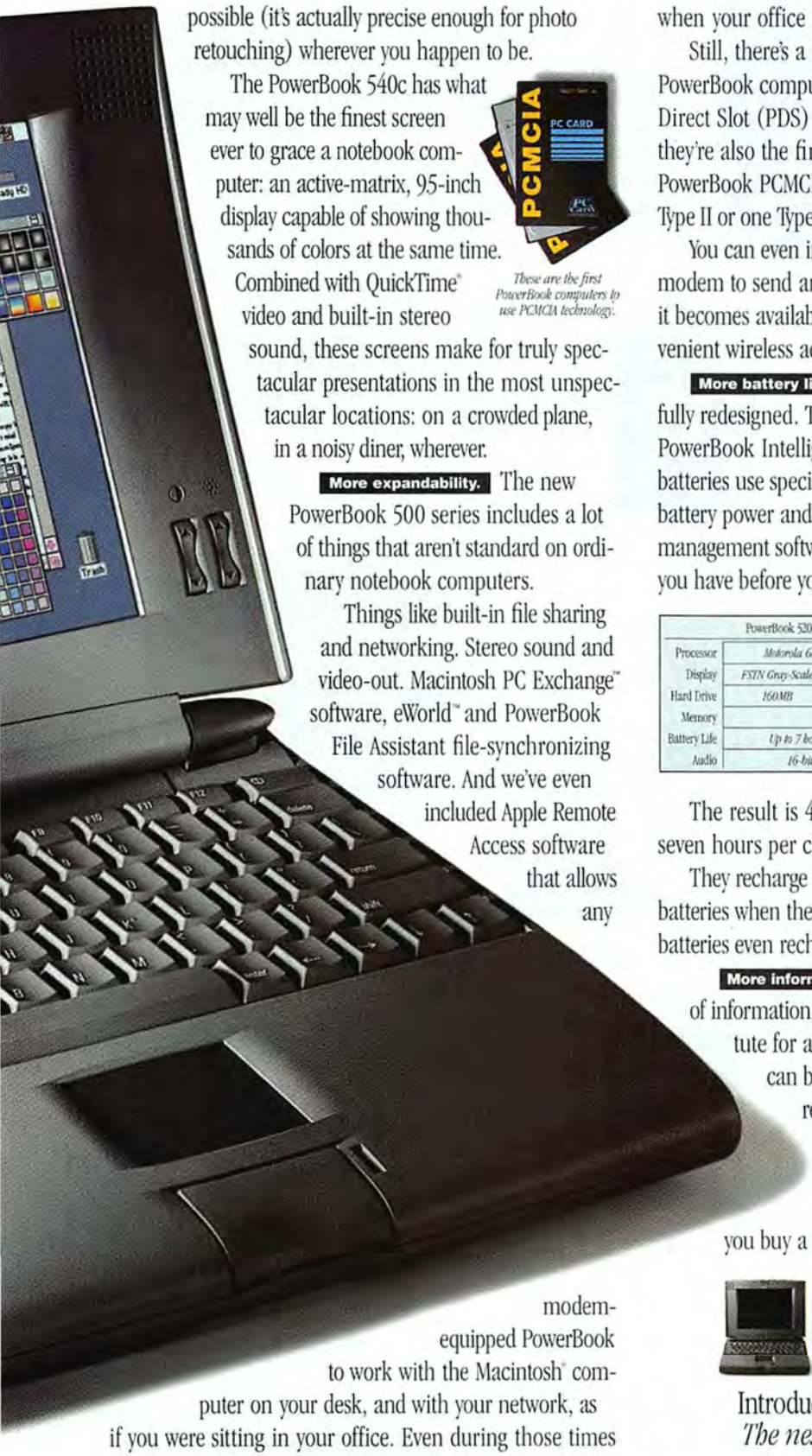

possible (it's actually precise enough for photo retouching) wherever you happen to be.

The PowerBook 540c has what may well be the finest screen ever to grace a notebook computer: an active-matrix, 9.5-inch display capable of showing thousands of colors at the same time. Combined with QuickTime® video and built-in stereo sound, these screens make for truly spectacular presentations in the most unspectacular locations: on a crowded plane, in a noisy diner, wherever.

These are the first PowerBook computers to use PCMCIA technology.

More expandability. The new PowerBook 500 series includes a lot of things that aren't standard on ordinary notebook computers.

Things like built-in file sharing and networking. Stereo sound and video-out. Macintosh PC Exchange™ software, eWorld™ and PowerBook File Assistant file-synchronizing software. And we've even included Apple Remote Access software that allows any modem-equipped PowerBook to work with the Macintosh® computer on your desk, and with your network, as if you were sitting in your office. Even during those times when your office happens to be thousands of miles away.

Still, there's a lot of room to grow. These are the first PowerBook computers to come with a built-in Processor Direct Slot (PDS) for third-party expansion modules. And they're also the first ones to offer the optional plug-in PowerBook PCMCIA Expansion Module, so you can use two Type II or one Type III PCMCIA card for even more flexibility.

You can even install an optional 19,200-baud internal modem to send and receive information quickly, and when it becomes available, a third-party cellular interface for convenient wireless access to your office network.

More battery life. Even the batteries have been thoughtfully redesigned. The PowerBook 500 series can use two PowerBook Intelligent Batteries. These high-powered NiMH batteries use special processors within each pack to monitor battery power and the new PowerBook Control Strip — power management software that tells you exactly how much time you have before you need to recharge the batteries.

	PowerBook 520	PowerBook 520c	PowerBook 540	PowerBook 540c
Processor	Motorola 68LC040 @ 50/25 MHz		Motorola 68LC040 @ 66/33 MHz	
Display	FSTN Gray-Scale	Dual-Scan Color	Active-Matrix Gray-Scale	Active-Matrix Color
Hard Drive	160MB	160MB	240MB	320MB
Memory	4MB DRAM expandable to 36MB			
Battery Life	Up to 7 hours with 2 batteries		Up to 6 hours with 2 batteries	
Audio	16-bit stereo in and out, built-in stereo speakers and mono microphone			

The result is 40% more battery life than before — up to seven hours per charge — when using both batteries.

They recharge faster, too — in as little as two hours for both batteries when the PowerBook is asleep or shut down. And the batteries even recharge while you're using the PowerBook.

More information. While this has been an abundance of information, by any standard, it can't serve as a substitute for a personal demonstration. Something that can be easily arranged at your authorized Apple reseller. To find the one nearest you, simply call 800-732-3131, ext. 100. (In Canada, call 800-665-2775, ext. 910.)

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$200 Rebate

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$300 Rebate

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*Macintosh® CPUs sold separately. Graphics cards and displays must be purchased on the same invoice. Products must be purchased between April 15 and August 31, 1994. Send registration cards and copy of invoice to: SuperMac, Attn.: Power Publishing Rebate, P.O. Box 60909, Sunnyvale, CA 94088-9816; envelopes must be postmarked by September 30, 1994. Rebate offer for end users only. Good for purchase in the US, Latin America, and Canada only. Allow four to six weeks for processing and delivery. Thunder and Thunder/24 are registered trademarks and SuperMac, the SuperMac logo, the Stylized "S," Spectrum and SuperMatch are trademarks of SuperMac Technology, Inc. All other brand and product names and logos are trademarks of their respective holders.

LETTERS

Tales of Encrypt

I AGREE 100 percent with Maggie Canon's assessment of the Clipper encryption technology ("Yank the Clipper," June '94, page 23), but I do take exception to some of her reasoning.

Having seen the stupidity of the terrorists who bombed the World Trade Center, I disagree that terrorists would not "be dumb enough to use a phone or computer system they know the government can monitor." For heaven's sake, these guys tried to get a refund on the rental van they blew up.

The terrorism angle should not be the focus of our attacks on the Clipper — the business and privacy issues must be. The Clipper will make it next to impossible for U.S. companies to sell their products in foreign countries. Even more worrisome for most American citizens should be the issue of privacy: The National Institute of Standards and Technology and the Automated Systems Division of the Treasury Department will hold the keys to the Clipper. Since the CIA cannot seem to keep any secrets from the Russians, what makes us think these agencies are any more leakproof?

Samer Farha
via the Internet

I'M WITH YOU. I say, yank that sucker. And at the risk of sounding like a fanatic, let me also say that if your readers believe that eavesdropping on telephone calls, reading of e-mail, and browsing of database files hasn't happened yet, I have some valuable swampland in Florida that will surely be of interest to them.

William M. Love
Palm Bay, FL

Screen Screams

ENJOYED YOUR monitor-evaluation article "Big-Screen Bargains" (June '94, page 82). I was very disappointed that you did not include an Apple monitor in any of your tables or discussions, although you did mention the Apple Macintosh Display Card 24AC in a sidebar. Apple sets the standards in its product line, and a magazine that caters to Macophiles should include an Apple product, if one exists, in all comparison articles.

Apple's products may be overpriced or may not be technically superior, but I would like to be the one to rule them out in my considerations, if in fact I do.

Russ McRae
Los Altos, CA

/ Apple was invited to submit a unit for inclusion in the article but declined. At testing time, Apple was phasing out its 16- and 21-inch monitors and the successor 17- and 20-inch models were not yet ready for evaluation. / JSA

ALTHOUGH I COMMEND your effort to sort through the myriad of monitors a consumer may choose from, I have a bone to pick with you about the methodology and results of your testing.

If I were only to scan your mouse ratings, I would seriously consider choosing the Sony CPD-1730. The "Closer Look" table says that the CPD-1730 has a maximum resolution of 1,024 x 768 pixels, but it doesn't — at least not at the standard 75-Hz refresh rate most graphics cards use. Why don't you test monitors at various resolutions?

Nicholas Silva
via ZiffNet/Mac

/ The Sony CPD-1730 cannot achieve a resolution of 1,024 x 768 pixels at 75 Hz, the Macintosh standard, but it can at 72 Hz, which is a resolution supported by the Power Macs and the Macintosh Quadra 840AV. We have tested monitors at more than one resolution

Write to Letters

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ILLUSTRATION / JOHNEE BEE

OPEN FOLDER

Exposing social decay isn't just the purview of Dan Quayle, we've found. Doron E. Hutton, of La Mesa, California, protests two tiny items in the screen dump that accompanied our review of DayMaker Organizer 3.0 (May '94, page 52): "File divorce papers" and "Stop check on 2/94 mortgage payment." Fumes the eagle-eyed Hutton: "The social fabric of America is already in chaos, stemming directly from the disintegration of the family. I am astounded and discomfited by the arrogance of whoever is responsible." Blame it on *Murphy Brown* reruns.

Television's terrible power has caused 13-year-old Jose Nino, of Miami, Florida, to actually agree with John Dvorak, backing up our gadfly columnist's June assertion that an 80-MB hard drive is a joke. Jose says the drive in his Performa 405 is "more pathetic than the Barney show I have to put up with when I baby-sit my little brother!" Yes, but at least *your* dinosaur isn't purple and doesn't sing or make appearances at shopping malls.

Beaming down with a note about *Star Trek IV: The Voyage Home* was Allen Albertson, of New Tripoli, Pennsylvania. Allen finds it highly illogical that the Mac Plus used in the 1986 vintage opus responded to Scotty's keystrokes "at a blistering pace. Even with maximum RAM, this kind of response was not possible. Was this just Hollywood animation magic?" It's conceivable that unit was decked out with a prototype Matter/Antimatter accelerator card and Klingon SIMMs, but consider: Scotty could rewire the entire *Enterprise* between commercial breaks. If anyone could make a Mac Plus run at warp speed, he could.

Speaking of warp factors, the quest for ever-faster PowerPC chips raises this question from Douglas D. Fox, via the Internet: "Did I miss something? There are the 601, the 603, and now the 604 PowerPC chips. What happened to the 602?" Like Type 2 fonts and the 68050 processor, it's entered the Twilight Zone.

ASK DR. POWER MAC

INSIGNIA SOLUTIONS' SoftWindows emulates a 286 PC. How can a Power Mac outperform a Pentium machine if it can't run 386-level programs?

Derek Ellington
Wake Forest, NC

/ Apple has *never* claimed that applications running with SoftWindows' 286 emulation or with the Power Macs' own 680x0 emulator run faster than equivalent versions on a Pentium machine. Native Power Mac apps, however, are a different story altogether and will be very fast. How fast depends entirely on the app.

I HAD DECIDED TO HOLD OFF on upgrading my LC to see if an upgrade to the PowerPC chip would become available. Is there any word about when such an upgrade will appear? Or is it time to turn my LC into some type of decorative object? (It's too shallow to be a fishbowl!)

Will Eberle
Las Vegas, NV

/ Apple has announced that it will offer a PowerPC upgrade board for all 68040 LCs and Performas. So if you have an LC 475 or later or a Performa 47x model or later, you will be able to upgrade to the PowerPC sometime later this year.

I HAVE DECIDED TO WAIT for the PowerPC 603 and 604 to become readily available on the Mac market to make PowerBook and desktop-computer purchases. When will PowerBooks with a 603 and desktop Macs with a 604 be available?

David L. Bubla
Maspeth, NY

/ Apple hasn't said when it will put 603 or 604 chips into the Power Mac line, but your need for speed may be satisfied by the 100-MHz 601+. Apple expects these turbocharged systems to begin shipping in late 1994.

I HAVE A CONCERN about upgrading my IIvx to the PowerPC. It currently has 20 MB of RAM, but since the SIMMs are 30-pin, they cannot be moved to a Power Mac motherboard, which uses 72-pin SIMMs.

Is there an adapter for converting 30-pin SIMMs for use on a Power Mac?

Tricia Sgrignoli
Helena, MT

/ If you're the adventurous type, you can try the SimmStack, from Sermax (800-209-7126 or 212-410-1597). (It offers a 30-day money-back guarantee.) And TechWorks (800-934-4019 or 512-794-8533) currently offers trade-ins on memory SIMMs greater than 1 MB for Power Mac users. At press time, 20 MB of RAM was worth $360 toward new 72-pin SIMMs.

in the past, but we discovered that the performance of a monitor changes little — if at all — at different resolutions. / KB & BF

THANKS FOR such an exhaustive report. Unlike other computer purchases, buying a large monitor can be a nightmare. Your authors suggest some tire kicking, but this is nearly impossible with 20- and 21-inch monitors. Few vendors have any monitors larger than 17 inches on display. It would seem I'm expected to write a big check and cross my fingers. Your advice to seek dealers with good return policies cannot be overstressed. The last time I bought a monitor, I sent two back before I got one I liked.

Michael Carr
via ZiffNet/Mac

Served Up

APPLE COMPUTER does not believe that the results published in the article "Choosing the Right Server" (May '94, page 102) are a true and accurate representation of the performance of our Apple Workgroup Server 95, which includes AppleShare Pro. As a result, we have been discussing with MacUser Labs the test methodology, tools, and analyses used, in an effort to verify the accuracy of the performance information in that article.

Variable performance results, unfortunately, are a fact of life for file-server tests. Unlike database programs, file-server software has no standard benchmark tests and performance-testing methodologies.

Apple feels that *MacUser* readers need to be made aware that the results cited in the article may not be wholly valid. We will continue to work with *MacUser* and other publications to ensure that file-server performance can be equitably measured across platforms and products. We are confident that given the level of cooperation we have received from *MacUser*, we will achieve our mutual aim of providing customers with accurate information on which to base purchasing decisions.

Doug McLean, Director, LAN Systems Marketing
Apple Computer, Cupertino, CA

/ Although *MacUser* is, indeed, working closely with Apple to verify the results of our file-server tests, we would like to emphasize the word *verify*. *MacUser* stands by the validity of its tests and the accuracy of the results printed in our May issue. / HB

Color Me Unimpressed

I'M GLAD I bought my HP DeskWriter 550C before I read "A Printer on Every Desk," in your May '94 edition (page 112). Those guys slammed HP inkjet printers so much that I'm starting to call my printer a door.

My 550C is not as fast as a laser printer that is three times or even twice the price. I never expected it to be. That doesn't mean it isn't worth what I paid for it. The print quality my inkjet printer produces is noticeably better than the output of several laser printers I've seen.

Carl E. Dotson
Poway, CA

IN YOUR LAB TEST of personal printers, our Sharp JX-9460PS received a lower ranking than we expected. This is the result of a problem this printer had with EPS images in PageMaker 5.0.

The results you saw were not an issue of print quality but of an AppleTalk communication problem for which we have a fix. It is unfortunate that this one factor so influenced the overall results, since your article acknowledges that the "quality of the 600-dpi text output and gray-scale images it produced received high praise."

Andrew Bernstein, Printer Product Manager
Sharp Electronics, Mahwah, NJ

OutFoxed

MY USE OF FOXPRO 2.5 in projects has led me to startlingly different conclusions from those of your review (June '94, page 47). I agree that this version of FoxPro has some nice features for browsing through tables and doing ad hoc queries, but I think your review will mislead people into thinking it's ready for prime time when it comes to application building.

It has some gaping holes, among them:

- No security. If I have my own copy of FoxPro, I can view and edit your tables without even leaving an audit trail.
- FoxPro's best feature, the RQBE (query) function, cannot be embedded and controlled in an application.
- Record looking and other low-level database controls must be written by the programmer.
- When I used a Wizard to create a report on a five-record, three-field database, FoxPro kept bombing because of memory errors until I allotted 8 MB to it.

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Unlimited number of outline columns	YES	No	No

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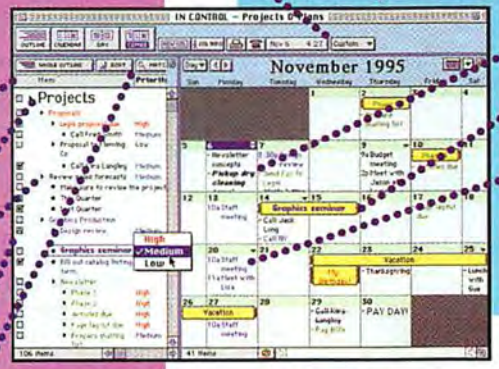

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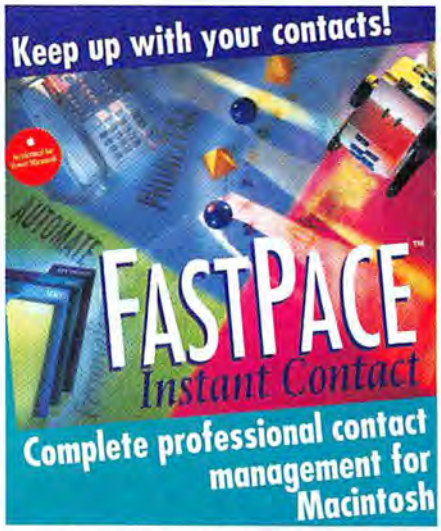

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I would happily use FoxPro as a personal productivity tool to manage some of my own data in an ad hoc manner, but when it comes to using it to develop a robust Mac application, I'd have an easier time batting blindfolded against Nolan Ryan.

Chuck Hinkle
via ZiffNet/Mac

Price Fishing

AS USUAL, Mr. Dvorak's back-page commentary ("Skating on Thin Price," June '94, page 216) conveyed a meaningful message. But, as usual, our friend John stretched the slingshot of reality so far that it snapped back in his face.

Case in point: He says, "The 80-megabyte hard drive is a joke . . . . You can barely get by with 340 megabytes nowadays." Come on, John. The entire Microsoft Office can fit in 80 megs, with room left over for thousands of documents.

As for Windows competition, your glorified Multimedia Complete System falls short. It ships with only 4 MB of RAM. It has no FPU. It is slower than the Quadra 610. Whatever monitor it comes with cannot be as crisp and clear as the monitors Apple makes. And, of course, the Macintosh operating system crushes this clone's OS.

Ned Vizzini
Brooklyn, NY

ALTHOUGH A VAST majority of *MacUser* readers seem to despise the thoughts of John C. Dvorak, I found his column "You'll Do Windows" (May '94, page 230) an accurate description of the current state of the computing world. I have three computers for home use: an Amiga for video work (and games), a Mac for writing, and a 486 Windows-OS/2 PC for practically everything else. Although I hope to purchase a Power Mac system sometime this year, I will continue to use more than one computer platform. It's just a more efficient and effective way to work.

Cecil E. Helton, Jr.
Richmond, KY

Pieces in a Mosaic

I READ a newspaper article about the Internet in which the writer raved about a program for the Internet called Mosaic. I promptly got on-line to see if I could download Mosaic. In one place, I learned that Mosaic works only for downloading graphics, either still or motion. Elsewhere, I learned that it is a general interface. Somewhere else, I learned I'd need HyperCard to make it work and maybe Apple Remote Access and maybe Crosstalk. I gave up — it's all too difficult.

Why can't I be reading about this in *MacUser*? Why should I have to wade through a thick and expensive book about the Internet to get basic information? The Internet is a happening thing. Why don't you cover it?

Kevin Hanson
Austin, MN

/ We wouldn't let a happening thing slip past us — our feature on the Internet, "Plug In to the Internet," begins on page 86 of this issue. As for Mosaic, it's a free, stand-alone application that offers a point-and-click interface to text, graphics, sounds, and movies on the Internet. But to use it, you need either a hard-wired Internet connection or dial-up access via SLIP or PPP from a local service provider. (For more information about Mosaic, see Bridges, June '94, page 127.) / JS

Andy's Sandbox

I LAUGHED SO HARD, I almost pivoted my Radius! Andy Ihnatko's "Child's Play" (June '94, page 25) touched on the *reality* of computing in the '90s. Being in Generation X and knowing the significant applications of the Etch A Sketch and Mr. Potato Head, I'm happy to see that the Millennium Generation will not be neglected in this area. How *would* they get along without Hungry Hungry Hippos?

Lorrie L. Piper
Merrimack, NH

I WAS ROLLING on the floor for hours. You missed one thing, though: the inflatable baseball bat ($3) for use when you see "Hit any key to continue."

Neil Enns
via the Internet

CORRECTIONS

In "Make Your Own CD-ROMs" (June '94, page 100), the list price of the Microboards PlayWrite 1000 with Dataware Technologies' CD Record 2.0 was incorrect. The correct price is $3,899.

In "Big-Screen Bargains," (June '94, page 82), the street price of the SuperMac SuperMatch PressView 21 was incorrect. The correct street price is $3,290.

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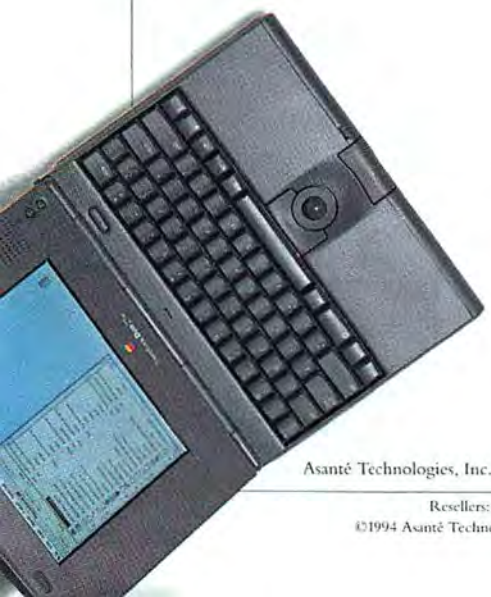

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CIRCLE **86** ON READER SERVICE CARD

MAGGIE CANON

What's the Difference?

TIME FOR A POP QUIZ: CHICAGO is (a) the home of deep-dish pizza, (b) a rock band whose

members are old enough to withdraw money from their IRAs, (c) the setting for *Guys and Dolls*, or (d) the new version of Microsoft Windows that makes a PC "just as good as a Mac." If you answered, "All of the above," then you might need a refresher course on Mac innovation.

"Just as good as a Mac" is a phrase that's been thrown around a lot lately, usually by PC users. But Mac users shouldn't be fooled. Plenty of significant differences exist between the two systems — from usability to functionality. For me, the biggest difference between a Mac running System 7 and a PC running Chicago is innovation. When it comes to pioneering new technologies, Apple is still way out ahead.

Apple and Multimedia

Let's review, shall we? Look at what multimedia means on Windows machines: CD-ROMs (that were probably developed on a Mac in the first place) and sound cards (an endless source of hardware headaches from which Mac users have been spared from the start). What does multimedia mean on the Mac? HyperCard (around since 1986 and *still* being used to create great CD-ROMs, such as Myst and Peter Gabriel's Xplora 1), built-in 16-bit stereo sound, QuickTime, AV Macs and Power Macs, and now the new 630 series of low-cost multimedia Macs.

The last of these, the 630-series Macs (profiled in this issue), exemplify Apple's newfound ability to take hot technology and make it incredibly attractive from a price/performance standpoint. These Macs make affordable the multimedia technology previously available only from the more expensive, AV machines. I expect what will make them especially popular is their extreme versatility. The base-configuration machine can perform everyday business tasks at Quadra 800 speeds. But add a couple of optional goodies, and you can start editing your own videos or keeping up with the latest news or sports results by watching CNN or ESPN on your Mac.

Low-cost video editing and built-in TV are only the beginning of Apple's multimedia offerings. QuickTime 2.0, scheduled for release in late summer of this year, brings digital video closer to broadcast standard. No more tiny, jerky movies — movies can now be played full-screen and will be smoother and faster. Professional video editors will appreciate QuickTime 2.0's support of SMPTE time code, 60 fields per second, high data throughput, and MPEG. It's also easier than ever to synchronize music with video, so making that music video starring your kids isn't such a far-fetched idea anymore.

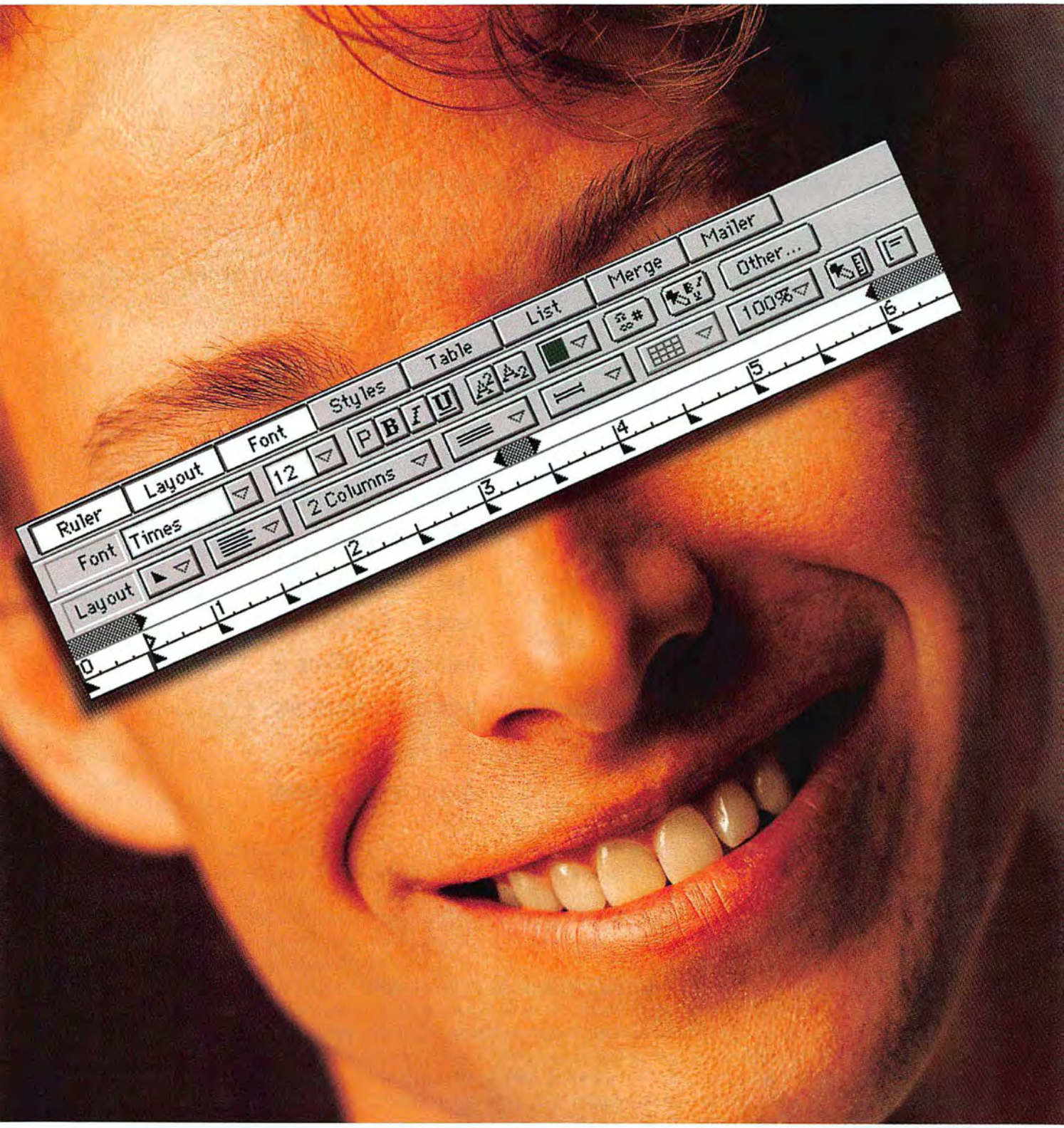
The biggest difference between a Mac running System 7 and a PC running Chicago is innovation. When it comes to pioneering new technologies, Apple is way ahead.

On top of that, QuickTime 2.0 provides the foundation for even more exciting developments. If you thought you had to wear a helmet and gloves and grow dreadlocks to get into virtual reality, think again. One of the coolest things to come out of Apple recently is QuickTime VR (the *VR* stands for virtual reality, of course). Basically, with QuickTime VR, all you'll need is a Mac and an application that takes advantage of QuickTime VR to experience moving around in a room, picking up objects from a virtual museum or store, or exploring an imaginary environment from your desktop (see New on the Menu, page 31, for details). Expect to see QuickTime VR finding its way into entertainment, education, and professional applications by this fall.

Quick seems to be the operative word around Apple, because the company has also brought out the QuickTake 100 digital color camera. Sure, the quality of the images it produces still leaves plenty to be desired, but the important thing is that Apple is carving out a new market — digital photography for the masses. If you're a real-estate agent who wants to get a photo of a hot property into a sales brochure fast, a Mac and a QuickTake 100 are your best bet.

All these innovations are testaments to Apple's willingness to maintain the Mac's distinctiveness. In the short term, they'll ensure that the Mac platform doesn't disappear, just because the conventional wisdom decreed that Windows on a PC was "just as good." Long-term, of course, I expect Apple's market share to grow, based on the formula exemplified by the Power Macs — unbeatable performance for the price.

While we're waiting, though, it's good to remember that there are still plenty of distinctions between the Mac and Windows-based systems — because having the power to be your best usually means being a little bit different too.



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With the Newton Connection Kit 2.0 for Macintosh,® you can exchange information with your Macintosh, as well as with a range of popular Mac® software, such as ACT! contact manager, Lotus 1-2-3, Excel and Microsoft Works.*

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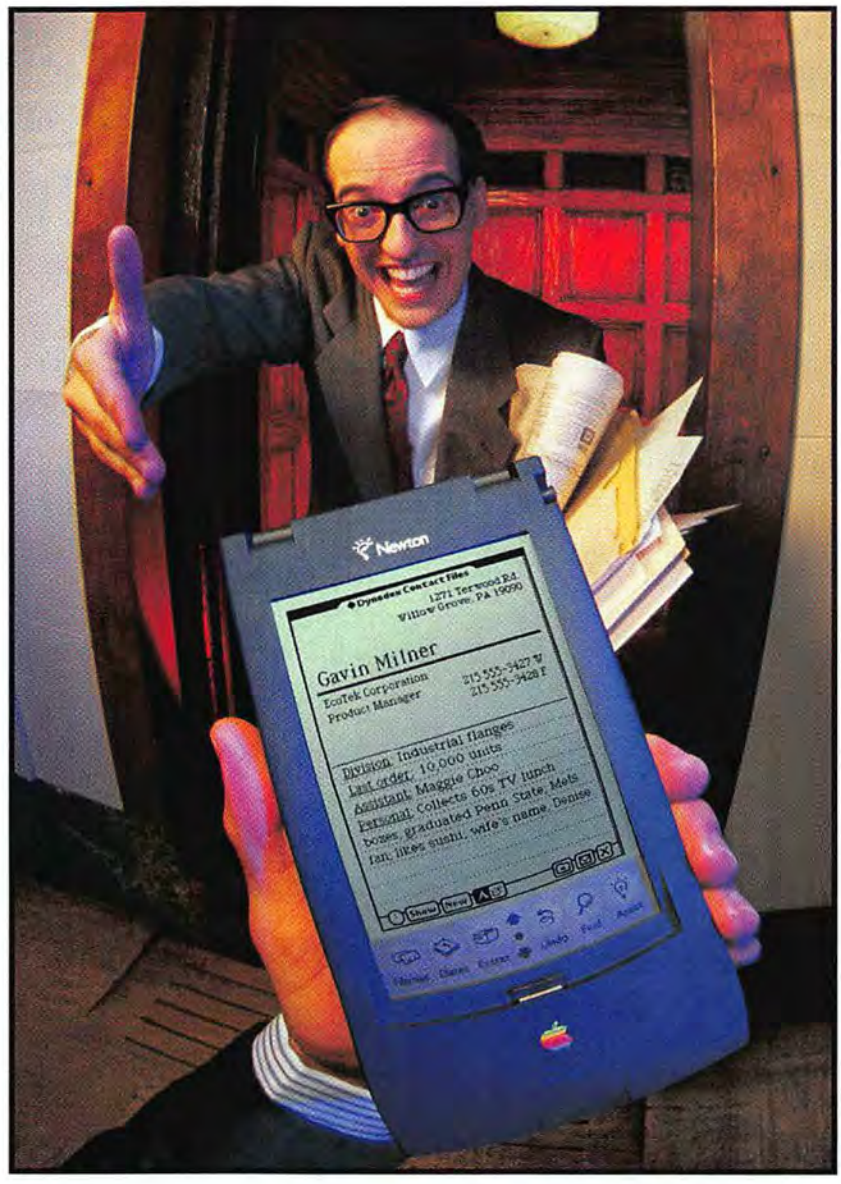
To find out more, call 800-365-3690, ext. 100, for the Newton dealer near you. Or check out an on-line service for the interactive demo found on the Newton forum.† Either way, you'll find that instead of giving you more technology, Newton gives you something you can really use: help.



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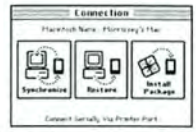
Newton connects to Windows. *With the Newton Connection Kit for Windows, you can easily exchange information with your Windows-equipped PC.*



Downloading, updating and backing up information between your Newton and your computer is as easy as plugging in.

Newton connects to Macintosh. *The Newton Connection Kit lets you work with your Macintosh via serial connection or your AppleTalk® network.*

*MacInkWest Library, a product of DataViz, Inc. **Available summer 1994. ConversionsPlus library, a product of DataViz, Inc. †Look for the on-line Newton demonstration on the following services: AppleLink, America Online, CompuServe and the Internet. In Canada, call 800-665-2775, ext. 900, for information. ©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, AppleLink, AppleTalk, Mac, Macintosh and Newton are registered trademarks of Apple Computer, Inc. The lightbulb logo and MessagePad are trademarks of Apple Computer, Inc. ACT! is a registered trademark of Symantec Corporation. Dynodex is a registered trademark of Portfolio Software, Inc. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Microsoft is a registered trademark of Microsoft Corporation.*

ANDY IHNATKO

Lawyers, Guns, and Sunny

THERE ARE SOME TRADITIONS, such as Aunt Dorothy's melon boat at the family Fourth of July barbecue or opening one gift on Christmas Eve, that we observe because they're warm touchstones of familiarity and constancy. Other traditions, such as calling in sick on baseball opening day, feature films based on lame '60s sitcoms, and Congress in general, persist only because no one had the good sense to put a stop to them the *last* time.

Modesty forbids my stating which one applies here, but it's time again for my Traditional Summer Vacation Column. Yes, as I write this, I've retreated to sunny beachside Hyannisport with an ice chest full of Snapples; three Tom Clancy books; and CDs by Jerry Lee Lewis, Blues Traveler, and Joe Satriani — plus my trusty PowerBook Lilith and a folder of topics from the past year's columns that merit further discussion.

Quick Draw for Newton

But I can't let a month go by without passing along *some* sort of new and useful information, so here's the traditional Arts & Crafts segment. Most Newton users have recognized the MessagePad's lone deficiency (just humor me here): Nobody makes a trim and compact carrying case that keeps the MessagePad at your fingertips but does *not* look like a Yuppie Greed-Enabling Accessory™.

After dismissing a dozen generic and Newton-specific products, I turned my rage inward and made The Eastwood (see photo). Just call the Michaels of Oregon (503-255-6890), a maker of police holsters and accessories, and order Set No. 9927-1, a tactical holster for automatic weapons (Size 27 — $69.95 plus shipping and handling). With about 2 feet of 2-inch web strapping, 8 size 8-32 roundheaded screws, 12 flat washers, 4 nuts, and only 20 minutes of effort, you can easily modify it to holster a Newton instead. That's the basic gist — for a complete and sporadically coherent set of plans and instructions, just jump onto ZiffNet/Mac or any other on-line service and download EASTWOOD.SIT, which I wrote free from the strictures of a limited word count.

The advantages of The Eastwood are myriad: Its midthigh placement with tie-down leg strap means that you'll be able to execute rattlesnake-fast one-handed quick draws of your Newton, the holster is fully adjustable to fit any frame or physique, and it makes you look a little like Han Solo if you happen to look a lot like Harrison Ford. It has only two disadvantages: (1) If you are a MessagePad 100 owner, you'll have to holster the Newton in its protective case, and (2) a person walking around in public wearing a modified police holster might attract a certain amount of unwanted attention. Three police departments gave it their thumbs-up and I've worn mine virtually everywhere for two months without incident, but I strongly urge you to read the full set of instructions, which explores this subject in greater detail.

THE EASTWOOD:

Rattlesnake-fast one-handed quick draws for your Newton.

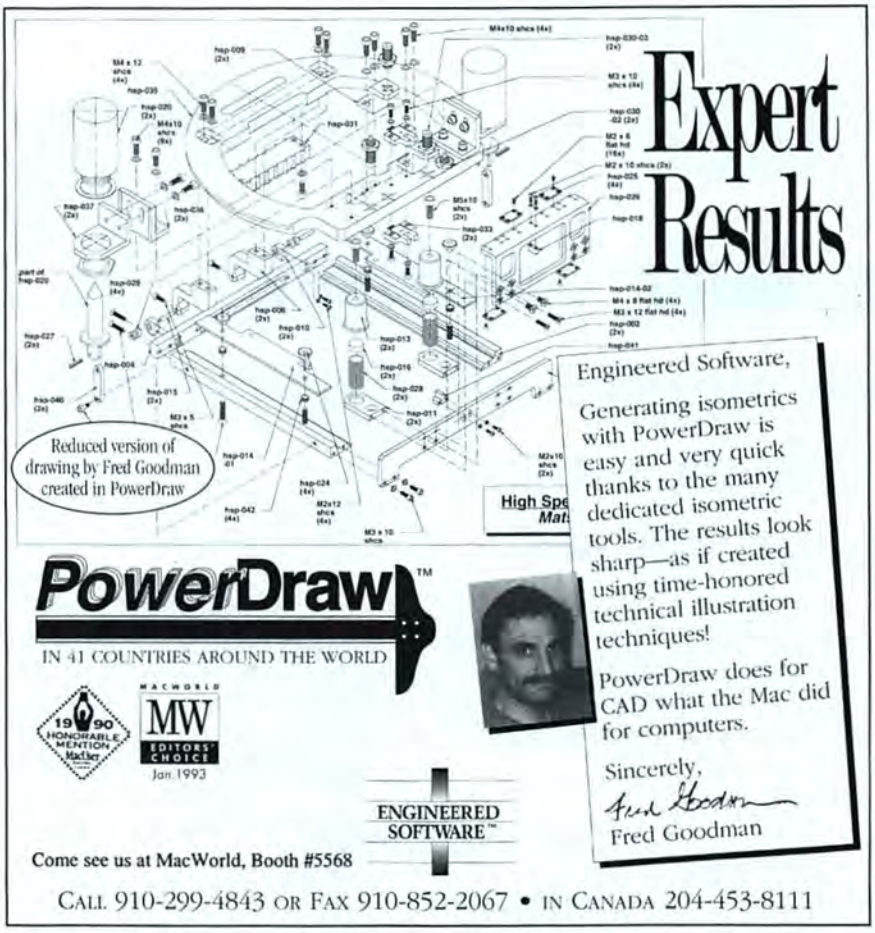
Now onward to the column updates:

Copywrongs

I won't mince words: I blew it in one of my copyright columns ("Monkey ©, Monkey Do," April '94). After receiving letters from two helpful readers, I retrieved the flight recorder from the wreckage of that column and determined that due to a boneheaded error during transcription of my notes, I had mistakenly reported that the "automatic" copyright to the works you create expires in three years unless it's registered. In truth, even if you do absolutely nothing, your copyright will last throughout your lifetime plus 50 years. Although you can register the copyright at any time, if you hope to ever recoup statutory damages and attorney's fees from a potential infringer, you must register within three months of the work's first publication — otherwise, you'll be able to win only actual damages and compensation for loss of profits. For additional details, write to Information Section, U.S. Copyright Office, Library of Congress, Washington, DC 20559 or phone 202-707-3000.

Now, the *really* dopey thing is, I'd gotten that *same* bit o' data correct a mere month earlier, in part 1 ("Do You Copy?" March '94). And as long as I'm flagellating myself here, I have to admit that the *Prisoner* episode I mentioned was entitled "Hammer into Anvil" rather than the other way around.

To atone for these errors, I promise that I'll nip off right away and kill myself in the most disgusting manner possible. Right after the kid comes by with my basket of steamers.



CIRCLE **73** ON READER SERVICE CARD

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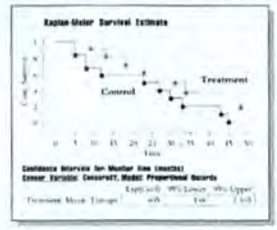

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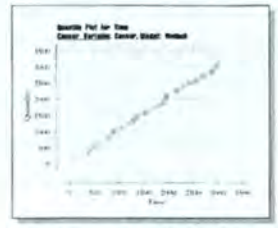

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CIRCLE **168** ON READER SERVICE CARD

The Rest of the Story

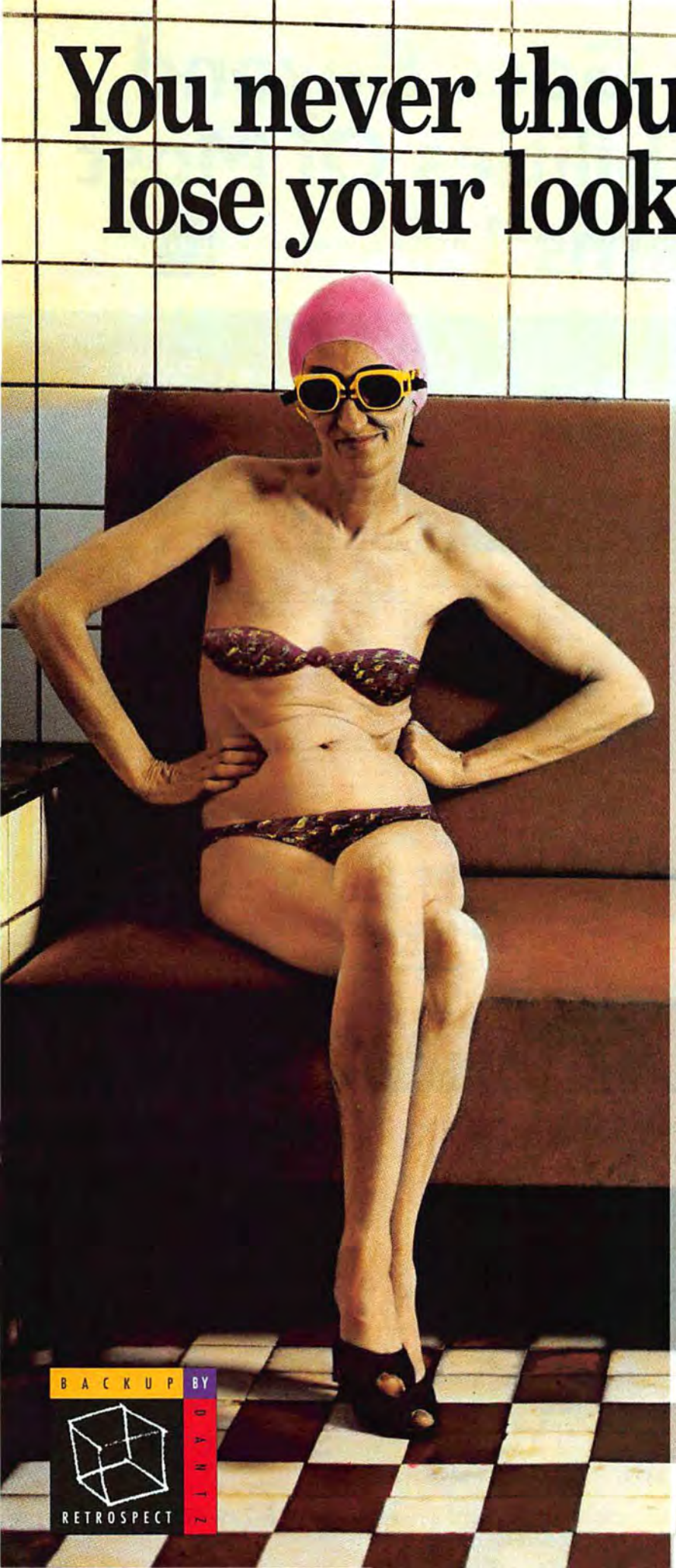
OK, on to happier things. Response to the story of The Letter ("Don't Leave It to Goofus," December '93) was overwhelming. Dozens of readers scrambled to their modems and word processors asking for copies of that mystical document of mine that, when mailed to software and hardware companies, inspired them to send me boatloads of free stuff when I was an impoverished student. Once again I must remind you that The Letter is the source of unspeakable power and it *has* to be researched; The Government has Top Men on it as we speak. But many readers also wrote in to tell me of the success they'd had with their own versions of The Letter. Impoverished individuals and highly worthy established charities alike recounted the generosities of various companies, which just goes to prove that Folks Act Like Good People when given the opportunity.

Back in February, I wrote about some of Apple's free Internet resources. Since then, Apple has set up an excruciatingly spiffy new home page — http://www.apple.com/ — on the World Wide Web. For those of you who have never heard of a home page, it's an on-line-readable hypertext document you can access by using either Mosaic (if your Internet connection is via SLIP or PPP) or Lynx (if you have a dial-up connection) software. Click on visual links of interest, and you'll be transported into directories of product-information sheets, technical info, remote servers of free and shareware software — trust me here, just tons of neat stuff. You can even view QuickTime movies online, including Ridley Scott's legendary "1984" commercial. Unlike FTP or Gopher sites, a WWW page has a slick, friendly, and highly graphical interface reminiscent of America Online (provided you access it through Mosaic). Although parts of it are still under construction, Apple's home page is a *killer* resource.

Parting Shots

As always, positive, negative, and Just Wrote Because My Boss Forgot To Lock The Stamp Drawer reader feedback is welcome. Write to me at here at *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Or prove that you're a thoroughly modern Millie by e-mailing me at 72511,204 (CompuServe) or andyi@world.std.com.

You never thought you'd lose your looks, either.



BUT YOU WILL.
AND THE ODDS ARE YOU'LL LOSE YOUR DATA, TOO.

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CIRCLE **28** ON READER SERVICE CARD

"FirstClass Goes Beyond The Capabilities Of Most Mail Systems"

BYTE Magazine 09/93

FirstClass®

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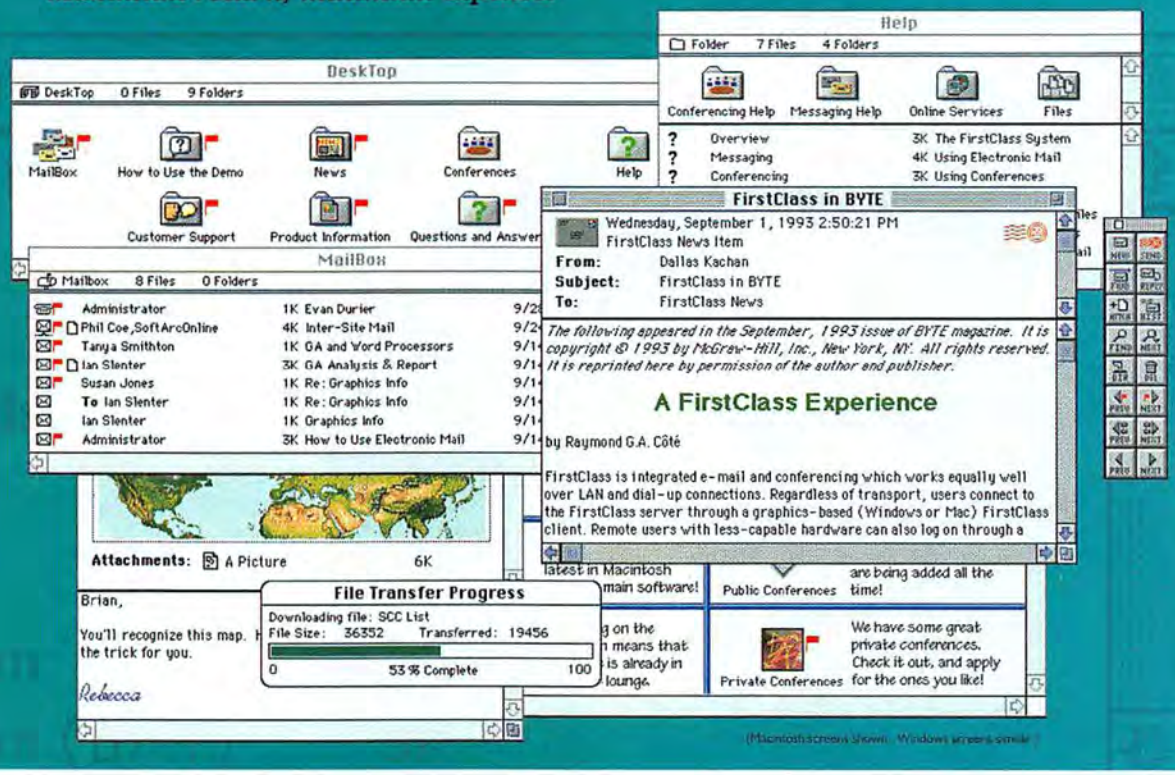

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Autoforward & Reply?	Y	-	Optional	-
Full Message History?	Y	Y	Pseudo	-
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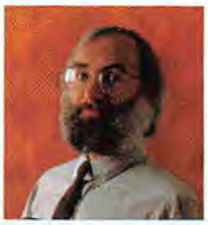
CIRCLE **64** ON READER SERVICE CARD

MICHAEL SWAINE



Trouble in Windows Land

JUST PRESS YOUR EAR TO THE ground along the Infobahn these days, and you're likely to hear ominous rumblings. Every software company, one gathers, is either struggling to survive or being investigated by the Justice Department, and every hardware company is in trouble. It reminds me of something my cousin Corbett once said: "Rough year. *Everybody* lost market share."

Hand-wringing is rife in Macland. Apple is losing the support of third-party developers. System 7 is showing its age. Either Apple needs to license its system software or it's too late to license it. Power Macs don't work right with NuBus devices. Native PowerPC applications are too slow in coming to market. Apple isn't providing decent PowerPC development tools. And all this will cause Apple to lose market share.

Well, maybe. But meanwhile, the other end of the universe is coming apart at the seams.

Ever since 1981, you could use the terms *PC, Intel box,* and *DOS machine* interchangeably. IBM gave us the widely imitated PC architecture; Intel has given us a *long* line of backwardly compatible microprocessors (generically referred to as x86 chips); and Microsoft gave us DOS, The Operating System That Would Not Die (lately dressed up in Windows, a garment that looks like a Macintosh but is really more of a slicker). Any one of the three implied the other two: PCs used Intel microprocessors and ran DOS, Intel machines were DOS-equipped PCs, DOS machines were PCs with Intel inside.

But no more.

IBM, still one of the top three personal-computer vendors and a force to be reckoned with if you can figure out what it's up to, has begun to abandon Intel and is in the last stages of severing its ties with Microsoft.

The imitators of IBM have not — yet — followed IBM's lead. Some aren't going to, but you might do well to consider that following IBM's lead was precisely the model that all of their businesses were founded on.

Intel chips have always been the clone makers' chips of choice — one might argue that this was because they had no choice. Now they do. Recently, much as IBM's PC was cloned, Intel's microprocessors have been cloned, and Intel has competition from AMD and Cyrix in producing the popular 486 and Pentium chips. The clone makers care little about brand loyalty and stickers saying "Intel inside" and much about performance and price. Intel is vulnerable on both fronts.

Windows is dying. Windows applications more and more often are referred to as legacy applications, which is what COBOL code is called.

Adding insult to injury, IBM is supposedly developing a PowerPC chip (the 615) that will include x86 instructions, allowing it to run native PowerPC *and* native x86 software.

The Microsoft/Intel relationship is rapidly moving toward a situation in which Intel needs Microsoft a lot more than Microsoft needs Intel, at which point Intel will know how the rest of the industry feels.

And Intel *does* need Microsoft, desperately. As Jeff Duntemann and Ron Pronk write in *Inside the PowerPC Revolution* (Scottsdale, Arizona: Coriolis Group Books, 1994), "Intel has probably lost the hardware war, but it can still keep up its market share by assuring that the PowerPC never wins the software war [by ensuring] that Microsoft and other major vendors of x86 software *don't* migrate their applications to the PowerPC platform."

Intel is no doubt pleased about Microsoft's slowness in delivering native PowerPC applications for the Macintosh. But even so, native PowerPC applications are appearing more rapidly than are native applications for Intel's Pentium.

But what was that about Intel losing the hardware war?

Well, chip experts claim that Intel made several mistakes when it introduced the Pentium chip. It was expensive, forced costly changes in system designs, wouldn't work in a portable computer, didn't automatically improve application performance, and retained an obsolete approach to providing registers. Intel is in no danger of losing its leading market *position,* but it could easily lose market *share.*

So could Microsoft. Windows is dying. Windows applications more and more often are referred to as legacy applications, which is what COBOL code is called. Microsoft's next-generation technology, NT, isn't catching on, and there's that pesky Justice Department business.

So could IBM. In its post-Microsoft era, IBM will face the challenge of maintaining 12 percent of the personal-computer market with an operating system — OS/2 — that has a 2-percent share of its market.

So it seems to me that with the non-Apple part of the universe coming apart at the seams, it would be difficult and dumb for Apple to lose market share.

That doesn't mean it won't happen, though.

The detail of EPSON's 4800 dpi, scanner really stands

Actual 30-bit scan

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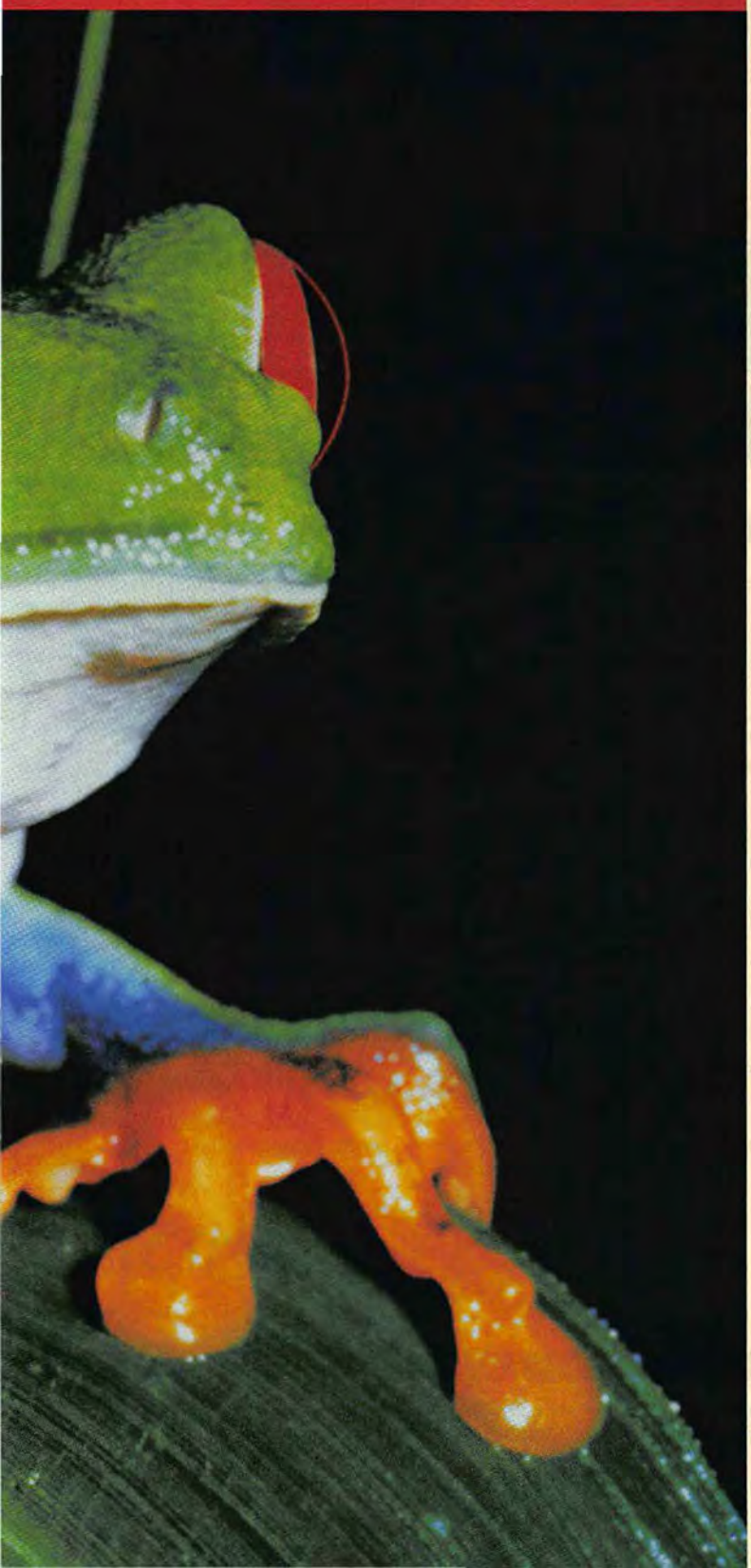
30-bit color out.



When it comes to detail, the new EPSON ES-1200C is in a class by itself. It's the only personal scanner with 4800 dpi and 30-bit color internal scanning for crisp, clear image reproduction.

To ensure the best results with any image you scan, the ES-1200C provides one and three pass scanning, and standard parallel and SCSI ports allow you to connect simultaneously to a Mac and a PC—an EPSON exclusive. All this means the ES-1200C gives you more power than anything else in its price range.

The ES-1200C Pro for Mac. The highest detail of any personal scanner.

The ES-1200C Pro includes top-ranked Adobe Photoshop, Kai's Power Tools, ScanTastic plug-in module & desk accessory and a SCSI cable. There's also a PC version.

Feature	EPSON ES-1200C Pro	HP ScanJet IICX	Microtek II HR	Umax UC1260
Optical Resolution	600	400	600	600
Max Resolution	4800	1600	2400	2400
Bits Per Pixel	10	8	8	8
One & Three Pass	yes	no	no	no
Dual Connectivity	yes	no	no	no

To see what a difference the details can make, visit your local authorized dealer or call 1-800-BUY-EPSON.

EPSON

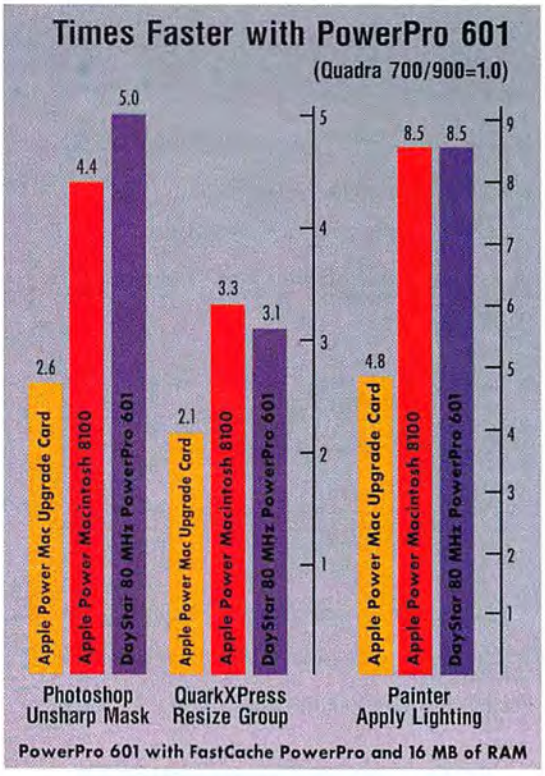
Launch Your Mac into the World of PowerPC With DayStar' PowerPro 601.

DayStar's PowerPC upgrade for the Quadra 650, 700, 800, 900, 950 and Centris 650.

Currently Shipping Native PowerPC Applications*

- Adobe Illustrator
- Adobe Photoshop
- Aldus FreeHand
- Aldus PageMaker
- Autodessys, Inc. Form• Z
- Central Point Software MacTools
- Claris Corp. Claris Impact
- Claris Corp. ClarisWorks
- Dantz Development Retrospect
- DeltaPoint DeltaGraph Pro
- FIT Software Full Contact
- Fractal Design Dabbler
- Fractal Design Painter
- Frame FrameMaker
- FWB Hard Disk Toolkit
- Graphsoft MiniCAD+
- Gryphon Software Morph!
- Hash Inc. Playmation
- Insignia SoftWindows 286
- Language Engineering Corp. LogoVista E to J
- Metrowerks CodeWarrior
- Specular Infini-D
- UserLand Software Frontier
- VideoFusion
- Wolfram Research Mathematica
- WordPerfect

Power Mac 8100 Performance for Thousands Less



DayStar designed the PowerPro™ 601 for the graphics professional who needs the maximum in performance. This processor upgrade card plugs up to 80 MHz PowerPC speed into your current Macintosh. You save time and money compared to purchasing a new Power Macintosh.™ And, PowerPro lets you avoid the emulation roadblock by letting you restart as a 68040 based Macintosh computer.

Developed in cooperation with Apple Computer, the PowerPro 601 has actual Power Macintosh ROM chips. So, you get the same basic hardware and functionality as Apple's own solution, all on an easy to install, 100% compatible upgrade card!

PowerPro 601 runs neck and neck with Apple's fastest—the Power Macintosh 8100—and leaves their upgrade card behind in the dust. Plus, the PowerPro offers up to 128 MB of additional memory expansion that combines automatically with your Mac's motherboard.

For Adobe Photoshop™ users, we include a broad family of filters that run Photoshop faster than any other solution. We also include DayStar's Product Bundle CD-ROM. This special edition disc contains ColorMatch™—a color management system for QuarkXPress™ and Adobe Photoshop—and DayStar's revolutionary PhotoMatic™ scripting utility, also for Photoshop. Combined, you get over $600 of applications, demos and more, free!

And, when you buy the PowerPro from DayStar, you also get access to the next generation of PowerPC technology through our cost saving upgrade programs.

So, take the fast road to PowerPC. Call DayStar Digital today.

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CALL FOR AN IMMEDIATE FAX BROCHURE! 1-800-984-4511 DOCUMENT #9101

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**This is only a partial listing. Check online electronic services for a complete list of PowerPC Native applications.*

CIRCLE **36** ON READER SERVICE CARD

SOFTWARE TOOLS /

MICROSOFT OPENS FLOODGATES

Dry spell ends with new versions of Works, Word, Excel, and PowerPoint.

IT'S BEEN ALMOST two years since Microsoft made major changes to any of its mainstream Mac applications, but the dry spell should come to an end this summer.

First on the list is Microsoft Works 4.0, a brand-new incarnation of the company's venerable integrated productivity program. Next come the long-awaited Word 6.0, Excel 5.0, and PowerPoint 4.0, all of which are included (along with Microsoft Mail) in Microsoft Office 4.2, a new version of the company's heavy-duty application suite.

The main focus in the new Works and Office releases is on consistency, integration, and ease of use. All rely on OLE 2.0, Microsoft's object-linking and -embedding technology, to make it easier to insert and edit different kinds of data in a single document. The three remodeled Office applications present similar tool bars and menus. And they feature IntelliSense, a grab bag of enhancements designed to simplify complex tasks and automate routine ones.

Power Mac versions of Word, Excel, and PowerPoint are expected to ship within 30 days of the 680x0 versions. A native PowerPC version of Works is scheduled for release sometime this fall.

In the Works. In recent years, Microsoft Works has fallen behind rival ClarisWorks, particularly in the area of integration. Works 4.0 catches up by way of OLE 2.0: Instead of having to go back and forth among separate modules, you can add a spreadsheet, chart, or drawing to a word-processing document by clicking on a tool palette. Microsoft also broadened the package by adding a slide-show feature; paint tools; and a slew of personal-information-management aids. New WorksWizards help novice users create documents just by answering a few questions.

In a Word. A complete rewrite of the Mac's leading word processor, Word 6.0 is based on the same core code and file format as the Windows version Microsoft began shipping in January. IntelliSense conveniences include automatic correction of spelling mistakes and automatic formatting of tables and imported text. Redesigned dialog boxes with click-on tabs that bring up related options let users make formatting choices without repeated trips to the menu bar.

Buy the Numbers. In addition to blazing speed on Power Macs — two or three times as fast as on a Quadra 950, according to Microsoft — Wizards top the list of Excel enhancements. A Tip Wizard monitors what you do, and if it sees a better way to accomplish the task, it illuminates a lightbulb on the tool bar, where you can click for advice. A Function Wizard helps you locate and understand the available functions. A Query Wizard simplifies retrieval of information from external databases. A PivotTable Wizard helps you set up your data so you can easily switch row and column headings, vary categories, and hide or discover details.

Now Presenting . . . . When you're ready to make your case to colleagues and customers, PowerPoint 4.0 will help you get your act together with the AutoContent Wizard, which prompts you to determine your objectives, set up your arguments, and enter key data; the Pick-a-Look Wizard; and the Rehearsal mode, which just might keep you from running past your allotted time.

All Together Now. The new Works, Word, Excel, and PowerPoint releases each require System 7, a 68020 or later processor, and lots of disk space. Even the minimum installation of Works takes up 5 MB; a full install requires 16 MB. The recommended install of Excel 5.0 fills 10 MB; a minimum setup requires 6 MB, and full install takes up 22 MB. 800-426-9400 or 206-882-8080. / Henry Norr

Microsoft Works 4.0

- Improved integration via OLE 2.0.
- Calendar, reminders, address book, and to-do-list manager added.
- Drag-and-drop editing.
- WorksWizards simplify creation of newsletters, certificates, slide shows, greeting cards, and invitations.

Price: $100; owners of previous versions and competitive products receive $20 mail-in rebate.

Microsoft Office 4.2

- Native PowerPC versions available within 30 days of 680x0 ship date.
- Document-centered integration via OLE 2.0.
- Menus, tool bars, charting, and text editing consistent across applications.
- Tabbed dialog boxes offer quick access to related options.
- Support for QuickDraw GX printing, PowerTalk, and AppleScript.
- Mac applications share code, features, and file formats with Windows counterparts.

Price: $500 (upgrade for owners of individual applications or of previous versions of Office, $299 with $30 mail-in rebate).

Microsoft Excel 5.0

Features listed for Office, plus:

- PivotTables facilitate data analysis.
- Tip Wizard offers shortcut suggestions.
- Other Wizards simplify using functions, importing, retrieving data, formatting, and charting.
- Drag & Plot feature makes it easy to add charts.
- In-cell editing, including formatting.
- Menu editor, dialog-box editor, and Visual Basic for Applications macro language built in.

Price: $325 (upgrade, $119 with $30 mail-in rebate).

Microsoft Word 6.0

Features listed for Office, plus:

- IntelliSense technology automates formatting of text and tables and correction of spelling errors.
- WordBasic macro language makes it possible to write scripts and launch them via AppleScript.
- 100 levels of undo.
- Files in Print Preview mode are fully editable.
- PowerBook mode conserves battery life.

Price: $325 (upgrade, $119 with $30 mail-in rebate).

Microsoft PowerPoint 4.0

Features listed for Office, plus:

- Integration with Word outliner.
- Wizards assist in design and creation of presentations.
- Rehearsal mode helps in presentation preparation.

Price: $325 (upgrade, $119 with $30 mail-in rebate).

IMAGE EDITING /

PHOTOSHOP 3.0 MOVES MOUNTAINS

Native version adds multiple floating layers, flexible palettes, and selective color controls.

ADOBE PHOTOSHOP has ruled the roost so long that it's easy to overlook the program's shortcomings. But Photoshop 3.0, which was due this August, is a dramatic improvement over its predecessor, offering a plethora of new creative tools and enhanced production features. It's also completely PowerPC-native (the 2.5.1 plug-in accelerated only specific functions) as well as 680x0-based.

The most obvious of the new features is support for multiple floating layers, which provides you with much greater freedom in creating composite images than did the previous version. You can manipulate each layer separately, and opacity controls include transparent backgrounds that allow other layers to show through. The new move tool lets you shift layers independently, and the new Layers palette lets you change the stacking order from front to back.

Collapsible palettes that you can combine or split apart help maximize flexibility and conserve screen real estate. The Commands palette lets you assign buttons to provide single-click access to frequently used functions. Other user-interface enhancements are zoomable previews on all filters, drag-and-drop support for moving selections from one file to another, and CMYK preview.

New creative controls include the Color Range command, which quickly builds masks based on selected colors; a set of lighting-effects filters that apply multiple light sources with user-definable angles and intensities to an image; and Filter Factory, which lets you create your own plug-ins.

Production controls are also stronger. True selective color correction — the kind found on drum scanners — lets you adjust the ink densities for a specific color plate by plate. The Replace Colors command creates a mask and then lets you adjust the hue, brightness, and saturation of the unmasked colors. A gamut warning highlights out-of-gamut colors, and the new sponge tool lets you saturate or desaturate colors to bring them into gamut.

Conspicuously absent from Adobe's update are any sign of AppleScript support or proxy-based editing for faster work on large files. $895. Upgrade from full version, $149; from LE version, $199. 800-833-6687 or 415-961-4400. / Bruce Fraser

Xerox Enters Color-Laser-Printer Fray

COLOR COPIERS are key to Xerox's business. Now the company has brought that expertise to the desktop with the Xerox 4900 Color Laser Printer, its first product to be sold through traditional retail channels.

The Xerox 4900 is based on the same Hitachi engine as QMS' new $9,999 Magicolor (see New on the Menu, August '94, page 29). But unlike the 600-x-600-dpi QMS unit, the Xerox printer offers resolutions as high as 1,200 x 300 dpi for both color and black-and-white output — and it's priced at $8,495.

The printer's engine speed is rated at 12 ppm for monochrome and 3 ppm for color. It ships with 12 MB of RAM, upgradable to 48 MB (color printing at 1,200 dpi requires 24 MB). Adobe PostScript Level 2; PCL 5 emulation; and serial, parallel, and LocalTalk ports are standard. Ethernet ($849) and token ring ($649) are options.

Control-panel software lets you monitor toner levels, printer status, and other functions. 800-275-9376; 716-256-4499 (fax). / Pamela Pfiffner

MACUSER/ZMAC UTILITY OF THE MONTH

AppleScript for All

CURIOUS ABOUT APPLESCRIPT but haven't learned scripting yet? This month's ZMac Utility, Script-a-File, is at once a powerful file-manipulation utility and an object lesson for novices in Apple's scripting language. First you choose how you want files to be processed, and then Script-a-File creates a drag-and-drop AppleScript application that can dispatch files to the Trash, install aliases on the Apple menu, or back up important documents. Under System 7.5's scriptable Finder, you can even turn TeachText files into Microsoft Word documents.

Created by Danny Goodman, author of *The Complete AppleScript Handbook*, Script-a-File is available from the ZiffNet/Mac service on CompuServe (GO ZMC:MACUSER), ZiffNet Selections on AppleLink, and ZiffNet/Mac services on eWorld (MacUser). / Mark Simmons

TECHNOLOGY TRENDS /

The Incredible Shrinking Syquest

WHAT LOOKS LIKE A PROP from *Honey, I Shrunk the Kids* is actually SyQuest's new SQ1080 removable-cartridge drive, made to fit into the PCMCIA slot of the 500-series (Blackbird) PowerBooks. Measuring a mere 3 x 2 inches, the SQ1080 fits into all Type III and Stacked Type II PCMCIA slots. The cartridge itself is a minuscule 2 x 2 inches, holds 80 MB of data, and can even take a 2,000-g pounding without losing data. You'll need the PCMCIA adapter from Apple, once that's available, and driver issues with the SQ1080 still need to be worked out. SyQuest estimates prices of about 70 cents per megabyte. 800-245-2278 or 510-226-4000. / Roman Victor Loyola

NEW CPUS /

POWERBOOK ADDS TO BOTTOM LINE

Pared-down 150 is Apple's most affordable.

A HIGH-END HUBBUB surrounded the recent introduction of the PowerBook 500 series, but the classic style — and low cost — of the PowerBook 100 series is alive and kicking. With a suggested price of $1,449, the new PowerBook 150 replaces the 145B as Apple's most affordable laptop.

At first the 150 looks like other 100-series PowerBooks, but it's been reengineered for economy. It uses industry-standard components, such as a 120-MB IDE hard drive (popular with PC makers) and a passive-matrix 9.5-inch diagonal screen with 640-x-480-pixel resolution (with four levels of gray). It also uses existing 100-series accessories and borrows its logic board and RAM from the Duo 230.

Minimalism marks this model. The easy-to-break plastic door of previous models is gone. Set into the 150's back are a 30-pin SCSI connector and one serial port for a modem or AppleTalk connection, as well as space for an internal modem jack. The 150's internal modem slot holds modems originally designed for the 145B, but the 150 lacks an ADB connector and a second serial port. As a result, the unit weighs 5.5 pounds, about a pound less than most of its PowerBook brethren.

The 150 packs a punch, though: It's driven by a 33-MHz 68030 processor and has 4 MB of RAM (expandable to 40 MB). The 150's hard disk is preloaded with ClarisWorks, the PowerBook Mobility Bundle suite of utilities, and System 7.1 (but no backup floppy disks). Apple's improved battery-management scheme means that you should be able to get about three to four hours from each charge. 800-538-9696 or 408-996-1010. / Jason Snell

E-MAIL /

QuickMail Inches Ahead

THE LONG-AWAITED upgrade of CE Software's QuickMail client software adds some snazzy new features but fails to address some old complaints.

On the plus side, QuickMail 3.0, which now operates as an application, adds a spelling checker that's based on the same InfoSoft engine found in Microsoft Word. A new feature called MailManager automatically replies to, forwards, files, prints, and deletes messages based on parameters such as date and sender. You can also search personal folders for messages based on words contained in them. Another new feature is the ability to print, import, and export address books. The limit on filed messages is now 250 per folder, up from the previous version's 100-message limit.

Missing from QuickMail 3.0 are many features that are found in competing mail packages, such as background sending or receiving of messages. You're limited to 16 enclosed files, and you still can't enclose folders or access filed messages from a remote machine.

Version 3.0 affects only the client software, leaving the QuickMail server at version 2.6, still lacking important network features such as directory synchronization. A server upgrade isn't expected until summer 1995. 10-user pack, $649; upgrades, $12 per user. 515-221-1801. / John Rizzo

COOL STUFF /

A New Eye on Video

VIDEO CAMERA as desk accessory? Connectix's new smaller-than-a-baseball, bigger-than-a-golf-ball camera promises desktop video at a list price of $149. It attaches to your serial port and captures 16-level gray-scale video with resolutions as high as 320 x 240 pixels at speeds of up to 15 fps (frames per second). The camera, which is expected to ship in the late summer, sports a built-in microphone and comes with video-recording software. / JS

TECHNOLOGY TRENDS /

Welcome to QuickTime's Virtual Reality

IMAGINE ENTERING a museum and on a distant wall spying an exquisite sculpture that you'd like to look at from all angles. In real life, picking it up is strictly forbidden. With most interactive CD-ROMs, you'd be able to zoom in jerkily, click on the sculpture to see various static views, and wait for your screen to redraw. But with titles authored with QuickTime VR, a nascent technology shown recently by Apple, you'd be able to glide around the room and rotate the sculpture to inspect its curves and textures.

QuickTime VR is an extension to QuickTime 2.0 that lets developers create photo-realistic 3-D worlds based not on video clips but on still images stitched together into one continuous QuickTime file. You can see 360 degrees around you at all times, with seamless pan and zoom abilities, and you can designate objects in scenes — such as a sculpture — as hot spots that invite interactivity.

Most panoramic photos are distorted when composited (top), but QuickTime VR maintains a 360-degree perspective at all times.

QuickTime VR is extremely smart when it comes to compensating for distortion in composited panoramic photos. Its special suite of authoring tools knows to compensate on the fly when you're stitching images together, so perspective is maintained.

The technology uses standard QuickTime compression to create compact files. For example, a composited 5-MB view becomes a 782K clip. QuickTime VR files run completely in software, requiring no hardware acceleration, and are compatible with any QuickTime 2.0-compliant application.

Currently, QuickTime VR is available only to developers. The first commercial product based on it is expected to be *Star Trek: The Next Generation Interactive Technical Manual*, due from Simon & Schuster Interactive this fall. / Pamela Pfiffner

POWER MAC UPDATE

NATIVE ATM CUTS TEXT OVERHEAD

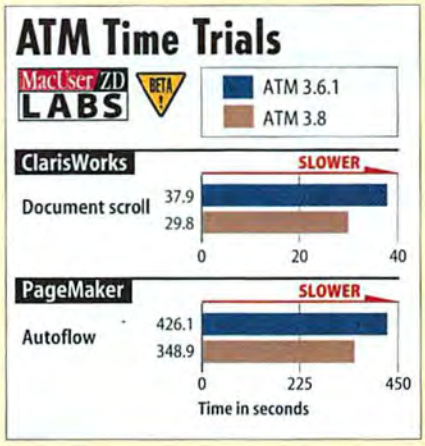
New version shows speed gains across the board.

AT LAST! Adobe Type Manager (ATM) is native for the Power Mac. Based on our tests of a beta version, ATM 3.8 speeds up text-intensive tasks such as scrolling by about 20 percent over its predecessor, version 3.6.

Those with Power Macs have been eagerly awaiting a native PowerPC version of ATM, because without it, native applications take a performance hit every time they draw text on the Mac's screen. This slowdown results when the Mac switches back and forth between the application's code, which runs native, and ATM, which — before this — had to be processed through the Power Mac's 680x0 software emulator. In our first look at Power Macs (see "The Power and the Promise," May '94, page 96), we found that ATM was one of the biggest slow-you-down culprits among popular system extensions.

That's all over now. With ATM 3.8 installed, you should notice a significant speed improvement over ATM 3.6 when a native application calls on your Mac to draw text on-screen. In MacUser Labs tests, we found that with a native version of ClarisWorks running on a Power Mac 8100, it took 21 percent less time to scroll a 30-page ClarisWorks document with ATM 3.8 than with 3.6. Autoflowing 300 pages of text into a PageMaker document (we were running the native version of PageMaker 5.0 on a Power Mac 8100) took 18 percent less time.

Although improved speed is version 3.8's primary advantage, the update has other benefits as well. The ATM 3.8 package, which also runs on 680x0-based Macs and offers support for 11 languages and Kanji, includes 30 Adobe typefaces, among them a multiple-master version of Tekton. Expected to have shipped in August, ATM 3.8 also takes advantage of Apple's QuickDraw GX, a part of Apple's new System 7.5. (Bundled with System 7.5 is ATM 3.7, which supports GX fonts but doesn't run native on Power Macs.) $60. 415-961-4400 or 800-521-1976. / Henry Bortman



YOUR GUIDE TO NATIVE POWERPC APPLICATIONS

THE FOLLOWING IS A LIST of selected native PowerPC applications shipping as of June 30. Many more are expected to ship in the next few months.

Business		
OmniPage Pro 5.0	Caere	408-395-7000
ClarisImpact 1.0	Claris	408-987-7000
ClarisWorks 2.1	Claris	408-987-7000
DeltaGraph Pro 3.1	DeltaPoint	408-648-4000
Full Contact 2.02	FIT Software	408-562-5990
Now Contact 1.1	Now Software	503-274-2800
MeetingMaker XP	ON Technology	617-374-1400
WordPerfect 3.0	WordPerfect	801-225-5000
Games		
Pathways Into Darkness 2.0	Bungie Software	312-563-6200
Spaceway 2000 1.1.1	Casady & Greene	408-484-9228
Flying Nightmares 1.0	Domark	415-513-8929
Multimedia		
After Effects 2.0.1	CoSA	206-628-4526
Morph 2.0.1	Gryphon Software	619-536-8815
Animation Master 2.0.5	Hash	206-750-0042
RedShift Multimedia Astronomy	Maris Multimedia	510-652-7430
LogoMotion 1.5	Specular International	413-253-3100
QuickFlix! 1.1	VideoFusion	419-891-1090
VideoFusion 1.6	VideoFusion	419-891-1090
Networking and Communications		
SPM Pro for Macintosh 2.2	About Software	408-725-4242
Retrospect Remote 2.1	Dantz Development	510-253-3000
Mac Bac	Hi Resolution	508-463-6956
LAN Surveyor 1.1	Neon Software	510-283-9771
NetMinder Ethernet 3.1	Neon Software	510-283-9771
Eudora 2.0.3	Qualcomm	619-587-1121
TeleFinder Group Edition 3.3	Spider Island Software	714-669-9260
Multiterm 5.0	Vicom Technology	604-684-9517
Publishing and Graphics		
Illustrator 5.5	Adobe Systems	415-961-4400
Photoshop 2.5.1	Adobe Systems	415-961-4400
FreeHand 4.0	Aldus	206-622-5500
PageMaker 5.0a	Aldus	206-622-5500
PhotoFlash 1.1	Apple	Apple resellers
Cumulus 1.2	Canto Software	415-431-6871
Dabbler 1.0	Fractal Design	408-688-8800
Painter 2.0/X2	Fractal Design	408-688-8800
FrameMaker 4.0.3	Frame Technology	408-433-3311
IsoDraw 2.6	Itedo Software GmbH	313-668-6611
Full Auto Frame	Scitex America	617-275-5150
Shareware		
Compact Pro 1.35P	Cyclos	On-line
Speedometer 4.0	Scott Berfeld	On-line
JPEGview 3.3	Aaron Giles	On-line
3-D/CAD		
DesignWorkshop 1.1	Artifice	503-345-7421
Vellum 2.5	Ashlar	408-746-3900
form•Z 2.5	Auto•des•sys	614-488-8838
MiniCad 5.0	Diehl Graphsoft	410-290-5114
PowerCADD 1.0	Engineered Software	910-299-4843
ArchiCAD 4.5	Graphisoft U.S.	415-737-8665
Atlantis Render 1.5	Graphisoft U.S.	415-737-8665
MacroModel 1.5.2	Macromedia	415-252-2000
Infini-D 2.6/N	Specular International	413-253-3100
StudioPro 1.1	Strata	801-628-5218
McCAD TrailBlazer 4.03	VAMP	213-466-5533
Virtus VR 1.0.1	Virtus	919-467-9700
Utilities		
Conflict Catcher II 2.1.1	Casady & Greene	408-484-9228
MacTools 3.0	Central Point Software	503-690-8088
Open Sesame! 1.1	Charles River Analytics	617-491-3474
Retrospect 2.1	Dantz Development	510-253-3000
ProFiles	Dayna	801-269-7200
ultraSecure 3.0	usrEZ Software	714-756-5140
MacBench 1.1	Ziff-Davis	ZiffNet/Mac
Other		
FORTRAN 77 SDK	Absoft	313-853-0050
Object Master 2.5	ACI US	408-252-4444
Data Desk 4.2	Data Description	607-257-1000
Ultimage/Pro 2.5	Graftek S.A.	203-572-9600
LogoVista E to J 2.0	Language Engineering	617-489-4000
CodeWarrior	Metrowerks	514-747-5999
MacSign 4.01	SofTeam USA	410-243-1130
Prism 3.3	Signal Analytics	703-281-3277
Frontier 3.0.2	UserLand Software	415-369-6600
Runtime 5.0	Vicom Technology	604-684-9517
Mathematica 2.2	Wolfram Research	217-398-0700

POWER MAC ZIPS PAST 840AV

Native publishing, video, and 3-D applications run twice as fast — and then some.

POWER MACS HOLD the promise of superfast performance, but chips and MIPS are meaningless without native applications. And nowhere is the computational muscle of the PowerPC chip more promising than in graphic-intensive applications such as those used in desktop publishing, 3-D modeling, and video production.

MacUser Labs compared the speed of Apple's top-of-the-line Power Mac 8100 to that of the old king of the hill, the Quadra 840AV, by testing several common functions in native versions of Frame Technology's FrameMaker, Aldus FreeHand, Specular International's Infini-D, Macromedia's MacroModel, Fractal Design's Painter, Strata's StudioPro, and VideoFusion's VideoFusion.

In general, the Power Mac ran applications at least twice as fast as the Quadra 840AV. In some tests, the speed gains were even more dramatic. In 3-D applications, rendering (producing a picture of a virtual world) was three times as fast and screen redraw was four times as fast. Aldus FreeHand saw some stunning speed gains. Rotating an image was four times as fast, and a complex path operation had an eight-times speed improvement.

Native Fractal Design Painter, on the other hand, exhibited only a slight speed advantage, due primarily to the 840AV's DSP, which enables rapid floating-point operations.

Raw speed isn't the only advantage of these native applications. The Power Macs simply perform better: 3-D models redraw faster, FreeHand previews are snappier, and brushes in Painter have a much more natural feel than in the 680x0 version.

Look for even greater speed boosts next year, when Apple brings out faster 601-based units and the really, really fast 604-based machines. / Sean J. Safreed

Jeffy Milstead directed the testing for this report.

OCR SOFTWARE /

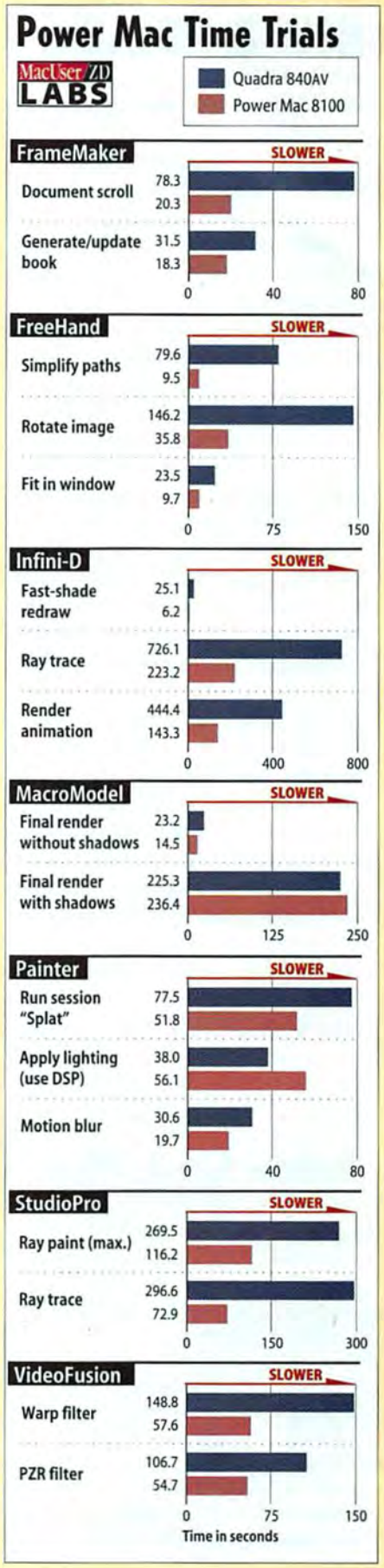
Caere's Speed Reading

THE SPEED ADVANTAGE of a Power Mac is clear if you're a graphics professional, but what if you work with words rather than images? Despite their inherent speed, native PowerPC word processors still have to wait for you to type something. The real speed gain would be if you didn't have to type at all.

That's where Caere's new native PowerPC OmniPage Professional 5.0 comes in. This OCR (optical character recognition) application significantly benefits from the added processing muscle of the PowerPC chip. In fact, Caere says that OmniPage now runs faster on a Power Mac than on any other personal computer, and it's as much as 400 percent faster than on a Quadra 900. If you've ever drummed your fingers waiting for text recognition, you'll understand why the Power Mac makes OCR more appealing.

But speed isn't everything. OmniPage Pro 5.0 addresses two other common OCR pitfalls as well: accuracy and ease of use. To aid with the former, Caere has introduced a new technology, 3D OCR, which uses gray-scale information the scanner provides to improve accuracy on broken, faded, and joined characters. Another new technology, Compound Neural System, attempts to improve recognition of degraded documents (such as faxes and photocopies) by applying algorithms that have been "trained" to handle common recognition problems. These features do slow down character recognition somewhat, but you can disable them during scans of clean text if you prefer.

At the same time it's making OmniPage Pro more technically sophisticated, Caere is also attempting to make it more user-friendly, by simplifying the interface and making it possible for users to change job settings without having to rescan pages. $695. 408-395-7000. / James Bradbury



NEW & NOTABLE

HARDWARE /

QMS 1060 and 1660 print systems. These two high-resolution laser printers feature strong network connectivity. The 10-ppm QMS 1060 ($2,699) can print 600-x-600 dpi on legal-sized paper, and the 16-ppm QMS 1660 ($4,199) can print 1,200-x-600 dpi on ledger-sized paper. Each printer includes emulations of PostScript Level 2 and PCL 5 and can work simultaneously with serial, parallel, and LocalTalk networks as well as with Ethernet or token-ring networks (with extra expansion cards). Since the printers' system code is stored in Flash ROM, it's easily upgradable. 205-633-4300.

Radius StudioArray. Geared for QuickTime-based digital-video editing, Radius' latest entry is a RAID disk array optimized for use with VideoVision Studio and the Quadra 840AV or Power Mac 8100. The StudioArray ($6,999) offers 4.1 GB of storage per module, equivalent to as much as 30 minutes of high-quality digital video. Additional 4.1-GB modules ($6,399 each) are also available. 408-434-1010.

RasterOps ClearVueColor 21. Support for resolutions as high as 1,600 x 1,280 pixels highlights this 21-inch display, which features a shadow-mask tube and a precise electron gun that minimizes pixel distortion at the corners and sides of the screen. Color temperature can be controlled with one user-definable and two preset settings. $2,449. 408-562-4200.

Hayes Optima 288 V.FC + FAX. Taking advantage of the 28.8 kbps of the V.FC protocol, this modem also supports the Group 3 fax standard for 14.4-kbps fax transmission. It's bundled with Hayes' Smartcom software. $569. 404-840-9200.

Berkeley Spreads Wings

FLYING TOASTERS aren't the only thing coming out of Berkeley Systems these days. The maker of After Dark has introduced Expresso Calendar and Address Book ($70),

a personal organizer with 20 customizable calendar designs. Expresso gives you the option of placing an image of your calendar on your desktop, so you can see it (behind open Finder windows) even when Expresso itself isn't loaded. 510-540-5535.

Sony's Sound Choice

LIKE TO BLAST CDS (and CD-ROMs) while working but find that most speakers take up too much desk space? Sony's new all-in-one CSS-B100 Speaker Box supports monitors as large as 17 inches (shown here is Sony's new $499 Multiscan 15sf) and can be placed on a CPU or on your desk. The monitor rests on a separate platform that sits above the shielded speakers, so vibrations from thundering bass lines won't affect your display. $129.95. 800-352-7669 or 408-432-0190.

SOFTWARE /

Phyla. Billed as the next step in database evolution, Phyla is an object-oriented database program that lets users define complex relationships among different classes of information. Linking data types is as easy as dragging and dropping. $495. Mainstay. 805-484-9400.

Omnis 7^3. The latest revision of the Omnis 7 database-application development package adds cross-platform support for Power Macs, OS/2, Windows NT, and three flavors of UNIX — all stemming from one source code. This product means that Omnis developers can now create run-time applications at no additional charge. $5,000. Blyth Software. 415-571-0222.

Prince of Persia 2: The Shadow and the Flame. This sequel to Jordan Mechner's successful action game features cinematic-style animation and treacherous pitfalls as the title character travels far and wide to — once again — save the beautiful princess. $40. Brøderbund. 415-382-4600.

Amazing Animation. With this application from Claris' Clear Choice line, children can create animated presentations that have moving pictures and sounds. You create an animation by selecting an item, clicking on it, and dragging it across the screen. The package includes backgrounds, animated characters, sound effects, and QuickTime support. $59. Claris. 408-987-7000.

MACINTOSH PRICE INDEX

THE UNITED COMPUTER EXCHANGE index reflects average sales prices of new and used Macs as of June 3, 1994. Prices (except those for compact models and Performas) do not include a monitor or a keyboard. The United Computer Exchange is a national clearinghouse of used microcomputer equipment.

Mac Model	New	Used
Plus (1/20)	•	$175
SE (1/20)	•	$300
SE/30 (5/40)	•	$625
Classic (2/40)	•	$475
Classic II (4/40)	•	$550
Color Classic (4/80)	•	$700
LC (2/40)	•	$350
LC II (4/40)	•	$450
LC III (4/80)	•	$575
Performa 475 (4/160)	$1,499	$1,300
Performa 550 (5/120)	$1,799	$1,575
II (5/40)	•	$375
IIsi (5/40)	•	$550
IIcx (5/40)	•	$475
IIci (5/80)	•	$700
IIfx (8/160)	•	$1,125
IIvx (4/80)	•	$850
Quadra 605 (4/80)	$799	$700
Quadra 610 (8/230)	$1,399	$1,175
Quadra 650 (8/230)	$2,069	$1,700
Quadra 660AV (8/230)	$1,399	$1,250
Quadra 700 (8/230)	•	$1,400
Quadra 800 (8/230)	•	$2,100
Quadra 840AV (8/230)	$3,079	$2,450
Quadra 900 (8/230)	•	$1,700
Quadra 950 (8/230)	$3,599	$2,425
Power Mac 6100 (8/160)	$1,649	$1,525
Power Mac 7100 (8/250)	$2,829	$2,550
Power Mac 8100 (8/250)	$4,399	$3,975
PowerBook 100 (4/20)	•	$650
PowerBook 140 (4/40)	•	$825
PowerBook 145 (4/40)	•	$950
PowerBook 145B (4/80)	$1,199	$1,050
PowerBook 160 (4/80)	•	$1,375
PowerBook 165 (4/80)	$1,399	$1,350
PowerBook 165c (4/80)	•	$1,425
PowerBook 170 (4/40)	•	$1,350
PowerBook 180 (4/80)	•	$1,800
PowerBook 180c (4/80)	•	$2,175
Duo 210 (4/80)	•	$1,050
Duo 230 (4/120)	$1,529	$1,200
Duo 250 (4/200)	•	$1,575
Duo 270c (4/240)	•	$2,050

• = discontinued model

For more pricing information on these models and on configurations not listed, call 800-755-3033 or 404-955-0569 or find it on ZiffNet/Mac, in Library 1 (Special Reports) of the MacUser Forum (GO ZMC:MACUSER), as UCEIDX.WRD (Microsoft Word format) and UCEIDX.TXT (ASCII text format); on AppleLink, look for it in ZiffNet Selections:MacUser Software:Reference.

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THE MORE, T

(THAT'S THE PHILOSOPHY BEHIND NEW FILEMAKER PRO SERVER.)

It may sound like a party, but the benefits are far more substantial. You see, FileMaker® Pro Server lets you and your entire workgroup do more, more quickly. (Not a bad thing to celebrate.)

Maybe your company's expanding, where more users will need to access files simultaneously. Or perhaps you're looking for more power to speed existing operations. FileMaker Pro Server is here, at your service. It's a high performance database engine, designed to dramatically accelerate multi-user file sharing over your network. In fact, its sophisticated client/server technology can speed database performance by up to 100 percent over FileMaker Pro 2.1, and increase multi-user file access from 25 to 100 simultaneous users per file.

Connecting FileMaker Pro Server to your existing network is simple. It can support both Macintosh and Windows users. And while it's compatible with standard Mac systems, including Centris and Quadra, it's also accelerated (native) for Apple's new Power Macintosh systems.

Due to its simple plug and play design, the Server can be run by anyone in your organization, not just network administrators or those with database experience. To begin sharing files, simply take any FileMaker Pro file off a desktop machine and drop it on the Server. You needn't worry about modifications or upgrades. It's all in one box.

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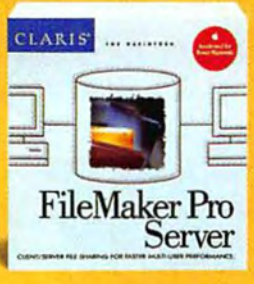
Comprehensive, graphical administration features ensure that the administrator can quickly and easily monitor file-sharing over the entire network, as well as Server performance.

You might be wondering if FileMaker Pro Server can stand up to the daily rigors of your business. Rest assured. We've already put the product through our own torture chamber: the Claris® Testing Lab. We experimented with a range of Mac and Windows computer models, running them in a wide array of network and file configurations--up to 100 computers at a time. We ran tests and made refinements for a full six months. So as more and more of you become networked together, you'll find fewer clock and coffee cup icons on your screens.

So come on! Grab a FileMaker Pro Server and get the whole gang working more productively! It'll definitely be more satisfying than the company picnic. (Sorry, onion dip and chips not included.)

You can get FileMaker Pro Server now from software resellers all over the world. If you'd like the name and address of the dealer nearest you, call Claris Customer Assistance at 1-800-3CLARIS.



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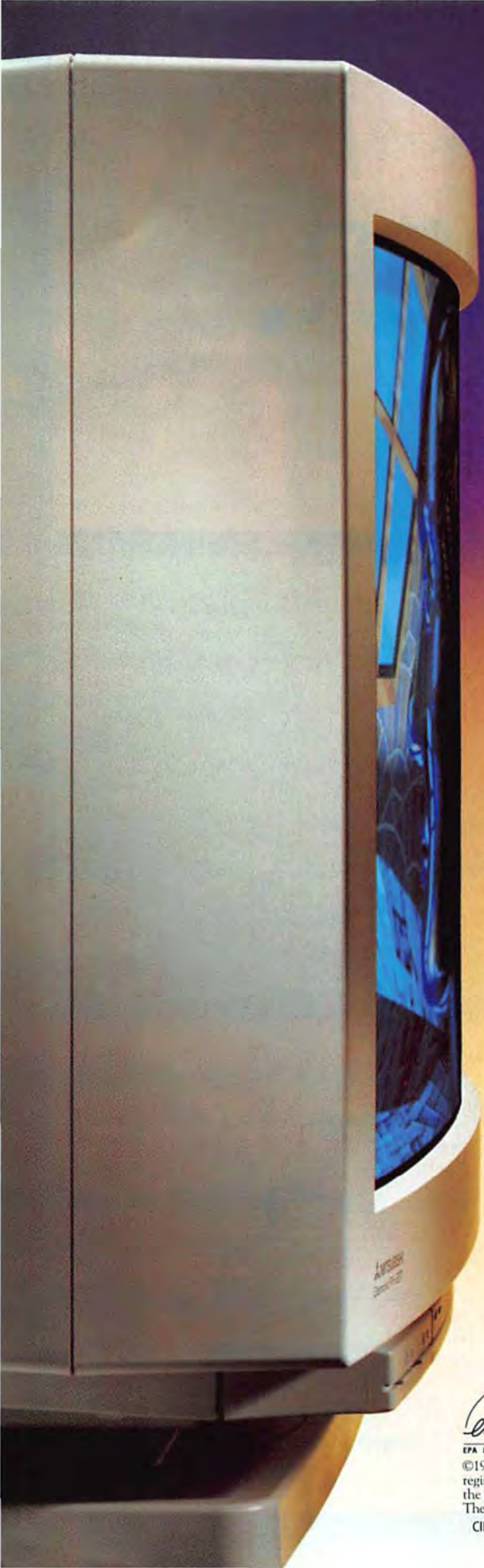

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CIRCLE **166** ON READER SERVICE CARD

PHOTOGRAPHY / LEON

In Focus PanelBook 530LS and Proxima Desktop Projector 2800 / New presentation hardware gets top billing.

IF YOU THOUGHT razzle-dazzle presentations required a mule train's worth of hardware, think again. Mobile presenters are finding improved color and image quality wrapped in ever lighter and more portable packages — a welcome trend in presentation hardware. Two recent offerings, In Focus' ingenious new PanelBook 530LS portable LCD projection panel and Proxima's Desktop Projector 2800, offer distinctly different advantages to mobile presenters.

MacUser ZD LABS

Reviews Rating Key

★★★★★	Outstanding
★★★★	Very Good
★★★	Acceptable
★★	Poor
★	Seriously Flawed
💣	Dangerous

The PanelBook is a lightweight little wonder that doesn't even require you to bring a PowerBook along to deliver your presentation. The Proxima projector — considerably heavier than the PanelBook, because it rolls a projector and an LCD panel into one unit — offers good color quality and is considerably lighter than most competing desktop projectors.

In Focus PanelBook 530LS

Measuring a compact 11.8 inches long, 9.5 inches wide, and 2.2 inches high, the slender PanelBook weighs less than 6 pounds. It attaches to a Mac's video output and displays what's visible on the Mac's monitor. To project the image onto a large screen, you place the PanelBook on an overhead projector. You need a projector with enough lumens (3,000 to 4,000) to project the LCD image onto the screen.

The PanelBook boasts an active-matrix color LCD panel with a color palette of 1.4 million colors. The model we tested supports NTSC, PAL, and SECAM, so you can project video images as well. Audio support is not included.

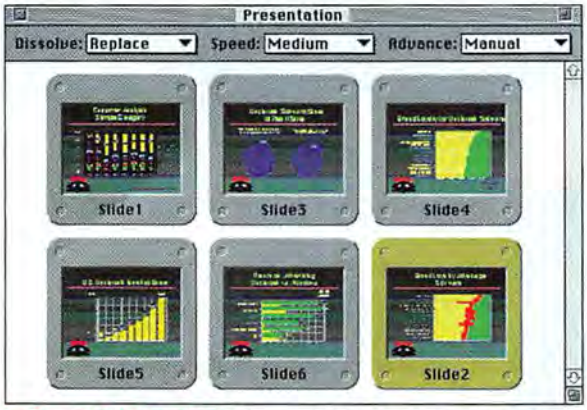
The real beauty of the PanelBook — in addition to the quality of its LCD panel — is In Focus' LiteShow II software, a built-in presentation application that turns the PanelBook into a self-contained presentation device. This means you don't have to lug a PowerBook along to present your slides; however, you do need to create the slides on a Mac first, display them one at a time on the PanelBook, and digitize them with LiteShow II, which is rather time-consuming and cumbersome.

Once you've done that, however, not only can you present your slides with LiteShow II but you can also use the software to make basic modifications and add transition effects. LiteShow II can display thumbnails of your slides on the PanelBook, so you can change the order, add effects, and set the timing. You can store 15 to 50 slides on a floppy disk (DOS-formatted, we're sorry to say), depending on their file size. A proprietary compression scheme ensures that most presentations will fit on a single floppy disk.

To manage the LiteShow II software during a presentation, you use the 11 buttons on the PanelBook's remote-control device, in conjunction with on-screen selections. It's not exactly point-and-click, but the buttons work quite well once you get used to them. Overall, we found LiteShow II easy to use, although it does take time to shuttle through the selections.

You can also use a Mac application to convert your presentation to LiteShow II format. The $750 LiteTools II software offers a more familiar and convenient conversion method than LiteShow II does (because it lets you work with your Mac), but it's pricey, especially considering that it performs only the basic functions you need to transfer a presentation to LiteShow II. It's no replacement for your presentation software.

To use LiteTools II, you must first export



In Focus' LiteTools II software for the Mac lets you transfer your slides to the PanelBook LCD projection panel, so you don't have to lug your PowerBook along to deliver a slide presentation.

slides from your presentation program as PICT files and bring them into the LiteTools II application. You can then add transitions, rearrange the order of the slides, and save them in LiteShow II format on a DOS-formatted floppy disk. LiteTools II can format, read, and write DOS disks — PC Exchange is not required. You can also format disks on the PanelBook, and the LiteTools II application will recognize them on your Mac.

Proxima Desktop Projector 2800

The Proxima DP2800 is one of the most portable desktop projectors we've seen. It weighs 19.5 pounds and is 17 inches long, 13.1 inches wide, and 5.9 inches high — just the right size to fit in a large briefcase. A Y-cable connects the projector to the Mac's video output.

Like the PanelBook, the DP2800 features an active-matrix color LCD panel, but it's capable of displaying 2 million colors — more than the PanelBook. The DP2800 is compatible with VGA, EGA, CGA, and VESA 640-x-480-pixel displays (you must purchase EGA and CGA cables separately). For those who want to project a video image, the DP2800 also supports NTSC, PAL, and SECAM.

For the ultimate multimedia experience, the DP2800 also comes wired for sound — it's equipped with two computer audio-input and two video audio-input jacks, a mini stereo jack for low-level stereo output, and two internal stereo speakers.

You control the DP2800's settings (contrast, brightness, color depth, and so on) with the buttons on the front of the unit or with the remote-control device.

An added benefit of working with Proxima's projector is the opportunity to use the company's $495 Cyclops Interactive Pointer System. The Cyclops pointer lets you control your presentations from the images the DP2800 projects, so you're not chained to your keyboard and mouse. You can select icons, menus, and text by clicking directly on or near the projected image of your Mac's screen. The wandlike Cyclops works its magic by using a video camera located close to the projector's lens. The camera maps the position of the wand tip's red LED onto the Mac's screen and conveys the information to the Mac via the ADB port.

Be prepared for a learning curve with the Cyclops. We didn't have a problem working with menus, selecting buttons, or dragging items, but more-precise maneuvers, such as clicking on the close box, marking check boxes, and moving sliding bars required lots of practice. Moreover, before you can use the Cyclops, you must first align and calibrate the camera with the projected image. That's easy enough, but if the projector moves slightly during your presentation, you'll have to recalibrate, which can take a few minutes.

Image Is Everything

To evaluate the image quality of the PanelBook and the DP2800, MacUser Labs developed three test documents — a color Aldus Persuasion presentation incorporating simple text and graphics, a Microsoft PowerPoint presentation with color gradations and detailed graphics, and a photographic image with flesh tones. Our test platform was a PowerBook 160, and we used the In Focus OverView 410P overhead projector with the PanelBook. Each device was set to produce the highest image quality possible.

Although neither the PanelBook nor the DP2800 can match the quality of a desktop monitor, we found each more than adequate for business presentations. Overall, we found the DP2800's image quality superior to the PanelBook's — colors appeared more vibrant and gradations were smoother, probably due to the DP2800's integrated projection system and larger color palette. For photographic images, both the DP2800 and the PanelBook displayed consistent flesh tones and maintained a good level of detail, although the DP2800's images tended to be more vibrant.

The Bottom Line

With their most recent presentation-hardware introductions, both In Focus and Proxima have made great strides toward improving the lot of mobile presenters. Choosing the device that's right for you depends on your priorities. If color quality takes precedence over portability, your best bet is the Proxima Desktop Projector 2800. It supports a wider range of colors than the In Focus PanelBook 530LS and is easy to set up and use. Proxima's Cyclops Interactive Pointer System is an added plus.

On the other hand, if you want the more portable device, you'll find the In Focus PanelBook 530LS to be lightweight, innovative, and capable. And with its built-in LiteShow II presentation software, the PanelBook can display your presentation without requiring you to take along a PowerBook. You can even use the software to make last-minute changes to your presentation without a computer. The one thing you will need is a bright overhead projector that's PanelBook-compatible. / Roman Victor Loyola

In Focus PanelBook 530LS

Rating: ★★★★

List Price: $5,299.

Pros: Lightweight and small. Built-in LiteShow II presentation software lets you leave your PowerBook at home.

Cons: LiteShow II image-capture process is cumbersome. LiteTools II option is pricey.

Company: In Focus Systems, Tualatin, OR; 800-294-6400 or 503-692-4968.

Reader Service: Circle #401.

Proxima Desktop Projector 2800

Rating: ★★★★½

List Price: $8,995.

Pros: Vibrant colors. Smooth color gradations.

Cons: Recalibrating optional Cyclops pointer system can be inconvenient.

Company: Proxima, San Diego, CA; 800-447-7694 or 619-457-5500.

Reader Service: Circle #402.

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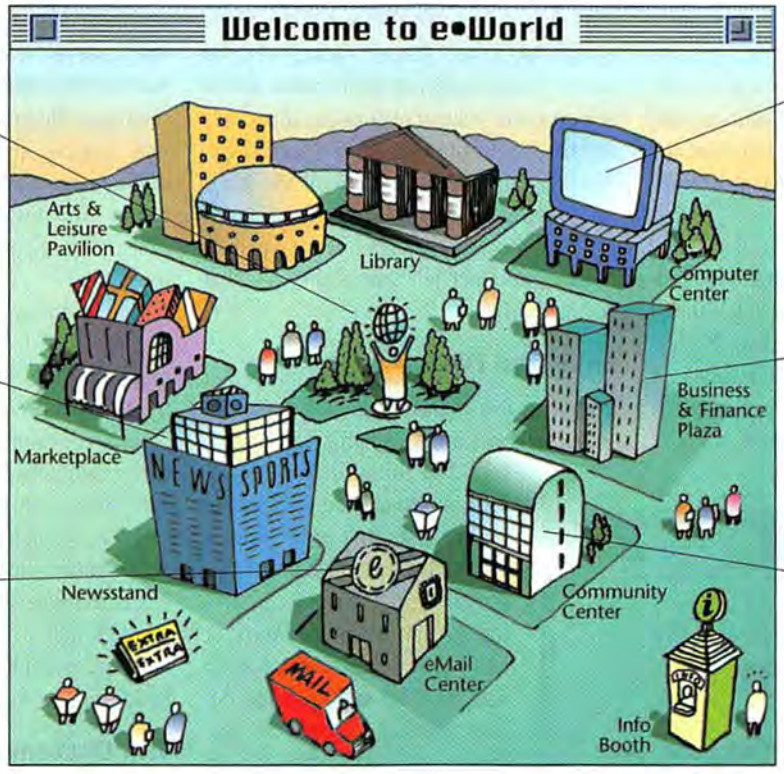

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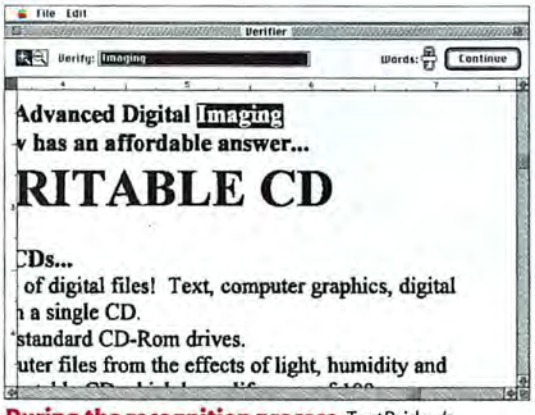
TextBridge / Xerox's low-cost OCR software packs a passel of high-performance features.

AT A PRICE you might expect to pay for a utility, TextBridge OCR (optical character recognition) software combines low cost with high accuracy in a niche previously known for its sky-high prices and specialized applications. TextBridge's attractive combination of value, basic features, and ease of use may even edge OCR toward the realm of mainstream business applications.

Buyer's Bargain

At only $99, TextBridge may have a bargain price, but it competes with the big guns of OCR — such as Caere's OmniPage Professional, which costs over seven times as much — when it comes to performance. It's true that TextBridge doesn't have some of the same advanced features as OmniPage Professional, such as a built-in graphics editor or the ability to save training settings, but TextBridge surprised us with its dead-on accuracy (close to 99 percent at times), speed, and simple elegance.



During the recognition process, TextBridge's Verifier highlights words it may be unfamiliar with and lets you verify or correct its best guess.

TextBridge's accuracy is especially good if you use a Hewlett-Packard scanner, because the program supports HP's AccuPage technology, which is built in to Hewlett-Packard scanners. We found that, in some respects, TextBridge rivaled the abilities of high-end OCR packages — for instance, recognized text files saved in the Microsoft Word RTF format and then opened in Word retained a welcome amount of formatting, including alignment, point size, and text style (bold and italics).

Admittedly, TextBridge competes more directly with Caere's $119 OmniPage Direct. But although this Caere product lets you scan text and acquire it from within almost any program instead of running separately as an application as does TextBridge, OmniPage Direct lacks many of the high-end features — interactive verification, the ability to recognize TIFF files, a spelling checker, and per-job trainability — that TextBridge has.

Easy and Direct

It took us less than ten minutes to set up TextBridge and start recognizing scanned text. The initial dialog box allows you to choose your source (either a scanner or an already scanned-in image) and your output format (a word-processing format such as Word or MacWrite or an image format such as TIFF or PICT). You decide whether you want to preview each page and interact with the recognition process, using TextBridge's Verifier. You can also specify the quality of the document you are scanning in (standard, fax, or dot-matrix), change the page orientation, add specialized words to a user dictionary, and decide whether you want to control which parts of the page TextBridge should recognize.

If you set the program to automatically zone your page, it breaks the page into text blocks. During the optional preview stage, you can accept those zones or respecify them manually. TextBridge will ignore any part of the page not designated as a text zone.

If you chose the Verifier option, a Verifier window appears during the recognition process and stops on words it's uncertain of and lets you verify or correct its best guess. The words are highlighted on the preview page so that you can see them in context.

You can even train TextBridge, albeit only temporarily. After you've verified the first page or two of a difficult document such as a fax, TextBridge will remember the look of certain words and recognize the rest of the pages more accurately and quickly. Unfortunately, you can't save these settings and use them for other documents.

When it's finished recognizing a page, TextBridge stops before it goes on to the next one. Once you've dealt with as many pages as you want to, you can have TextBridge save them in a file in your preferred output format. You can also save any unrecognized scanned pages as image files for later recognition. And the program supports batch processing of pages saved as TIFF or PICT image files.

Unlike many programs that support AppleScript, TextBridge provides documentation that fully describes its support for this feature. It even provides sample scripts. For example, the In Basket Watcher script monitors a folder, watching for new TIFF files, a common format for saved digital faxes. When a new TIFF file appears, the script automatically starts TextBridge and has it recognize the file, saving the text to another folder. TextBridge is also AppleScript-recordable, so you can record scripts in addition to writing them from scratch.

The Bottom Line

At $99 and with a 30-day, no-nonsense money-back guarantee if you order it directly from Xerox Imaging Systems, TextBridge gives you the ideal way to find out if OCR technology is what you need. Let's face it, to a large extent, OCR simply functions as an add-on or enhancement to word processing for most people. We applaud the fact that Xerox Imaging Systems acknowledges this and has priced this product accordingly.

/ Gregory Wasson

TextBridge

Rating: ★★★★½

List Price: $99.

Pros: Excellent interface and value. Supports HP's AccuPage technology. AppleScriptable.

Cons: Trainability limited to current file.

Company: Xerox Imaging Systems, Peabody, MA; 800-248-6550 or 508-977-2000; 508-977-2435 (fax).

Reader Service: Circle #403.

Smartcom II 4.0 / Hayes teams sophisticated telecom features with a simple-to-use interface.

MAKING ON-LINE connections just got easier, with the latest release of Smartcom II. Version 4.0 of Hayes' highly rated telecommunications software boasts an improved interface as well as support for Apple events and the PowerTalk Mailer. The Smartcom II software works with just about any modem, including the new V.FC 28,800-bps models, and it connected properly with every system we called.

Dialing In

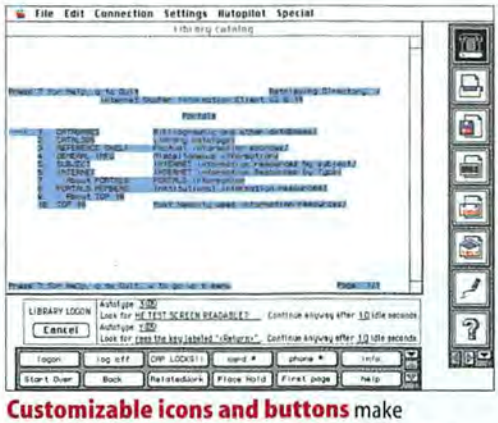
Smartcom II's graphical dialing interface makes it one of the simplest telecom programs to use. To connect, you simply click on a telephone icon and choose the number to dial. With version 4.0, phone-number lists for each Smartcom II document can incorporate as many as eight phone numbers, a useful feature for services and remote sites that use more than one line.

Once we were on-line, our sessions ran smoothly, without interruption or unusual slowdowns. Controls let you slow the scrolling speed of text files in the Online Window, so you can browse through. If you're in a hurry, you can copy and save files for later reading.

Brief on-line sessions can be copied to Smartcom II's new Communications Editor. If you're picking up e-mail from a system that doesn't support off-line mail readers, for example, you can quickly dump your daily mail into the Communications Editor and read it off-line at your leisure. You can also use the editor to save user lists and bulletins. You can save text in a wide variety of word-processing formats.

The Communications Editor accommodates only 32,000 characters, so it can't handle long sessions or long documents. Fortunately, if you're dealing with something that exceeds this length limit, you can copy the entire contents of the buffer with a keystroke and paste the text into a word-processing document. For most on-line activities, however, the Communications Editor is a handy tool.

Smartcom II's Autopilot feature lets you create custom scripts and link them to buttons. The scripts can automate virtually any task, from logging on to downloading files. Buttons can also hold snippets of scripts or frequently used lines of text, such as a sign-off message or your credit-card number. You can create scripts by having Smartcom II record sequences as you perform them, or you can use the Autopilot editor to write them. We found Smartcom II's scripting features slightly easier to use than MicroPhone Pro's or White Knight's.



Customizable icons and buttons make Smartcom II's interface easy to use. The telephone icon shown here initiates a log-on script to a local library's on-line service.

New with version 4.0 is the ability to assign icons to buttons. The program provides a library of prebuilt color icons as well as scripts for logging on to on-line services such as CompuServe and GEnie. With just a few easy operations, we were able to attach a prepared script to a button, customize the script, and assign an icon to the button.

Uploading and downloading files is fairly painless with Smartcom II. We had no trouble sending or receiving files, using any of the transfer protocols supported, including Xmodem, Ymodem, Zmodem, Kermit, and CompuServe B Plus.

In addition to the ubiquitous TTY and VT emulators, Smartcom II supports Prestel and Minitel emulation. The program also handles ANSI color graphics, an invaluable feature for those who call PC-based bulletin boards.

Advanced Features

Smartcom II is no substitute for such specialty programs as Qualcomm's Eudora, an excellent tool for Internet access, nor does it provide the same level of sophisticated functionality as MicroPhone Pro, with its fax tools and TCP/IP support. But Smartcom II is surprisingly powerful for a telecom program that's so easy to use.

For starters, version 4.0 works with Apple's PowerTalk mail system, so you can send, receive, and forward e-mail from any addressable location, including your corporate e-mail system. Apple-events support lets you use Smartcom II's features from within other Apple-events-savvy applications, such as HyperCard, as well as automate such tasks as virus checking of newly downloaded files.

With Smartcom Canvas, a built-in graphics application, you can create simple diagrams on your desktop and send them electronically. You can even create graphics interactively while you're on-line with another Smartcom II user. If you've ever tried to explain a knotty networking problem to a colleague over the Internet, you'll appreciate this tool.

Last, several advanced modem settings, such as the ability to turn error-correction protocols on and off, are available for users of Hayes modems.

The Bottom Line

Simple to use yet powerful, Smartcom II remains a good choice for novices and sophisticated users alike. Beginners will find the program's default settings and button interface helpful. Scripting and other advanced features are there when you're ready to grow. With its affordable price and excellent feature set, Smartcom maintains its position as one of the top telecom programs for the Mac. / Mitzi Waltz

Smartcom II for the Macintosh Version 4.0

Rating: ★★★★

List Price: $149.

Pros: Easy-to-use interface. Comprehensive feature set.

Cons: Lacks fax tools and TCP/IP support.

Company: Hayes Microcomputer Products, Atlanta, GA; 404-441-1617.

Reader Service: Circle #404.

Tektronix Phaser 220i / New 600-x-300-dpi printer gives thermal-wax printing a face-lift.

NOT CONTENT TO REST on their laurels, the print wizards at Tektronix have followed the success of the popular thermal-wax Tektronix Phaser 200i with the next-generation Phaser 220i. The 220i offers all the features of its Eddy Award-winning predecessor, including impressive speed and the ability to print on plain paper. What sets the newcomer apart is top-notch color output.

MacUser/ZD LABS

Rich Color

The Phaser 220i achieves its good-looking output by combining a new 600-x-300-dpi print engine with innovations in color technology. Half-stepping, a technology long used in the monochrome world but relatively unknown in the color arena, helps enhance resolution, as does Tektronix's improved halftoning method. Test images printed with the 220i (including those printed in standard-quality mode) were vastly superior to the 200i's — colors were richer and more vibrant, text darker and more readable.

It's pricey, but the Tektronix Phaser 220i delivers color output that looks so good, you may think it came from a dye-sublimation printer.

Unlike the 200i, the 220i has three settings: high-quality 300-x-600 dpi, standard resolution, and a midrange setting that saves time by half-stepping the engine without rendering the image at full resolution. You have three ways of controlling the settings — with hardware switches; with a printer utility; or via the Print dialog box, if you're using a PostScript Level 2 driver.

At the high-quality setting, photographic images and graphic elements look great — the halftone dots that characterize most thermal-wax output are barely noticeable. Although you probably won't mistake 220i output for that of a dye-sublimation printer, you might have to look twice to spot the difference. The 220i's color-matching capabilities are also superior to those of its predecessor. Built-in color tables allow the printer to sync its color gamut with that of your monitor or of a standard offset press.

Although the 220i normally prints on coated stock, using a three-color ink roll, you also have the option of printing to standard copier or laser-printer paper. In order to print on uncoated paper, the 220i uses a ColorCoat ink roll, which applies a clear primer layer to the page before it applies the colored-wax inks.

Solid Performance

To find out how the Phaser 220i's speed compared with that of the 200i (the fastest thermal-wax printer in our April color-printer roundup — see "Color, Inc.," April '94, page 76), we used the same series of tests we used for the April article. Like the 200i, the 220i is equipped with a 2-ppm engine and a 24-MHz AMD 29000 RISC processor, but its optimized PostScript controller and improved motors give it an advantage for printing certain types of documents.

At standard resolution, we clocked the 220i and the 200i at about two minutes each for printing a one-page Adobe Illustrator document and about three minutes each for a five-page Microsoft PowerPoint document. But the 220i was 68 percent faster than the 200i at printing the QuarkXPress page and a whopping two and a half times as fast at printing the Adobe Photoshop document.

The results weren't quite as impressive at high resolution — the 220i took more than twice as long as the 200i to print the PowerPoint and Illustrator documents. That's a slight drawback if you plan to print primarily presentations. And the 220i was about 60 percent slower at the high-resolution setting than at the standard setting when printing the QuarkXPress page and the Photoshop document. However, for those documents, the 220i was *still* faster than the 200i. Moreover, all of the 220i's speed ratings are well within the range of the thermal-wax printers we've tested.

Out of the box, the Phaser 220i is network-ready. It comes standard with serial, parallel, and LocalTalk ports; optional Ethernet support for Novell NetWare and EtherTalk connectivity costs $695. The base model ships with 10 MB of RAM, upgradable to a maximum of 14 MB.

We were impressed with the 220i, but we have one complaint — it's pricey. The printer's list price is about $6,000, and memory and networking options will set you back another $1,000 or more. You can opt for the less expensive $3,995 Phaser 220e, but you'll have to forgo the memory upgrade and the EtherTalk option.

The Bottom Line

For printing good-looking color-presentation graphics, the thermal-wax Tektronix Phaser 220i is your best bet, hands down. Solid overall performance, excellent output quality, and support for plain-paper printing make it a tough act to follow at any price. / Anita Epler

Tektronix Phaser 220i

Rating: ★★★★½

List Price: $5,995.

Pros: Near-photo-realistic image quality. Good overall speed. Plain-paper printing.

Cons: Pricey. Speed suffers at high resolution.

Company: Tektronix, Wilsonville, OR; 800-835-6100 or 503-682-7377.

Reader Service: Circle #405.

Face to Face / The first document-conferencing software for the Mac sticks to the basics.

DOCUMENT-CONFERENCING software was only a gleam in developers' eyes before 1994. Now Crosswise has taken the basic concept — live markup and notation of documents viewed on remote networked Macs — and produced Face to Face, an easy-to-use document-collaboration tool that should be especially appealing to those who work in higher-education and publishing environments.

Meeting One-on-One

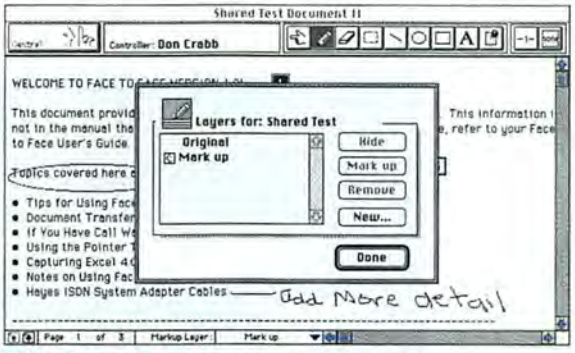
The idea behind Face to Face is startlingly simple: Present a shared document on LocalTalk, EtherTalk, TokenTalk, modem-dial-up, or ISDN networks, and give users of two peer-to-peer connected Macs markup and annotation control. Face to Face does not use TV cameras, specialized network boards, or other fancy gimcrackery.

To share and revise a document during the meeting, you must first convert it to the Face to Face ImageDocument format, a representation of what the document might look like printed on one long piece of paper. To convert a document, you open it, select the Face to Face Chooser extension, print the document to the ImageDocument format, and save it to your hard disk.

Then you set up a Face to Face address book that includes all the remote Macs with which you may want to conference. If you're using System 7 Pro, Face to Face will substitute the System 7 Pro PowerTalk catalog for its own address book. Each Mac must have its own copy of Face to Face installed, along with the Apple networking-support extensions that come on the Face to Face installation disk. You choose whether you want to conference over a local AppleTalk network or over a modem.

Beginning the Teleconference

Starting a meeting is as simple as calling your meeting partner on the phone and clicking on the Call a Meeting button. You select the documents for the meeting from a list of documents in ImageDocument format and select your meeting partner from the address book. Your partner launches Face to Face and clicks on the Waiting for a Call button. Once a successful connection has been made, the documents to be discussed have to be downloaded, which can take several minutes if they are large and the network is slow. Even though Face to Face can work at 2,400 bps, we strongly recommend using at least 9,600-bps modems.



With Face to Face, it's easy to mark up copies of documents on-screen and instantly show your changes to another person on your network.

Both of the meeting partners, designated as the controller and the participant, will see the Face to Face document window, in which they can make notes and annotations. A document may have several markup layers, such as a shared layer plus individual layers in which each partner can make notes. Each of these layers appears in a Layers list window. The controller has immediate control over the shared layer for making notes and annotations. The participant may add annotations, notes, and comments to his or her own layer. You can make the participant's layer the shared markup layer, simply by selecting it in the Layers list window and clicking on the Mark Up button. Basic annotation tools include various selection tools, a pencil for making freehand annotations, and electronic reminder notes.

There are several limitations when you're working with Face to Face and PowerTalk. You cannot use PowerTalk's catalog groups from within Face to Face, nor can you launch a Face to Face meeting from the PowerTalk In Tray. Face to Face also can't deal with multiple electronic entries in your PowerTalk catalog, so it will default to the first entry it finds unless you've set an address preference.

Crosswise calls Face to Face the "first cross-platform document conferencing system," but currently the program works only on the Mac. (Version 2.0 will support Windows, and Crosswise says upgrades will be free.)

Two remote-control products, ScreenLink and Timbuktu, allow you to remotely control another Mac over a network, so you can get many of Face to Face's functions with either of them simply by controlling the remote Mac and the documents you want to discuss via conferencing. Since they require you to launch applications over a network, however, products such as Timbuktu can be considerably slower than Face to Face, and both meeting partners need to have all the same applications. We got more shared-document work done faster with Face to Face than with ScreenLink or Timbuktu, even when we factored in the time it took to save documents in the ImageDocument format first.

The Bottom Line

Should you buy Face to Face? The program's biggest competition is the fax machine — people fax documents to each other and then chat over the phone. But Face to Face is a winner for environments, such as higher education and publishing, that involve a lot of long documents and remote editing. If it weren't so expensive, home-based businesses as well might find Face to Face a convenient alternative to faxing. / Don Crabb

Face to Face 1.1

Rating: ❗❗❗

List Price: Two users, $295 each; ten users, $236 each.

Pros: Good document-collaboration tools. No extra hardware needed.

Cons: Limited to two participants per meeting. Lacks cross-platform capabilities. Expensive.

Company: Crosswise, Santa Cruz, CA; 800-747-9060 or 408-459-9060.

Reader Service: Circle #406.

Canon IX-4015 / Small but mighty color scanner teams speed with good image quality.

WHAT'S SMALLER THAN a bread box but big on image quality? The Canon IX-4015, Canon's first scanner for the home and small office. Canon has teamed up with another powerful imaging player — Light Source, maker of the popular Ofoto scanning software — to create a low-cost color scanner with performance well above what you'd expect for the price. Poised to compete with similarly priced but bulkier offerings from Agfa and Hewlett-Packard, Canon's scanner offers two major improvements: size and speed.

MacUser/ZD LABS

Compact Design

The first thing you notice about the 24-bit Canon IX-4015 is its small footprint — the scanner measures only 11.25 x 15.75 inches. Slightly bigger than a big-city phone book, it's about half the size of competing products and can handle documents as large as U.S. letter/A4.

From the outside, Canon's scanner looks pretty typical (except for its size, of course), but the company has made some interesting innovations in the IX-4015's scanning hardware. Instead of the usual fluorescent lamp, Canon uses a xenon bulb, which the company claims is less prone to flickering and doesn't need to be replaced. In our tests, the light source proved unusually consistent and stable over time.

To see how the Canon IX-4015 stacks up against the competition, we put it through the same suite of tests we used in our most recent roundup of low-cost color scanners (see "Low-Cost Color Scanners," February '94, page 129). To evaluate image quality, we scanned two color images and compared them to scans from the La Cie Silverscanner II, the winner in the February article. The Canon IX-4015's color fidelity was good, although we found that the scanner had a tendency to add a slight color cast to image highlights — something a reasonably skilled user could easily correct. Still, the scans were remarkably sharp and crisp.

You might expect that image quality as good as the Canon IX-4015's would exact a price in speed. Not so — the single-pass IX-4015 is a veritable speed demon. Scanning a 4-x-5-inch color photograph in slightly more than 30 seconds, the IX-4015 was two and a half times as fast as an Agfa StudioScan and nearly twice as fast as the Apple Color OneScanner, which had the fastest engine in our February roundup. Canon attributes the IX-4015's speed advantage to another technology innovation: Unlike scanners that move the lamp, lens, sensors, and mirrors during a scan, the Canon IX-4015 moves only the mirror and the lamp — the optics remain stationary.

Fast and compact, the Canon IX-4015 is a good buy for home and small-office use.

The one drawback of the Canon IX-4015 is its Photoshop plug-in, which suffers from an unacceptably cumbersome user interface. Unlike nearly all competing products, the IX-4015's plug-in doesn't allow you to numerically define the area to be scanned — you're forced to use a less precise click-and-drag marquee for selection. Furthermore, the software measures the selected area in pixels rather than inches. Then, after it makes a scan, it trashes your manually entered scan parameters as well as the prescan image, so you're forced to reinvent the wheel for every scan.

Ofoto to the Rescue

Fortunately, Canon followed the lead of other low-cost-scanner makers and bundled Ofoto 2.0 with the IX-4015, so novices have an alternative to the frustrating plug-in. With Ofoto, getting a good scan can be as simple as clicking on the Autoscan button. The software does the rest, balancing color and brightness, straightening skewed images, eliminating moirés, and sharpening the image — no time-consuming rescanning and image tweaking is necessary. Built-in calibrations allow Ofoto to optimize scans for specific printers. The Ofoto software also provides tools for creating custom calibrations, correcting common photographic imperfections (color-cast problems, poor focus, and exposure error), and doing basic image editing.

In order to use the Canon IX-4015, you need at least a Mac SE, 4 MB of RAM, System 6.0.7 or later, a hard drive with a minimum of 20 MB of free disk space, and an 8- or 32-bit display card.

The Bottom Line

The news for entry-level scanner users keeps getting better. The new Canon IX-4015 boasts speed, image quality, features, and pricing that put it in competition with the big boys. And the scanner's small footprint makes it an especially attractive choice for home and small-office use. / Anita Epler

Canon IX-4015

Rating: ★★★½

List Price: $1,169 (with Ofoto 2.0).

Pros: Excellent speed. Small footprint. Good image quality.

Cons: Minor color-cast problems. Poorly designed Photoshop plug-in.

Company: Canon Computer Systems, Costa Mesa, CA; 800-848-4123 or 714-438-3000.

Reader Service: Circle #407.

Spyglass Plot / No data set is too large for Spyglass' new line-graphics plotting tool.

AIMED AT SCIENTISTS and engineers, the latest data-analysis tool from the scientific-visualization experts at Spyglass handles as many data points as your Mac's memory allows. Spyglass Plot completes the Spyglass family of data-visualization tools, bringing the same power and well-designed interface to analyzing column data that Spyglass Transform and Spyglass Dicer bring to analyzing matrix/image data and volumetric data, respectively.

The Plot Thickens

Spyglass Plot is so easy to use that we figured it out without even cracking the manual. The interface is well designed, simple, and straightforward. We especially liked the intuitive graph-annotation and text-modification tools.

To help you visualize your data, Spyglass Plot creates five types of plots: line graphs, double-Y plots, color scatter plots, parametric plots, and error-bar plots (such as those used to represent the highs and lows of the stock market). All plots are based on one-dimensional data sets that take the functional form $a = f(x)$. If you need to analyze 2-D or 3-D data, you'll need the $595 Spyglass Transform or the $695 Spyglass Dicer, respectively.

As a robust data-visualization tool, Spyglass Plot does a lot more than simply create one-dimensional plots. Curve-fitting techniques coupled with a variety of numerical functions (including trigonometric, hyperbolic, arithmetic, and fast Fourier transforms) help you analyze and massage column data. And Spyglass Plot is designed to handle reams of data — the program's spreadsheet-style display window supports as many as 32,000 columns, and the total number of data points the program can plot is limited only by memory.

Getting data from other programs into Spyglass Plot is straightforward. In addition to generic ASCII text and binary files, the program can read many file formats, including the scientific HDF and HDF VSET formats, as well as standard spreadsheet files.

Spyglass Plot additionally provides tools for enhancing graphic output once you've imported and plotted your data. You can customize each plot by using different line types and weights, colors, symbols, fonts, labels, legends, and titles. In short, you won't have to export raw plots to a graphics program to make them presentable. You can print from Spyglass Plot on color and monochrome PostScript printers and can export plots as EPS, PICT, or HDF files. Naturally, the program also fully supports the Mac's Clipboard.

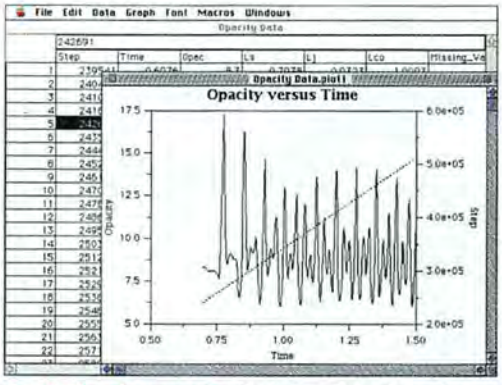
Visualization analysis can be tedious, due to the repetitive task of comparing data sets, but Spyglass Plot provides excellent macro programming features for automating the process. We had no trouble learning to automate our test analyses once we'd read the manual and experimented with the program's sample data sets. You can create macro scripts to control virtually every function of the program.

And because Spyglass Plot uses the same macro language as Spyglass Transform, you can share macros, as well as data files, between the two programs. The Apple events-aware Spyglass Plot also works with AppleScript and UserLand's Frontier.

The $295 Spyglass Plot package comes with two versions of the program — one with FPU support and one without. Spyglass recommends using at least a 68020 color Mac and 4 MB of memory, but based on our tests, we recommend at least a 68030 Mac and 8 MB of memory. You'll get the most-acceptable performance on a 68040 Mac.

We tested both versions of Spyglass Plot on a Mac IIci, a Quadra 650, and a Power Mac 8100. The program zipped along nicely on our Quadra 650. Plots appeared seconds after we issued the plotting command, even when our sample data ran to thousands of data points. We never felt as if we were waiting for Plot to catch up with us. And when we modified data in worksheets, linked plots updated quickly.

We ran into some problems running the program on the Power Mac, however. The FPU version of Spyglass Plot not only failed to recognize the Power Mac's built-in FPU but also simply wouldn't run at all. An on-screen message advised us that we needed a more powerful Mac! And although we were able to run the non-FPU version on the Power Mac, the software's speed was unacceptably slow. According to Spyglass, a native PowerPC version may be available by the time this review appears.



Analyzing large sets of columnar data is nearly painless with Spyglass Plot, the newest member of the powerful Spyglass family of data-visualization tools.

The Spyglass Plot manual is straightforward and easy to understand, although we'd like to see it include additional sample data sets and macros. A UNIX version of the program is also available.

The Bottom Line

Spyglass Plot is a worthy addition to the Spyglass family of data-visualization tools. Its thoughtful interface design and time-saving macros make complex data analysis nearly painless. And the software handles large data sets with ease. All in all, the program's plotting and visualization features are well executed, easy to learn, and simple to use, even if you've had little experience with data visualization. / Don Crabb

Spyglass Plot 1.0

Rating: 4½

List Price: $295.

Pros: Easy to install, learn, and use.
Can handle large data sets.
Excellent data-import and -export facilities.

Cons: Poor performance on Power Macs.

Company: Spyglass, Savoy, IL; 217-355-6000.

Reader Service: Circle #408.

PixelPaint Pro3 / Three-in-one paint tool gets high marks for versatility.

PAINTING, RETOUCHING, and compositing images are all fair game for Pixel Resources' PixelPaint Pro3. The latest version of this veteran paint tool combines features found in Adobe Photoshop, Fractal Design's Painter, and Specular's Collage. PixelPaint succeeds admirably in some areas — most notably special effects — and offers good value for the price, but we found it's best used to complement, rather than to replace, any of those other programs.

Create composite images or isolate objects for individual editing, using PixelPaint Pro3's new Pixel•Layers feature. Each marqueed selection shown here is a floating Pixel•Layers object.

Pixel•Layers

The most noteworthy addition to PixelPaint is the Pixel•Layers feature, which lets you create multiple floating selections (similar to those in Painter X2) within a single document. The selections are live objects that float over the background — you can edit or move them independently and combine them to create complex composite images.

But although Pixel•Layers selections are easy to create, they're not nearly as flexible for complex compositing as objects in Painter or Collage. For example, PixelPaint lacks Painter's list view for naming and arranging layers and Collage's ability to undo any operation you've performed on a layer.

Natural-media effects are new to PixelPaint. The customizable impressionist brush simulates the effect of dabbing with a paintbrush, and there are tools that simulate pastels, graphite, and charcoal. The texture brush responds to PixelPaper texture selections. The program comes with 66 paper textures, which you select from a floating palette.

You can also apply paper textures to existing artwork, and you can combine them with the Glass setting and specify the thickness and frostiness of the glass. Although similar to Painter's Apply Surface Texture and Glass Distortion filters, PixelPaint's tools lack the helpful interactive controls Painter's provide.

PixelPaint brushes are highly customizable. You can vary their size, angle, and color and even use any gray-scale image as a brush. Although you will find more built-in settings for traditional media effects in Painter, PixelPaint's brushes let you create a wider variety of your own effects.

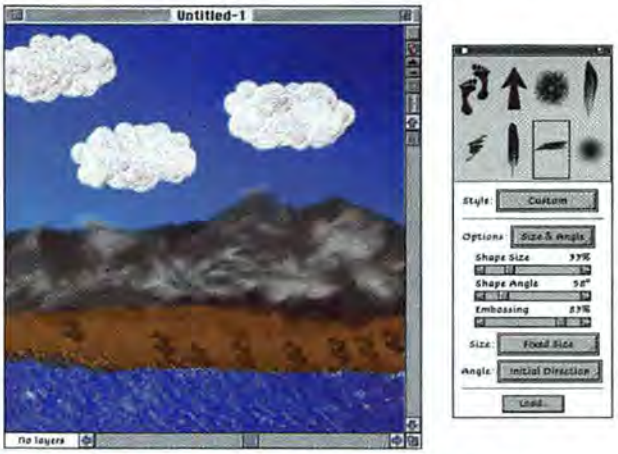
PixelPaint features a good selection of filter effects (Blur, Sharpen, Show Mask, and Find Edges, to name just a few) and color-correction tools, similar to Photoshop's. PixelPaint also supports the Photoshop plug-in format, so you can use filters such as those in Xaos' Paint Alchemy. Most of the PixelPaint filters give you the same types of controls as Photoshop's, but the program's color-correction tools fall short. PixelPaint gives you control over color balance, hue and saturation, and color-content percentages, but it does not provide the fine level of control you get with Photoshop's interactive preview dialog boxes.

But PixelPaint does provide several special tools you won't find in any other paint program. Most notable is the effects tool, which lets you work with color in novel ways. For example, you can selectively paint noise into an image or brush color away from a portion of an image. Additionally, you can set the degree of transparency for the colors you apply, so underlying artwork can show through — a handy feature.

Thanks to PixelPaint's support for AppleScript, you can record any series of operations (with the exception of painting) as a script. This capability makes it easy for you to automate color-correction tasks or achieve artistic effects quickly without doing any programming. Scripting support is also useful for automating graphic-file-format translation — PixelPaint's Open command now accommodates a variety of raster formats, so you can automate file translation from CompuServe GIF to standard TIFF, for example.

PixelPaint's precise selection tools are also a big plus. The program lets you use a series of Bézier curves to select areas, and you can add selected areas to, subtract them from, or intersect them with new selections. You can also make selections based on color ranges.

The variety and power of PixelPaint's tools make the program a great value at $379, but we have several caveats. Professionals will miss the fine level of control over brightness, contrast, and gamma provided by Photoshop's Levels and Curves commands. And although PixelPaint supports Apple's ColorSync and provides controls for color separation, you can't edit in CMYK



PixelPaint Pro3's brushes are highly customizable — you can even use gray-scale images as brushes.

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City Or Town	State	Zip Code	Years At Address	☐ Own Home ☐ Rent ☐ Other ☐ Own Condo/Co-op ☐ Live With Parents		Social Security Number
Date Of Birth (Month/Day/Year)	Mother's Maiden Name		Home Phone Number And Area Code ( )			Name Home Phone Is Listed Under
Previous Home Address, Number And Street	City Or Town		State	Zip Code	Years There	

Please Tell Us About Your Job

3

Business Name Or Employer	Position	Years At Job	Business Phone Number And Area Code ( )
Check Here If You Are: ☐ Retired ☐ Self-Employed	If Retired Or Self-Employed, Give Bank Name	Bank Phone Number And Area Code ( )	Bank Account Number

About Your Income

4

You do not have to include alimony, child support, spouse's income, separate maintenance or other income unless you want us to consider it in connection with this application. Your total **yearly** income from all sources must be at least **$12,000** to be considered for cardmembership.

Your Total Personal **Yearly** Income — Other **Yearly** Household Income

Other **Yearly** Income Sources

Important Account Information

5

Please Check Those That Apply. Be Sure To Specify Bank/Institution Name.

☐ Money Market/ NOW Account	Bank/Institution Name:
☐ Checking Account	Bank/Institution Name:
☐ Savings Account	Bank/Institution Name:
☐ Visa/MasterCard ☐ Dept. Store/Sears	☐ Diners Club ☐ Gasoline ☐ American Express ☐ Other

Would You Like An Additional Card At No Charge?

6

If Yes, **Print** The Name Of The Additional Cardmember (First, Middle, Last)

Please Tell Us About Your Computer Use

7

Do You Own A Computer? ☐ Apple ☐ Other ☐ None

Do You Use Your Computer At? (Check Those That Apply) ☐ Home ☐ School ☐ Business

Please Sign This Authorization

8

I certify that I meet/agree to all the Citibank credit terms and conditions on other side. Please allow 30 days to process this application.

Applicant's Signature
X
Date

1UBAL 0149B LY11V 0000

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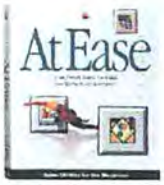

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FOLD HERE

Annual Fee	None first year, $20 thereafter.
Annual Percentage Rate	Currently (July 1, 1994) 16.65% for purchases. 19.8% for cash advances.
Variable Rate Information	The annual percentage rate for purchases may vary each calendar quarter. We will calculate the variable rate by adding 9.4% to the rate disclosed as the U.S. Prime Rate as reported in the "Money Rates" table of The Wall Street Journal on the third Tuesday of March, June, September and December of each year. Because the annual percentage rate is variable, the current rate may not be in effect when your card is issued. This rate will not be lower than 12.9% or higher than 19.8%. However, if cardmembers fail to keep all their Citibank accounts in good standing, the rate will increase to 19.8% on the full purchase balance.
Grace Period For Purchases	20-25 days
Minimum Finance Charge	50¢
Method of Computing The Balance For Purchases	Average Daily Balance (including new purchases)
Late Fee On Purchases And Cash Advances	$15
Transaction Fees For Cash Advances	At a financial institution or By check: 2% of amount of advance but not less than $2 or more than $10. At an Automated Teller Machine: $1.75.
Over-The-Credit-Limit Fee	$10

FOLD HERE

The information about the costs of the card described in this application is accurate as of July 1, 1994. This information may have changed after that date. To find out what may have changed, write to Citibank at P.O. Box 6116, Sioux Falls, SD 57117-6116.

By signing this application, I authorize Citibank (South Dakota), N.A. ("you") to check my credit history and I authorize any references listed to release information to you about any of your affiliates regarding my eligibility for the Apple Citibank credit card and any renewal or future extension of credit. I certify that I am 18 years of age, or older, and that the information provided is accurate. If I am issued a card, I authorize you to exchange information about how I handle my account with Citibank affiliates, credit bureaus and proper persons. If I request an authorized user to be added to my account, I understand that account information will also be reported to credit bureaus in the authorized user's name. I authorize your affiliates to perform certain customer service and payment processing functions for my Citibank credit card account. I also authorize you and your affiliates to periodically exchange information regarding any accounts I may have with you or your affiliates. I understand that if I use the card or authorize its use at a point of sale, my account within 30 days after I receive the card. The Citibank Agreement sent to me with the card will be binding. I have read and understand the disclosures above.

In order to be considered for an Apple Citibank card you must complete and sign the application. Omission of any information requested may be reason for denial.

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136-6003A

mode — a major limitation for achieving good screen-to-print fidelity.

There are also several shortcomings in PixelPaint's interface. The program's profusion of palettes is unsuitable for small screen displays (the Hide Palettes command only slightly mitigates this problem). The zoom tool is limited — you can enlarge images only by factors of 2, 4, 8, or 16. And unlike with other graphics programs, when you enlarge an image in PixelPaint, everything in it gets bigger, including Bézier selection lines. That can be a drawback if you've zoomed in to the image to do more-precise editing — the enlarged lines are likely to get in your way. Last, PixelPaint's basic brush tool is limited to a maximum of 63 pixels, which makes painting on large canvases tedious.

The PixelPaint manual is informative but poorly indexed. Most disappointing is the lack of a tutorial, so you're on your own to find all the ins and outs of the program's many tools.

The Bottom Line

PixelPaint Pro3 offers a breadth of paint and image-enhancement tools, but it lacks depth. Most impressive are the program's special-effects and selection tools. We especially liked the brushes, which do a good job of creating abstract images and are a great choice if you're looking for a way to generate backgrounds for multimedia products or presentation graphics.

Professionals, however, won't find any reason to substitute PixelPaint for Photoshop as their main image-editing tool. PixelPaint's color-correction tools and layer support fall far short of Photoshop's. Still, many graphics users will find PixelPaint a versatile program that brings several special features to the drawing table. / Sean Safreed

PixelPaint Pro3

Rating: ★★★½

List Price: $379.

Pros: Excellent brush effects. Support for multiple floating selections. AppleScriptable.

Cons: Lacks tutorial. No support for CMYK editing. Poorly implemented zoom feature.

Company: Pixel Resources, Norcross, GA; 800-851-1427 or 404-449-4947.

Reader Service: Circle #409.

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Dabbler / Paint box and art lessons rolled into one.

PAINT PROGRAMS have the tools and effects for creating stunning artwork, but they're useless unless you have the talent and knowledge to use them. Dabbler, on the other hand, is not only an excellent entry-level art program but also includes innovative on-screen lessons.

Easing into Artistry

Dabbler's work area resembles an artist's desk with four drawers that have nearly everything you need: drawing tools, textured paper, color palettes, and tool-customizing options. The tools behave in a pleasantly realistic way: Markers bleed into paper, crayons create waxy buildup, and water drops smear colors together. Sounds add to the feeling of realism: Pens scratch, markers squeak, and drawers whoosh out.

You can also use the program's special tools to create sophisticated-looking artwork. Want to see what a photograph would look like if it had been drawn in chalk? Scan it into a sketch pad, and place a blank page on top of it. Select the Clone icon from the color-palette drawer, and then rub over the page, using the chalk tool. Dabbler automatically selects the color of the chalk based on the underlying image and re-creates the image in the new medium. You'll have to experiment to get the desired results, however, and the documentation for this feature is unacceptably weak.

You can also trace an image by placing a piece of paper over it in a sketch pad and making the paper transparent. And the program's support for Adobe Photoshop plug-ins gives you a virtual cornucopia of special effects.

Dabbler has a series of 14 on-screen lessons based on two classic how-to-draw books by Walter Foster, both of which are reprinted in the manual. The on-screen lessons are animations of drawings from the books sketched in by an invisible hand, with instructions and tips that pop up as the drawing takes form.

Dabbler saves drawings automatically into multipage sketch pads, bypassing the traditional Save command. But this convenience has its cost, since the sketch pads eat up hard-disk space. A 72-pixel-per-inch, 640-x-402-pixel sketch pad, just shy of 9 x 6 inches, took up 2 MB when its 12 pages were blank and ballooned to 12 MB when we added several complex drawings and scans. An annoying quirk keeps the sketch-pad storage size from shrinking even when you trash drawings.

An abundance of realistic natural-media tools makes drawing with Dabbler easy and fun.

Dabbler has unusually high hardware requirements for a hobbyists' program, even though they're not outrageous, given the realistic tools, sounds, and effects. It demands 5 MB of RAM — *real* RAM, not virtual memory. Eight-bit-display representation on-screen lags behind your input, so you really need a 16-bit display. Add a digitizing tablet as well, since drawing with the mouse is awkward.

The Bottom Line

Beginners will love Dabbler's intuitive interface and easy-to-follow art lessons, and its variety of realistic natural-media tools at this price will even please more-experienced artists. / Shelley Cryan

Dabbler 1.0

Rating: ★★★★

List Price: $99.

Pros: Useful on-screen art lessons. Realistic tools. Inexpensive.

Cons: Hefty hardware requirements. Weak documentation.

Company: Fractal Design, Aptos, CA; 800-297-2665 or 408-688-5300; 408-688-8836 (fax).

Reader Service: Circle #410.

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CIRCLE **32** ON READER SERVICE CARD

RunWay Software for the Macintosh

Warp-speed file-transfer utility for networks.

FRUSTRATED WITH how long it takes to move large files from one Mac to another over a network? Try RunWay, an innovative network utility that in MacUser Labs tests was as much as three times as fast as the Finder at transferring large files over an Ethernet network.

Takeoff

RunWay works its magic by modifying AppleTalk protocols, which enables the program to make more-efficient use of available network bandwidth. RunWay does not compress files, so data maintains its integrity.

The utility installs as an application and uses the same Users/Groups model as System 7 file sharing and AppleShare — in fact, one of these must be active for RunWay to access shared files.

On our two-node Ethernet network, we clocked RunWay at 600K per second for a 20-MB file transfer — compared to 200K to 250K per second for the Finder! That translates to 34 seconds for RunWay and 85 to 105 seconds for the Finder to make the file transfer. (Finder throughput varied depending on whether we were using System 7 file sharing or AppleShare and on whether we were reading or writing data.) Even greater speed gains are possible on busier networks, according to the company.

RunWay also improved the speed of file transfers over our two-node LocalTalk network by a factor of 2 to 2.5, achieving a throughput rate of 25K per second — close to LocalTalk's limit.

RunWay is a great network tool, but we have several caveats. Speed gains aren't as great for small files as for large ones. And RunWay doesn't work like file-server software — a RunWay-equipped Mac can transfer files to and from only one other RunWay-equipped Mac at a time. As the utility reads and writes files, it tells everyone else on the network that it's busy.

From an interface perspective, we think the program could benefit from a face-lift. RunWay has a single dialog box for creating a list of the files and folders you want to transfer and another for selecting their destination. The company claims that this simplifies batch transfer of files stored in separate folders, but we strongly recommend that RUN integrate RunWay with the Finder in future releases.

And last, RunWay's copy-protection scheme is archaic. The RunWay installation disk lets you install the software on a limited number of machines. If you want to install the utility on an additional machine, you have to remove it from one of your original installations. We'd like to see the company allow unlimited installations and use network-ID checks to limit the number of simultaneous users.

For an even greater speed boost, check out the $675 NuBus RunWay Ethernet Accelerator Board (10BASE-T only — a three-interface version costs $800). It arrived too late for us to test for this issue, but according to RUN, this card's hardware implementation of RunWay protocols lets you transfer files over an Ethernet network at the incredible rate of 1 MB per second. And because its onboard 68020 processor offloads Ethernet processing from the host Mac's CPU, the card can achieve this rate in any NuBus Mac, according to the company.

The Bottom Line

For those whose network regularly gets bogged down with large file transfers, RunWay is a must-have utility. At a cost of $399 for a two-user license, the program will quickly pay for itself. / Henry Bortman

RunWay Software for the Macintosh 1.0

Rating: ★★★½

List Price: 2-user license, $399; 5-user license, $749; 25-user license, $2,499.

Pros: Blazing-fast file transfers.

Cons: Poorly designed interface. Irritating copy-protection scheme.

Company: RUN, Mahwah, NJ; 800-478-6929 or 201-529-4600.

Reader Service: Circle #411.

Style with Purpose

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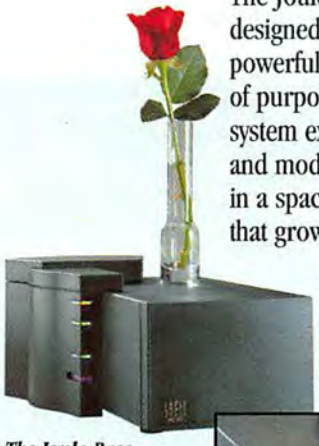

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Step Two: To ***expand,*** simply stack extra storage modules one upon the other. Built-in connectors eliminate cables and hassles.

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CIRCLE 43 ON READER SERVICE CARD

Kodak Arrange-It and Kodak Create-It

Create Photo CD-based presentations with Kodak's new software tools.

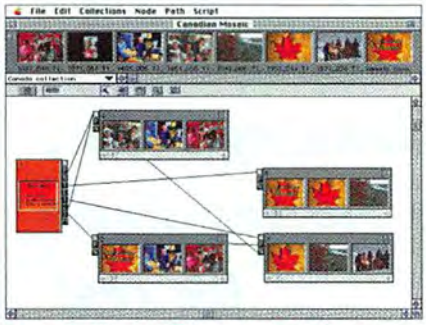
THINK *presentation software,* and you probably don't think *Kodak.* Well, it's time to think again: In step with the company's recent Photo CD-related software releases, Kodak's latest offerings target presentations created on your Mac and played from Photo CD discs. Kodak Arrange-It provides a more affordable vehicle than videotape for multimedia presentations; Create-It aims to make the slide carousel obsolete.

Kodak Arrange-It

A powerful layout tool for creating kiosks and point-of-sale displays, Arrange-It lets you build sophisticated interactive multimedia presentations, using audio files and image frames you've created with other programs. Once you've laid out your presentation, Arrange-It generates a script; a Photo CD service bureau uses the script to transfer your presentation to a Photo CD disc, which you can play using a CD-ROM player and your Mac or using Kodak's own Photo CD player and a TV.

Central to Arrange-It are *Collections* — user-defined libraries of graphics files (Photo CD, TIFF, or PICT) and sound files (AIFF). You can display the contents of two Collections simultaneously; to create a presentation, you drag image frames and audio files from the Collections and arrange them in the desired sequence in the program's Canvas window. For interactivity, Arrange-It provides a transparent way to link menu objects, frames, sounds, and groups of frames — you simply drag to create connecting paths that determine how the presentation branches as users click on objects or press buttons on a Photo CD player. You have full control over time-out settings, image resolution, transition styles, and delays between frames or frame sequences. You can also use an outliner to create presentations, although we suspect most users will prefer the visual approach.

You can view your finished presentation on your Mac before you create the export script and ship everything off to a Photo CD service bureau. Kodak provides a toll-free number for finding the location of service bureaus in your area. The cost of the service varies according to the complexity of the



To make branching presentations with Kodak Arrange-It, you create paths that link frames and sequences of frames.

Instant access to six CD-ROM's with either the two or four speed model lets you set the stage for infinite possibilities.

presentation — we were quoted prices that ranged from $250 to more than $1,000. At those prices, Arrange-It provides a less expensive option than does videotape, making it a good choice for schools, visitor centers, and museums.

Kodak Create-It

Create-It may be kin to Arrange-It, but it's a far less capable program. Unlike Arrange-It, which is designed primarily for sequencing and linking existing slide frames, Create-It is designed for creating and editing individual frames. Like Arrange-It, the program provides the tools you need to transfer your finished presentation to a Photo CD disc. But unfortunately, Create-It is slow and the presentation tools it provides pale in comparison with those of more-established presentation-software packages.

You design frames by importing or placing existing images (Photo CD, TIFF, or PICT) as well as by adding text and graphic objects you create with the program's basic tools. Objects can reside on one of three frame layers — background, foreground, or master. In the Presentation view, you can further refine your presentation by adding sound (AIFF), controlling the duration of frames, and creating hot spots that branch to other frames.

Text handling is one of Create-It's strengths: You can kern text, wrap it around a graphic object, and fit it to a path or within a shape. Basic image-enhancement features let you control the brightness, contrast, and color balance of your photographic images, and there's even an option for removing the eye redness caused by flash exposures.

Create-It's features are straightforward, even for beginners, but the program doesn't measure up overall. It's slow on anything other than a 68040 Mac and requires lots of RAM to be useful. And there are several major gaps in its feature set — it has no integrated outliner, for example, and it can't create charts or autobuild lists.

The Bottom Line

Kodak Arrange-It is an excellent tool for creating Photo CD-based interactive presentations for kiosks or point-of-sale displays. Kodak Create-It, on the other hand, is a disappointment overall and falls far short of other slide-based presentation programs such as Aldus Persuasion and Microsoft PowerPoint. / Gregory Wasson

Kodak Arrange-It 1.0.2

Rating: ★★★★

List Price: $395.

Pros: Intuitive drag-and-drop layout tools. Sophisticated branching options.

Cons: Requires a separate program to create presentation elements.

Company: Eastman Kodak, Rochester, NY; 800-235-6325 or 716-724-1021.

Reader Service: Circle #412.

Kodak Create-It 1.0

Rating: ★★½

List Price: $245.

Pros: Easy to use. Good text-handling tools.

Cons: Slow. Lacks outliner, special effects, charting, and autobuild lists.

Company: Eastman Kodak, Rochester, NY; 800-235-6325 or 716-724-1021.

Reader Service: Circle #413.

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For Your Information.

TimeSquare and DateView / Can these new calendar programs challenge the competition?

IF AFTER SIFTING through the current selection of calendar programs, you still haven't found the one that best matches your unique style of tracking appointments and activities, check out TimeSquare and DateView, two new entries that are solid all-around performers. But don't get your hopes up too high. Although each program has a handful of features that may appeal to certain users, neither packs the punch necessary to seriously challenge leading contenders Now Up-to-Date and DateBook Pro.

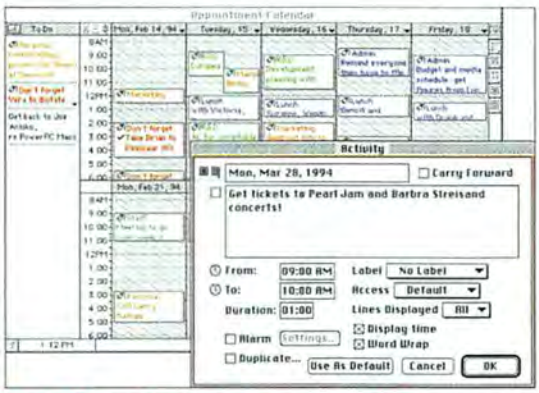
TimeSquare

TimeSquare isn't really a completely new product. Rather, it's a version of Team Building Technologies' AgentDA that's been enhanced with additional capabilities, such as multiuser and to-do-list functions.

TimeSquare's main view is an appointment calendar with a user-selectable display range of 1 to 35 days. You can view each day's events either as a simple list or lined up along a time grid (as in a typical appointment book). We appreciated the convenience and flexibility of this approach, but we were slightly disappointed by the absence of a traditional month-by-month display.

TimeSquare's alarm reminders, complete with snooze controls and advance warnings, are on a par with what you'll find in any competing program. TimeSquare's to-do lists are functional but not as elaborate as the multicolumn to-do lists in other programs. You can avoid having to open a separate to-do-list window by selecting a view that always shows to-do items without a time to the left of the calendar display. You can sort the list alphabetically by type or in order of priority, which helps you see just the information you want in the order you want to see it. TimeSquare also has excellent navigation features that make it a snap to locate any date, no matter how far it is from the current one.

Beyond these basics, TimeSquare's showcase feature is its unique method for sharing information among users. After you complete the one-time setup, multiuser access is so seamless that you almost never know that publish-and-subscribe is at its heart. You have more control over which users can see what messages than is possible in most, if not all, competing programs. In particular, by creating a separate edition for each user and using TimeSquare's password security, you can set the program up so that users can see and/or modify only those shared messages intended for them. The primary inconvenience of TimeSquare's approach is that you cannot make changes to a shared message created by another user unless you are on-line and have access to the relevant edition and document. Even then, if you want to edit messages, you must access the information indirectly via publish-and-subscribe dialog boxes. Now Up-to-Date, in contrast, lets you edit shared messages directly, even when you're off-line.



To-do lists, color-coded category labels, and a grid display all help you quickly identify events in TimeSquare.

Once you get past TimeSquare's multiuser advantages, the program falls short of the competition in several significant areas. For example, it cannot create banners that span several days. In addition, although you can enter repeating events, they are not linked. This means that if you want to make the same change to all dates of a recurring event, you have to modify each one separately. TimeSquare's printed output also does not provide the

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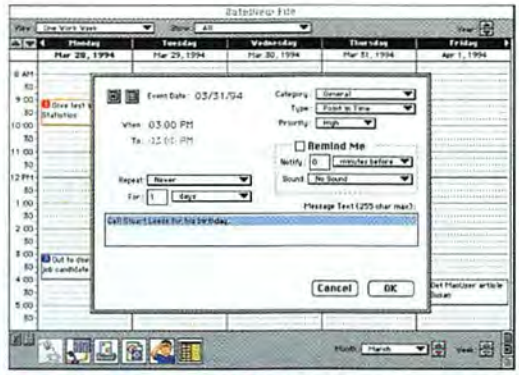
CIRCLE 83 ON READER SERVICE CARD

monthly calendar or appointment-book layouts common in most other electronic calendars.



DateView's category labels lack color coding, but they do have color-coded and numbered priority rankings.

DateView

DateView's primary features have a lot in common with TimeSquare's. The two programs have similar find and navigation tools as well as a similar time-grid-versus-to-do-list display. DateView's display range is somewhat more limited, giving you a choice of viewing one to six weeks at a time, although you can redefine weeks to span, say, Tuesday through Friday instead of Sunday through Saturday. Like TimeSquare, DateView doesn't have a traditional monthly calendar view and lacks a banners feature.

If you already use Advanced Software's contact manager, InTouch, that's probably the most compelling reason to choose DateView. DateView can link its appointments to names and addresses in InTouch, in a manner similar to that of other program combos such as Now Up-to-Date/Now Contact and DateBook Pro/TouchBase Pro.

Other DateView assets include the program's handling of repeating events, which are linked and can be edited simultaneously. And no matter what irregular repetition pattern you need, DateView's superb customizing options should be able to accommodate you. DateView also can print out activities in a healthy variety of appointment-book formats.

On the negative side, DateView's to-do-list options are so sparse as to be almost useless. To-do items are not separated from daily event listings, and most annoying, if you choose the time-grid (rather than the to-do-list) display, to-do items vanish altogether. Finally, DateView has no multiuser capabilities.

The Bottom Line

TimeSquare and DateView each turned in a respectable performance. If you don't need multiuser access and already use InTouch, DateView is an excellent choice. If you need sophisticated multiuser features or if you want better to-do-list functions and don't care much about printed formats, you should choose TimeSquare instead. For those users who are somewhere in the middle, we found TimeSquare to be the superior product overall.

The main problem with both programs is that, for most users, there are too few compelling reasons to prefer these contenders over the top electronic calendars in the field. For example, despite its few weaknesses (such as an inconvenient method for navigating to other dates), we still much prefer Now Up-to-Date over either program reviewed here. Now Up-to-Date offers a stronger feature set while staying at least as easy to use. To achieve success in this highly competitive arena, we predict that it will take greater innovation than evidenced in either TimeSquare or DateView. / Ted Landau

DateView 1.0.1

Rating: ★★★

List Price: $99.95.

Pros: Works with InTouch contact manager. Linked repeating events.

Cons: Limited to-do-list features. No multiuser functions. No banners.

Company: Advanced Software, Sunnyvale, CA; 800-346-5392 or 408-733-0745.

Reader Service: Circle #414.

TimeSquare 1.0

Rating: ★★★½

List Price: 2-user pack, $79.95 until December 1994, $149.95 thereafter.

Pros: Powerful multiuser functions, with password security. Simple but well implemented to-do lists.

Cons: Repeated events are not linked. Limited print formats. No banners.

Company: Team Building Technologies, Montreal, PQ, Canada; 800-453-7671 (for U.S. distributor, Focus Enhancements) or 514-278-3010; 514-278-2874 (fax).

Reader Service: Circle #415.

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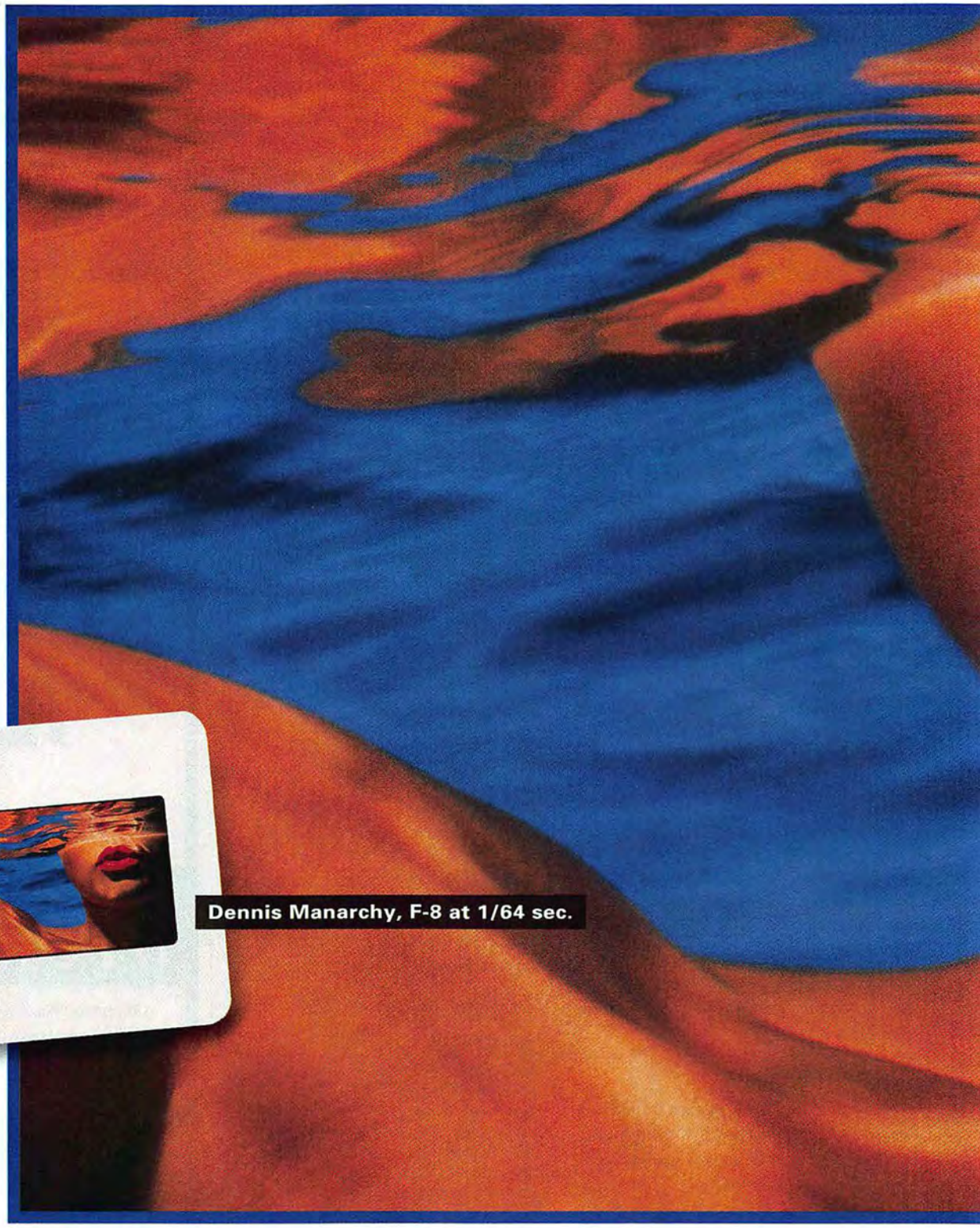
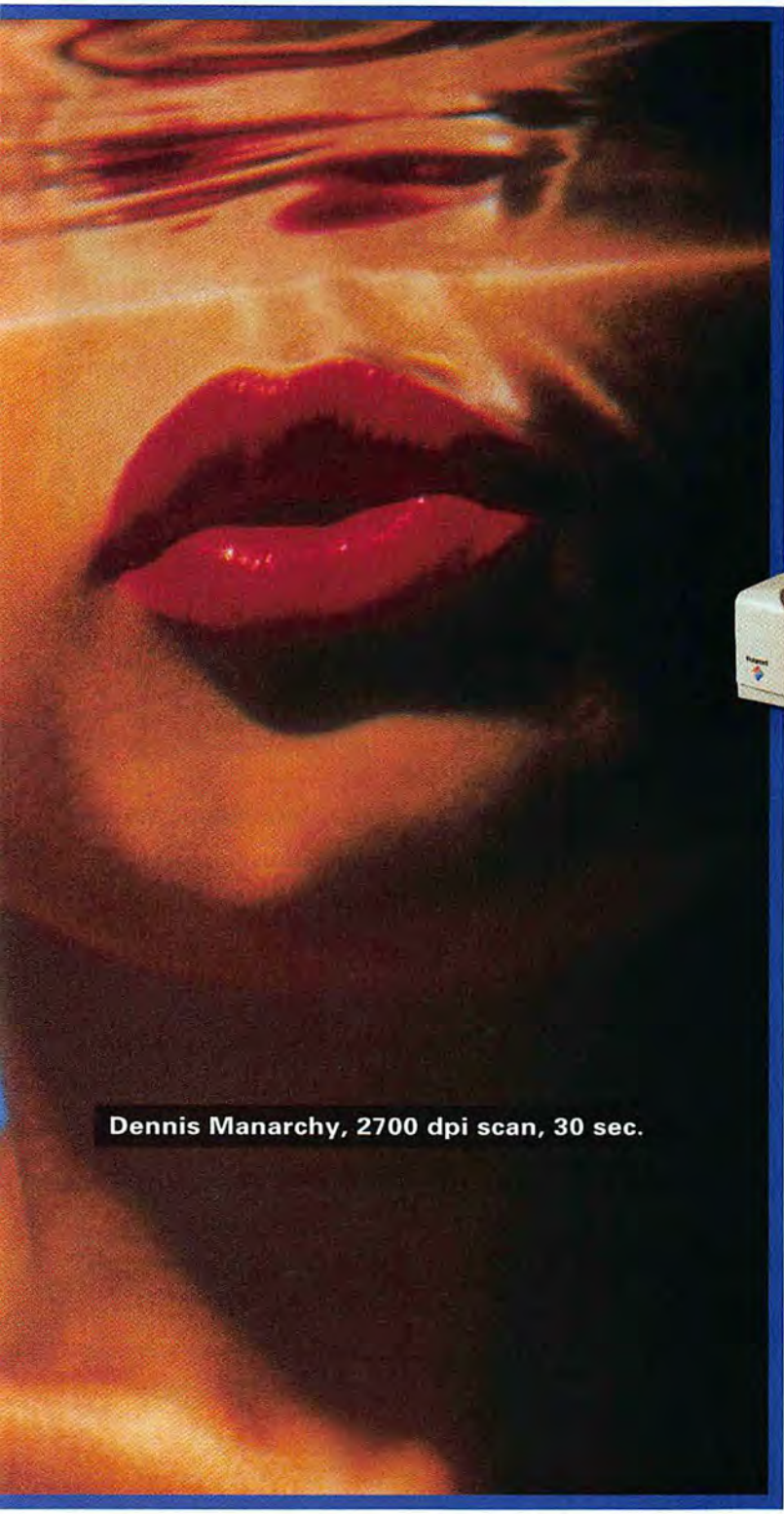


Dennis Manarchy, F-8 at 1/64 sec.



Dennis Manarchy, 2700 dpi scan, 30 sec.

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* Source: Evaluations by Rich and Associates, June 1994. † Suggested list price. Actual purchase price may vary.
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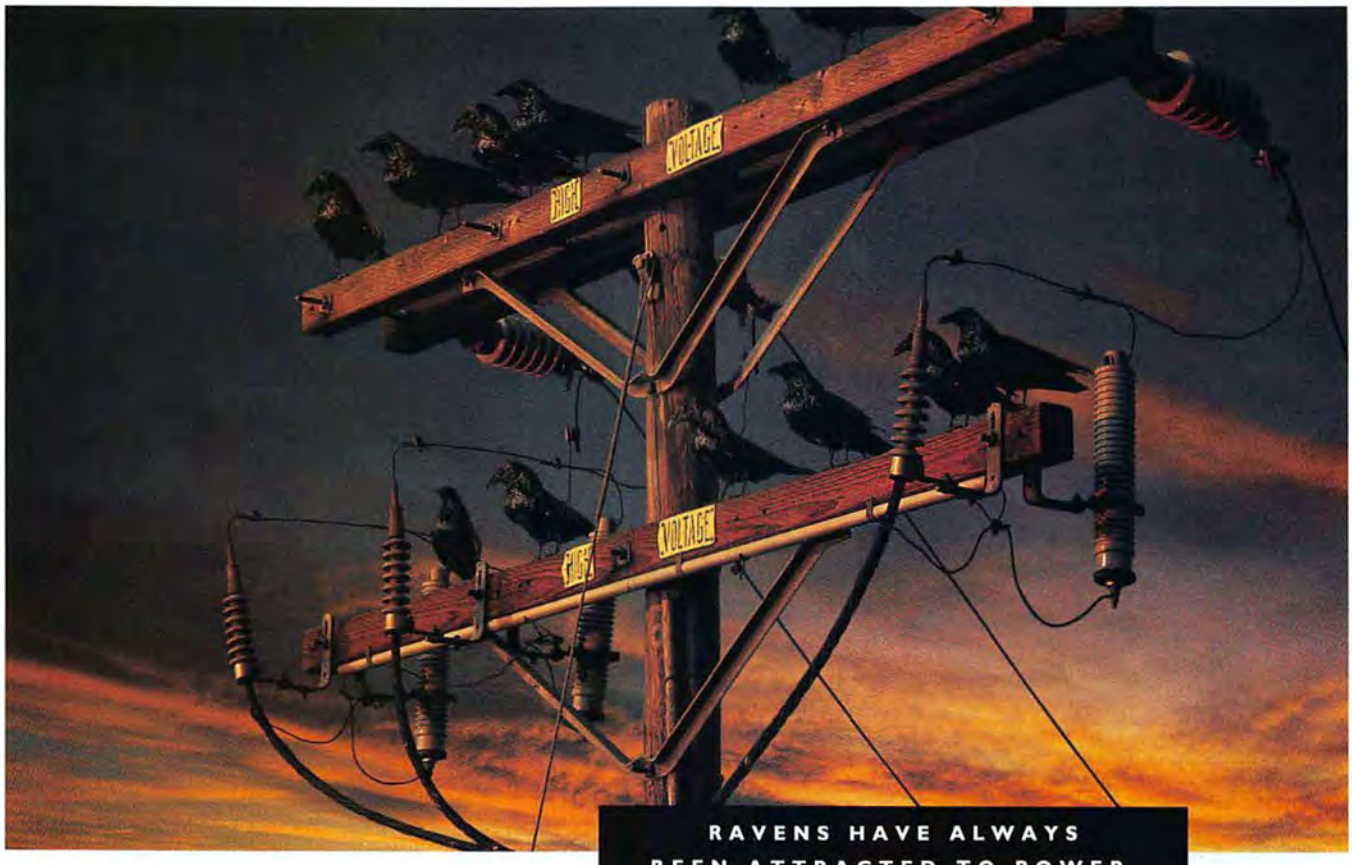
CIRCLE **49** ON READER SERVICE CARD



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Raven 8100

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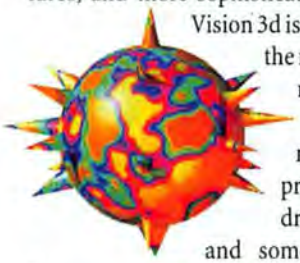
StrataVision 3d 3.0 / Integrated modeling, rendering, and animation

GRAPHIC DESIGNERS and multimedia artists looking for an integrated set of 3-D-modeling, -rendering, and -animation tools will find exactly that in StrataVision 3d 3.0, a respectable upgrade to an already popular program. With more modeling tools, better textures, and more-sophisticated animation, version 3.0 of StrataVision 3d is a good value, even though it's not up to the modeling prowess of its more powerful relative, Strata StudioPro.



StrataVision 3d 3.0 comes with a multitude of modeling tools, such as predefined shapes and extensive 2-D drawing tools, which will satisfy basic and some more-advanced modeling needs. However, modeling mavens excited about the new vertex-level editing options will be only mildly content: Although you can select any control point or groups of points and pull them out of the object mesh, there are no curve-based reshaping tools.

Drag-and-Drop Textures. Texture and animation tools have received a nice overhaul, however. The package includes a healthy selection of procedural textures, such as solid woods, marbles, and stones; texture maps, for leather surfaces and the like; and sample StrataVision 3d models (both in the program and on a bundled CD-ROM) of cars, landmarks, partial skeletons, and more. Texture placement has also been improved, with new mapping methods, the ability for you to preview selected settings, and a graphical method for adjusting the scale and placement of textures on surfaces. You can also drag textures from a palette and drop them directly onto shapes in a scene. Animation tools include smoother, editable motion paths and more-sophisticated motion controls. This new version also sports reasonably faster rendering speed.

All things considered, we found StrataVision 3d 3.0 to be a good value. / David Biedny

StrataVision 3d 3.0 ★★★★ / **List Price:** $695. **Company:** Strata, St. George, UT; 800-772-7133 or 801-628-5218. **Reader Service:** Circle #416.

Gryphon Dynamic Effects, Volume I

Special FX for Adobe Premiere

THE VAST CREATIVE POTENTIAL of moviemaking with Adobe Premiere (version 2.0 or later) has just expanded, with Gryphon Dynamic Effects, Volume I, a set of special-effects plug-ins that includes 20 useful, attractive, and downright bizarre effects. Some are enhancements of existing Premiere effects, such as the Smooth Iris and Smooth Wipe transitions, and some are completely new and have no counterparts in any other QuickTime editor or special-effects program.

Creativity Made Easy. The effects are easy to install and even easier to use. Photoshop fans will be pleased to find animated versions of the familiar Twirl and Zigzag filters as well as a dynamic brightness/contrast control that can be set to change gradually. Many of the effects are designed to manipulate the colors of a movie over time, including the Color Lookup filter, which applies precise colorization effects based on the colors in an 8-bit-color table, and the Duotone filter, which converts a color movie to black-and-white.

The real standout of the package, though, has to be the incredible Tempus filter: With it, a gray-scale image you select becomes a mask. As a movie plays, the parts of an earlier frame within the mask remain in place. The resulting distortion over time is arresting and unique, and by using different images, you can achieve a staggering variety of effects.

Originality Unlimited. By creatively combining the Luminance and Offset Jitter effects with the Dust filter you can quickly achieve a silent-film look. The unique Soft Focus filter is equivalent to a photographic diffusion effect.

Adobe Premiere moviemakers looking to expand their creative options will find Gryphon Dynamic Effects, Volume I, a desirable addition to their video desktop tools. / David Biedny

Gryphon Dynamic Effects, Volume I ★★★★ / **List Price:** $119. **Company:** Gryphon Software, San Diego, CA; 619-536-8815. **Reader Service:** Circle #417.

Summagraphics SummaSketch FX ADB Tablet / Despite a unique pen design, this new tablet misses its mark

ALTHOUGH IT HAS an innovative stylus, the Summagraphics SummaSketch FX ADB Tablet, the newest contender in the arena of pressure-sensitive drawing tablets, won't send its competition scurrying.

The tablet looks like the Wacom UD-1212 (see review, March '94, page 68), with some key differences. To work with the Mac, it requires three cables with two clumsy 25-pin connectors and a large ADB serial-port plug as well as an AC adapter. And although Wacom's 12-inch tablets have macro buttons, the FX has none.

Tactile Stylus. Overall, we enjoyed drawing with the FX pen. It has three sides, so you can easily locate the buttons by feel. A fast input rate and 256 levels of pressure made it easy to get the effects we wanted.

The pen has a very springy tip that compresses completely into the stylus; although artists and designers used to pressing down with brushes might prefer this, after a few hours we found it tiring. Adding to our fatigue was the stylus's weight: It uses two batteries and weighs about twice as much as the Wacom UltraPen stylus.

Mediocre Software. Summagraphics lets you control basic tablet-to-screen mapping and pressure settings, but you can't program the two buttons on the stylus to do anything except a mouse click.

In spite of a good pen design, the shortcomings of the SummaSketch FX still leave the Wacom UD-1212 as the best 12-inch drawing tablet. / Jim Benson

Summagraphics SummaSketch FX ADB Tablet ★★½ / **List Price:** $649. **Company:** Summagraphics, Austin, TX; 800-337-8662 or 512-835-0900. **Reader Service:** Circle #418.

Disc-To-Disk / Digital pipeline from audio CDs to your Mac

YOU CAN PLOP an audio CD into your CD-ROM drive and play it, but taking the next logical step — direct digital capture of the CD's sound on your Mac — was problematic before Optical Media released Disc-To-Disk. This application grabs digital-audio files from standard audio CDs played in a CD-ROM drive and turns them into Mac digital-sound files — going directly through SCSI, without any special sound hardware.

High-Quality Sound. Because this method does not involve any analog conversion (unlike with the QuickTime Movie Player, which records audio-CD tracks to the Macintosh, using internal analog-to-digital conversion), you eliminate the possibility of introducing noise or distortion into the resulting sampled-sound file. You can create sound files of CD quality (44-kHz, 16-bit stereo) or lower quality and save them in a variety of formats, including Sound Designer, AIFF, snd, QuickTime audio, and even Windows WAV (making sure you use Windows naming conventions).

Easy Recording. The process is simple: Just choose a section of an audio track (by specifying start and stop times or by dragging markers — there's a waveform view to help you), and click on a button. You can preview specific portions of audio through the Mac speaker or play them directly from the CD-ROM (using the CD-ROM drive's audio output). You can also put multiple selections from an audio CD into a recording list for batch sound processing.

The one drawback of the program isn't Optical Media's fault: Not all CD-ROM drives support the transfer of sound data directly through the SCSI bus (NEC drives reportedly have this problem). We tested Disc-To-Disk with an AppleCD 300, and it performed flawlessly. Plus it was *fast* — the conversion process was like copying a file from a CD-ROM to a hard disk (which is much faster than digitizing the audio with a typical audio digitizer). Anyone using audio-CD sound effects or music excerpts (in sampling keyboards, for example) will find Disc-To-Disk a dream come true. / David Biedny

Disc-To-Disk 1.0 ★★★★★ / **List Price:** $199. **Company:** Optical Media International, Los Gatos, CA; 800-347-2664 or 408-376-3511. **Reader Service:** Circle #419.

Super 7 Utilities 2.0 / A medley of System 7 enhancements

WHETHER YOU'RE prospecting for gold or buying a general utilities package, you're doing the same thing: staking a claim and mining it, hoping to strike it rich. Super 7 Utilities, a set of System 7 enhancements, isn't the mother lode, but it's valuable enough to warrant its price.

Choice Morsels. The newcomer in version 2.0, Window Master, lets you stack or tile the windows of applications by using a pop-up menu that appears when you Shift-click on a window title bar. Helium Pro lets you turn Balloon Help on or off with a keystroke, change the font and size of the Balloon Help text, and move Balloon Help messages to a display area at the bottom of the screen. Speed Beep Pro lets you add custom sounds to a wide variety of events such as when you insert or eject a disk. Unlike the Finder, Speed Beep Pro lets the Mac continue to do its work while the sound plays.

Alias Assistant and Desktop Extras are not quite as useful but are worthwhile to have nonetheless. Alias Assistant tracks your aliases and automatically deletes them when the original file is deleted. Desktop Extras streamlines the sometimes laborious processes of copying, moving, aliasing, and deleting files in the Finder by making these operations menu items that bring up a dialog box containing frequently used folder destinations.

Marginally Mighty. Mighty Menus and Super Comments are less practical. Mighty Menus allows any menu to be torn off and made into a floating palette, but since most frequently used menu items have keyboard command equivalents or floating palettes, there's no reason to give up precious screen space. Super Comments keeps comments in Get Info boxes from disappearing when you rebuild your Mac desktop and now lets you enter Get Info comments into files, using Save and Save As dialog boxes. Unfortunately, we long ago lost any comments we cared to put into the Get Info box, the first time we rebuilt the desktop, so most of us lost any interest we may have had in using Get Info comments.

Although some of the Super 7 Utilities are only modestly valuable, Window Master, Helium Pro, and Speed Beep Pro are conveniences well worth getting. / Jeffrey Sullivan

Super 7 Utilities 2.0 ★★★½ / **List Price:** $99.95. **Company:** Atticus Software, Stamford, CT; 800-284-6255 or 203-348-6100. **Reader Service:** Circle #420.

PGA Tour Golf II / Virtual golfing

LIKE REAL GOLF, PGA Tour Golf II is easy to learn and fiendishly difficult to master. And given its choice of seven courses, mastering it will take you a good, long time.

You can play alone; with as many as three friends; or with any of ten computerized pros, including Tom Kite, Fuzzy Zoeller, and Craig Stadler. The game has several modes: Start with the Driving Range and Putting Green for practice (you'll need it), and then move to the Practice Round, Tournament, or Skins Challenge. Finally, choose from seven gorgeously reproduced courses such as Scottsdale, Avenel, and Sawgrass.

Realistic Play. Control over your shots is easy and intuitive. The mouse button or space bar controls your swing; you can also adjust your aim and draw (hook to the left) or fade (slice to the right). As in real golf, wind plays a significant part, so keep an eye on the wind indicator.

Other thoughtful touches include a user-controlled flyby of any hole and the ability to examine the contours of each green.

If you like golf and challenges, you'll love PGA Tour Golf II. / Bob LeVitus

PGA Tour Golf II ★★★★½ / **List Price:** $59.95. **Company:** Electronic Arts, San Mateo, CA; 415-571-7171. **Reader Service:** Circle #421.

DiskTop 4.5 / File-management finesse

DISKTOP HAS WAITED several years for a major update, but the wait has been worth it. This popular file-management utility now boasts an attractive look and some powerful new features.

Finder Finesse. DiskTop displays all hard and floppy disks you have mounted and lets you find, list, and rename files as well as copy, move, and group files on them in one window. Since it's a DA, DiskTop works perfectly even for people who aren't using MultiFinder or System 7. You can launch applications and documents directly from DiskTop too.

Uncluttered and Fast. DiskTop has abandoned the cluttered and awkward volume window you had to click through to view files in previous versions. And by adding jump-to submenus, you can now instantly move to any frequently used folder on a disk. You can create as many as ten kinds of custom views of volumes, folders, and files.

DiskTop combines features power users will love and a simplicity that even novices can appreciate. And PrairieSoft isn't about to let it stagnate again: By the time you read this, the company plans to have a utility out that will let you customize DiskTop with colors and different point sizes for text. / Gregory Wasson

DiskTop 4.5 ★★★½ / **List Price:** $99.95 (upgrade, $30). **Company:** PrairieSoft, West Des Moines, IA; 515-225-3720. **Reader Service:** Circle #422.

VideoDirector 1.5 / Remote-control home-video editing

VIDEODIRECTOR 1.5 ELIMINATES much of the drudgery of editing and copying home videos. The software and a bundled serial cable allow your Mac to act as the remote control for an 8-millimeter camcorder and a VCR.

Name That Scene. First use the controls on your Mac (SE or later, System 6.0.7 or later) to play the camcorder tape, marking the beginning and end of each scene. Then give each scene a title, and arrange and delete the scenes by title as you would like them to appear. Once you've created a sequence, VideoDirector will automatically create a new video — recording, pausing, fast-forwarding, and rewinding the camcorder and the VCR to do so.

Repeated Cuing. VideoDirector does require some willingness to regularly recalibrate the playback to correct tape drift. Although this can be complicated, VideoDirector does a good job of helping you make these adjustments. Since VideoDirector does not digitize video, it cannot do special effects such as dissolves and wipes.

Gold Disk's tech-support people were friendly and helpful with the few problems we had. Our use of a PowerBook Duo, with its unique single serial port, accounted for one of the problems: The port had trouble operating the camcorder's remote control very well. But with a MiniDock, VideoDirector worked perfectly.

VideoDirector requires a lot of direction and involvement on the user's part to work well, but as long as you don't need special effects and have the time, VideoDirector is a useful, inexpensive tool for editing your home videos. / Joseph O. Holmes

VideoDirector 1.5 ★★★ / **List Price:** $199.95. **Company:** Gold Disk, Santa Clara, CA; 408-982-0200. **Reader Service:** Circle #424.

MusicTime 2.0 / Toon transcription

NONPROFESSIONAL MUSICIANS looking for a quick way to get notes onto paper can get quality music notation and recording from MusicTime. But the whimsical illustrations, the regular appearances of the Toon Band throughout the manuals, and some notable shortcomings may drive even some intermediate-level musicians to upgrade immediately to MusicTime's more talented sibling, Encore.

Encore Lite. MusicTime is basically a stripped-down version of Encore, although it has two unique features that Encore doesn't have: You can play your computer keyboard like a synthesizer, and you can use color for emphasizing notes, staves, and other musical elements on-screen and on printouts. The simulated keyboard makes it possible to use MusicTime without a MIDI keyboard controller, but you still need either a sound card or a synthesizer module to hear music played back.

These features are overshadowed by the program's drawbacks. MusicTime is limited to only eight staves, making it hard to create scores for ensembles larger than a few players. Its speed is less than impressive — scrolling and printing are slow, and note entry with the Mac's keyboard is slower still.

Puny Primer. Worst of all is MusicTime's manual. At 83 pages, it doesn't even cover all of the program's functions. The ReadMe file says you can buy another book discussing MusicTime in greater depth — for another $20!

If you have always wanted to use color in your notation or have limited synth equipment and can't afford Encore, you may want to try MusicTime. Serious composers looking for a low-priced bargain would be wise to try something else. / Ken Gruberman

MusicTime 2.0 ★★★ / **List Price:** $149. **Company:** Passport Designs, Half Moon Bay, CA; 415-726-0280. **Reader Service:** Circle #423.

Icon Mania! / Revitalize your desktop

EVER WISHED YOUR icons could be graphical representations of files? Icon Mania! lets you easily replace any icon with one that offers a better visual clue to what is in the underlying document, folder, or disk.

Iconography Made Easy. The documentation isn't stellar, but the program is intuitive. Using a pull-down menu, you find the folder whose icon you want to change. Next, open an icon library and drag a new icon onto the one you want to change.

Icon Mania! provides a library of several hundred icons, including animals, celebrities, and software programs. You can also create your own icons with Icon Mania!'s built-in editor, or with a single command, you can create a thumbnail of an EPS, PICT, or TIFF file.

Sure, you can get some of Icon Mania!'s functions by cutting and pasting in Get Info windows under System 7. And some documents in certain formats, such as Adobe Photoshop, automatically appear as thumbnails. But Icon Mania! is easy to use, works on a wide variety of graphics formats, and provides an extensive collection of ready-made icons. / Shelley Cryan

Icon Mania! ★★★★ / **List Price:** $69.95. **Company:** Dubl-Click Software, Woodland Hills, CA; 800-266-9525 or 818-888-2068. **Reader Service:** Circle #425.

DECK II and DigiTrax / Digital-recording champs compete head to head

TO KEEP ITS COVETED *MacUser* Editors' Choice title as best music/sound product, OSC's DECK II digital-audio-recording software (pictured here) has to be unassailable enough to withstand assaults from would-be deposers such as Alaska Software's premier release, DigiTrax.

Equalized Basics. These programs allow you to record, edit, and play CD- and DAT-quality audio files with an AV Mac or a Mac that has an audio card equipped with a DSP (digital signal processor). If you have an AV Mac or Spectral Innovations' NuMedia audio card, DigiTrax provides you with six audio tracks. DECK II supplies four to eight audio tracks, depending on your hardware (four with most Digidesign systems and RasterOps' MediaTime, six with the Quadra 660AV, and eight with the Quadra 840AV and Digidesign's ProTools). The interface for each program looks like a multitrack cassette recorder, complete with volume faders, LED meters, and pan controls. Each also has audio scrubbing, autolocation, and automatic punch-in and -out and supports synchronization to SMPTE time code as well as to QuickTime movies.

Finely Tuned Subtleties. The differences emerge only when you venture beyond the basics. Although DigiTrax has a few features not available in DECK II — such as the ability to play audio CDs on a CD-ROM player, record audio directly from an internal CD-ROM player, work with 8-bit-audio files, and adjust a track's tone with a single-band EQ — it falls short of DECK II's sophistication.

For example, when you're controlling audio transitions, the ability to fade one sound out as another fades in and to determine the shape, timing, and transition of the fade is vital. DECK II provides a variety of fades and allows you to incorporate them in a single track. DigiTrax has only a single type of fade and requires two tracks.

DECK II also has an edge in speed. When executing a Normalize operation, which maximizes the volume setting of an audio file, DigiTrax took more than six times as long to perform the operation as DECK II. Normalizing a one-minute stereo file on a IIci equipped with a NuMedia card took DECK II 3 minutes, 50 seconds; DigiTrax took 25 minutes to do the same operation.

Among DECK II's special features are automated mix down and virtual work tracks that can be mixed in with your normal play tracks. If you are serious about editing multitrack 16-bit digital audio on the Mac, DECK II is a must. / Christopher Breen

DECK II 2.1 ♦♦♦♦ / **List Price:** $399. **Company:** OSC Media Products, San Francisco, CA; 415-252-0460. **Reader Service:** Circle #426.

DigiTrax 1.0 ♦♦♦ / **List Price:** $349. **Company:** Alaska Software, Sunnyvale, CA; 408-738-3320. **Reader Service:** Circle #427.

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CIRCLE 122 ON READER SERVICE CARD

Astro Chase 3D / Arcade action in a pooped-out spaceship

AFTER A MERCILESS SIEGE by an evil alien menace, in which the United Earth ConFederation's Space Force has been almost completely destroyed, the invaders launch a volley of mines toward Earth. Standing between the planet and the worst Thursday in history are you and your Ultraship.

Satisfying Detail. There's a terribly nifty shoot-'em-up arcade game in here. Using a simple set of controls, you zoom through space, blowing up mines and alien ships. The game's graphics are superb, offering realistically shaded and textured ships and planets at any screen size or resolution.

Space Yugo. The biggest problem with Astro Chase is that this Ultraship you're piloting just doesn't move fast enough. Oh, the software is certainly zippy — the animation is perfectly fluid, whether you're using a Quadra 800 or an LC II — but the Ultraship's engines were apparently lifted out of a 1990 Yugo. You'll be drumming your fingers on the desk while you wait for the ship to arrive at that cluster of mines, and you'll have to take two or three passes at a ship before your vessel can maneuver high or low enough to get it in your viewscreen. And sooner or later, you'll run low on energy, and if you're not next to an energy depot when that happens, you're dead.

Astro Chase 3D is a good game that would be great if its programmers spent a weekend giving it a tune-up. / Andy Ihnatko

Astro Chase 3D ★★★ / **List Price:** $59.95. **Company:** MacPlay, Irvine, CA; 714-553-3522. **Reader Service:** Circle #428.

Freak Show / Exploring the new and the bizarre

OVER TWO DECADES AGO, the Residents made their first foray into the music industry and since then have consistently combined the visual with the auditory in groundbreaking ways.

The Residents' unique music and the stunning design of Jim Ludtke have now found an ideal forum on CD-ROM. Freak Show is liberally peppered with references to the Residents' earlier endeavors, such as the eternally preserved Herman the Head.

Be prepared to be overwhelmed as you enter the CD-ROM's bizarre big top and discover that there's far more to Jack the Boneless Boy and Wanda the Worm than their mere stage personae. Go behind the velvet curtain to get the real stories of the circus' inhabitants and attempt to piece together their interconnected sagas. As you click around, the cursor either turns into arrows to guide you or becomes a Resident's eyeball when you find something cool.

The object of this visual feast is to explore, explore, and explore some more. Your efforts will be rewarded with amazing animation; surprisingly fluid QuickTime movies; and as expected, lots of music.

Both Residents fans and new inhabitants of their world will undoubtedly be entranced by this successful marriage of the innovative band to this burgeoning medium. / Kristin Mellone

Freak Show ★★★½ / **List Price:** $39.95. **Company:** The Voyager Company, Irvington, NY; 212-431-5199. **Reader Service:** Circle #429.

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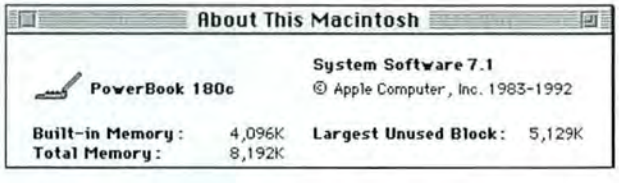

RAM Doubler is an extension that works by reclaiming memory not being used. MacWEEK says "RAM Doubler couldn't be easier to use." It is the latest from Connectix, the Macintosh memory experts and makers of the award-winning CPU and MODE32.

RAM Doubler is affordable at $99 SRP with a 30-day money back guarantee. Get RAM Doubler wherever great software is sold.

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MACWORLD MW EDITORS' CHOICE

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CIRCLE **62** ON READER SERVICE CARD

MacUser ZD LABS

Apple Ethernet Adapter
The communications slot can accept an Ethernet adapter, a 2,400-bps data/9,600-bps fax modem, or a 14.4-kbps data/9,600-bps fax modem. **Price:** $99.

Apple's Newest 68040 Macs

Versatile Values

Apple's new 630-series desktop systems offer AV, CD, and even TV in a flexible, affordable package.

Apple's latest desktop systems — the look-alike Quadra 630, LC 630, and Performa 630 series — would certainly appeal to James Bond. Like the best weapons in the superspy's arsenal, the new systems embrace the possibility that a simple, even innocuous, device can become surprisingly powerful when you add a few equally simple accessories.

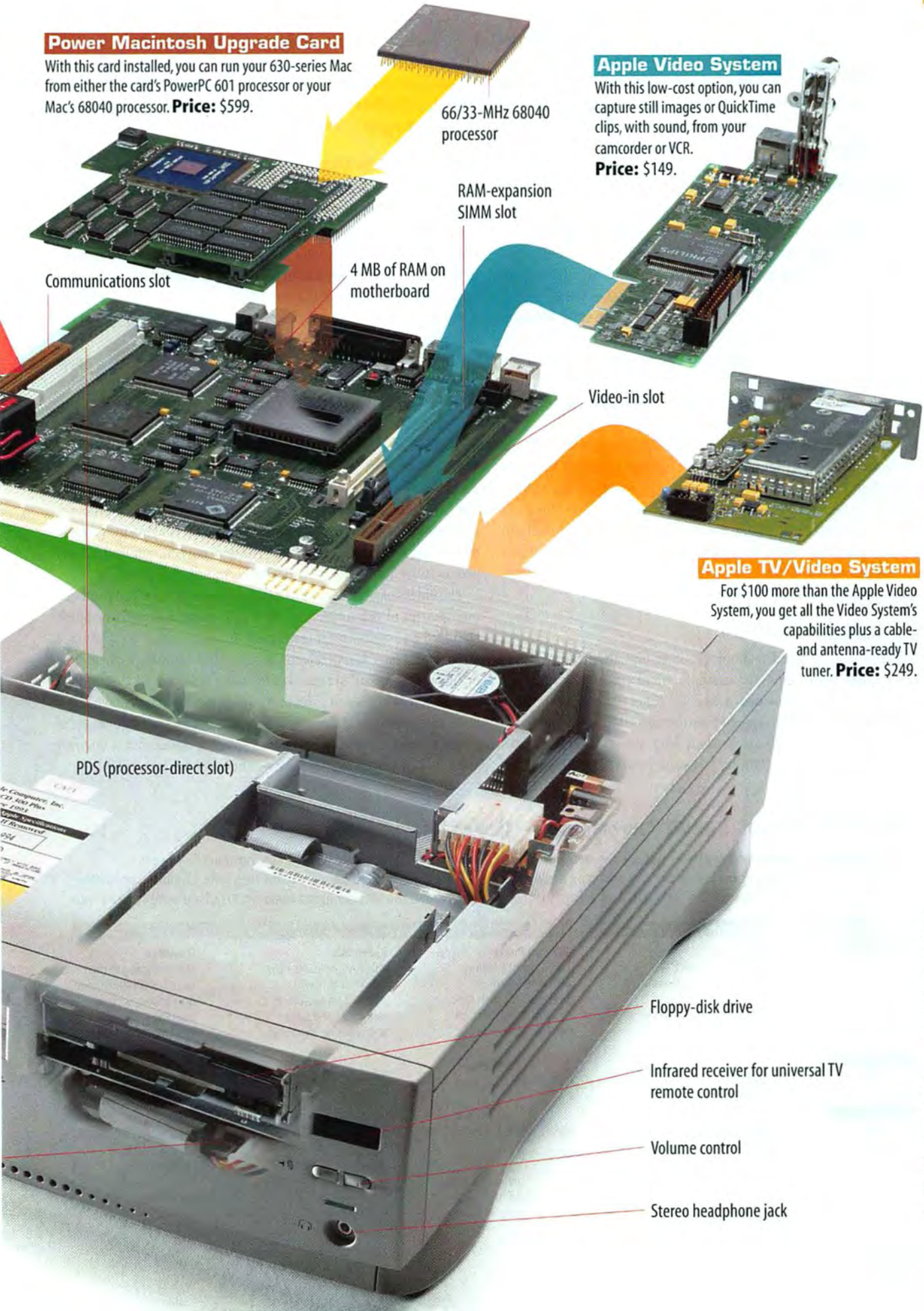
In Bond's case, this principle might entail snapping a cuff link or two onto a Rolex to create an atomic laser cannon. The Macintosh 630s, however, aren't nearly as pernicious: The core hardware of these machines is a new CPU architecture built around the venerable 66/33-MHz 68040 chip. The key to the new Macs is a gaggle of affordable add-ons that can turn any 630 into a speedy office workstation, a low-end video-digitizing and -editing station, or a multimedia machine for education or presentation use. You can even turn it into a TV set — or into a Power Mac that runs native PowerPC applications as well as 68040 applications without emulation.

And we do mean *you* can do all this: In the best Bond-gadget tradition, the 630s are engineered for quick on-site modification. Apple designed them so that all parts, including the logic board, can be installed or removed with just a screwdriver. The versatility of this easy configuration, combined with impressive performance at low cost, heralds a new class of Macs that meet a variety of business, home, and educational needs.

To get an idea of the 630 line's core hardware, consider the Quadra 630 ($1,199), a no-frills version in all respects save one: It offers a full 66/33-MHz 68040 processor with an integrated number-crunching FPU (floating-point unit) rather than the FPU-less 68LC040 found in the LC and Performa versions. Its single, Spartan configuration includes a 250-MB IDE hard drive (more on IDE later); 4 MB of RAM

By Jim Shatz-Akin

HAVE IT YOUR WAY — inexpensively. The new 630-series Macs make adding features a snap, thanks to an ultramodular board design and a set of easy-to-install options. If you can handle a screwdriver, you can customize your 630-series Mac — there are even identification labels next to each expansion slot, to show you what goes where.



PHOTOGRAPHY / STEVEN UNDERWOOD CUTAWAY / PETER ALAN GOULD

soldered onto the motherboard; and a single RAM-expansion slot that accepts a 72-pin, 80-nanosecond SIMM with a capacity as high as 32 MB. The Quadra 630's front panel conceals an empty CD-ROM-drive bay (your local dealer will gladly fill it for around $300), and its back panel and logic board reveal vacant expansion slots for a variety of options.

Elegant Cannibalization = Great Prices

Many of the 630-series expansion slots were developed for earlier Macs, and Apple has kept the 630s' price/performance ratio high by cleverly recycling them into the new machines' architecture. For example, the 630s' communications slot, which holds either a data/fax modem or an Ethernet adapter, first appeared in the LC 575.

The communications slot in some of the Performa 630 configurations contains a 2,400-bps data/9,600-bps fax modem — essentially a retooled version of the Apple PowerBook Express Modem. If you want faster modem speed (and you probably will if you use a modem regularly), Apple also provides a 14.4-kbps data/9,600-bps fax modem for the 630-series communications slot.

Another expansion option taken from the PowerBook line is the DB-15 video-out port for an external monitor: Each 630 Mac supports up to 16-bit color on a 640-x-480-pixel display or up to 8-bit color on an 832-x-624-pixel display. This port also accommodates an optional Apple Presentation System video-out adapter, for output to videotape or to a television monitor. The PDS (processor-direct slot) is borrowed from the LC III, and the TV-tuner option is a refinement of the one offered in the now-defunct Mac TV.

Slot Machine, Redefined

In addition to recycled technologies, the 630 architecture offers plenty that's brand-new. For example, there are new proprietary expansion slots for the video-in and TV-tuner options, and there's an infrared receptor that lets you tune the television with a universal remote control. The 630s also include long-awaited audio features that we hope appear on all future Macs and Power Macs: In addition to the back-panel audio-out jack for 16-bit-stereo sound, the 630s offer a headphone jack on the *front panel* — finally, after 10+ years — along with a volume control, which saves trips to the Sound control panel. And the headphone jack is smart: When you plug in headphones, the signal to your remote speakers shuts off.

Entry-Level AV Options

One of the more enticing aspects of the 630 architecture is that it makes it possible for you to capture, edit, and output video — affordably. Apple offers two options for capturing video: One of them, the Apple Video System ($149), lets you digitize video and stereo sound from any video camera, VCR, or laserdisc player that outputs in the S-video or composite-video formats standard in North America. The Apple Video System can also be switched to accept the European PAL and French SECAM video formats.

The other option, the Apple TV/Video System ($249), is a couch potato's dream. It provides the same functions as the Apple Video System but also includes a cable- and antenna-ready TV tuner. You can use it to watch TV shows on your Mac display, and you can also digitize video images — stills or QuickTime clips — right off the TV signal. Unlike its Mac TV ancestor, the Apple TV/Video System doesn't make you sacrifice your Mac desktop in order to watch TV: You can have CNN (or *Beavis and Butt-head*) playing in a window in a corner of your desktop while you work on the vital business of the day (or night). The Apple TV/Video System may emerge as the Anti-productivity Tool of the Decade, but it *is* undeniably cool.

The video-playback window's standard size is 320 x 240 pixels, or one-quarter of the screen area of a 14-inch monitor set at Apple's standard 640-x-480-pixel resolution. You can reduce the playback window to 160 x 120 pixels for better video-capture performance or blow it up to full-screen size by using a technique called *pixel doubling*, in which each pixel in the original image is replaced by a 2-x-2 block of identical pixels. The resulting coarser video image is bothersome at normal computer-viewing distance, but a few feet away — at TV-viewing distance — the results are acceptable.

Figure 1

Mac 630-Series Speed / no surprise — they're fast

They're inexpensive and versatile — but are the new 630-series Macintoshes fast enough to earn a place on your desktop? Yes. In most cases, they're as fast as a Quadra 800 — at about a quarter of that now discontinued Mac's price when it was introduced last year.

MacBench, our industry-standard test suite (available on ZiffNet/Mac), shows the FPU-equipped Quadra 630 to have a substantial edge

MacUser ZD LABS BETA!

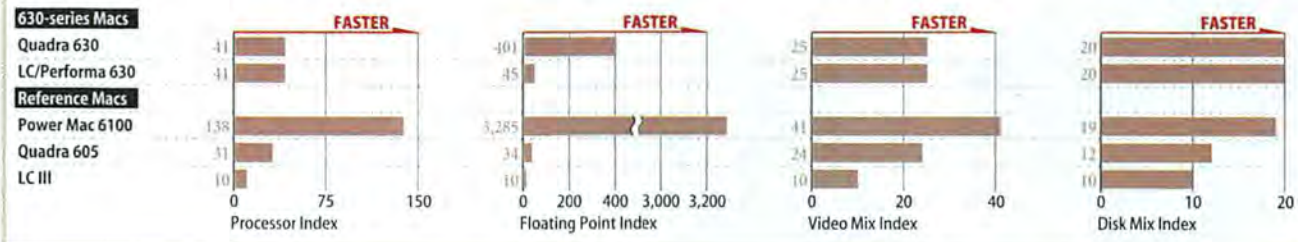
MacBench 1.1 tests

Processor
The Processor test measures raw processing power and is a good indicator of a machine's overall speed.

Floating Point
The speed of floating-point operations is important for such tasks as scientific calculation and 3-D rendering.

Video Mix
This test indicates how quickly a Mac will respond on such tasks as redrawing the screen and scrolling a graphic.

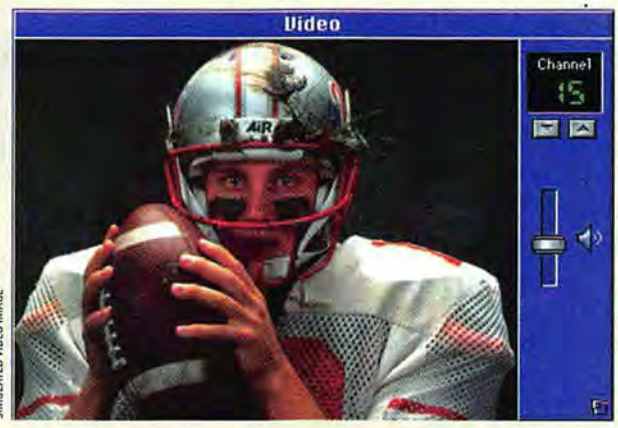
Disk Mix
This test gauges the speed of disk-intensive operations, such as opening a large file or searching a database.



Easy Video Control / watch TV or capture QuickTime

Apple Video Player's Controls and Video windows make using the Apple Video System or the Apple TV/Video System simple and straightforward.

COUCH POTATOES WILL LOVE a 630-series Mac equipped with the Apple Video System or the Apple TV/Video System. Apple Video Player software lets you grab still images or video segments from a camcorder, VCR, videodisc player, or the TV/Video System itself. The unselected buttons in the Controls window (left) access TV-picture adjusters, sound-capture controls, and closed-caption TV controls.



SIMULATED VIDEO IMAGE

An expandable viewing window allows you to preview and play back video and QuickTime clips — and watch TV, if you've got an Apple TV/Video System-equipped 630 Mac. In addition, when you list TV shows in the TV Reminder window (not shown), Apple Video Player asks you just before those shows begin if you'd like to tune in and then plays them for you if you wish.

The prerelease version of the Apple TV/Video System we tested achieved video-capture frame rates of about 5 fps (frames per second) for a 16-bit, 320-x-240-pixel image and 10 fps for a 16-bit, 160-x-120-pixel image. That's a far cry from the broadcast-quality rate, 60 fps, but it's adequate for turning a home video of your daughter's first home run into a QuickTime movie to send to your Mac-equipped relatives.

In addition, the single-frame-capture capability lets you take instant snapshots from videotape and insert them into your documents. This option should appeal to small-business folks, including real-estate brokers and car dealers, who need quick-and-dirty images of their wares to insert into sales materials.

To complement the video-in capabilities, Apple offers an external video-out option, the Apple Presentation System, which lets you display your screen's contents on a television monitor or output them in real time to videotape. The unit sits outside the Mac, and although its results are not broadcast-quality, they're fine for low-budget presentations and classroom use.

Easy-to-Use AV Software

A single piece of software, Apple Video Player, controls the video-in and -out functions. Its main screen contains four icon-labeled buttons — one each for video recording, TV tuning, audio recording, and accessing closed-caption TV broadcasts. (The TV and closed-caption buttons are grayed out if the Apple TV/Video System is not installed.) Each of the buttons presents you with a series of

in floating-point performance over its LC and Performa counterparts (with all Macs set to 8-bit video). Application-based testing, however, shows that all 630-series Macs perform identically, because neither ClarisWorks nor PageMaker requires fast floating-point performance. As expected, a Power Mac 6100 running native PowerPC applications can be significantly faster than the 68040-based 630-series Macs.

Application-based tests

ClarisWorks Scroll
Surprisingly, the 630-series Macs kept up with the Power Mac 6100 when scrolling through a 200-page document.

ClarisWorks Search
Finding and replacing more than 6,000 words in a 242-page RAM-resident document tests the processor's power.

ClarisWorks Recalculation
Our loan-amortization test recalculates 16,642 cells — and shows that ClarisWorks avoids floating-point calculations.

PageMaker Edit
The new Macs take three times as long as an entry-level Power Mac to shrink 313 pages of 14-point Times to 12-point Times.

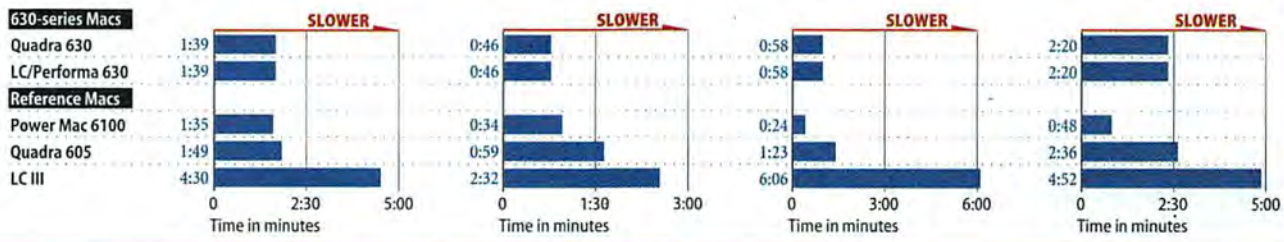


figure 2

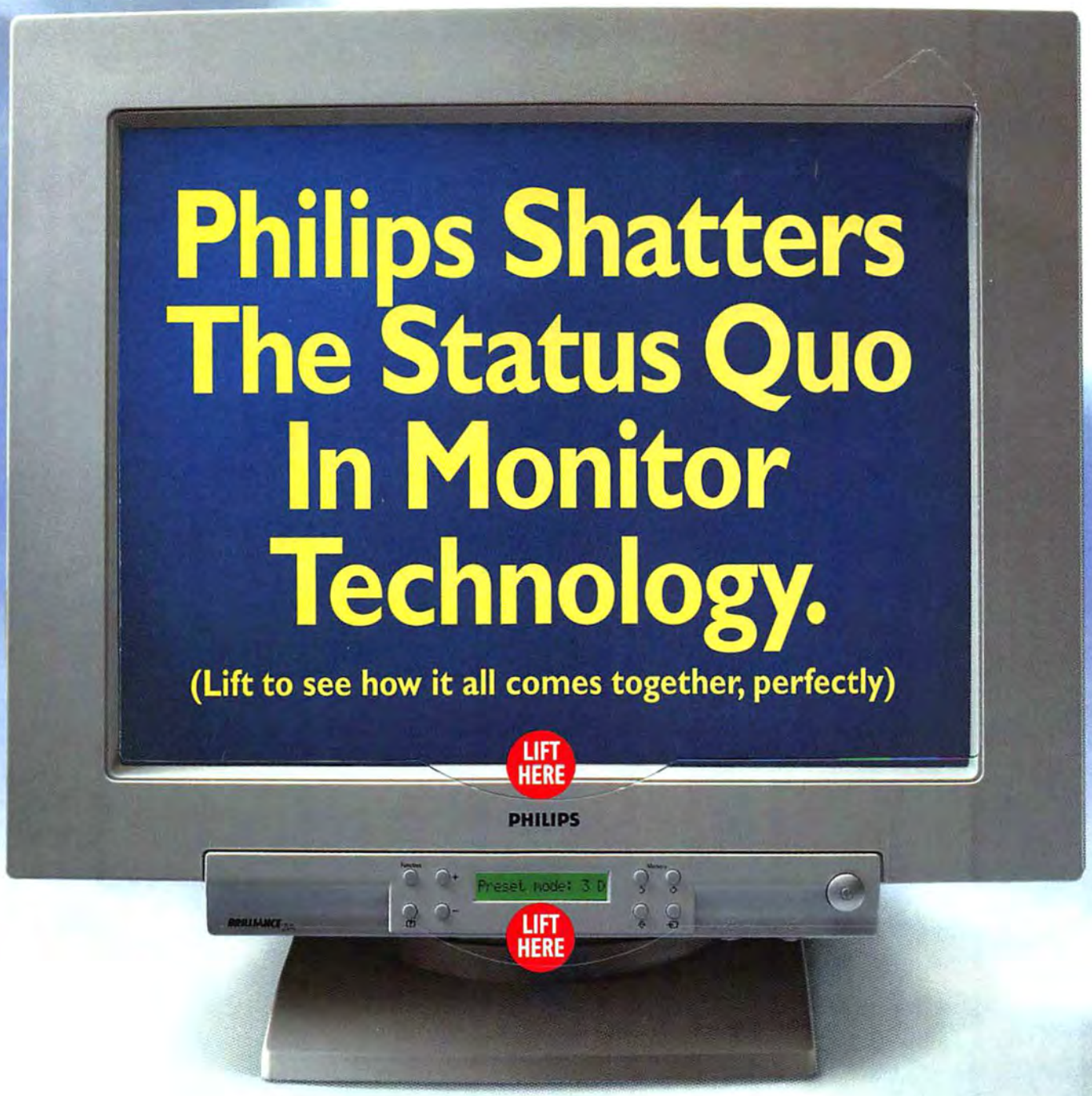
Bundles of Difference / extras set the 630s apart

Accessories and bundled software differentiate the Quadra 630, LC 630, and Performa 630 series. The stripped-down Quadra — the only 630 with an FPU — is designed for office users who'll customize it for their specific needs. The LC is aimed at users in education, and the everything-in-a-box Performas are geared for computing neophytes.

Shop carefully for your Performa — which bundle you get depends on the store you choose. You'll find the Performa 630 in computer superstores such as CompUSA and the 635 in office superstores such as Office Depot, the 636 will be sold in university bookstores, and teachers can get a 638CD through Apple's Educator Advantage Program.

	Quadra 630	LC 630	Performa 630	Performa 635CD	Performa 636	Performa 638CD
List price	$1,199 (4/250)	$1,299 – $1,349 (4/250) $1,949 – $1,999 (8/250/CD/video-in)	$1,449 – $1,499 (4/250) $1,849 – $1,899 (8/250/CD)	$1,849 – $1,899 (5/250/CD)	$1,349 – $1,399 (4/250) $1,649 – $1,699 (8/250/CD)	$1,649 – $1,699 (8/250/CD)
Processor	68040	68LC040	68LC040	68LC040	68LC040	68LC040
Clock speed	66/33 MHz	66/33 MHz	66/33 MHz	66/33 MHz	66/33 MHz	66/33 MHz
FPU	built in	none	none	none	none	none
Monitor	none	Apple 14-inch	Apple 14-inch	Apple Multiple Scan 15	Apple 14-inch	Apple Multiple Scan 15
Keyboard	none	none	AppleDesign keyboard	AppleDesign keyboard	AppleDesign keyboard	AppleDesign keyboard
Modem	none	none	Apple 2,400-bps data/ 9,600-bps fax	Apple 2,400-bps data/ 9,600-bps fax	none	Apple 2,400-bps data/ 9,600-bps fax
Maximum RAM	36 MB	36 MB	36 MB	36 MB	36 MB	36 MB
Expansion slots						
PDS	1	1	1	1	1	1
NuBus	none	none	none	none	none	none
Communications	1	1	1*	1*	1	1*
Ports						
Serial	2	2	2	2	2	2
ADB	1	1	1	1	1	1
SCSI	1	1	1	1	1	1
Bundled software†	eWorld, QuickTime 2.0	QuickTime 2.0§	American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClarisWorks 2.1, ClickArt Performa Collection, eWorld, KidWorks 2, MacGallery Clip Art, MacLink Plus Translators, PC Exchange, Quicken 4, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite, Teleport Fax Send, Thinkin' Things, The Writing Center	American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClickArt Performa Collection, eWorld, KidWorks 2, MacGallery Clip Art, MacLink Plus Translators, Microsoft Works 4.0, PC Exchange, Quicken 4, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite, Teleport Fax Send, Thinkin' Things, The Writing Center	American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClarisWorks 2.1, ClickArt Performa Collection, eWorld, MacGallery Clip Art, PC Exchange, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite	American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClarisWorks 2.1, ClickArt Performa Collection, eWorld, KidWorks 2, MacGallery Clip Art, MacLink Plus Translators, PC Exchange, Quicken 4, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite, Teleport Fax Send, Thinkin' Things, The Writing Center
Bundled CD-ROMs◊	NA	none§	Dole Five-a-Day Adventures, Electronic Arts 3D Atlas, The Family Doctor, The New Grolier Multimedia Encyclopedia, Software Dispatch, Time Almanac, Wacky Jack's CD Game Show	Electronic Arts 3D Atlas, The Family Doctor, The New Grolier Multimedia Encyclopedia, Software Dispatch, Time Almanac, Wacky Jack's CD Game Show	The New Grolier Multimedia Encyclopedia, Software Dispatch, Time Almanac	Dole Five-a-Day Adventures, Electronic Arts 3D Atlas, The Family Doctor, The New Grolier Multimedia Encyclopedia, Software Dispatch, Time Almanac, Wacky Jack's CD Game Show

*Bundled modem occupies communications slot.
†Subject to change without notice.
§Dealers may offer custom bundles.
◊Included only with CD-ROM configurations and subject to change without notice.



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task-specific controls that let you adjust video color and contrast, audio-sampling rates, and so forth. Along with each video option, Apple is also bundling Avid VideoShop 2.0, a QuickTime-based program that provides video- and audio-editing capabilities as well as basic special effects and scene transitions.

If you choose the Apple TV/Video System option, you'll also have access to Apple Video Player's TV Reminder. This feature lets you log the times and channels of your favorite television shows and prompts your Mac to ask you if you want to tune in just before they come on. You can also use Apple Video Player to lock channels out from anyone who doesn't know your password. This might work for keeping young kids away from the Playboy Channel, but don't count on it to keep a Mac-savvy employee away from *The Young and the Restless:* The password setup is fairly easy to circumvent.

Sound and Vision

THE LOW-COST MULTIMEDIA capabilities of the 630-series Macs inspired Apple to equip its new 15-inch color monitor with built-in stereo speakers and a headphone jack. The Apple Multiple Scan 15 ($479) also offers digital controls, a tilt/swivel base, and a respectable dot pitch of .28 millimeters. It can switch resolutions from 640 x 480 pixels to 1,024 x 768 pixels without being restarted, on Macs capable of supporting those resolutions. (The top resolution for the 630 series is 832 x 624 pixels.)

Apple introduces a new technology with the Multiple Scan 15. Previously, all of Apple's high-end display systems used Sony Trinitron *aperture-grille* tubes. The Multiple Scan 15 is the first quality Apple monitor to feature Hitachi's flat-square *shadow-mask* tube.

When aperture-grille technology — which creates pixels by firing electron beams through a screen of vertical wires — was introduced by Sony, in 1968, it provided brighter, crisper displays than any early shadow-mask tube. But shadow-mask technology, which focuses electron beams through a sheet of metal perforated by tiny holes, has steadily increased in quality.

Some professional designers prefer shadow-mask monitors, claiming they display fine line art more uniformly than aperture-grille monitors. Apple apparently thinks these folks may have a point. Aperture-grille aficionados shouldn't be worried, however: Sony's Trinitron patent recently expired, and other monitor manufacturers — led by Mitsubishi — are exploring aperture-grille improvements. Sony, of course, won't sit still and let its dominance erode; expect monitors to continue to improve in quality as a result of this competition. / Rik Myslewski

Stereo speakers, multiple resolutions, and a new — for Apple — display technology distinguish the Apple Multiple Scan 15.

Something New to Know About I/O

The 630 models are the first desktop Macs with internal hard drives that use a PC-style IDE (Integrated Drive Electronics) connection rather than the SCSI connection found on all Macs since the Mac Plus — but don't worry, there's still a SCSI port for your external SCSI peripherals. IDE drives, widely used in the PC market, typically cost 10 percent less than comparable SCSI drives: They were incorporated into the 630s to keep system costs down.

IDE hard disks require different formatting software from that used to format Mac SCSI hard disks. The HD IDE Setup software included with the 630s does basic formatting but doesn't support volume partitions. However, most Mac disk utilities — including Symantec's Norton Utilities and Central Point's MacTools — should work fine with the IDE drives, according to Apple engineers.

Apple promises that those who outgrow their 630's 250-MB hard drive will be able to upgrade with an off-the-shelf IDE drive, if it supports *logical block addressing,* a data-accessing scheme used by virtually all new IDE drives. What's more, preliminary MacUser Labs tests showed that if an IDE drive with a good caching scheme is installed in a 630-series Mac, performance can be impressive.

Mac of All Trades, Master of None

We found the Macs in the 630 series an exceptional value for entry-level users — but be forewarned: Despite all of its expandability, the 630 line is limited in its capacity to grow, largely because it cannot accept NuBus expansion cards. If your 630 inspires you to pursue serious video editing, for example, you'll need a non-630 Mac in order to use a high-end NuBus digitizing card. Ditto if you get excited about photo manipulation and decide you'd like to run millions of colors on a 21-inch monitor.

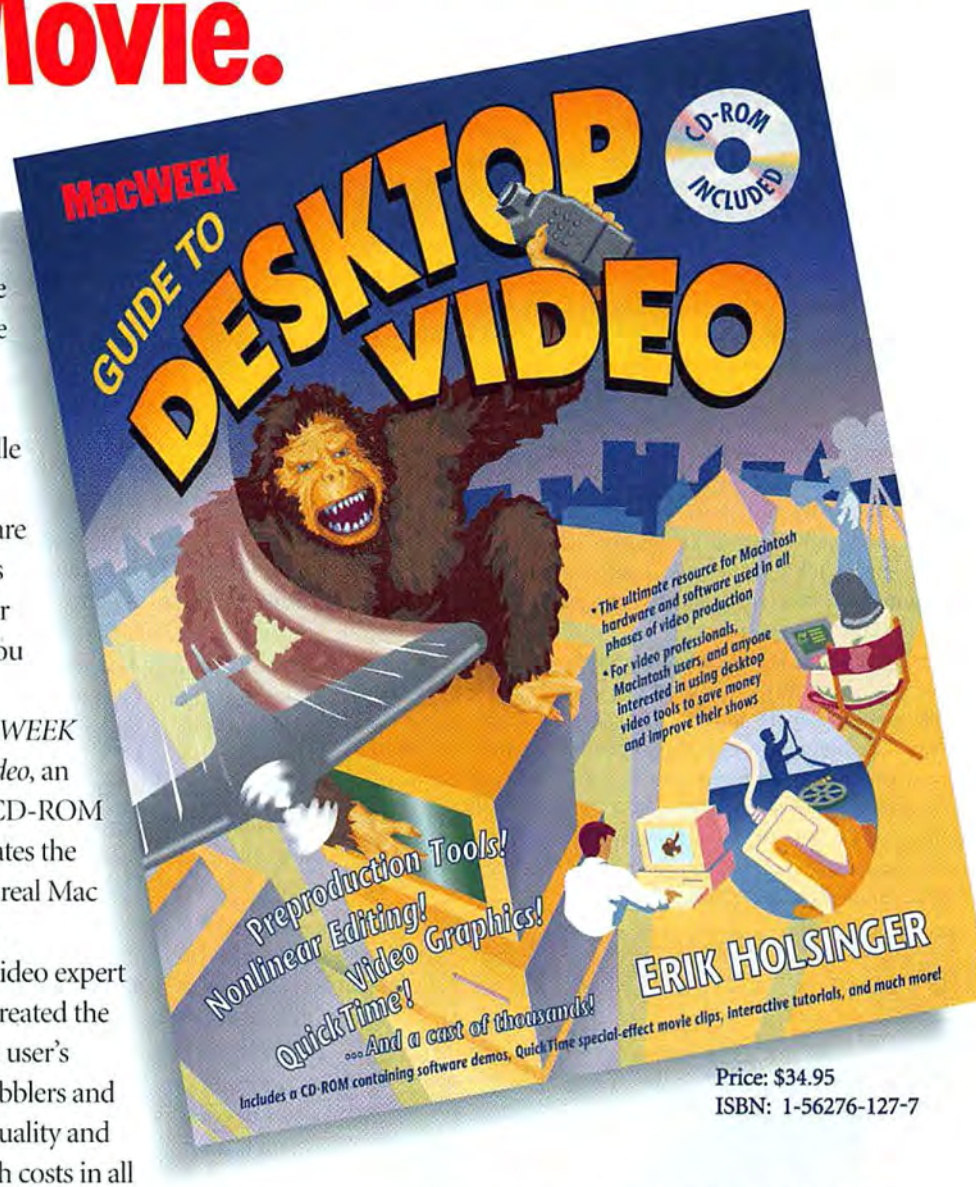
Nevertheless, the 630 Macs succeed as speedy, versatile entry-level desktop systems. Their numerous expansion options make them readily adaptable for use in small businesses, introductory-level multimedia development and presentation, and multimedia-based instruction (including educational TV).

In addition, their PowerPC upgrade option enables the 630 Macs to take advantage of the native PowerPC applications that are — at last — beginning to appear in force. And perhaps best of all, you can finally get a versatile, high-speed Mac at a comfortable, low-stress price. Isn't that what we've been demanding for years?

MacUser associate editor Jim Shatz-Akin insists his Ovaltine be shaken, not stirred. MacUser Labs project leader Roman Loyola oversaw the testing for this story.

MacBench, our benchmark software used to test the Mac 630s for this report, is available on-line on ZiffNet/Mac. See page 4 for instructions on accessing ZiffNet/Mac.

The Book That Inspires the Movie.



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Apple's New System 7.5

What's in it?
What's in it for you?

THERE'S STEAK. And then there's sizzle. System 7.0 had sizzle. It was bold. It was new. It was exciting. System 7.5? Well . . . .

It's not that Apple's latest system-software release is *bad*. It has potential. It's just that after waiting so long — it's been three years since the release of System 7.0 — it would have been nice to get a System 8.

But, as Mick Jagger once pointed out: You can't always get what you want. In the meantime, System 7.5 is here. And since we're not likely to see any major improvements on it for at least a year, it's worth considering what it has to offer. And by the way, there will be no System 7.5 Pro. Unlike with System 7.0, with System 7.5, everyone gets everything.

Some good news: It's fat — as in *fat binary*. That means that the same set of installation disks can be used to install System 7.5 for either a 680x0 Mac or a Power Mac — or for both. Some bad news: It's fat — as in enormous. It requires 2.5 to 3 MB of RAM for the basic installation (the larger number is for Power Macs). If you install PowerTalk and QuickDraw GX as well (they require separate, optional installations), increase that to 4.5 to 5.5 MB of RAM. Don't try this on a Mac Plus.

The cost? Sorry. When we went to press, Apple was being characteristically cagey on this critical question. But we can tell you that Cupertino is expected to release System 7.5 toward the end of August and that it should begin appearing preinstalled on Macs shortly thereafter.

By Henry Bortman

Apple plans to preinstall the basic System 7.5 software — but not necessarily QuickDraw GX and PowerTalk — on the internal hard disks of all new Macs. It wouldn't make sense to install the whole shebang on a 4-MB Mac, for example. However, Apple will put the installation software for GX and PowerTalk on the hard disk, and if users purchase the additional RAM required, they will be able to perform the installations without a bunch of floppy swapping. (In case you're wondering, the Installer that ships with System 7.5, unlike its predecessor, can install on the boot disk and upgrade the currently running system software.)

Several major new (or sort of new) technologies appear in System 7.5: AppleScript, PowerTalk, QuickDraw GX, Apple Guide, and Macintosh Drag and Drop. In addition, System 7.5 users get a slew of desktop enhancements (see the "System 7.5 Desktop" sidebar). Many of them are modified versions of shareware utilities that have been around for years. Here's what all these goodies will do for you.

AppleScript: Let Your Mac Do the Work

AppleScript, which shipped as part of System 7 Pro, lets you automate repetitive tasks by writing (or recording) scripts. They're like macros. A script can operate within a single application or across multiple programs. For example, you might create a script that queried a database in one application, charted the data in a second, and pasted it into a weekly report in a third.

All this requires that the applications you want to control be scriptable, and many still are not. The Finder, for example, becomes scriptable only with the release of System 7.5, and many control panels are still AppleScript-unaware.

Although developer support for AppleScript will likely grow now that it's part of the standard Mac OS, it remains a tool for power users. It offers a relatively easy way of creating automated custom processes. Consultants and in-house developers will find it invaluable. But make no mistake: AppleScript is a programming language. If that sentence made you flinch, get someone else to create your scripts for you.

PowerTalk: A Mailbox on Your Desktop

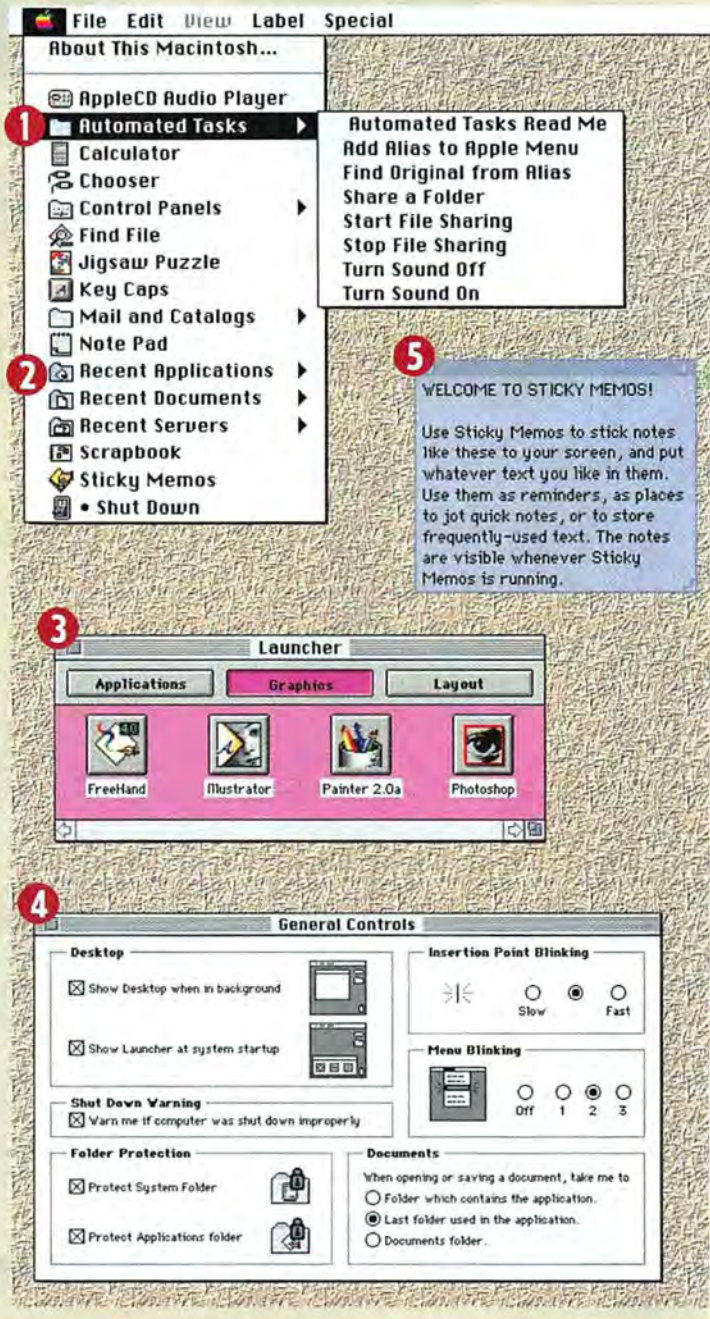
PowerTalk is the first offering to emerge from a far-ranging concept for providing simplified and secure communications among computer users. The concept, known as Apple Open Collaboration Environment (AOCE), includes mail and messaging, catalog services, and various levels of security. Apple envisions AOCE as being capable of supporting everything from the simple exchange of e-mail between two individuals to enterprisewide automated document-routing systems. PowerTalk is the first step, a set of basic client services for Mac users.

PowerTalk puts two new icons on your desktop — one called Mailbox, the other called Catalogs. The Mailbox does what you'd expect: It stores mail you receive from other people until you get around to reading it. With PowerTalk, though, Apple has put a new twist on e-mail. With other e-mail systems, you have to use a special e-mail application to compose and send messages. If you want to send someone a file, you have to add it to your message as an enclosure. With PowerTalk, you can send a file itself as a message, directly from within the application that created it — if the application supports PowerTalk. The Catalogs icon displays lists of electronic

The System 7.5 Desktop / a rich collection of

AT FIRST GLANCE, the System 7.5 desktop looks much like those of its predecessors System 7.0 and System 7.1. But look closer, and you'll find a treasure chest of enhancements large and small. With System 7.5, AppleScript (automated control of applications) and PowerTalk (e-mail and messaging), both part of System 7 Pro, are included in the standard Mac system software.

System 7.5 also debuts two technologies that were not part of any previous system-software release: QuickDraw GX and Apple Guide. GX enables easier printing and better-looking type and includes several other additions to the Mac's graphical repertoire. Apple Guide is a new help system that walks you through a wide variety of system-related tasks.



features is now standard equipment

In addition, several productivity-enhancement utilities that have been available as shareware or as part of commercial products such as Now Utilities are built in to System 7.5. These include a hierarchical Apple menu, quick access to recently used files, WindowShade (which collapses a desktop window to display only its title bar), and even a clock in the menu bar.

A Wealth of New Features

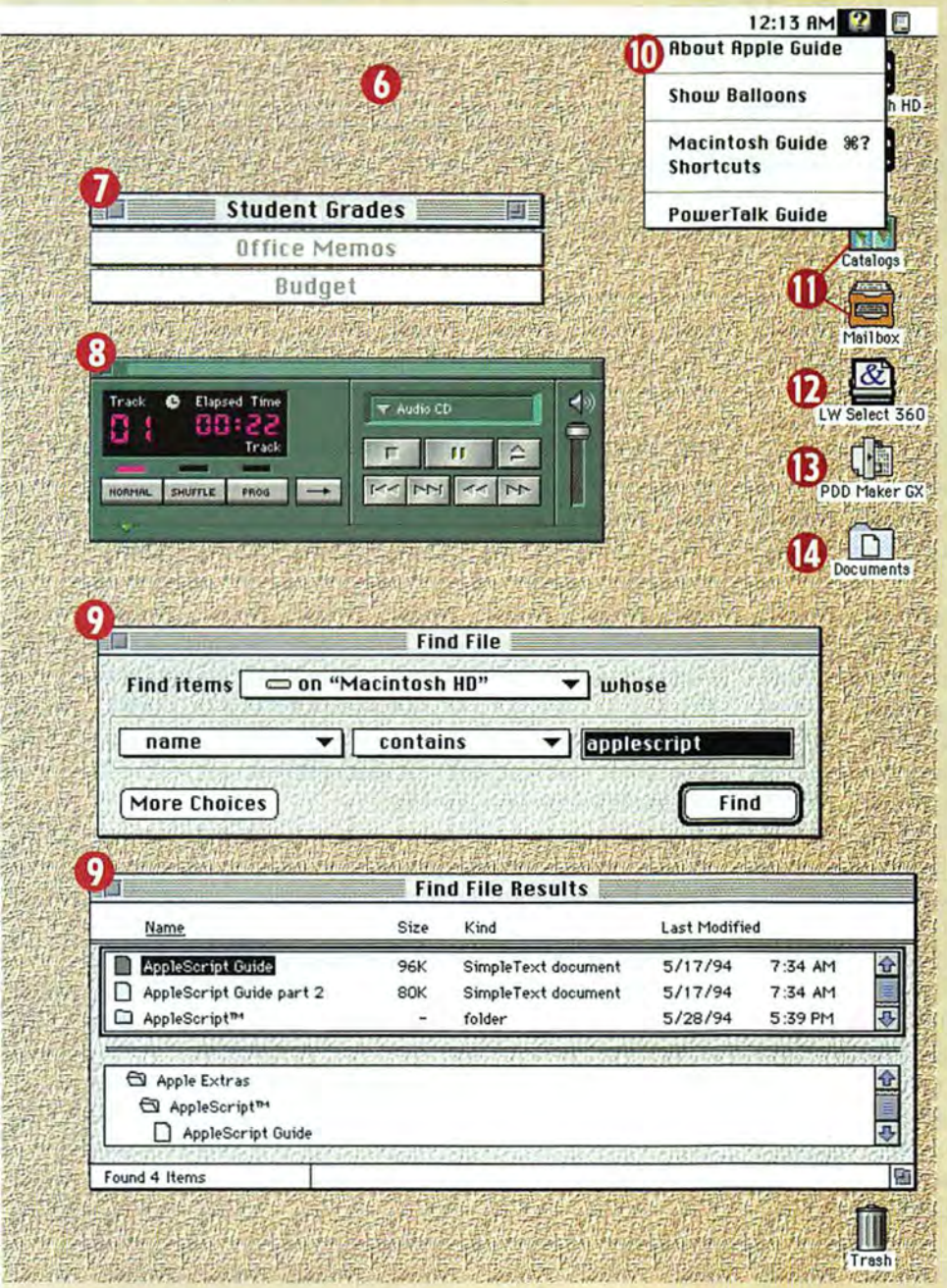
❶ The Apple menu is hierarchical in System 7.5, displaying the contents of folders stored in the Apple Menu Items folder. One Apple-menu submenu, Automated Tasks, contains AppleScript scripts that perform various useful system tasks.

❷ System 7.5 automatically creates aliases for your most recently used applications, documents, and file servers and stores them in special folders whose contents can be viewed from the Apple menu.

❸ The Launcher (formerly available only on Performas), which gives you convenient access to frequently used documents, folders, and applications, is part of the standard System 7.5.

❹ System 7.5's General Controls control panel reveals several new features, among them the ability to lock the System Folder (and a special Applications folder, new to System 7.5) and control what folder is displayed when you open or save a document.

❺ The Sticky Memos application lets you stick electronic notes on your desktop — and you don't have to worry about them falling off.



❻ System 7.5 provides nearly 50 new desktop patterns, many of which impart a rich 3-D-like texture.

❼ WindowShade is a system extension, formerly shareware, that lets you collapse any window on the desktop by double-clicking on its title bar.

❽ Sporting a spiffy new 3-D look, System 7.5's AppleCD Audio Player may offer a sneak preview of the Mac's next-generation user interface. After all, the original look and feel of the Mac has had a ten-year run without a major redesign.

❾ In System 7.5, the Find File command is much more versatile than its predecessor. Its Find File Results window displays all the files that meet the file-search criteria and shows you exactly where each file is located. You can double-click on these files to open them, or you can drag them to copy or move them.

❿ Apple Guide, Apple's new help system, guides you step by step through the byways of the system and the Finder.

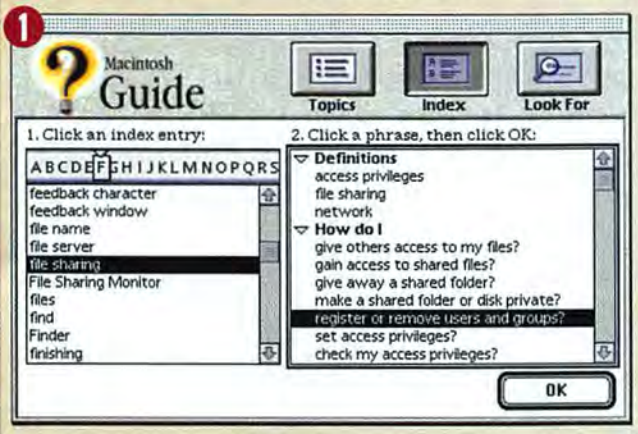
⓫ PowerTalk, included with System 7.5 as an optional item to install, adds directory and e-mail services to the Mac's desktop.

⓬ With QuickDraw GX, also included with System 7.5 as an optional installation, selecting a printer in the Chooser creates a desktop printer icon. Dragging a file onto the icon sends that file to the printer the icon represents.

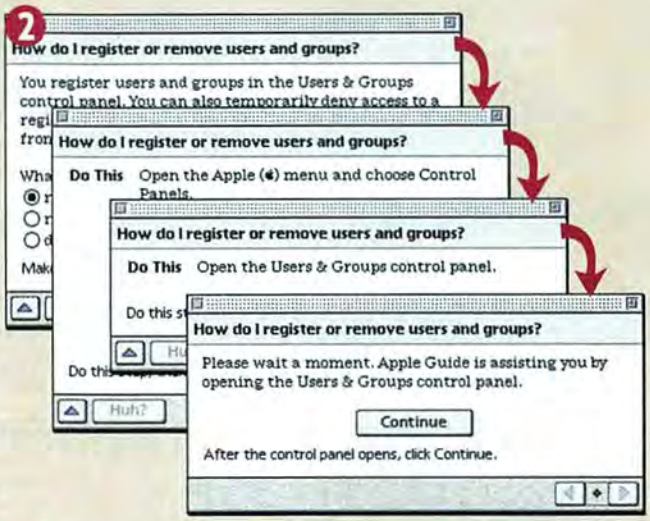
⓭ Dragging a file to the PDD Maker GX desktop icon, which you create from within the System 7.5 Chooser, generates a portable digital document (PDD) that can be read by System 7.5's SimpleText application, regardless of which application created the original.

⓮ From within the General Controls control panel, you can tell System 7.5 to create a Documents folder on the desktop into which all newly created documents are saved.

Apple Guide / finally, a help system that really works



1 Apple Guide is a new help-system function built in to System 7.5. An Apple Guide database, Macintosh Guide, which contains instructions for performing dozens of common desktop tasks, is accessible from the Guide menu when the Finder is active. Selecting it displays this floating dialog box, from which you can get help by searching on keywords or, as shown here, by selecting a topic from an indexed list.



2 When you select a help topic, Apple Guide displays a series of dialog boxes to walk you through the process. If you take a misstep, Apple Guide is sometimes savvy enough to perform an action for you.

addresses and network services. PowerTalk ships with built-in support for an AppleTalk catalog, which displays mail addresses for other PowerTalk users and provides an alternative to the Chooser for accessing AppleShare-type file servers.

Already, some third parties have developed gateways that let PowerTalk users exchange mail with users on a variety of other e-mail systems including CE Software's QuickMail, Microsoft Mail, and the Internet. Apple expects PowerTalk users to be able to receive not only e-mail and files but also other types of electronic messages — faxes, for example, or even voice-mail.

In addition, PowerTalk provides something Apple calls a Key Chain. Accessible from the Mail and Catalogs submenu of the Apple menu, the Key Chain provides a one-stop log-in service that simplifies access to your PowerTalk mailbox and AppleShare file servers. Today, most users access file servers from the Chooser. Each time you log on to a server, you have to enter your password for that server. If you routinely access several servers, this can get tedious. With the Key Chain active, the first time you access a server, the system asks you if you want to add the server to your Key Chain. If you do, thereafter you have to enter only a single password — your Key Chain password — and you can take the express lane to log on to any server on the Key Chain (or in to your PowerTalk mailbox). You don't have to go through each individual server's log-on dialog box.

Like AppleScript, PowerTalk first became available as part of System 7 Pro last year. But it has caught on even more slowly. Few mainstream applications support it yet, because its restriction to System 7 Pro has made supporting it a low priority for most developers. With System 7.5, however, it will be readily available to many more Mac users and to *everyone* who buys a new Mac. (Although PowerTalk is included with System 7.5, it requires that users perform a separate installation.)

Expect many more programs to begin supporting PowerTalk. For example, the upcoming versions of Microsoft Word and Excel, the two most popular applications on the Mac, will feature PowerTalk messaging. (For more information on PowerTalk, see "System Software for the '90s," December '93, page 105; "Unlocking PowerTalk," April '94, page 131; and "Apple's PowerTalk," July '94, page 100.)

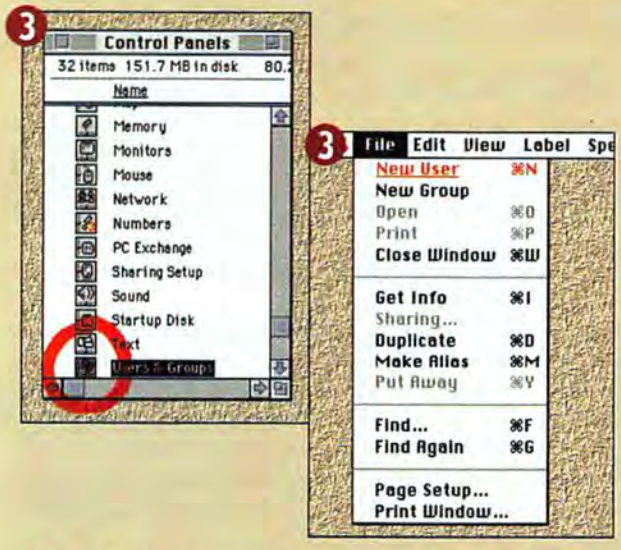
QuickDraw GX: Graphics Power Worth the Wait?

Announced more than two years ago, QuickDraw GX is finally available in System 7.5. GX generated a great deal of excitement when it was first announced. Some developers, such as Corel, made plans to base entire products on it. But it took so long to arrive that many companies got tired of waiting. Our survey of half a dozen top Mac developers found the prevailing attitude to be, "Now that it's shipping, we'll take a look at it." One impediment to adoption mentioned by vendors is that Apple hasn't announced plans to port GX to Windows, as it has with many other system technologies. Since most major vendors today develop for multiple platforms, supporting GX only on the Mac presents problems.

One thing developers *are* likely to adopt — it will be relatively easy — is GX's new print architecture. With GX installed, you can print files by dragging them onto desktop printer icons. Opening a desktop printer icon displays a list of print jobs queued up for that printer. In applications that implement GX printing support, the Print dialog box displays a pop-up menu of all printers that have desktop icons, letting you target a specific printer at print time without an annoying visit to the Chooser.

The GX print architecture is extensible. One such set of extensions — Peirce Software's Peirce Print Tools, which lets you do such things as add a "watermark" to your print jobs; print two-up, three-up, and more; and log printer usage — is available now.

The second major advantage of GX is that it provides new type capabilities. Developers (of TrueType as well as Type 1 fonts) will be able to create a font that contains multiple weights and widths, small caps, swash characters, and dozens of ligatures. From within GX-



3 Apple Guide uses visual aids to point you to the right spot for your next action. In some cases, it automatically scrolls a window, selects a file or folder, and circles it with a Coach Mark (left). In others, it emphasizes a menu selection (right) to make sure you don't miss it.

savvy applications, users will be able to take advantage of these font features much more easily than they can now. Ligatures, for example, will display and print automatically, rather than having to be typed manually as they are today.

Type 1 PostScript fonts are supported directly by System 7.5; a new version (3.7) of ATM is included with the new system software. Although version 3.7 cannot run native on Power Macs — for that you'll have to purchase version 3.8 from Adobe — it does support GX's new font format. In fact, when you install GX, all Type 1 PostScript fonts present in your system's Fonts folder will automatically be combined with their associated bit-map files and converted to the new format, making them indistinguishable from TrueType fonts. The GX Type Enabler utility, included with System 7.5, is for converting any old-style Type 1 fonts you want to install later.

Of all the features of GX, the new typographic possibilities are the most exciting. But here's the bummer: These are the features major third-party developers are least likely to adopt anytime soon. Small companies, startups, and companies that have specialized type products may go for it. Pixar, for example, will support GX typography in its Typestry product. But changing the basic way an application places text in a document involves digging way down into the guts of the application. Because GX isn't available for Windows, developers whose core code is shared between the Windows and Mac versions of their applications are going to take a long, hard look before implementing this stuff. (For more information on QuickDraw GX, see "System Software for the '90s.")

Apple Guide: Unlocking the System's Mysteries

Apple Guide is the Mac's new help system, appearing for the first time in System 7.5. If you're worried that this might be the Son of Balloon Help, relax. The only thing the two have in common is that they're accessible from the same menu (formerly dubbed the Help menu, henceforth known as the Guide menu). Apple Guide is a strong candidate for the coolest thing in System 7.5. (To see a QuickTime movie of Apple Guide in action, download the Apple Guide in Action clip, from ZiffNet/Mac, Library 1 [Special Reports] of the MacUser Forum; filename SVSYS7.SEA.)

It's unlike any other help system you've seen. It doesn't just *tell* you how to do something; it *shows* you (see the "Apple Guide" sidebar). For example, if you want to know how to do something that requires opening the Control Panels folder, Apple Guide will draw a red circle, called a Coach Mark, around the Apple menu to point you in the right direction. When you click on the menu, *Control Panels* appears in red and underlined. If you do the wrong thing, Apple Guide will often tell you to go back a step. When it can, it performs actions for you, such as opening a folder or a control panel or scrolling a window to display the file you need to open and highlighting it.

It's not perfect. There are things missing. It doesn't always point you to the right spot. And we would like to see it do things for you more often than it does. But it's a great beginning. Apple has as much as stated that Apple Guide will be the foundation of the active assistance it is planning for future Mac system software.

It may take a while for third-party developers to implement Apple Guide-based help. But consultants and corporate support and training personnel don't have to wait. Using Guide Maker (available separately from APDA), they can create Guide databases tailored to their clients' needs, not only for in-house custom applications but also for tasks users perform regularly in commercial applications.

Drag and Drop: Here, There, and Everywhere

Over the past year, the number of tasks you can accomplish by dragging things around on the Mac's desktop has increased. PowerTalk, for example, lets users enclose files in a mail message by dragging them from the Finder to the Enclosures area of the PowerTalk Mailer (the addressing portion of a mail-enabled document). With the new QuickDraw GX printer drivers, you can print files by dragging them onto desktop printer icons.

Now Apple is making the capability pervasive. As developers implement this technology, you'll be able to drag any selected item from one window to another, within a single application or between applications. You'll also be able to drag a selection directly to the desktop, to create a "clipping" file. You will be able to insert a clipping into another document later by — you guessed it — just dragging it in. And if you just want to see what's in the clipping, you'll be able to view its contents directly from the Finder.

Desktop Enhancements: Loaded with Features

Dozens of handy system utilities are available for the Mac. Many of them are shareware; others are available in commercial packages such as Now Utilities. System 7.5 incorporates close to a dozen such improvements. Among them are

- A hierarchical Apple menu.
- Folders on the Apple menu that display recently accessed files, applications, and file servers.
- Sticky Memos, an electronic Post-it-note application.
- A menu-bar clock.
- WindowShade, which lets you collapse a window so that only its title bar shows.
- A vastly improved Find File command in the Finder.

10 Good Things About System 7.5

1. **The Finder's Find File command.** It displays a list of all the files that meet your search criteria. No more wandering from folder to folder in frustration.
2. **Menu-bar clock.** You've seen SuperClock, which displays the time and date in the menu bar. Now it's part of the system.
3. **Hierarchical Apple menu.** The contents of folders in the Apple Menu Items folder display as Apple-menu submenus. So, for example, you can access an individual control panel directly from the Apple menu.
4. **Desktop printer icons.** System 7.5's QuickDraw GX lets you print files by dragging them onto printer icons on the desktop. Opening a desktop printer icon displays a list of files queued up for printing.
5. **Apple Guide.** Great innovation! Step-by-step tours walk you through the intricacies of the system and the Finder.
6. **PowerTalk.** Want to send that spreadsheet you're working on to a colleague without leaving your application? It's a snap if the application supports the PowerTalk Mailer — and a growing number of programs do.
7. **Drag and drop.** Drag selected text or graphics onto the desktop to create a clipping file. Drag data from a spreadsheet to a chart to update the chart. Drag a graphic directly into a page layout. You get the idea.
8. **MacTCP.** Been waiting for that chance to cruise the information superhighway? MacTCP provides a needed network connection. Of course, you still have to pay your own tolls.
9. **Faster Finder.** Apple claims it's as much as twice as fast at copying files as the System 7.1 Finder. And it's fully scriptable!
10. **System 7.5 is fat.** From a single set of disks, you can install System 7.5 on either a 680x0 Mac or a Power Mac — or install a system that works on both.

10 Bad Things About System 7.5

1. **It's huge.** If you install PowerTalk and QuickDraw GX, you're looking at 4.5 to 5.5 MB of RAM. Rumors of SIMMs being bundled are, however, apparently false.
2. **Open and save.** The hierarchical Apple menu can display recently used documents. Not much help when you want to open a file from or save a file to a specific location from within an application.
3. **Apple Guide is incomplete.** Many new features aren't covered at all — nor are some of the more confusing older features. And it can give misleading directions.
4. **Launcher setup.** To add a file or application to the Launcher, just drag an alias onto the Launcher window, right? Nope: You have to burrow into the System Folder to make any changes.
5. **SCSIProbe.** No, it's not part of System 7.5. Apple still doesn't give you an easy way to mount removable-storage volumes.
6. **The Trash.** No progress here either. Is a Delete menu item too much to ask? Or a keyboard command equivalent for the Empty Trash command?
7. **QuickDraw GX font conversion.** Type 1 fonts are automatically converted to GX format when you install QuickDraw GX. But don't try using converted fonts with an older version of the system. It's a one-way ride.
8. **Macintosh Easy Open.** You have to switch it off if you are a PageMaker user who wants to place EPS and TIFF files. Oops!
9. **Another PageMaker problem.** PageMaker can't use the new LaserWriter GX printer driver. Apple had to kludge a way to let you use the older LaserWriter 8 driver for ill-behaved applications.
10. **Desktop clutter.** QuickDraw GX adds printer icons to the desktop, PowerTalk adds Mailbox and Catalogs icons, AppleScript adds "script applications," Drag and Drop adds clipping files. It's getting mighty crowded.

We couldn't leave a discussion of System 7.5 without mentioning MacTCP. For those who don't dabble in acronyms, TCP (Transmission Control Protocol) is a network protocol common on UNIX systems. What makes it a hot item these days is that you need it if you want to make a direct connection to the Internet. Formerly available bundled only with third-party products or licensed through developer programs, it will now be part of the standard Mac OS offering.

What's in It for You?

New system software always creates the urge to upgrade. In some. Others, the cautious types, prefer to watch someone else find the kinks and let Apple iron them out rather than offering up their Macs to an uncertain future.

System 7.5 will be no exception. Early adopters will run out and install it — they're probably already running a beta version — and ride out the storm. But a lot of people will wait. For two reasons: (1) Much of the technology in System 7.5 is already available, either in System 7 Pro or in third-party utility packages and shareware. Those who have parts of System 7.5 may not want to pay for those parts again. (2) System 7.5 takes a big bite out of RAM. Apple's installed-RAM recommendation on this one has hit new heights: If you have a Power Mac and plan to install GX and PowerTalk, the suggested minimum RAM is a whopping 16 MB. No word on whether Apple plans to bundle SIMMs with the new system software.

Some people should definitely upgrade. If your office is using PowerTalk, odds are you're frustrated because System 7 Pro doesn't run on Power Macs. Using System 7.5 is the only way to run PowerTalk on Power Macs. If Apple Guide appeals to you — particularly if you're a consultant or in-house support specialist who wants to develop custom Apple Guide databases — go for it. And if you're a network administrator, you might appreciate being able to maintain all of your users' systems with a single system-software release instead of being trapped in the current nightmare of having to support System 7 Pro for PowerTalk users, 7.1.2 for Power Mac users, and 7.1 for the rest.

But if you're just J. Q. Average User — if your Mac works just fine the way it is, or if you barely even understand what all this new stuff is about, much less feel the need for it — stick with the system you're running. You'll save hard-disk space, have more RAM available to run applications, and avoid the headaches that often accompany a system-software transition.

Henry Bortman is *MacUser*'s technical director. He currently keeps two systems handy: System 7.5 beta for thrills and System 7.1 for when he really needs to get some work done.

The Apple Guide in Action QuickTime movie is available in the MacUser Forum of ZiffNet/Mac and in the MacUser Online Section of eWorld. See page 4 of this issue for information on how to sign on to these services.

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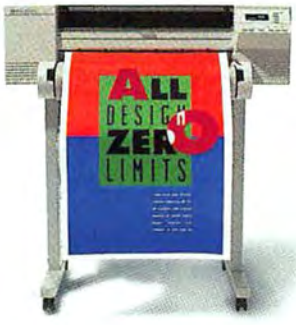

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ILLUSTRATION / JOE SPENCER

Plug In to the

Hooking your Mac up to the riches of the Internet is easier than you think. **By Joe Clark**

Everybody's talking about the Internet. Once the exclusive domain of academics and hard-core UNIX nerds, the Internet has grown into a vast storehouse of information useful — and easily accessible — to even the most inexperienced traveler of the information superhighway.

Originally, the Internet was created to serve the needs of university researchers, government agencies, and the military. Large corporate sites were the next to see the advantages of an open community where information is shared and provided freely and where geographic boundaries can be traversed transparently.

Now just about every on-line dabbler has discovered — or at least heard about — *The Net*. Maybe you've heard jargon such as *surfing the net*, *flaming*, or *WWW (World Wide Web)*. Maybe you've received a few business cards with strange e-mail addresses such as john_paul@vatican.org. Now you're thinking that it's time to check out this new way of communicating.

Well, rest assured — you *can* connect to the Internet from your Mac. It's easy, but careful planning is essential. Here's our step-by-step guide to getting wired.

From the viewpoint of Joe or Jane User, the Internet is an information resource, a gathering place, and a message center all in one — but it's much bigger and far less structured than even the largest,

most popular on-line service or bulletin-board system. The reason is simple: The Internet isn't a single, identifiable entity — it's a network of networks, a multitude of computers all around the world, communicating via phone lines, Ethernet, and any other media that can support *IP* (Internet Protocol), the Internet's special protocol, or language. Each *host* computer (a remote computer you log on to on the Internet) is set up so information can move freely through it and, therefore, around the entire Internet. The Internet's e-mail and newsgroups depend on this free-flowing movement of information.

Some of these hosts also act like file servers — that is, they contain information Internet users can download to their own computers. In many cases, the information is contained in public directories, whose files anyone can access.

What You'll Find on the Internet

Although the Internet has a wealth of resources, a few of its features are more commonly used than others:

E-MAIL. The most basic Internet service is electronic mail. Like e-mail within your company or on an on-line service, Internet e-mail lets you send messages to one or more other users, regardless of where they are located or what type of computer they use.

NEWSGROUPS. Newsgroups are the Internet's town hall. Over 5,000 discussion groups, or *newsgroups*, cover a multitude of topics. Devotees of *The Simpsons*, bicycle repair, linguistics, the Newton, African-American culture, fax technology, and particle physics all have one or more newsgroups, with readers and contributors from around the world. In the true Internet spirit of information exchange, many newsgroups include regular postings of answers to frequently asked questions (FAQs). Newsgroups such as comp.sys.mac.comm, which focuses on telecommunications for Mac users, have extensive FAQs that are updated regularly.

Some newsgroups are sedate forums for researchers; some are the homes of novice computer users seeking help; and some are arenas for rabid conspiracy theorists, political activists, and troublemakers. The most vitriolic of the messages they send are called *flames*.

MAILING LISTS. Like newsgroups, mailing lists bring together people with similar interests, through postings that can be read by the group. Mailing lists are managed by one person or through automated mailing-list software and are distributed through e-mail to subscribers. You subscribe to a list about, say, folk music or Claris' FileMaker Pro by sending an e-mail message to the list's owner. You will soon receive daily, weekly, or occasional e-mail messages from people who submit them to the list. You can contribute your questions, comments, or information in the same way.

Some mailing lists receive many messages per day, and the owner sends periodic collections of posted material in digest form, keeping your e-mail traffic down considerably.

Internet

FTP. Like many other Internet terms, FTP (File Transfer Protocol) is often used as a verb, as in, "Where can I FTP the agenda of last year's International AIDS Conference from?" You use FTP to transfer files from an Internet host computer to your computer. Many Internet hosts support *anonymous FTP* (you don't need an account for the machine you are trying to reach), which lets you retrieve files from public directories.

SEARCH ENGINES AND BROWSERS. The Internet's vastness has given rise to software that helps you search for and retrieve information even when you don't know where it is stored. Using search engines with names such as Archie, WAIS (Wide-Area Information Server), and Gopher, you can learn the location of information on almost any topic. You can then FTP it to your Mac (getting the hang of the jargon?).

A WWW browser lets you take a virtual walk around the Internet or one of its sites, checking out what's available and deciding whether you'd like to see more, all via hypertext links. WWW is among the Internet's flashiest and fastest-growing services.

TELNET. Think of Telnet — another versatile noun/verb — as a transporter, à la *Star Trek*. Telnetting refers to logging on to one computer from another. For example, you can log on to the Internet host at your office and telnet from there to an Internet-connected computer at your firm's European office. If you have an account for the remote computer, you have all of that computer's privileges available to you. If you have Telnet access to an on-line service such as CompuServe or America Online, you can log on to the Internet without using a modem.

The Easy Part: Getting Connected

The basic requirements for Internet access are an account with an Internet service provider; communications software; and in most cases, a modem. Some corporations maintain their own Internet connections; if you work for one of them, you can usually log on to the net via AppleTalk networks in-house. For most, though, Internet access requires a dial-up connection — that is, through a modem and an account you pay for. The scope of your Internet access will depend on the type of account you have and the software you use.

Internet service providers are connected directly to the Internet, usually through one or more UNIX-based computers. You pay for an account that allows you to log on to the provider's system, just as you would log on to an on-line service or corporate mainframe. Logging on puts you on the Internet. Service-provider lists, including nixpub and pdial (two of the most well-known lists of service providers), are available on the Internet and on-line services.

The other way to get onto the Internet is to go through a commercial on-line service such as CompuServe. Such services have gateways to the Internet, although you can generally exchange only e-mail and occasionally news if you go through them (see figure 1).

The Hard Part: Choosing an Interface

The Rubicon of Internet connectivity is the choice between text-based access — *terminal emulation* — and a graphical interface, like the one you're used to on the Mac. This may seem like a no-brainer, but applying a friendly face to an Internet connection takes a bit of work and forces you to confront the nuts and bolts of Internet networking. On the other hand, terminal emulation requires you to

learn UNIX commands, something Mac users rarely relish.

The easiest way to log on to the Internet is to dial in to your service provider's system with a Mac communications program such as the shareware ZTerm or Hayes' Smartcom II. Your Mac then becomes a terminal on the Internet host. Because the Internet host uses the UNIX operating system, you need to use UNIX commands to read news, send mail, and transfer files. Some UNIX applications running on an Internet host have rudimentary menus, but the menus are driven by your keyboard, not your mouse. Fortunately, you can use e-mail and access newsgroups without learning many commands. You can also read documentation for the application you're using while you're connected or after you have downloaded it.

The commands for transferring files and searching for information are trickier, and they vary with the telecommunications protocols your Internet host supports.

Direct Access

HOOKING UP YOUR MAC NETWORK to the Internet is not difficult, but it involves some cost and a little network expertise.

For complete connectivity — giving your site continuous access to the Internet — you will need a dedicated data circuit (also called a leased line) from an Internet service provider's POP (Point of Presence) to your site. POP is a fancy name for a rack of modems and routers owned by an Internet service provider. If you provide your own Internet access, you'll need your own POP.

Think of a POP as your on-ramp to the Internet. Data speeds over a leased line range from 56 kbps to 45 Mbps. Typically, the line is owned by your local telephone company. You pay a monthly fee for the line and a flat fee to the Internet access provider. For 56-kbps connectivity in the U.S., the total cost is around $1,000 per month. Although this isn't cheap, one leased line will let you connect all the computers within your organization to the Internet.

Your leased line is connected to a device on your site called a *CSU/DSU* (Customer Service Unit/Data Service Unit), the interface between the phone company's equipment and your router. The CSU/DSU is connected to a router connected to your LAN. The router, using *IP*, allows any properly configured Mac on your network to communicate with any host on the Internet.

Macs connected to your network need *MacTCP*, available with some Mac Internet access packages and as part of System 7.5. Each Mac requires a unique *IP address*, which your Internet service provider gives you. You also have to register a unique *domain name* for your organization. Your Internet provider can help you with this too.

You'll also need a *DNS* (Domain Name Server), which keeps track of the names and addresses of your own and other Internet hosts. You can either set up your own DNS or use your service provider's. Having your own DNS lets you add users to and remove them from your network. You will, however, need a UNIX system to run the DNS software, since no DNS software is available for the Mac. Setting up a DNS is not trivial, but it isn't terribly difficult if you know your way around UNIX. If you want to manage your company's e-mail and newsgroup access, you need server software for that as well. The best server software runs on UNIX systems — you can use your DNS machine for e-mail and news, to centralize Internet administration.

Security is another Internet-connectivity consideration. Most routers support the filtering of information, so that you can deny access to your network to the outside world. / Smoot Carl-Mitchell

Terminal emulation's advantages are ease of configuration (all you need to get connected is to know your user ID, your password, and the phone number of the Internet host's modem), speed, and full functionality. Terminal emulation — sometimes called a *shell account* — is usually the cheapest kind of Internet account, although that is changing a bit. The UNIX-based software for reading news often has more features than the Mac alternatives. Since UNIX-based mail and news software is not burdened with a graphics interface, reading large volumes of news or mail often goes faster.

Internet Access: the Mac Way

If you find the Mac's point-and-click interface indispensable, you can apply it to the Internet, as long as you have two important items: Apple's MacTCP software and a SLIP or PPP account from your service provider. MacTCP is a control panel that lets your Mac communicate with an Internet host in its native language, IP. A SLIP (Serial Line Internet Protocol) or PPP (Point to Point Protocol) account puts your Mac on the Internet.

Getting MacTCP is easy — it's part of Apple's System 7.5 and is also included with several Internet software packages. You can't, however, just buy a copy of MacTCP alone. Setting up MacTCP can be a headache (fortunately, you have to set it up only once). It's best to have your service provider configure MacTCP for you to ensure that all settings are correct. If the provider won't do that, you need to find out the following, some of which will be needed when you configure SLIP or PPP:

- The service provider's modem phone number.
- An IP address (your unique Internet identifier) and an e-mail address for your use.
- Whether your IP address is determined manually (you enter a permanent IP address) or dynamically (one is assigned by the host each time you log on).
- The name and IP address of your Domain Name Server (there might be more than one).

You may also need

- A gateway address for the server you're dialing in to.
- The name of your *news server* (the machine on which newsgroup information is stored).

Now all you have to do is open the MacTCP control panel, click on the More button, and fill in the settings with the information you received from your service provider.

Once you have MacTCP configured, your next task is to configure SLIP or PPP software. SLIP tools such as Synergy Software's VersaTerm SLIP, part of VersaTilities, and InterCon Systems' InterSLIP, part of TCP/Connect II, come with commercial Internet software packages. InterSLIP is also distributed freely through the Internet. MacSLIP is available for $49.95 from TriSoft (800-531-5170). InterPPP is a separate product from InterCon Systems. MacPPP is available free on the Internet and from on-line services.

Be forewarned that not every Internet site supports SLIP and PPP. And, compared to terminal-emulation accounts, SLIP and PPP accounts are often more expensive. SLIP and PPP accounts are more likely to be billed on an hourly basis than are terminal-emulation accounts, so you may pay a higher monthly fee (more than $30 a month) plus a per-hour charge (as opposed to a flat fee of $20 a month for a terminal-emulation account).

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figure 1

On-Line Services / the indirect road to the Internet

Commercial on-line services offer limited access to the Internet, usually through an e-mail gateway. If you already use an on-line service and are primarily interested in exchanging mail with other Internet users, one of these options may be for you. The latest addition to on-line-service access is Telnet. If you can telnet directly from your Mac to the net (say, by logging on to a local server connected to the Internet), you can also make modemless connections to CompuServe. This saves long-distance charges and speeds up connection.

Service	Phone	Internet Services	Mac Software	Price	Internet Fees
America Online	800-827-6364 703-448-8700 703-506-1942 (fax)	E-mail gateway. Usenet newsgroups. Internet forum/software. WAIS and Gopher search.	yes	$9.95/month (includes 5 hours), $3.50/additional hour	no extra charge
CompuServe	800-848-8199 614-457-8650 614-457-0348 (fax)	E-mail gateway. Internet forum/software. Telnet to service.	yes	$49.95 membership (includes $25 usage credit); basic service, $8.95/month, unlimited access; Enhanced Services, $4.80/hour, 1,200 or 2,400 bps; $9.60/hour, 9,600 or 14,400 bps	$.15 per e-mail message, using the Internet gateway; forums/downloading are Enhanced Services
Delphi	800-695-4005 617-491-3393 617-491-6642 (fax)	E-mail gateway. Usenet newsgroups. Internet forum/software. WAIS and Gopher search. Telnet to other hosts. FTP. IRC (Internet Relay Chat).	no	$10/month (includes 4 hours), $4/additional hour; $20/month (includes 20 hours), $1.80/additional hour	$3/month
eWorld	800-775-4556 408-974-1236	E-mail gateway.	yes	$8.95/month (includes 2 evening or weekend hours), $7.90/hour (day), $4.95/additional evening or weekend hour	no extra charge
GEnie	800-638-9636 301-251-6415 301-251-6421 (fax)	E-mail gateway. Internet forum/software. GEnie sysops will search/FTP files for users.	no	$8.95/month membership, $12.50/hour (day), $3/hour (evenings and weekends)	no extra charge
MCI	800-444-6245 202-833-8484	E-mail gateway.	no	$.50/first 500 characters, $.10/next 9,500 characters	no extra charge
Prodigy	800-776-3449 914-448-8000	E-mail gateway.	yes	$14.95/month (first month free)	no extra charge

SLIP is more common than PPP, primarily because it has been around longer. PPP, a more efficient protocol, is growing in acceptance. Since both kinds of access use the service provider's system in the same way, you shouldn't have to pay more for PPP. If you have a choice, pick PPP.

If you decide to go with a graphical Mac interface, you'll have several shareware Mac applications to choose from when assembling a software tool chest. Mail and news readers, FTP client software (the software used to transfer files to your Mac), information browsers, and clever utilities circulate freely from anonymous-FTP sites. Most of this software is good and well supported. With these applications, you may miss some advanced features available in UNIX-based software on your Internet host — news readers don't yet support filtering of the kind you find on UNIX systems, for example — but using Mac software definitely beats learning UNIX.

Several telecommunications products take an integrated approach to the Internet. Synergy Software's VersaTilities, Software Ventures' MicroPhone Pro II, and InterCon Systems' TCP/Connect II each combine e-mail, news, FTP, and Telnet into one software bundle. The integrated approach speeds configuration of your Internet account and provides a standard interface for several Internet services. You also gain the advantage of technical support (see the "Internet Software" sidebar for our ratings of leading Internet-access programs).

Internet in the Office

Many companies, particularly in high technology, have joined the Internet, either through direct links (using their own UNIX-based systems) or through service providers. If your company has an Internet connection and allows its employees to access the Internet, you may be able to reach the Internet directly from your Mac and the office network. Your system administrator should be able to provide what an Internet service provider would: MacTCP configuration and software. If your company is not on the Internet, it can purchase access from a service provider or buy equipment to make the connection (see the "Direct Access" sidebar).

Some businesses have integrated the net to the extent that Internet e-mail arrives on your Mac directly from your company's e-mail system. Several vendors, including StarNine, sell e-mail gateways. With one of the StarNine Mail*Link SMTP Internet e-mail gateways, a QuickMail, Microsoft Mail, or PowerTalk user can receive Internet e-mail. You can attach files to e-mail messages, because StarNine

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Internet Software / which application is right for you?

THERE'S A WEALTH of Mac software — both commercial and shareware — that will help you access and navigate the Internet. Most of the commercial products take an integrated approach to the Internet, with modules for e-mail, news-file transfer, and Telnet.

Integrated Packages

MicroPhone Pro II

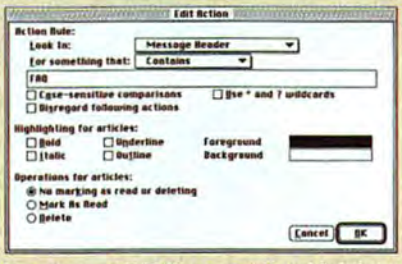
MicroPhone Pro II is a popular telecommunications program that includes some Internet tools: a Telnet tool, MacTCP and Fetch FTP client software, and modules for e-mail and news. The e-mail and news modules are written in MicroPhone's scripting language and use the program's interface-building tools to make icons, windows, and buttons. The newsgroups interface is particularly friendly and Mac-like, with standard dialog boxes for subscribing to and unsubscribing from groups. Unfortunately, the program lacks important article-management and -searching features and is slow. You can script your own Internet applications, a feature unique among these products. Documentation is well written and organized, including separate manuals for TCP/IP tools, Internet utilities, and scripting.
MicroPhone Pro II ★★★½ / **List Price:** $195. **Company:** Software Ventures, Berkeley, CA; 510-644-3232.

TCP/Connect II 1.2

A wealth of features is packed into TCP/Connect II. This ambitious program includes e-mail, news, and FTP software. It also supports multiple terminal-emulation sessions and Telnet. For news and e-mail, TCP/Connect II supports message filtering, a handy feature for sorting through the dozens of messages you're likely to receive. However, its single-window, multipane approach to news reading is marred by poorly designed keyboard navigation commands. It's also slow when retrieving newsgroup information. Its single, dense manual is merely a catalog of features and offers little troubleshooting help.
TCP/Connect II 1.2 ★★★½ / **List Price:** $195. **Company:** InterCon Systems, Herdon, VA; 703-709-5500.

VersaTilities 1.13

A versatile package of Internet utilities, VersaTilities includes SLIP client and server software; FTP server software; and an integrated application for news and e-mail access and FTP. VersaTerm Link, the package's application software, contains a handy icon bar and an impressively fast news reader. However, although it alphabetizes subject lines for news articles, it lists threads (a group of messages on the same topic) continuously — there's no indenting or other tidy means of distinguishing articles beyond the first in a thread. A convenient e-mail module allows you to define aliases for individuals and for groups, and the easy-to-read manual makes setup simple. VersaTerm Link is also included with Synergy's VersaTerm Pro, a telecommunications and terminal-emulation package.
VersaTilities 1.13 ★★★★ / **List Price:** $145. **Company:** Synergy Software, Reading, PA; 215-779-0522.



You can set TCP/Connect II to highlight or dispose of messages automatically as they are received from the news host.

WorldLink

For beginners, using WorldLink is a convenient way to sample the Internet. With a graphical interface and feature set almost identical to that of TCP/Connect II, WorldLink is a dial-up application that needs neither MacTCP nor SLIP/PPP software. To use WorldLink, you must buy an account with PSI, a Virginia-based Internet service provider. WorldLink downloads your e-mail, news, and FTP requests in batch mode, letting you read material and create responses off-line. At 2,400 bps, WorldLink is painfully slow, and like TCP/Connect II's, its documentation needs work. Still, using WorldLink is an easy way to sample the Internet.
WorldLink ★★★½ / **List Price:** $29.95, plus $9 (2,400 bps) or $19 (9,600 bps) per month. **Company:** InterCon Systems, Herdon, VA; 703-709-5500.

Single-Purpose Programs

Anarchie 1.13

Anarchie allows you to use the Archie protocol to search for files on countless hosts across the Internet and provides a slick interface for downloading files to your Mac from anonymous-FTP sites. Anarchie lets you connect to more than one FTP site at a time and download multiple files simultaneously. Anarchie uses Apple events to automatically decode compressed or BinHex files once

gateways support MINE (Multipurpose Internet Mail Exchange), which lets you transfer nontext files such as spreadsheets and graphics via the Internet. These gateways must be installed on your local mail server, which must then be connected to the Internet.

Choosing a Good Service Provider

Whether you are seeking Internet access for yourself or for your organization, the choice of an Internet service provider is important. Since service providers offer connections to users with a wide variety of computers, it's important that the provider you select understands Mac connectivity. If the provider has never heard of MacTCP, it's probably a good idea to look elsewhere.

Service providers with Mac experience can help you configure a connection and can recommend software. Some standardize on e-mail, news readers, or other software, which they provide and/or support. You may even find newsgroups devoted to the provider's Internet services, where you can ask questions and get support.

Service providers' charges for Internet access vary, and you should shop around to find the best deal. Service providers with local phone numbers around the country make it possible for you to dial a local phone number for Internet access when you travel. On the other hand, these large service providers may charge more and offer less support than providers with fewer subscribers.

The explosive growth of the Internet has strained the resources of some service providers. Be sure that yours has enough phone lines to accommodate its users. Continual busy signals or a slow response from the host machine are warning signs.

Information, Please

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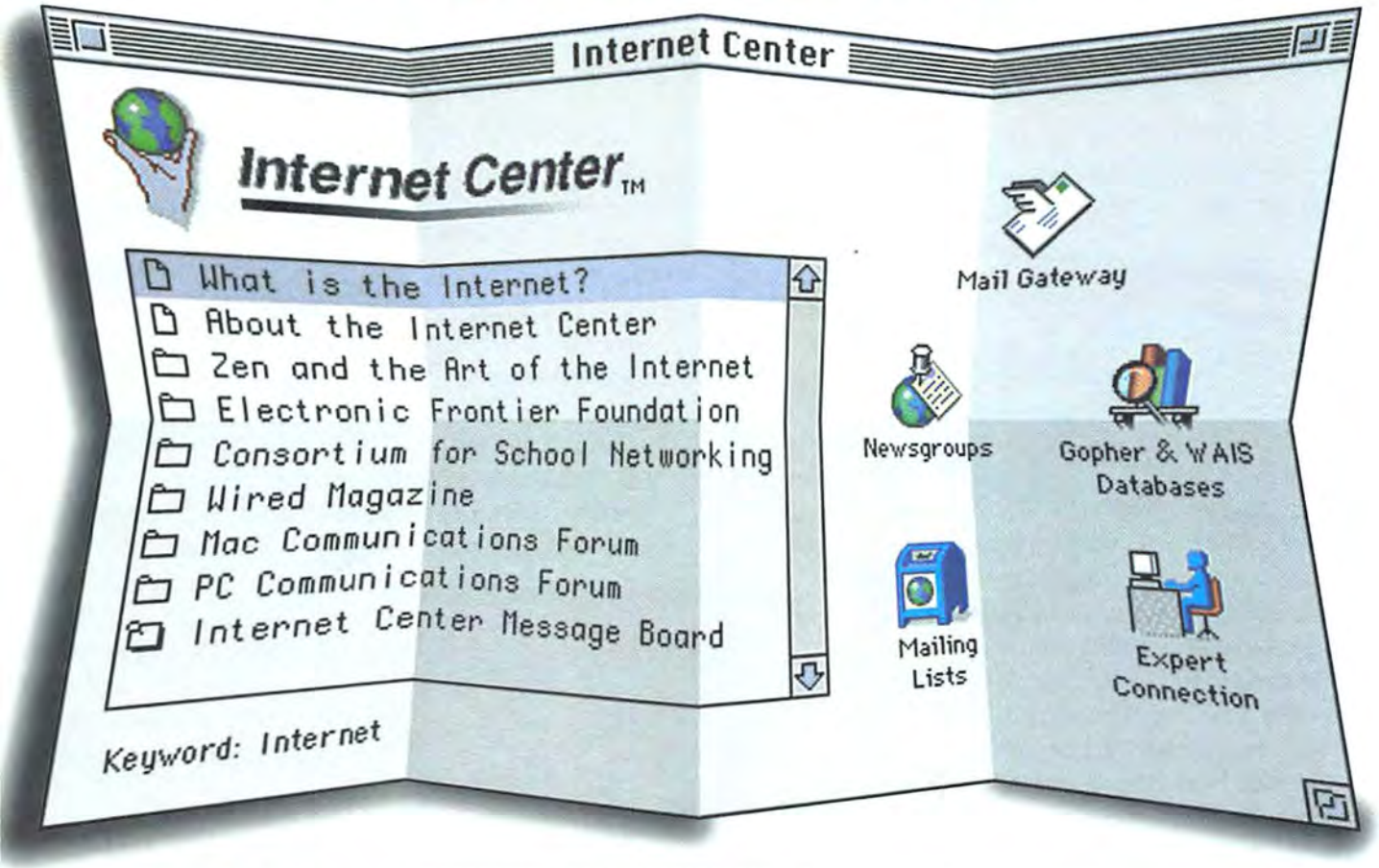

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they're on your Mac. Although it doesn't yet allow users to upload files or view text files on the fly, Anarchie is so flexible that it may soon become the Mac FTP application of choice.
Anarchie 1.13 ★★★★½ / List Price: shareware ($10 for individuals, $500 for companywide site license). **Provider:** Peter Lewis.

Eudora and Eudora shareware

Eudora is the pioneer Internet e-mail package for the Mac. It can be used with a MacTCP connection or as a stand-alone application that can dial your Internet host and retrieve e-mail automatically. To use the stand-alone option with most systems, you must use ResEdit to modify Eudora resources for your particular Internet host — but sorry, there's no documentation on how to do this, except with a HyperCard stack on the Eudora disk.

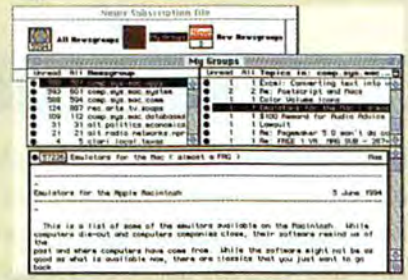
Both the commercial and the shareware versions store messages in an unlimited number of *mailboxes*, so you can organize your e-mail by sender, subject, or any other criteria. You can create address books and aliases for e-mail addresses. Eudora lets you attach Mac files to e-mail messages and is smart enough to translate attachments to and from the common BinHex transfer format. The commercial version also includes e-mail-filtering options.
Eudora 2.03 ★★★★½ / List Price: $65.
Eudora shareware 1.42 ★★★★ / List Price: free.
Company: Qualcomm, San Diego, CA; 619-587-1121.

InterNews

Fast and efficient, InterNews represents newsgroup sets (a set of newsgroups you group together) with attractive icons. It features a single-window, multipane layout: You have the option of three horizontal windows (newsgroups on top, article titles in the middle, article text at bottom) or one horizontal window (article text) topped by two side-by-side windows (newsgroups and article titles). Reply functions are also well integrated with each other. InterNews lets you perform text searches on newsgroup and article subject lines.
InterNews 1.01 ★★★★ / List Price: free for individuals, $25 for commercial users. **Provider:** Dartmouth College.

NCSA Mosaic

A sophisticated assistant, Mosaic helps you navigate the World Wide Web, an international hypertext-based network of linked information. Also available for Windows and UNIX environments, Mosaic is based on a "home page" interface — a document containing text and graphics. Some words, phrases, and pictures are linked to other home pages, indexes, and sound or video files. Clicking on a link takes you to another page, whether it's located on the WWW server you're using or on another one across the Internet. A pull-down menu and HyperCard-style arrows let you backtrack at any time. The only limitation for the impatient user is speed. Much of the program's slowness is due to the searches and remote connections Mosaic must do during your Internet travels. Mosaic 2.0, due later this year, will support text searches and add other features.
NCSA Mosaic ★★★★ / List Price: free. **Provider:** University of Illinois National Center for Supercomputing Applications.



InterNews features a flexible single-window, multipane layout that's compact and attractive.

NewsWatcher

Written and distributed free by one of the heroes of personal computing, John Norstad, this news reader tracks and displays the number of articles in a newsgroup. NewsWatcher can search a newsgroup's subject line, author name, keyword, or other *header* information, displaying resulting messages in a new window. Some newsgroups consist of user-uploaded files called *binaries*. NewsWatcher can download and decode these BinHex files with one click. Threads are succinctly represented by System 7-like triangles to the left of the subject line: Click on the triangle, and the subject lines of the other messages in the thread appear. Replying to the author of an article by direct e-mail, adding your own article to a thread, and starting a new thread are all easy. Unfortunately, NewsWatcher cannot search or sort newsgroup-article titles and does not support *kill files* — that is, it is unable to filter out article titles or authors that you don't want to see.
NewsWatcher 2.0d17 ★★★★ / List Price: free. **Provider:** John Norstad, Northwestern University. / Shelly Brisbin and Joe Clark

looking for an Internet service provider, for example, have a friend who's already an Internetter provide you access to the Internet's nixpub or pdial lists.

Each of these directories, which are also posted on the Internet forums of such popular on-line services as America Online, CompuServe, and ZiffNet/Mac, provides listings of Internet service providers. Lists of FTP sites, mailing lists, and WWW servers can tell you where to find everything from Macintosh software to the lyrics of popular songs.

Internet books abound. At least two, accompanied by disks of shareware containing Internet utilities and tools, are specifically for Mac users. Adam Engst's *Internet Starter Kit for Macintosh* (Indianapolis: Hayden Books, 1993) comes with a copy of MacTCP, InterSLIP, the Eudora e-mail reader, and more. Michael Fraase's *The Macintosh Internet Tour Guide* (Chapel Hill, NC: Ventana Press, 1993) also comes with a disk of software. Each book includes lists of newsgroups, service providers, and FTP sites as well as detailed explanations of Internet services, conventions, and commands. If you're serious about exploring the Internet, these books will prove a valuable investment.

The Internet is a vast source of information, growing daily. Once you've started surfing the net, you won't regret the time it took you to get set up. In fact, the only regret you may have is that you have to log off and get back to work.

Joe Clark is a Toronto-based writer who spends way too much time on-line. Smoot Carl-Mitchell, managing partner of Texas Internet Consulting in Austin and coauthor of *The Internet Connection: System Connectivity and Configuration*, also contributed to this story.

You can find more information about the Internet, including lists of service providers, on ZiffNet/Mac. See page 4 for details on how to access ZiffNet/Mac.

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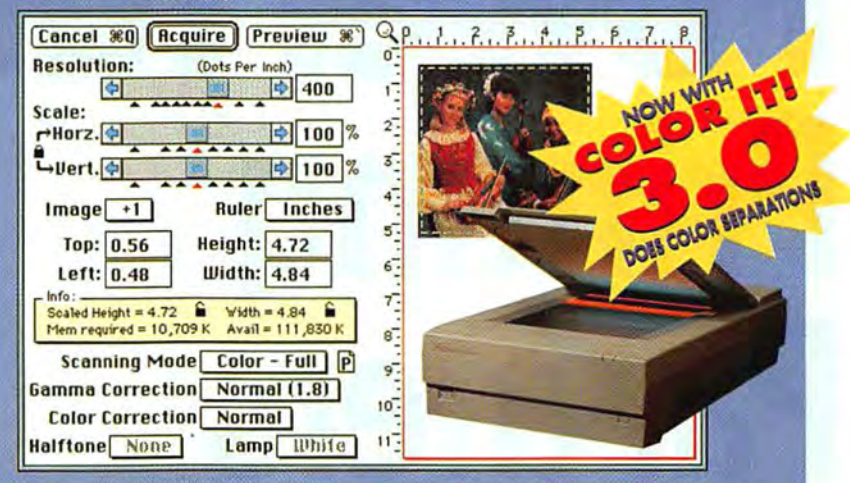

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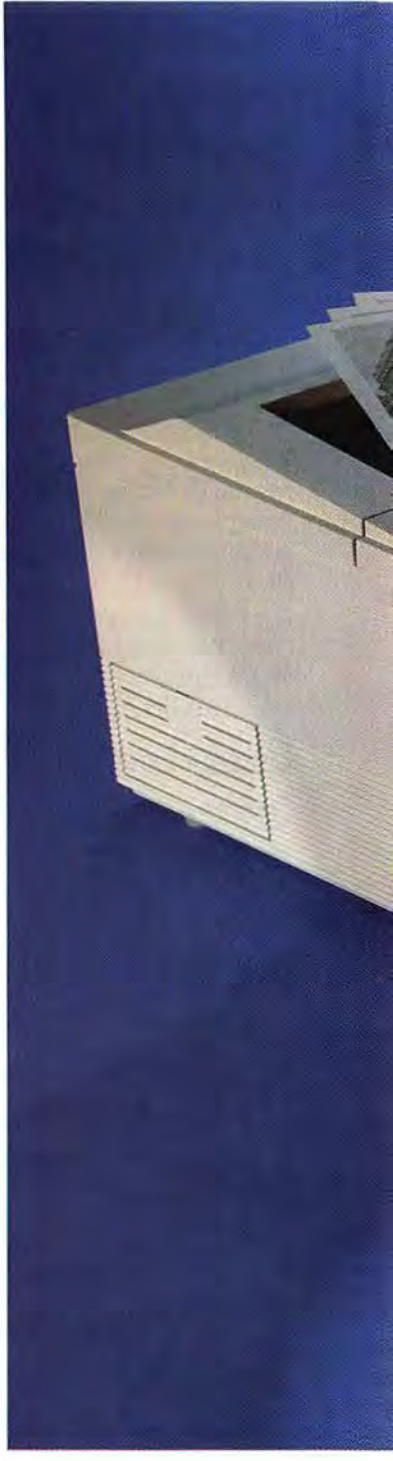


Which printer will stand up to your toughest office challenges? MacUser Labs tests 21 hard-working candidates.

By Drew J. Cronk and Anita Epler

A good office printer meets a straightforward job description: to meet the diverse printing needs of a group of networked computer users and to do so reliably and cost-effectively. Yet, as simple as this task seems, the average office printer encounters some far-from-simple variables: multiple computing platforms, multiple networks, and multiple user needs.

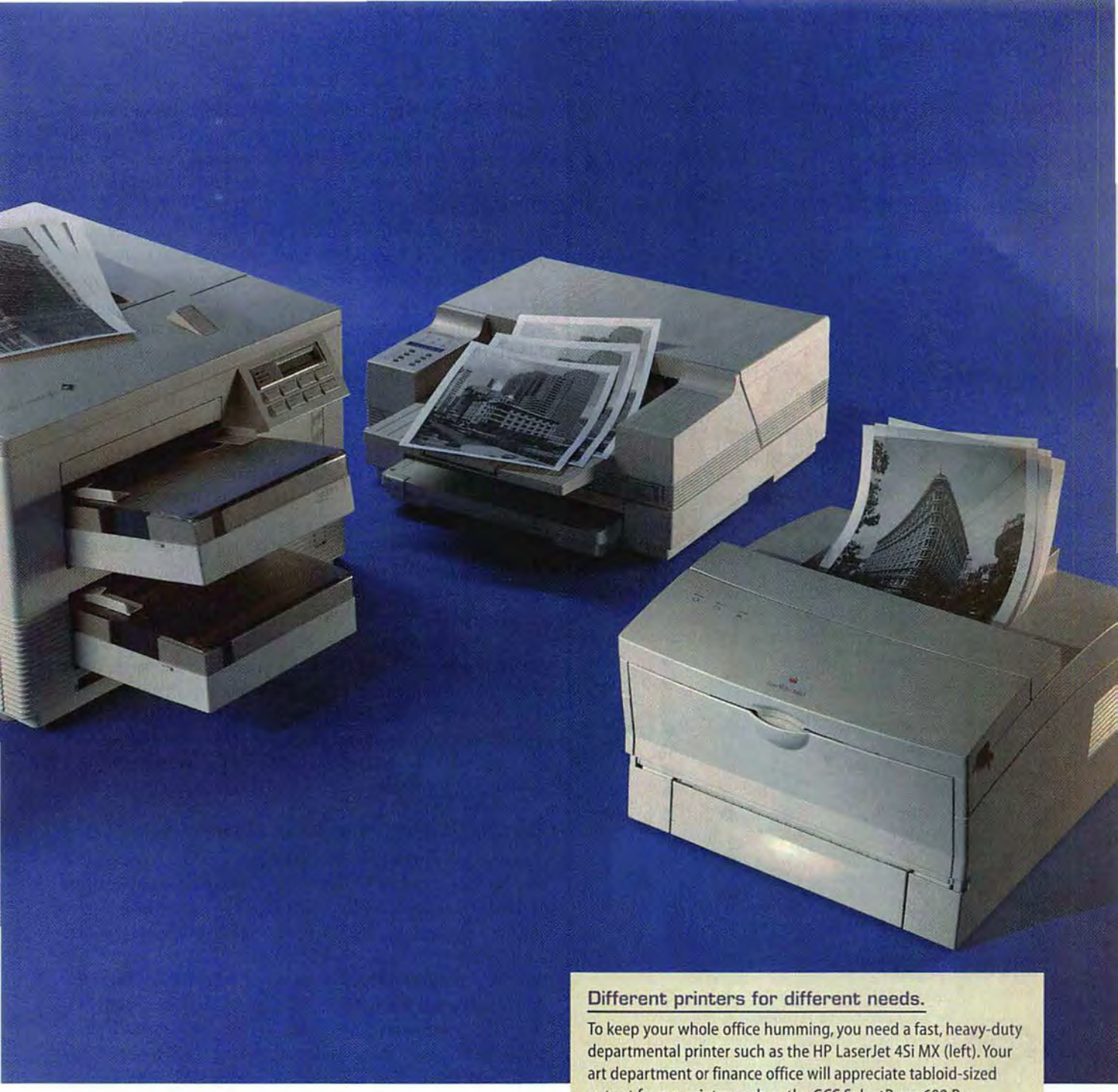
To survive in such an environment, an office printer must be rugged, fast, reliable, and — perhaps most important — accommodating. An office printer should support PostScript, use laser or LED technology, be networkable, and have an 8-ppm or better engine.

Using these criteria, we rounded up 21 printers that *should* be capable of filling the bill. After running these candidates through a battery of objective tests — as well as our own brand of real-world usability trials — we identified some that are more capable than others. Some breeze through their required duties with grace and dignity; others are more likely to just sit there and whine.

The Two Types of Office Printers

Once we had all the printers in our lab, we divided them into two groups: *workgroup* printers and *departmental* printers. Workgroup printers are designed for groups of 5 to 20 users: Each has an engine speed in the range of 8 to 12 ppm, supports LocalTalk networks (and in some cases, Ethernet), and offers basic paper-handling capabilities. List prices for these printers are in the range of $1,500 to $5,700.

Everything workgroup printers can do, departmental printers can do too — bigger, better, and faster. Designed for use by groups of 20 or more, they have engine speeds of 15 ppm and up, can work



Different printers for different needs.

To keep your whole office humming, you need a fast, heavy-duty departmental printer such as the HP LaserJet 4Si MX (left). Your art department or finance office will appreciate tabloid-sized output from a printer such as the GCC SelectPress 600 Pro (center). The Apple LaserWriter Select 360 (right) is equally at home in a small workgroup or on your desk.

PHOTOGRAPHY / FRED STIMSON

on either LocalTalk or Ethernet networks, and sport hefty paper-handling capabilities. List prices for these workhorses are bigger too: $3,700 to $20,000.

After spending numerous hours testing, tweaking, and inspecting all the printers, we discovered that the line between workgroup and departmental printers isn't always clearly defined. In some of our tests, the fastest workgroup printers outran several departmental ones. Overall, print quality between the two groups was comparable and price tags for the highest-cost workgroup printers edge up against those of the lowest-cost departmental printers.

Some of the biggest differences between the two groups were in their features, not their performance. For instance, departmental printers have more paper-handling options and heavier-duty print engines than workgroup printers. Departmental printers are also harder to set up and, in most cases, are too large for one person to move (most of these printers weigh 75 to 120 pounds).

Understanding Resolution

In days gone by, a 300-dpi laser printer provided the best possible output quality. Many of today's printers, however, have a resolution of 600 dpi. Thanks to the higher resolution, you'll see sharper text and line art and an increase in the number of gray levels that can be printed.

Some vendors add resolution enhancements to their printers that

The Bottom Line

MacUser ZD LABS SPEED AND OUTPUT QUALITY are the two most important factors when you're choosing an office printer. But because competition among the printer vendors has gotten tougher — and printer quality has improved — you may find that your decision is based on other factors too, such as connectivity options, paper-handling abilities, and customer service.

⊕ = OUTSTANDING
● = ACCEPTABLE
⊖ = POOR

Workgroup Printers	Price/ Performance	Customer Service	Printing Speed	Output Quality
★★★★½ HP LaserJet 4M Plus	⊕	⊕	⊕	⊕
★★★★½ GCC SelectPress 600 Pro	⊕	⊕	●	⊕
★★★★ Apple LaserWriter Pro 630	⊕	⊖	●	⊕
★★★★ Apple LaserWriter Select 360	⊕	⊖	●	⊕
★★★½ NEC Silentwriter 1097	⊕	●	●	●
★★★½ QMS 860 Print System	●	●	⊕	●
★★★½ TI microLaser Pro 600	⊕	⊖	●	●
★★★ Digital DEClaser 5100	●	⊖	●	●
★★★ Lexmark IBM LaserPrinter 4039-10R	●	●	●	●
★★★ Lexmark IBM LaserPrinter 4039-12R	●	●	●	●
★★½ ALPS LSX-1000	⊖	⊖	⊖	●
★★ Kyocera Ecosys FS-1500A	⊖	⊖	⊖	⊖

For large-format output, the SelectPress 600 Pro ($5,699 list, $4,855 street) is the clear winner, offering reasonable speed and output quality well above that of its competitors. The base price, although not low, includes an internal hard drive and a built-in EtherTalk port.

This value-priced printer ($2,688 list, $2,220 street) has just about everything a good office printer should: speed, high-quality output, good connectivity options, and a solid company behind it. Still, it lacks a SCSI port.

Departmental Printers	Price/ Performance	Customer Service	Printing Speed	Output Quality
★★★★½ HP LaserJet 4Si MX	⊕	⊕	⊕	⊕
★★★★ PrePress Solutions VT800	⊕	●	●	●
★★★½ Apple LaserWriter Pro 810	⊕	⊖	●	●
★★★½ Dataproducts LZR 2080	⊕	●	●	●
★★★½ QMS 2025 Print System	⊖	●	⊕	●
★★★½ QMS 3225 Print System	⊖	●	⊕	●
★★★ Lexmark IBM LaserPrinter 4039-16L	●	●	●	●
★★★ PrePress Solutions VT820	●	●	●	●
★★★ QMS 1725 SLS	●	●	●	●

Listing is alphabetical within groups of equal mouse ratings.

For those who need tabloid-sized printing, the VT800 ($4,595 direct) is a solid choice. As one of four nearly identical printers that use the same engine, the VT800 has a slight edge, thanks to an external hard drive, a built-in EtherTalk port, and one year of on-site service.

An easy printer to recommend, the LaserJet 4Si MX ($5,299 list, $4,615 street) offers outstanding output quality, excellent speed, and a good all-around feature set. Again, our only complaint is the missing SCSI port.

improve the appearance of a printed page. Hewlett-Packard uses its proprietary Resolution Enhancement technology (REt) to smooth the jagged edges of text and line art that are usually associated with lower-resolution printers. Apple, NEC, and a host of others use similar techniques.

Another resolution-enhancement technique increases the number of gray levels that a printer can produce. This gives any color, gray-scale, or computer-generated image the appearance of sharper detail and finer tints while using a 300- or 400-dpi engine. Different vendors implement gray-scale enhancement in different ways, but most of these techniques require the vendor to add more RAM to the printer and tend to slow down a printer's speed.

Vendors can also enhance overall print quality by tweaking a 300-x-300-dpi printer until it offers a 300-x-600-dpi, 600-x-600-dpi, or higher *interpolated* resolution. (With interpolated resolutions, the printer lays down more dots than it normally would but doesn't adjust their size.) Our tests show that a 300-dpi printer that has been tweaked produces higher-quality images than does a standard 300-dpi printer. But be forewarned — our testing has also consistently shown that tweaked printers do not produce better output than printers based on 600- or 800-dpi engines.

To help you figure out which printer will provide the output quality you need, we asked a jury of experts to take a long, hard look at sample output from each printer. We printed the test document at the highest resolution each printer could muster, as high as 600 dpi. The jury then evaluated the quality of text, line art, and a photographic image. We combined the results of these two independent critiques to arrive at a broad, overall rating of each printer's output quality (see the "Bottom Line").

Judging the Quality of Text and Line Art

To gauge each printer's ability to print crisp text, sharp line art, and rich blacks, we turned our jurors loose with sample output, their reading glasses, and a high-magnification loupe. Upon their bleary-eyed return, our jurors had reached a verdict: With few exceptions, all the printers received a thumbs-up.

Workgroup Printers. Five units — the Apple LaserWriter Pro 630, Apple LaserWriter Select 360, Digital DEClaser 5100, GCC SelectPress 600 Pro, and HP LaserJet 4M Plus — tied for top honors. Six of the seven remaining workgroup printers produced perfectly respectable text and line art. In fact, only one printer — the Kyocera Ecosys FS-1500A — received the dreaded "Poor" stamp of disapproval. Each of our jurors commented that lines this printer produced were noticeably jagged — even when viewed at a normal reading distance.

Departmental Printers. The HP LaserJet 4Si MX was clearly the favorite, receiving a perfect score from every juror. The QMS 1725 SLS, which uses the same type of Canon engine as the LaserJet 4Si MX, was a close second. We chalk the LaserJet 4Si MX's edge up to its proprietary REt.

Printouts from the Apple LaserWriter Pro 810, the Dataproducts LZR 2080, and the PrePress Solutions (formerly Varityper) VT800 and VT820, which all use the same type of Fuji/Xerox engine, were nearly identical. These four printers have true engine resolutions of 300 and 400 dpi and employ interpolation to boost the resolution to 600 dpi, thereby causing text to look less sharp than that produced

figure 1

Output Quality / how good they look

MacUser ZD LABS **Sharp text and high-contrast gray-scale images** — these are two signs of a high-quality printer. To test output quality, we first created a sample page that included a variety of type sizes and styles, delicate line-art drawings, and a detailed gray-scale image. We then assembled a jury of experts and asked them to rate the output of each printer for the sample page. First, the jury members rated each printer's ability to create sharp text and lines. They examined text and lines both at standard reading distance and under a high-magnification loupe, looking for jagged edges and clean hairlines. We then asked the jury to rate each printer's ability to produce gray-scale images. This time jurors looked for the amount of detail in light and dark areas of an image and how smoothly the printer could produce a transition from dark to light gray. Here are some examples of what they saw.

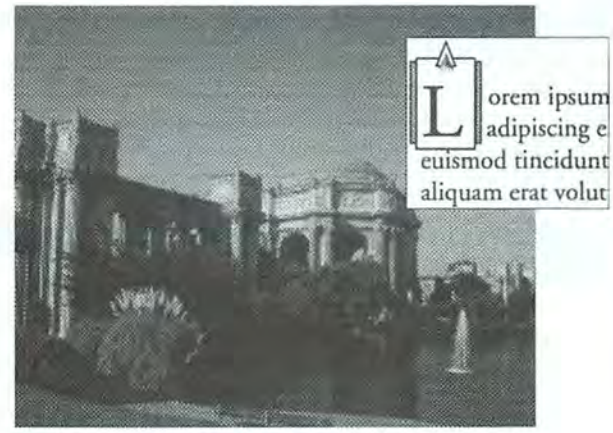
Workgroup Printers

The Good. Our judges found that five printers produced top-notch output, such as this from the Apple LaserWriter Pro 630. In the gray-scale image below, note the smooth gradations in the sky and the amount of detail apparent on the buildings. In the inset, note the crisp lines of the L and the triangle as well as the smooth shading.

The Bad. A poor-quality printer produces output that is much less sharp. This came from the Kyocera Ecosys FS-1500A. In the gray-scale image, note the banding in the sky and the loss of detail in all areas. In the inset, note the jagged edges in the curves of the L and the top of the triangle. Also note that the shading is characterized by large dots.

Departmental Printers

The Good. In general, the departmental printers produced output equal in quality to that of the workgroup printers. In this sample from the HP LaserJet 4Si MX, the banding in the sky is slightly worse than that in the best workgroup-printer image and there is a tad more loss of detail. The text, however, is every bit as sharp. Most standard business offices will be pleased with this level of print quality.



The Bad. As with the workgroup printers, we found a couple of departmental printers that couldn't quite make the grade. The Lexmark IBM LaserPrinter 4039-16L produced extremely dark gray-scale images (as shown here) with noticeable loss of detail. Text, however, is dark and crisp — jagged edges in the curve of the L and the top of the triangle are barely noticeable.

PHOTO COURTESY OF KODAK

by printers with true engine resolutions of 600 dpi. Members of our jury noted that, compared to the printer leaders, this quartet produced slightly thicker, fuzzier type and slightly more jagged line art — flaws that make these printers less than ideal choices for desktop publishers but do not automatically disqualify them from use in typical offices.

Because of a bug in the firmware of the QMS 2025 and 3225 Print Systems, we weren't able to print our sample output in time for the formal jury. QMS later fixed the bug, and we printed the sample documents. Several jurors performed an informal evaluation and found the text and line-art quality from these printers to be about average.

Judging the Quality of Gray-Scale Images

We made even more demands of the printers when it came to judging their ability to handle photographic images. Our gray-scale test page contained light areas, dark areas, gradations, and areas of fine detail. Flaws became more readily apparent when we had the printers produce this complex document.

WORKGROUP PRINTERS. Four printers — the Apple LaserWriter Pro 630, Apple LaserWriter Select 360, HP LaserJet 4M Plus, and GCC SelectPress 600 Pro — continued their winning streak by producing above-average output. The Digital DEClaser 5100, which was one of the top picks for text and line-art quality, ranked in the middle of the pack when it came to producing gray-scale images. And once again, the Kyocera Ecosys FS-1500A placed dead last; its 300-dpi print engine simply didn't have the resolution to keep up with the rest of the pack. Kyocera claims that it will ship a 600-dpi Ecosys printer in early fall. Alas, although the Kyocera Ecosys FS-1500A may be easy on the environment (see the "Printing Green" sidebar), its output is far from easy on the eyes.

DEPARTMENTAL PRINTERS. The HP LaserJet 4Si MX once again took top honors, although this time around, jurors noted a few minor flaws, such as slight banding in smooth, gray areas of the image. The QMS 1725 SLS, which handled our text and line-art output so well, made a poor showing with the gray-scale image, barely achieving an "Acceptable" rating. Jurors complained of a loss of shadow and detail, banding in gradated areas, and overly dark halftones.

The Apple LaserWriter Pro 810, the Dataproducts LZR 2080, and the PrePress Solutions VT800 and VT820 produced average gray-scale images, marred by toner spray on the page and overly dark halftones — flaws that, although minor for a typical business setting, could eliminate them as serious contenders in a graphics-intensive office. An informal evaluation of images from the QMS 2025 and 3225 Print Systems showed them to be of average quality as well.

Only the Lexmark IBM LaserPrinter 4039-16L received a "Poor" rating for gray-scale output. The photographic image appeared very dark. Shadowy areas lost all detail, and gray areas appeared muddy.

The Theory About Speed

Just as there's a theory about how engine resolution relates to output quality, there's a theory about how a printer's components relate to its overall speed. Conventional wisdom holds that four basic factors — engine speed, processor speed, the amount of installed RAM, and the interface used to communicate with the Mac — dictate just how fast a printer can turn out a job. If a manufacturer gets this combination just right, great things happen; if not, then somewhere along the line, a time-consuming bottleneck occurs.

The ppm rating vendors give their printers can be misleading. In fact, this figure reflects only the speed of the print *engine*. Although the engine speed dictates how fast a printer can pull in a letter-sized page, slap some dots on it, and drop it out the other side, a lot of other action has to take place before the speed of the engine counts.

Most of this action occurs in the printer's PostScript interpreter, or RIP (raster-image processor), which must first construct the image by interpreting the PostScript code received from the Mac and turning it into a bit map. A laser then draws the bit-mapped image onto the printer's drum. The drum and toner combined put the image on the paper.

figure 2

Workgroup-Printer Speed / clear winners and losers

It's all in a day's work. To find out how fast these printers will run in a typical office, we printed a variety of documents — some that would be produced by administrative staff and others that would be produced by designers. Some printers, such as the HP LaserJet 4M Plus, performed well no matter what the task, whereas others performed best for one type of task. The NEC Silentwriter 1097, for example, ranked higher for business tasks than for graphics ones; the QMS 860 Print System, on the other hand, whizzed through the graphics tasks more quickly than most of the other printers but was among the slower ones for the business tasks. The printers are listed in order of their overall speed.

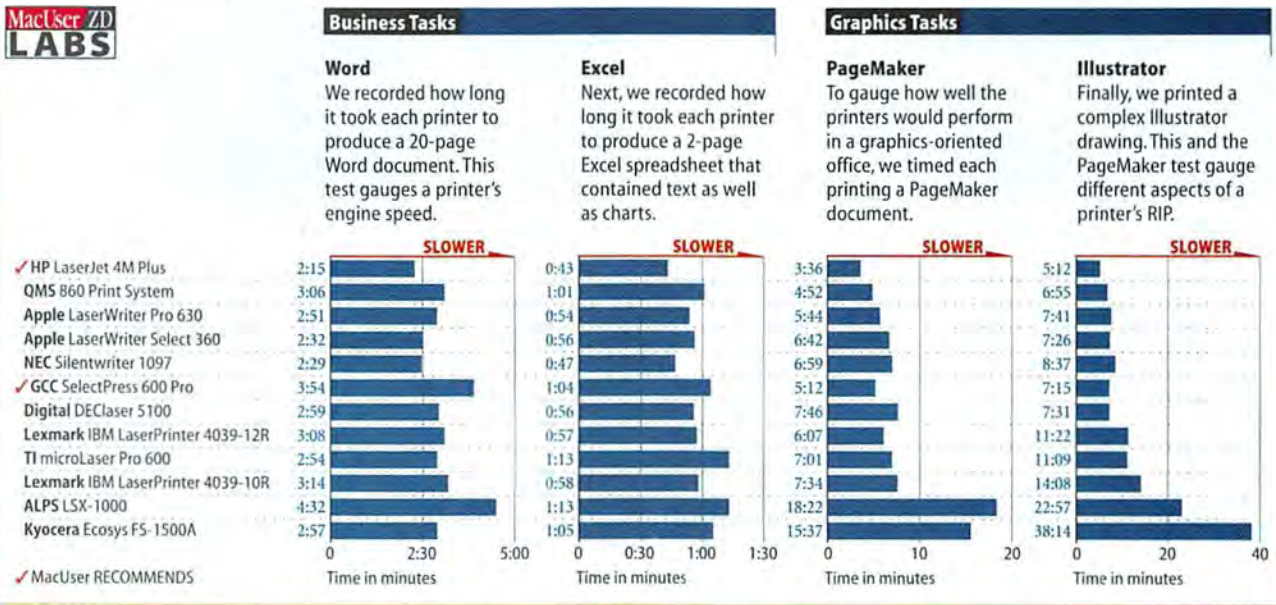


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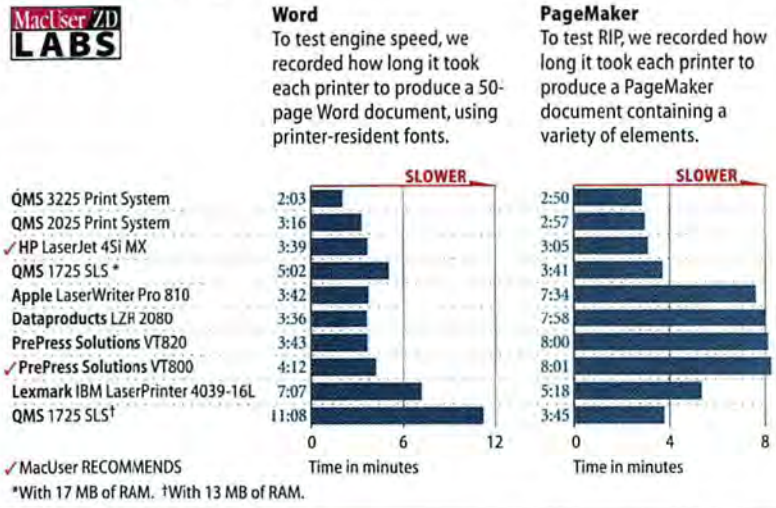
figure 3

Departmental-Printer Speed / fast engines, fast printing

For high-volume, high-speed printing, you'll want a departmental printer. Fast engines, fast processors, and fast network connections distinguish these printers. When printing a PageMaker document, for example, the four fastest departmental printers beat or nearly equaled the fastest workgroup printer. Even more telling, the second-fastest workgroup printer took over a minute longer than the fourth-place departmental printer.

Our tests also confirmed our expectation that the Apple LaserWriter Pro 810 and the PrePress Solutions VT800 and VT820, which are relabeled versions of the Dataproducts LZR 2080, would yield similar results. We hadn't, however, expected the QMS 1725 SLS to need 17 MB of RAM in order to perform respectably in our Word test. The printers are listed in order of their overall speed.

MacUser ZD LABS



✓MacUser RECOMMENDS

*With 17 MB of RAM. †With 13 MB of RAM.

The processor acts as the printer's director, controlling all actions. In a well-engineered printer, a fast processor, a fast RIP, and a fast engine will mean fast printing speed.

The amount of installed RAM also affects the speed of the printer, since RAM acts as a holding tank for the data the processor has interpreted. All the printers we tested ship with enough RAM to hold a full page, but that amount can be anything from 2 to 16 MB, because some printers use compression schemes to keep the amount of necessary RAM low and because large-format printers need more RAM. These schemes, although they help make a printer easy on your budget, can also slow it down. If you plan to print more than simple memos and spreadsheets, you should look for a printer that comes with at least 7 or 8 MB of RAM.

Finally, consider how long it takes data to get from your computer to the printer. Data going to a printer travels faster over Ethernet than over LocalTalk — with one caveat: The printer must be able to swallow the data at the same rate as the network is trying to feed it. If it can't keep up, it's the old hurry-up-and-wait syndrome.

The reverse is also true: If the printer has a fast processor, it needs a connection that allows for rapid data transfer; otherwise, the processor will be hampered by long waits for information from the Mac. Texas Instruments offers a $349 upgrade card, the PowerStep, that increases a printer's processor speed. If you buy this upgrade card, make sure you also upgrade your network interface to EtherTalk.

What Our Tests Reveal About Speed

Although you can use a particular printer's specifications as a guide to how fast the printer will perform, you can't assume they'll tell the whole story. For instance, the QMS 3225 Print System we tested had a 32-ppm engine, a 33-MHz RISC processor, 16 MB of memory, and an EtherTalk port. You'd expect it to be fast, and it was — faster than any other printer we tested.

Easy, huh? Well, let's try again. Which was faster: the Apple LaserWriter Select 360, with a 10-ppm engine, 16-MHz RISC processor, 7 MB of RAM, and a LocalTalk port, *or* the Lexmark IBM LaserPrinter 4039-10R, also with a 10-ppm engine and a 16-MHz RISC processor but with 8 MB of RAM and an EtherTalk port? The Lexmark IBM LaserPrinter 4039-10R, right? After all, it had an extra megabyte of RAM and a top-of-the-line network connection.

Sorry, but in our workgroup-printer speed tests, the Apple LaserWriter Select 360 was faster in every test than the Lexmark IBM LaserPrinter 4039-10R. No, we didn't make a testing error. And no, we aren't playing favorites. The truth is simply that good engineering can give a printer an edge over its competitors.

Connecting to Your Network

Speed issues aside, it's critical that your printer provide a port that matches the network you're going to be using. Nearly all the vendors equip their printers with a LocalTalk port. ALPS, Kyocera, and Lexmark, however, offer LocalTalk support only as an option (for about $200). Only a handful of vendors include an EtherTalk port built in to their printers. Most do, however, offer EtherTalk support as an option, at a cost of about $500. Those printers that don't have an EtherTalk option — the ALPS LSX-1000, the Apple LaserWriter Select 360, and the NEC Silentwriter 1097 — can be connected to an Ethernet network via an external LocalTalk-to-Ethernet adapter, such as the Dayna EtherPrint or the Asanté AsantéPrint.

For a printer to be truly networkable, however, it needs more than just the proper port. The multiplatform office (one that has Macs as well as PCs) has an inherent language barrier that a networked printer must be able to handle. Many DOS applications use HP's PCL instead of PostScript as their page-description language. For you to print files from these applications, the printer must also support HP's PCL (or an emulated version of it).

All the printers we tested offer an *all-ports-active* feature. They can accept data through any port and can automatically discover whether the file is entering through the EtherTalk, LocalTalk, serial, or parallel port. But only those printers with both an all-ports-active feature and *automatic emulation switching* can identify and interpret incoming data, no matter whether it's a PCL file from a 486 computer or a PostScript file from a Mac. Those that lack automatic emulation switching — the Apple LaserWriter Pro 630 and the Kyocera FS-1500A — require you to change the emulation setting via software each time the source of the incoming file changes.

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When it comes to oversized printing, ordinary laser printers simply fall short. But with the DesignXpress Series™ from NewGen Systems, you can print full 11x17-inch bleeds—complete with crop and registration marks—on up to 12x20-inch paper. With up to 1200 dpi resolution, the DesignXpress 12 is perfect for creating camera-ready art and pre-production proofs. Plus, the DesignXpress Series features a 16 page-per-minute print engine, powerful RISC processor and built-in PostScript Level 2 for the latest in high-performance printing technology. To find out more, call NewGen at ***1-800-756-0556***. And discover a new world of laser printing on your desktop. NewGen Systems Corporation, 17550 Newhope Street, Fountain Valley, California 92708. (714) 641-8600.

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CIRCLE **48** ON READER SERVICE CARD

Old world 11x17-inch printers don't even give you 11x17. About 1/2-inch worth of layout sails off the edge. And your crop marks? They're history.

The DesignXpress Series' oversized format allows you to navigate through serious publishing projects without having to guess about what lies beyond.

figure 4

Workgroup Printers / what you need to know

	ALPS LSX-1000	Apple LaserWriter Pro 630	Apple LaserWriter Select 360	Digital DEClaser 5100	✓ GCC SelectPress 600 Pro
List price, base model	$1,499	$2,299	$1,599	$2,199	$5,699
List price as tested	$2,035	$2,299	$1,599	$2,599	$5,699
Street price as tested	$1,950	$2,070	$1,540	$2,285	$4,855
Engine speed	10 ppm	8 ppm	10 ppm	8 ppm	8 ppm
Interface as tested	EtherTalk	EtherTalk	LocalTalk	LocalTalk	EtherTalk
RAM (std./max.)	2 MB/34 MB	8 MB/32 MB	7 MB/16 MB	2 MB/66 MB	16 MB/16 MB
RAM (test config.)	6 MB	8 MB	7 MB	10 MB	16 MB
300-dpi resolution	●	●	●	●	●
600-dpi resolution	●	●	●	●	●
Resolution enhancement	●◊	●◊	●◊	●	
Gray-scale enhancement	●	●◊		●	
LocalTalk port included	**	●	●	●	●
EtherTalk port included	††	●	††	**	●
PCL 4 support	●	●	●	●	●
PCL 5 support	●§§		●	●§§	●
SCSI port included		●			
Internal hard drive		◊◊		**	●
PostScript Level 2	●	●	●	●	●
Tabloid-sized printing					●
Built-in duplexing					
Multiple active trays	●	●	●	●	●
Fax option	●				
Toner recycling	●	●	●	●	●
Energy Star compliance	●	●	●	●	
Toll-free tech support	●	●	●	●	
Extended warranty	●	●	●	●	●
Std. warranty	3 years	1 year	1 year	1 year	1 year

✓ MacUser RECOMMENDS *NEC does not publish list prices. †Via resolution enhancement. §Offers interpolated resolution of 300 x 600 dpi. ◊Available at 300-dpi resolution only.

The Importance of Paper Handling

If you're tempted to shrug off paper handling as unimportant, think again. If you frequently print lengthy reports or manuals, you'll want a printer that can hold a large quantity of paper; maybe you'll want one that can automatically print on both sides of the paper. Or if you regularly print large spreadsheets, brochures, or prepress proofs, choose a printer that supports large-format printouts.

Overall, departmental printers offer better paper-handling capabilities than workgroup printers. For example, although all the workgroup printers we tested accept letter-sized paper, only two — the GCC SelectPress 600 Pro and the QMS 860 Print System — accommodate 11-x-17-inch (tabloid-sized) paper. In contrast, all the departmental printers except three — the HP LaserJet 4Si MX, the Lexmark IBM LaserPrinter 4039-16L, and the QMS 1725 SLS — can handle tabloid-sized printouts.

Departmental printers also generally hold more paper trays than workgroup printers and the trays each hold more sheets of paper. Most workgroup printers come equipped with one paper tray that holds around 250 sheets of paper. Exceptions include the Digital DEClaser 5100, GCC SelectPress 600 Pro, and TI microLaser Pro 600, each of which comes with two 250-sheet paper trays.

Most departmental printers, on the other hand, come with two or three paper trays that can hold 250 to 500 sheets of paper each. The QMS 1725 SLS, for instance, comes with three paper trays that hold a total of 1,500 sheets of paper, and the Apple LaserWriter Pro 810 and the PrePress Solutions VT820 come with three 250-sheet trays. Again, the Lexmark IBM LaserPrinter 4039-16L is the odd printer out — it comes with only one, 500-sheet paper tray, giving it a capacity equal to that of the two-tray workgroup printers.

The hands-down paper-handling champs, however, are the two QMS behemoths: the 2025 and the 3225 Print Systems. These workhorses are designed to keep pumping out pages all day, every day — more like photocopy machines than traditional office printers. For instance, the HP LaserJet 4Si MX has a duty cycle of 75,000 pages per month, but the QMS 2025 Print System can handle 100,000 pages per month and the 3225 Print System can spew out 200,000 pages per month before you risk overtaxing the printer. In addition, the 2025 and 3225 Print Systems offer features that no other departmental printer we reviewed does — collating, offset stacking, and signature printing. (Dataproducts has recently released two printers that

✓ HP LaserJet 4M Plus	Kyocera Ecosys FS-1500A	Lexmark IBM LaserPrinter 4039-10R	Lexmark IBM LaserPrinter 4039-12R	NEC Silentwriter 1097	QMS 860 Print System	TI microLaser Pro 600
$2,479	$2,095	$1,499	$1,749	NA*	$3,906	$1,599
$2,688	$2,253	$2,395	$2,485	NA*	$4,605	$1,599
$2,220	$1,920	$2,160	$2,400	$1,795	$4,340	$1,380
12 ppm	10 ppm	10 ppm	12 ppm	10 ppm	8 ppm	8 ppm
EtherTalk	LocalTalk	EtherTalk	EtherTalk	LocalTalk	EtherTalk	LocalTalk
6 MB/38 MB	2 MB/5 MB	2 MB/16 MB	4 MB/16 MB	7 MB/9 MB	12 MB/32 MB	6 MB/22 MB
8 MB	4 MB	8 MB	8 MB	9 MB	12 MB	6 MB
●	●	●	●	●	†	●
●		●	●	§	●	●
●	●	●	●	●		
●		●	●	●		
●	**	**	**	●	●	●
●	**	**	**	††	**	**
●	●	●	●	●	●	●
●§§	●	**	**	●		●
				●	●	**
●		**	**	●	●	●
					●	
**	**	**	**			
●	●	●	●	●	●	●
				●		
●	NA	●	●		●	
●	●	●	●			●
	●			●		●
●	●	●	●	●	●	●
1 year	1 year	1 year	1 year	1 year	1 year***	1 year

**Optional. ††Available only with a third-party product. §§Supports Enhanced HP PCL 5 or an emulation. ◊◊Has an internal bay for adding a hard drive. ***Includes on-site service.

provide competition for these QMS ones, the Typhoon 30 and the Typhoon 60; see New on the Menu, July '94, page 32.)

If you like the idea of printing on both sides of the paper — without stopping to flip the pages yourself — you should consider a printer that supports *duplexing*. As you might expect, QMS offers duplexing as an option for its 2025 and 3225 Print Systems. HP, Kyocera, and Lexmark also deserve points for giving you duplexing as an option on any of their printers.

If you regularly use different types of paper — say, letterhead and standard bond — consider a printer that has two (or more) *active* trays. With these printers, you can keep letterhead in one tray and plain paper in the other and select the desired paper tray directly from the Print dialog box. You might, for example, want to print the first page of a document from the tray that contains letterhead paper and the following pages from a tray that holds plain paper.

Features We'd Like to See More Often

Several printers have noteworthy features we'd like to see more frequently. Some have a SCSI port for attaching a font-filled external hard drive — a time-saver if you frequently print multifont and graphics-laden documents. A few vendors deserve kudos for including an internal hard drive (or at least a bay for one) as well.

The ALPS LSX-1000, Apple LaserWriter Pro 810, Dataproducts LZR 2080, NEC Silentwriter 1097, and PrePress Solutions VT800 and VT820 can combine two standard office functions — printing and faxing — in one box. You can add an optional fax card, thereby turning the units into plain-paper PostScript fax machines as well as printers.

We also appreciated the big, bright, 4-line/20-character LCD on the Lexmark printers. Other vendors, take note: If you're going to make us play with your control panels, at least make them easy to read as well as to operate.

For those who are installing a departmental printer in a mixed-platform environment, the Dataproducts LZR 2080 and its clones — the Apple LaserWriter Pro 810 and the PrePress Solutions VT800 and VT820 — offer *Virtual Printer Technology* (VPT), a feature that's especially useful for the PCs on the network. VPT provides PC users with much of the easy printer-management control that Macintosh users enjoy through the Chooser and the standard Print dialog box. Each printer on the network can be designated as multiple "virtual

figure 5

Departmental Printers / what you need to know

	Apple LaserWriter Pro 810	Dataproducts LZR 2080	✓ HP LaserJet 4Si MX	Lexmark IBM LaserPrinter 4039-16L	✓ PrePress Solutions VT800	PrePress Solutions VT820	QMS 1725 SLS	QMS 2025 Print System	QMS 3225 Print System
List price, base model	$4,899	$5,415	$5,299	$3,698	$4,595	$5,495	$5,999	$12,995	$19,995
List price as tested	$4,899	$5,415	$5,299	$3,997	$4,595	$5,495	$6,698	$13,694	$20,694
Street price as tested	$4,540	$4,586	$4,615	$3,500	$4,595 (direct)	$5,495	$5,830	$13,694 (direct)	$20,694 (direct)
Engine speed	20 ppm	20 ppm	17 ppm	16 ppm	15 ppm	20 ppm	17 ppm	20 ppm	32 ppm
Interface as tested	EtherTalk	EtherTalk	EtherTalk	EtherTalk	EtherTalk	EtherTalk	EtherTalk	EtherTalk	EtherTalk
RAM (std./max.)	8 MB/32 MB	8 MB/32 MB	10 MB/26 MB	4 MB/16 MB	8 MB/32 MB	8 MB/32 MB	13 MB/32 MB	16 MB/32 MB	16 MB/32 MB
RAM (test config.)	8 MB	8 MB	10 MB	8 MB	8 MB	8 MB	17 MB	16 MB	16 MB
300-dpi resolution	●	●	●	●	●	●	●	●	●
400-dpi resolution	●	●			●	●		●	●
600-dpi resolution	*	*	●	●	*	*	*		
800-dpi resolution	*	*			*	*			
Resolution enhancement	●	●	●	●					
Gray-scale enhancement	●			●					
LocalTalk port included	●	●	●	†	●	●	●	●	●
EtherTalk port included	●	†	●	†	●	●	†	†	†
PCL 4 support	●	●	●	●	●	●	●	●	●
PCL 5 support			●[§]	†			●	●	●
SCSI port included	●	●			●	●	●	●	●
Internal hard drive					◊	◊	●	●	●
PostScript Level 2	●	●	●	†	●	●	●	●	●
Tabloid-sized printing	●	●			●	●		●	●
Built-in duplexing			†	†				†	†
Multiple active trays	●		●	●	●	●	●	●	●
Fax option	●	●			●	●			
Toner recycling		●	●	●			●		
Energy Star compliance			●	●					
Toll-free tech support	●	●			●	●			
On-site service included		●	●	●	●	●	●	●	●
Extended warranty	●	●	●		●	●	●	●	●
Std. warranty	1 year	1 year	1 year	1 year	1 year	1 year	2 years	90 days	90 days

✓ MacUser RECOMMENDS *Via interpolation. †Optional. §Supports Enhanced HP PCL 5 or emulation. ◊80-MB external hard drive included.

printers," with each one configured to take advantage of options such as different page-description languages, dpi settings, and the like.

The QMS printers also offer unique features that can best be appreciated in a busy network environment. For instance, thanks to QMS' proprietary Crown architecture, these printers can perform various multitasking operations, such as interpreting a PostScript file while simultaneously downloading another print job. The Crown architecture also lets the printers handle four network interfaces (serial, parallel, LocalTalk, and either EtherTalk or token ring) simultaneously. Unfortunately, if you want to access all this power and still maintain fast printing speeds, you'll need to load the printers with RAM. Overall, our tests revealed significantly shorter printing times for the QMS 1725 SLS with 17 MB of RAM than for the same printer with 13 MB.

The most unusual feature of the Crown architecture is the Software Loadable System (SLS), which allows you to upload new software to the printer whenever problems arise or the printer's firmware is updated. Other printers require a technician to install a new logic board or ROMs when these types of changes are made. Unfortunately, we got a bit too much of a firsthand look at how this system works when we ran into several problems with the QMS 2025 and 3225 Print Systems. It took repeated visits from a QMS technician — and repeated software installation — before we could get these printers to work correctly.

The Downhill Path of Tech Support

Tech support ain't what it used to be. We made two rounds of telephone calls — one for workgroup printers and one for departmental printers — and the results in each case were dismal. For workgroup

Our new personal Mac® laser printer lets you say what you want to say, exactly the way you want to say it.

That's because the Silentwriter 640 is a true laser printer with 300 dpi resolution, our patented Sharp Edge Technology and Microfine toner, for crisper characters and richer, darker blacks.

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CIRCLE **54** ON READER SERVICE CARD

Printing Green / recycle your toner cartridges

LOOK AT A TONER CARTRIDGE, and what do you see behind all that plastic? If you're a pessimist, you see a solid-waste-disposal problem the size of Nevada. The 33.9 million laser-printer-toner cartridges Americans will use in 1994 could circle from Carson City to Las Vegas, due north to Jackpot, then south and west to Reno, and back to Carson City, round and round, four and a half times.

But not everyone throws old toner cartridges in the trash. About one-quarter of those 30+ million assemblies will be refilled, recharged, or remanufactured. These and other solutions not only reduce waste but they can also profit the environmentally conscious printer user — so there's reason to be optimistic about stemming the flow of used toner cartridges to landfills. Here are several ways to hear the chink of change in your pocket — or at least to help you feel like a respectable ecocitizen.

Out with the old, in with the old. Send used cartridges to a remanufacturer. The Imaging Division of Dataproducts, for instance, accepts various printer cartridges, including those from Apple; Canon; Hewlett-Packard; NEC; QMS; and, of course, Dataproducts. At its Simi Valley, California, facility, Dataproducts removes unused toner, cleans all parts, replaces or rebuilds defective components, refills the cartridge with toner, and sends the remanufactured product to distributors. As an incentive to send in an old cartridge, Dataproducts includes a rebate coupon good for $2 to $20 with each new cartridge.

To complete the circle, buy remanufactured cartridges, which usually tend to sell for 20 to 50 percent less than new ones. But beware: Sometimes these cartridges have a shorter life than new ones. More important, some companies merely refill the cartridge with toner and overlook maintenance that can make a difference between poor-quality and letter-perfect copies. Unfortunately, no truth-in-labeling laws yet exist to protect uninitiated consumers.

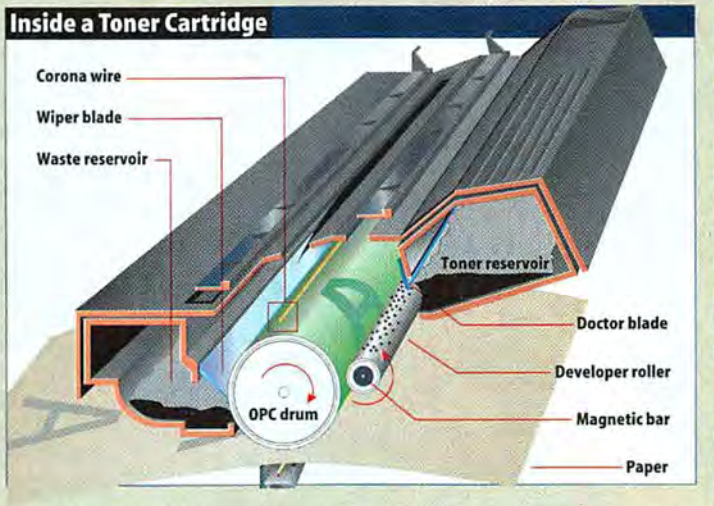
Everybody's doing it. Recycling, that is. Toner cartridges made by Canon for Apple, Hewlett-Packard, and others come with a self-addressed, prepaid UPS label. If you send the used cartridge back, it goes to Canon's Dalian, China, facility, where workers disassemble it for reuse. Some parts, such as screws, springs, and pins, are literally reused; plastic parts are melted down for use in new cartridges; and metal parts are solsd as scrap. Less than 5 percent of the cartridge is not recyclable.

This approach does not save you any money, but handing the cartridge to a UPS delivery person takes little more effort than tossing it in the wastebasket. You can polish your halo with this knowledge: For each cartridge it receives, Canon donates 50 cents each to the National Wildlife Federation and The Nature Conservancy.

You can't waste what you haven't got. If you buy an environmentally friendly printer such as the Kyocera Ecosys, you can skip buying cartridges altogether. Because the drum, fuser, corona wire, and developer (often part of standard cartridges) are permanent fixtures, they don't ever need to be replaced. All you do is add toner. Refills come in nontoxic incineratable plastic packages. In a landfill the containers won't disintegrate but will crumble, taking minimal space.

On an even greener note — like the kind in your pocket: A toner refill for the Kyocera Ecosys yields about 7,000 copies and lists for $49. Standard cartridges that print as many pages can cost three times as much. / Patty Ames

Inside a Toner Cartridge



printers, only GCC and HP were able to answer all three of our questions. Vendors fared even worse when it came to departmental printers. The best of the lot was HP — and it managed to get only two answers right. (The answer to the third question was on the company's automated telephone-tips service, however.)

Although we're getting stricter in our methods of exposing flaky technical support (we now refuse to be submitted to more than 15 minutes of Muzak per question), the questions we posed were not difficult:

1. How come my fonts print out as jagged text? (The printer font is not installed properly.)

2. Why doesn't the printer show up in the Chooser? (Either the wrong network option is selected in the Network control panel or the cable is plugged in to the wrong port.)

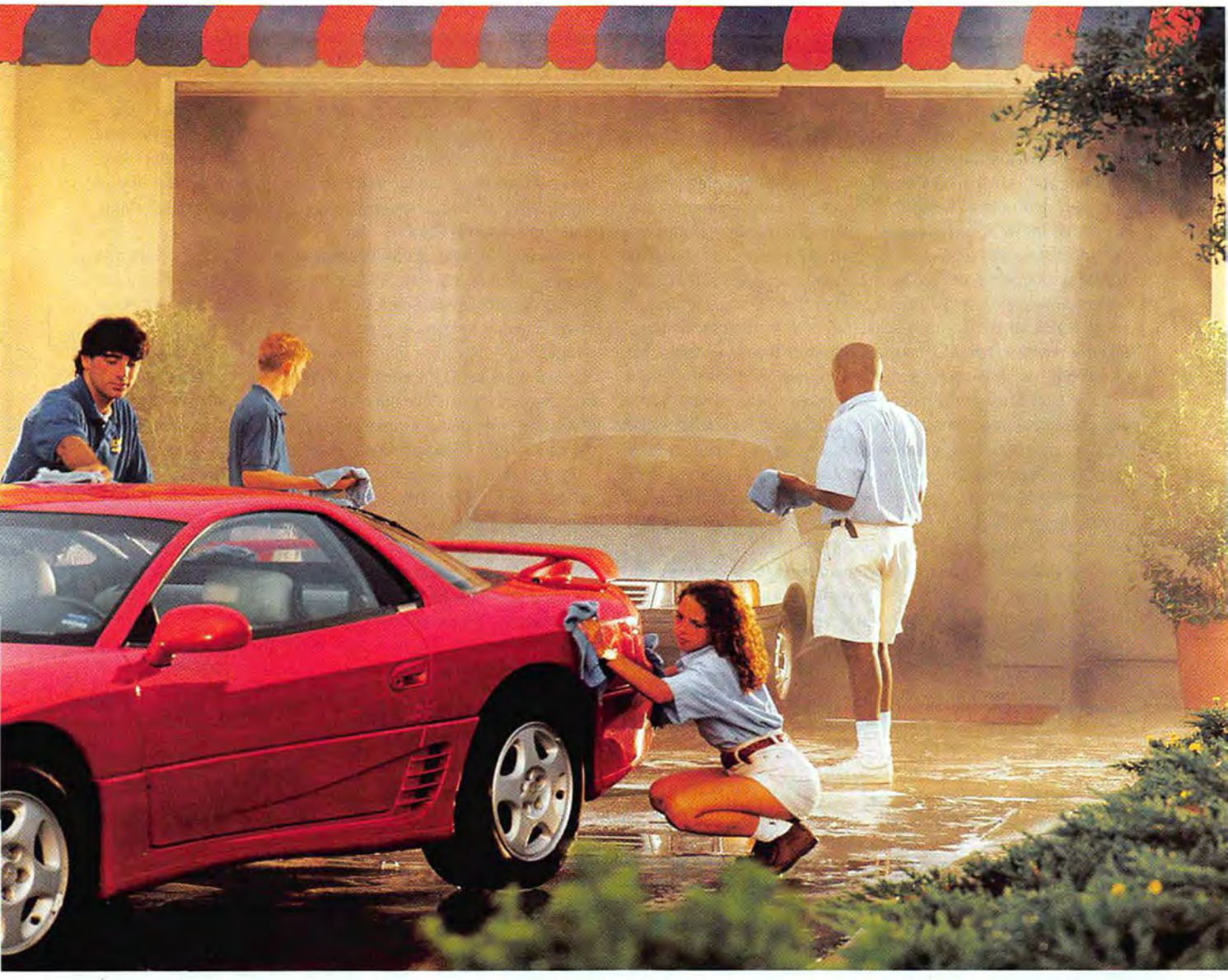
3. Why is Excel printing the same pattern in bars of two different colors? (Make sure Color/Grayscale is selected in the Print dialog box.)

Granted, new products are appearing on the shelves faster than ever, but we're beginning to wonder if some vendors have ever heard of the term *training*.

One positive trend among departmental-printer vendors is the availability of on-site service during the warranty period. In general, departmental printers are harder to set up and maintain than workgroup printers. They are also much larger and therefore harder to box up and send back to the vendor for maintenance or repair. All the vendors except Apple offer on-site warranties for their printers; all except QMS offer one-year warranties.

QMS offers a two-year, on-site warranty for the 1725 SLS. You'll note, however, that QMS offers only 90 days of on-site support for the 2025 and 3225 Print Systems. At first, that might seem stingy — after all, these printers offer a multitude of configuration options and they are much too large (not coincidentally, about the size of a small copy machine) and too heavy (187 pounds) to send out for service. But the 90 days is enough to get the printer set up and configured correctly, using QMS' tech-support lines. (If you want a QMS technician to install and configure the printer for you, however, it'll

Hot Wax and Jet Sprays Have Their Place. But Not In Quality Color Printing.



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QMS Reference Price: QMS ColorScript Laser 1000 $7,999 • QMS *magicolor* Laser Printer 12 MB $9,999 • QMS *magicolor* Laser Printer 28 MB $12,999

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The MacUser Poll / our readers pick their favorite printer companies

A GOOD PRINTER IS INCONSPICUOUS. If you notice your printer at all, it's usually because something has gone wrong: a page is imperfect, output is slow to appear, paper jams. Our MacUser Poll of 10,000 subscribers indicates that most of our readers don't notice their printers very often. They report a high degree of satisfaction, especially with monochrome printers. Using a color printer is a bit less satisfying — slow printing times were most often cited as a cause for dissatisfaction.

We conducted our nationwide survey of printer users from October 1993 through February 1994. Working with the Ziff-Davis Research Department and Chilton Research Services (an independent market-research firm), we collected readers' opinions on top Mac printer vendors (not necessarily vendors whose printers are reviewed here). Of the 10,000 randomly chosen *MacUser* subscribers we surveyed, 4,500 provided opinions on as many as four printers they had used in the past two years. We ignored responses that did not indicate a specific manufacturer as well as those about vendors for which there were fewer than 50 responses each — samples too small to ensure statistical accuracy.

In the table below, the companies are ranked in order of how the survey respondents rated them on overall satisfaction. For each question we asked our readers, we also gave each company a satisfaction ranking of above average, average, or below average; the statistical method used to determine these rankings is explained in "Doing the Numbers," page 97, August '94. Detailed data on all the companies and how their rankings were decided is available on ZiffNet/Mac.

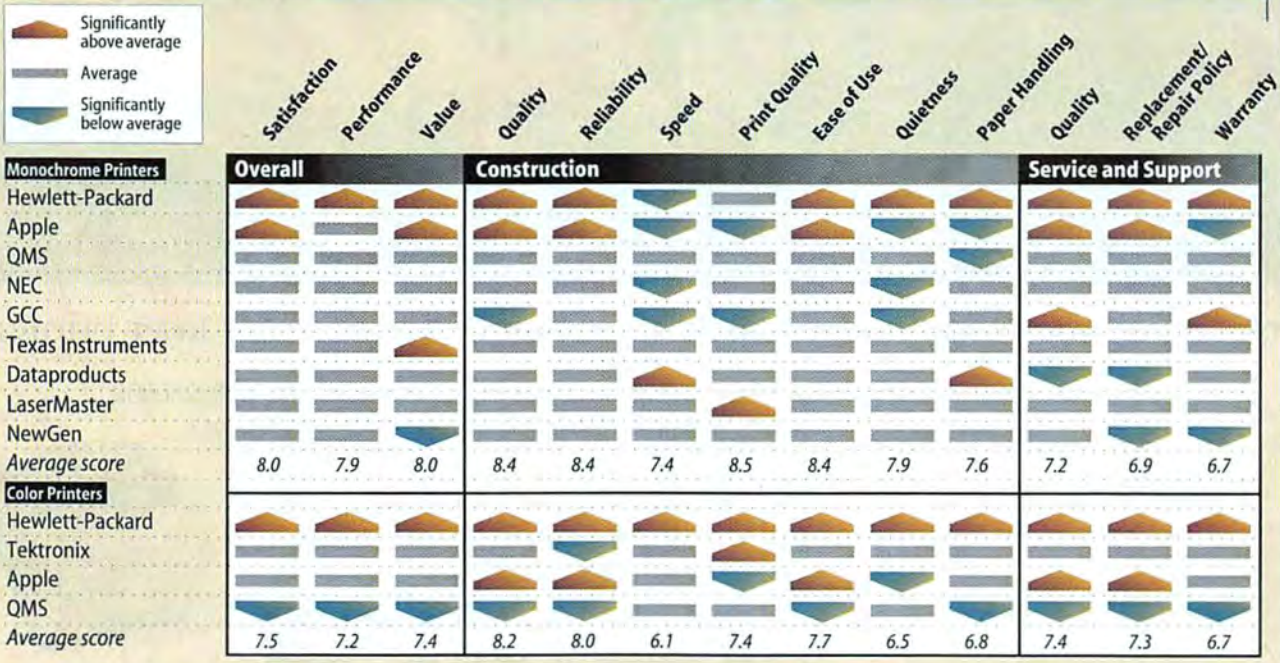
Hewlett-Packard dominated both the monochrome and the color-printer rankings, with a perfect above-average score bestowed by color-printer users and high marks in all but two of the monochrome categories: speed and print quality. Slippage here is understandable, because our results include responses from users of all types of monochrome printers: The venerable DeskWriter's less-than-ideal inkjet print quality and tepid printing speed (along with that of the now-defunct LaserJet II) may have influenced Hewlett-Packard's average and below-average rankings for these two categories.

Where Hewlett-Packard slipped, Dataproducts and LaserMaster emerged as our readers' choices for speed and print-quality honors. Again, there's no surprise here, as both companies have long labored for leadership in these areas — Dataproducts, whose printers were our readers' favorite monochrome speed demons, provides a line of high-output office workhorses, whereas LaserMaster has been a long-standing advocate of high-resolution printing.

People have strong opinions about Apple — both positive and negative. Its monochrome printers, for example, garnered only one average ranking; in all other categories, readers ranked them either above or below average. For example, no love was shown for either monochrome- or color-printer print quality, but readers expressed above-average satisfaction in the quality of Apple's technical support. In addition, it appears that our readers have long memories, as Apple was tagged with below-average warranty scores — apparently a lingering aftereffect of Apple's long-abandoned 90-day warranty.

Despite this somewhat erratic showing, Apple's monochrome printers joined the color and the monochrome offerings from Hewlett-Packard to earn the only above-average overall-satisfaction rankings. However, the other printer vendors were not far behind — in fact, among monochrome-printer vendors, scores were so closely bunched that none fell below the statistically average range. Whatever their specific complaints about individual vendors and their products, it appears that Mac users are, on the whole, content with their printers — that is, until the next paper jam. / Rik Myslewski

Results of Our Printer Poll



We asked 10,000 *MacUser* readers to tell us, on a scale of 1 to 10, how satisfied they were with their printers' quality, reliability, and performance and with their vendors' service and support. We converted their responses into above-average, average, and below-average rankings for each company. In general, monochrome-printer users voice more satisfaction than color-printer users.

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1994 WIN AWARD W 100 WINDOWS MAGAZINE

PC MAGAZINE EDITORS' CHOICE

Kodak

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CIRCLE **82** ON READER SERVICE CARD

cost you $400.) After that, you'll want to purchase a maintenance contract, just as you do for your copier, to keep the printer running smoothly.

The Best of Each Bunch

WORKGROUP PRINTERS. For those who print mostly on letter-sized paper and use mainly the standard 35 PostScript fonts stored in the printer's ROM, we recommend the HP LaserJet 4M Plus. Its top-ranked speed, excellent output quality, and reasonable price make this printer a winner. But if you need extra font storage, you should opt instead for the SCSI-equipped Apple LaserWriter Pro 630. This printer has many of the same features as the LaserJet 4M Plus, produces high-quality output, and also sports a low price. It is slower than the LaserJet 4M Plus, though.

For offices that produce graphics-intensive or large-format documents, we recommend the GCC SelectPress 600 Pro. Although more expensive than many of the workgroup printers, the SelectPress 600 Pro produces tabloid-sized output, includes an internal hard drive, and is EtherTalk-ready.

We also consider the Apple LaserWriter Select 360 and the TI microLaser Pro 600 to be top-of-the-line contenders in the letter-sized-printer category. With street prices around $1,500 and $1,400, respectively, these printers are terrific bargains for small offices — or even for use as personal printers. The LaserWriter Select 360 is the faster of the two, but the microLaser Pro 600 can be configured with a SCSI port.

DEPARTMENTAL PRINTERS. Once again, HP takes top honors — this time with its LaserJet 4Si MX. This fast, reasonably priced printer produces top-quality output. Our only complaint is that it lacks a SCSI port. Kudos goes to four other high-quality printers — the Dataproducts LZR 2080 and its clones, the Apple LaserWriter Pro 810 and the PrePress Solutions VT800 and VT820. If you need tabloid-sized output, these are the departmental printers to consider. We give the edge here to the PrePress Solutions VT800. This swift, 15-ppm printer comes with an 80-MB external hard drive, a SCSI port, LocalTalk and EtherTalk ports, and one year of on-site service. The VT800 is priced lower than its larger relative, the 20-ppm VT820, and offers comparable printing speed.

We couldn't justify giving either the Lexmark IBM LaserPrinter 4039-16L or the QMS 1725 SLS more than an average rating. The 1725 SLS ranked below the HP LaserJet 4Si MX in our speed and output-quality tests, and its street price was $1,200 more than that of the HP printer when we factored in the cost of the 17 MB of RAM it needed to produce some of our more complex documents.

The QMS 2025 and 3225 Print Systems turned out to be eye-openers. These high-end specialty printers are designed for heavy-duty document production. Everything from their paper-handling abilities to their duty cycles to their price and service options are based on this assumption. And we found these printers to be quite a good fit for their market. But don't plan to trade in your paper-jamming copier for a QMS 2025 or 3225 and have an easier time of it. These complex printers require much more attention and care than your run-of-the-mill business printer.

All things considered, we're pleased to announce that quality, speed, and resolution are all up — and price is down. In fact, our choices in the workgroup-printer category are both improved versions of last year's winners, confirming once again that there is no substitute for experience—as well as showing that there is always room for improvement. So keep up the good work, folks.

[*Due to schedule restrictions, we were unable to complete testing of two printers: the Sharp JX-9660PS and the NewGen ImagerPlus 6. Preliminary review revealed that these printers produce quality output and include solid features. — Ed.*]

Drew J. Cronk spent numerous hours testing, poking, and prodding printers. Coauthor Anita Epler, a project leader at ZD Labs, managed the testing for this report. Brian Fikes, Martin Wong, and Raymond Zhou also contributed to the testing.

You can download more-detailed data from our MacUser Poll in the MacUser Forum on ZiffNet/Mac (GO MACUSER). See page 4 of this issue for instructions on accessing ZiffNet/Mac.

Directory / vendors of printers tested

ALPS Electric (USA)
San Jose, CA
800-825-2577
408-432-6000
408-432-8337 (fax)

Apple Computer
Cupertino, CA
800-538-9696
408-996-1010
408-974-2483 (fax)

Dataproducts
Woodland Hills, CA
800-980-0374
818-887-8000
818-887-8084 (fax)

Digital Equipment
Maynard, MA
800-777-4343
508-493-5111
508-493-8780 (fax)

GCC Technologies
Bedford, MA
800-422-7777
617-275-5800
617-275-1115 (fax)

Hewlett-Packard
Santa Clara, CA
800-752-0900
800-387-3867 (Canada)
800-333-1917 (fax)

Kyocera Electronics
Somerset, NJ
800-232-6797
908-560-3400
908-560-8380 (fax)

Lexmark International
Lexington, KY
800-358-5835
606-232-3000
606-232-2380 (fax)

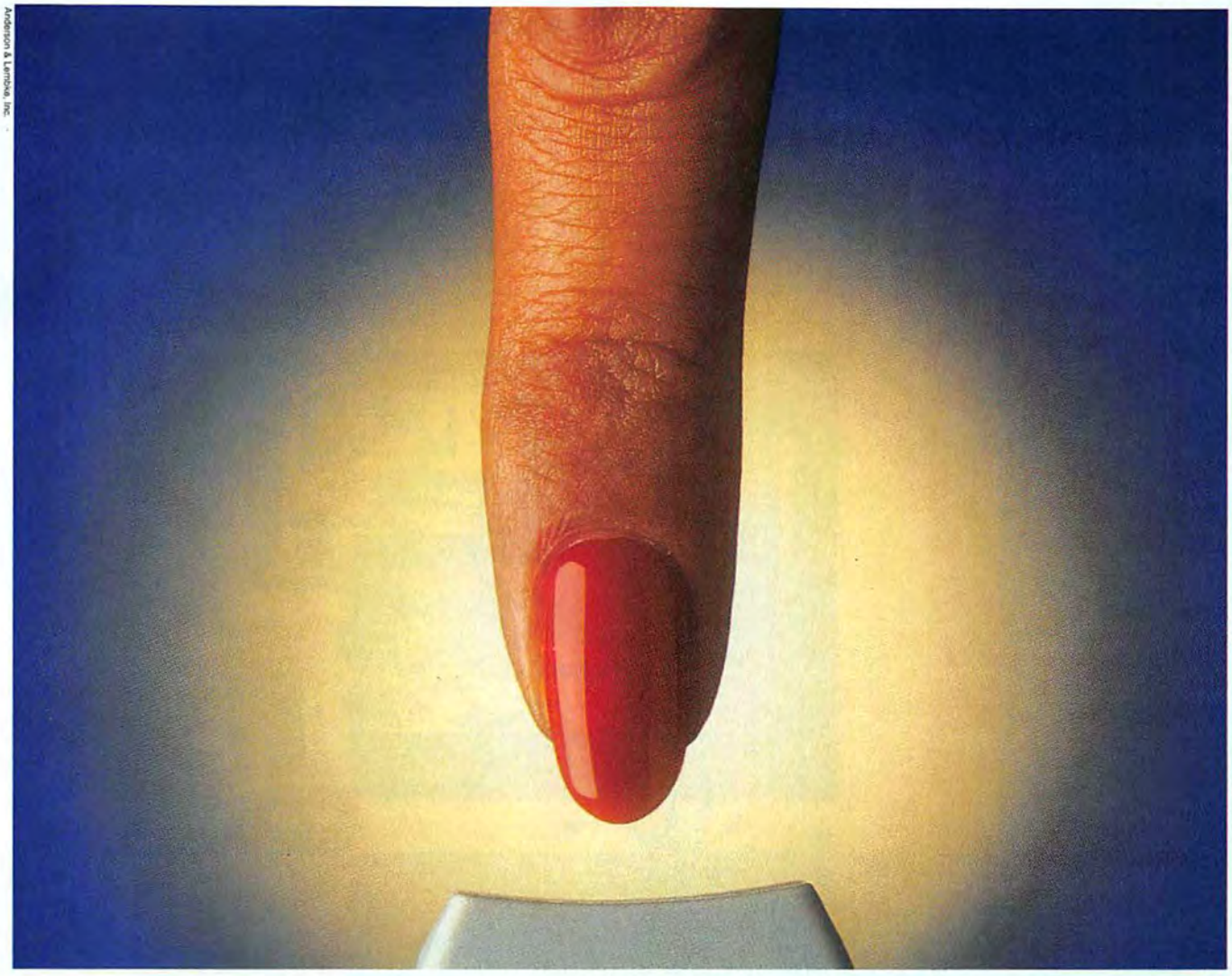
NEC Technologies
Boxborough, MA
800-632-4636
508-264-8000
508-264-8673 (fax)

PrePress Solutions
East Hanover, NJ
800-443-6600
201-887-8000
201-887-4300 (fax)

QMS
Mobile, AL
800-523-2696
205-633-4300
205-633-4866 (fax)

Texas Instruments
Temple, TX
800-848-3927
817-774-6660 (fax)

Anderson & Lembke, Inc.



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AGFA

The complete picture.

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CIRCLE **52** ON READER SERVICE CARD

1
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Here's the recipe. It begins with nine scanned images of restaurants, tables, chairs, a waiter, picture frames and a dinner to die for. Background layer ❶ holds master image. On another layer ❷, sections of two restaurants complete overall scene. Layer Masks are used to hide unwanted portions of image. Wine bottle shadow ❸ is extended using airbrush on Fade setting. Replace Color feature ❹ changes color of wine from red to white. Lighting Effects filter ❺ is used to reduce ambient light and add highlights that reflect multiple light sources. Color Range feature ❻ isolates waiter (originally shot against textured wall), and he is placed in the scene. Mirror images ❼ are copied to multiple layers where they are scaled, composed and further manipulated. Clouds filter ❽ creates window to outside world. Original photographs by Robert Mizono.

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CIRCLE **22** ON READER SERVICE CARD

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The Image Composition Tool for Adobe Photoshop™

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See why MacWEEK calls Collage *"a valuable tool that should be on the shelf of anyone who manipulates images on the Macintosh."*

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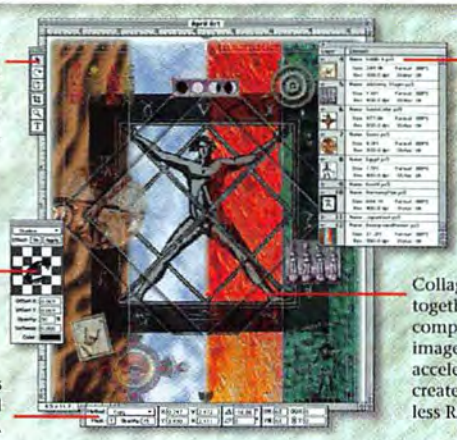
VERSION 2.0

NATIVE FOR POWER MACINTOSH, SUPPORTS CMYK COLOR, AND HANDLES IMAGES UP TO 53" X 53"

Familiar page-layout tools make Collage easy to use. Features like rulers, guides, alignment tools, and image grouping let you easily create complex compositions.

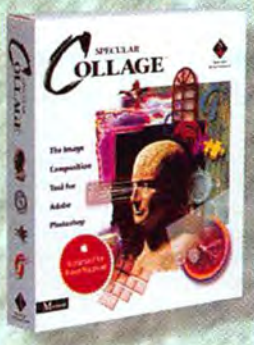
Special effects like drop shadows and feathering are only a mouse click away. Collage is object-oriented, so if you move an image its shadow automatically moves with it!

The Information Palette gives you complete numerical control over the layout of your images.



The Element Palette lets you change the layering of your images at any time. When you edit an image in Photoshop, Collage automatically updates your composition.

Collage and Photoshop work together to create high-resolution composites. Photoshop provides the image editing power while Collage accelerates the layout. You can now create your images faster and with less RAM and hard drive space!



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CIRCLE **57** ON READER SERVICE CARD

Code: AT002

HANDS ON Desktop Publishing

PAINT PROGRAMS /

PAINTER PUTS ON A NEW FACE

CRAMMING IN more effects while simplifying the interface was Fractal Design's goal with the new native PowerPC version of Painter. On top of that, X2's multiple-floating-selection capability is now built in.

Painter's look is less fussy in version 3.0, thanks to new floating palettes and smaller icons. Borrowing from its entry-level program, Dabbler, Fractal has collapsed tool sets into logical collections that expand when selected. A new control palette reflects your options as you switch tools.

By harnessing QuickTime technology, Painter 3.0 offers some of the features of an animator's paint box. You can paint on an imported movie (known as *rotoscoping*) or create animations with its *onionskinning* capability, a technique akin to painting on layered acetate sheets. You can use QuickTime movies as a brush source, so you have the unique ability to paint with a movie.

Painter's new brush technology makes these special effects possible. Other special effects include image warping, multicolor gradients, and selective color replacement. Pricing not set at press time. 408-688-5300. / Sean J. Safreed

ClarisDraw Seeks to Outsmart the Competition

DRAWING AN ERA to a close, Claris ends MacDraw's reign as the illustration tool for the rest of us. ClarisDraw, its cross-platform replacement (available now for 680x0 and Power Macs and in early 1995 for Windows), sports new features and "smart" tools.

Priced at $399, ClarisDraw is aimed directly at casual graphics users, yet it doesn't skimp on capabilities. Standard shapes and drawing tools are included, as are 2,400 pieces of clip art. For designing with words, ClarisDraw has savvy features such as text on a curve, text conversion to outlines, and linked text blocks. Two new additions extend ClarisDraw's reach: A simple 24-bit paint program lets you enhance or tweak an imported graphic, and a presentation module lets you create graphics-rich slide shows.

New Smart Connectors allow you to attach two objects that stay connected no matter how you manipulate them, and the PointGuide and Guideliner ease the tedium of aligning objects, by indicating when the cursor's close to an endpoint or aligned with the top of an object. Upgrade, $89. 408-987-8227. / SJS

SCANNERS /

Polaroid Takes on Instant Scanning

INSTANT IMAGE acquisition is Polaroid's claim to fame, so it's not surprising that the company has designed a fast, compact slide scanner that it says can record an image at 2,700 dpi in about 30 seconds. At $2,495, the SprintScan 35 is attractively priced.

The key to the scanner's speed is a CCD that captures the light signal with extreme sensitivity and a set of three custom ASICs that handle color correction, sharpening, interpolation, and other duties. The ColorSync-compatible unit captures 35mm slides or negatives at 10 bits per color and then converts the scanned image to 24 bits. A 3.0 dynamic range results in good shadow detail.

In addition to a Photoshop plug-in that lets you scan directly from Photoshop, the SprintScan 35 includes its own software for controlling resolution, setting crop areas, and more. 800-662-8337 or 617-386-2000. / Pamela Pfiffner

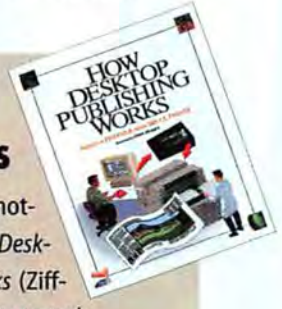
TYPOGRAPHIC TOOLS /

Make Your Own Fonts

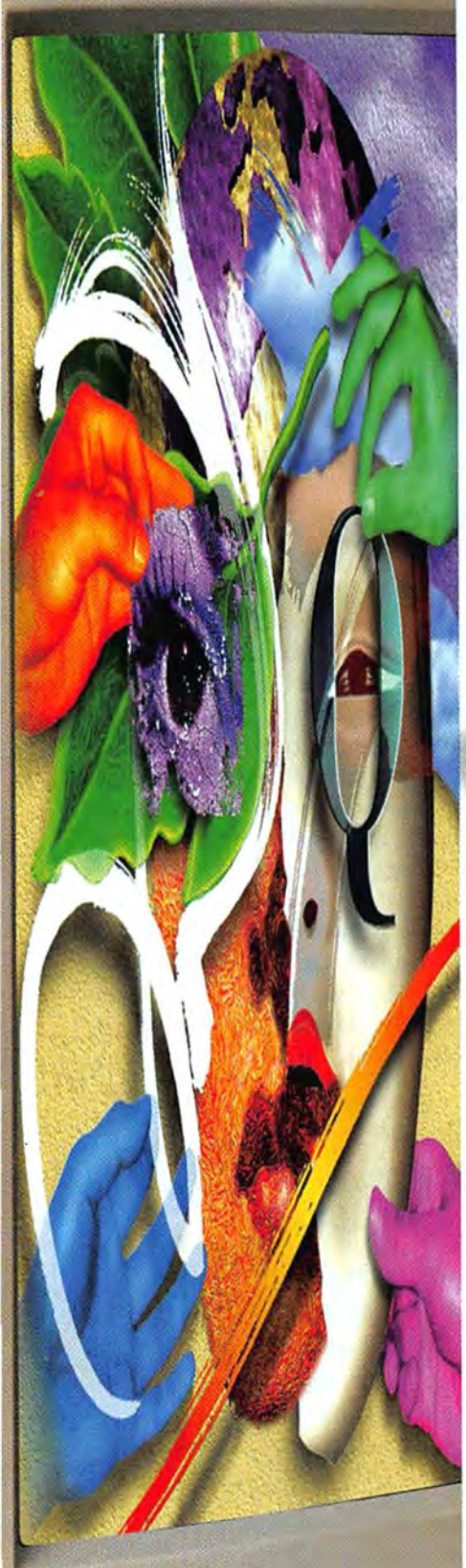
BORED WITH BODONI? If the usual cast of characters doesn't thrill you, make your own with Font-o-matic, from Altsys.

Font-o-matic is best described as silly, but that's what makes it charming. With this $59.95 utility, you can apply any of 16 effects — individually or in combination — to any PostScript or TrueType font — a single letter or an entire alphabet — in your system. Spike a T with cactus thorns, take a bite out of a B, or dapple an M with cow spots — just the thing for zingy initial caps. Effects such as Rotate, Skew, and 3D have more-sober applications but retain the program's wit by giving sliders settings such as Gilligan Skinny. Save your mangled masterpieces as fonts or EPS files. 214-680-2060. / PP

DTP from Soup to Nuts



SHAMELESS PLUG notwithstanding, *How Desktop Publishing Works* (Ziff-Davis Press) is an illustrated overview of the publishing process, from metal-type origins to modern direct-to-plate technologies. Written by *MacUser* senior editor Pamela Pfiffner (ahem) and contributing editor Bruce Fraser, this guide also answers such questions as What is a halftone? and How do printing presses work? $24.95. 800-688-0448 or 510-601-2000.



Created in Fractal Design Painter by Glenn Mitsui

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*Estimated street price. †Note: The maximum diagonal viewable screen area of the Optiquest 4000TC is 15.7".

Some for the Books

Ordering pages correctly for assembly into bound books and newsletters — what's called imposition — can be confusing. Here's some software that lets you turn your pages into simple pamphlets or sophisticated tomes. BY BRIAN P. LAWLER

IT'S AS FRUSTRATING as opening a puzzle box: You're producing a 16-page booklet that will be printed on folded 11-x-17-inch paper, and you're trying to figure out which page should go across from page 4. Is it 5? Although that's the correct reading sequence, that's not how pages are printed. Actually, page 13 is printed across from page 4.

The process of pairing and moving pages of a publication into the correct position for printing is called *imposition,* and it's no longer just the realm of ink-stained pressmen. Anyone who's reproduced a folded, multipage document on a photocopier has wrestled with imposition. No matter what your project, a variety of tools exists today that can help you create imposed spreads.

What Is Imposition?

Electronic documents are created in reader's page order: 1, 2, 3, and so on. But in reproduction, those pages are moved into what are called printer's companion pages, or *printer's spreads* (see figure 1). Most commercial presses print large sheets of paper with multiple pages grouped into *signatures,* which are folded, bound, and trimmed to size after printing. A publication often consists of multiple signatures bound together to form the complete printed product. Once a signature has been folded, bound, and trimmed, the pages are back in reader's page order.

Depending on the size of the paper, pages can be imposed *two-up,* as in the previous example of pages 4 and 13, or *four-up,* in which pages 5 and 12 sit across another fold from pages 4 and 13, respectively. Presses capable of printing four, eight, or more pages on a single sheet of paper also use the term *head-to-head* imposition, in which the tops of pages join at a fold line but are again in the correct orientation after folding (see figure 2).

Traditional imposition is done on a light table in the prepress department of a printing company. In the high-tech world of electronic publishing, the process of imposition can move upstream from the light table to a service bureau or all the way to a production artist at a computer. On the Mac, a variety of imposition options are available, including a few that can be helpful — and profitable — to publishers large and small.

The benefits of imposition to desktop publishers are numerous. Imposing small-scale projects makes in-house publication easier by eliminating the need for paste-up. With the growing popularity of PostScript laser printers that can print on tabloid-sized paper, page imposition makes sense for many in-house publications. By preparing two-page pairs for output on 11-x-17-inch paper, these publications are then ready for reproduction with no additional manual work.

The cost savings from electronic imposition can also be impressive. For a typical eight-page, four-color print job, the cost of assembling four sets of two-page pairs as imposed-page films can be less than half the cost of assembling the same pages as eight individual negative sets. Notable savings also accrue when you're printing pages on an imagesetter, where the price for a two-page negative is typically one-third less than the price of two single-page negatives (for example, two letter-sized pages cost $14 each, or $28 total, whereas one tabloid-sized negative accommodating those same two pages costs only $20).

If you're planning a job for commercial printing and want to do the printer's pairs yourself, be sure to communicate, early and clearly, with the printer. The details of page positioning are very important and must be correct for this approach to work to your advantage.

Printers have a special vocabulary for the processes and problems in production, and in the world of imposition, you encounter a handful of novel terms such as *saddle-stitched, perfect-bound, grind-off,* and *creep.*

Saddle-stitching, in which thread or staples pierce the fold, or spine, of the publication, is the most common binding technique desktop publishers use. Documents to be saddle-stitched need different precautions from those that use perfect binding,

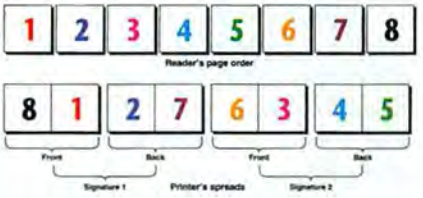

figure 1 / **What is correct** for reading order is not correct for a printing press. In printer's spreads, companion pages are paired with odd-numbered pages on the right, even on the left.

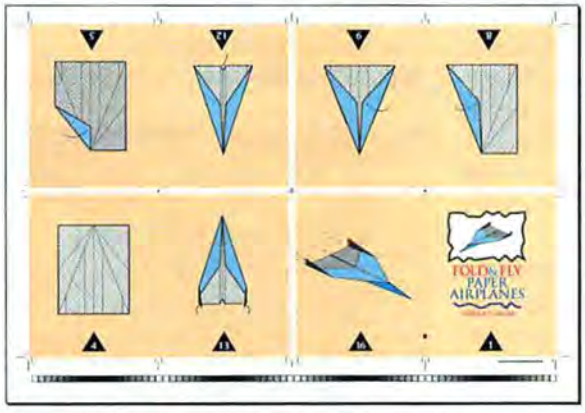

figure 2 / **Professional imposition** programs can handle head-to-head imposition and complex bleeds. Pages not shown here will be printed on the back side of these pages (page 3 prints on the reverse of page 4, for example).

the process of making glued-back paperback books. Most perfect-bound books require an extra margin in the gutter fold for grind-off when the signatures are glued together. If you generate your own printer's spreads for this process, you must know the size of these margins that go between pages for correct binding.

The most significant concern is the issue of page creep, the effect of pages getting farther and farther away from the spine of the booklet as the number of pages — and the collective thickness of the booklet — increases (see figure 3). To compensate for creep, a film assembler moves each page a tiny bit left or right to allow for the effect of the cumulative thickness in binding. Usually this correction means moving the outer

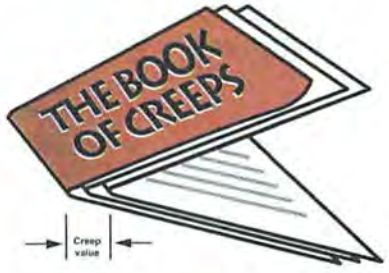

figure 3 / **Creep makes** copy move farther from the binding edge as the number of pages increases. When finding the creep value, measure the thickness of the booklet's spine.

pages in the signature away from the gutter fold. Correcting for creep on a light table is nightmarish work.

In electronic imposition, however, precise creep compensation is easy to accomplish. Most of the page-imposition products on the market provide an allowance for creep, whose value you usually enter in terms of total spine thickness. To find the correct amount of compensation, make a dummy booklet — or have a printer make one for you — and then measure the thickness of the spine. This measurement is your creep-compensation value. Creep occurs in both saddle-stitched and perfect-bound binding, since most perfect-bound books are made up of multiple saddle-stitched signatures bound together. In perfect-bound publications, each of the signatures must have compensation for creep as well as for grind-off.

Differences of style exist here. If your software requires the creep value to be entered in .001-inch increments, simply enter the total value in inches. If your software requires the entry of the creep value in printer's points (1 point = 1/72 inch, or .0138 inch), calculate the value in points by dividing the measurement in inches by .0138 to get points and then round up to the nearest whole number.

You can also estimate the amount of creep compensation needed by ascertaining the paper thickness. Measured in thousandths of an inch, a paper's caliper is published in catalogs from paper merchants and can be determined by your printer. Ask your printer to "mic" (measure with a micrometer) the paper you're using for your project.

Multiply the caliper by the number of sheets to get the thickness of each signature (some squeeze takes place at the binding edge, but for most projects, this small variation can be ignored). The paper in this magazine, for example, has a caliper of .002 inch. (Magazine papers are very thin; most commercial printing papers have a caliper of .003 to .005 inch). If you were to produce a 32-page brochure on the same magazine paper, the total signature thickness would be .032 inch (16 sheets x .002 inch), or 2.31 points. Entering this creep-compensation value in the imposition software will correct for the effects of paper thickness on the gutter width.

Tools for Imposition

Imposition is easy on the Mac if you use Aldus PageMaker or QuarkXPress. There are also low-end programs that let you do quick-and-dirty imposition. For complex jobs that require head-to-head imposition or grind-off allowances, print professionals need more-sophisticated software. Here's a quick survey of the total range available:

Print Utilities. Specialized utilities such as BookMaker's ClickBook and Peirce Software's Peirce Print Tools let you print multiple-page booklets from any application on a laser printer.

ClickBook installs as a control panel. You simply activate it from the Page Setup dialog box and print. The ClickBook dialog box appears, from which you choose 1 of 20 standard layouts, including side-by-side and four-up book for folded sheets and four-up tiled in portrait or landscape orientation (see figure 4). Another possibility is printing on both sides of the paper. A customized version of ClickBook is sold as Make-A-Booklet through the mail-order paper company Paper Direct, which includes preformatted templates designed for use with Paper Direct's preprinted papers.

Peirce Print Tools is a general printing utility that's optimized for Apple's soon-to-be-released QuickDraw GX (Peirce bundles the QuickDraw GX extension with the package). This collection of printing extensions includes Pamphlet, which lets you make simple printer's spreads on letter-sized paper, and DoubleSider, which lets you print on both sides of the paper.

PageMaker Additions. For producing publications of only one signature, Aldus provides the Build Booklet Addition in PageMaker 5.0. After you've completed your publication, you select Build Booklet, under Additions on the Utilities menu, and get a dialog box that provides options for simple page impositions (see figure 5). This Addition is useful for generating printer's spreads for impositions in saddle-stitched and perfect-bound publications. But it lacks head-to-head imposition ability, printing pages only two-across, three-across, and four-across in a side-by-side arrangement — useful mainly for making folded brochures. It does let you delete pages or add blank pages to make the total number of pages divisible by 4, which is necessary for imposed signatures.

When activated, Build Booklet creates a new PageMaker document and then moves the document elements into printer's pair order. In the process, it changes automatic page numbering to fixed numbers. Creep compensation is taken care of by the precision positioning of page elements on the new two-page document pages.

QuarkXPress XTensions. For those who are

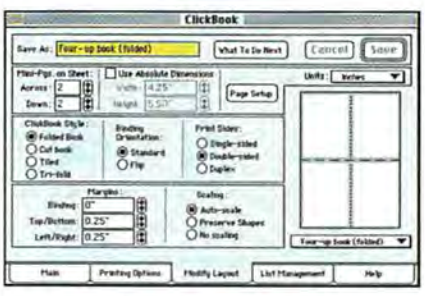

figure 4 / **BookMaker's ClickBook** lets you print simple booklets from any application with parameters for book style, binding margin, and double-sided printing.

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working in QuarkXPress, the simplest tool for creating companion pages is Printer's Spreads, an XTension you purchase separately from Corder Associates. As with PageMaker's Build Booklet Addition, you complete a document and then select Printer's Spreads from QuarkXPress' Utilities menu. A dialog box asks you to enter a creep-compensation value in points. The program then converts automatic page numbers into fixed text elements and repositions the page elements to create printer's pairs of pages. This XTension can impose a 32-page booklet in a matter of minutes.

Another alternative for QuarkXPress is DK&A's INposition Lite (see figure 6). This XTension adds a series of functions to the new Print Signatures window, which you reach via QuarkXPress' File menu, letting

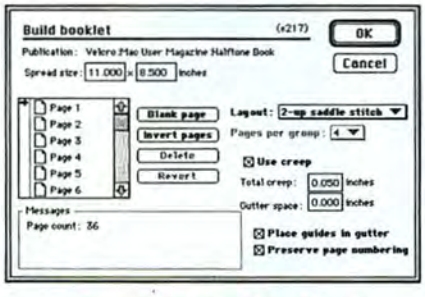

figure 5 / **PageMaker's Build Booklet** allows compensation for page creep and offers the ability to add or delete pages to make the total number of pages divisible by 4.

you print two-up and four-up impositions in 32-page signatures. INposition Lite, the less expensive younger sibling of the professional product INposition, can automatically adjust margins, depending on the number of pages and type of binding.

Professional Tools. There is a raft of high-end imposition products, each of which answers the need for imposing signatures of four or more pages on each side of a printed sheet and for imposing more-complex publications that require multiple signatures. The complexity and the price of these high-end products make them inappropriate for most users yet well suited to service bureaus, printers, and prepress operations, where a large imagesetter generates full-signature film, with its page components and printer's marks in precise position.

These products include Impostrip, from Ultimate Technographics; Aldus PressWise; Island Graphics' Imposition Publisher; and ScenicSoft's Preps. Each offers precise control over page position and printer's marks and can impose many pages for printing presses capable of large signatures. Two XTensions — INposition, from DK&A, and Impress, from XTend — address the needs of high-end QuarkXPress users.

Caveat Imposer

As with any software, you get what you pay for. The low-cost imposition products have some problems of which you should be aware. For example, both Printer's Spreads in QuarkXPress and Build Booklet in PageMaker fail when you're imposing designs that have elements that bleed off the page or elements that cross over from one page to the next. With the PageMaker utility, the crossover element stays with the left page of the spread it crosses. Printer's Spreads behaves similarly, except the lower-numbered page always gets the placed item. In each case, this creates situations that require either repair after imposition, redesign to eliminate such elements, or use of one of the high-end imposition products.

With this in mind, it's best to consider your imposition needs carefully. If you're making a relatively straightforward booklet or newsletter, by all means use one of the simple utilities. If your job is a complex, many-paged affair, you may be better off letting the pros handle it. As with many other prepress functions, it's imperative that you communicate with your printers to get clear instructions before forging out into their territory. The cost and efficiency benefits of electronic imposition accrue only if the job is done right the first time.

Brian P. Lawler is a graphic-arts consultant, writer, and lecturer who works from a hot-air-balloon basket in San Luis Obispo, California.

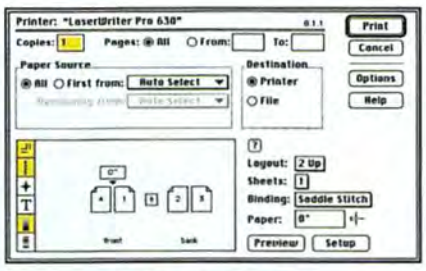

figure 6 / **DK&A's INposition Lite,** a QuarkXPress XTension, lets you preview the front and back of printer's spreads and automatically sets press marks and margins.

DIRECTORY

Aldus PressWise 2.0, $2,595
Aldus
Seattle, WA
206-622-5500

Build Booklet, free with Aldus PageMaker 5.0
Aldus
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206-622-5500

ClickBook 1.1 for the Macintosh, $69.95
BookMaker
Palo Alto, CA
415-354-8160

Imposition Publisher
Personal Professional, $2,195
Studio Professional, $3,995
Island Graphics
San Rafael, CA
415-491-1000

Impostrip (Six-Pack), $2,995
Ultimate Technographics
Montreal, PQ, Canada
514-954-9050

Impress, $249
XTend
North Brunswick, NJ
908-821-6400

INposition 1.5, $1,750
INposition Lite, $195
DK&A
San Diego, CA
619-488-8118

Make-A-Booklet, $49.95
Paper Direct
Lyndhurst, NJ
800-272-7377
201-507-5488

Peirce Print Tools, $129
(includes QuickDraw GX)
Peirce Software
San Jose, CA
800-828-6554
408-244-6554

Preps, $6,995
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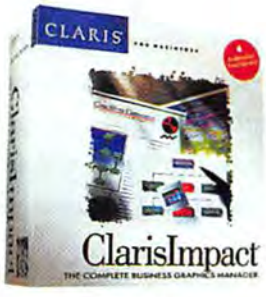

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Let's talk scanned image quality.

Test 1

COLOR REGISTRATION ACCURACY

MICROTEK SCANMAKER IISP

A good test for RGB color registration is to scan black and white line art in RGB color mode. When magnified and displayed on the monitor you should not see red, green or blue pixels, only gray and black. Microtek's ScanMaker IISP image on the left shows no red, green or blue pixels. Hewlett Packard's ScanJet IIcx, however, shows too many red, green and blue pixels.

BEFORE YOU BUY ANY SCANNER, TAKE A GOOD, HARD

Before you lay down your hard-earned bucks for a single-pass color desktop scanner, here's a simple test you can perform to see for yourself how well it handles color registration.

Scan black and white line art in RGB color mode. Then enlarge and examine the results.

If the colors are properly aligned — or "registered" — the lines will look black. If you see dots of red, green or blue at the edge, the scanner's color registration leaves something to be desired.

SEE FOR YOURSELF.

In a recent direct comparison between the Hewlett-Packard ScanJet IIcx and the Microtek ScanMaker IISP, the ScanMaker clearly shows superior color registration. The H-P ScanJet IIcx, well, leaves something to be desired. And because poor registration is only one factor that causes inaccurate color, it further degrades color quality when accuracy problems already exist. So color registration is only one of the quality checks you should be making if you want the best scanner for your money.

Another is color accuracy — how close does the color of the scanned image come to the color of the original? The Microtek ScanMaker IISP uses an award-winning system called Dynamic Color Rendition (DCR) which automatically calibrates and

The scanner to ask for, **Microtek's ScanMaker IISP**, *comes complete with Adobe Photoshop LE for Windows or Macintosh and the DCR color calibration/correction system including software and an IT-8 calibration target. Or ask for the* **ScanMaker IISPX** *with the full-version of Adobe Photoshop. Scanner shown with optional Transparent Media Adapter. Optional Automatic Document Feeder also available.*

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Test 2

COLOR ACCURACY

H-P ScanJet IIcx

Process Magenta

A Warm Red

Microtek IISP *H-P IIcx*

Microtek IISP *H-P IIcx*

Color accuracy is important in most of the images we scan. To test color, we scanned color swatches from an industry standard color-matching system. Once again, Microtek's ScanMaker IISP easily outclassed the well-known ScanJet. The disparity is even more apparent when the Transparent Media Adapter is used. H-P's stationary "light table" light source results in uneven accuracy, while Microtek's moving light source gives consistently more accurate color.

LOOK AT REGISTRATION AND COLOR ACCURACY.

corrects colors to make them virtually indistinguishable from the original.

To prove it, we scanned a 100% magenta color swatch on the ScanJet IIcx and the Microtek ScanMaker IISP. The results, as you can see, show the ScanMaker IISP's color accuracy is superior to H-P — or anyone else. In fact, in a scanner comparison published in the February 8th edition of *PC Magazine*, the editors said, ***"...the ScanMaker IISP's color output was clearly the best of any scanner in our survey."***

PC MAGAZINE EDITORS' CHOICE
February 8, 1994
Microtek ScanMaker IISP

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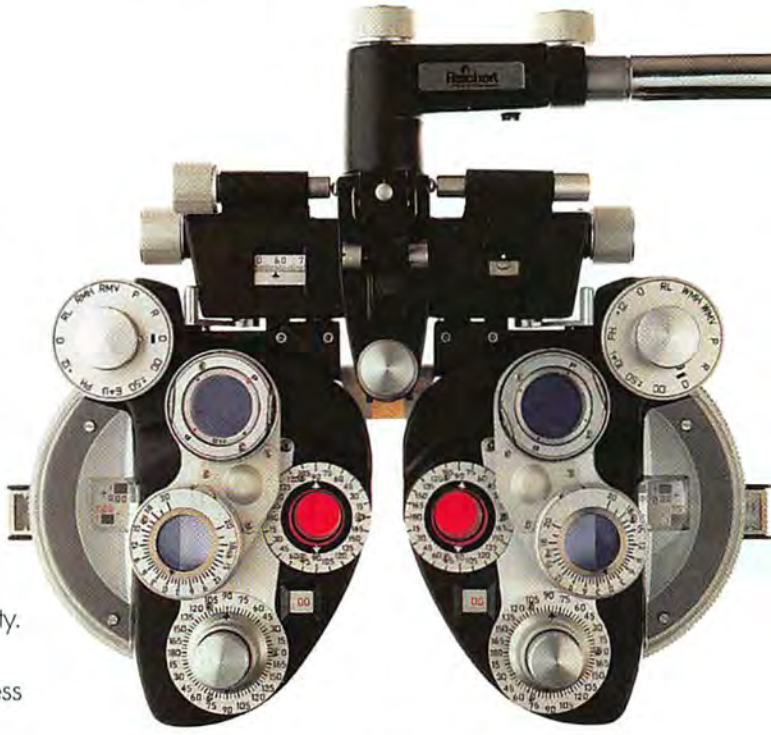

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The Big Color Spin

Learn how to pick pleasing color combinations in any software by experimenting with a color wheel. BY JANET ASHFORD

COLOR IS CRUCIAL to the emotional impact of a design, but some colors work together better than others. By using a wheel that maps simple color relationships, you can learn how to choose color combinations that successfully communicate your intent. Create new and striking combinations by rotating the pointers around the wheel, keeping in mind the desired relationship between colors. As these examples show, applying various color pairs or groups to a simple black-and-white design yields very different results. The pointers on the wheel next to each example indicate which colors were used. You can employ the same principles in a graphics program by establishing a color palette and combining various hues and tints.

Janet Ashford is the coauthor, with Linnea Dayton, of *Adobe Illustrator: A Visual Guide for the Mac* (Graphic-sha/Addison-Wesley).

1. This 12-color wheel uses the three primary colors (red, yellow, and blue), the three secondary colors (orange, green, and purple) and the six intermediary colors (red-orange and so on). The concentric circles are layers of tints: 50 percent (inner ring), 100 percent (middle ring), and 15-percent black added (outer ring). We constructed the color wheel in Aldus FreeHand, whose color palette is shown here in the background.

2. Complements are colors that lie opposite each other on a color wheel (here, yellow and purple).

3. Near complements are the colors that lie on either side of a color's complement (here, blue, yellow-orange, and red-orange).

4. Double complements are pairs of complements (here, tints of yellow and purple, and blue-green and red-orange).

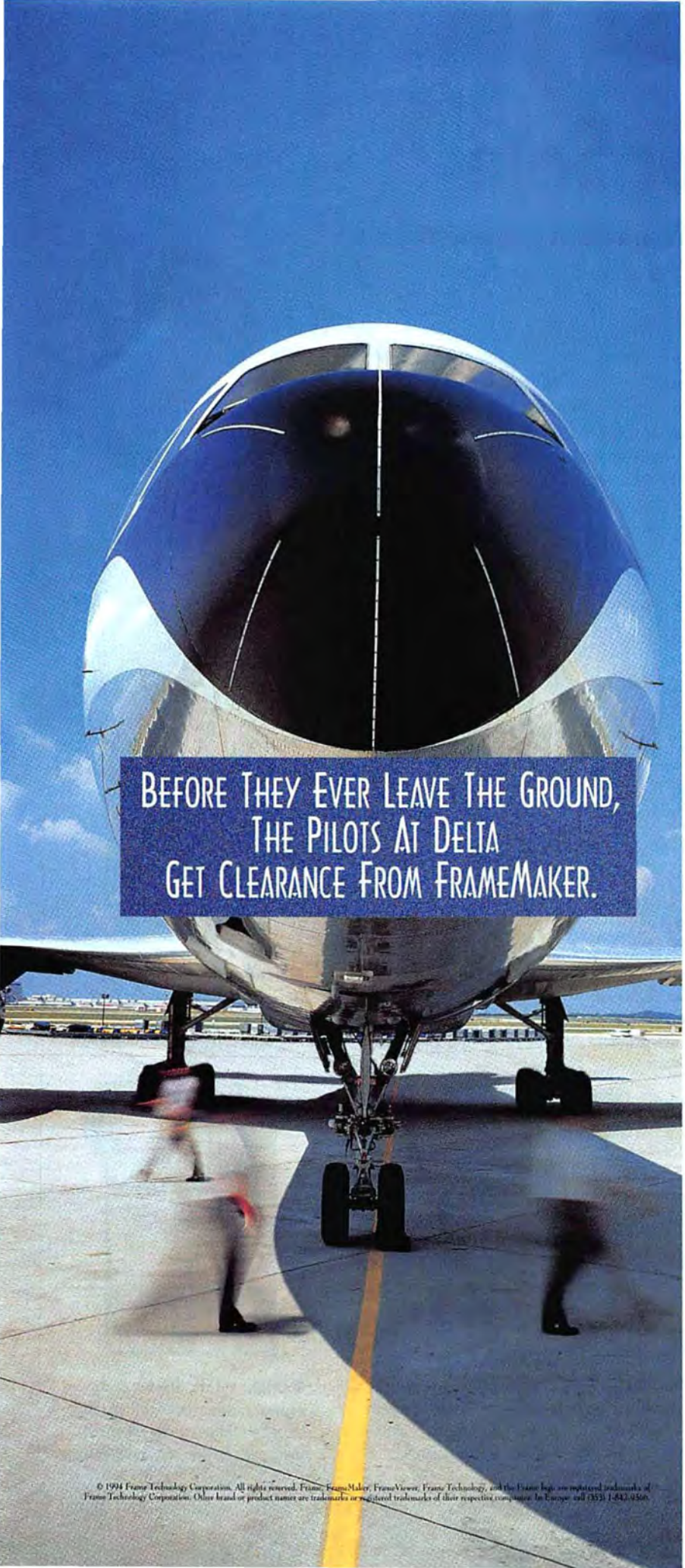
5. Triadic complements are three colors that lie equidistant from one another (here, shades of blue-green, red-purple, and gold).

6. Multiple complements are groups of three or more adjacent colors (here, yellow-green, green, blue-green, blue, and blue-purple).

7. Bright colors used with muted tones make an effective combination (here, blue and orange set against a muted orange).

8. Bright colors used with black create a strong palette (here, triadic complements accented with black).

9. Bright colors, blacks, and muted tones used together create a sophisticated look (here, black with tints of red and green).



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CIRCLE **140** ON READER SERVICE CARD

What's Your Preference?

Using the right preferences settings can make your publishing application function more efficiently and increase your productivity. BY BOB SCHAFFEL AND CHUCK WEGER

Feel like your publishing work puts you on the bleeding edge of technology? In this new column, two noted publishing professionals provide hands-on help and offer expert tips on using publishing software and hardware, from how to set up your system to the best ways to work with prepress tools.

WHAT'S THE FIRST THING you should do after you install a new program? (Hint: If you said, "Use it to produce my rush 16-page color catalog," you should seek medical attention, now.) The answer is, Check the preferences! Preferences are settings in obscure dialog boxes that are usually buried under the File or Edit menu. Some preferences affect how the application functions. Others make a critical difference in how your files output. Some help you work more efficiently. And there are those that are a matter of taste — or preference, as it were.

Most applications store preferences settings as files in the Preferences folder, in the System Folder. Some preferences files are found elsewhere, however: Check the Aldus folder for FreeHand preferences and the Quark folder for QuarkXPress preferences, for instance. Aldus' PageMaker's preferences, on the other hand, are stored in the application, so there's no separate file.

If an application suddenly behaves oddly — slowing to a crawl or refusing to launch without bombing — its Preferences file may be corrupted. If you've ruled out a general system error or an extension conflict as the cause of this behavior, try trashing the Preferences file; the application will generate a new one automatically. (Of course, then you'll have to reset all of your preferences in the new file.)

Mac publishing applications abound with preferences, ranging from three in Aldus PageMaker 5.0 to a whopping nine in Adobe Photoshop 2.5.1 (we'll devote a later column to this important application). You will each have your own list of favorites, but here's our hit parade of productivity-enhancing preferences:

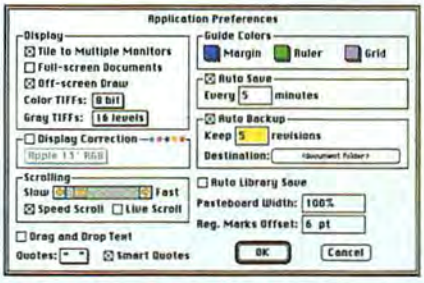
Type Greeking. To save tedious screen-redraw time in your page-layout program, change the point size at which type is greeked so that a larger range of type is grayed out. For example, if your application is set so that anything smaller than 6 points/pixels is greeked, change the setting to 12 points/pixels. You can also greek pictures in QuarkXPress (Edit: Preferences: General) and gray out graphics in PageMaker (File: Preferences: Graphics) — real time-savers.

Document-Scrolling Speed. QuarkXPress' application preferences let you control how fast the program scrolls; FreeHand allows you to turn off redraw (File: Preferences: Display) so you can scroll without it, and in Photoshop (File: Preferences: General) you can choose Faster rather than Smoother for displaying CMYK composites. You can select off-screen redraw in QuarkXPress (Edit: Preferences: Application) and in FreeHand (File: Preferences: Display: Buffered Drawing), which is usually faster, although you may run into memory problems with off-screen buffering if you don't have enough RAM.

Auto Save and Auto Backup. These two QuarkXPress features (Edit: Preferences: Application) work very well — assuming you have enough disk space — and can help protect you against random crashes (not that the Mac ever does that, of course).

Smaller File Save. This PageMaker feature (File: Preferences: Save Option) keeps garbage from building up in the document's file structure. The time penalty over using the Faster option is minimal.

Undo Levels. Some programs, such as FreeHand (File: Preferences: Editing), allow you to store more than one undo in RAM until you close your document. Keep in mind, though, that speed decreases as the amount of RAM reserved for undos increases. You don't really have to undo 100 steps now, do you? Save the RAM for speed: Try 10 undo steps instead.



The Application Preferences dialog box in QuarkXPress offers many productivity-enhancing settings, such as Off-screen Draw, Scrolling, Auto Save, Auto Backup, and the all-important Smart Quotes.

Point Definitions. You probably think there are 72 points to the inch, but some high-end publishing systems employ the traditional measurement of 72.28 (1 point = .013835 inch). If you have a tight-fitting layout and are sending your files through a prepress system, this can be a gotcha. QuarkXPress (Edit: Preferences: Application) and Photoshop (File: Preferences: Units) allow you to define how many points are in an inch.

QuarkXPress Trapping. If your service bureau uses a high-end trapping program such as Aldus TrapWise, IslandTrapper, or Scitex FullAutoFrames, turn off Quark's trapping, by entering 0 for Auto Amount and Indeterminate (Edit: Preferences: Trapping). Otherwise, try these settings for normal offset printing: a trapping value of .25 point for printing 150-line screens or .3 point for 133-line screens.

Bob Schaffel is technology director of the Professional Prepress Alliance, a trade organization of pioneering service providers. A former service-bureau manager with more than 20 years' hands-on graphic-arts experience, he now consults, teaches, and writes about new technologies. Chuck Weger is an independent consultant and publisher of the *Photoshop Monitor* newsletter; he was formerly manager of advanced technology for a top prepress company.

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HANDS ON Networking

CROSS-PLATFORM E-MAIL /

FILE ENCLOSURES CROSS BOUNDARIES

ENCLOSE FILES with Internet e-mail — or with e-mail to PC and UNIX-machine users on LANs — with help from version 3.0 of Mail*Link SMTP for QuickMail or Mail* Link SMTP Microsoft Mail ($2,995 each; upgrade pricing varies), from StarNine (510-649-4949). These Mac-based gateways link the two Mac mail products to UNIX-based mail systems running SMTP (Simple Mail Transport Protocol). Support for the MIME (Multipurpose Internet Mail Extensions) standard enables the gateways to deliver binary-file attachments — including text, images, sound, and video — among different mail systems.

Other new features aid compatibility with SMTP-based PC mail systems. Mac-to-PC file mapping assigns the appropriate DOS file extension to an enclosed file. For PC-to-Mac enclosures, the gateway adds the appropriate type and creator information.

Administrators will appreciate a new feature that lets them configure enclosure-handling methods for outgoing messages addressed to a specific destination. Plus, administrators can now forward incoming mail to any address on the LAN, the SMTP backbone, or the Internet, and they can set up multiple mail addresses for a user. Another addition, Apple's Threads Manager, lets the gateway connect to — and process concurrent messages from — five different SMTP hosts. / John Rizzo

HIGH-SPEED WANS /

ATM Data Blast for Macs

MAC NET MANAGERS looking at high-bandwidth LANs, take note: This fall, Fore Systems (412-772-6600) will introduce the first Mac ATM (asynchronous-transfer mode) card. The $1,700-to-$1,900 NuBus NTA-200 will allow data transfer at 100 or 155 Mbps (depending on the version) — fast enough to transmit full-screen, live video. It must connect to an ATM switch, which gives each Mac the full bandwidth. ATM switches use fiber-optic cable and cost $30,000 to $60,000 each, but Fore expects to have a much cheaper copper-cable switch when it releases the card. / JR

ETHERNET CARDS /

Focus Escalates Price War

ETHERNET-CARD PRICES KEEP DROPPING, as evidenced by the $74.99 EtherLAN card, from Focus Enhancements (617-938-8088). Its SMC 91C92 controller chip uses a unique packet-processing algorithm intended to speed data transfer. The 7-inch card, available for NuBus and the LC's PDS, is SNMP-compatible and includes a utility that measures file-transfer speed. The EtherLAN autosenses the presence of a 10BASE-T or thinnet connection. It uses a Focus driver instead of Apple's standard EtherTalk driver, giving network managers one more driver to worry about updating. / JR

NETWORK SECURITY /

Shielding the LAN

LOCK OUT INTRUDERS OR VIRUSES — or both — with the help of four new software packages. Three specialize in securing network data, whereas the other focuses on stopping viruses.

For ironclad network security, check out ultraSECURE with ultraCOMMAND ($239 per Mac, $479 for admin software), from usrEZ Software (714-756-5140). It offers security features that meet Department of Defense security standards, such as double-DES file encryption, and also offers remote password protection for folders, files, disks, the Apple menu, control panels, and the desktop. ultraSECURE can also automatically scan for viruses at startup. For less beefy security, usrEZ offers ultraSHIELD with ultraSECURE ($149 per Mac, $389 for admin software), which provides only single-DES encryption and no DOD intruder-warning banner.

For similar features, minus the protection from viruses, at a lower price ($129.95 per Mac), you can buy FolderBolt Pro, from Kent Marsh (800-325-3587 or 713-522-5625). For volume encryption, you need to add NightWatch ($39).

If protection from viruses is your main concern, however, look at Virex Administrator, from Datawatch (919-549-0711). It lets you automate extensive virus scans on a network as large as hundreds of Macs. According to Datawatch, not only can you perform speedy scans on all network Macs that have Virex installed but you can also delay scans until convenient times and update Virex remotely to repair infected Macs and prevent viruses.

Virex Administrator is pricey — the administration software starts at $200 for a 25-node network, plus you must install Virex on each machine ($950 for 25 Macs) — but it can save you hours of work. / Nancy Peterson

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Network Help

How to foil rogue routers, build a network-address book, and maintain Ethernet collision detection among buildings. BY KURT VANDERSLUIS

Going to Seed Routers

Q. Is it a good idea to use nonseed routers? If some of my routers are nonseed, how many seed routers should I designate on the network?

David Ward
Los Angeles, CA

A. In general, I recommend using all seed (or preconfigured) routers, even though it requires more work on your part to maintain such a system. However, if you have tight control over your network, using nonseed routers can help reduce your administrative burden.

When you use nonseed routers, it's easier to manage administrative changes such as redefining network addresses. On a backbone network containing five routers, for example, you can designate one of the routers as a seed router and have the other four be nonseed. To change the network address of that backbone, you need only configure the one seed router and then turn off all the nonseed routers and turn them back on. I recommend that you have all five routers be seed routers, but then you need to configure all five to change the backbone's address.

The big disadvantage of nonseed routers becomes apparent when a misconfigured, or *rogue,* router makes its way onto your network (for example, when someone installs a Novell NetWare server without realizing that it's also functioning as an AppleTalk router — and hence doesn't coordinate network addresses and zone names). Incorrect routing information from the rogue router can propagate more quickly through your network if you have nonseed routers, which get their routing information from any router already in service when they're turned on or restarted. Typically, a nonseed router begins service by broadcasting the question, What is the identity of this network? and accepting the response of the first router that replies. If that first responding router is configured properly, all is well. If it's not, however, its incorrect information will spread to the nonseed router newly in service.

If you use seed routers exclusively, you may still get the occasional rogue router, but the incorrect routing information from rogue routers has less opportunity to spread to your other ones.

Hunting for Addresses

Q. When we moved to Ethernet, we didn't record anyone's Ethernet address. Now we'd like to have a list of all the Ethernet devices on our network, for troubleshooting and inventory purposes. Is there an efficient way to make a table that shows each person's name, Ethernet address, AppleTalk address, and IP address?

John Morin
Richardson, TX

A. If you have GraceLAN Network Manager, this is very easy to do for the Macs on your network. You need to make a custom layout to see the IP addresses (which the GraceLAN responder reads from the Mac's MacTCP control panel) in the same table, but the GraceLAN layout editor is easy to use. Unfortunately, GraceLAN Network Manager can't build such a list for AppleTalk devices that are not Macs.

To build a list of network addresses for *all* of your AppleTalk devices — including printers, routers, and non-Mac file servers — you have to use a protocol analyzer and a network-management program, such as GraceLAN Network Manager or Apple's Inter•Poll, that can build a list of network devices.

Here are the steps to follow:

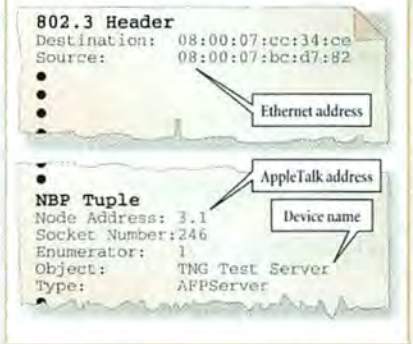
1. From a Mac workstation, use the network-management program to build a list of the devices on your network.

2. Use your protocol analyzer to monitor the network activity during the list-building process. To make the task easier, set up a filter so you're capturing only the traffic to and from the Mac on which the list is being built.

3. Use the protocol analyzer to open and decode the Name Binding Protocol (NBP) Reply packets; they contain the name of the replying device, its AppleTalk address, and its Ethernet address, as shown in figure 1. (IP addresses won't appear unless an application that uses MacTCP is open.)

figure 1

NBP Reply Packet



4. Copy the device addresses and the names displayed in the decoded packets, and paste them into your protocol analyzer's name-mapping editor. Having addresses mapped to device names in your protocol analyzer will make troubleshooting easier later on. (This is more important to do for Ethernet addresses than for AppleTalk addresses, which can change.)

5. If you want to format the list or combine it with another one (say, if you've already made an address list for the Macs, using GraceLAN Network Manager), you can export it from the protocol analyzer in tab-delimited format and import it into a word processor or spreadsheet program.

Write to Network Help

c/o *MacUser*
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You can also send your question to Kurt VanderSluis on AppleLink at KVANDERSLUIS.

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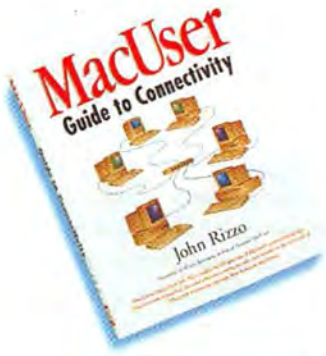

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CIRCLE 17 ON READER SERVICE CARD

BREAKING THE RULES / *far-apart Ethernet nodes*

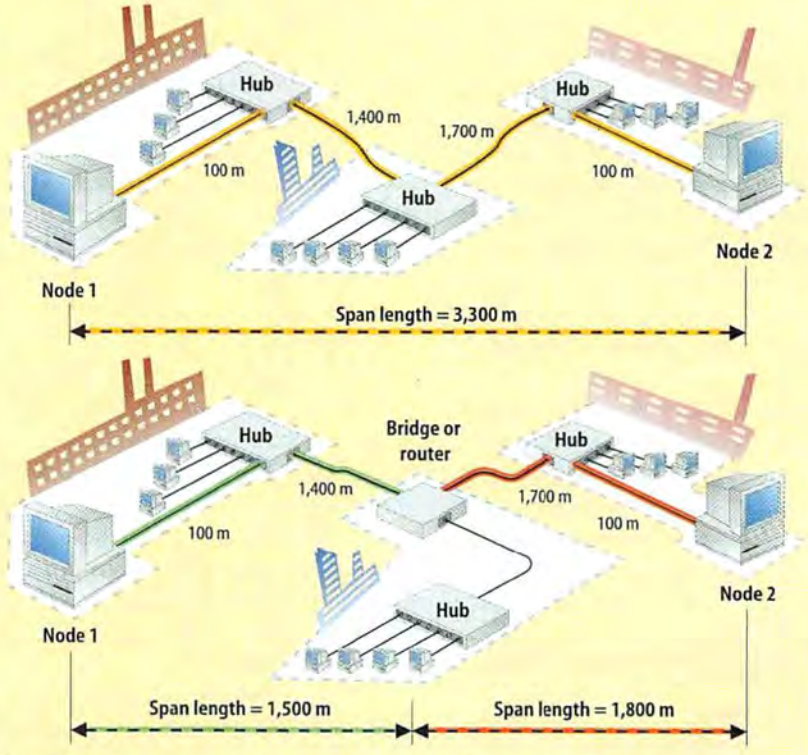
Q. Our Ethernet network has a main building containing a large hub connected to our outlying buildings via FOIRL (Fiber Optic Inter Repeater Link). The farthest of these buildings is 1,700 meters away from the main building, which is less than the maximum distance for FOIRL, but many of the users in these outlying buildings have trouble communicating with each other. Why is this?

Karl Bergeman
Rochester, NY

A. Although 1,700 meters is an acceptable *segment length* (distance between repeaters) for the situation you describe, the overall *span* of your network (the maximum Ethernet length between two nodes, including repeaters) may be too long for Ethernet's collision detection to work properly.

The span must be short enough that the jam signal resulting from a detected collision will make it back to both sending nodes *while they're still sending the packets that collided.* If the jam signal arrives after that, the nodes will not find out about the collision. Worse, if one of the nodes has already begun sending a second packet when it receives the jam signal, it will interpret the collision as having occurred in the second packet instead of the first. As a result, it will retransmit the wrong packet. If this happens often, your network can be plagued by slowdowns and faulty communication.

So how short does your span need to be? A good rule of thumb for copper-and-fiber networks (many component manufacturers provide formulas for calculating a more precise guideline) is 2,500 meters — and I'd guess at least two of your outlying buildings are farther apart than that. I recommend that you place a bridge or a router between the main building and the outlying buildings, so that each outlying building is like a separate network from the standpoint of collision detection. Then you need to consider only the distance between each node and the bridge or router when calculating span lengths. Bridges and routers have independently functioning ports, each with its own collision-detection function — so collision detection will work properly and all of your users will be able to communicate.



If the span of your Ethernet network (the maximum Ethernet length between two nodes, shown in yellow in the top figure) is too long — say, over 2,500 meters in a copper-and-fiber network — collision detection may not work properly. Adding a bridge or router divides the large network into smaller spans (shown in green and red in the bottom figure) for more-manageable collision detection.

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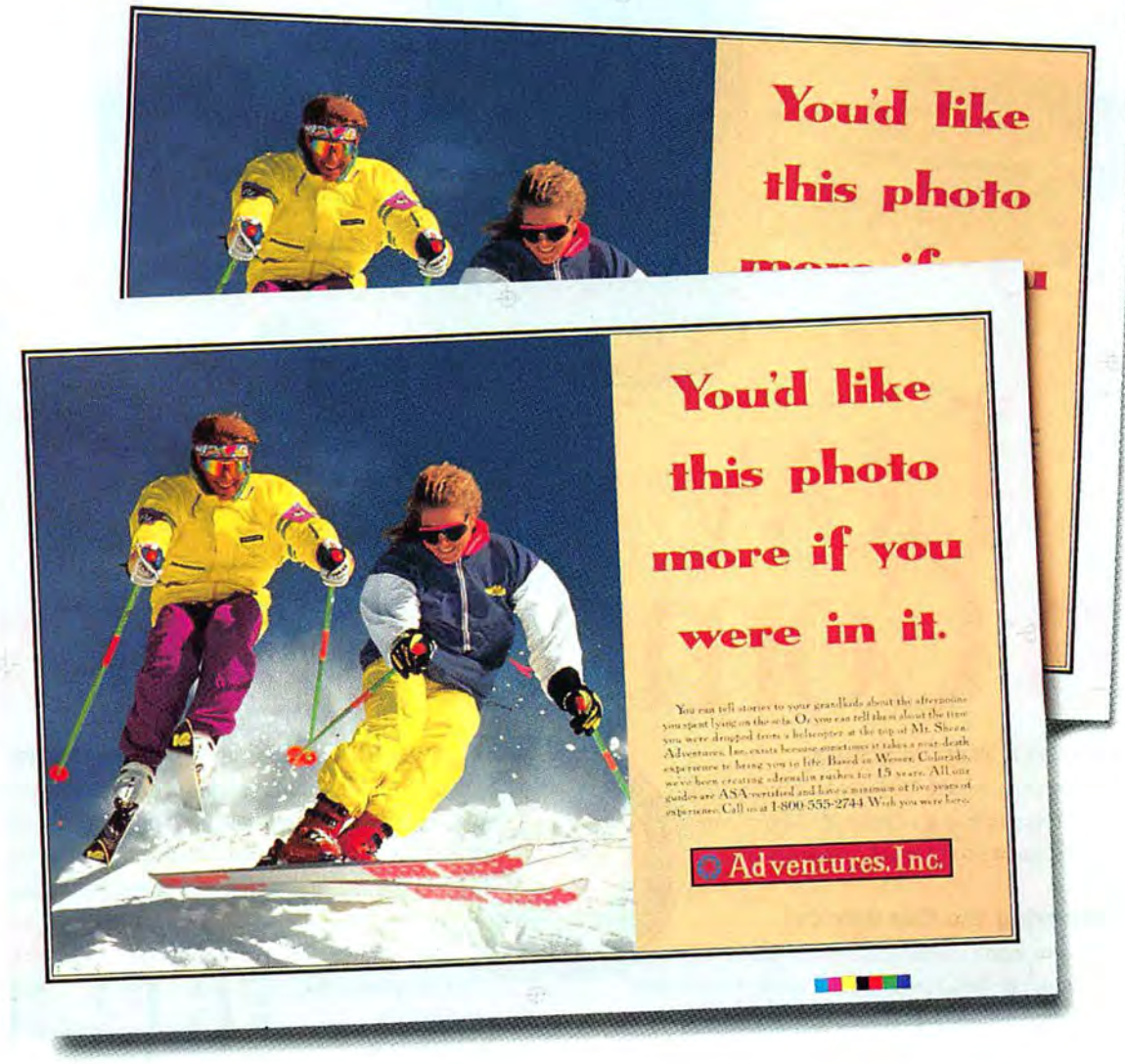

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Which Windows Wins?

How to choose the best way to run Windows on your Mac — when the available options for doing so are changing just about as fast as we can test them. BY JOHN RIZZO

A POPULAR BIT of advice about the weather in some locales goes like this: If you don't like it, just wait for an hour. I'm tempted to say something similar about Apple's Windows-compatibility product strategy.

Recently, the forecast looked bright and sunny for those of us who want to run Windows (and DOS, of course, since Windows is DOS-based) on a Mac. Apple offered its fast, RISC-based Power Macs in bundles with Insignia Solutions' native version of SoftWindows (available separately from Insignia Solutions [415-694-7600] for $499), providing a major leap in speed for the software-only Windows emulator (SoftPC, Insignia's earlier version of this product, runs applications more slowly than they run on even low-end PCs). Orange Micro (714-779-2772) introduced the Series 200 models of its OrangePC coprocessor card (available in configurations priced from $999 to over $2,000), which let you put a fast Intel processor into any Mac that had a 12-inch NuBus slot. And Apple provided its own hardware alternative (although only for the Quadra 610) to the OrangePC card: the $399 DOS Compatibility Card. I couldn't wait to test and compare them.

Then, like a midwestern tornado, Apple unleashed an announcement that it wasn't producing any more Quadra 610s and DOS Compatibility Cards. But, it said, not to worry — it was thinking about replacing the DOS Compatibility Card with another product. Sometime. Maybe.

At MacUser Labs, we tested the DOS Compatibility Card anyway. As it turns out, the card in a Quadra 610 runs Windows applications faster than does SoftWindows on a $5,000 Power Mac. Lucky Quadra 610 owners who can still find a DOS Compatibility Card in the distribution channels should grab it — it's a bargain.

For high-end-PC-type performance on your Mac, the only game in town is still the OrangePC card. We tested the OrangePC 290, which costs $2,388 and sports Intel's hot 486DX4/100 processor. It also has a 128K cache and 1 MB of video RAM and is plenty fast enough for all but those users who insist on panting after Pentiums.

Which of these Windows options is right for you — and whether you should wait for something else to come along — depends on what capabilities you need as well as what you can afford to pay.

Features Versus Finance

SoftWindows and the DOS Compatibility Card are each aimed at the same audience: users who have limited budgets and who don't need full PC expansion capabilities

MEMORY-SETUP TIPS / *configuring memory to maximize speed*

TO GET THE SPEED we did with these products, be careful how you configure system memory. All three products work best with lots of memory, mainly because Windows and its applications are memory hogs. Plan to have at least 8 MB of RAM on top of what your Mac already has.

Orange Micro's OrangePC card is the easiest product to configure correctly, since it uses RAM on the card — a single 16-, 32-, or 64-MB SIMM. The OrangePC application uses only 512K of the Mac's memory at most. Apple's DOS Compatibility Card has a SIMM slot too, but it can accept no more than 32 MB of RAM; beyond that, it can share memory with the Mac, but you'll get a 25-to-40-percent speed reduction with this method, according to Apple.

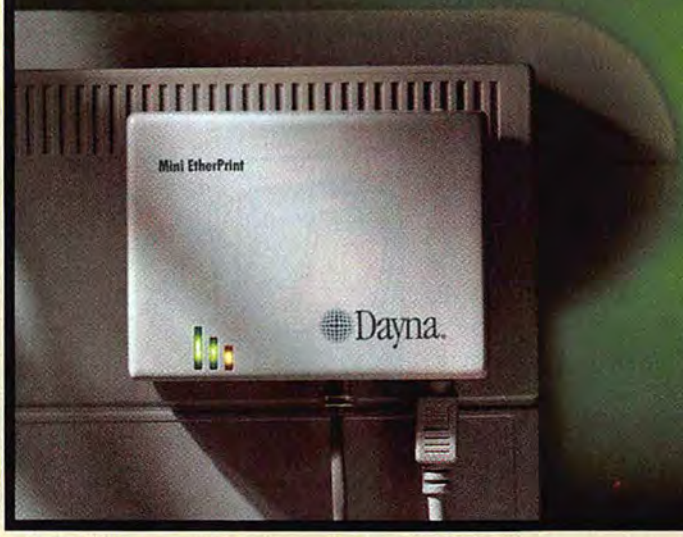
If you're mainly interested in using DOS, you can run SoftWindows on an 8-MB Power Mac, but Insignia recommends 16 MB for SoftWindows in general. I recommend having 24 MB if you want to run multiple Mac and Windows applications simultaneously. To supplement your Mac's real RAM, you can use the Power Mac's virtual memory, but use it sparingly — although it works better than the virtual memory in 680x0 Macs, using it is still much slower than using real RAM.

You should always increase the Minimum memory setting in SoftWindows' Get Info box. Insignia recommends a minimum setting of 12,000K for a 16-MB Power Mac and 18,000K for a 24-MB Power Mac. If you can't devote this much to Windows, try to increase SoftWindows' minimum-memory setting by 1,152K for every 1 MB of PC memory you want to use.

To run the maximum possible number or size of PC applications, you'll also need to increase the PC *extended* memory (choose PC Memory in SoftWindows' Setup menu) — the current way to get around the 64K memory limit in DOS (using *expanded* memory was the old way). However, don't bump up the extended memory as high as you can: Increasing extended memory will decrease the size of the DeltaCache, a space SoftWindows reserves in RAM for storing frequently used application code. Leave at least 1 MB for the DeltaCache; a smaller DeltaCache will significantly slow SoftWindows.

For any of these products, keep the expanded memory set to 0 unless you want to run older PC applications that require expanded memory. Windows applications will slow down if expanded memory is not 0.

Connecting LocalTalk Devices To Your Ethernet Is A Big Deal.



Your Connector Doesn't Have To Be.

No Boundaries
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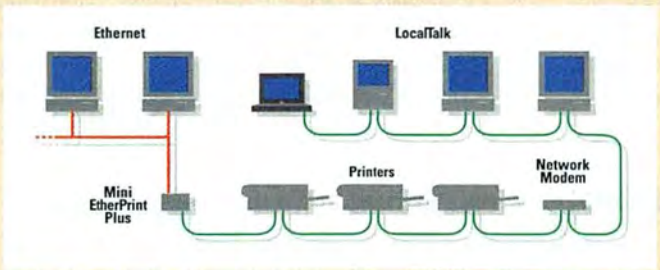
Introducing Mini EtherPrint™. Up To 8 LocalTalk Connections, New Compact Size.

Connecting LocalTalk printers and other devices to Ethernet has never been easier or less intrusive. The reason? Dayna, the very company that pioneered the technology with EtherPrint™, has made a small improvement that promises big benefits.

It's called Mini EtherPrint, and it's the ideal way to provide a simplified Ethernet connection for as few as 1 or 2 LocalTalk printers to as many as 8 LocalTalk devices of any variety.

Mini EtherPrint connects to your printer with no set-up routines or start-up sequences. Just plug and print. For easy trouble-shooting, we've included power, activity and link status lights, as well as a handy reset switch. And if there's a power outage, Mini EtherPrint will restart and restore its connections automatically. We also include SecurIt™ protection software to prevent unauthorized access to network modems, color printers or other LocalTalk devices.



Mini EtherPrint products are ultracompact plug-and-print solutions offering Ethernet connectivity for LocalTalk devices. Mini EtherPrint supports 1 or 2 devices, Mini EtherPrint Plus supports up to 8.

Mini EtherPrint may be the smallest connector around, but it offers the biggest cost advantages. A competitive price per connection, Lifetime Warranty and 24-Hour Replacement Program make our value especially tough to beat.

Prove to yourself that the challenge of connecting more LocalTalk devices to your Ethernet is smaller than you thought. Choose Mini EtherPrint from Dayna. For more information, call 800-443-2962 ext. 537 or use our 24-hour FAX Response System.

FAX Response: 801-269-7340, Doc.#1303

Dayna®

CIRCLE **133** ON READER SERVICE CARD

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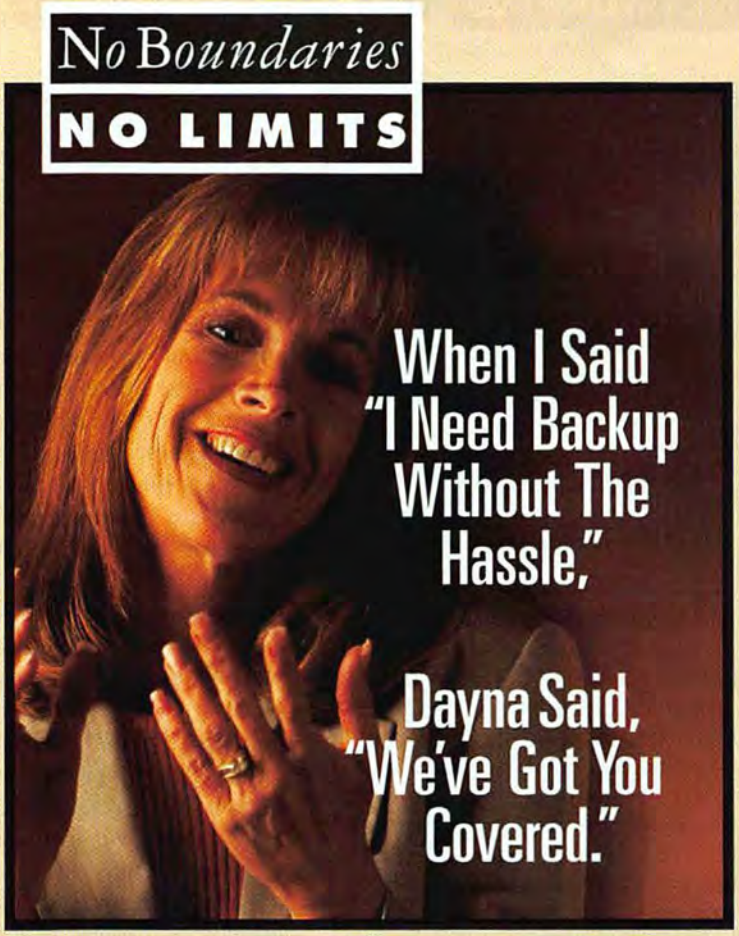
(slots for connecting PC peripherals) or speed beyond that of a low-end 486 machine. The OrangePC card is more like having a PC inside your Mac; it can provide the expansion capabilities of a real PC and costs about as much.

SoftWindows is the easiest of the products to install. The SoftWindows installer program copies both DOS and Windows to your Mac, along with the SoftWindows application. Insignia's DOS and Windows software contains actual Microsoft code, so it looks and acts like the real thing. It also lets you connect to a NetWare server.

The two 486 cards come with DOS, but if you want to run Windows, you need to supply your own copy. The OrangePC card also comes with an application (now in version 3.01) that launches you into DOS. Once DOS has been launched, however, all the processing occurs on the OrangePC card, not on the Macintosh.

When you order an OrangePC card, you can choose among several models with different Intel 486 processors and other options. Like previous versions of the OrangePC card, the Series 200 cards include PC parallel and serial ports as well as optional expansion slots to let you connect PC peripherals. For the expansion-slot option, Orange Micro has replaced the AT-bus slots of older models of the card with the more flexible PCMCIA slot, which you can use for credit-card-sized network cards, modems, additional memory, or cards that provide other functions. You also get a SIMM slot for RAM as well as support for the Super VGA PC graphics standard.

By comparison, Apple's DOS Compatibility Card is plain-vanilla. This 7-inch PDS card has no expansion slots or PC ports for connecting to devices such as printers, although you can print through your Mac's printer port. The 486SX/25, which is relatively slow, is your only processor choice. You access DOS and Windows through the PC Setup control panel (see figure 1) — not nearly as convenient a method as those provided by SoftWindows and the OrangePC application. In addition, you can't have Mac and DOS or Windows applications on one monitor's screen simultaneously, as you can when you use SoftWindows or the OrangePC card. There's one big plus, though: At $399, Apple's card is much cheaper than the OrangePC.



SafeDeposit Gives You Easy Backup Anytime, Anywhere.

Whether you're in the office or on the road, the files on your Mac are at risk. If backup wasn't so much trouble, you'd probably do it all the time. Well now there's a way to get the security you need with none of the hassles. We call it SafeDeposit™, the only backup program designed with the user in mind. And the ideal solution for desktop systems and PowerBooks alike.

MacUser, ★★★★ *December 1993*

Unlike any other backup program, SafeDeposit puts you in charge of your own backup schedule. And PowerBook users on the road can back up important files to the office using ARA. To find out more about easy, reliable backup for your desktop Macintosh, PowerBook or AppleShare file server, call 800-443-2962 ext. 821 today. Or use our handy 24-hour FAX System for full details.

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CIRCLE **134** ON READER SERVICE CARD

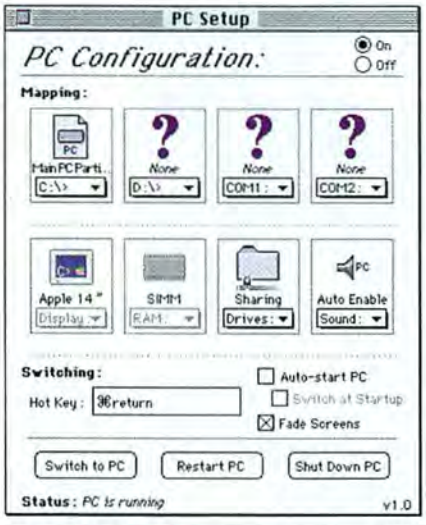


figure 1 / **With Apple's** DOS Compatibility Card, you adjust settings and launch DOS via the less-than-convenient PC Setup control panel. To make adjustments when you're running DOS or Windows, you must switch back to the Mac, using a key combination. Insignia's SoftWindows and Orange Micro's OrangePC software take an easier approach: You launch DOS by double-clicking on an application icon, and you can access settings when DOS is on-screen.

Real PC Speed

To see how running DOS and Windows applications on a Mac with these products compared to running them on real PCs, we tested a variety of common DOS operations and tasks in popular Windows applications (see figure 2). We also ran two standard Ziff-Davis PC benchmark applications, WinBench 4.0, for Windows (results not shown), and PC Bench 8.0, for DOS. We ran SoftWindows on a Power Mac 8100, used the Apple DOS Compatibility Card in a Quadra 610, and used the OrangePC 290 in a Quadra 650. The two PCs we used were a 486SX/25 Compaq DeskPro and, for a higher-end reference, a 486DX2/66 Dell Optiplex.

For SoftWindows on the Power Mac, our results were similar to those on our first look in May (see "The Corporate Power Mac," page 133) — the combo was slightly slower overall than a low-end 486 PC (the 486SX/25-based Compaq DeskPro) but faster than you would expect a 386 to be. The SoftWindows/Power Mac setup was slower than the DOS Compatibility Card/Quadra 610 system, which closely matched the speed of the 486SX/25 PC for most tests. A 486SX/25 PC provides acceptable speed, but it's certainly not a power user's machine.

The one unusual result we saw for the SoftWindows setup was in the WinBench graphics test, which showed the SoftWindows system's color display to be faster for 8-bit color (256 colors) than for 4-bit color (16 colors) — the opposite behavior from the other tested systems; Insignia confirmed that it had optimized the product for 8-bit color.

Operations with the OrangePC card in the Quadra 650 were slightly slower than with the 486DX2/66-based Dell Optiplex PC, a fairly typical power user's PC. You might expect the OrangePC-based system to be faster, since the version of the card we tested contained a 486DX4/100 chip — a faster one than a 486DX2/66. I suspect that the OrangePC-based system wasn't as fast as a real PC with a 486DX4/100 chip because the former uses VGA on top of the Mac's video system. In fact, PC Bench showed significantly lower video scores for both the OrangePC-card and the DOS Compatibility Card setups than for the SoftWindows one or the real PCs. PC Bench also reported a lower processor score for the OrangePC setup, possibly due to the limits of NuBus. Apple's DOS Compatibility Card fits in the Quadra 610's PDS, which usually allows faster data transfer than NuBus.

What Wouldn't Work

The compatibility issues with SoftWindows haven't changed since last May — it still has no 386 Extended Mode, which means you can't install or run the newer versions of some Windows software, such as the most recent Quattro Pro, on a Power Mac running SoftWindows. (Check with the vendors of software you want to use to see if their applications require 386 Extended Mode.) An upgrade to SoftWindows planned for later

figure 2

A Win-Win Situation / Windows-on-Mac systems perform well against real PCs

We employed two actual PCs — a 486SX/25 Compaq DeskPro and a 486DX2/66 Dell Optiplex — to provide us with reference points for comparing the three Windows-on-Macintosh products that we tested. Our tests included some standard PC benchmark tests and timings of file-management as well as application-based tasks. Overall, the hardware-based options — the OrangePC card and the

MacUser ZD LABS

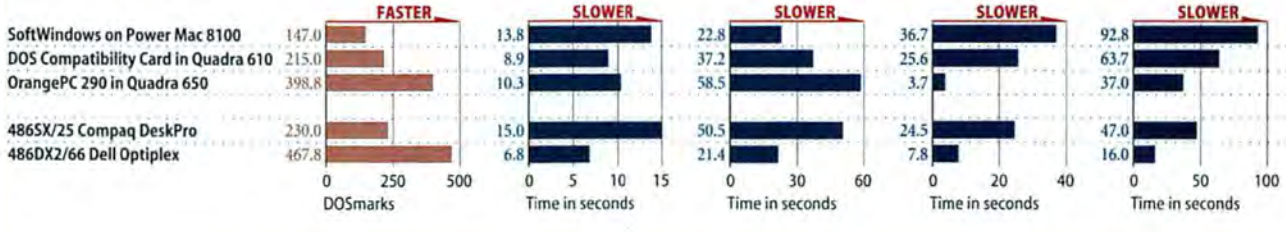
PC Bench 8.0
A compilation of synthetic tests that measure performance of the video, hard-disk, and processor subsystems under DOS.

Windows Launch from DOS
The time Windows takes to launch after WIN is typed at the DOS prompt (averaged for 4- and 8-bit displays).

DOS Copy
The time it takes for a 15-MB file to be copied by means of the DOS Copy command (4-bit display only; 8-bit is not relevant).

Ami Pro Find-and-Replace
The time it takes to change every instance of *the* to *teh* in 250 pages (averaged for 4- and 8-bit displays).

Excel for Windows Macro
The time a macro takes to recalculate and sort data in a spreadsheet (averaged for 4- and 8-bit displays).



this year should remedy this problem.

Software compatibility isn't a problem with the 486 cards, but we did run into some technical difficulties with the OrangePC card we tested, which was one of the first DX4 cards Orange Micro shipped. A voltage-regulator chip used on the DX4 card (but not on other versions of the card) caused frequent crashes. Orange Micro replaced the troublemaking chip with one that didn't cause a problem.

The Whether Report

Whether to buy one of these products over the others is a less tricky question than whether to wait for future developments.

Overall, in our tests of the current offerings, the hardware-based options won the speed contests. To approximate the computing power and connections of a higher-end PC, installing an OrangePC card in your Mac is the way to go.

For those whose speed and PC-connectivity needs are less rigorous, the DOS Compatibility Card is a good deal. It lets you run Windows applications on a Macintosh slightly faster than SoftWindows does, and it doesn't have any compatibility problems. The biggest problem is that you may not be able to find a DOS Compatibility Card to buy — and that it fits only in the Quadra 610, which is also being discontinued.

Why did Apple create this situation? The company now claims that it always intended the DOS Compatibility Card to be a limited-quantity product, although it doesn't say why and it certainly didn't go out of its way to publicize this limited availability when it introduced the card (I haven't found any material from Apple that mentions the limitation in writing). Abandoning the product after making it available only for a single Mac model smacks of a failed marketing experiment, as with the MacTV, although Apple denies this is the case. Perhaps the card was discontinued because Apple wasn't making enough profit on it or because its low price meant that it competed with SoftWindows, with whose maker Apple has a strategic partnership.

Should you wait for Apple's next 486 card for 680x0 Macs? Predicting when or if such a product will arrive is a gamble. If it does, I doubt that we'll see the bargain-basement $399 price tag again.

Meanwhile, Insignia won't be sitting on its hands while Apple decides how best to provide Windows capability on 680x0 Macs. In addition to incorporating 386 Enhanced Mode, to eliminate incompatibilities, Insignia is working on speed improvements. The company may also be working on a "SoftChicago," an emulated version of Microsoft's next-generation Windows 4, scheduled to ship in the middle of next year. As for a "SoftNT," don't expect to see such a thing unless the demand for Windows NT itself increases.

On the hardware side, the big question is, Can Orange Micro put a Pentium on an OrangePC card? Not the current Pentium, which by itself exceeds the NuBus power limits of many Macs. Intel will be producing a less power-hungry Pentium, but having one in a Mac is probably a year off. NuBus may also be too slow for a Pentium, but a PCI (Peripheral Component Interconnect) bus in next year's Power Macs could provide a possibility.

Will anyone else enter the Windows-on-Mac market in the near future? Despite rumors of such developments at press time, I don't think so. As Yogi Berra said about another market, "Nobody goes there — it's too crowded."

MacUser technical editor John Rizzo is the author of *MacUser Guide to Connectivity* and *How Macs Work* (Ziff-Davis Press).

DOS Compatibility Card — won the speed tests, with the OrangePC card approaching the speed of the higher-end PC system.

Lotus 1-2-3 for DOS Macro
The time it takes for a macro to recalculate and sort data in a spreadsheet (4-bit display only).

Access Search
The time it takes to conduct a Boolean search on a database that includes three fields (averaged for 4- and 8-bit displays).

MacUser

COMING SOON:

NOV

MONITORING MONITORS

Monitors are the subject, and how to buy them is the topic. MacUser explores monitors of all sizes, covering all the new technology and updated features. Our exclusive User Profile helps buyers match features and prices to their needs. Plus, surprising subscriber poll results. Find out which monitors buyers prefer in the magazine buyers prefer: MacUser.

SCANNING SCANNERS

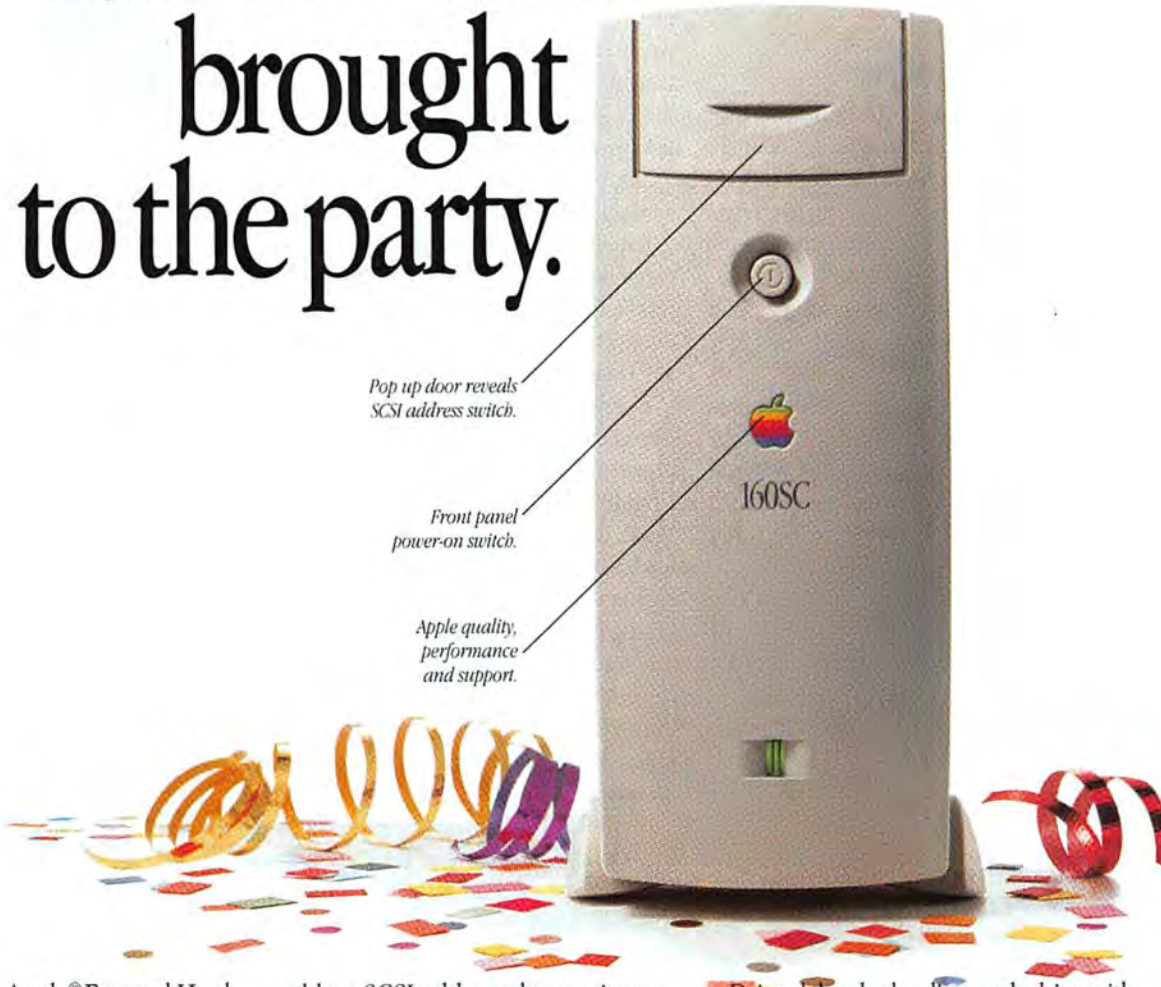
This November, the MacUser professionals scrutinize 11 high-end professional color scanners. Representing the three leading technologies — flat-bed, slide, and baby drum — each scanner is ZD Labs tested for color quality. Business buyers depend on MacUser to thoroughly scan the scanner market.

PHOTOSHOP FOR POWER

The MacUser Labs tests PhotoShop under a series of high-end situations on the PowerMac, Quadra and cross-platform situations. This Labs solution article suggests insightful ways to enhance PhotoShop regardless of your platform. All in the magazine fort serious buyers.

NOVEMBER AD CLOSE:
TUESDAY,
AUGUST 23RD, 1994

Before you consider a third party external drive, look at what we've brought to the party.



Introducing Apple® External Hard Drives. Now you can add reliable external storage to your Mac with all the quality you expect from Apple, at prices that will surprise you.

Apple External Hard Drives are bundled with everything you need to begin safely storing your data right away, including a power cable, a SCSI cable, and a terminator. Convenient front-panel SCSI ID and power controls make it easy to power up and change your SCSI address – whether you set the drive up vertically or horizontally.

The new Apple drives are available in four convenient storage capacities, 160Mb, 230Mb, 500Mb and 1000Mb, and are manufactured exclusively by La Cie, Ltd. a Quantum Company. And right now we're celebrating the Apple Drive debut by loading each drive with powerful hard disk management software, handy utilities and much more.

Look for the Apple Drive at your local dealer soon. For more information and the name of a participating reseller or Quantum distributor, call La Cie.

Now you can safely store your work outside your Mac without leaving the Apple family.

That's cause for celebration. Apple

For All The Facts Call: LACIE LIMITED A QUANTUM COMPANY 800-999-0499

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CIRCLE 41 ON READER SERVICE CARD

HANDS ON Mobile Office

STORAGE /

PORTABLE PCMCIA FOR MACS

THE PROMISE OF PORTABILITY offered by PCMCIA technology — credit-card-sized storage, modems, and memory — became a reality sooner for PCs than for Macs. True, Apple is providing a PCMCIA option for the PowerBook 500 series, but if you want PCMCIA now and a PowerBook 500 isn't in your budget, take a look at the PowerCard ($495), a portable PCMCIA reader/writer from Software Architects (206-487-0122).

As diminutive as a desktop modem and weighing only 1.5 pounds (power supply included), the PowerCard hooks to your Mac via a SCSI connection and functions with many PC-compatible PCMCIA cards. Its software allows you to use Type I, II, and III SRAM; flash-RAM; and hard-disk cards. At press time, Software Architects was negotiating with modem vendors about developing drivers for modem cards.

For fast data transfer, the PowerCard uses a SCSI-2 connection and works with SCSI Manager 4.3, which is Power Mac-compatible. And to simplify Mac-to-PC file transfer, the PowerCard lets you create partitions for Mac as well as DOS data on your PCMCIA cards — but you have to supply your own DOS-translation software. / Nancy Peterson

BATTERIES /

Add-on Power for 500s

FOR SOME POWER-HUNGRY users of the PowerBook 500 series, even two internal batteries are not enough. Such users will appreciate Battery Technology's SlimPack500 ($299.95), the first external battery pack for the 500s. Battery Technology (213-728-7874) promises as much as nine hours of power on a single charge from the 2.5-pound SlimPack500, which measures 11 x 6.5 x 5 inches and attaches to a PowerBook with an included mounting kit.

The SlimPack500 can't communicate with the PowerBook 500's internal battery-management circuitry, but it can share charge-capacity information with you via a five-LED indicator. / Jim Shatz-Akin

500-SERIES MEMORY /

Stick to Slim SIMMs on RAM Cards

IF YOU'RE BUYING MEMORY for your 500-series PowerBook, be cautious. At press time, we were receiving reports about users buying SIMMs that caused problems in their PowerBook 500s because the SIMMs didn't fully meet Apple's specs. Here's what to look out for:

Although the general specs on 500-series memory are similar to those for other PowerBooks, the component-height specification is not. Because space inside the 500-series PowerBooks is at a premium, Apple has specified that chips on either side of the 500-series RAM cards must not rise more than 1.5 millimeters from the board. RAM-expansion cards exceeding this specification can interfere with internal modems or cause the PowerBook keyboard to bow upward.

Confusion arises because two SIMM-chip designs are used for Mac memory cards — SOJ (small-outline J-lead) chips, which are 3.66 millimeters high, and the more expensive TSOP (thin small-outline package) chips, which are 1.20 millimeters high. Some RAM-expansion cards have both types of chips on a single card. The only way to ensure that your RAM card meets Apple specs for PowerBook 500s is to make sure it uses only TSOP chips. / JSA

New for the Newton

APPLE'S PERT PDA continues to evolve into a useful tool. With version 2.0 of the Newton Connection Kit ($99 from Newton dealers; upgrade free), Newtons can share information with more Mac or PC applications than ever. Apple's StarCore software-publishing group (800-708-7827 or 408-966-1010) also offers some new Newton software. The Newton Solution ($199) consists of a 2-MB flash-RAM card available in three versions: the Professional Idea Manager, the Executive Productivity Manager, and the Mobile Sales Manager. Each version has two applications intended to meet the needs of the targeted user, plus Notion (a comprehensive list manager) and Jigsaw Strategy Game. Another new business-oriented StarCore offering for the Newton is TapWorks ($119), which integrates four modes: text processing, spreadsheet, drawing, and graphing. New leisure-oriented StarCore titles include Zagat Guide to Top U.S. Hotels & Restaurants ($99.95), Maltin Film Guide ($69.95), Hugh Johnson Wine Guide ($119.95), and DietLog ($119). / NP

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OmniPage Professional sets the standard in OCR. Offering more accuracy, more power, and more flexibility than ever before.

In fact, it offers the most advanced OCR technologies in the industry—technologies that Caere has pioneered.

Only Professional helps you spend more time using scanned information instead of correcting it. Its breakthrough 3D OCR™ feature recognizes grayscale information during document scanning to greatly improve recognition of poor quality documents.

That's not all. Professional recognizes a broader range of documents, reading the most difficult characters and symbols with ease. A feat made possible thanks to its exclusive Language Analyst,™ neural network and fax recognition capabilities.

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Accelerated for Power Macintosh

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For superior performance, it's your best shot.

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PowerBook Tips

From cleaning your PowerBook's trackball to keeping your phone bills low, readers share their tips for ultimate PowerBook use. COMPILED BY JOSEPH O. HOLMES

Cheaper Faxing

To save money when you're sending faxes long-distance, eliminate the cover sheet and incorporate the information into a 1- or 2-inch header on your fax documents. If that's not possible, use as simple a cover sheet as possible. Any type or graphics takes extra time to send. My company sends hundreds of faxes a day throughout Europe and to the U.S., and by eliminating cover sheets, we have saved more than $6,000 a year on our phone bill.

Nathan Keith
Waldbrunn, Germany

More-Visible Ports

Annoyed that the markings for your PowerBook's rear-panel connectors are gray-on-gray, tiny, and hard to read? Add some contrast by filling in the molded markings with white. Rub a white crayon gently across the labels to fill them, and then use a paper towel to rub off the excess. (A little isopropyl alcohol on the towel helps.)

Andy Baird
Hightstown, NJ

AutoRemounter

Apple's AutoRemounter 1.0, a System 7.1 control panel that automatically remounts PowerBooks onto a network, did not work with the PowerBook 140 or PowerBook 170. Good news: The newest version, 1.2, *does* work on all PowerBooks. It's part of the System Software Update 2.0.1, which is available as SYSUPD.SIT in Library 14 (Apple Software) of ZiffNet/Mac's Download & Support Forum.

Joanne Bonnano
Wycoff, NJ

CompuServe on the Road

To find a local CompuServe number anywhere in the U.S., use a telecom application to have your modem call 800-346-3247. At the prompt, press Return and type Phones as your user name. This method gives you only two numbers for any selected connect speed, but if you want more, just sign on again — there's no need to hang up and call back. If you use CompuServe Navigator, save the numbers in its phone listing for use the next time you're in the same town.

Bob Spargo
Boca Raton, FL

Floppyless Installations

Here are two methods for installing software onto any PowerBook that lacks a floppy drive. Both methods require access to a second Mac and work only with software that uses the Apple Installer, such as Microsoft Word 5.x and QuicKeys 3.x.

Networking method. Copy your master floppy disks onto the root level of the hard disk of a Mac that will be networked with your PowerBook. Now make a network connection between your PowerBook and that Mac and, from your PowerBook, access the desktop Mac's hard disk via file sharing and launch the Installer application. From here, the installation should proceed normally. (Don't install system software via this method. Doing so may crash the PowerBook and corrupt the existing system software.)

SCSI method. If you have an external hard drive, connect it to a desktop Mac and use Apple's Disk Copy to save disk images of the floppy disks. (FastCopy, part of Central Point Software's MacTools Deluxe 3.0, can perform the same function as Disk Copy.) Then connect the external drive to your PowerBook, use the freeware MountImage control panel to mount each virtual floppy, and proceed with the installation. Duos require a SCSI adapter such as an Apple MiniDock or a SCSI dock from Lapis or Newer Technology.

Disk Copy is available from ZMac's Download & Support Forum, in Library 14 (Apple Software), under the name DICOPY.SIT; MountImage is in Library 3 (Extensions), as MOUNTI.CPT.

Jeff R. Harmon
Toonerville, WA

[There are conflicting reports on whether these system-installation methods work. Several readers have told us they work fine, but proceed with caution. — Ed.]

TIP OF THE MONTH

Trackball Cleaning Pen

Cleaning pens marketed for cleaning CDs or laser printers (such as the LaserKleen pen, from Paper Direct) are great for cleaning the trackball mechanism inside a PowerBook. They have a firm, angled, lint-free tip and are filled with isopropyl alcohol. The pens, about the size of a Magic Marker, are more expensive than a cotton swab and rubbing alcohol but are much more convenient for traveling.

Kay Hall
Cocoa Beach, FL

Write to PowerBook Tips

c/o *MacUser*
950 Tower Lane
18th Floor
Foster City, CA 94404

You can also send your tip to Joseph Holmes (72241,731) on ZiffNet/Mac, *MacUser*'s on-line service (include a daytime phone number). We pay $25 for every undocumented tip we print, and the Tip of the Month earns $100; see page 4 for more details.

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PowerBook SCSI Wizardry

Voodoo. Witchcraft. Black art. When SCSI setups work — especially SCSI setups involving PowerBooks — it's usually attributed to luck. Here's how to get lucky. BY SHARON ZARDETTO AKER

WAY BACK WHEN SCSI ports were introduced, with the Macintosh Plus, there was an unsuccessful movement to pronounce the acronym with a vowel sound between the *S* and the *C* instead of between the *C* and the *S* — *sexy* instead of *scuzzy* — just to be different from the PC world. Well, the art of SCSI connections and termination may not be sexy, but it can be dark and dangerous — especially when you're not up on the PowerBook's particular SCSI concerns: special cables and connectors; slightly unusual termination approaches; and most models' ability to become a SCSI device in themselves when connected to another Macintosh, for fast file transfers and other such operations.

Cable Cabalas

The cramped I/O panel on the back of the PowerBook called for a new kind of SCSI connector: the HDI-30. HDI stands for high-density interface, and 30 is the number of spaces for pins. But that doesn't mean a cable needs 30 pins to fit — in fact, the basic SCSI connection uses only 29 pins. You may even see cables and adapters described as HDI-29 connectors; they'll fit perfectly with your HDI-30 port.

Apple provides two basic SCSI cables for PowerBooks — cables that are similar enough in name and appearance to cause some confusion. The Apple HDI-30 SCSI System Cable is designed for connecting external SCSI devices to the PowerBook. It's platinum-colored and has a 29-pin HDI connector at one end and a 50-pin male connector at the other. The other cable, the Apple HDI-30 SCSI Disk Adapter, is meant for using the PowerBook's internal hard-disk drive as a SCSI drive for another Macintosh. It's shorter and dark gray, with a 50-pin female connector at one end and a full complement of 30 pins in the HDI-30 connector (the 30th pin puts the PowerBook into SCSI Disk mode).

figure 1 / **The PowerBook's special HDI-30** SCSI connector requires a special SCSI cable. The platinum-colored Apple HDI-30 System Cable is for attaching an external SCSI device to your PowerBook. The shorter, dark-gray Apple HDI-30 SCSI Disk Adapter is for using the PowerBook as a SCSI drive. If you don't want to mess with special cables, get an adapter such as the APS SCSI Boy or SCSI Doc, each of which can provide the PowerBook with a standard, desktop-Mac SCSI connector that attaches to a standard SCSI system cable. Both APS adapters let you connect the PowerBook to SCSI devices; the SCSI Doc also lets you use the PowerBook as a SCSI device.

Using either SCSI cable with a PowerBook Duo is more complicated, since Duos don't provide a SCSI connection. If the Duo in question isn't in a Duo Dock, you need an attachment that contains an HDI SCSI connector. There's one in Apple's MiniDock, and most third-party attachments include the SCSI port. But if SCSI is all you need, check out a SCSI-only dock, such as Newer Technology's $139 SCSI MicroDock (800-678-3726 or 316-685-4904).

POWERBOOK SECRETS / *when you blow a fuse*

IT'S A CONFOUNDING SITUATION: Your PowerBook runs on AC power but won't run from the internal battery, even if it's fully charged. And you can't charge the battery while it's in the PowerBook.

A blown motherboard fuse is the likely culprit. The most common cause is a defective AC adapter, but an errant paper clip shorting the AC terminal can also blow the fuse. For those who can't get this problem fixed under warranty, many dealers will cure the situation with a $400 motherboard — for a fuse that costs about $1. But if you've fiddled with electronics and can handle a soldering iron, you can probably fix it yourself. You'll need to disassemble the PowerBook and remove the motherboard to make the repair.

On the PowerBook 100, the fuse is mounted on the upper side of the motherboard, near where the battery connects; it's labeled F1 5A in gigantic letters. On PowerBooks in the 140-to-180c range, the fuse is surface-mounted, colored white, and labeled 5A 125V.

Unfortunately, direct-replacement fuses can be hard to find. You can try calling Digi-Key (800-344-4539 or 218-681-6674) to get one. Or you can opt for a clever substitution: Since there's a substantial amount of room where this fuse is affixed, just whip out your soldering iron and mount a fuse holder for a standard 5-amp 5-x-20-millimeter minifuse. You'll need to use two clips, one to hold each end of the fuse. There's still plenty of clearance after insertion of the standard fuse — and this setup allows for easy replacement if you're unlucky enough to need to do it again. / Richard Wolfson

Attaching SCSI Devices

To connect a SCSI device — an external disk drive, for example, or a scanner — to a PowerBook, you need an HDI-30 system cable. The HDI connector plugs in to the PowerBook; the other end is a 50-pin male connector that fits the back of most external SCSI devices. Or you might instead consider the $19 SCSI Boy adapter, from APS Technologies (800-846-9948 or 816-483-6100), a 3-inch adapter with an HDI-30 connector at one end and a 25-pin female connector at the other. Plug it in to the PowerBook, and you wind up with the equivalent of a normal back-of-the-Mac 25-pin female SCSI connector that accommodates a standard SCSI system cable. Since most hard drives come with such a cable, you won't have to buy anything else — and if you usually carry an HDI-30 system cable around "just in case," you'll find the SCSI Boy much easier to pack.

If you have a 25-pin connector at the back of the external device, however, things are not so simple. The HDI-30 cable ends in a 50-pin male connector, and a 25-to-50-pin SCSI cable has a male connector at each end. Once again, the SCSI Boy provides a good solution, along with a standard 25-to-25-pin SCSI cable. Or you can use a 50-to-50-pin gender changer to connect the male ends of the HDI cable and the 25-to-50-pin SCSI cable.

PowerBooks as SCSI Drives

Most PowerBooks (all but the PowerBook 140, 145B, and 170) are capable of working in SCSI Disk mode — that is, they're capable of connecting to another Macintosh as an external hard drive.

Before we get to the *how*, here's a brief mention of the *whys*. After all, it's a cinch to connect the PowerBook to your desktop Mac and use file sharing to send things back and forth. But a SCSI connection provides significantly faster data transfer than an AppleTalk connection. Also, you can work directly on a document that's stored on the PowerBook's hard disk, without copying it to the desktop Mac's hard disk. You can even run an application from the PowerBook's hard disk (try *that* across AppleTalk!) or install software on it, using the desktop Mac's floppy drive.

In order to set up the PowerBook's hard drive as a SCSI drive, plug the 30-pin end of Apple's HDI-30 SCSI Disk Adapter in to your PowerBook's HDI port; the other end is a 50-pin female connector like those on most SCSI devices, so you can connect it to the desktop Macintosh with a standard 50-to-25-pin SCSI system cable. Or you can use the $39 APS SCSI Doc, a 3-inch adapter that plugs in to the PowerBook's HDI port and provides a 25-pin female connector, enabling you to connect the PowerBook to your desktop Mac as you would a SCSI device with a 25-pin connector, using a 25-to-25-pin SCSI cable. The SCSI Doc may sound like the SCSI Boy, but there's a significant difference. The SCSI Doc does more than just provide a standard SCSI connection; flip a switch, and its 30th pin (well, it's actually pin 1) is activated so that the SCSI Doc serves as a SCSI-drive adapter.

PLUG A SCSI BOY IN to the PowerBook, and you get the equivalent of a normal back-of-the-Mac 25-pin female SCSI connector that accommodates a standard SCSI system cable. Since most hard drives come with such a cable, you won't have to buy anything else.

But before you plug in the cables, you have to check one more thing. The PowerBook's drive defaults to a SCSI ID of 1. If you have another SCSI device with that ID number attached to the desktop Mac, you have to change one of the IDs (use the PowerBook control panel to set the SCSI ID number of the PowerBook's drive). With the ID set, shut down both the PowerBook and the desktop Mac before attaching any cables. Once you've attached the cables, start the PowerBook first and then the desktop Mac. Remember: When in SCSI Disk mode, the PowerBook drive and screen never sleep, so don't expect to run in SCSI Disk mode too long if you're using battery power.

Termination Frustration

Did anybody notice I haven't mentioned termination yet? That's because it's one of the most hex-prone aspects of this whole scuzzy business. As with desktop Macs, there are termination guidelines but no hard-and-fast rules. If you're connecting an external device to a PowerBook, the guidelines are generally the same as for a desktop Macintosh: Terminate the last device in the chain, since the internal drive is terminated. But Apple recommends that you also add termination before the first device in the chain for optimum performance. Therefore, even a simple chain consists of the PowerBook, an HDI-30 SCSI system cable, a pass-through terminator, the external device, and that device's terminator.

If you're connecting one of Apple's SCSI printers, particularly a Personal LaserWriter SC or a LaserWriter II, be aware that the SCSI connection for these printers can be problematic — apparently a fuse in the printer interferes with the termination power that should be supplied to the chain. There is a fix available, so check with an Apple tech-support person.

When the PowerBook is being used as an external drive, it has to be the last device in the chain. Once you have a SCSI cable going in to it, there's no place for one coming out. Also, the PowerBook's drive is internally terminated and so provides the end-of-chain termination. PowerBooks supply no termination *power* to the chain, but this isn't an issue unless you're connecting one to a Mac Plus, which also doesn't supply termination power, meaning that connections can be flaky. A Duo's MiniDock, though, does supply termination power, so it should hook up to a Plus with no problem.

One More Gizmo

I'll end by recommending one more gadget from the APS folks. The SCSI Sentry checks and regulates the SCSI signal on a chain and can even provide termination power if needed (for a Mac Plus/PowerBook setup, for instance). At only twice the size of a terminator, it's another easy-to-pack, just-in-case item. In fact, it's almost as indispensable as the one item no traveling practitioner of SCSI voodoo should be without: a wax PowerBook (and 29 pins, of course).

Sharon Zardetto Aker has temporarily abandoned her PowerBook to work on the layout of her new book, *The Mac Almanac*, which will be coming from Ziff-Davis Press any day now. Rich Wolfson is about ready to give up his PowerBook 100 and go for a Duo.

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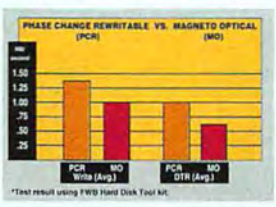

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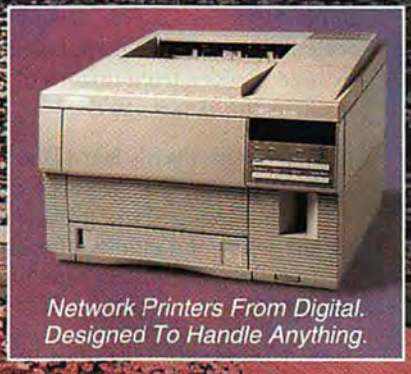

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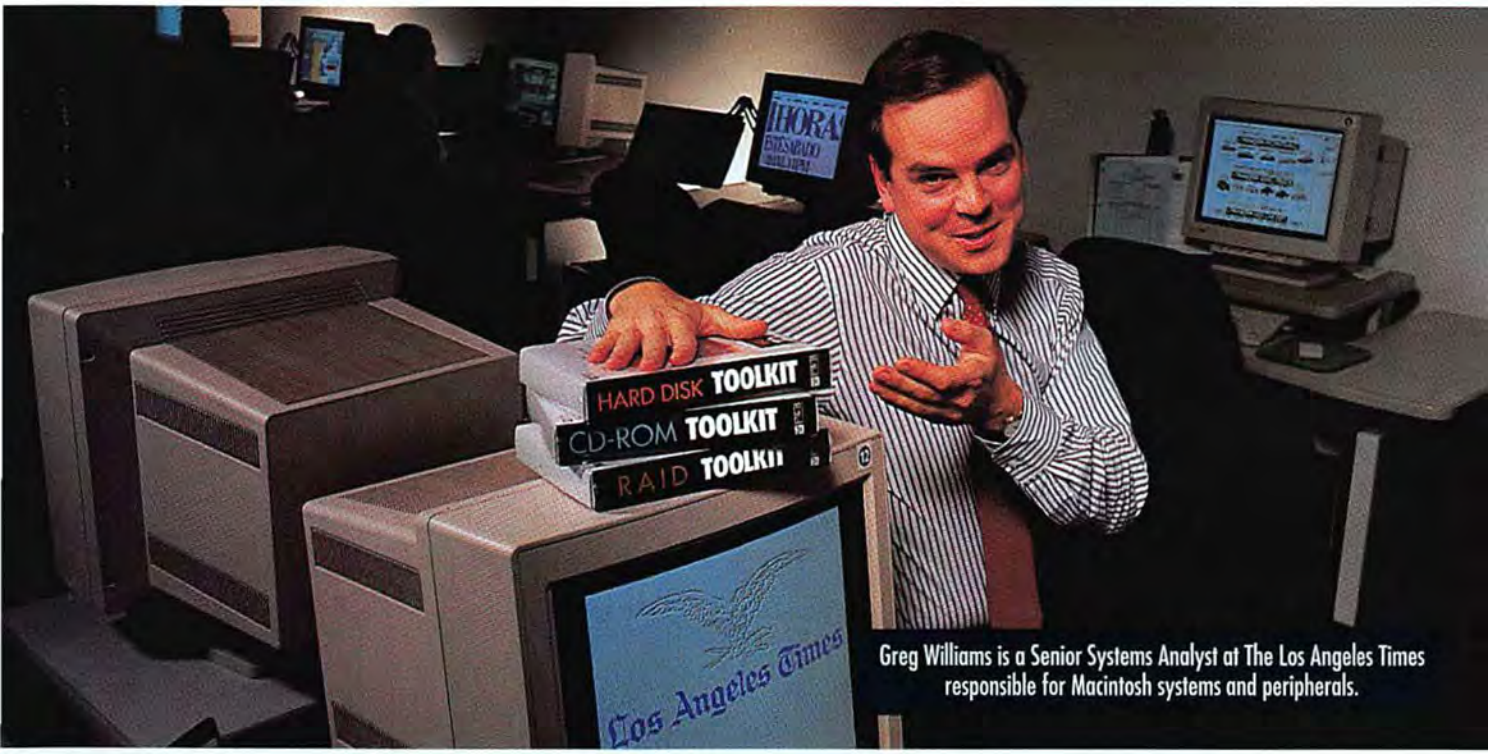

Greg Williams is a Senior Systems Analyst at The Los Angeles Times responsible for Macintosh systems and peripherals.

Open FWB's ToolKit.

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Hard Disk ToolKit
— MacUser Magazine

It's a jungle out there, particularly at the deadline-driven L.A. Times. That's why they chose FWB's ToolKit family of Disk Management Software. According to Senior Systems Analyst, Greg Williams, who manages that jungle: "It was a critical decision. We have hundreds of Macs of every kind, and hundreds of storage devices from dozens of manufacturers. They must all deliver 'round the clock, or the Times can't."

It started with FWB's Hard Disk ToolKit. Says Greg: "It has the three things we need every day. One, assured compatibility in a chaotic world of storage brands and technologies. Two, powerful tools that guarantee top drive performance and provide easy and efficient control over those drives. And three, compatibility with Apple's new Power Macintosh, because ToolKit software is fully SCSI Manager 4.3 compliant."

Greg also uses RAID ToolKit to convert his existing drives into high-speed disk arrays on a number of Quadra 950s, taking advantage of RAID 0 data striping and RAID 1 mirroring capabilities. And he just installed CD-ROM ToolKit to increase power and performance for the Times' CD-ROM drives.

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PHOTOGRAPHY / LEON

Painless Laser Printing

DON'T LET PRINTING PROBLEMS perplex you. This guide can tell you what's wrong and how to fix it.

BY ROMAN VICTOR LOYOLA AND NANCY PETERSON

Believe it or not, many laser-printer problems aren't hard to handle. In most cases, all it takes is a little software adjustment, or cleaning or replacing a printer part (inkjet-printer problems are even easier to fix — see the "My Handsome Prints" sidebar). The key is to match the symptoms of the problem with the appropriate solution, starting with the most frustrating symptom of all.

The Unresponsive Printer

If your printer just sits there like a lump after you've sent it a Print command and you've checked for the most obvious causes — a loose connector, a wrong printer selection in the Chooser, a door ajar on the printer — and you've even tried resetting the printer (with the Reset button or by turning it off and on), look for more-obscure causes. If you print a file in an emulation language — an emulated version of HP's PCL, say — check on the control panel on the printer to see if your printer supports that emulation. If it does, you may need to switch to that emulation manually, by selecting it on the control panel (be sure to switch back to the printer's usual mode after you've printed).

Interminable Hang-ups

If a "preparing data" or "processing job" message stays on-screen forever, meaning your printer hasn't received the Print command from your Macintosh, you may have a software bug or a damaged file. The most likely culprits in each case are the printer driver, the print spooler, and the application you're printing from. Try reinstalling each of these programs from the original disks to replace possibly damaged files. If the problem is a bug, you'll have to wait for an update from the software vendor.

Complex pages that contain complicated graphics or numerous fonts may also confound your Mac, so that it can't successfully send a Print command. Try simplifying your document or printing just one page at a time. If you're using many nonresident fonts, select Unlimited Downloadable Fonts in a Document in the Options window of the Page Setup dialog box.

The Missing Printer

If you get messages saying your Mac can't find the printer, make sure AppleTalk is active in the Chooser. Next, make sure you have the right version of the printer driver for the system software you're using. For instance, a System 7.x printer driver probably won't work if you're running System 6. If you're running System 7, make sure your printer driver is up-to-date.

Fonts You Don't Want

If an unexpected font shows up on the page, your printer driver was probably unable to find the right outline-font files. All you have to do is move those files into the correct folder in your System Folder. Which folder is correct depends on the system-software version. With System 7.1, store outline- and bit-mapped-font files in your Fonts folder. With System 7.0, store outline fonts in the Extensions folder and bit-mapped fonts in the System file. In the event that you need to use printer-driver versions earlier than 7.1.2 with System 7.1, store outline-font files in the Fonts folder and put aliases of them into the Extensions folder.

Jaggy Type

If type doesn't look smooth and you're using ATM (Adobe Type Manager), make sure the ATM control panel is turned on. Then, make sure you have both parts of ATM installed: the control panel and the ATM 68020/030/040 file, which sits at the top level of the System Folder.

If that's not the problem or if you aren't using ATM, you're probably getting jaggy type because your driver can't find the PostScript-outline-font file for the font you are using. Make sure that file is in your System Folder. Turn on Font Substitution in the Page Setup dialog box so that the driver won't use a screen version of the font the next time it can't find the right outline-font file.

Fuzziness and Fade-outs

If text and large areas of black are light or splotchy but you're not out of toner — and you've already tried shaking the toner cartridge to stir up settled toner — try turning up the print density. Some printers have knobs for adjusting print density; others use physical control panels or software utilities.

If that doesn't work, try cleaning the corona wire, usually located under the drum or the toner cartridge. Some printers have special tools for cleaning this wire; a cotton swab moistened with isopropyl alcohol works fine as well.

Fade-outs can also occur if you've recently replaced the printer drum. The drum requires a few rotations before it can evenly distribute the electrical charge from the printer. To help it along, print 10 to 20 completely black pages.

If all these techniques fail, try replacing the printer drum or the toner cartridge.

figure 1 / **Dried toner** on your printer's corona wire blocks portions of an image from printing. To clean the wire, use the printer's cleaning tool — or a cotton swab and isopropyl alcohol.

figure 2 / **Replacing the fuser wand,** usually located on top of a printer's fuser rollers, can solve the problem of unwanted dots, stains, and lines on the printed page.

Unwanted Vertical Lines

If your pages have extra lines running vertically down the page, it may mean that the fuser wand has accumulated dried toner. Consult your printer's documentation to find out how to replace the wand.

If the fuser wand isn't the problem, you'll have to spend a bit more money to replace the toner cartridge, which may contain a scratched drum. The next step is to have a repair shop replace the fusion rollers if they're scratched.

Unsightly Stains and Dots

If your pages are marred by embarrassing stains and dots, the culprit may be the same as with the vertical-line problem: a dirty fuser wand that needs replacing. It's also possible the drum isn't being properly cleared by the eraser lamp, leaving a tiny electrical charge. To remedy this, you can replace the cartridge if it contains the drum, but first try touching the metal contacts of the cartridge to a grounding wire.

Paper Jammin'

You can solve most paper-jam problems without spending a dime. Always check for the following likely causes: a door on the printer that's not shut tight, a too-full paper cassette, improper paper loading (so that the corners of the paper sheets aren't under a metal clip in the paper tray), or a damaged sheet of paper. If the paper is getting damaged, make sure you're storing it in a dry area so that the pages don't curl. You can additionally experiment by using paper that's less coarse or less shiny (but be sure that the paper's weight meets your printer vendor's recommendations).

Postscript

Even if these techniques don't solve every one of your printer problems, mastering them is sure to make your life easier. Plus, there's a great side benefit: You will have garnered a new reputation as printer wiz extraordinaire.

Roman Victor Loyola is a MacUser Labs project leader, and Nancy Peterson is a *MacUser* associate editor.

My Handsome Prints / *inkjet-printer tips*

WHEN YOU'RE TRYING to figure out why your inkjet printer is messing up, follow some sage French advice (slightly fractured here): *cherchez le papier*. You'd be surprised how many inkjet-printing problems — glitches such as ink bleeding, paper curling or warping, paper jams, feeding of multiple sheets simultaneously (or no sheets at all) — result just from the use of laser paper or other nonoptimal stock. You can fix all these problems by switching to a specialty paper. The kind to use depends on the type of problem you're having and on the output quality you want.

If your inkjet printer won't feed paper correctly, try a different weight of paper. If the paper warps or the ink bleeds, try thicker or coated paper. Coated paper minimizes bleeding and also makes inkjet printing look sharp and vibrant. Many printer vendors, such as Apple Computer (800-776-2333 or 408-996-1010), Hewlett-Packard (800-752-0900 or 208-323-2551), and Canon Computer Systems (800-848-4123 or 714-438-3000), and paper vendors, such as Paper Direct (800-272-7377 or 201-507-5488), sell coated paper for around 10 cents per sheet.

But if you need really high-quality output, check out the new inkjet-printer medium from Apple and Canon: Back Print film. It works only with specific printers, but if yours is one, you can get the very best inkjet-printer output. As the name suggests, the printer prints to the back of the paper — you reverse the printed image through software. The front of the paper is waterproof, so it's not subject to warping or ink bleeding. Back Print film should be available now, but you have to pay for such high quality — around $1 to $2 per page. / Nancy Peterson

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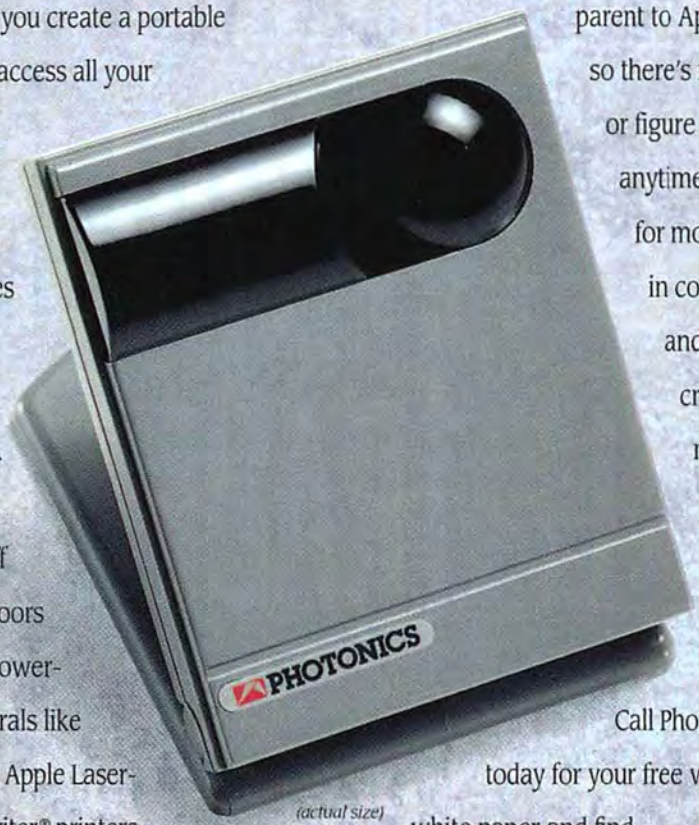

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Help Folder

Stop software piracy on networks, settle font disputes, and give Microsoft Word a feature it should have had all along. BY ANDY IHNATKO AND BOB LEVITUS / TIPS COMPILED BY CHRISTOPHER BREEN

Key to Secure Networks

Q. How can I let people access applications on Macs in a computer lab without letting them copy the applications onto a floppy disk or external drive?

Owen Legare
via CompuServe

ANDY: It's next to impossible to prevent people from copying applications, if they're so inclined. But there *is* a way to disable pirated applications.

KeyServer ($30 to $55 per user), from Sassafras Software (603-643-3351), does just that and, in my opinion, is the best network-security software around. It won't let applications launch until they fetch a "key" from the network Mac on which KeyServer resides, so once you've assigned keys to your applications with KeyServer, no one will be able to open them unless they are installed on Macs in your lab network. (KeyServer does let you create a temporary "portable key" so someone can load an application on a PowerBook for a road trip.)

You can also control how many copies of an application can run at one time on a network — useful if your site license limits the number of users for an application.

BOB: KeyServer sounds like a good, low-cost way to secure applications. But if you need a program that has more-extensive security features, try a higher-end product, such as ultraSHIELD, from usrEZ (714-756-5140). It will put an end to your software-piracy concerns by letting users access aliases to open an application but not allowing them inside the folder containing the real application icons. It's more expensive — $149 per computer, with discounts for multipacks — but it gives you a powerful set of security controls.

usrEZ also has a new product out (so new that we haven't tested it yet) for network administrators: ultraCOMMAND. ultraCOMMAND lets you administer security and handle general management tasks, such as software updates or backups, from one computer for all the computers in a network. Pricing depends on the number of Macs in your network.

Them's Fightin' Fonts

Q. My Type 1 and TrueType fonts with similar names seem to be conflicting. When they're both installed, the inch numbers on the ruler in Microsoft Word are twice as big as normal. When I remove the TrueType font, the problem goes away. How can I get rid of the conflict and keep all of my fonts?

Eric Wirth
New York, NY

BOB: It sounds as if the fonts with similar names are using the same internal font-ID number. All you have to do is renumber the fonts, using a font-management utility such as Suitcase, from Symantec (800-441-7234 or 408-253-9600), or MasterJuggler, from AlSoft (800-257-6381 or 713-353-4090).

You can also renumber fonts by using a font-manipulation program such as Fontographer, from Altsys (214-680-2060), or a font-conversion program such as FontMonger, from Ares (800-783-2737 or 415-578-9090).

Finally, you may want to use Apple's ResEdit to tackle renumbering fonts, but you'll need a good reference to guide you through the process. If you decide to go this route, I strongly suggest you work with backup copies of your fonts rather than with the originals.

Write to Help Folder/Tips

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Don't want to wait for an answer? Post your question on ZiffNet/Mac, *MacUser*'s on-line service, and get a reply from Bob (76004,2076) or Andy (72511,204). We pay $25 – $100 for any undocumented tips we publish. Send them to Christopher Breen (72241,1036).

TIPS / Utilities

STUFFIT SUBSTITUTE

You can use America Online 2.1 or the eWorld application instead of StuffIt to compress files. To do so, compose a piece of mail while off-line and click on Attach File. Find the file you want to compress, and click on Add. Check Compress Files, and then click on Attach. A dialog box will ask you where to save the compressed file. Select a folder, type a filename, and click on Save. Your file is now compressed. Close this worthless piece of mail, without saving it.

To decompress a StuffIt file, simply open it from within the America Online 2.1 or the eWorld application.

Chris Adamson
Lansing, MI

RAM-TRIPLER UPDATE

Matt Henderson sent in an update to his tripling-your-RAM tip, published in the "TIPS / Utilities" sidebar of the July '94 Help Folder (page 146). Alter the prefs resource of the RAM Doubler extension after you've installed it on your Mac, rather than altering this resource on the installer disk, which is impossible. — Ed.

ANDY: I'm not convinced that your problem is caused by font conflicts. It could be any number of minor-league system problems, or it could be a problem with Word.

Try reinstalling Word. If that doesn't fix the vexed ruler, reinstall your system software too. Pristine copies of Word and the system software may clear up the problem.

New Word Order

Q. How do I get Microsoft Word to include a total page count in the footer? I want the footer to read "Page XX of YY," but I don't want to have to change YY every time the page count changes.

Mary Fenestra
Rye, NY

ANDY: Shame on Microsoft for not including a page-count option in Word.

Allow me to offer a workaround until the company gets around to adding one. Place the cursor at the end of your document, and from the Glossary dialog box, select Page Number and click on the Insert button. Select the page number that appears at the end of your document; copy it; go to the Character dialog box; check Hidden, to hide the page number; and click on OK. Now open the header or footer, type `Page`, insert a space, click on the page-number icon in the upper left corner of the window, insert another space, type `of`, insert another space (see figure 1); and choose Paste Special from the Edit menu. In the Paste Special dialog box, choose Picture, and then click on the Paste Link button.

That ought to do it. Whenever you open the document, Word will fetch the page number of the last page from that hidden text and stick it into all the headers or footers.

If Page Count isn't a glossary item in the next release of Word, I'm going to Seattle to knock over all of Bill Gates' garbage cans.

BOB: The best time to use this trick is when you're all finished with your document, just before you print. If you add the hidden page number earlier and then make changes, you may end up with something wacky, such as "page 10 of 6," in your header or footer.

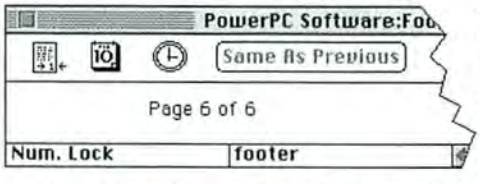

figure 1 / **Include a page count** in footers of Microsoft Word documents by using the Glossary and the Paste Special feature.

If you do run into that problem, you can correct it in a few ways. The easiest is to save changes and update the link — select the incorrect number in the header or footer and press Option-F3. Closing and reopening your document will also update the link.

However, if you've added text after the hidden number, you'll have to follow Andy's steps again. That hidden number must remain at the very end of the document for this technique to work.

Dress Up the Desktop

Q. I'm tired of the plain look of my desktop. Can I turn some of my great-looking color pictures into the desktop background?

Wilson Tam
Alhambra, CA

BOB: Sure. The Fun Pictures component of Now Fun, from Now Software (800-237-2078 or 503-274-2800), lets you do this (see figure 2).

ANDY: Or try the absolutely free BackSplash II, which has a list of features as long as your arm. The only way you can get it is from ZiffNet/Mac, which commissioned its creation. You can find BackSplash in Library 9 (ZMac Exclusives) of the Download & Support Forum, filename BACKSP.SIT.

The Quitting Game

Q. Sometimes when I use Command-Option-Escape to force the Finder to quit, it doesn't work. Am I doing something wrong?

Jeff Riel
Moscow, OH

BOB: Force quit works only some of the time — and when it does, it leaves your Mac in a fragile state. On those fortunate occasions when holding down Command-Option-Escape does allow you to quit and save changes to unsaved documents, you should restart your Mac right away — it's bound to crash again soon.

ANDY: Force quit is really the Macintosh equivalent of the medieval-era leap of faith, in which virtuous knights were instructed to prove their faith in the power of their god by walking off perilously high precipices. And then their squires would steal their horses and sell them. Meaning, the real purpose of force quit is to delight Apple's middle managers at your demonstration of supreme faith in the ability of the Macintosh OS.

figure 2 / **Backdrops on the Macs** of your faithful Help Folder authors — Bob's (top) and Andy's (bottom), with strategically placed open folders to keep this a family magazine — show how to express personality using Now Fun and BackSplash II.

Force quit works after a crash only if enough of the document you're using is left that the Mac can talk it down off the ledge and save it. If too many portions of the program were wiped out by whatever caused the crash, your Mac calls in the expert snipers so the program won't hit any innocent passersby in its fall to the sidewalk.

Give Your Mac a Rest

Q. Is it harmful to turn the monitor on and off without turning off the computer when I'm not working on my Mac? Or is it better to turn them off together?

Harry Olsen
Auburn, CA

BOB: There's no danger in turning the monitor on and off and leaving the computer on. In fact, it makes sense, because the monitor is the bigger energy hog of the two. But to save energy, the best strategy is to turn everything off, including the printer and any storage devices.

If you have several external devices, check out PowerKey ($119), from Sophisticated Circuits (800-827-4669 or 206-485-7979), a nifty hardware/software combination that lets you turn multiple devices on by pressing the Power On button on your keyboard and

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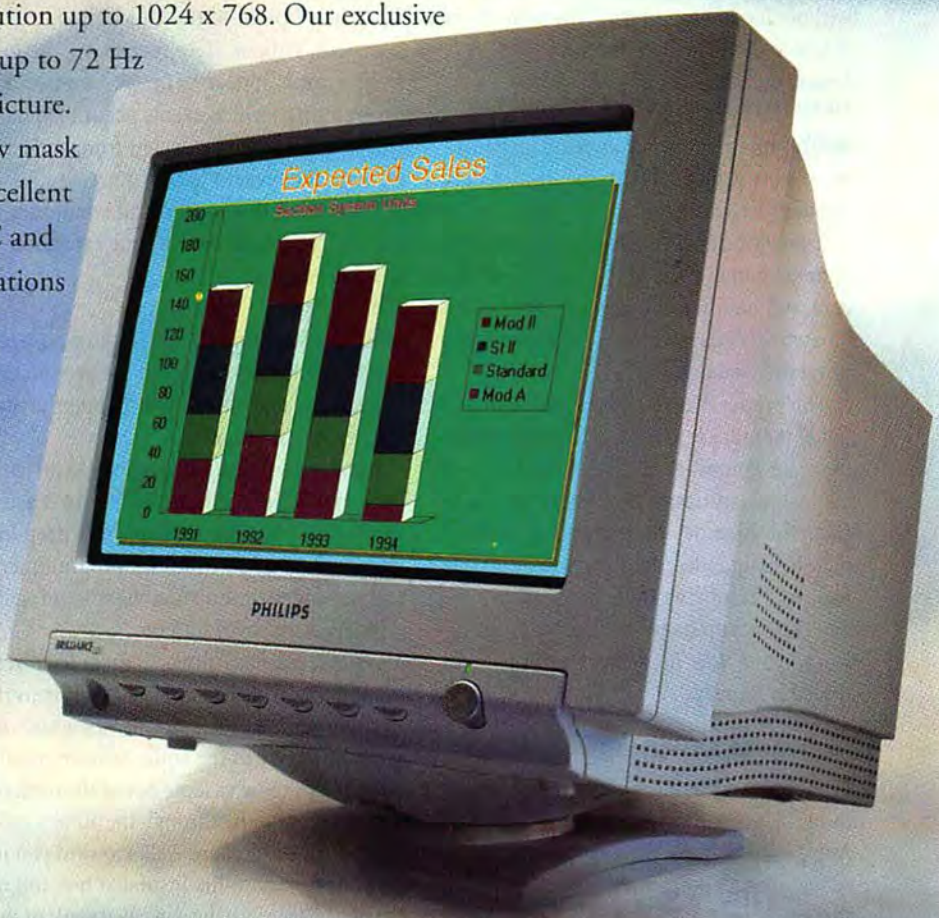

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turns those devices off automatically when you shut down.

ANDY: Now that saving energy has become a semihot issue in the computer industry, the Environmental Protection Agency has developed a set of specifications, called Energy Star, for "green" computing. To be Energy Star-compliant, a monitor must automatically switch off its picture tube when the Mac is resting. It works sort of like a screen saver — don't touch the keyboard for a few minutes, and — boom — off goes the monitor. Move the mouse, and it comes back to life. A neat idea, and once I get a piddling extra couple of thousand dollars for new hardware, I intend to give it my personal support.

Newton Memory Lapses

Q. It seems like I can't do anything interesting on my original Newton MessagePad without having to restart because memory is low. Is there a way to fix this?

Edward Ghuyan
via the Internet

ANDY: Don't give up on your MessagePad — there were problems with the Beatles during their first year too.

Even the original MessagePad has enough system memory for 99.44 percent of the cool stuff out there. However, it can become bloated with useless bits of data from the programs you use.

The proper way to clear all this detritus out of memory is to use a utility such as the freeware RemoveIt!, available from almost all on-line entities. A simpler method is to clear the memory by performing a complete backup, either onto a card or onto your Mac, and removing both the battery pack and the backup battery. When you do a restore, your low-memory warnings will probably vanish.

Alarming Question

Q. Help! A little blinking book, or something like that, has suddenly replaced the Apple symbol in the upper left corner of my screen. What's going on?

Cass Mitchman
Gurnee, IL

BOB: It sounds like another case of a power user playing tricks; in this case, someone must have turned on your Alarm Clock DA. The alarm notifies you by flashing a little clock (it's not a book) in place of the Apple on your Apple menu. All you need to do is shut the alarm off, by choosing Alarm Clock from the Apple menu, clicking on the expander icon to the right of the time, clicking on the alarm icon, and clicking on the on/off-switch icon. The alarm is off when the switch is up.

ANDY: The flashing-icon question has been a popular one since the early days of Macs. Here's another pointer along these lines: If you see a flashing icon in place of the application icon in the upper right corner, it means the system is notifying you that a background application wants to show you an alert, such as when PrintMonitor tells you your printer's been hosed by another user. Click on the flashing icon, or click on the icon and scroll down the pop-up list, to bring the message to the front.

Wasted Time?

Q. When I point to the QuickTime extension, with Balloon Help turned on, the following words appear: "Time n. A nonspatial continuum in which events occur in apparently irreversible succession from the past through the present to the future."

What does this mean? And what does it have to do with my QuickTime extension?

Nick Chalmov
Milwaukie, OR

BOB: It means that things in the past have happened already, things in the present are happening, and things will happen in the future, in that order.

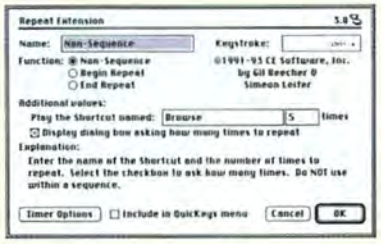
And it has nothing whatsoever to do with your QuickTime extension. It's an Easter egg, a whimsical "extra" deposited deep inside a piece of software by programmers with too much time on their hands and well-developed senses of humor.

ANDY: No, no, no. Time is "a great legalizer, even in the field of morals," according to H. L. Mencken. Time is in the laughter of schoolchildren, in the smile of your grandmother as she takes a pie out of the oven to cool. Its scent wafts through the air as a red-shirted concessionaire walks toward you in Fenway Park with his insulated box full of hot dogs. Time is in the shriveled souls of the wicked and in the screams of the damned and dying as they join the infinite march toward the pits of Hell. "Whimsical," indeed!

BOB: OK, OK already.

ANDY: Oh, and check out the Balloon Help for MacsBug too.

TIPS / Microsoft Word



VIEWING GRAPHICS

You can use CE Software's QuicKeys and Microsoft Word to create a slide show for easy viewing of graphics files.

To do so, first place the graphics you want to view in one folder. Open Word; select Find File, on the File menu; and open the folder containing your graphics. Leaving the Find File window open, create a QuicKey sequence that contains a three-second User/Timed Pause and an Alias Keystroke for the down-arrow cursor, name the sequence Browse, and leave the keystroke unassigned. Close this QuicKey, and create a Repeat Extension. Select the Non-Sequence function, check the box that causes the Repeat dialog box to appear, type `Browse` in the Play the Shortcut blank, and enter 5 for the number of times you want Browse to repeat. Now enter a keystroke to initiate your QuicKey, and close the window.

When you type the QuicKey keystroke, your graphics will appear on-screen with a three-second pause between them.

Credit and the usual *MacUser* tip-writer fee go to Mark Aitken, of Concord, California, for reminding me about Word's viewing feature.

Christopher Breen
Contributing editor, *MacUser*

WORD AND ON-LINE TEXT

If you collect lengthy sections of text while searching through on-line services or Internet-surfing, here's a way to organize your selections, using Microsoft Word.

Copy a section of text while on-line, open Word, and type a bullet character (Option-8) before pasting the text. When you're off-line and ready to read your selections, use Word's Find command to search for the bullet character. Since this character doesn't appear in the copied text, the Find quickly takes you to the beginning of each copied entry.

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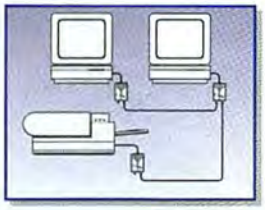

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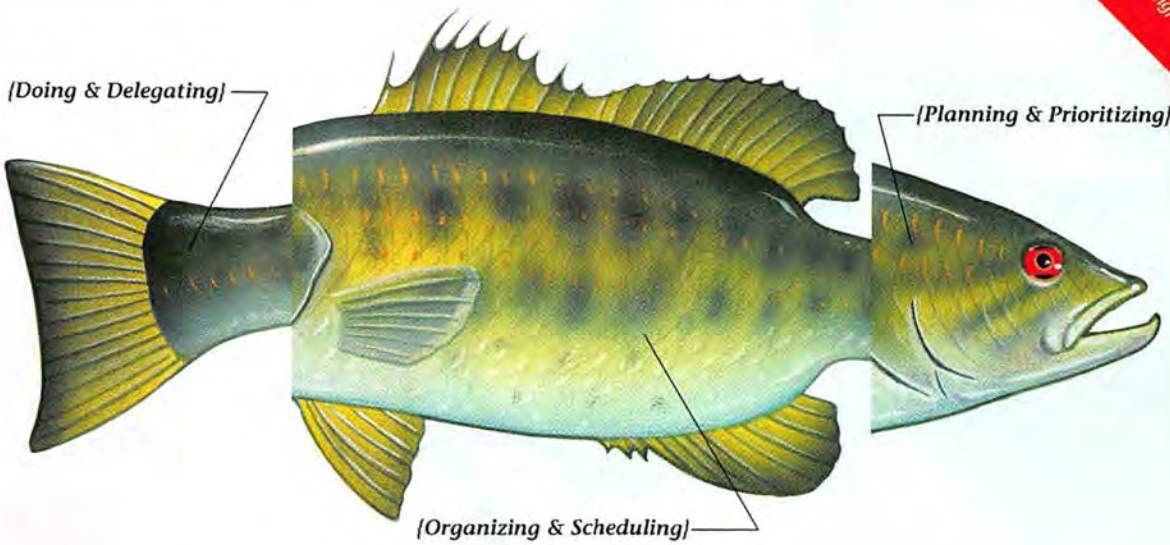

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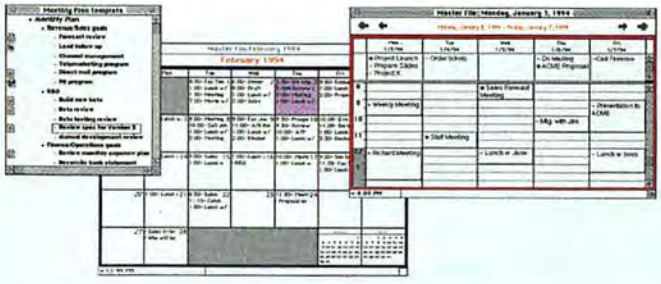

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540MB	12ms	4500	128K	2yr	LPS540S	$374	$434
540MB	9.5ms	5400	512K	5yr	EMP540S	$509	$569
1080MB	9.5ms	5400	512K	5yr	EMP1080S	$699	$759
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240MB	14ms	4500	256K	Fujitsu	1 Year	$309 (2.5" for Powerbook)	
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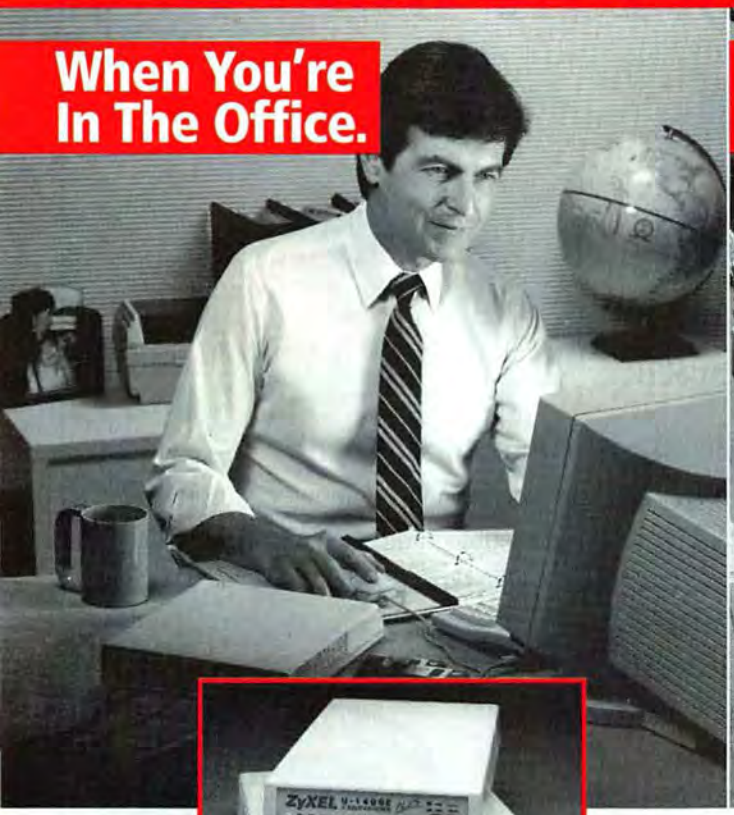

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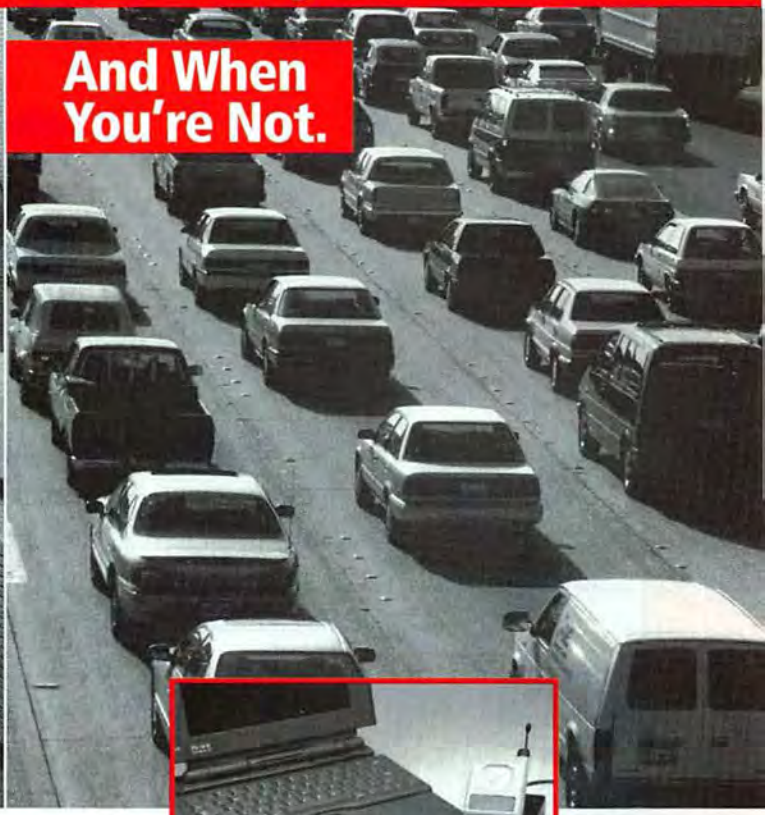

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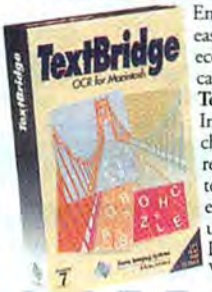

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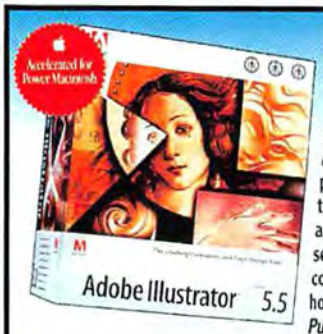

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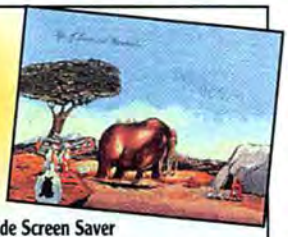

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95398	33MH, Univ Turbo 040 w/128K Cache	$825.98
95399	40MH, Univ Turbo 040 w/128K Cache	$999.98
98419	Quad 040 40MHz 68040 w/128K Cache	$999.98
97264	Image 040 Imaging Xelo	$1,599.00
95350	PowerPro 601 66MHz Xel	$1,595.00
95351	PowerPro 601 80MHz Xel	$2145.00
98804	Charger	$524.98
06482	Charger Plus	$678.98

radius

05250	Radius Rocket 33	$1098.00
95541	Radius StageTwo Rocket	$1699.00

NETWORKING

ASANTE

98800	Asante Lite Mac II & Performa 600 (TK/TN)	$119.98
98801	Asante Lite Mac II & Performa 600 (TK/10T)	$115.89
98802	Asante Lite LC family (TK/TN)	$115.98
98803	Asante Lite LC family (10T)	$109.98
00511	MC3NB II Mac II Performa 600 (TN/TK/10T)	$288.98
03641	MC•IIEE4 for Mac II Performa 600 (TK/TN)	$155.98
03642	MC•IIET64 for Mac II Performa 600 (TK/10T)	$155.98
03645	MC•30IFET64 for IISI & SE/30 (TK/10T)	$155.98
03647	MC•30IE64 for IISI & SE 30 (TK/TN)	$155.98
03648	MC•SEE for SE (TK/TN)	$155.98
03649	MC•SEET for SE (TK/10T)	$155.98
04933	MC3IISI for IISI & SE 30 (TK/TN/10T)	$199.98
99950	MC•LCII for LC,LCII,LCIII (TN/10T)	$189.98
99951	MCLCTNII for LC,LCII,LCIII (TN)	$155.98
99952	MCLC10TII for LC,LCII,LCIII (10T)	$155.98
06104	Asante Print (10T)	$338.98
96842	Asante Print 8 (AUI/10T)	$424.98
06817	Mini EN/SC II/PowerBooks (10T)	$248.98
06818	Mini EN/SC II/PowerBook (10T/TN)	$314.98
96840	NetExtender Hub (AUI/10T)	$178.98
96841	NetExtender Hub FN (AAUI/10T)	$178.98
05499	Thin FriendlyNet Media Adapter	$84.98
05500	Thick FriendlyNet Media Adapter	$84.98
05501	10 Base T FriendlyNet Adapter	$84.98
00348	10T HUB/12 w/10T/TK/TN Ports	$498.98
00404	10T HUB/8 w/8 10T/TN Ports	$248.98

Dayna

00806	DaynaPORT E/LC (TN) DP0400	$109.86
03547	DaynaPORT E/SE (TN/TK)DP0100	$145.36
04595	DaynaPORT E/II-T (10T/TK)DP0201	$109.86
04717	DaynaPORT E/30 (TN/TK)DP0510	$145.36
98400	DaynaPORT E/SE-T SE (10T/TK) DP0101	$145.98
98401	DaynaPORT si/30T (10T/TK) DP0511	$145.98
98403	DaynaPORT E/SE-3 SE (10T/TN/TK) DP0103	$159.98
98404	DaynaPORT E/LC-M (10T/TN) DP0403	$159.98
98405	DaynaPORT si/30-3 (10T/TK/TN) DP0513	$159.98
05728	DaynaPORT E/II-3 (10T/TK/TN) DP0202	$159.98
04718	DaynaPORT E/II (TN/TK)DP0200	$118.98
00488	DaynaPORT SCSI Link-3 DP0302	$298.98
05190	DaynaPORT SCSI Link 3 (10T/TK/TN)PB	$324.98
96825	Dayna Pocket SCSI Link T (10T)	$235.98
96826	Dayna Pocket SCSI Link M (10T/TN)	$289.98
05279	DaynaPORT EasyNet-T (AAUI/10T)	$55.98
05280	DaynaPORT EasyNet (AAUI/TN)	$55.98
00003	EtherPrint (10T/TK)	$338.98
00321	EtherPrint Plus 2.0 (TN/TK)	$448.98
03546	EtherPrint 2.0 (TK/TN)	$338.98
06595	EtherPrint 3 10T/TK/TN	$378.98
06622	EtherPrint-3 Plus 10T/TK/TN	$469.98
04911	DaynaSTAR MiniHub-8	$199.98
06617	Pathfinder Router	$599.98
99902	DaynaSTAR Hub-24	$869.98

Farallon

98408	EtherWave AUI Transceiver	$108.98
98409	EtherWave AAUI Transceiver	$108.98
98410	EtherWave Printer Adapter	$348.98
98411	EtherWave NuBus Card	$198.98
98412	EtherWave LC Card	$198.98
98414	EtherWave PB or Slot-less Mac Adapter	$328.98
98413	EtherWave PC ISA Card	$198.98
98848	EtherThin Transceiver (AAUI/TN)	$68.98
98849	EtherThin Transceiver (AUI/TN)	$68.98
03475	Ether10-T Transceiver (AAUI/10T)	$68.98
04307	Ether10-T Transceiver (AAUI/10T)	$68.98
99050	EtherMac SCSI Adapter TN HDI-30	$298.98
99051	EtherMac SCSI Adapter TN DB25	$261.98
99052	EtherMac SCSI Adapter10T HDI-30	$277.98
03333	Ether10-T StarController	$1,098.00
05693	Ether10-T Starlet PN515-1	$278.98
00828	PhoneNet DIN 8 10PK PN310	$194.98
00832	PhoneNet DIN 8 PN308	$28.98
00855	PhoneNet DB-9 PN309	$34.98
04160	PhoneNet Connector 50pk PN350	$798.98
02779	PhoneNet Star Connector PN301	$15.98

COMMUNICATIONS/MODEMS

Global Village

99319	GlobalFax Duo Software 2.07	$79.98
99307	Global Village Teleport Bronze II	$94.98
05686	PowerPort Bronze	$98.98
06267	TelePort Gold	$238.98
05684	PowerPort Gold	$298.98
99181	TelePort/Mercury for Desktop Macs	$298.98
99182	PowerPort/Mercury for PowerBook 1XX	$339.98
99183	PowerPort/Mercury for PowerBook Duo	$339.98
95206	One World Fax - 1 Line, Localtalk	$859.98
95208	One World Remote Acc - 1 Line, LocalTalk	$1,059.00
95207	One World Fax - 2 Line, Ethernet	$1,298.00
95209	One World Remote Acc - 2 Line, Ethernet	$1,598.00
96598	GlobalFax for One World 10-User Lic Pk	$219.98
96599	GlobalFax for One World 50-User Lic Pk	$859.98

Hayes

06545	ACCURA 24 Ext	$73.98
06543	ACCURA 144 + FAX144 Ext	$179.98

Supra

99308	Supra FaxModem 144LC Ext - Mac	$164.98
00413	Supra FaxModem V.32bIS (MC) w/Sft Cable	$239.98
96582	Supra FaxModem 288 Ext - Mac	$329.98
06865	Supra FaxModem 144PB Int - PowerBook	$234.98
96583	Supra FaxModem 288 Int - Mac PB	$329.98

STORAGE SYSTEMS

iMEGA

95354	Iomega MacTransportable 90 (NO DISK)	$299.98
96810	Iomega MacTransportable 90 Pro	$359.98
96811	Iomega MacTransportable Multidisk 150	$499.98

PLI

96820	Infinity Optical VR 3.5 IBM	$889.98
04699	Infinity 3.5 Optical Drive (Fujitsu)	$1,125.00
04698	Infinity Opt Sony 3.5 128MB	$1,134.00
95364	Infinity 200 Removable Drive	$689.98
06547	Infinity 88 R-W 44	$519.98
96821	Infinity MAX Optical 5.25 1.3GB	$3,599.00
96822	Infinity Optical 5.25 HH 1.3GB	$3,059.00
97953	DAT 3.5 10 Gig Drive	$1,538.00
96823	Infinity 270 Turbo S	$589.98
99926	Infinity 105 Turbo S 105MB REM	$429.98

FWB

97513	CD-ROM Toolkit	$49.98
05476	Hard Disk Toolkit - Personal Ed	$48.98
00555	Hard Disk ToolKit	$124.98
99923	Hammer PE 170 MB HD	$425.98
04891	Hammer PE 340MB HD	$559.98
94110	PocketHammer 530 FMF	$1,039.00
05422	PocketHammer 1000 FMF	$1,239.00
94108	PocketHammer 1600 FMF	$1,879.00
94109	PocketHammer 2100 FMF	$2,439.00
94120	HammerTape 525MB Ext	$975.98
94121	SCSI JackHammer	$639.98

Apple Hard Drives

95346	160MB External HD	$325.98
95347	230MB External HD	$409.98
95348	325MB External HD	$449.98
95335	500MB External HD	$829.98
95339	1000MB External HD	$1,129.00

Internal HD

06733	Quantum 170 MB	$248.98
97960	Quantum 270 MB	$368.98
06941	Quantum 340 MB	$419.98
01107	Quantum 540 MB	$498.98
99929	Quantum 1.0 GB	$969.98
06736	Quantum 1.2GB	$1,199.00
97991	Seagate 2.1GB Barracuda	$2,099.00

External HD

06728	Quantum 170 MB	$318.98
97961	Quantum 270 MB	$428.98
06942	Quantum 340 MB	$519.98
01108	Quantum 540 MB	$588.98
99927	Quantum 1.0 GB	$999.98
05731	Quantum 1.2GB	$1,244.00
99186	Seagate 2.1 GB Barracuda	$2,479.00

Removable HD

06219	SyQuest 44MB	$227.98
06538	SyQuest 44 88MB	$368.98
99930	SyQuest 105MB	$348.98
01142	SyQuest 200MB	$498.98
97689	SyQuest 270MB	$539.98
01163	128MB Magneto Optical	$998.98

PowerBook HD

99174	127MB 2.5" Drive	$318.98
99175	210MB 2.5" Drive	$448.98
99176	340MB 2.5" Drive	$648.98

INPUT DEVICES

MICROTEK

06251	ScanMaker II	$499.98
06945	ScanMaker IISP	$798.98
06252	ScanMaker IIXE	$898.98
01120	ScanMaker IIHR	$1,128.00
06503	35T Slide Scanner	$969.98
01122	ScanMaker IIi	$2,658.00
06821	Automatic Document Feeder	$398.98
13442	Transparent Media Adapter	$528.98

Calcomp

95380	DrawingSlate 6x6 Corded Pressure Stylus	$246.88
95251	DrawingSlate 12x12 Cordless Pressure Stylus	$371.88
95241	DrawingSlate 12x12 Cordless 4B Cursor	$246.88
95242	DrawingSlate 12x12 Cordless 16B Cursor	$246.88
95243	DrawingSlate 12x18 Cordless 4B Cursor	$371.88
95244	DrawingSlate 12x18 Cordless 16B Cursor	$371.88

Logitech

04258	MouseMan	$74.98
95612	TrackMan II	$76.98

Wacom

03677	12x12 Std. Cordless Pressure Stylus	$655.98
00397	12x12 Electrostatic Cordless Pressure Stylus	$1,070.00
03803	12x18 Electrostatic Cordless Pressure Stylus	$1,051.00
13342	UP-201 Cordless Batteryless Pressure Sensitive Pen (UD Series)	$85.98

CD-ROM/MULTIMEDIA

NEC

97814	NEC MultiSpin 3Xe External	$464.98
97815	NEC MultiSpin 3Xi Internal	$431.98
97816	NEC MultiSpin 3Xp Classic Portable	$386.98
96658	NEC MultiSpin 3Xp Granite Portable	$386.98
97817	NEC MultiSpin 4X Pro	$969.98
06884	Media Vision PAS 16	$90.89
06789	Yamaha Hello! Music!	$279.98
02168	Yamaha M10 Shielded Speakers	$68.98
99581	Altec Lansing 56 Speakers	$66.82
98280	Altec Lansing Subwoofer 150	$100.23
05689	Altec Lansing ACS 300 Speakers	$233.86

PRINTERS

HEWLETT PACKARD

95517	HP DeskWriter 310	$319.98
95518	HP DeskWriter	$194.98
95520	HP DeskWriter 520	$309.98
95522	HP DeskWriter 560C	$599.98

NEC

96746	NEC Silentwriter 640	$789.98
13111	NEC Silentwriter Model 1097	$1,419.00

Texas Instruments

12595	MicroWriter Basic	$517.98
14319	MicroLaser Pro 600 PS23	$1,399.00
14320	MicroLaser Pro 600 PS65	$1,599.00

POWER BACKUP

Tripp Lite

04605	Isobar 4 Surge Protector	$48.98
04740	Isobar 6 G5 Surge Protector	$58.98
99790	Tripp Lite BC 250 UPS	$136.98
06661	Tripp Lite BC 400 UPS	$174.98
04744	Tripp Lite BC 500 UPS	$198.98

MEMORY UPGRADES

The Mac Zone carries memory upgrades. Please call for configurations and current prices.

MEDIA

Bernoulli Cartridges

96824	Bernoulli 90MB Cart	$98.98
97289	Bernoulli 105MB Cart	$85.98
97291	Bernoulli 150MB Cart	$98.98

Volume discounts Available

SyQuest Cartridges

02183	SyQuest 44MB Cart Unfo	$64.98
00183	SyQuest 88MB Cart Unfo	$99.98
99902	SyQuest 105MB Cart Unfo	$59.98
00278	SyQuest 200MB Cart Unfo	$118.98
97992	SyQuest 270MB Cart Unfo	$74.98

Volume Discounts Available

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Hard Drives Quantum

ClubMac 30 DAY MONEY BACK GUARANTEE

Quantum's hard disk drives are available in 2.5 and 3.5-inch form factors in storage capacities ranging from 85 megabytes to 2.1 gigabytes

LPS 270MB INTERNAL

- Fast SCSI-2
- 4,500 RPM
- 10ms access time
- WriteCache & DisCache Firmware

ClubMac 30 DAY MONEY BACK GUARANTEE

Includes all necessary brackets and software

GO•DRIVE SERIES
2.5" POWERBOOK DRIVES

Capacity	Access	Internal	External
170mb	17ms	$259	$379
256mb	17ms	$339	$459

LPS SERIES
3.5" LOW PROFILE

170mb	14ms	$189	$249
270mb	11ms	$239	$299
340mb	11ms	$279	$339
540mb	10ms	$399	$459

EMPIRE SERIES
3.5" HIGH PERFORMANCE LOW PROFILE

1080mb	9.5ms	$739	$799
1440mb	9.5ms	$909	$969
2100mb	9.5ms	$1359	$1419

Quantum Pro and LPS series carry a TWO Year Warranty
Go-Drives carry a ONE Year Warranty

Seagate

ClubMac 30 DAY MONEY BACK GUARANTEE

Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
3.5" HALF HEIGHT						
1.9GIG	ST11900N	*Hawk 2*	9ms	1600mb	$1179	$1239
2.4GIG	ST12400N	*Hawk 2*	9ms	2000mb	$1329	$1389
1.9GIG	ST11950N	*Barracuda 1*	8ms	1350mb	$1445	$1505
2.4GIG	ST12550N	*Barracuda 2*	8ms	2050mb	$1629	$1689
4.0GIG	ST115150N	*Barracuda 4*	8.5ms	4000mb	$2469	$2529
5.25" FULL HEIGHT						
3.4GIG	ST43400N	*Elite-3*	11ms	2750mb	$1999	$2099
9.0GIG	ST410800N	*Elite-9*	11ms	8600mb	$3999	$4099

Seagate drives carry a ONE Year Warranty

CD-ROMs

NEC

NEC MultiSpin 3Xp
The 3Xp combines 3X transfer rate performance, 250ms access time and a 256 KB continuous-flow cache in a compact design, making it and incredible value. At only 2.4 lbs the 3Xp is the world's lightest triple speed CD-ROM reader.

MPC2 Multimedia PC

MultiSpin 3Xp CD-ROM Reader

CD-ROM READERS

	w/o bundle	w/ClubMac CD bundle
MultiSpin 3Xp (Portable, 250ms access time, very light; 2.4 lbs)	$399	$499
MultiSpin 3Xi (Internal, 195ms access time, 450KB/sec data transfer)	$439	$539
MultiSpin 3Xe (External, 195ms access time, 450KB/sec data transfer)	$469	$569
MultiSpin 4X Pro (External, 180ms access time, 600KB/sec data transfer)	$935	$1035

NEC MultiSpin CD-ROM Readers carry a TWO Year Warranty

ClubMac Removable Hard Drives

FEATURING SyQuest REMOVABLE TECHNOLOGY

ClubMac 30 DAY MONEY BACK GUARANTEE

CLUBMAC 3.5" REMOVABLES

CLUBMAC 5.25" REMOVABLES

CLUBMAC REMOVABLES

	Internal	External
ClubMac 44mb 5.25" (SQ555)	$199	$229
ClubMac 88c 5.25" (SQ5110C)	$379	$419
ClubMac 200mb 5.25" (SQ5200)	$529	$569
ClubMac 105mb 3.5" (SQ3105)	$289	$329
ClubMac 270mb 3.5" (SQ3270)	$499	$539

CARTRIDGES

44mb (SQ400)	$59
88mb (SQ800)	$69
200mb (SQ2000)	$79
105mb (SQ310)	$59
270mb (SQ327)	$75

All SyQuest drives include a TWO Year Warranty.
All drives include SCSI Director formatting software, ONE FREE Cartridge, necessary cables for "plug-and-play" and documentation.
All SyQuest cartridges include a FIVE Year Warranty.

ClubMac Optical Drives

ClubMac 30 DAY MONEY BACK GUARANTEE

ASK ABOUT OUR NEW 1.3 GIG SHARP OPTICAL

CLUBMAC 5.25" 650MB SHARP OPTICAL

	Access Time	Internal	External
ClubMac (M2512A) 3.5" 230mb Fujitsu Optical	30ms	$899	$929
ClubMac (JY-750) 5.25" 650mb Sharp Optical	40ms	$1669	$1699
ClubMac (JY-800) 5.25" 1.3GIG Sharp Optical	40ms	$2069	$2099
MaxOptix Tahiti III (9400) 5.25" 1.3GIG Optical	19ms		$2499
Hewlett-Packard (C1716T) 5.25" 1.3GIG Optical External	28ms		$2429

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

ClubMac Tape Backups

ClubMac 30 DAY MONEY BACK GUARANTEE

Capacity	Model	Format	Media	Internal	External
2.0GIG	ClubMac DAT	DDS	60m, 90m	$739	$789
2-4GIG	ClubMac DAT/DC	DDS-DC	60m, 90m	$929	$979
4-8GIG	ClubMac DAT/2	DDS-2	60m, 90m, 120m	$1139	$1189
2.0GIG	HP DAT	DDS	60m, 90m	$939	$989
2-4GIG	HP DAT/DC	DDS-DC	60m, 90m	$1049	$1099
4-8GIG	HP DAT/2	DDS-2	60m, 90m, 120m	$1319	$1369
2.2GIG	EXB-8205S	8mm	112m	$1499	$1549
5.0GIG	EXB-8505S	8mm	112m	$2319	$2369

ClubMac DAT and DAT/DC drives include Retrospect v2.1 Backup Software, ONE 90 Meter Tape and a TWO Year Warranty. HP DAT drives carry a ONE Year Warranty
The ClubMac DAT/2 & HP DAT/2 drive includes Retrospect Remote v2.0 (3-Pack) Network Backup Software, ONE 120 Meter Tape and a ONE Year Warranty

ClubMac CD-ROM Reader

ClubMac 2X Speed CD-ROM Reader

- 320ms access time • Caddy-Less design
- Double Speed performance
- Headphone jack and RCA jacks
- PhotoCD compliant • No Caddy Needed

ClubMac 30 DAY MONEY BACK GUARANTEE

	w/o bundle	w/ClubMac CD bundle
ClubMac Dual Speed (External, 320ms access time)	$199	$299

The ClubMac CD-ROM reader carries a ONE Year Warranty

ClubMac CD-ROM Bundle

The Animals

Atlas Pack (World)

Atlas Pack (US)

Maya Clinic

Toolworks Encyclopedia v6.0

LUCASFILM GAMES
Lucas Game Pak II

$800 VALUE

Quickshot Speakers

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Purchase one of the following

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LeMansGT — PrecisionColor Pro 24X

Get a "FREE" CD-ROM READER a $469 value

NEC MultiSpin 3Xe FREE

Offer ends 08/31/94

It's time to trade up for VideoVision Studio! SAVE $500*

For a limited time, you can trade in your digital video board and get $500.00 from Radius when you purchase a VideoVision Studio video board.

* Offer good only with the purchase of a Radius VideoVision Studio. Mail qualifying video board, VideoVision Studio warranty registration card and a copy of your sales receipt to Radius. Offer ends 08/31/94

GRAPHIC CARDS

LeMansGT (0447)	$1835
PrecisionColor Pro 24X (0429)	$1319
PrecisionColor Pro 24XK (0430)	$679*
PrecisionColor Pro 24XP (0431)	$439
PrecisionColor 24X (0421)	$804†

MULTIMEDIA

VideoVision Studio (0418)	$3295
VideoVision Studio Upgrade (0419)	$1499
VideoVision Studio Basic (0416)	$1509

MONITORS

PrecisionColor/21 (0463)	$1989
IntelliColor Display/20e (0461)	$1949
PrecisionColor Display/20v (0427)	$1399
PrecisionColor Display/17 (0460)	$969**
Pivot Display (0361)	$565
Full Page Display/gs (0424)	$489
TPD20gs (0436)/21gs (0437)	$785/$969

* After MFR $50.00 rebate, † After MFR $75.00 rebate
** After MFR $100.00 rebate. Offers expire 08/31/94

NEC

$1099

17" MultiSync 5FGp

MONITORS

15" MultiSync 2V (JC-1432VMA) up to 832 x 624	$335
15" MultiSync 3V (JC-1535VMA) up to 1024 x 768	$469
15" MultiSync 4FGe (JC-1531VMA-3) up to 1024 x 768	$629
17" MultiSync 5FGe (JC-1731VMA-3) up to 1024 x 768	$989
17" MultiSync 5FGp (JC-1741UMA-3) up to 1280 x 1024	$1099
21" MultiSync 6FGp (JC-2141UMA-3) up to 1280 x 1024	$1999

NEC Monitors carry a THREE Year Warranty.

PRINTERS

Silentwriter 640 6ppm, 300 dpi, 52 fonts, PS Level 2	$679*
Silentwriter 1097 10ppm, 600 dpi, 35 fonts PS Level 2	$1379

The Silentwriter 640 carries a Limited TWO-Year Overnight Replacement Warranty
The Silentwriter 1097 carries a ONE Year Warranty.
*After MFR $50.00 rebate. Offer ends 09/30/94

Printers

HP LaserJet 4ML Printer

$1029

- Fast Intel 80960 18.8 MHz RISC processor
- Auto-switching between PostScript and enhanced HP PCL 5
- 300-dpi w/ HP Resolution Enhancement
- 35 PostScript fonts • 4ppm • 4MB standard memory
- PostScript Level 2 • ONE Year Warranty

HEWLETT PACKARD Authorized Dealer

HP DeskWriter 310 Printer 300 x 300 dpi, 3ppm, Optional Color Kit Available	$309
HP DeskWriter 310 Printer with Cutsheet Feeder (60-sheet) Color Kit Available	$369
HP DeskWriter 520 Inkjet Printer 600 x 300 dpi, 3ppm, 35 fonts	$289
HP DeskWriter 550C Inkjet Printer 300 x 300 dpi color, 3ppm, 35 fonts	$479
HP DeskWriter 560C Inkjet Printer 600 x 300 dpi color, 3ppm, 35 fonts	$575
HP DeskJet 1200C/PS PostScript Printer 600 x 300 dpi, 6ppm	$2215
HP LaserJet 4ML Printer 300 x 300 dpi, 4ppm, 35 scalable fonts	$1029
HP LaserJet 4MP Printer 600 x 600 dpi, 4ppm, 35 scalable fonts	$1395

HP DeskWriter Inkjet Printers carry a THREE Year Warranty.
HP DeskWriter 310 Printers carry a ONE Year Warranty. HP LaserJet Printers carry a ONE Year Warranty.

Acceleration

30 DAY — 2 Year Warranty — DAYSTAR DIGITAL

TURBO 040 ACCELERATORS

Turbo 040 (with FPU support)

33 MHz Turbo 040 w/128K cache (000773)	$789
40 MHz Turbo 040 w/128K cache (000797)	$955

Turbo 040i (w/o FPU support)

33 MHz Turbo 040i w/128K cache (000780)	$625
FastCache Turbo (000223)	$165

APPLICATION ACCELERATORS

Image 040 (Quadra/Centris) (000414)	$1539
Quad 040 w/128K cache (Quadra/Centris) (000056)	$955

POWERPC PRODUCTS

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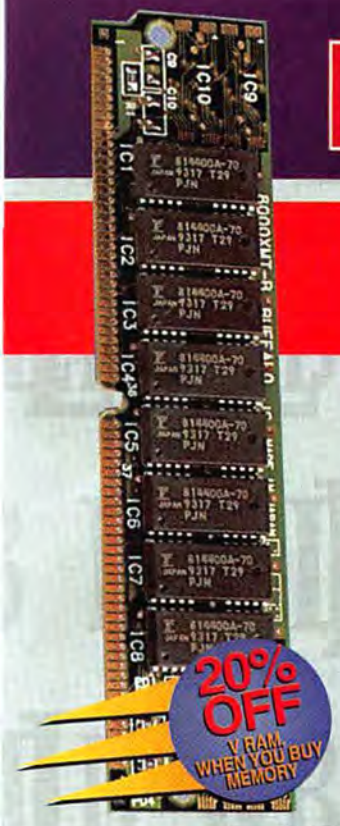

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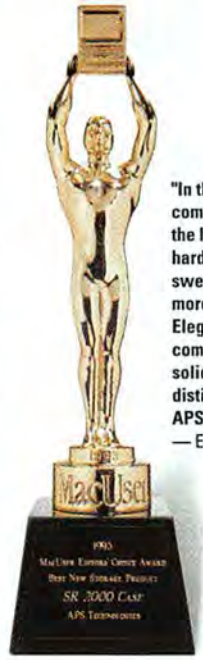

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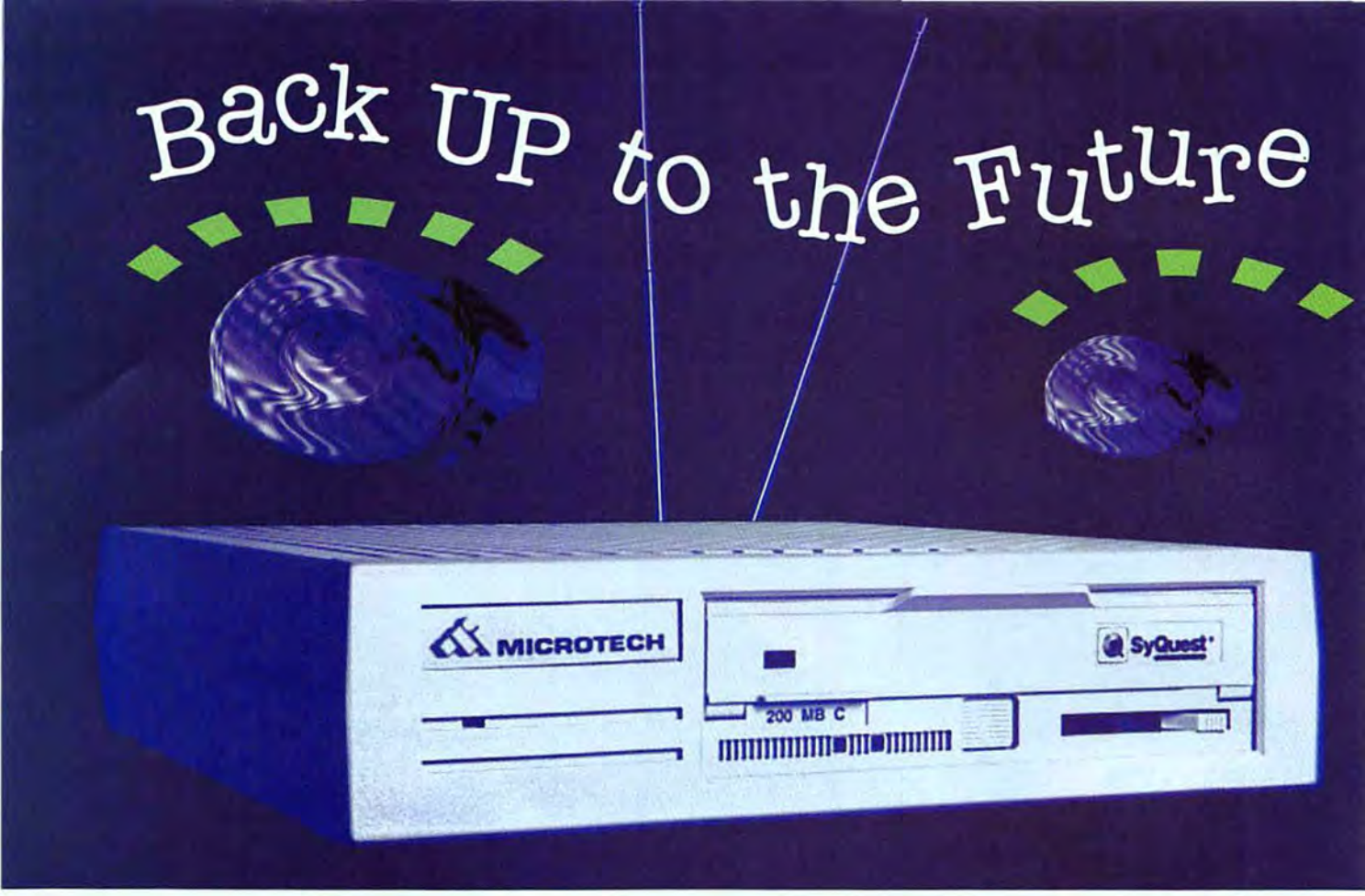

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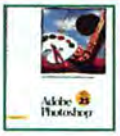

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1. For how many micro computers do you buy products? (check one)
☐ 01) 1-4 ☐ 02) 5-49 ☐ 03) 50+

2. Your primary job function is: (check one)
☐ 01) Administrative/ General Management
☐ 02) MIS/DP, Communications Systems, Programming
☐ 03) Engineering/R&D
☐ 04) Finance/Accounting
☐ 05) Marketing/Sales
☐ 06) Computer Dealer/VAR

3. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (check all that apply)

4. Which of the following products have you bought in the last 6 months? (check all that apply)

SOFTWARE:	Q3	Q4
Accounting	☐ 01	☐ 01
Spreadsheets/Financial Planners	☐ 02	☐ 02
Project Managers/Planners	☐ 03	☐ 03
Word Processors	☐ 04	☐ 04
Database Managers	☐ 05	☐ 05
Graphics/Presentation Software	☐ 06	☐ 06
Integrated Software	☐ 07	☐ 07
Communications	☐ 08	☐ 08
Utilities	☐ 09	☐ 09

HARDWARE:	Q3	Q4
Modems	☐ 10	☐ 10
Scanners	☐ 11	☐ 11
Microcomputers	☐ 12	☐ 12
Printers/Plotters	☐ 13	☐ 13
Monitors/Displays	☐ 14	☐ 14
Storage	☐ 15	☐ 15
Add-in Boards	☐ 16	☐ 16
Networking	☐ 17	☐ 17

5. If so, what function do you serve in the buying process? (check all that apply)
☐ 01) Initiation/ Determine Need
☐ 02) Selection of Brand and Model
☐ 03) Selection of Source
☐ 04) Authorization
☐ 05) Other

6. Over the next 12 months, how much will your organization spend on computer products or services? (check one)
☐ 01) over $5 million
☐ 02) $1 - 5 million
☐ 03) $500,000 - $999,999
☐ 04) $100,000 - $499,999
☐ 05) $50,000 - $99,999
☐ 06) $10,000 - $49,999
☐ 07) under $10,000

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Database Managers	☐ 05	☐ 05
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Communications	☐ 08	☐ 08
Utilities	☐ 09	☐ 09

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Boards/Components/Chips		208
Computer Systems		211
Disk Drives		220
General		219
Input/Output Devices	203	
Multi-Media	203	
Peripherals	203	219
Powerbook Products	204	
SOFTWARE		
Bar Coding		219
Business	205	221
CAD/ CAM		
CD-Rom	205	221
Communications/Networking		
Entertainment/Games	206	
Foreign Languages/Translation	206	
General		221
Graphics/Fonts		221
Medical/Dental		
Music/Midi	206	
Networking	207	
Programming Tools/Languages		
Real Estate		
Religion		
Scientific/Engineering	207	
Utilities	207	
Adult		226
SERVICES		
Computer Insurance		
Consulting/Programming		
Data Conversion/Data Recovery		224
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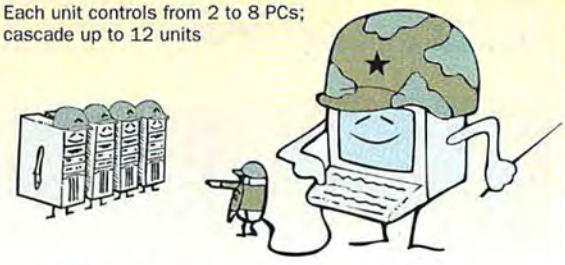

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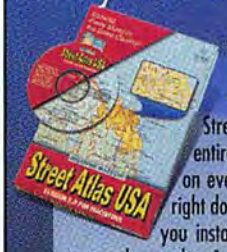

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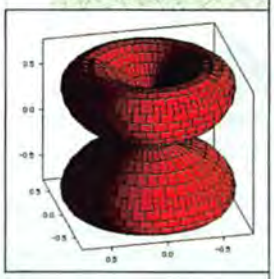

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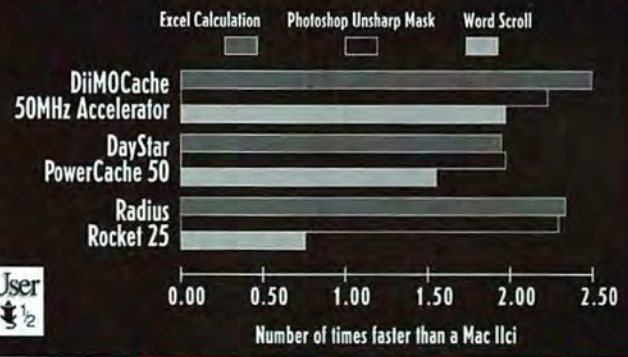

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Seagate

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2.4gb	9ms	1350	1425
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Duo 280c 12/320 Modem	$3708
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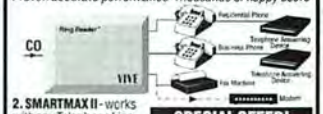

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MA-540 E	540MB	Quantum	10ms	$449
MA-1080 E	1080MB	Quantum	9.5ms	$789
MA-1440 E	1440MB	Quantum	10ms	$1289

External Hard Drives include SCSI cable, A/C power cord, external terminator, FWB Hard Disk Toolkit and come preformatted and loaded with Apple's System 7.1 software.

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P/N	Capacity	MFR.	Access	
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MA-270 I	270MB	Quantum	11ms	$239
MA-340 I	340MB	Quantum	11ms	$289
MA-540 I	540MB	Quantum	10ms	$389
MA-1080 I	1080MB	Quantum	9.5ms	$729
MA-1440 I	1440MB	Quantum	10ms	$899
MA-2100 I	2100MB	Quantum	10ms	$1229

Includes: Bracket, SCSI cable, power cable, FWB Hard Disk Toolkit and comes preloaded with Apple's System 7.1 software.

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P/N	Capacity	
MA-170 P	160MB	$255
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MA-256 P	250MB	$319
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MA-520 P	500MB	$649

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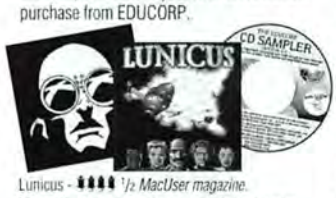

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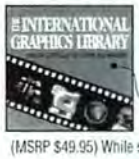

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JOHN C. DVORAK

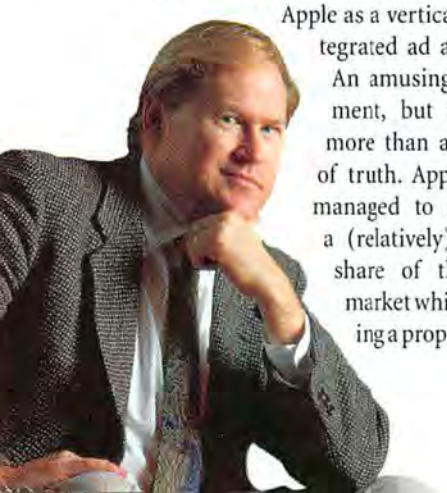
The Universal PowerPC

I CAN HARDLY WAIT until I no longer have to answer the question: Should I buy a Mac or a PC? With a new stand-alone standard for the PowerPC emerging from the PowerPC consortium, there may finally be a true cross-platform solution: They'll be in the same box! Any PowerPC machine using the new standard will be able to boot a Mac environment, boot an OS/2 (actually Workplace OS renamed) environment, boot a UNIX environment, or whatever. Since Workplace OS is supposed to have a DOS emulator and should be able to run Windows at blazing speed, why would anyone buy anything else? And if the world turns to this box, what becomes of Apple and its proprietary franchise? Is it down the tubes?

No. In fact, sales may increase.

Playing to Apple's Strength

The top three makers of personal computers are currently Compaq, Apple, and IBM. Imagine two of the top three makers — Apple and IBM — coming out with a new machine and moving their combined market share (not overnight, obviously) to this new platform and taking a bunch of cloners with them. All of a sudden, Apple is part of a giant new market that's wide open for growth. It sheds its need to design hardware and focuses on doing what it does best: Sell!



A venture capitalist once referred to Apple as a vertically integrated ad agency. An amusing comment, but it has more than a grain of truth. Apple has managed to garner a (relatively) huge share of the PC market while selling a proprietary machine. But Compaq now sells more clones than Apple sells proprietary machines. The handwriting's on the wall: The days of the proprietary machine are numbered. But if Apple has done so well selling a proprietary machine, imagine what it could do if it were competing on a level playing field with the schlockmeisters who sell PCs. Except that the playing field won't be exactly level: Apple is part of the core group that designed the microprocessor!

Under this scenario, Apple can continue selling computers but will concentrate on selling System 7 for the PowerPC in the new PowerPC market. The Intel PC installed base has grown to nearly 200,000,000 computers. All these machines will eventually be dumped for something new. If that something new is the PowerPC platform, those buyers will flock to System 7.

Best of Both Worlds

Although dual operating systems have previously been used only by hackers running DOS and maybe UNIX, I've noticed that a lot of OS/2 users run both OS/2 and DOS/Windows, even though DOS/Windows is built in to OS/2. That's because there are some peculiar products you like to run once in a while that don't work with OS/2, despite compatibility claims. But you don't want to drop OS/2, because it's generally better and less crash-prone than Windows. So what do you do? Use both. There is already a critical mass of cool applications running under the Mac environment. Children love the Mac and prefer it over any PC. And as I've said before in this column, my wife flatly refuses to use anything but a Mac. You can be sure I'll have a Mac OS running on any Universal PowerPC in my house.

The Universal PowerPC will incorporate the Mac ROM and load it into the system from the hard disk. This opens up the possibility that the Mac OS can be enhanced by outside coders to add better speech recognition or other interesting functions.

The Universal PowerPC will also open up the operating environments more than in the past. The rule of thumb today is to code your product for the dominant operating system — Windows — if you want to make the most money. Many reluctant Mac coders have been forced to do this against their will. With multiple operating systems in the same PowerPC box, coders could write to their preferred OS without worrying about lost business. If the Mac OS is best for graphical applications, a company can just focus on this and not waste a lot of time porting its code to a different platform. All that time that used to be spent porting can then go toward implementing better features.

This potential new market consists of every current user of a PC and a Mac plus any newcomers attracted to this design. That means more than 200,000,000 computers and probably 200,000,000 copies of the Mac OS. If Apple can maintain a 20- to 25-percent share of that huge market and add to it sales of its OS, it will be a bonanza for Apple.

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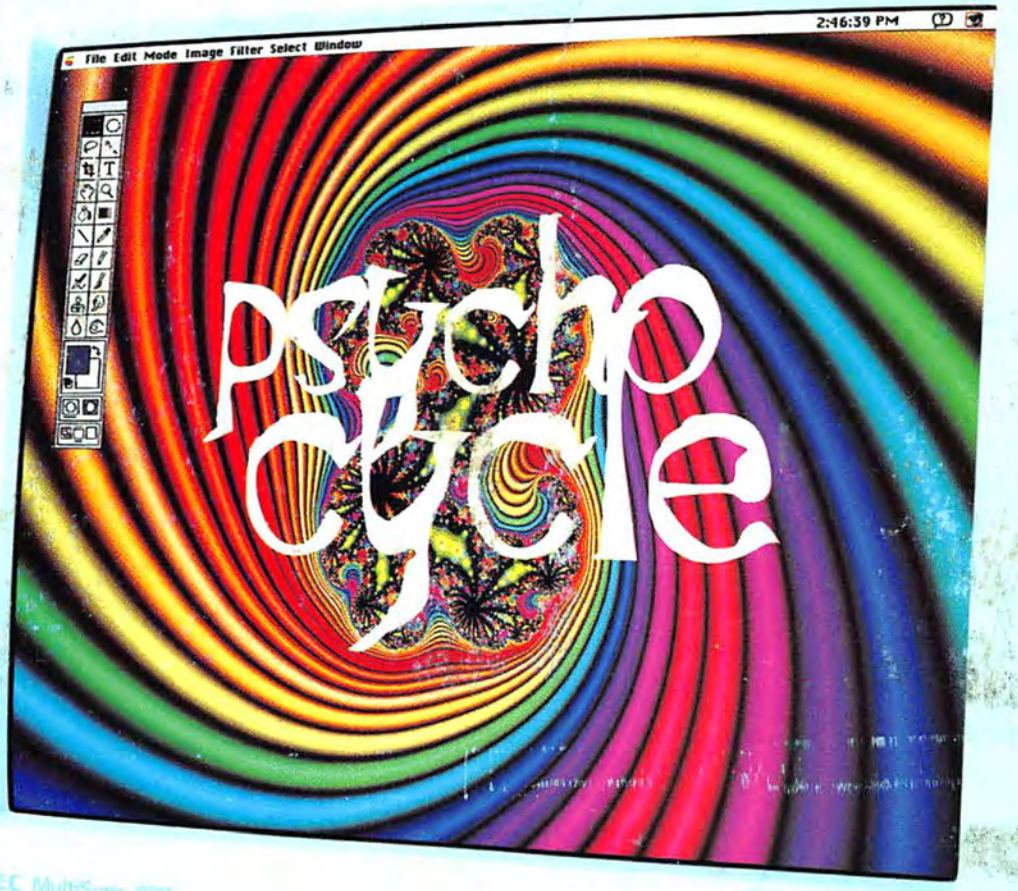

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