

OCTOBER 1995 / \$3.95

Mac User

ZD ZIFF-DAVIS PUBLISHING COMPANY

POWER MACS FOREVER

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18 Low-Cost
Scanners

**From Dylan
to da Vinci**

The 50 Hottest
New CD-ROMs

Shareware Bonanza

30 Great Programs
You Can Download Today



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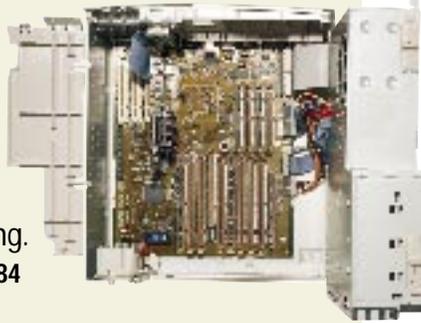
The Sequel

Second-generation Power Macs sport a card-ready PCI bus, quad-speed CD-ROM drives, and breakneck speed.



APPLE'S NEW LINE of Power Macs is not only more powerful than ever before — it also offers more than a few technological surprises, including a new VRAM design, CD-quality audio, Fast SCSI buses, and support for telephony and videoconferencing.

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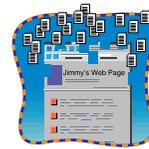
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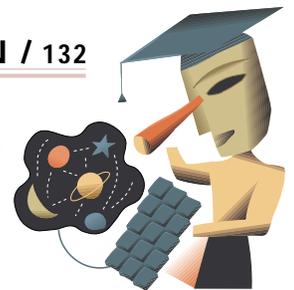
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and **Derek Van Alstyne** 1967 – 1989



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LETTERS

Coping with Copland

THANKS FOR THE GREAT ARTICLE about System 8 ("Countdown to System 8," July '95, page 62). If I could, I'd go out and buy it tomorrow. I don't know if I can wait another year before it will be available!

Erik Porter
ErikPorter@aol.com

YOU SAID SYSTEM 8 is going to be 95 percent PowerPC-native. Why would Apple write an OS for Power Macs and make it only 95 percent native?

Dan Pride
DanPr007@aol.com

/The 5 percent that's not going native is used so infrequently that the effort required to make it native would far outweigh the benefit to users. / HB

AS A PROUD OWNER of a Performa 575, I was upset when you wrote that although Copland will be "hardware independent," it won't work on 680x0 Macs.

If Apple is spending resources to make Copland hardware-independent, then shipping on 680x0 as well as PowerPC machines should be easy. If it is just adding code to allow Copland to run on Apple PowerPC machines as well as the Common Hardware Reference Platform, then the phrase *hardware-independent* is misleading.

Most of Apple's installed base is 680x0-based machines. Apple shouldn't abandon the large number of 68030/68040 users in the field so quickly.

John Reagan
reagan@hiyall.enet.dec.com

/Sadly, *hardware-independent* does mean *processor-independent*. Many of new features of Copland require the processing muscle of the PowerPC. Apple looking into how it can incorporate some of Copland's functionality and interface into a 680x0-based system — a though such a system may require 68040. The primary goal for Copland no-compromise computing on PowerPC machines. Start saving for your upgrade. / HB

Off Base?

ALTHOUGH YOUR ARTICLE regarding online services ("On-Line Services for Business and Pleasure," July '95, page 70) was quite informative, it should have mentioned that CompuServe can be accessed not only via the CIM software but also by *any* standard terminal program. People on the road can use any computer with a modem to access the service.

Adam Keil
70761.3473@compuserve.com

FOR MY MONEY, Delphi is the best service. I generally use it 20 hours a month and pay \$23. My neighbors, on the other hand, use one of the more favorably reviewed services and don't respond to e-mail because it's too expensive.

Yes, Delphi is text-based, but I have not had to learn "a slew of commands" — I simply choose a numbered item from a menu or type the first few letters of the topic I am interested in.

Vicki Holdwick
via the Internet

AOL'S PRICE is not really lower than CompuServe's. Plus it's very annoying to log on and spend an extra 5 minutes downloading new art for the interface. Anyone who uses the same services every time they log on to CompuServe can use CompuServe Navigator, which can make 3-hour sessions drop to 15 minutes. Also, CompuServe has very wide distribution of 14.4-kbps nodes and even some 28.8-kbps nodes, whereas AOL is just getting its network of 14.4-kbps nodes off the ground.



OPEN FOLDER

A **flaw-free publication** isn't easy to create. To secure *MacUser's* pages, we employ a crack staff of copy editors who are trained to scour every line of type with their eagle eyes, looking for the smallest goof.

Slipping through the cracks is hard to do, but some errors — real and imagined — do make it into the magazine, as some of the letters we received via the Internet this month attest. "You say Microsoft Bookshelf '94 tells you the meaning of *jejeune*. Does it also tell you how to spell it?" writes would-be copy editor Steve Atlas. An equally *jejeune* letter came to us from Mike Trent: "Andy Ilnatko misspelled the name of the beer-swilling Barney from *The Simpsons*, Barney Gumble." You're right, Mike. But although our *Simpsons* knowledge is sketchy, any stories we write about *Gilligan's Island* will be completely error-free. And isn't that a relief?

Reporting the facts as we're presented with them can cause us trouble too. Our pictures of System 8 drew this from Stuart Itzkowitz: "The word *stationary* in Copland's Open and Save dialog boxes should be *stationery*." Erik Porter spied a greater conspiracy: "Apple's removing one day from our weekend!" Our picture showed one file being created on Friday the 10th and modified on Monday the 12th. Perhaps it's Apple's way of telling us they're working around the clock to get Copland ready. Or maybe Apple just hasn't availed itself of the services of a talented copy-editor type.

Humbled we may be, but sometimes we're criticized for things we do right: "It stroke [sic] me that you capitalize words after a colon!" writes Alberto Tabone. "English is derivative of Latin, which dates back more than 2,000 years. Capitalizing words after colons is wrong." The last time we checked, capitalizing after a colon was acceptable. But we'll be sure to keep your suggestion in mind in case the idea *strokes* us to publish a Latin version of *MacUser*, complete with a comparison of SVSTEM VII and VINDOVS XCV.

WRITE TO LETTERS

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letters@macuser.com

All letters become the property of *MacUser*, and we reserve the right to edit any letters we print. Include a return address and a daytime phone number. If you write to us via e-mail, please specify whether you want your electronic address printed.

Also, CompuServe's new dial-up PPP connection moves its Internet access ahead of everyone else's. Rather than being forced to use someone else's clunky interface and incur regular connect-time charges, users can dial in and use Netscape or Mosaic to surf the Web, use Anarchie or Fetch to ftp files, or use any of the other standard Internet software.

Domenico Bettinelli, Jr.
74143.2374@compuserve.com

UNLESS YOU LIVE in a large city, high-speed access to America Online is little more than a distant dream. Most towns have only 2,400-bps access numbers. This not only means that the interface is slow and that downloading files takes forever but also that many of the newer features of AOL aren't even available. Given that all members pay the same hourly rate, regardless of how fast they can connect, AOL can be considerably more expensive than you indicate in your article.

Yasha Hartberg
Yasha@bigraf.tamu.edu

ALTHOUGH I APPRECIATE the usefulness of reviewing online services, I question how appropriate it was for *MacUser* to assign mouse ratings that state a preference for CompuServe when you operate online services on CompuServe and eWorld and receive revenues from subscribers to those services.

Grady Houseknecht
GRADYHOUSE@aol.com

/ Although ZiffNet/Mac is indeed a part of Ziff-Davis Publishing, it is not connected financially with *MacUser*. Although we do recommend CompuServe for business, we also recommend AOL for after-hours fun, even though AOL features competing publications' areas instead of a ZiffNet/Mac area. Our review was of online services in their entirety, and ZiffNet/Mac is only one small portion of CompuServe and eWorld. / CE

Yippee Zip

I AM DISAPPOINTED with your 4.5-mouse rating of Iomega's new Zip drive (July '95, page 40). My Zip drive has given me nothing but pleasure! My total storage capacity has moved up from 250 MB plus floppies to over a gig. The adapter's size is not a problem at all, and the SCSI choice of 5 and 6 is not a problem unless you have more than

four SCSI devices. I think the Zip deserves 5 mice — it's one of the best Mac products I have ever purchased.

Donald Neyrinck
via the Internet

/ We're glad you were satisfied with the Zip, power supply and all. And there's good news for new Zip buyers — Iomega has begun shipping a much smaller AC power adapter with the Zip drive. / RM

THE LACK OF an on/off switch for the Zip Drive is a problem! All SCSI devices should be equipped with on/off switches that do not harm the computer or its data. I accidentally jarred my new Zip drive, and the power cord fell out of its socket. Unthinkingly, I plugged it back in. The next time I booted up my computer, my hard-disk data was trashed. I am told that any SCSI device can have this happen if it is shut off or turned on while the computer is on.

M. A. R. Barker
barke002@maroon.tc.umn.edu

Quick Praise

YOUR NEW QUICK LABS feature is great. You've said that your testing methods will remain the same month-to-month, so we can make direct comparisons. Can we compare Quick Labs ratings to those in your regular, longer reviews and features?

Jon Voskuil
voskuilj@pictel.com

/ In most cases, no. The products covered in our reviews and features tend to be more-specialized ones for which the Quick Labs tests aren't suitable. For example, we'll perform different tests on RAID storage products than on standard hard drives. The next time we do a roundup of standard monitors, printers, or hard drives, we will consider using the exact same tests as we do for Quick Labs and presenting the test results in the same way so that you can make comparisons. / CE

The Macintosh Diet

THANKS FOR "10 Steps to a Slim System" (July '95, page 104). I am finally able to get rid of some of the memory eaters in my system. I've been trying to do this for a while, and your article has given me a better outlook on making do with what we have.

Ed Reverdy
ereverdy@lynx.neu.edu

WOW! I trimmed almost 50 MB from my hard disk. Great article. Question: Inside

the System Folder is a "suitcase" called System, which claims 930K. However, when I open that suitcase, it contains a mere 41K worth of stuff. What's up with that?

Vann Anderson
OUT4GOLF@aol.com

/ Although the System file is a suitcase that can contain various items, it also contains all the invisible software goodies that make your Mac's system run. In other words, that 930K is vital equipment. Don't throw it out! / JS

YOU INDICATE THAT "disabled" folders in the System Folder can be deleted, but this is how extension-management utilities (Conflict Catcher or Apple's own Extensions Manager, for example) do their work. If you've just booted up with your minimum set of system add-ons (to speed your machine for a superhigh-frame-rate game of Marathon, for example), most of your system extensions, control panels, and the like will be in these folders. If you trash them, you'll lose a lot of useful, and sometimes necessary, files.

Brian Latimer
BLatimer@mdta.mdc.com

/ You're right — you should always check what's inside those folders and *only then* throw away any items in them that you never plan to use again. / JS

Fonts of Wisdom

CONGRATULATIONS on a helpful and informative article ("Ten Tips for Trouble-Free Printing," July '95, page 94). Hopefully, anyone who will be taking their files to a service bureau for output will read it first and take the advice to heart.

One of the most frequent problems that prevents us from running out a customer's file is when fonts used in placed graphics (from vector programs such as FreeHand or Illustrator) are not converted to paths or outlines and those fonts are not sent with the document. Whichever page-layout program a customer uses will not alert that person to the presence of a font in a placed EPS graphic, and if we don't have that particular font available, the graphic will print with Courier instead.

It's just good practice to convert all fonts within a graphic to outlines or paths before placing them in a page-layout program. No fonts, no problems.

Tricia Summers
TriciaS@pub01.halcyon.com

I WAS DISTURBED by the suggestion that whenever you send a job to a service bureau, you should send all the bitmapped and outline fonts with the job. I was under the impression that this practice was illegal and still considered software piracy, something I'm sure you don't advocate.

If font vendors haven't changed their policy on the sharing of fonts, then you should not be encouraging people to break the law, whether it's being enforced or not.

Tom Simmons
tsimmons@aol.com

/ You're right. There are two issues at work: licensing and piracy. Each font foundry has its own licensing regulations. For instance, the license that comes with Adobe font packages allows you to send only the bitmap font (which may contain unique kerning information) to the service bureau. You can send the accompanying outline font with the document as long as the service bureau has also purchased the font — a smart idea, since your service bureau may have a more recent version of the font than you have. To ensure that service bureaus have plenty on hand, Adobe sells fonts to service bureaus at a steep discount. That's an ideal licensing scenario. The reality is that you need your job to print right the first time, and sending fonts — especially unusual ones — along is a common practice. But that's how fonts are pirated and distributed illegally. It's your responsibility to make sure any fonts you send to a service bureau are deleted from its system after your job is run. But call your service bureau first to find out its policy, and don't do business with one that won't honor your requests. / PP

All in the Game

BRAVO! It's about time that one of the main Mac mags realized that Macs are fun (The Game Room, July '95, page 116)!

My one suggestion? Expand The Game Room to two or three pages instead of just one, so you've got more space for hints, cheats, and sneak peeks.

Ray Wilmott
rwilmott@mars.superlink.net

JEEZ, BOB, I'm afraid your preamble doesn't absolve you from guilt. Thanks for helping ratchet up the level of violence in our entertainment. I really fear that in a roundabout way, this virtual-reality stuff turns into real reality. Do you ever wonder if your encouragement of this trend might contribute to a senseless act of violence? I'm not advocating that we all spend the rest of

our lives in a monastery, but I do think there's got to be some middle ground.

Here's hoping you can sleep at night!

Lee Blaske
LBLASKE@aol.com

/ I sleep fine at night. I don't believe there is any correlation between games and real violence. Those who would do violence will do it with or without Marathon. Repeat after me: "It's only a game." / BL

Insta Software

I DON'T UNDERSTAND your review of our Insta products (July '95, page 61). We have introduced nine titles — among them Insta Photographer, Insta Realtor, Insta Printer, Insta Contractor, and Insta Purchasing — with unique solutions for Mac users. In five minutes, users can unwrap, install, and learn the program and produce their first

estimate, invoice, delivery memo, or whatever form they want. And they never have to buy, type, make mistakes on, or misfile forms again.

Certainly, at \$19.95, these products are great values for Mac users. Our products are unique, easy to use (complete with online help), and affordable. Our products aren't "Byzantine" — but they do help Mac users solve some Byzantine problems.

Darhsiung J. Chang, President, Chang Labs
ChanLabs@eworld.com

/ Producing a series of integrated \$19.95 relational databases that attempt to be unique solutions for Mac users is indeed a noble effort. But the Insta interface is just too confusing and not very Mac-like.
/ SR

Power Up

I JUST GOT my Power Computing Power 100 computer yesterday morning. I'm writing this because of the courteous excellence I've experienced since my initial order — and the electric goose-bump thrill I've gotten every time I've booted up in the past 36 hours.

Considering all the friendly and informed support I've received, I will definitely buy from Power Computing again. These pioneering souls are even better at the Mac than Apple!

Scott McCutchen
via the Internet

Sticky Situation

I WOULD LIKE for John Dvorak to provide us with the name of *one* daily newspaper that is using hi-band 8-mm camcorders for its photos ("The Teflon™ Computer Company," July '95, page 184).

Newspapers and wire services do, on occasion, capture a video image if deadlines are tight or no other alternative exists. Some newspapers are using electronic cameras on a limited basis. But I don't know of a single newspaper that routinely prints video images. The quality isn't there, despite the great things the Mac can do.

Jim Arnold
Arnold@plink.geis.com

JOHN DVORAK SAYS it's the Mac's charisma that assures its continued existence. Wrong. The Mac is popular because it works, whereas many of the people I know have trouble understanding and operating

their Windows-based PCs.

I really feel sorry for those forced by unknowing, unfeeling technical-support staffs that insist that their companies standardize on Windows. They know that if they made the leap to the Mac, many of their staff members would soon be out of a job, because they'd no longer be providing support for a platform that is fundamentally flawed.

The reason the Mac keeps going is that there are millions of satisfied Mac users. We keep it going. And we'll continue to do so.

Chris Leuty
Chris.Leuty@umist.ac.uk

Barney Rebel

ANDY'S ARTICLE ("A Confederacy of Barneys," July '95, page 21) was right on. We need computers built in to every desk in every school. I have been using computers in my classroom since 1980. I bought them myself. Now, after all these years, our school will have one Mac in every classroom in the fall and still no computer lab. Our classrooms have no phone lines for modem connections.

Now you can see why teachers like me grieve for our students. And you can also see why I read Andy's column so avidly. What he has said about education and computers should be studied by every parent, teacher, school board, district, and public official.

Jeanie Thiessen
MomJeanie@aol.com

PEOPLE NAMED IHNATKO shouldn't throw stones.

Barney Page
barney@cix.compulink.co.uk ☺

CORRECTIONS

In the August '95 Quick Labs (page 96), FWB's PocketHammer 100FMF and PocketHammer 200FMF should each have received 3.5 mice instead of 3 mice.

We incorrectly labeled the optional ATI video card as the processor daughterboard in our story about the Power Mac 9500 (August '95, page 75). The processor daughterboard (with heat sink) is located just above the six PCI slots and below the power supply.

Our listing of Internet charges for CompuServe (July '95, page 78) should have shown that the standard CompuServe Internet service provides three free hours each month and then bills \$2.50 an hour.



A China Beachhead

SHERLOCK HOLMES WOULD'VE BEEN impressed. After hearing about the scarcity of Power Mac 8100s in the U.S., I went on a

worldwide search to find the missing machines. I finally found them in a most unlikely place — China. At the same time, I discovered something even more scarce stateside these days, but more on that later.

You see, I was in Beijing at Apple's invitation to attend the Apple China Market Forum, a developers' conference for companies developing for China's house-on-fire personal-computer market. While visiting Chinese companies, I was surprised to discover that most of the Macs were new Apple Power Mac 8100s! Rather ironic, considering the shortage at home, but no one could accuse the Chinese of timidity when it comes to embracing new technologies.

The technological revolution that is now sweeping China reminds me of when the Berlin Wall fell and telephone companies rushed in to install new systems, catapulting the technology infrastructure overnight from rotary to cellular and skipping all the stages in between. The Chinese will undoubtedly experience some speed bumps on the road to technological nirvana, but at least they won't be waiting around for hours while a Gaussian blur calculates.

Apple's approach to China mirrors the company's recent reorganization, which has refocused it on its market strengths — graphics, publishing, consumers, and education. Unlike with Japan, where Apple achieved significant success by entering the market before Windows got a foothold, the Chinese business market is already dominated by Windows, so Apple is looking for another approach. According to Robin Abrams, Apple Asia's energetic and perceptive VP and general manager, Apple is putting most of its energies where it knows it can win, which for now means high-end

publishing and computer-aided design.

Despite the recent diplomatic setbacks between the West and China, China remains a Holy Grail for companies looking to achieve more growth by selling products into the Asian market. With more than 1.2 billion people, China has the largest population in the world, and of that population, 300 million are considered potential customers for PC hardware and software companies. One of the most interesting talks during the two-day China Market Forum was given by Wang Jian, deputy director of the Research Institute of Economics State Planning Committee. He talked extensively about the changes China has been experiencing since it liberalized its market in 1979. With more than 50 percent of the gross national output in heavy industry, China is well on its way to being an industrialized country. Per capita income is still low compared to that of other developed countries, but consumer-electronics penetration is relatively high (keep in mind that 900 million Chinese are peasants), with a quarter of the population owning TVs and more than half owning telephones. And with the third-highest savings rate in the world, that scenario will continue to change, as more and more Chinese have money to buy consumer goods.

Success for foreign vendors such as Apple in the Chinese market is a lot more complicated than mastering chopsticks and developing a taste for bear paw. Localization is key, but it's also difficult. With approximately

6,000 characters for Simple Chinese and 13,000 for Traditional Chinese, input remains the Great Wall. Apple's WorldScript technology is a strategic advantage for the Mac, because it allows the seamless use of both single-byte and double-byte languages with the Mac OS and applications. And QuickDraw GX is useful because it makes printing characters easier.

I think that what will really make the difference for Apple in China, though, is something more valuable than any one technical innovation: It's developer enthusiasm and loyalty. When we met with Chinese software developers, I felt like I had gone back in time about ten years, to when the Mac market was just beginning. We didn't really need our trans-

lators; body language alone was enough to convey their enthusiasm. Julian Wan, senior engineer at Shenzhen CTC Company, could have been a Chinese Steve Jobs, waving his hands and talking nonstop about how fantastic the Macintosh is. If he'd known how to say it in English, he would have called the Mac "insanely great."

I think even Apple realizes that it's time to get a similar enthusiasm reignited back here at home. Like it or not, developer support is one area in which Microsoft has been doing a better job. Apple's recent decision to make Guy Kawasaki (the original Mac evangelist) an Apple Fellow for developer issues might be one step toward returning to the halcyon days of the '80s, when Mac developers really had religion.

I'd hate to think that the only place to find it (or a Power Mac 8100) might someday be in China. ▲

When we met with Chinese software developers, I felt like I had gone back in time about ten years, to when the Mac market was just beginning.



Natural Born Filler

THIS MONTH'S COLUMN IS COMING TO you live from beautiful seaside Falmouth, Massachusetts, where the temperature of

the water is a bracing 58 degrees, the wiliness of the native clam population is still no match for the superior intellect of the locals mucking in the surf with their rakes, the chances of an atomically mutated giant sea creature heaving itself onshore and causing bad vibes for beachgoers are remote at best, and the children are far above average. And if my desire to put the PowerBook down and return to my Tom Clancy and my sound track of *Quadrophenia* is so great that I should yield to the temptation to steal a line or two from Garrison Keillor, well, that's to be excused, because this is my annual Vacation column. I'm sorry, but it's July and far too nice outside to do a real column.

No, this time out I'm just going to present updates to the previous year's columns. Partly this is because I have a genuine desire to make needed amendments and amplifications, but the best explanation for why I do this is that nobody's ever actually *stopped* me. So let's start off with the traditional Arts & Crafts segment.

Fish, dear readers. I say, fish. When on that balmy spring afternoon in 1992 I looked to my shelf and saw not a Macintosh 512K but a thing I could dismantle and keep goldfish in, little did I know that with the release of my Macquarium™ plans and directions, I would strike a chord that would resonate throughout the Mac community for years to come. Nowadays, every week brings mail from new Macquarium™ owners, delighted with the fact that they now own a two-gallon fish tank in the shape of a classic Macintosh.

And yet, like Alexander looking out upon the sea, my eyes were on the next horizon. After nearly a year of research and failed

prototypes, I'm finally able to go public with the next generation of Macquarium™ technology: *Macquarium 95*. (Hey, I figured at least *one* functional product ought to ship with that name this year . . .) In addition to a complete overhaul and rewrite of the Classiquarium plans and instructions, Macquarium 95 marks the debut of the *Macquarium Valdez*. It's so named because, like its namesake, the Valdez is a supertanker (with five times the original's capacity) and had similar problems with leakage and killing aquatic life. But those last two problems were licked with the third prototype, and I'm confident that you can indeed allow your sea otters to gambol and frolic around my Valdez without reservation.

Macquarium 95 will be free (but thoroughly copyrighted, so you just watch your step) and will be available from all online entities, including *MacUser's* Web page. Probably. OK, technically I haven't actually finished writing it, but it needs only 5,000 piffling words and a few dozen illustrations, and I'm confident I can have the whole thing ready in the two months it'll take for this column to see print. I think. Well, just keep in mind that Macquarium 95 is free, done because, dammit, I *care*.

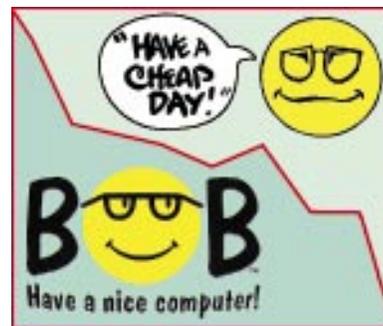
OK, onward with the recaps. Not a few among you questioned the wisdom of my rattling on Apple's many indefensible copyright violations (August), and one of you felt strongly enough about the matter to set fire to my pair of Wozniak and Jobs garden

gnomes under cover of darkness. Well, just to demonstrate that I'm willing to play both sides of the street — and that, unlike certain ivory-tower members of my profession, I'm willing and able to cave right in under the threat of physical violence — I call the world's attention to the figure below. Behold the visage of Microsoft's Bob. Why the smug look? Because Bob knows that his image was stolen lock, stock, and spectacles from one of the many trade-

marked images of Jerry Ellis, regionally beloved proprietor of Building #19, a chain of insurance-salvage stores in the Northeast. It breaks my heart to see an unfeeling corporate behemoth take advantage of the man who brought a generation

of New Englanders the legendary Wet Underwear Sale; the man who bought all the defective windows from Boston's largest skyscraper and sold them as Winnebago-sized glass coffee tables; the man, ladies and gentlemen, who — without a single thought of self — will sell you a complete smokehouse-flavored tuxedo for \$25. Jerry, the author of this column is *behind* you in this: Stick it to 'em for all it's worth. (Note to readers: Hey, they sent Capone away for tax evasion; this could work . . .)

July's column on the politicizing of the Internet generated a lot of positive response but raised two oft-repeated questions. First, people wanted to know why I didn't mention the Web sites for Congress (<http://www.house.com/> and [senate.com/](http://www.senate.com/)) when I provided various Net resources for keeping up with Congressional activity. Well, at the time, the Feds advised me that the sites weren't quite finished yet, and



besides, I was a little pressed for space. Boatloads of government services are available from both sites. If you lack Net access, call the Federal Information Center instead (800-688-9889 from most of the U.S.). Ask the human operators any question at all, and they'll direct you to the appropriate agency. Quite ginchy.

People also wanted to know why I didn't name names. Actually, I did, but because of the aforementioned space restrictions, they were removed during editing. Because the Communications Decency Act did indeed pass through the Senate, I am now thrilled to single out Senators Gorton (Moron-WA), Coats (Idiot-IN), and Exon (Disgrace to the Entire Concept of Congress-NE) and mention in passing Senators Byrd and Heflin (Jumping Aboard the Bandwagon Late in Cynical Attempt to Acquire Political Capital-WV and -AL, respectively.) Terribly unfair of me, sure, but hey, this isn't *Newsweek*. To demonstrate that I'm bashing the pinheads and not the states, I'll point out that our two Democratic senators here in Massachusetts were split, with only Kennedy

choosing to defend basic freedom. The day this act is signed into law, I really won't be able to get any work done at all.

As for April's column, well, all I can say is that I should have known better. I was burned once before by writing an April Fool's column and counting on people to read through to the end to make sure they knew it was just a joke. See, in 1991 or thereabouts, I wrote an April prank for the Boston Computer Society's *Mac* magazine, claiming that original 128K Macs were being recalled by Apple for being fire hazards. People who got beyond the first 400 words read that the problem was caused by the CRT's electron gun suddenly firing backward and trying to melt off all the names of its original designers (who had been fired from Apple). Most people got the gag. Five hundred people didn't and called Apple, which in turn asked me some rather direct questions. Six months later, when I'd forgotten the incident, a national columnist was silly enough to take the story at face value and the whole mess started all over again.

So as you've all probably gathered by now,

I'm indeed still a *MacUser* columnist. Not wishing to embarrass those who didn't read the last line of the April column, I will merely thank them for the kind e-mails, in which they promised to read my new Windows column in *Field & Stream*.

Finally, my sincere apologies to Keep It Simple Systems, which thanked me kindly for the praise I gave its SunRunner PowerBook solar panels back in January and then asked when the Belgium I would be getting around to returning its demo unit. I have showered them with McDonald's gift certificates and have humbly requested forgiveness. Digital mail I can dig. Analog mail I'm not so good with.

Oops . . . on that note, without the benefit of the panels, I'm getting my second low-battery warning here and gotta wrap things up . . . damn! OK! *Andy Ihnatko's Colossal Waste of Bandwidth* will be appearing soon on *MacUser's* Web site! Damn! Now that I'm at the last line, I can say what I *really* think about those gulliblead0sui9u0df9as ☹

MacUser columnist Andy Ihnatko can be e-mailed at andyi@world.std.com.

NEW ON THE MENU

DISPLAYS /

A Multimedia Monitor for the Masses

Apple's new 17-inch display system has sound and vision.

FOLLOWING ON THE HEELS of its all-in-one multimedia Macs, Apple is introducing a new 17-inch display system packed with color and multimedia features.

The first thing you notice about the AudioVision 1710AV is its sleek design, which includes built-in stereo speakers and an omnidirectional microphone. The front panel features ADB, headphone, and microphone ports, making it easy to connect additional devices to the monitor. The compact case rests on a tilt-and-swivel stand.

Under the hood, the new system uses a 17-inch Sony Trinitron aperture-grille CRT with a .26-millimeter dot pitch, which gives you a viewing area of just over 16 inches. Redesigned electron guns make this display 30 percent brighter than competing models that also employ a 17-inch Trinitron tube,

according to Apple. It offers multiple resolutions, from 640 x 480 pixels at 67 MHz up to 1,280 x 1,024 pixels at 75 MHz.

For more-consistent color, the AudioVision 1710AV features Apple's DigitalColor technologies. These hardware and software enhancements automatically correct and color-calibrate the monitor over time, adjusting the guns to compensate for aging phosphors and correcting the monitor's white point to match room lighting conditions. The included Pantone color picker has been optimized for this display system.

Out of the box, the AudioVision 1710AV, which replaces Apple's AudioVision 14, is



Mac- and PC-ready. It ships with a cable adapter for a VGA connector and supports common PC resolutions and refresh rates. On-screen menus let PC users control the display's white point, screen rotation, and so on. Mac users can perform the same functions via a separate interactive application. Estimated street price, \$1,049 to \$1,149. 408-996-1010. / Pamela Pfiffner

PHOTOGRAPHY / MICHAEL FALCONER

NEWS ANALYSIS /

Windows 95: The Big Mac Attack

THREE YEARS OF HYPE and promises. That's what Microsoft has lavished on Windows 95, the first major revision of its PC operating system since Windows 3.0 shipped in 1990. It all comes to fruition on August 24: On that day, Microsoft boosters claim, Windows-based PCs will have closed the usability gap that was once the Mac's biggest asset.

Microsoft will have spent close to \$200 million promoting its new OS and will have seeded more than 40,000 beta testers with the software. In this sea of Windows hype, many people wonder if the Mac can stay afloat. Does Windows 95 mark the death knell for the Mac,

as many PC cynics believe, or is Microsoft only now starting to catch up with advantages the Mac has had since the mid-80s?

From a business standpoint, Microsoft's barrage of "advance looks" at Windows 95 has certainly kept some corporations from buying Macs. Although Mac sales are still on the upswing, they're not growing as quickly as sales in the computer industry as a whole. Windows 95 has forced Apple to abandon its strategy of increasing its market share to 25 percent and instead to focus on the installed base of Mac users.

Drawbacks. But Windows 95 is not without its detractors. *PC Magazine* recently reported that Windows 95 can have serious limitations when combined with 32-bit applications, because it maintains compatibility with current 16-bit applications. Many of the benefits of

running 32-bit applications, such as preemptive multitasking, won't be available to Windows 95 users until they've upgraded their existing 16-bit applications. Preemptive multitasking is a feature Mac users will see in Apple's Copland operating system next year.

After using our prerelease copy of Windows 95, we're convinced that the new version offers a big interface gain over Windows 3.11. It's now easier for PC users to manage files, print, and use their office network. At first glance, the new interface has many of the trappings of the Mac OS, with such Mac phrases as "Shut down" and "It's now safe to turn off your computer." A closer look reveals that Windows 95 is more like OS/2 (with some Windows 3.1 tossed in) than the Mac OS. However, the Windows 95 interface is distinctive enough that neither Windows 3.11 users nor

IBM to Clone the Mac?

Key vendors reveal pricing, PCI plans.

THE COMPANY THAT started the whole PC-clone business is getting into the clone business itself, sort of. IBM eclipsed its own announcement of PowerPC-based desktop machines by making a commitment to bundle the Mac OS with future systems. The other clone players — Radius, DayStar Digital, and Power Computing — are talking prices and committing to PCI.

IBM. The deal is this: When IBM ships PowerPC systems compliant with CHRP (the Common Hardware Reference Platform) sometime next year, the machines will support the Mac OS. We already knew that CHRP-compliant systems should be able to run the Mac OS — no news there — but IBM's firm commitment to offering the Mac OS on its machines means that Apple will gain some much needed credibility in the corporate world.

Don't confuse this news with a Mac OS licensing announcement. When we asked an IBM spokesperson about the specifics of bundling, pricing, and advertising of the Mac OS with IBM systems, all we got was a blank stare.

Radius. Radius has shifted gears slightly in its clone-sales approach. It has announced the Radius 81/110, which still targets high-end users but will definitely appeal to more

than just big-buck video producers. The machine's moniker betrays the similarity to the now-vintage Power Mac 8100/110 — it contains the same motherboard. Configured with 16 MB of RAM, a 2-GB hard drive, and a quad-speed CD-ROM drive, the Radius 81/110 is targeted to sell on the street for \$4,600 to \$4,700.

How does this compare to the newest Apple systems? The Power Mac 8500/120, also with 16 MB of RAM and a 2-GB hard drive, sports a faster processor — a PowerPC 604 — and lists for almost exactly the same price as the Radius 81/110 (see "Power Macs: The Sequel," in this issue). So we'll see whether customers will consider this latest offering from Radius a bargain.

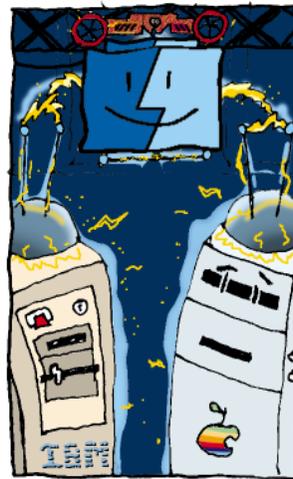
DayStar. DayStar, meanwhile, has finally released the specs and pricing for its Genesis MP system. It will sport — count 'em! — four PowerPC 604 processors running at 132 MHz and will come equipped with 32 MB of RAM, a 2-GB Fast SCSI-2 hard drive, a quad-speed CD-ROM drive, and a mouse. Keyboards, video cards, and display systems are extra. But extra bucks may be in short supply after you've written the check

for \$14,999 to DayStar — no CODs, please. **Power Computing.** Power Computing is also very interested in multiprocessing. Details are in short supply, but the company is considering a full range of possibilities: multiple PowerPC 601s, 604s, even 603e's.

When Power Computing talks about multiprocessing, it can't help but mention its PCI-based systems, due out this fall. As previously reported, Power Computing will offer not only all-PCI machines but mixed-bus computers as well. You'll have a choice between either five PCI slots or two NuBus and two PCI slots. In the low-profile system, you'll be able to choose between a three-slot PCI design and a one-NuBus-and-one-PCI configuration. Power Computing will even offer buyers of mixed-bus systems the option to upgrade later to a system based solely on the PCI bus.

Details on these new systems were unavailable at press time, but Power Computing did let us in on some price cuts for

its current line of NuBus-based systems. For instance, the current top-of-the-line Power 110 (configured with a 110-MHz PowerPC 601, 16 MB of RAM, a 2-GB hard drive, and a quad-speed CD-ROM drive), formerly \$5,649, is now available for \$4,149. Do the math, and Power Computing's price comes out to \$500 less than that of the nearly identical Radius 81/110 system mentioned earlier. Can you say "price war"? / Henry Bortman



Mac users will be able to switch to Windows 95 without some retraining.

Better Than the Mac? For Mac users, there is no compelling reason to switch to Windows 95. Microsoft's Plug and Play technology makes installing hardware on a PC easier than it was before, but the Mac is still easier to set up, use, and maintain.

To counter Microsoft's ad blitz — and send its own message about the Mac OS — Apple has announced a promotional campaign called Windows 95 Assault. But as soon as Microsoft's media machine dies down and Apple really starts showing off Copland, it'll be time for Microsoft to start the hype-and-promise program for its next operating system, Cairo (said to be like Windows NT with a Windows 95 interface). The OS wars never end. / John Rizzo and Jason Snell

Updated Software for Power Mac 9500 Users

PROUD OWNERS of the Power Mac 9500 have no doubt discovered some small problems with applications and less than stellar speeds. Thankfully, vendors such as Adobe and Dantz have already devised fixes for Photoshop 3.0.1 and Retrospect 2.1, respectively.

Photoshop 3.0.4. This update speeds up specific Photoshop functions, including Skew, Rotate, and Gaussian Blur, on all PowerPC 604-based Power Macs. Back in this version is Composite Controls, from version 2.5, which now works on Photoshop layers. There's also a new scratch-disk efficiency indicator that shows when Photoshop runs out of real memory and begins reading data from and writing it to the

hard disk. This can help you decide whether to invest in more RAM to make Photoshop run faster. Registered users can get the update CD-ROM free or the floppy-disk version for \$19.95. 206-628-2749.

Retrospect 2.1A. Because of changes to SCSI Manager for the new line of PowerPC 604-based Macs, Power Mac 9500 users will need this update of the backup application to make Retrospect work on their new machines. The patcher also fixes a bug with startup volumes that have more than 2 GB of free space. Available on ZiffNet/Mac, on CompuServe (go zmc: dwnitech), as retrosup.sit, in the Commercial Updaters library. 510-253-3000. / Sean J. Safreed

E-MAIL /

QuickMail Upgrades with Style in Color

PowerPC-native server software, spruced-up client software mark version 3.5.

OFFERING STYLISH improvements to its interface and powerful new server-based features, version 3.5 of CE Software's QuickMail seeks to win back users disappointed by the limited improvements available in QuickMail 3.0.

Version 3.0 introduced MailManager, a rules-based system that let QuickMail automatically process messages based on their content. MailManager processed messages only after they'd been downloaded from the server, but QuickMail 3.5 adds that ability to a QuickMail server itself. Running with PowerPC-native code, the QuickMail server

On the client side, QuickMail users can now spruce up their messages by using text with various colors, fonts, and point sizes. (QuickMail ignores these styles when sending text files out to the Internet and online services.) QuickMail 3.5 is also Macintosh Drag and Drop-savvy: Filing messages in folders and adding or removing enclosures are now simple click-and-drag operations. And since QuickMail no longer requires any system extensions, it ought to be more stable.

Rounding out the package are the completely rewritten QuickConference, a utility that lets users hold real-time text-based discussions over their office network, and a built-in QuickMail-to-America Online gateway. And that's just the start — although CE Software expects version 3.5 to be available in August, it is already planning for quick follow-up releases, versions 3.7 and



can now reply to, forward, and delete messages — even when a user isn't connected to the server.

4.0, due later this year and in early 1996, respectively. \$199; upgrade from version 3.0, \$3 per user. 515-221-1801. / Jason Snell



STORAGE SYSTEMS /

Pinnacle Apex Tops the MO Mountain

A REMOVABLE-MEDIA DRIVE usually has two drawbacks compared to a hard drive or DAT backup system — slower throughput than a hard drive and lower-capacity cartridges than a DAT drive. Pinnacle Micro hopes to abolish both of these shortcomings with the new Apex magneto-optical (MO) drive.

Developed by Pinnacle, the Apex drive sports a whopping 4.6 GB of capacity on a 5.25-inch cartridge, nearly twice the capacity of other optical storage systems. Boosting capacity to 4.6 GB required several enhancements to current MO technology, such as the ability to use nearly the entire surface of the disc and lighter, smaller optical heads.

The improvements inside mean that the Apex drive's 4.6-MB-per-second throughput is as fast as that of many hard drives. The 17-millisecond seek time is also less than that of any other optical drive, although it's still double that of today's fastest hard drives. The Apex drive uses a technique that allows it to overwrite data in a single pass, making writing to the disc just as fast as reading from it.

The Apex drive is suitable for applications such as desktop video production and publishing. The only real drawback is the lack of an industry-standard cartridge format, which makes it impossible to use Pinnacle's media in other 5.25-inch MO drives. The drive will ship in quantity in September. \$1,695 with one cartridge; cartridge, \$199. 714-789-3000. / Sean J. Safreed

MACUSER/ZMAC UTILITY OF THE MONTH



Scrap Your Scrapbook

THESE DAYS the Clipboard and the Scrapbook seem dated. Now there's ZMac's ScrapBoard. This Drag and Drop-aware application combines the ease of the Clipboard with the utility of the Scrapbook. No longer will you lose a clipping when you add something to the Clipboard: ScrapBoard gives you as many clipboards as you need, collecting clippings on a floating palette. Capture graphics, text, and sound, and drop them into your open documents with one click. Save your ScrapBoards, open multiple sets, and save them in Apple's Scrapbook format — all from pop-up menus.

Created by Jonathan Durkee, ZMac's ScrapBoard is available on ZiffNet/Mac, on CompuServe (GO ZMC:MACUSER) and eWorld (Shortcut: MacUser). / Scott Love

INTERNET /

Less Web, More Rock

INTERNET RADIO. Up until now, that concept hasn't meant much — sound is usually relayed over the Internet by your downloading audio files and then playing them after the transfer is complete. But RealAudio, a new compression technology from Progressive Networks, lets Internet users listen to audio right as it comes across their network link — even with connections as slow as 14.4 kbps. Since the free RealAudio receiver (which will soon be bundled with Web browsers from Netscape, CompuServe, Spyglass, and others) runs in the background, you can continue working on your Mac as the sound plays. Progressive Networks has already signed up ABC and NPR as content providers. Who's next? Howard Stern? info@realaudio.com or http://www.realaudio.com/. / JS

3-D ANIMATION /

QuickDraw 3D-Savvy Applications Coming

Strata first out of the gate.

THE LATEST ROUND of PowerPC 604-based Power Macs has arrived, and with them comes Apple's latest technology, QuickDraw 3D. The first round of applications from Electric Image, Specular, and Strata that support QuickDraw 3D's new technology are on their way. Couple these with PCI-based QuickDraw 3D accelerators from YARC and other companies, and the Power Mac 8500 and 9500 are poised to take on high-end workstations such as those from Silicon Graphics.

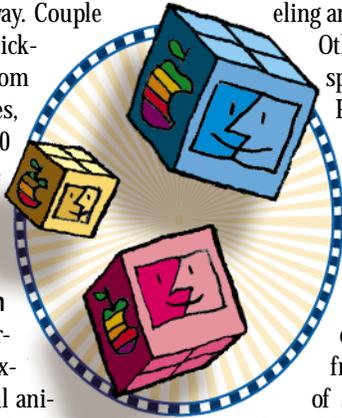
ElectricImage Animation System 2.5. The latest version of the Mac's most expensive and most powerful animation package offers new features, such as *inverse kinematics*, for creating joints that define the motion of characters from the inside out, and the addition of rendered previews within the application. An update planned for later this year will support shaded animation previews, thanks to QuickDraw 3D. \$7,495; upgrade from 2.1, \$495. 818-577-1627.

Infini-D 3.1. With the recent release of

Infini-D 3.0, Specular added a new modeling system and animation features. Version 3.1, due by October, will support QuickDraw 3D. The interactive renderer in QuickDraw 3D will allow Infini-D users to see shaded renderings in both the modeling and the animation previews.

Other additions include speed enhancements for PowerPC 604-based Power Macs. \$895; upgrade from 3.0, less than \$50. 413-253-3100.

StudioPro 1.75. Available now, the QuickDraw 3D-savvy update to this all-in-one animation application from Strata offers previews of shaded renderings. Strata has also added support for PCI-based hardware accelerators, which can render scenes several times as fast as a single PowerPC processor. When multiprocessing Power Macs from DayStar Digital and others become available, StudioPro's high-quality ray-tracing renderer will support multiprocessing, for faster final rendering. \$1,495; upgrade from 1.5, \$99; upgrade from 1.0, \$149. 801-628-5218. /SJS



Apple's QuickDraw 3D Comes in the Box

ALTHOUGH 3-D APPLICATIONS are just becoming QuickDraw 3D-savvy, the Mac OS already is. Available as an optional installation for all new Power Macs with more than 16 MB of RAM, the QuickDraw 3D extension lets applications show and manipulate 3-D objects just like they do text and graphics. (The QuickDraw 3D extension also ships with applications that support it.) You can copy and paste

3-D objects into the Scrapbook or into a compatible version of SimpleText. And using new tools available in QuickDraw 3D-savvy applications, you can rotate, zoom in on, or pan around objects. The rendering system in QuickDraw 3D allows 3-D objects to be viewed in wireframe or full-24-bit shaded views. The renderer even supports textures that are wrapped around objects, such as a label pasted on a bottle.

Apple has additionally introduced a cross-platform file format called 3DMF, which handles 3-D objects, lighting information, and textures, so you can move an entire scene intact from one 3-D application to another. This gives you the advantage of using the best application to create final renderings or animations of 3-D scenes. /SJS



QuickDraw 3D can render shaded models, such as this lion, in real time.

Macromedia Takes 3-D to the Extreme

COMBINING THE POWER of MacroModel's spline-based modeling tools with a new rendering and animation system, Macromedia is replacing all of its previous 3-D tools with Extreme 3D. The new package includes a unique animation interface and Extreme FX, a complete 2-D-animation and -compositing tool that's similar to Adobe After Effects.

Many of the tools in Extreme 3D will be familiar to MacroModel users, but new Boolean modeling tools allow adding, subtracting, and intersecting of surfaces. So, if you can imagine it, Extreme 3D can probably model it.

Macromedia has added a flexible animation engine that can animate any shape you create, right down to the point level. Its powerful sequencer offers complete animation control over object characteristics such as color and

reflectivity and over spatial information such as rotation and position for whole objects or individual surface points.

Extreme 3D's interface shows animation tracks in a unique way that reduces the amount of information on-screen at one time. For instance, if you change the color of an object over time, only that track appears in the sequencer. Of course, there's also spline-based animation. You can combine 3-D animated elements with 2-D animation in the Extreme FX post-production application, using the same sequencing interface as that of Extreme 3D.

Extreme 3D for both the Mac OS and Windows will be available in October, for less than \$795. An update to version 1.1 next year will support QuickDraw 3D's interactive renderer and the 3DMF file format. 415-252-2000. /SJS



PRINTERS /

HP's Inkjet Invasion

Fast new models target home and offices.

PUMPING OUT INKJET printers at a rapid clip, Hewlett-Packard is peppering the market with low-cost units designed for home and small-business users.

DeskWriter 600. Priced for home users, Hewlett-Packard's new \$365 DeskWriter 600 is a monochrome printer that is able to print in color with the addition of the \$49 Color Kit, a three-color (CMY) cartridge



that replaces the single black cartridge. The DeskWriter 600 uses the same reformulated inks as the DeskWriter 660C (see New on the Menu, July '95, page 26) and offers 600-x-600-dpi black printing and 600-x-300-dpi color printing on glossy paper or 300-x-300-dpi color on plain paper. HP's ColorSmart and Resolution Enhancement technologies improve the appearance of color graphics and of black type and line art, respectively.

Faster than its predecessor, the popular

DeskWriter 540, the DeskWriter 600 can print black at 4 ppm and color at 1 ppm in its ink-saving EconoFast mode; in high-quality mode, the print rating slips to 1 ppm for black and 4 minutes per page for color. The one-size-fits-all media tray accepts 100 letter-sized sheets (plain, premium, or glossy paper), 50 transparencies, or 20 envelopes. A serial port with an AppleTalk interface is included. A three-year warranty is standard.

DeskJet 850C. For small-business users, the new DeskJet 850C is HP's fastest inkjet printer to date, zooming along at 6 ppm (black) and 2 ppm (color) in 300-dpi EconoFast mode; print speeds for 600-dpi, high-quality output are 4 ppm (black) and 1 ppm (color). The printer includes HP's new Color Resolution Enhancement technology (C-REt), which modulates the printer-dot size, for smooth-looking images.

Paper capacity is 150 sheets of letter-sized paper (plain, premium, or glossy stock) or 15 envelopes. Two ink tanks — a high-capacity black cartridge and a three-color cartridge — are standard.

List-priced at \$658, the DeskJet 850C includes both a serial and a parallel port, for connecting to Macs and PCs. As a bonus for the eco-conscious, the DeskJet 850C is manufactured with 25-percent recycled plastic. A one-year warranty is standard. 800-752-0900. / Pamela Pfiffner

Two Modems Talk Back

FAX, VOICE-MAIL, and data transmissions are all important parts of any small office's link to the business world, but having all that usually means buying lots of equipment and paying to install multiple phone lines. Two new V.34 modems from Prometheus and Hayes let you add these high-priced systems to your business without breaking your budget.

Prometheus CyberPhone V.34. In addition to a maximum data-transfer rate of 28.8 kbps, the CyberPhone V.34 (\$259) offers an integrated voice-mail system, allowing incoming callers to leave voice messages in multiple voice-mail boxes, and automatically senses and receives incoming fax transmissions — it's all through

software running on your Mac. A speakerphone version of the modem (\$299) lets you use the CyberPhone V.34 to conduct hands-free conversations. 503-692-9600.

Hayes Optima 288 Business Modem. Also featuring a speed of 28.8 kbps and software that handles voice-mail and faxes, the Optima 288 Business Modem (\$579) offers extras such as remote-configuration options, dial-back security, and automatic call routing. An extension of its voice-mail system allows users to create an automated "fax on demand" system, with which callers can select documents from a menu and have them automatically faxed to them. 404-840-9200. / Jason Snell



CD-ROMS /

But Is It Art?

IF YOUR INABILITY to tell a Gauguin from a van Gogh is rendering you a pariah with the smart set, never fear: The following CD-ROMs will have you spouting artspeak in no time.

Passion for Art. In the '20s, an eccentric entrepreneur, Dr. Barnes, began acquiring some of the world's great Impressionist and Postimpressionist masterpieces — and kept them out of the public eye for many years. Corbis Publishing now brings this private collection to the masses with a new CD-ROM called *A Passion for Art: Renoir, Cézanne, Matisse and Dr. Barnes*. Walk through a virtual gallery to see the paintings of the Barnes Foundation displayed in sizes and positions relative to their actual wall locations, or go on a guided tour with noted art historians. Distributed by Maxis. \$50. 800-526-2947 or 206-562-6000.

Starry Night. Van Gogh captured our imaginations with his depiction of a pre-dawn night sky. However, art historian Albert Boime believes the painting may have been van Gogh's attempt to capture the many technological and cultural changes occurring in 1889. *Voyager* brings Boime's theories to life with its new CD-ROM *Van Gogh: Starry Night*. Art connoisseurs and novices alike can listen to more than 90 minutes of audio, read van Gogh's correspondence, view more than 200 images, and check out the full text of Boime's lecture. \$40. 800-446-2001 or 212-431-5199.

With Open Eyes. It's never too early to start developing your kids' appreciation for the arts. The new CD-ROM *With Open Eyes*, also from *Voyager*, allows young children to view more than 200 works of art from The Art Institute of Chicago at a pace that is more their speed than the usual trip to the museum. Kids can traverse a globe to find out the country of origin of a particular piece, zoom in to one of several "hot spots" on a painting to get a closer look, and make a scrapbook of their favorite works. \$40. 800-446-2001 or 212-431-5199. / Kristin Balleisen

NEW & NOTABLE

HARDWARE /

Kensington MasterPiece HomeOffice. This combination surge suppressor and power-control center offers five switches, six electrical

outlets, and a telephone surge protector, protecting computer equipment while giving users control over the pow-

er going to their computer and peripherals. \$69. 800-535-4242 or 415-572-2700.

APS Q 4.0. This 3.5-inch 4-GB hard drive is based on a Quantum Atlas mechanism and is available in external (\$1,500) as well as internal (\$1,400) configurations. 800-235-2753 or 816-483-6100.

General Parametrics Spectra*Star Printers. These plain-paper thermal color printers offer a top resolution of 600 x 300 dpi and are PostScript Level 2-compatible. The Spectra*Star 240 (\$2,995) sports a 25-MHz RISC processor and 6 MB of RAM. The Spectra*Star 280 (\$3,995) is powered by a 33-MHz RISC processor and comes with 10 MB of RAM. Each printer additionally offers an optional Ethernet port and an optional external hard drive. Serial, parallel, and LocalTalk ports are standard. 510-524-3950.

Summagraphics Summa Expert. Targeted at graphics and CAD professionals, this tablet is sensitive to 256 levels of pressure and comes in two configurations — either 12 x 12 inches (\$499) or 12 x 18 inches (\$899). The Summa Expert also provides customizable buttons on a cordless stylus. 512-835-0900.

Tamarack Z1-600. A 30-bit single-pass flatbed color scanner, the Z1-600 uses a custom ASIC chip to improve scanning speed. A transparency adapter for slides and negatives and an automatic document feeder are available as options. \$699. 714-744-3979.

Optical Access CD/Maxtet 6X Servers. Spinning at 6X speeds, these CD-ROM servers are designed to give users quick access to CD-ROM-based files on AppleShare servers. A built-in controller allows the server to offer 7 drives with one SCSI ID (\$8,495) or 21 drives with three SCSI IDs (\$24,995). 617-937-3910.

Sampo AlphaScan 17mx. A 17-inch display system offering digital controls, the AlphaScan 17mx features a compact cabinet design and a maximum resolution of 1,152 x 882 pixels. \$699. 404-449-6220.

Panasonic LK-MC604S. This quad-speed CD-ROM drive features a tray-loading design and a power-saver feature that reduces power consumption when the drive is not in use. \$499. 800-742-8086 or 201-348-7000.

SOFTWARE /

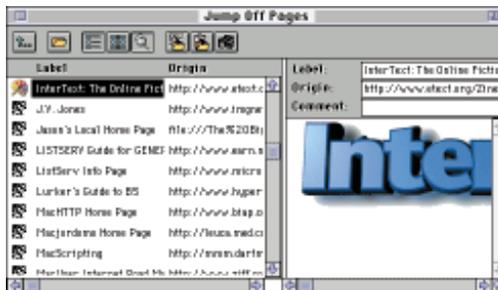
Digital Chisel 2.0. The new version of this tool for creating multimedia documents for use in education features Power Mac support, the ability to play concurrent sound, speed control for animations, new templates, and a clip-media CD-ROM. \$160; upgrade from version 1.0, \$15; CD-ROM upgrade with clip media, \$45. Pierian Spring Software. 800-472-8578 or 503-222-2044.

Blackthorne. An adventure game that combines shoot-'em-up action with logic puzzles, this PC title comes to the Mac with new, 256-color graphics. In an SF/fantasy world, the player takes the role of a prince who returns to his planet to defeat its evil ruler and his minions. \$40. Macplay. 714-553-3521.

Pro Forma 3. The completely rewritten version of this financial-analysis tool adds new forecasting features, depreciation-calculation capabilities, and other functions to provide users with information that assists them in making financial decisions. \$327; upgrade from previous versions, \$49. Spreadware. 619-772-1758.

ScreenToyz. If you thought the screen-saver craze was over, you were wrong. ScreenToyz does screen savers one better by connecting a toy to your Mac via the ADB port. Whether you choose the TNT detonator, the toilet flusher, or the high-voltage switch, you can vent your frustrations while interacting with accompanying screen animations. \$40. Creative Insights. 408-366-6100.

GrabNet. A utility to help Net surfers stay organized, GrabNet catalogs images, text, and URLs, covering places you've been on the Net. By dragging and dropping items into folders and subfolders, users of the Internet can keep track of what they have found and where they have been online. Double-clicking on an item in the GrabNet window automatically brings that item up in your Web browser. \$20. The ForeFront Group. 800-961-1101; <http://www.ffg.com/>.



MACINTOSH PRICE INDEX

THE UNITED COMPUTER EXCHANGE index reflects average sales prices of new and used Macs as of June 29, 1995. Prices (except those for compact models, Performas, and LCs) do not include a monitor or a keyboard. The United Computer Exchange is a national clearinghouse of used microcomputer equipment.

Mac Model	New	Used
SE/30 (5/40)		• \$500
Classic II (4/40)		• \$400
Color Classic (4/80)		• \$700
LC III (4/80)		• \$400
Performa 475 (4/160)		• \$700
Performa 550 CD (5/160)		• \$800
Performa 575 CD (5/250)		• \$1,050
IIsi (5/40)		• \$375
IIci (5/80)		• \$600
IIfx (8/160)		• \$750
Quadra 605 (4/80)		• \$550
Quadra 610 (8/160)		• \$750
Quadra 630 (4/250)		• \$800
Quadra 650 (8/230)		• \$1,700
Quadra 660Av CD (8/230)		• \$1,100
Quadra 700 (8/230)		• \$1,150
Quadra 800 (8/230)		• \$1,800
Quadra 840Av CD (8/230)		• \$2,200
Quadra 900 (8/230)		• \$1,500
Quadra 950 (8/230)		• \$2,000
Power Mac 6100/60 (8/250)		• \$1,050
Power Mac 6100/66 CD (8/350)	\$1,799	\$1,500
Power Mac 7100/66 (8/250)		• \$1,750
Power Mac 7100/80 CD (8/700)	\$3,049	\$2,500
Power Mac 8100/80 (8/250)		• \$2,500
Power Mac 8100/100 CD (16/1 GB)	\$4,199	\$3,600
Power Mac 8100/110 CD (16/2 GB)	\$5,299	\$4,200
PowerBook 145B (4/80)		• \$700
PowerBook 150 (4/120)	\$999	\$750
PowerBook 165 (4/80)		• \$950
PowerBook 165c (4/80)		• \$1,150
PowerBook 170 (4/40)		• \$1,000
PowerBook 180 (4/80)		• \$1,400
PowerBook 180c (4/80)		• \$1,600
PowerBook 520 (4/160)	\$1,399	\$1,200
PowerBook 520c (4/160)	\$1,899	\$1,600
PowerBook 540 (4/240)		• \$1,700
PowerBook 540c (4/320)	\$2,999	\$2,600
Duo 250 (4/200)		• \$1,200
Duo 270c (4/240)		• \$1,700
Duo 280 (12/240)		• \$1,700
Duo 280c (4/320)	\$3,379	\$2,500

• = discontinued model

For more pricing information on these and other models, 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). On AppleLink, look for it in ZiffNet Selections:MacUser Software:Reference. On eWorld, go to shortcut MACUSER, in MacUser Software Library:MacUser Special Files.

REVIEWS & Quick Clicks



Apple Color StyleWriter 2400 and 2200 and HP DeskWriter 660C / New crop of razzle-dazzle color inkjet printers.

COMPETING HEAD TO HEAD for years with their printing products, Apple and Hewlett-Packard are at it once again with a new crop of color inkjet printers for home users and small offices. Apple's two new offerings — the Apple Color StyleWriter 2400 and the portable Apple Color StyleWriter 2200 — feature excellent software controls and fairly speedy performance. The HP DeskWriter 660C couldn't keep pace with the Apple printers, but it boasted the best-looking text. All three printers are easy on the budget — each comes with an aggressive price tag of \$500 or less.

text and line art and 360 x 360 dpi for grayscale and color images. Setup is a snap, literally. Snap in two pieces — one for the ink cartridge and one for the two ink tanks (CMY and black) — and you're done.

You connect the printer to your Mac's serial port or plug it directly in to your network by using the optional \$105 LocalTalk module. For those who use the serial connection, Apple's ColorShare technology lets you share the printer on your network — an especially useful feature for EtherTalk and TokenTalk networks, because Apple doesn't make an interface module for those networks.

Its software is what makes the StyleWriter 2400 a standout. Support for Apple's Desktop Printing lets you print simply by dragging your document to a printer icon on the desktop.

During the printing process, the icon changes to give you feedback on how the job is progressing and alerts you if there's an error. You can also specify what time you want your document printed as well as which pages you'd like to print.

In addition, the software lets you print two or four reduced-sized pages on a single sheet of paper. You can also print watermarks — transparent text or graphics that overlay a document. Apple includes some ready-made watermarks, but you can create your own, using any application that supports the PICT or PICT2 formats. This is a great feature, but we wish the watermarks would show up in print previews. We also would have liked the Print dialog box to contain an indicator that tells you whether the watermark is enabled.

Watermarks aside, Apple has included plenty of other useful information in the StyleWriter 2400's Print dialog box. You can select media (plain, coated, or glossy paper; transparencies; or back-print film), print quality (draft, normal, or best), and halftone and ColorSync options. You can also activate a utility that cleans the print head. Additionally, the printer comes with a good selection of 64 TrueType fonts.

Apple Color StyleWriter 2200

Weighing only three pounds, the sleek StyleWriter 2200 closely mirrors the print quality and speed of its larger sibling. It also features the same settings, the same versatile and convenient software, and the same selection of 64 TrueType fonts.

Like its sibling, the StyleWriter 2200 has only two pieces to snap into place — an ink cartridge and an ink-tank component. The ink tanks are tiny and empty quickly, so you probably won't want to use the StyleWriter 2200 as your primary desktop printer. If you're printing only black-and-white documents, you can opt for a higher-capacity black-only ink cartridge.

The printer's cover opens to provide an automatic sheet feeder that can hold as many as 30 sheets of paper or 5 envelopes. You connect the StyleWriter 2200 to your Mac's serial port — a LocalTalk connection

REVIEWS RATING KEY

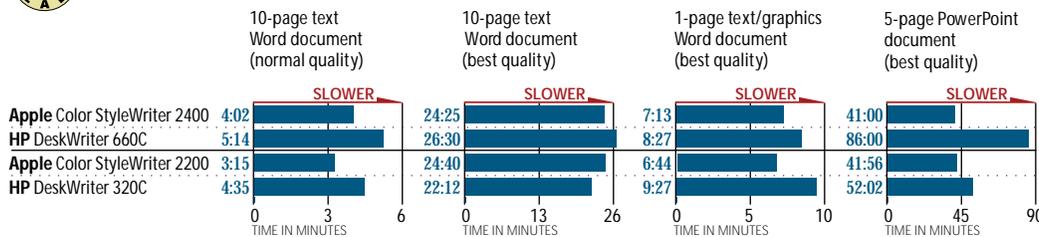
●●●●●	OUTSTANDING
●●●●	VERY GOOD
●●●	ACCEPTABLE
●●	POOR
●	SERIOUSLY FLAWED
*	DANGEROUS

Apple Color StyleWriter 2400

The StyleWriter 2400 cranks out excellent output quality at speeds that are impressive for an inkjet printer. It offers a choice of two print settings — 720 x 360 dpi for black



Battle of the Inkjets/ speed-testing new desktop and portable color printers



StyleWriter 2400, in several of our tests. To be fair, it's important to note that the DeskWriter 320C represents old technology — HP plans to introduce a new portable printer this fall.

is not available, but you can share the printer over an AppleTalk network, using ColorShare.

The one disappointment with Apple's portable printer is its battery design. The battery itself is small and compact and provides about 200 prints per charge, but to use it, you have to connect a rather cumbersome battery attachment to the back of the printer. It would be nice to be able to use the battery without having to lug along the attachment. And there's no way to check the status of the battery.

HP DeskWriter 660C

Like the StyleWriter 2400, the DeskWriter 660C uses two ink cartridges, one CMY and one black. Setup and installation are simple. The DeskWriter 660C comes with a LocalTalk connection built in. It also has a serial connection and includes 27 TrueType fonts.

The DeskWriter 660C prints at 600 x 600 dpi for best-quality black text and line art, 600 x 300 dpi for best-quality color and grayscale images printed on glossy or transparent media, and 300 x 300 dpi for normal-quality color and grayscale images printed on premium and plain paper. HP's ColorSmart technology automatically selects the right settings for each print job and optimizes print quality for each type of element on a page — text, graphics, and photographic images.

Software controls provide options for media selection (plain, coated, or glossy paper, or transparencies) and print quality (best, normal, or EconoFast). Clicking on the handy preview button shows you what each page will look like before you print it.

Print Quality and Speed

To see how the three new color inkjet contenders compare in print quality and speed, we printed several types of documents at a variety of print settings. We compared the

results of the Apple Color StyleWriter 2400 with those of the HP DeskWriter 660C and the results of the Apple Color StyleWriter 2200 with those of HP's veteran portable printer, the DeskWriter 320C. Our test platform was an Apple Power Macintosh 6100/60 that had 24 MB of RAM and was running System 7.5.

For black text, the two full-sized printers produced output that was very similar in quality, although the DeskWriter 660C's 600-x-600-dpi setting — combined with HP's proprietary Resolution Enhancement technology — gave it the edge. The text produced by the Apple printer was of a very high quality but wasn't as smooth as the DeskWriter 660C's.

For color output, however, the Apple printer was the clear winner. Although the DeskWriter 660C produced vibrant colors for business graphics, the Apple printer boasted sharper, crisper details, for better-looking photographic images.

The Color StyleWriter 2400 also bested the DeskWriter 660C in terms of speed. This is not surprising when you consider that the HP printer, with its higher resolution, is processing much more data than the Apple printer. We also suspect that the HP printer would deliver better speed results if it were using a PowerPC-native driver, which was not available at testing time.

For portable printing, the Apple Color StyleWriter 2200 ran away with the show, outclassing the HP DeskWriter 320C in print quality and overall speed. The HP printer really falls short when you're printing documents that contain color and black elements. For those types of documents, the DeskWriter 320C uses a process black with the CMY cartridge, which results in a muddy, dull brown rather than a true black.

The StyleWriter 2200 not only blew by the HP portable printer in every speed test but one but it also bested its larger sibling, the

The Bottom Line

If you're looking for an affordable desktop color printer, you can't go wrong with the Apple Color StyleWriter 2400, with its feature-rich software, accurate color printing, and relatively zippy performance. Although the HP DeskWriter 660C is a solid offering, especially if you plan to print mainly black text, its speed isn't as impressive as the Apple printer's. For portable printing, the Apple Color StyleWriter 2200 is a three-pound wonder that boasts amazingly good color-output quality — we recommend it as the perfect PowerBook printing companion for Mac users on the go. / Tony Bojorquez

Apple Color StyleWriter 2400

Price: \$400 (estimated street).

Pros: Excellent speed and output quality. Well-designed software.

Cons: No preview for watermarks.

Company: Apple Computer, Cupertino, CA; 800-538-9696 or 408-996-1010.

Reader Service: Circle #401.

Apple Color StyleWriter 2200

Price: \$400 (estimated street).

Pros: Excellent speed and output quality. Well-designed software. Compact and lightweight.

Cons: No battery-management tools. Cumbersome battery attachment. Small-capacity ink tanks.

Reader Service: Circle #402.

HP DeskWriter 660C

Price: \$500 (estimated street).

Pros: Sharp text. Vibrant colors for business graphics. Built-in LocalTalk.

Cons: Not as fast as the Apple printers. Dense color in photographic images.

Company: Hewlett-Packard, Santa Clara, CA; 800-752-0900.

Reader Service: Circle #403.

Microsoft Project 4.0 / Online assistance helps business users over the hurdles of project management.

A GARGANTUAN LEARNING CURVE has kept most business users away from project-management software, although the size of their projects often merits the use of a software tool. Even Microsoft Project, one of the most accessible of the project-management programs currently available, has required a considerable investment in learning time. However, with the newest release — Microsoft Project 4.0 — the Redmond folks have pulled out all the stops

for project scheduling. You can enter tasks, assign resources, and modify schedules, using the calendar.

But its familiarity aside, we found Project's calendar somewhat limiting. If you have a large number of tasks scheduled for the same day, some may be out of view, requiring you to double-click on them to view them. The calendar's method of task entry requires that you click your way through a series of dialog boxes — a much more tedious method than using a Gantt chart. And you can't organize tasks into related groups.

Because of these limitations, we recommend that you take the plunge and learn to use the more versatile Gantt chart to create a schedule. Project's default view, the Gantt chart, lists tasks in a column along the left of the screen and displays a time scale across the top of the chart. To the right of each task, Gantt-chart bars indicate start and finish dates — the longer the bar, the longer the task.

Other graphical views of your project include the PERT chart (a flow-chart-like view that shows the relationships between tasks); a Resource Usage view; and a special Tracking Gantt view, which shows you your original plan alongside the actual schedule.

Project has always had robust online help, but even experienced planners were easily confused by arcane project-management terminology and the plethora of high-powered features. Project 4.0 adds Cue Cards to its arsenal of help tools.

Cue Cards offer detailed step-by-step instructions on a multitude of project-management tasks. We found them extremely helpful for walking us through the nitty-gritty details of menu selection, dialog-box choices, and mouse maneuvers. There are Cue Cards for assigning people to tasks, highlighting tasks that directly influence a project's finish date, and updating your schedule with actual start and finish dates.

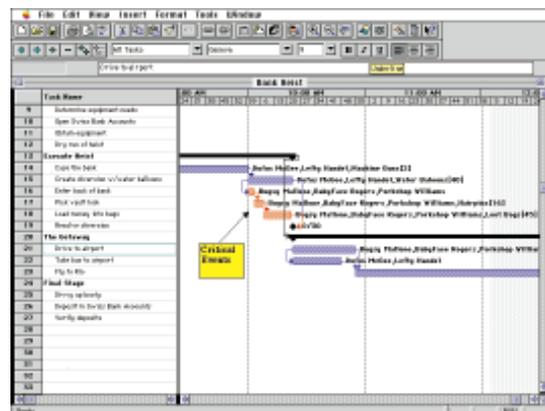
The instructions are always clear and easy to follow.

Project's Cue Card-based tutorial is a good way to begin learning the program. It shows you, step by step, how to create a simple project, using your own data. The tutorial is so clear that you may find yourself using it as a crutch for your first several projects. But keep in mind that the tutorial scratches only the surface of Project's capabilities — you'll need to delve into other Cue Cards for further information.

Given Project's bare-bones printed documentation, the Cue Cards are a big help, but there is one drawback to using them. Although Cue Card windows aren't fixed (meaning you *can* move them around on the screen), you *can't* shrink them. We found that they often blocked our view of important areas of the screen.

Cue Cards are great, but you have to know that you activate them from the tool bar. What if you *think* you know what you're doing when you don't? Project is smart enough to sense when you're getting off track. When that happens, the program's Planning Wizard pops up to offer unsolicited advice. Missives from the Wizard offer in-depth explanations of what you're doing wrong, with polite suggestions for ways to overcome the problem.

The Wizard's jurisdiction extends beyond errors — you'll hear from the Wizard if it thinks you're working inefficiently or if it notices schedule conflicts you might have overlooked. For example, if you type in the same durations for several tasks in a series, it will suggest a data-entry shortcut. If you try to schedule a task on a day you previously designated as a holiday, you'll hear from it. If it gets too annoying, you can lock it out, but you'll miss out on some helpful advice. According to Microsoft, there are 36



The tool bars and menu structure of Microsoft Project 4.0 will make the program instantly familiar to users of other Microsoft business applications.

in their efforts to make Project approachable enough to become a mainstream business tool. To some extent, they've succeeded, but like any powerful program, Project still comes with a learning curve.

Déjà Vu

When you first launch Microsoft Project, chances are it will look instantly familiar to you. That's because the program has been redesigned to resemble and work like its popular siblings — Microsoft Word, Excel, and PowerPoint. Project's customizable tool bars, tabbed dialog boxes, and menu structure will make users of other Microsoft products feel right at home. Other borrowed features include drag-and-drop support and helpful Wizards.

Also designed to make Project a more comfortable fit for business users is the new Calendar view, which provides an alternative to using esoteric Gantt and PERT charts



The Planning Wizard pops up with advice when Microsoft Project senses that you've made a mistake.

scenarios that prompt a visit from the Planning Wizard.

To help you create good-looking Gantt charts for presentations, there's also the Charting Wizard, which grills you about design preferences and executes selections based on your answers.

Power users will appreciate Project's new support for Visual Basic for Applications (VBA), a good tool for creating macros. Microsoft Excel also uses the Visual Basic macro-programming language, so it's easy to create macros that link the two programs. If you're a veteran Project user and you've already built a sizable collection of macros in Project 3.0, you'll be glad to know that the new version will translate the macros into VBA when you edit them with Project 4.0.

One especially useful macro that works with Project and Excel comes prewritten in Project 4.0. You use it to adjust resource costs for inflation over time. The one drawback is that, as with other macros that work with Project and Excel, you must have both programs running concurrently. It would be nice to have this feature built in to Project itself, so you wouldn't have to run Excel to take advantage of this useful tool.

Savvy users will also appreciate Project's beefed-up multiproject features, which now let you combine details from as many as 80 projects.

The Bottom Line

Microsoft Project 4.0 features a slew of terrific new learning aids for business users unfamiliar with project-management tools. But it's still far from a learn-in-one-afternoon mainstream application. However, if you manage projects that involve lots of resources, tasks, and dependencies and if you face significant penalties when projects fall behind, then investing time and effort in feature-rich Project 4.0 will almost certainly pay off. / Shelley Cryan

Microsoft Project 4.0

Price: \$470 (estimated street).

Pros: Excellent online assistance. Feature-rich. Highly customizable.

Cons: Fairly steep learning curve. Cue Cards often obstruct views.

Company: Microsoft, Redmond, WA; 800-426-9400 or 206-882-8080.

Reader Service: Circle #404.

Live Picture 2.0

High-res image editor gets tune-up.

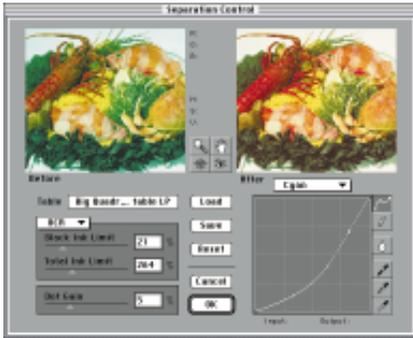
THE HOTTEST LIVE PICTURE news broke several months ago when HSC Software slashed the price of its high-resolution image editor from \$3,995 to \$995. Now the company has released version 2.0, which not only enhances the core functionality of the program but also adds several significant new features.

Although Live Picture still lacks direct support for CMYK files (the program's native color mode is RGB), the combination of a native 48-bit-color space and version 2.0's improved color-separation and color-conversion code does a very good job of retaining black-plate information for imported CMYK images. Moreover, the program's color-correction tools now include the option to use CMYK values, an important addition.

Most graphics professionals use Live Picture in conjunction with Adobe Photoshop. To allow the two programs to work together more smoothly, Live Picture 2.0 now includes a Photoshop-acquire module that lets you import IVUE (Live Picture's proprietary file format) images directly into Photoshop.

Another important Photoshop-related addition is Live Picture's new support for vector-based paths. This is especially valuable if you're converting masks generated by Live Picture's precise Silhouette function — which automatically creates masks based on color and brightness attributes — into paths and clipping paths. Clipping paths are essential for importing rendered Live Picture images into layout programs such as QuarkXPress or into other applications that recognize clipping paths, such as Adobe Illustrator. You can also stroke paths with Live Picture's painting tools, a useful method for creating precise brush-stroke effects.

Production design shops will appreciate Live Picture's new batch-processing feature, which allows the program to render multiple projects unassisted. And version 2.0 has a smaller memory requirement than before — the minimum has been reduced from 32 MB to 20 MB, and the recommended amount of memory has gone from



Expanded CMYK capabilities in Live Picture 2.0 include curve-controlled color correction and control over UCR and GCR, a feature crucial for color-separation work.

64 MB to 48 MB. In general, we also found version 2.0 snappier than the previous version, with speed improvements on everything from screen redraw to the final rendering process.

In addition to the new features, Live Picture 2.0 boasts a multitude of subtle improvements. You can now directly manipulate alpha channels in imported images without first converting the channels to masks or stencils. Live Picture's Open dialog boxes now sport helpful file previews, and you have the ability to turn screen anti-aliasing on and off. A four-point perspective tool with expanded distortion capabilities replaces the three-point perspective tool in the previous version. Furthermore, the program is no longer dongle-protected.

Still missing from Live Picture is an Unsharp Mask filter. We'd also like to see a more useful cloning tool and more-standard brushes.

The Bottom Line

At a fraction of the cost of the original release, Live Picture 2.0, with its new vector-based-path support and improved CMYK-related tools, is sure to have broader appeal to digital artists. / David Biedny

LivePicture2.0

Price: \$995 (list).

Pros: More reasonably priced and requires less memory than before. Improved CMYK controls. Vector-based paths. No dongle protection.

Cons: No Unsharp Mask filter. Lacks direct CMYK support. Brushes and cloning tool need improvement.

Company: HSC Software, Carpinteria, CA; 805-566-6200.

Reader Service: Circle #405.

PhotoFix / Photoshop alternative provides simpler tools at a more affordable price.

PHOTOSHOP'S COMPLEXITY, high price, and ferocious RAM requirements aren't for everyone. If all you need is a basic, reliable image-editing program that lets you do simple compositing and retouching, you'll probably be better off with Microspot's \$249 PhotoFix, an easy-to-use program with a full complement of paint and image-editing tools. PhotoFix is packaged with PhotoFix Browser — an equally easy light-duty image-cataloging application — and a Photo CD disc with 100 attractive, royalty-free images.

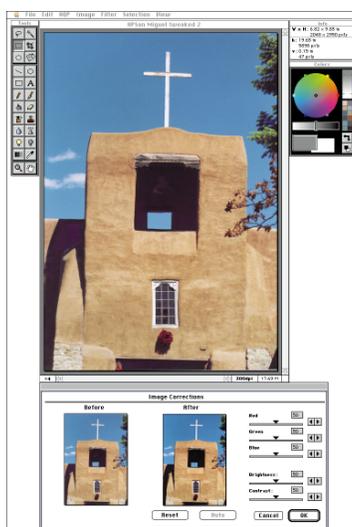
Essentially Easy

Simplicity is the quintessence of PhotoFix. If you are looking for curve-based color and tone editing, unsharp masking with fine control over various parameters, and CMYK editing features for pre-press work, you'll need a more sophisticated graphics program. But if you simply want to, say, create a collage or touch up a photograph on your computer and print the resulting image — with predictable color — on a color printer, PhotoFix fills the bill. It reads and writes only PICT and TIFF files, but with the help of Apple's QuickTime and Apple Photo Access extensions, it can also open Photo CD images as PICT files.

One of PhotoFix's niftier features is its simple printer-to-monitor calibration routine, called HQP (high-quality printing). On one page, PhotoFix can print 9 or 15 variants of your image, using either different brightness and contrast settings or different amounts of cyan, magenta, and yellow in each variant. You select the variant that looks best and type its values into the Image Corrections dialog box. Overall, this approach is simple and quite effective.

Another nifty feature is PhotoFix's

minimal RAM requirement. The program will run with as little as 2.5 MB of RAM, although 8.5 MB is the recommended configuration. With 8.5 MB allocated, PhotoFix easily handled 18-MB Photo CD files. Each file took a minute or so to open, but once a large file was open, we were able to perform many operations without time lags or delays. Although large, 264-pixel brushes were noticeably slow in PhotoFix, 128-pixel brushes were very responsive in 18-MB files. This is remarkable, considering that Photoshop is glacially slow in similar situations. You need about three times your file size available as free disk space for PhotoFix's temporary file, but disk space is much less costly than RAM.



PhotoFix can handle all the image-editing basics, including simple color correction.

PhotoFix's tool palette has every kind of tool you would expect in an image editor, including a magic wand for selecting color; an airbrush; a cloning tool; and dodging, burning, and sharpening tools. You set tool parameters — such as brush size and opacity — by double-clicking on a tool icon and changing the values in a dialog box. This approach takes a little longer than using Photoshop's floating palettes, but on smaller monitors, it's much easier to deal with.

Color Correct

You can do a surprising amount of color correction with the modest amount of control you have. You can adjust contrast; brightness; and the red, green, and blue intensities. There are no curve or gamma adjustments. For more-exacting color control, you can adjust the brightness and contrast of the individual color channels, but if you're sufficiently color-savvy to be looking for those kinds of features, you probably need

something that is more full-featured than PhotoFix.

You can create simple masks with feathered edges by using any of the selection tools. You can also adjust the opacity of floating selections, for smooth compositing effects, but again, PhotoFix emphasizes ease of use over industrial-strength professional capabilities. You can also easily rotate, crop, and resize images.

PhotoFix works with all third-party Photoshop plug-ins, including scanner plug-in modules and printer-export modules. We found that HSC Software's KPT Convolver was particularly useful with PhotoFix — Convolver plugs some gaps in PhotoFix's lineup, particularly in the areas of sharpening and color correction.

PhotoFix Browser is a handy little image-cataloging program. Each catalog can hold a maximum of 150 images. You can ask Browser to search through a folder or an entire disk and add all the images it finds to a catalog. This is a particularly useful feature if you want to catalog a Photo CD. Once the images are in a catalog, you can add a short text description plus as many as four keywords to each image. You can search for images by name, by keyword, or by specification of a minimum and maximum file size, and you can search through all open catalogs at once. Double-clicking on an image in the catalog launches PhotoFix and opens the image.

The Bottom Line

It's refreshing to find an unassuming little program that meets its basic, realistic goals for features and performs elegantly with a minimum of fuss. PhotoFix is well suited to budget-conscious users who don't need the sophistication and complexity of a professional program. / Bruce Fraser

PhotoFix 2.8.8 ○○○○

Price: \$249 (list).

Pros: Inexpensive. Easy to use. Well-integrated image cataloger. Relatively low RAM requirement.

Cons: Lacks many professional-level features, such as CMYK support and gamma correction. Reads only PICT and TIFF formats.

Company: Microspot, Saratoga, CA; 800-622-7568 or 408-253-2000.

Reader Service: Circle #406.

netOctopus / These systems-management tools keep network administrators in control of mixed-platform networks.

NETWORK ADMINISTRATORS often find themselves needed in eight places at once. And they frequently have to juggle a cobbled-together assortment of systems-management tools, especially if they're overseeing a mixed-platform network.

Datawatch's netOctopus delivers a helping hand by letting you reach out to the desktop of anyone on the network to, say, inventory software and hardware, install an upgrade, meter software usage throughout your network, or even reboot a computer. Furthermore, unlike most other Mac products (which can manage only Mac clients), netOctopus' administrator software can communicate with Macs and PCs, as long as the PCs are running the NetWare IPX protocol stack or AppleShare Windows Client software.

Network Agent

Once you have installed netOctopus' responder (called an Agent) on all the computers you need to monitor, you can gather systems, software, and configuration information without leaving your desk. On client machines, the Agent appears as a control panel that can be used to limit the administrator's access to the client workstation.

When you launch netOctopus' administrator software, you see a list of all the zones on your network. Under netOctopus' Zone window are four preconfigured windows, called templates. When you double-click on a zone name, the templates fill with information about the workstations in that zone. For instance, as it gathers network information in real time, the Workstations template — by default — lists the owner, zone, computer, net, node, socket, and system of the computers in a zone.

You can customize the templates, create your own from scratch, or use one of the dozens of preconfigured templates that come with netOctopus. The real beauty of the program comes into play when you've set up your own templates and use the filtering feature to identify which computers on your network have — or don't have — certain options or software. For example, say

you're given a mandate to get everyone in the company onto the Internet but you have no idea who in your organization has an IP address or has MacTCP installed. With netOctopus, you can create a new template, called IP Inventory, that shows the com-

Stat	Owner	Zone	Computer	Net	Node	Socket	System
	Ben Chin	EtherTalk ...	Macintosh LC	3	34	251	7.1
	Grace FeherCorr...	EtherTalk ...	Macintosh LC	3	252	251	7.1
	Rob Rosenthal	EtherTalk ...	Macintosh IIci	5	27	250	7.1
	Rosa Montoya	EtherTalk ...	Macintosh LC	3	173	251	7.1

As it gathers information in real time, netOctopus reports selected systems information about the workstations in your network.

puter name and owner, the IP address, the IP gateway address, and whether or not MacTCP is active. You can filter the information in the template so that only the computers that don't have an IP address appear.

Once you've identified a problem, netOctopus can help you solve it. For instance, if you find out-of-date printer drivers on client machines, you can update them all by making a simple menu selection. You can also synchronize all the computer clocks throughout the network.

To install software over the network, you can either place files in a drop box on each workstation and let users install the software themselves or you can run Apple's installer scripts over the network to install users' software for them.

Scripting Tools

You can automate and enhance the systems-data-gathering and software-distribution capabilities of netOctopus by using AppleScript. Unfortunately, you cannot record actions as AppleScript scripts in this version: You can only attach a written script to the program.

Datawatch offers a steady stream of off-the-shelf scripts that you can use if your scripting skills are rusty. For instance, if you have Microsoft Excel 5.0 and FileMaker Pro 2.1 or later, you can meter software use with an AppleScript script that gathers real-time

data about software applications running on the network and stores the data in a spreadsheet or database.

The major weakness of netOctopus is its inadequate documentation. The version we reviewed came with the original 1.0 manual plus two separate addenda, one each for release 1.1 and 1.2. Since major new features, such as support for AppleScript and for Windows and DOS PCs, were introduced in these upgrades, the documentation is — at best — scattered and disorganized.

Datawatch promises a new manual with the next major release, netOctopus 2.0.

The Bottom Line

All in all, netOctopus is a useful addition to the corporate systems administrator's toolkit. You'd have to buy — and coordinate — several systems-management programs to get the breadth of netOctopus, and because netOctopus is one of the few Macintosh-based programs that can handle Macs as well as PCs, it allows you to manage a mixed-platform network from a Macintosh. By the time you read this, Datawatch will have released netOctopus 1.3, which will include PowerPC-native administrator software and support for mobile and remote users, who can have their computers updated with new versions of software when they log in. / Kelli Wiseth

netOctopus 1.2.1

Price: \$39 to \$47 (direct) per computer, depending on the number of computers.

Pros: Broad set of network-management features, from network polling to software auditing. Uses AppleScript.

Cons: Disorganized documentation. Can't record actions.

Company: Datawatch, Wilmington, MA; 508-988-9700.

Reader Service: Circle #407.

PowerCADD 2.0 / Engineered Software's 2-D drafting tool narrows the gap between midrange and high-end CAD.

FOLLOWING FAST on the heels of Engineered Software's speedy PowerPC-native release of PowerCADD, version 2.0 adds support for publish-and-subscribe plus a variety of enhancements to existing features. PowerCADD 2.0 not only fortifies the program's position as one of the top 2-D production-drafting tools for the Mac but it also narrows the gap between PowerCADD's capabilities and those of high-end pro-

Another limitation is that there aren't any tools for managing the links among publishing and subscribing documents in a network environment. The result is that when you're about to change an original published symbol or graphic, you have no way of knowing which or how many documents have subscribed to the object nor can you selectively choose which documents are to be updated. This isn't a big problem for small design shops, where there are few users and documents, but in a large CAD environment, it can wreak havoc when users unwittingly change an original without knowing how that will affect a large number of subscribing documents.

Still, publish-and-subscribe is useful for basic sharing of elements among drawings, and it also comes in handy for publishing elements other than symbols and graphics, such as technical-drawing notes and titles.

In addition to publish-and-subscribe, PowerCADD 2.0 has several other noteworthy new features. Improved printing capabilities let you print only the contents of the current drawing window, print to fit the printer's current page size, and reorder the print sequence of pages. However, we wish there were a way to directly manipulate margins, as you can with the Print Preview function in Microsoft Word, for example.

PowerCADD's layering scheme has been improved with the addition of new layer attributes. You can now specify drawing scale, color, and locking for each individual layer. For a more convenient way to manipulate layers that doesn't require poking around in menus, you can buy the optional Professional Layer Management external (\$59), which groups all the layer controls into an instantly accessible tool palette.

The Break tool has been enhanced with new functions and a new cursor. You can now create an opening in an object at any point along its perimeter by simply clicking and dragging, an improvement over the multistep process required by the previous version.

A long-standing strength of PowerDraw, PowerCADD's 680x0-based predecessor,

and now a strength of PowerCADD is each program's extensible architecture. Support for plug-in externals, macros, and a programming interface vastly expands the capabilities of both versions.

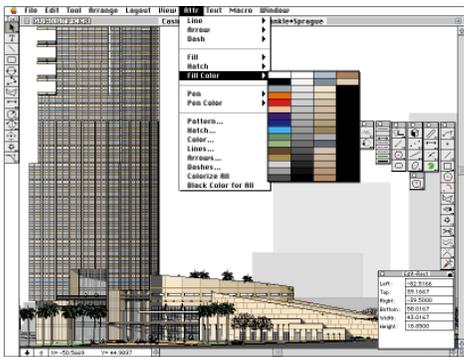
Of all the externals, the well-designed WildTools (\$189) bears special mention. It adds a customizable tool palette that has more than 100 powerful tools and utilities for professional drafters. The tools provide a broad range of features, including custom line styles, advanced dimensioning, isometric drawing tools, enhanced PostScript printing, parallel offsets, Bézier curves, advanced filleting, and many architecture-specific functions. The WildTools palette also helps minimize PowerCADD's palette clutter, which can quickly become a problem, especially for users of small monitors.

In fact, we'd like to see Engineered Software enhance and polish PowerCADD's interface along the lines of the WildTools external — specifically by doing a better job of organizing palettes and by providing better-looking tool icons. It would also be nice to be able to use System 7.5's Drag Manager to drag and drop symbols into and out of libraries.

The Bottom Line

By adding publish-and-subscribe support to PowerCADD 2.0, Engineered Software has provided a basic way for users to share elements among documents as well as to update shared elements quickly and easily.

Also, for many users, PowerCADD's programmability and extensibility may make PowerCADD a better choice than high-end CAD programs. Unless you need to integrate 3-D models into your drawings — in which case we recommend Microstation V5 for Power Macintosh — PowerCADD is probably all you'll need for professional 2-D drafting and design. / James K. Anders



An extensible architecture allows users to expand PowerCADD's capabilities by adding externals, such as the feature-rich WildTools palette, shown here at the right of the screen.

grams such as AutoCAD and Microstation V5 for Power Macintosh.

Better Late Than Never

The big news with PowerCADD 2.0 is its newly added support for Apple's publish-and-subscribe, a valuable feature for CAD users, who often need to share symbols and drawings. With publish-and-subscribe, for example, PowerCADD users can place a published symbol from a library into multiple PowerCADD documents and update all the placed symbols simply by editing the original.

Publish-and-subscribe is sure to boost the productivity of PowerCADD users, but there are a few issues that limit its functionality. Because published symbols and graphics placed in PowerCADD documents are in PICT format, you can't edit them or snap to individual points unless you convert them to objects. Once you do, you break the publish-and-subscribe link.

PowerCADD 2.0 ○○○○○

Price: \$795 (list).

Pros: PowerPC-native speed. Support for publish-and-subscribe. Plug-in architecture.

Cons: Cluttered interface. Not Drag and Drop-aware.

Company: Engineered Software, Greensboro, NC; 910-299-4843.

Reader Service: Circle #408.

Microtech Blue / Superbly engineered fixed and removable drives fetch a premium price.



YOU ALWAYS PAY TOP dollar for high-quality brand-name products, whether you're buying a Lexus automobile, an Armani suit — or Microtech Blue. This new line of elegant storage systems has the best engineering we've seen, but it's up to you to decide whether or not Blue's technical superiority is worth the luxury price.

If SCSI problems bedevil you, Blue drives are the answer to your prayers. The drives use printed circuit boards, which are not as susceptible to read/write and SCSI-signal interference as the internal ribbon cables in most hard drives. In addition, the use of short jumpers instead of standard SCSI cables to connect stacked drives shortens the SCSI chain, creating more-reliable connections. And the drives use a more effective form of digital termination that ensures that signals between SCSI devices are stable and operating at optimal levels.

Blue drives come in a variety of flavors: Blue Storm hard drives; Blue Spark hard drives with a Blue Lightning NuBus SCSI accelerator; Blue Streak RAID 0 and 1 systems, also accelerated by Blue Lightning; and Blue Stream 8-GB DAT drives.

In our tests, the drives were every bit as fast as advertised and they kept pace with other high-speed drives that use the same or comparable mechanisms. Competing drives, however, don't have such Blue niceties as easy-locking stackability, clutter-reducing jumpers, and a unique LCD control panel.

The LCD panel lets you power the drive up or down, set the drive's SCSI ID, and — our favorite touch — pull up Microtech's tech-support phone number. The panel is especially useful with the Blue removable drives — the Blue Storm, Spark, and Streak systems. These systems let you pull a shuttle containing the drive itself out of the bay for

transport. By touching a button on the panel, you can spin down the drive and unlock the shuttle. The only problem we encountered with these systems was an erratic drive-access indicator in the panel of one of the first drives we tested.

The systems with removable drives also have slide-out power supplies: If your IS manager has the foresight to keep spare Blue power supplies, you can get a drive back into service almost instantly if your power supply dies.



A removable shuttle in some top-of-the-line Blue drives provides a portable storage system.

The Bottom Line

The technical superiority of the Blue drives commands a high price. The street price for a Blue Storm 1-GB drive with a Connor CFP1080S mechanism is \$850 — rather steep when compared with other drives that use the more common Quantum Fireball 1080 mechanism. For example, the Quantum-equipped La Cie Joule Portable 1080MB Hard Drive was available in early July for \$429 — about half the price of the Blue Storm. You'll see comparable price differentials throughout the Blue line, so be sure to launch your accounting program and meditate on your checking balance before you decide to buy. / Rik Myslewski

MicrotechBlueLine ○○○○

Price: Ranges from \$850 for a Blue Storm 1-GB to \$7,200 for a Blue Streak 8-GB RAID FW with two Blue Lightning Fast/Wide SCSI adapters (estimated street).

Pros: Well designed. Multifunction LCD panel. Forced-perfect termination and other SCSI optimizations. Removable mechanism and user-replaceable power supply in some models.

Cons: Expensive. Early-model LCD panel had erratic drive-access display.

Company: Microtech International, East Haven, CT; 800-626-4276 or 203-468-6223.

Reader Service: Circle #409.

MATLAB / Calculating coefficients with a command-line interface proves cumbersome.

BESIDES DOING numerical analysis, MATLAB now also does scientific visualization. The latest version, 4.2c, has added the ability to create 3-D mesh, surface, and volumetric plots. But MATLAB is still a far cry from the graphical applications you may be used to working with on the Mac. MATLAB is a programming environment with a straight command-line interface, and it has the look and feel of a DOS program. Although having to do some programming in a powerful numerical-analysis program isn't extraordinary, even on the Mac side, MATLAB virtually ignores the Mac's operating system altogether — it's unlikely you'll use your mouse at all.

Terminal Tallies

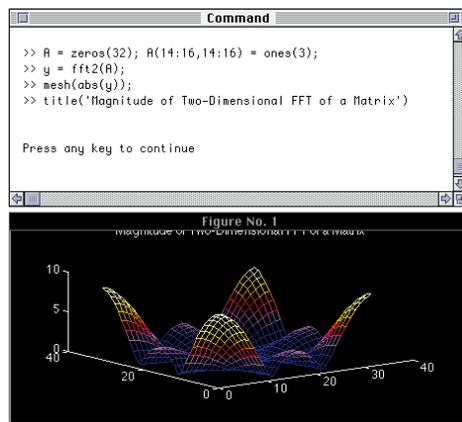
MATLAB doesn't take advantage of basic graphical-interface features, such as scroll bars in windows, much less more-current features such as Macintosh Drag and Drop and AppleScript. You can't even copy and paste text in some places. The graphics MATLAB creates are equally primitive: The yellow-on-black bar graphs look like they came from a 20-year-old mainframe system rather than from a modern-day Mac.

MATLAB has very few menus and windows to depict, which means the manuals are as devoid of graphics as the application itself. To get an idea of how much time you'll need in order to learn how to use MATLAB, consider that the tutorial in the *User's Guide* is 183 pages long, almost all text. This is in addition to a 500-page *Reference Guide*, which details the programming language.

The time you spend learning the program will reap rewards, however: Once you've become familiar with MATLAB, you can program powerful sets of functions, and MATLAB is particularly versatile when it comes to matrix and vector equations. You can add, subtract, multiply, divide, transpose, and factorize matrices and vectors as well as work with eigenvalues. MATLAB also has functions for processing polynomials, Fast Fourier transforms, and

differential and nonlinear equations.

Many of the new commands in this version add the ability to create 3-D plots, and you can even animate sequences of plots with a changing variable. The MATLAB language has a few new tricks as well. You can link MATLAB to code compilers, including



Three-dimensional plotting is one of the new features in the latest release of MATLAB 4.0, but the program still lacks some Mac basics such as scroll bars in graphics windows.

Metrowerks' CodeWarrior, Symantec's C++ 5.0, Absoft FORTRAN 4.0.1, Language Systems FORTRAN 1.0, and Apple's MPW PCC 1.0.6. You can convert RGB color to output in CMYK simply by adding a line of code to your print commands.

MATLAB also comes with a utility called MATLAB NoteBook, which lets you access and edit MATLAB code by using Microsoft Word 6.0. Thus, you can edit MATLAB code on machines that don't have MATLAB installed; it also gives you the opportunity to work with a better interface — that of Word.

M-Files Mysteries

Unfortunately, MATLAB versions 4.0 and above are not backward-compatible with MATLAB programs (called M-files) written with version 3.5 and earlier versions. If you're a current MATLAB user and want to upgrade, you'll have to change the code in all your earlier M-files if you want them to run. According to The MathWorks, nine major commands, as well as some minor commands and functions, have been

changed. Some of the syntax of the language has also changed; for instance, line continuations now require three periods, not two.

The program worked smoothly, and the speed of the analysis and graphing functions was good on our Power Mac 8100/100. You need a fairly beefy Mac to run MATLAB: It requires a lot of processing power, RAM, and hard-disk space as well as a floating-point processing unit (FPU), which a low-end Performa 630 lacks.

The MathWorks recommends allotting 12 MB of RAM to MATLAB but seems to be confused about how much disk space the program needs. The manual said 10 MB would be adequate, but a Read Me file said the program needed 17 MB. The program actually took 24 MB for its 943 files on our Power Mac.

The Bottom Line

MATLAB is a good matrix-manipulation programming environment that may let you get away with writing less code than with FORTRAN. However, other Mac programming languages give you more in the way of automated aid and graphing tools. With MATLAB, you have to type commands to do just about everything, including saving and printing. And for those who are looking for a good program for numerical computation, Wolfram Research's Mathematica has a greater range of general math functions than MATLAB does (see review, August '95, page 56). For scientific visualization, you'll be more productive using programs that have a better graphical interface (such as Spyglass Transform, View, and Plot) or one of the many statistics packages that let you directly manipulate a 3-D graph with the mouse. And you can pick up both Mathematica and any one of the programs in the Spyglass series for less than the price of MATLAB. / John Rizzo

MATLAB 4.2c

Price: \$1,695; upgrade, \$95 (list).

Pros: Access to powerful math functions, particularly for matrix and vector mathematics.

Cons: Command-line user interface. Not backward-compatible. Steep learning curve.

Company: The MathWorks, Natick, MA; 508-653-1415.

Reader Service: Circle #410.

Conflict Catcher 3.0 / New version is best ever at hunting down extension conflicts.

IF SHERLOCK HOLMES had to track down the extension that brought your Mac to a standstill, he'd use the process of elimination, just as Conflict Catcher does. Conflict Catcher systematically disables a subset of your active extensions and asks you if you can reproduce the freeze, crash, or quirk you experienced by using the remaining active set. Once the program has identified the troublesome subset, it repeats the process until it pinpoints the problem extension.

Conflict Catcher 3.0 first tests any extensions you identify as possible troublemakers, as well as those you added most recently. It also lists the extensions in your system by their name, date installed, status (enabled or disabled), folder, type, and load order. Conflict Catcher can display a short description of an extension you don't recognize, what it does, and how it works.

You can create different startup sets for different conditions. As an added bonus,

Conflict Catcher 3.0 is now clever enough to detect whether your PowerBook is running on battery power, and if so, it can start up your Mac with an extension set that conserves power.

Before it tests your setup, Conflict Catcher can check to see if any of your extensions have been corrupted. The program uses a list of symbiotic and incompatible extension sets, called links. Symbiotic links automatically keep certain extensions active at the same time, and incompatible links automatically keep certain extensions out of each others' way. For instance, Conflict Catcher enables the LoadRAMDoubler extension when you enable the RAM-Doubler extension, since they need each other and it disables System 7.5's Apple Menu Options when you enable Now Utilities' Now Menus, because those two extensions are incompatible.

You can turn off this linking feature, but if

you do use it, you should add in your own sets of symbiotic or incompatible extensions as you find them. The short list of links that comes with Conflict Catcher is not as extensive as those found in technical-support databases such as Teknosys' Help.

The Bottom Line

If you can't live without a slew of extensions but you're having a hard time living *with* them, get Conflict Catcher. It's the smartest extension manager we've seen. / Clay Andres

Conflict Catcher 3.0

Price: \$99.95 (list).

Pros: Finds extension conflicts quickly and conveniently. Detects when PowerBook battery is used and starts up with power-saving extension set. Links symbiotic and incompatible extensions. Displays information about extensions.

Cons: Linked-extensions list could be more extensive.

Company: Casady & Greene, Salinas, CA; 800-359-4920 or 408-484-9228.

Reader Service: Circle #411.

Sculpt 3D 4.0 / Pricey but powerful, Byte-by-Byte's 3-D modeler features a speedy new rendering engine.

POSITIONED AT THE HIGH END of the Macintosh 3-D market, Sculpt 3D is pricey (\$1,495), but it's also powerful enough to let you create virtually any kind of 3-D object — if you know what you're doing, that is. The new release, Sculpt 3D 4.0, features a much improved interface and support for several different kinds of curves, but it remains a difficult product to use. Still, the power and feature set of Sculpt 3D rival those of some of the best 3-D modelers for the Macintosh, such as AutoDesSys' Form•Z and VIDI's Presenter Professional, thanks in no small part to a speedy new rendering engine.

Pondering Perspectives

Modeling in Sculpt 3D takes place in three linked windows called the Tri View. Each window displays a view of your model along a different axis (x, y, or z), and a fourth window displays your scene rendered as it looks to your camera, called the Observer. By moving the Observer, you can render images of your scene from various perspectives. A simple palette gives you access to Sculpt 3D's tool set, and a new prompt line gives you context-sensitive instructions while you work.

Sculpt 3D offers a good selection of modeling tools (including primitive shapes such as circles, squares, cubes, and spheres). It

also provides commands for creating lathes, extrusions, and lofts. Although these features are standard in most 3-D programs, Sculpt 3D actually sports more power than most other modelers in that it provides complete control over each vertex of an object.

Sculpt 3D is a polygonal-surface modeler rather than a spline-based modeler, such as Alias Sketch, or a solid modeler, such as Form•Z. Consequently, all of its surfaces are composed of small polygons. You can grab any vertex of any polygon and move it in any direction you like, which is precisely what makes Sculpt 3D at once a powerful and daunting program. Whole ranges of polygons can be selected and moved, duplicated, rotated, scaled, and a lot more. Sculpt 3D's impressive controls even let you assign a separate texture to each polygon in a model.

Although this level of control is powerful, it does not lend itself to manipulating curved surfaces easily. You select one of the four different kinds of curves that Sculpt 3D now supports — NURBS, Bézier, B-spline, and arc — and use it to extrude or lathe shapes into three dimensions. The curve tools function like the curve and pen tools in an illustration package. After you've shaped the curve and instructed Sculpt 3D to use it to create a 3-D shape, the program

constructs a polygonal surface. You can still edit the curve at this point, however, with Sculpt 3D's nice mix of polygonal-modeling and spline controls.

Industrial Art

Sculpt 3D began life with a strong industrial-design focus, and the new version of the program builds on that strength. With excellent, simple controls for positioning and snapping objects to particular points in space, Sculpt 3D gives you a good deal of precision and makes it easy to align edges and surfaces.

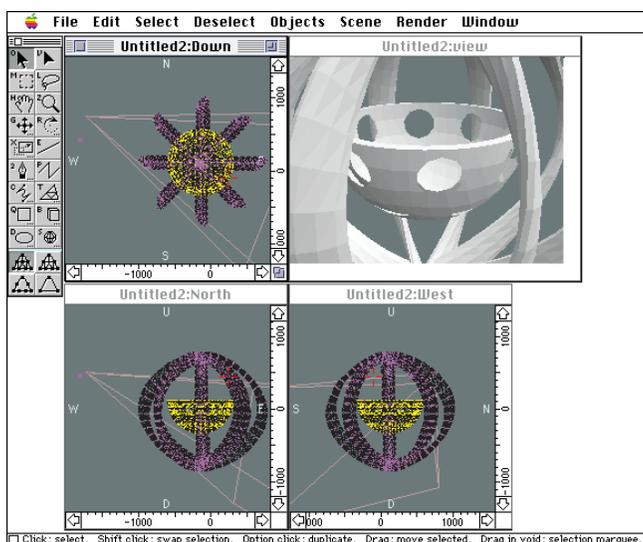
Aside from its standard modeling tools, most of the program's modeling power resides in the Actions menu, with its simple commands for creating objects and performing modeling functions. You can create primitive shapes — from hemispheres to cones — numerically or with the mouse and access commands for lofting, twisting, extruding, extruding on a path, lathing, and welding surfaces together by using dialog boxes.

Sculpt 3D also has Boolean tools that enable you to carve one object with another or carve the shape of one object into another. Like most of the other functions in this program, these commands are lightning fast. In fact, Sculpt 3D operates as fast as any modeler you're likely to find on the Macintosh, particularly if you're running it on a Power Mac.

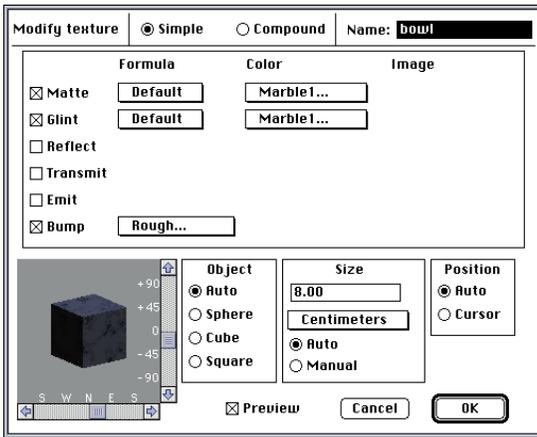
Scratching the Surface

For applying textures to your models, Sculpt 3D provides a mix of procedural (code-based) and surface (bitmapped) textures, which gives you plenty of power for creating realistic surfaces as well as a good interface for positioning those surfaces on an object. The product provides several procedural textures, including wood, marble, camouflage, and stripes. For those who want to create new textures themselves, Sculpt 3D has a somewhat confusing interface for texturing controls. For some imponderable reason, Byte-by-Byte has chosen to use nonstandard terms for just about everything related to textures. Transparency maps, for example, are referred to in Sculpt 3D as Transmission maps, and Specular maps have been defined as Glint maps.

When you're finally ready to render, you



Sculpt 3D's three-window view lets you see along each axis of your scene. The fourth window displays a preview of your image from the perspective you've set.



Powerful texture controls are one of Sculpt 3D's strengths, although the program's texturing interface is far from simple to use.

will find that Sculpt 3D has one of the best — not to mention speediest — ray tracers available. Because the program gives you exacting control over the smoothness of any set of polygons in your scene, it's a simple matter to optimize your models to get the most rendering speed without sacrificing quality.

It's a real shame that Sculpt 3D's power is

hampered by such a nonstandard interface. Three-dimensional modeling is a complicated process no matter how good your software may be, and problems in Sculpt 3D's interface design end up making things even more confusing. The program has nonintuitive tools: For instance, using the pen tool (which works and acts like a Bézier curve), you define control points *after* you create the curve. In the more-standard graphics programs, you click and set your control points

before you draw a Bézier curve. Having to create much of the image by using modal dialog boxes is awkward as well. Unfortunately, although Sculpt 3D's documentation is thorough, it will prove helpful only to those who are already 3-D experts; however, the new tutorial, a self-printing file on one of the disks, does ease the learning process somewhat.

The Bottom Line

Sculpt 3D may give you a lot of power, but it lags behind its main competitor, Form•Z, in ease of use. Although Form•Z also has a steep learning curve, it's more polished and has more modeling tools than Sculpt 3D. Form•Z doesn't have the rendering capabilities of Sculpt 3-D, but by the time you read this, a new version of Form•Z (which has a rendering engine and a higher price) may be a worthy challenger. But right now, if you need a modeler that can create absolutely anything and can render high-quality ray tracings fast, consider Sculpt 3D. / Ben Long

Sculpt3D4.0

Price: \$1,495 (list).

Pros: Vertex-level control over all points. Fast. Powerful ray tracer.

Cons: Steep learning curve. Inadequate manual. Awkward, nonintuitive interface.

Company: Byte-by-Byte, Austin, TX; 512-305-0360.

Reader Service: Circle #412.

SPSS 6.1 for the Macintosh / Full-featured statistical package gets a major face-lift.

THE VETERAN STATISTICAL-software program SPSS — short for Statistical Package for the Social Sciences — began life as a mainframe program that eventually migrated to the personal computer. SPSS for the Macintosh, however, failed to attract much of a following, because it looked and worked essentially like ported mainframe software. With the latest release, however, the eponymous firm has clearly groomed SPSS to appeal to a Macintosh audience — SPSS 6.1 for the Macintosh features a substantially improved interface that uses Mac-like dialog boxes and pull-down menus. But interface improvements aside, the program is still slower and pricier than competing packages in its class.

New Look

If you saw or used any of the previous versions of SPSS, you will be amazed at how the appearance of the program has improved with the latest release. Not only does SPSS 6.1 look like a true Mac application but its dialog boxes are also among the best-designed we've ever seen in any statistical program. In fact, they're so clear and accessible that even if you have only a general knowledge of statistics, you'll be able to set up most analyses with little or no need to refer to the SPSS documentation at all — this is an incredible feat for such a complex program.

The basic mechanics of using SPSS are now much the same as with most other statistical programs. You define variables and enter data by using the program's new spreadsheetlike Data Editor. SPSS allows you to manipulate your data from within the Data Editor in almost any conceivable way. Once the data is in its final form, you select a statistical-analysis command and SPSS processes it and displays the results in a separate text-output window.

SPSS also provides a good selection of high-resolution charts for graphing your data. When you want to customize a chart, a context-sensitive tool bar — which displays either a core set of tools, window-specific tools, or charting tools, depending on the task you're performing — provides handy access to all the editing tools you need.

That's the good news. The bad news is that despite these substantial improvements, SPSS has several disadvantages. First, it's very slow, to the point of being almost unusable on anything less than a 68040 Mac. True, by disabling extensions, you can noticeably speed things up, but SPSS is one of those CPU-intensive applications that literally cries out for a PowerPC-native version, which was not available at review time.

In fact, if you own a Power Mac, you won't be able to run the current version at all. That's because SPSS requires a floating-

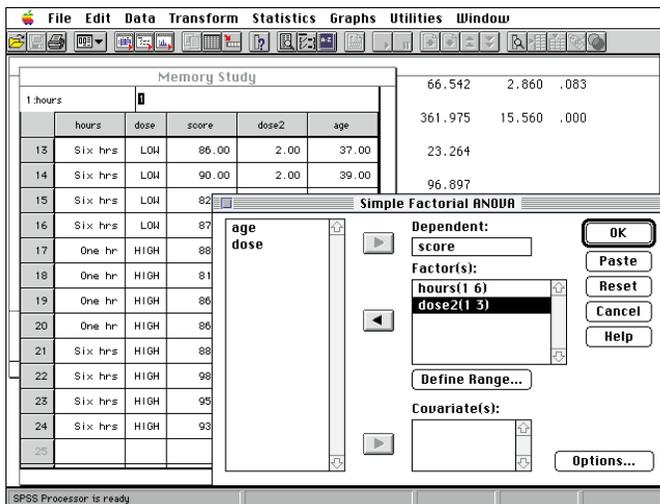
point unit (FPU), which is absent in the Power Mac's emulation mode. A partial workaround is to install a software-based FPU that allows SPSS to run in emulation mode on the Power Mac, but this is a less than ideal solution that's sure to deliver disappointing speed. According to the company, a PowerPC-native version of SPSS should be available by the time this review appears.

Contributing to the program's glacial performance is its underlying architecture. As you work with the software, it quickly becomes evident that the program's graphical interface, with its menus and dialog boxes, operates as a shell constructed over the program's original command-line processing core. The actions you select — even basic tasks such as opening and saving files — must be translated into SPSS syntax before they can be carried out. Not only does this make the program unwieldy and slow but it also limits its ability to take full advantage of the Mac's capabilities.

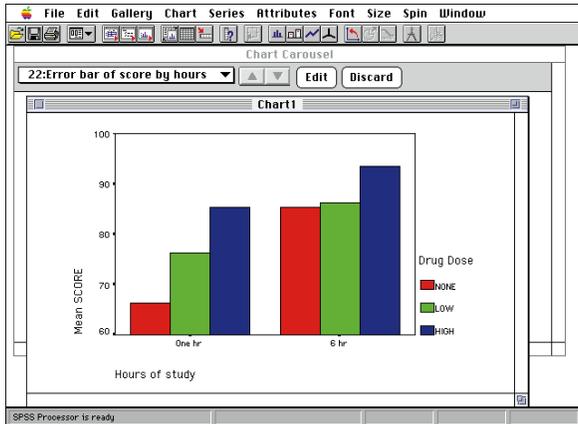
Although the graphical shell makes SPSS accessible to inexperienced users, if you're a veteran SPSS user and have already mastered the program's syntax, you can run SPSS the old-fashioned way — by creating command-syntax files.

SPSS has long been known for the full range of statistical procedures it provides — that is, if you purchase all the modules. For organizations and institutions that work with a variety of computing platforms, it also offers the advantage of cross-platform compatibility with the Windows and UNIX versions of SPSS. However, compared to statistical software developed specifically for the Macintosh, such as Data-Desk, JMP, and StatView, SPSS is weaker at exploratory statistics and is missing the numerous pop-up menus and other interactive features common to these competing programs.

Even Systat — another powerhouse statistical package that also has mainframe roots — is better in this regard. For example, with Systat, you can select a group of data points in a scatterplot and have the program highlight the corresponding points in the data window. With SPSS, by contrast, you can select only one point at a time. Or so the documentation claims — every time we tried selecting a point in a scatterplot, the program crashed.



A new spreadsheetlike Data Editor, a context-sensitive tool bar, and well-designed dialog boxes make SPSS 6.1 for the Macintosh much more accessible than previous versions.



A charting module with tools that let you edit chart elements directly is included in the base package of SPSS 6.1 for the Macintosh.

SPSS is also very expensive. The base package, which includes the graphics module, has a list price of \$495. However, if your needs exceed what the base package offers, you're faced with the purchase of additional modules that range in price from \$295 to \$395 apiece. For example, factor analyses and MANOVAs are each available as separate modules. When you're done

than 15 MB in our setup) in the Preferences folder of the System Folder.

The Bottom Line

SPSS 6.1 for the Macintosh represents a major leap forward from previous versions. For those who have the system resources to support it as well as the financial resources to afford it, SPSS provides a complete range of

adding up the list price of the complete SPSS package, it can easily approach \$2,000 (discount promotions are available). Other statistical packages, notably DataDesk and Systat (which was recently purchased by SPSS), sell for much less yet equal or exceed most of what SPSS has to offer.

And finally, SPSS has adopted the unusual approach of storing more than half of its program files (accounting for more

statistical procedures made accessible through the program's new and thoughtfully designed Mac interface.

However, despite its notable improvements, SPSS 6.1 is not likely to win many new converts. Several competing statistical packages are less expensive and speedier and make better use of the Mac's interactive features. The best among these — DataDesk and Systat — match or exceed the capabilities of SPSS. / Ted Landau ▲

SPSS 6.1 for the Macintosh ○○○

Price: Base list price, \$695; SPSS Professional Statistics, \$395; SPSS Advanced Statistics, \$495; SPSS Tables, \$395; other modules also available.

Pros: Improved interface with well-designed dialog boxes. Full range of statistical procedures. High-quality charts. Cross-platform compatibility.

Cons: Slow. Expensive. Lacks interactive features. No PowerPC-native version yet.

Company: SPSS, Chicago, IL; 800-543-6609 or 312-329-3500.

Reader Service: Circle #413.

Bansai MFX-1 / Fax machine to go

IF YOU HAVE A FAX MODEM in your PowerBook, sending computer-generated documents while you're on the road is easy. But if you have a paper document you want to fax, you have to pay up to \$10 a page at the hotel front desk or hunt down a fax machine in an unfamiliar field office or town. Unless you have Bansai's MFX-1 Portable Facsimile Transmitter, that is.

Essential Faxing. The MFX-1 is about as wide and high as a PowerBook, but only about 2 inches deep. Inside is just the heart of a fax machine: the scanner and the transmitter. To use it, you connect it to either a telephone or your Mac and dial by using the telephone keypad or telecommunications software on your Mac. When you slide paper documents into the MFX-1, it will send crisp, clear faxes to almost any fax machine or fax modem at up to 9,600 bps.

Although the idea of a small, portable fax machine for sending hard-copy documents is nice, we found having to plug it in to a phone or a computer just to dial was cumbersome, especially since Bansai could have fit a small keypad onto the device. The only display elements on the MFX-1 are status lights, and the only controls are the stop, start, and mode buttons. And although the MFX-1 itself weighs little more than a pound, the bulky 4.5-x-4-x-4-inch power brick you have to use with it weighs more. Furthermore, you can send faxes only if you're within a few feet of a U.S. power outlet and a standard RJ-11 phone jack, until this fall, when Bansai will ship its external battery pack, international power adapter, acoustic coupler, and adapter for plugging the MFX-1 into an automobile cigarette lighter — all of which will be sold separately.

Skinny Scanner. We actually found the MFX-1 more useful as a portable scanner. If you have a fax modem built in, you can hook it up to your computer and transmit documents into your Mac for OCR or retouching. Then you can retransmit them directly from your Mac.

If you particularly want to avoid public fax machines when you need to send a confidential paper document, or if you don't have convenient access to a fax machine while traveling, the MFX-1 might be right for you, even priced at \$379. Otherwise, without the accessories, its usefulness and value are limited for most users.

/ Raines Cohen

Bansai MFX-1 🍷🍷 / Price: \$379 (list). Company: Bansai Product Sales, San Rafael, CA; 800-647-1155 or 415-491-0561. Reader Service: Circle #414.



Strata MediaPaint / Rotoscoping done right

MULTIMEDIA ARTISTS and professional animators looking for a great tool for painting on QuickTime movies should check out Strata MediaPaint, Strata's remake of Neil Media's Video Graffiti (see review, November '94, page 56). Although the interface hasn't changed much, MediaPaint now has a slew of new features, including support for Adobe Photoshop and Premiere plug-ins, pressure sensitivity, and alpha channels for masking.

MediaPaint's forte is rotoscoping — it lets you combine hand-drawn animation effects with QuickTime movies. When you work on a QuickTime movie in MediaPaint, you never actually alter the original footage but instead draw on a transparent layer, which can either be combined with the original or saved separately for use elsewhere or as a stand-alone movie. We found this approach to be superior to that of Fractal Design Painter, with which you have to alter the original footage.

Fabulous Features. Although Painter has more brushes and a larger paper-texture selection than MediaPaint, its animation interface is comparatively simple and it doesn't have the same features for digital artists that MediaPaint does. For instance, MediaPaint lets you paint on a movie while it's playing. You can also record your art as an animation, which makes MediaPaint a great tool for creating titles that write themselves to the screen over time.

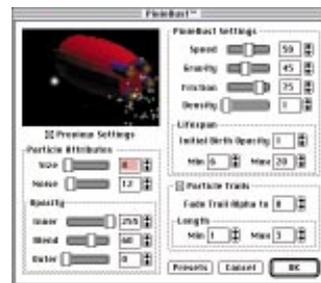
Other features include the special Squiggle plug-in, which makes a drawing done by hand appear to wiggle and undulate on command. There is also the ShapePainter tool, which lets you access libraries of sequential drawings and allows you to paint with a brush a library of walking characters, which you can move around in real time while recording their position on each frame. MediaPaint also enables you to create your own brushes.

The most interesting of the new features are the unique plug-ins called Particle tools. These tools are self-animating, and you set the gravity, size, and life span of each particle through a series of dialog boxes. The BabyBoom tool, for example, creates particles that "give birth" to new particles.

Light Table Done Right. Animation programs have historically lacked a true animators' light table, but MediaPaint does it right. When you view multiple frames of animation with MediaPaint's Lightbox, you see different opacities for each layer: Lower-number frames are darker, and higher-number frames are lighter. This process, known as onionskinning, lets you know which range of frames you're editing by their opacity rather than their frame number. The Lightbox feature will enable character animators to move over from analog light tables to a digital painting environment.

We have one item on our wish list — we'd like to be able to paint directly on alpha channels (a feature not available in any animation program to date). But if you're an animator or a multimedia, video, or film artist, MediaPaint will give you a great visual advantage that's well worth the price. / Lynda Weinman

Strata MediaPaint  / Price: \$695 (list). Company: Strata, St. George, UT; 800-678-7282 or 801-628-5218. Reader Service: Circle #415.



MacAdministrator / Keeping files, folders — and piracy — under control



KEEPING ORDER in a shared-Macintosh environment — a school lab, for example — is no easy task. Students can wreak untold quantities of havoc by adding unwanted files and fonts, giving hard disks new identities, abusing Internet access, or pirating programs. Hi Resolution's MacAdministrator provides network managers with a full set of network-administration tools to bring the shared desktop back under control.

Securing Your Setup. MacAdministrator centers on two main components: the MacAdmin application and the MacClient extension. Several other components work with them to protect virtually every aspect of the individual Macs that make up the network. You can keep files, folders, programs, and other desktop items from being renamed, moved, copied, or deleted. You can also prevent users from accessing specific control panels or volumes or changing anything in the Fonts folder or the System Folder, or you can let users run only designated applications. The network administrator can define virtual desktops on a per-user basis so that the user will always see the same initial desktop and have access to the same printer and set of files, volumes, and programs, no matter what Mac on the network is used.

The program monitors and logs printer and software usage, controls Internet and server access, and can perform software audits periodically. Managers can also schedule software distribution during nonpeak

hours. In addition, safeguards exist to prevent clever users from pressing the Shift key at startup to disable protection and from starting up with a floppy.

MacAdministrator is easy to use, but like all other security and network/desktop-control programs, MacAdministrator isn't hassle-free.

For example, since both Adobe

PageMaker and Macromedia FreeHand use their own special dialog boxes when printing, the print-monitoring function in MacAdministrator doesn't work with these two programs, and no workaround is available at this time.

The program's documentation is in Acrobat PDF files, which theoretically should save paper. Unfortunately, we found dealing with the many separate PDF files that make up the MacAdministrator manual to be so awkward that we simply ended up printing them anyway. We should also note that MacAdministrator requires System 7.5.

Sensible Desktop Control. MacAdministrator is an easy-to-implement, reliable tool for dealing with shared Macs on a network. Apple's At Ease is a better choice for individual home users seeking relief from their children, although a single-user version of MacAdministrator is due out by the time you read this review.

/ Gregory Wasson

MacAdministrator  / Price: for ten users, \$399 (list). Company: Hi Resolution, Newburyport, MA; 800-455-0888 or 508-463-6956. Reader Service: Circle #416.



Visual Arranger / Music generator for hobbyists

STUMBLING UPON a radio station playing today's "lite" hits, you may have thought, "Heck, I could write this stuff!" Well, now, thanks to Yamaha's MIDI-based solo-accompaniment program, Visual Arranger, you can.

This concept of a MIDI-based, music-minus-one-performer program is not a new one: PG Music's Band-in-a-Box has addressed the canned-band market for years. The main difference between the programs — other than Band-in-a-Box's greater flexibility and complexity and the Yamaha product's variety of ensembles — is Visual Arranger's iconic approach, which appeals to music-composition hobbyists and veterans alike.

Formula One. The idea behind these applications is that music styles can be represented by preset "riffs" and arrangements; classic Motown songs, for example, feature

a ringing tambourine on beats two and four. Visual Arranger takes 8 popular music styles — dance, ballad, pop, rock, R&B, jazz, Latin, and world — and breaks each down into 20 substyles. Each substyle contains eight separate licks: intro, A section, B section, four fills for transitions between the sections, and an ending.

To create a song, click on the Intro button,



choose a substyle icon — Ragtime, for instance — and drag the icon down to the Song window. Click on the Main A button, and again drag the Ragtime icon to the Song window — the two Ragtime icons are now automatically linked. To add measures and chords to the Main A lick, double-click on the Ragtime icon. Doing so brings up the

Chord window, where you can edit — but not create — chords. Repeat this procedure for other sections.

Visual Arranger also lets you adjust the volume of your individual sounds, substitute other instruments for the default sounds used in each style, add melodies and preset instrumental and drum fills, and change the tempo of your tunes.

Tool or Toy? Entry-level musicians will find Visual Arranger a fun and easy-to-use musical sketch pad. Band-in-a-Box users will be impressed by Visual Arranger's larger and more varied instrumental ensembles and colorful mixing board, but they are unlikely to make the switch. True, Visual Arranger is long on entertainment, but those who are looking for more-professional features, such as the ability to generate sheet music, will find it worth their while to fork over the extra \$30 for Band-in-a-Box.

/ Christopher Breen

Visual Arranger ★★★ / Price: \$59.95 (list). Company: Yamaha, Buena Park, CA; 800-301-7076 or 714-522-9240. Reader Service: Circle #417.

InTouch 2.5 / Function follows formlessness

DISGUISED AS A SIMPLE address-book DA, InTouch works equally well as a free-form information manager, contact log, appointment calendar, and to-do list. The latest release of InTouch has only a handful of modest new features — most of the changes are interface improvements, such as labeled icons, standard keyboard command equivalents, and individually resizable panes in the main window.

Boundaryless Freedom. Instead of giving users numerous specific fields — such as first name, last name, and city — to fill in, InTouch has only two fields, each capable of holding 32,000 characters in any format.

Typically, you use the first for names and addresses and the other for phone numbers and notes. This free-form design is simultaneously the main strength and the main weakness of InTouch.

Entering information any way you please appeals to novices and those who despise

the restrictions of structured databases. But mail-merge and exporting data from InTouch for use in other databases are all but impossible, because these tasks usually require a consistent structure. And anything but the simplest searching and sorting tasks is problematic, because you can't isolate exactly what you want.

If you can live with the drawbacks of the free-form design, you'll find that

InTouch has a lot going for it. It can print your data on standard

Avery-label stock, envelopes (with or without POST-NET bar codes), address-book forms, and fax cover sheets. You can now tag

lines you don't want printed, such as nicknames, and designate which phone numbers should be dialed through the speaker or modem. Thanks to a companion control panel, you can highlight text in most applications and then press hot keys to instantly add it to a new record, print a record, search for a record, or dial the phone

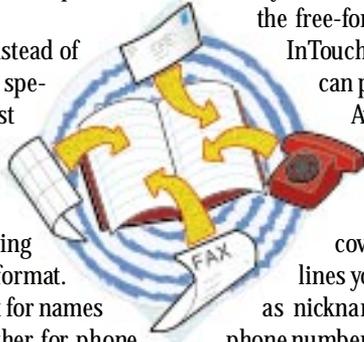
— all without having InTouch open.

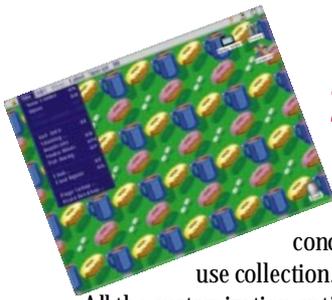
You can also set reminders, which will pop up as a dialog box on your screen at the specified date and time, whether InTouch is open or not. InTouch contains a decent simple calendar program, but there are also hooks for DateView, The Prairie Group's full-featured calendaring and to-do-list-management program.

There are enough enhancements in this new version to justify the upgrade fee, and novices looking for an easy-to-use address-book program may enjoy InTouch's lack of structure. And for those who try it and don't like it, The Prairie Group sells the program with a 30-day, money-back guarantee. But if you need to perform sorts, mail-merges, imports and exports, and complex searches, you would be better off forgoing this free-form database in favor of a more structured personal information manager.

/ Owen Linzmayer

InTouch 2.5  / Price: \$69.95 (list). Company: The Prairie Group, West Des Moines, IA: 800-346-5392 or 515-225-3720. Reader Service: Circle #418.





Zonkers! / Mac makeover

UTILITIES THAT TRANSFORM aspects of your Mac are a dime a dozen, but Zonkers! collects every conceivable interface tweak in one easy-to-use collection.

All the customization options in Zonkers! are available from one pull-down menu or from buttons in the Zonkers! control panel. The options include swapping your dull static cursors for colorful animated ones, colorizing your menus, altering your desktop pattern, and changing how windows and buttons appear on your Mac across all applications. For example, if you want to make your Mac look like a PC running Windows, Zonkers! will oblige you.

Spiff Up Those Icons. A well-designed addition to the customization features in Zonkers! is its icon browser/editor, which lets you easily create and alter custom icons and then copy them to and from documents by dragging and dropping rather than having to use the multistep process the Finder requires.

The Zonkers! library of colorful desktop patterns, icons, and cursors is well organized and fun, if somewhat bland. The CD-ROM version, whose library is twice the size of the disk version for the same price, is a better bet for users with CD-ROM drives. If you're bored with your Mac's look, Zonkers! is a good one-stop tool for giving it a makeover. / Jason Snell

Zonkers! 🍌🍌🍌 / Price: \$30 (list). Company: Nova Development, Calabasas, CA; 800-395-6682 or 818-591-9600. Reader Service: Circle #419.

Org Plus 2.0 / Charting your organization

TO BUILD A CHART in the latest version of Org Plus, you select or create an employee on a chart and then add subordinates, managers, assistants, and coworkers. Each designation determines how and where Org Chart places the employee and draws connecting lines in the chart. You have several layout options to choose from. **Cross-Platform Magic.** If you insert your Org Plus chart into an OLE-compliant application, such as Adobe Persuasion, simply double-clicking on the chart will launch Org Plus. You can then edit the organizational chart directly in that application.

You can trade files created in Org Plus for Macintosh 2.0 with Org Plus for Windows 2.0 and Org Plus Advanced for DOS 6.0.1 without having to convert the files, since all these programs now share the same file format. Chart hierarchies and box contents transfer flawlessly, but when we read an Org Plus organizational chart created on a Windows PC, the chart lost Windows-specific formulas and colors and many of the Windows fonts didn't match up correctly with their Mac counterparts.

You also can't import logos or add pictures to charts, and you're limited to opening one chart at a time.

ClarisImpact boasts more functionality than Org Plus, including support for style sheets, and creates a wide variety of other business graphics. It also costs less. / Shelley Cryan

Org Plus 2.0 🍌🍌🍌 / Price: \$149 (list). Company: Banner Blue Software, Fremont, CA; 510-794-6850. Reader Service: Circle #420. 📄







POWER MACS

The Sequel

THREE NEW POWER MAC MODELS DELIVER BIG-TIME FEATURES AT SMALL-TIME PRICES.

The latest nonstop-speed blockbuster isn't a movie starring Keanu Reeves (although a bus *does* figure prominently in the plot line): It's Apple's new line of Power Macs. Replacing the original Power Mac line (last year's Power Mac 8100, 7100, and 6100) are the ultrafast Power Mac 8500, 7500, and 7200. The new Power Mac line is no mere rehash of last year's models or a low-budget spin-off of the recently announced high-end Power Mac 9500, though. Like any good sequel, the new line offers a few special twists of its own.

Top billing goes to the Power Mac 8500. With its mighty 120-MHz PowerPC 604 processor, the Power Mac 8500 (\$3,999 for the base configuration) delivers graphics- and video-workstation performance and better AV capabilities than the original Power Macs. The Power Mac 7500 (\$2,699 for the base configuration), although less powerful and lacking some of the high-end capabilities available with the Power Mac 8500, is no slacker. It's less costly and less powerful because it has a PowerPC 601 processor, but it offers a new enclosure that lets you easily negotiate the internal components. In addition, the Power Mac 7500 is outfitted for business '90s-style, with support for computer telephony and videoconferencing.

BY KELLI WISETH

PHOTOGRAPHY / MICHAEL LAMOTTE; SCREEN IMAGE / DENEBA SOFTWARE

Finally, everyone who's been waiting for high performance but hasn't wanted to pay Apple's historically high prices can stop eyeing the PC ads with longing: The Power Mac 7200 brings processing power that was top-of-the-line at the Power Macs' debut in 1994 and delivers it at an entry-level price, starting at \$1,599. The Power Mac 7200 comes with either a 75-MHz or a 90-MHz PowerPC 601 processor and is housed in the same easy-open case as the Power Mac 7500.

BREAKNECK SPEED

So what about that bus we mentioned earlier? The second-generation Power Macs each sport three expansion-card slots built on the new PCI (Peripheral Component Interconnect) bus, which is intended to optimize data handling at PowerPC processing speeds. (There's no point having a rocket under the hood if the drivetrain can't deliver.) Apple has now retired NuBus, which allowed data transactions at a top rate of 10 MHz, in favor of the PCI bus, which runs at 33 MHz in the new Power Macs. PCI, a widely adopted architecture in the PC world, made its Macintosh debut last June in the Power Mac 9500 (see "The Power Macintosh 9500," August '95, page 68).

The price of PCI's speed is the loss of backward compatibility — NuBus cards won't work in the PCI slots of the new Power Macs. But on an upbeat note, PCI cards are expected to cost less than similar NuBus cards.

The arrival of PCI coincides with another sweeping change in Mac system architecture: Apple has done away with SIMM (single in-line memory module) memory in favor of a new design that uses DIMMs (dual in-line memory modules). DIMMs can be speedier than their predecessors when installed in pairs, which boosts speed via a technique called interleaving (see the "DIMMs 'n' SIMMs 'n' Things" sidebar, August '95, page 76). DIMMs cost about the same as comparable-capacity SIMMs, but they aren't backward-compatible: SIMMs don't fit in DIMM slots.

Lest users begin to feel abandoned with heaps of obsolete hardware, Apple has promised to help out with the transition to the new Power Mac generation. Apple will offer owners of Quadra 840AVs and Power Mac 8100-series computers a logic-board upgrade to the Power Mac 8500 later this year (about \$2,000 with 8 MB of RAM). No similar option allows upgrades from older systems to the Power Mac 7500 or 7200, but Apple promises a "very aggressive trade-in" program for those who wish to upgrade. Specific details were unavailable at press time; if you're interested, call the Apple Exchange Program (800-447-8723).

Also, look for enterprising third parties to emerge with schemes for extending the usable life of your old add-in hardware: SimmSaver Technology, of Wichita, Kansas, has announced DimmSaver (\$79), a converter that promises to let you use SIMMs in DIMM slots. And



To remove the outer enclosure, press two buttons on the front of the case and slide the cover off the base.



Flip the protective flap to the left; extend the chassis's nifty kickstand (on the right); and unclip the two sliding locks, one in the front and one at the back.



Swing the chassis assembly up and to the right.



Stand the chassis on its kickstand, and you've got easy access to the drives, power supply, and logic board.

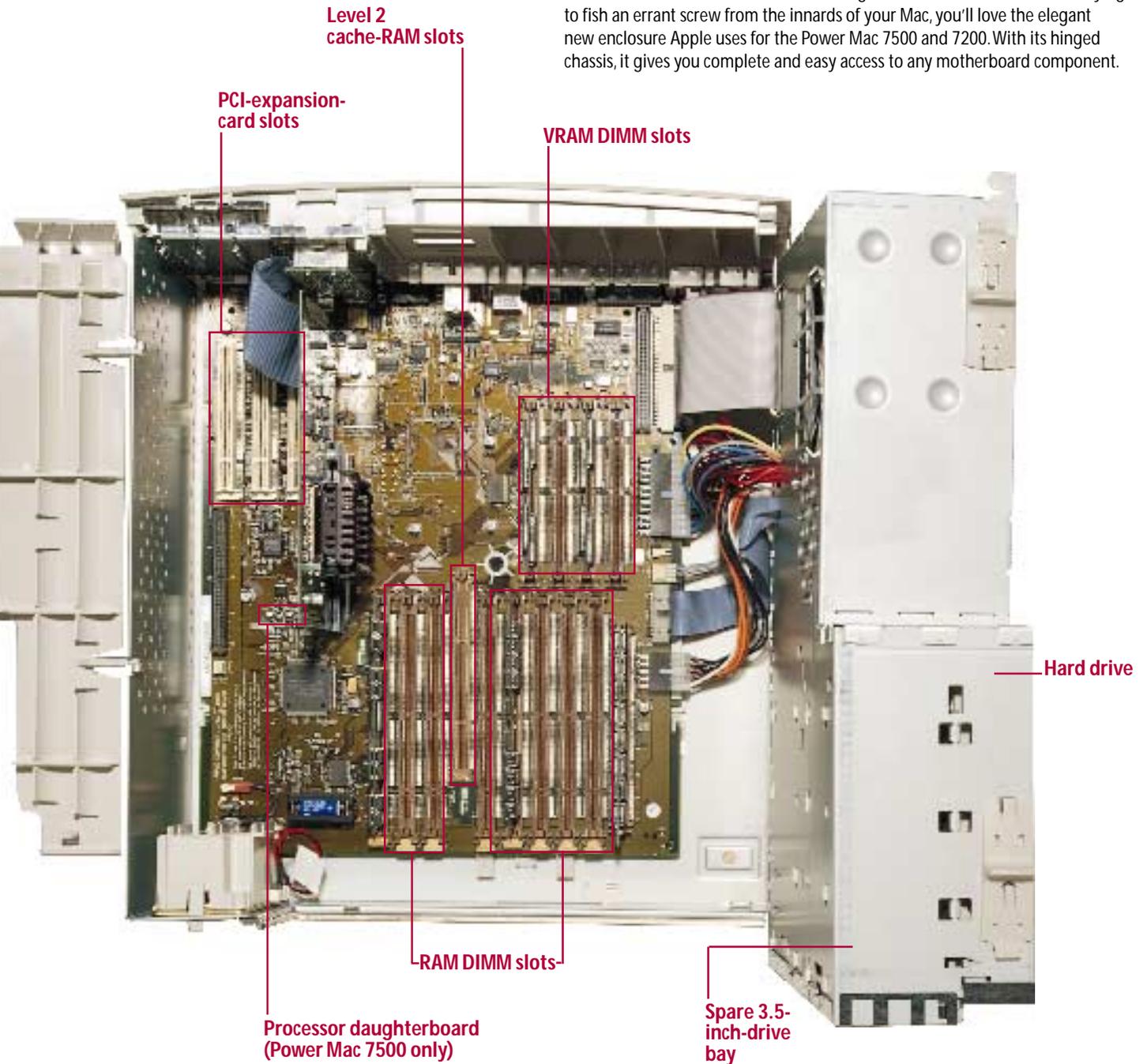
Second Wave, of Austin, Texas, will offer adapter boxes, starting at \$695 list, that will let you use your older NuBus cards in the new PCI-equipped systems.

THE PLOT THICKENS

Some changes in the new Power Macs should bring smiles to most faces: Apple has raised the bar several notches on its base configurations. For example, an

INTERIOR DESIGN 101 / *elegant use of space*

IF YOU'VE EVER WORRIED ABOUT vanishing in a blue electrical flash while trying to fish an errant screw from the innards of your Mac, you'll love the elegant new enclosure Apple uses for the Power Mac 7500 and 7200. With its hinged chassis, it gives you complete and easy access to any motherboard component.



internal quad-speed CD-ROM drive (the AppleCD 600i) comes with *every one* of these new Power Macs. A minimum of 1 MB of VRAM (video RAM) — sufficient to deliver millions of colors on a 14-inch monitor — is now standard as well (the Power Mac 7500 and 8500 come with 2 MB each), and all the new models can be upgraded to 4 MB of VRAM, enough to display millions of colors on a 21-inch monitor. (The VRAM on the new

Power Macs is of a new design that isn't compatible with older Mac VRAM.)

Hard-drive capacity has also risen, with 500 MB being the new minimum; the Power Mac 8500 boasts a 1-GB drive in its base configuration. In addition to benefiting from the speed inherent in having high-capacity drives, the Power Mac 8500 and 7500 benefit considerably from having Fast SCSI buses for the internal drives.

(Besides the factory-installed drive, each machine has a 3.5-inch-drive bay that also connects to the Fast SCSI bus.) Fast SCSI supports data-transfer rates of up to 10 MB per second — twice the maximum rate of standard SCSI drives. (The external SCSI buses on the Power Mac 7500 and 8500 and all the SCSI buses on the Power Mac 7200 are standard, 5-MB-per-second connections.)

Another stock item new on all models, in addition to Apple's own Ethernet port (AAUI), is the industry-standard port (RJ-45) for 10BASE-T connections, so you can connect to virtually any corporate computer system without requiring any additional hardware.

The new Power Macs are all upgradable too: The processors in the Power Mac 8500 and 7500 are mounted on daughterboards that can easily be swapped out for ones with faster chips (although none are currently available). The Power Mac 7200-series processors are soldered onto the motherboard, but Apple has promised a logic-board upgrade to the Power Mac 7500 as a future option (pricing and availability have not yet been

determined). Like the previous Power Macs, each of the new machines has a Level 2 cache slot that can be equipped with up to 512K of RAM, to dramatically increase speed. Three of the four machines we tested (the Power Mac 8500, 7500, and 7200/90) were equipped with 256K of L2 cache memory. In previous tests, we've found that this amount of cache memory has boosted the processing speed by 15 to 20 percent.

Finally, the new Power Mac line gets an overall speed boost, thanks to System 7.5.2, the version of the Mac OS that began shipping with the Power Mac 9500 in June. This system-software version includes the new DR (dynamic recompilation) software emulator, which lets Power Macs run non-native software (programs written for 680x0 Macs). The emulator has been completely redesigned with speed in mind (see the "System 7.5.2" sidebar, August '95, page 74). Also, critical parts of the system software that used to run under emulation — including SCSI Manager, Resource Manager, and Sound Manager — are now PowerPC-native.

SCHMOOZING FROM THE DESKTOP / *work face to face, even at long distance*

WITH THE INTRODUCTION of the new Power Macs, Apple is pushing two technologies. One lets you use the Power Mac 8500 or 7500 for videoconferences over all kinds of computer networks. The other turns your Power Mac into a speakerphone. Each promises to help people work together more easily.

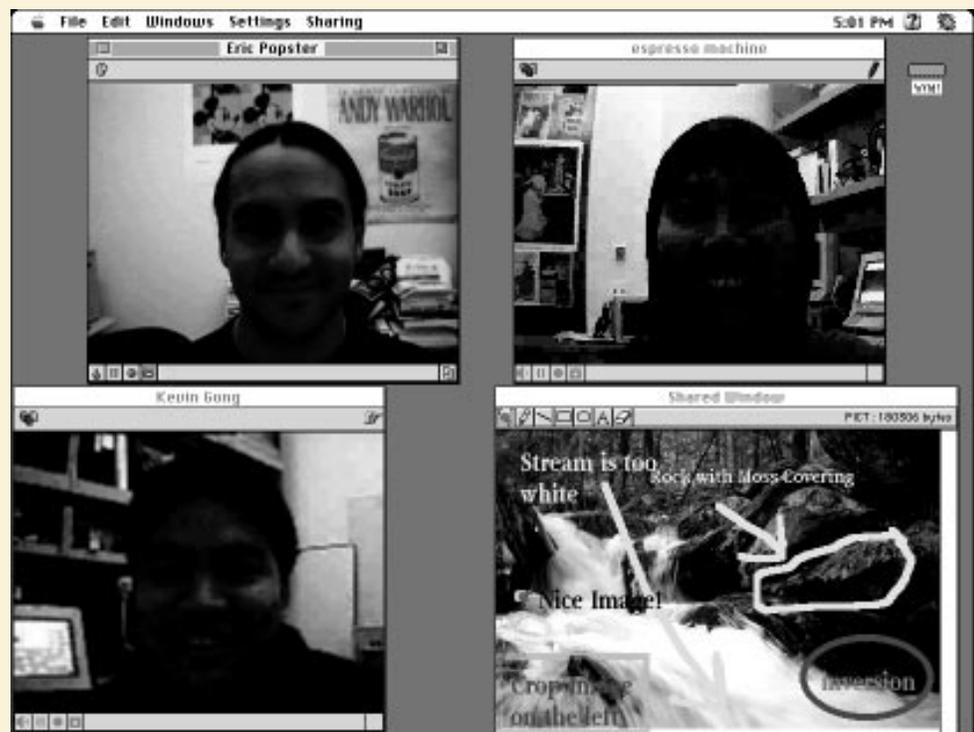
The flashier of the technologies is QuickTime Conferencing (QTC), which Apple announced earlier this year. QuickTime Conferencing is a Mac OS extension. By itself, it gives you nothing, but with the right combination of hardware and software, QTC lets you and others on your network share and manipulate video, audio, text, images, and sound.

It works like this: When you're using QTC with your coworkers, you see their faces in QuickTime-movie windows and hear them via your Mac's speakers. They hear your voice transmitted through your Mac's microphone and see your face in a window on their screens. In addition to the faces, you *all* see the Shared Window, which can be used to exchange ideas and present information. Any of you can paste images, sounds, and QuickTime movies into the shared work space and then draw in it or type annotations. Each conference participant's comments and drawings appear in an assigned color that makes it easy to track who's saying what. Apart from mission-critical games of hangman, this capability is well suited for design critiques, group editing sessions, and any other give-and-take work effort.

Our hands-on experience with QTC, using

beta software and preshipping Power Macs on Ethernet, was impressive but imperfect: The QuickTime movies were decidedly jerky, which made for slightly disjointed conversations, but facial expressions were discernible. Furthermore, although the Shared Window *was* responsive, users must send their changes to the window when they are complete and if several

people are working at the same time, one update can accidentally obliterate another. The experience is a bit like an online chat session or a satellite long-distance call, in which questions and answers sometimes get out of sync. As with those media, you can learn to work around the mildly annoying time lag to get productive work done.



DIRECT TO VIDEO: POWER MAC 8500

One-stop shopping for demanding graphics professionals or corporate-video producers is what Apple has in mind with the Power Mac 8500, which comes equipped with a completely revamped AV subsystem that supports full-motion video capture, display, editing, and output at near-broadcast quality. This new generation of AV technologies has been upgraded in several ways.

First, it's easier than ever to connect video peripherals: Jacks accommodate input from S-video sources, such as high-end camcorders, and composite video, which is used on many consumer VCRs; earlier AV Power Macs required the use of adapters (which were included) for composite video. You can also hook the Power Mac 8500 directly to an NTSC television monitor — a trick that requires a special video adapter or cable for all other Macs (except the 7500).

The quality of the images with the Power Mac 8500 is also better than those with any earlier Mac: The original AV Power Macs supported video input and output at a

maximum color bit depth of 16 bits (thousands of colors). The Power Mac 8500 supports 24-bit video (millions of colors). And as our tests indicate, it has the best-ever video-capture capabilities for an out-of-the-box Mac (see figure 1). The 8500 also has a slot for a DAV 2 expansion card. Like the original digital-audio/video slot on the Quadra 840AV and 660AV, the DAV 2 slot accommodates third-party video-compression hardware. Original DAV cards won't work in the DAV 2 slots, however, and no DAV 2 cards have been announced yet.

Broadcast-video professionals will probably demand the speed of a Power Mac 9500 loaded with third-party enhancements, but for straightforward corporate training videos and multimedia presentations, the Power Mac 8500 more than fills the bill as a video workstation.

TELL ME, DON'T SHOW ME

Video-editing capability is cool, but for many users, it's downright frivolous. If your computing needs fall more in the category of office user than power graphics user

Apple is bundling QTC with various combinations of hardware and software, including the \$200 Apple Media Conferencing Kit, which consists of the QuickTime Conferencing system extension, the Apple Media Conferencing application, and a color video camera.

Apple is touting the Power Mac 7500 as "QuickTime-Conferencing-ready," which indicates that it comes with the QTC extension and the Apple Media Conferencing application. And because the Power Mac 7500 contains the input portion of the video subsystem (input ports for S-video or composite video), you can connect a desktop video camera to the Power Mac 7500 and immediately start holding video conferences. The black-and-white Connectix Quick-Cam, which connects to your Mac's serial port, can also be used with QTC.

QuickTime Conferencing is built on open industry standards, so you will be able to communicate with others over Ethernet, token-ring, TCP/IP, ISDN, and ATM networks. QTC also supports all major video-compression standards.

ANSWERING THE TELEPHONY CALL

GeoPort technology is Apple's answer to computerized telephony. Supporting speeds of up to 2 MB per second, GeoPort serial connectors have been standard on all Power Macs, so it's no surprise that both serial ports on the latest Power Macs are GeoPorts. One labeled with a printer icon and the other with a telephone icon, they accept external modems and printers just as the original Mac serial ports did — but

things get really interesting when you plug in Apple's GeoPort Telecom Adapter "pod."

The GeoPort and adapter tap in to Apple's Macintosh Telephony Architecture, an open standard supported by AT&T and other big players for integrating telephones and computers. With the right hardware and software, the GeoPort lets your Mac process voice, fax, and data communications through a single phone line. The software automatically recognizes each type of call and directs it appropriately.

The Power Mac 7500 and 7200 include this complete software bundle, the same bundle Apple ships with its \$200 GeoPort Telecom Adapter Kit. Part of the bundle is a limited version of Cypress Research's MegaPhone, a screen-based telephone application; *limited* means that some high-end features, such as the application's call-logging facility, won't be available to you unless you get an upgrade (around \$50) from Cypress. Nonetheless, the version that ships with the Power Mac 7500 and 7200 provides automatic dialing, voice-mail, and speakerphone capabilities.

What you don't get, however, is key additional hardware that's required to *really* make all this telephony happen. Neither the Power Mac 7500 nor the Power Mac 7200 comes with a GeoPort pod, and the Power Mac 7200 even lacks a microphone. So in order to take full advantage of the software that Apple bundles with the Power Mac 7500 and 7200, you need to buy these items and more RAM as well. MegaPhone alone needs 5 MB of RAM, so the

standard 8 MB for these machines won't handle telephony very well. Apple apparently wants to whet users' appetites with the bundled software, but the lack of hardware needed to even test-drive the telecom capabilities may end up frustrating Power Mac 7500 and 7200 owners. If you're among the vexed, remember that PC users have been treated like this for years — getting bargain prices for new systems and then paying à la carte for hardware that Mac users expect out of the box. Maybe Apple really *is* figuring out how the personal-computer business works.



A single control panel, Sound & Displays, replaces the Monitors and Sound control panels in the Power Mac 8500 and 7500. From within it, you can select from multiple audio and video input sources that feed into the new Power Macs' AV subsystems.

— but you still want cutting-edge technology — you'll want to check out the Power Mac 7500.

Priced at over \$1,000 less than the Power Mac 8500, the Power Mac 7500 has a 100-MHz PowerPC 601 chip, not a powerhouse PowerPC 604 as in the Power Mac 8500. The Power Mac 7500's unassuming 6.15-x-14.37-x-16.93-inch enclosure may not turn any heads, but when you open it up, you discover the meaning of inner beauty. The redesign includes one of the slickest tricks we've seen in years, a hinged chassis that gives you full access to the motherboard (see the "Interior Design 101" sidebar).

The Power Mac 7500 has no video-output capabilities, but it uses the same video-capture subsystem as the Power Mac 8500. This subsystem is designed not for editing but for futuristic business communications: Bundled software and a few add-on goodies turn the Power Mac 7500 into a videophone that allows users to see and talk with each other and to share a common desktop work window for sketches, notes, graphics, or QuickTime movies (see the "Schmoozing from the Desktop" sidebar).

Apple calls this collaborative computing; all we can think of is George Jetson. To make it happen, you need to buy two extra pieces of hardware: a video camera, such as the color camera in the Apple Media Conferencing Kit (about \$200), which you connect to the Power Mac 7500's video-in jacks, and a GeoPort Telecom Adapter (commonly called a pod), which you plug in to a serial port (and your phone line).

If you want to use your Macintosh as a business communications tool but don't want to worry about your

appearance while on the phone, the Power Mac 7500 still has something for you — if you're willing to buy a GeoPort pod. This add-on, plus the included PlainTalk microphone and bundled software from Apple's GeoPort Telecom Adapter Kit, lets you turn your Power Mac into a business phone, fax, and answering machine. Earlier versions of this software have been available since the debut of the Quadra 840AV, but many of its key components are now PowerPC-native. In addition, the Express Modem's fax software now supports V.17 high-speed fax, and Cypress Research's MegaPhone telephony software, the choicest part of the bundle, gives you speakerphone capabilities, voice-mail, and automatic call dialing.

GET THOSE EXTRAS OFF THE SET!

What if you don't want any of these fancy gadgets? Your work requires processing power and capacity, but you don't expect or *want* to see a colleague (or your boss) peering out at you from a window on your Mac desktop. And you certainly don't want to pay for such capabilities. If you're in this position, you'll want to look at the Power Mac 7200.

This Power Mac looks exactly like the Power Mac 7500: same nifty hinged enclosure, same three PCI slots. The main difference is in their processors and the machines' rock-bottom pricing. The soldered-in PowerPC 601 processor, running at 75 MHz in the Power Mac 7200/75 and 90 MHz in the Power Mac 7200/90, allows the Power Mac 7200 to perform quite respectably as a business machine compared to the original Power Macs (see figure 2). And the price offers a way to get

FIGURE 1

EXPLICITLY GRAPHIC / testing speed with video and digital images



Business communicators and graphics professionals alike are sure to appreciate the capabilities of the latest Power Macs. Humongous image files open and save *fast*, and the new system software's PowerPC-native Sound Manager means that CD-quality audio and respectable-quality video can be captured simultaneously. These charts reflect

the speed of the tested machines for a series of tests involving the use of Adobe Photoshop, Specular's Infini-D 3-D-rendering software, QuarkXPress, and Adobe Premiere. The first three tests place demands on specific Macintosh OS operations; the results are grouped by operation.

The Processing test measures raw processing

power, as required to create transitions in Premiere or compress and decompress image files in Photoshop.

The Storage test gauges speed on transfers of large blocks of data to and from the hard drive; such transfers are common in video and graphics applications.

The Display test, which includes scrolls and redraws of large image files, places demands on the Power Macintoshes' graphics-display subsystems.

For the Video Capture test, we set each machine to its maximum number of colors at a resolution of 640 x 480 pixels and measured the rate at which we were able to capture 320-x-240-pixel frames while digitizing a color movie *and* recording its sound track at CD-quality fidelity.

Results for the first three tests are relative to those for a Quadra 630 with an IDE hard drive, which is assigned a score of 1.0 for each test.

Graphics Applications	Processing	Storage	Display	Video Capture (fps)
	0.....6	0.....4	0.....3	0.....30
Power Mac 8500/120	5.3	3.5	1.9	30
Power Mac 7500/100	4.1	2.1	2.3	20
Power Mac 7200/90	3.3	2.0	2.3	*
Power Mac 7200/75	2.2	1.2	1.9	*
REFERENCE MACHINES				
Power Mac 8100/100AV	3.7	2.0	0.7	13
Power Mac 7100/80AV	3.0	1.5	0.8	12
Power Mac 6100/66AV	2.6	1.4	0.6	12
Quadra 840AV	1.3	1.3	1.1	12

* Lacks video-in ports.

Longer bars are better.

everyone in the office running a Power Mac. (The accounting department won't even notice the Power Mac 7200's lack of an AV subsystem but will surely appreciate the low price.)

To think of the Power Mac 7200 as low-end misrepresents the case, though. Each configuration boasts a faster processor and greater RAM capacity than the original Power Mac 6100 or 7100. The built-in VRAM lets the Power Mac 7200 support more colors than the original Power Macs too. And like the Power Mac 7500, the Power Mac 7200 ships with telecom software that allows it to work like a phone (if you provide a microphone and a GeoPort pod). Both configurations of the Power Mac 7200 are outstanding performers for price-sensitive (or no-frills) users.

SEE HOW THEY RUN

Broadly speaking, the capabilities provided by the new line appeal to two distinct camps: professional-level-graphics and -video producers and mainstream business users. People in the color-publishing business or those who produce training videos, for example, need a system with different strengths from those who mainly use office-productivity applications, such as word processors and spreadsheet programs.

To see how the new machines stack up against last year's crop of Power Macs, we devised two series of tests, one for users of graphics and video applications (see figure 1) and one for business users (see figure 2).

For graphics and corporate-video pros, we put the new Power Macs through a series of application-based tests, using Adobe Photoshop, QuarkXPress, Specular's

Infini-D, and Adobe Premiere, and grouped the results for tests that specifically tax three critical areas of system performance: processing, storage (including hard-drive input and output), and screen display. We also measured the highest audio-and-video-capture rate possible for those machines with video-in capabilities.

Our business-productivity tests included MacBench 2.0, which provides scores for the raw speed of the processor, the floating-point unit, and the hard-disk and video-display subsystems with common business tasks. We also performed tests with actual applications — in this case, Microsoft Word and Excel and the Macintosh Finder.

As we expected, the Power Mac 8500, with the zippy new 120-MHz PowerPC 604 processor, was the overall winner in all the speed tests for high-end graphics as well as business productivity — with one notable exception: The Power Mac 8500's Display scores fell short of the Power Mac 7500's in both test categories. From our investigation, we learned that the reason had to do with *bus timing*.

PowerPCs run so fast that portions of the logic board (including the buses that link the processor to the memory and video subsystems) cannot keep up with them. The buses can't handle new data with every PowerPC clock cycle, so the processor has historically updated them every other cycle (or at half the processor's clock speed). This trick is used in the Power Mac 7500, which updates its video bus at a rate of 50 MHz (half its 100-MHz clock speed). The Power Mac 8500's 120-MHz PowerPC 604 is too fast for even the half-speed scheme to work, so it updates the video bus

FIGURE 2

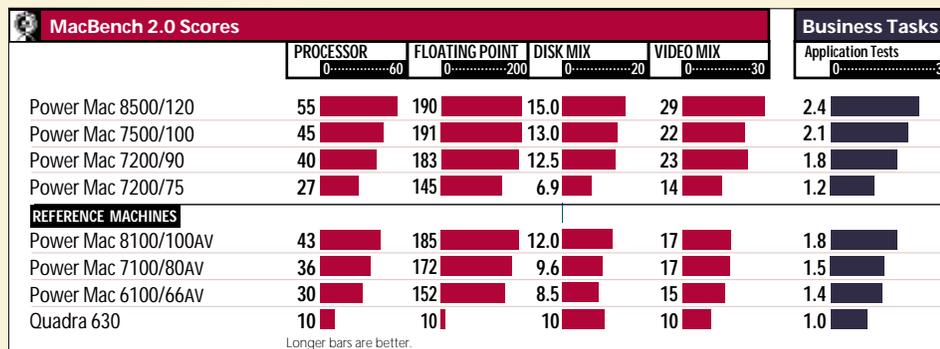
GETTING DOWN TO BUSINESS / office-productivity speed



There is nothing buttoned-down about the speed of the latest Power Macs with general-business applications. Pre-shipping versions of the new machines screamed in our business-oriented MacBench 2.0 tests and for our business tasks. For all these tests, we used the machines with their maximum shipping RAM. The Power Mac 7200/75

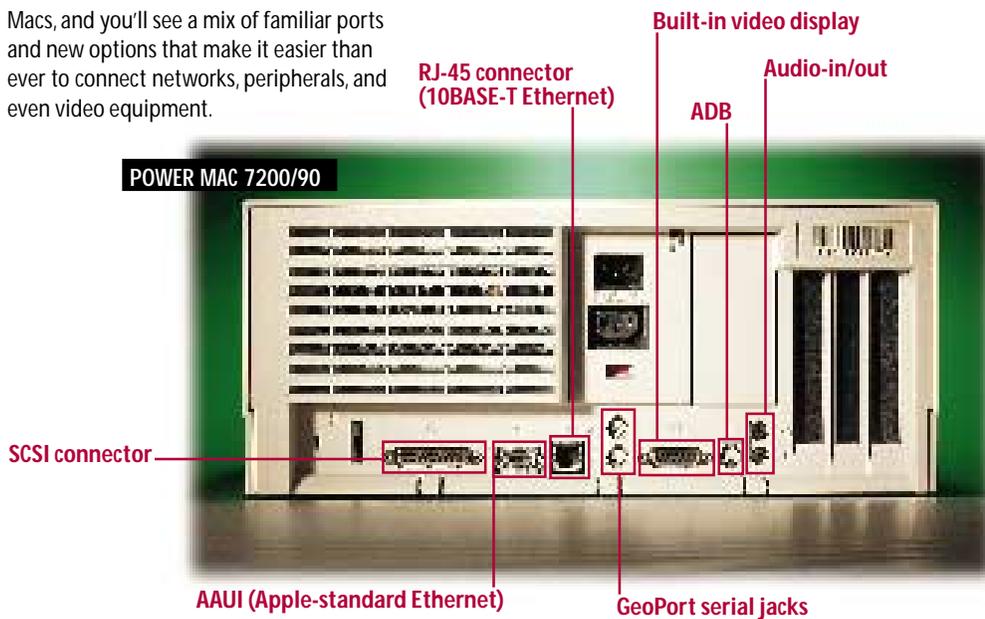
Apple provided had no Level 2 cache memory installed; all the other systems had 256K of L2 cache memory (which comes standard on the Power Mac 8500/120 and costs roughly \$200 for the Power Mac 7200/90 and Power Mac 7500/100). Results are relative to those for a Quadra 630 with an IDE hard drive, which is assigned a score of 10 for each MacBench 2.0 test

and a score of 1.0 for the business-tasks application tests. Our MacBench 2.0 benchmark software tests Mac speed at the subsystem level, using tasks patterned after those performed by typical office-productivity programs. The business-tasks tests look at overall system performance, using the Mac Finder and Microsoft Word and Excel.



PORT ABILITY / *plugging in to the new Power Macs*

LOOK AT THE BACK PANEL of the new Power Macs, and you'll see a mix of familiar ports and new options that make it easier than ever to connect networks, peripherals, and even video equipment.



All the new Power Macs have the same bank of connectors, most of which were available on earlier Power Macs. New in this generation is the RJ-45 connector, for painless connections to 10BASE-T Ethernet networks.

every *third* cycle — at a frequency of 40 MHz (one-third of its 120-MHz clock speed). So, despite its awesome processing muscle, the Power Mac 8500 has a *slower* video subsystem than the Power Mac 7500. Hard-core graphics users may want to consider adding an accelerated-video display adapter to speed up such functions as panning and scrolling within image files.

In our video-capture test, the combined benefits of System 7.5.2, Fast SCSI, and the video subsystem in the Power Mac 8500 and 7500 clearly showed their worth: The Power Mac 7500, which has the same processor as the Power Mac 8100/100, beat the latter's capture rate by more than 50 percent; the Power Mac 8500, with its mighty processor, captured the 24-bit, 320-x-240-pixel video at 30 fps — more than double the rate of the former champion, the Power Mac 8100/110.

The PowerPC-native Sound Manager software contributed greatly to the new systems' scores in our video-capture test: We captured the video signal *and* CD-quality audio (16-bit sampling at 44.1 kHz) at the same time. That's a very convenient way to create quick video presentations that wasn't practical with earlier-generation machines: Users of older Power Macs achieved higher video frame rates by recording video alone and then dubbing sound in afterward — a time-consuming step that's no longer necessary in many instances.

But that's only half the story; the other half is about office productivity, and in that regard, the Power Mac 7500 isn't too far behind the Power Mac 8500. For strictly business applications, the Power Mac 7500 is a good, solid performer, nearly matched by the Power Mac 7200/90.

CUT TO THE CHASE

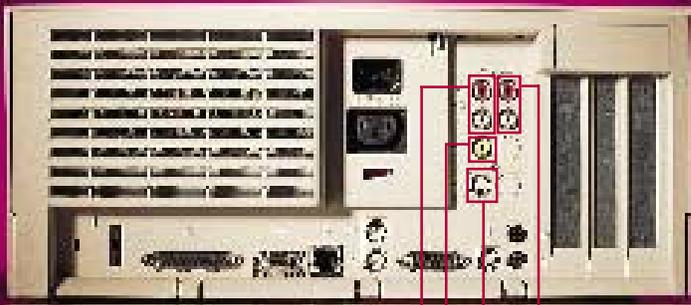
Apple has been dinged a lot over the years by supporters and critics alike, especially for its pricing structure. This second generation of Power Macs should help change that.

For graphics and video applications or if you're in business for yourself and want to run standard business-productivity apps as well as video, you won't be disappointed by the Power Mac 8500. This is definitely the one to get if you're interested in experimenting with high-quality-video and -audio editing and don't want to build your own workstation from the ground up (as you would have to with the eminently expandable Power Mac 9500).

If the notion of a collaborative, interactive distributed work environment is part of your company's vision, the Power Mac 7500 will fit in well today and support the kind of work you'll be doing tomorrow. For any environment in which coworkers are geographically distant but teamwork and face-to-face discussion are critical, the Power Mac 7500 provides, in one package, everything necessary for making the virtual workplace a reality.

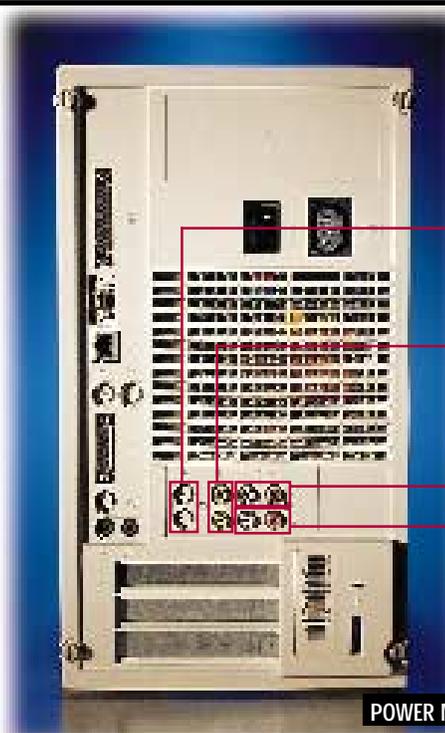
The Power Mac 7200, in either configuration, is a fast, capable business tool, with a hefty hard drive, room for enough RAM to run the next hog-of-a-version of Word, and true ready-to-go Ethernet. For a powerful all-purpose business machine, particularly for small-business owners, the Power Mac 7200/90 — especially with 256K of optional cache memory — is a good buy. Almost as fast as the Power Mac 7500 in the MacBench 2.0 and application test suite, the Power Mac 7200/90

POWER MAC 7500/100



Stereo line-audio input
Composite-video input
S-video input
Stereo line-audio output

Setting the Power Mac 8500 and 7500 apart among the new machines are their AV subsystems. The Power Mac 8500 allows unprecedented connection to video-recording and -playback equipment, with a full complement of video and audio inputs and outputs. The Power Mac 7500 provides inputs only, in keeping with its design as a videoconferencing workstation.



S-video input/output
Composite-video input/output
Stereo line-audio input
Stereo line-audio output

POWER MAC 8500/120

won't give you as much expandability and upgradability in the long run, nor will you receive even a subset of the AV-technologies suite — but if you do not require such features, there's really no reason to pay for them, is there? ▲

Kelli Wiseth is a *MacUser* contributing editor. Senior project leader Jeffy Milstead managed the testing for this report.

 MacBench 2.0 benchmarking software is available online on ZiffNet/Mac. See How to Reach Us for instructions on how to access ZiffNet/Mac.

SPEC CHECK / features of the new Power Macs



POWER MAC 7200/75



POWER MAC 7200/90



POWER MAC 7500/100



POWER MAC 8500/120

	POWER MAC 7200/75	POWER MAC 7200/90	POWER MAC 7500/100	POWER MAC 8500/120
Estimated street price range*	\$1,599 – \$1,799 (8/500)	\$1,899 – \$1,999 (8/500)	\$2,699 – \$2,899 (8/500) \$2,999 – \$3,399 (16/1 GB)	\$3,999 – \$4,299 (16/1 GB) \$4,499 – \$4,699 (16/2 GB)
PowerPC clock speed and model	75-MHz 601	90-MHz 601	100-MHz 601	120-MHz 604
Processor location	logic board	logic board	daughterboard	daughterboard
Maximum RAM	256 MB	256 MB	512 MB	512 MB
L2 cache installed	none	none	none	256K
VRAM installed/maximum	1 MB/4 MB	1 MB/4 MB	2 MB/4 MB	2 MB/4 MB
Maximum built-in video resolution	1,152 x 870 pixels	1,280 x 1,024 pixels	1,280 x 1,024 pixels	1,280 x 1,024 pixels
Maximum resolution at 24-bit color	1,152 x 870 pixels	1,152 x 870 pixels	1,152 x 870 pixels	1,152 x 870 pixels
Internal Fast SCSI			✎	✎
AV FEATURES				
Support for NTSC and PAL monitors			✎	✎
DAV 2 slot			✎	✎
24-bit-video input			✎	✎
24-bit-video output			✎	✎
Stereo line-audio input/output			✎	✎
TELEPHONE/CONFERENCING FEATURES				
GeoPort telephony/fax software	✎	✎	✎	✎
Cypress MegaPhone software	✎	✎	✎	✎
Apple Media Conferencing software			✎	✎
PlainTalk microphone			✎	✎

*Pricing was preliminary at press time. All systems come with a 4x CD-ROM drive.



PHOTOGRAPHY / GIAMPIERO BENVENUTI

*Versatile color
flatbed scanners
are now priced
to fit within
anyone's budget.*

It's late, and you've already seen the midnight movie twice. You're channel surfing, and you come upon a show with a guy in a red bow tie talking quite loudly . . .

"Now Mike, all I have to do is place this photo on the glass, push this button, and voilà! My picture is now on the computer screen! (Oooh . . .) And not only that, but I can also scan slides and transparencies and I can use the OCR software to scan text! (Aaah . . .) All that in this little machine we call a scanner, Mike!" (Thunderous applause.)

"Wow!" says Mike. "All that in one little machine?"

"It's a *scanner*, Mike! All that in one little *scanner!*"

Color scanners are frequently billed as jacks-of-all-trades. You can use these SCSI devices to scan color photos, black-and-white drawings, and — with the aid of an adapter — transparencies. You can even scan text and use OCR (optical character recognition) software to

BY ROMAN LOYOLA

SCANNERS

translate it into a format your word processor can handle. And you can do all this with a scanner that costs as little as \$350.

There's got to be a catch, right? How can something so versatile be so affordable? Does a low price mean you have to make sacrifices in

THE BOTTOM LINE

RICH COLORS, NATURAL FLESH TONES, and sharp focus — a perfect scanner produces an image that has all these qualities. When rating scanners, we heavily weighted image quality, ease of use, and price. For users who are new to scanning, we also factored in the amount of hand-holding a company gives you through its tech-support policies and the documentation accompanying its product. For those with more imaging savvy, we factored in the number and variety of fine-tuning controls each scanner provides.

+ / OUTSTANDING ● / ACCEPTABLE - / POOR

RATING PRODUCT PRICE SUPPORT IMAGE QUALITY SOFTWARE

★★★★½ La Cie

Silverscanner DTP ● + + +



For the bargain hunters among you, we recommend the La Cie Silverscanner DTP (\$899 direct). The Silverscanner DTP produced excellent-quality images, and its software was easy to use. This scanner nosed out the Epson ES-1000C only because of La Cie's long history of rock-solid, user-friendly support.

★★★★

Nikon ScanTouch - ● + ●



If you need the best image quality, check out the Nikon ScanTouch (list price, \$1,720; estimated street price, \$1,200). This fast scanner requires only minimal adjustment in order to produce top-notch images. The Photoshop plug-in isn't as full-featured as we'd like, but it has the basic tools for image adjustment.

★★★★½

Ricoh CS300 + - ● ●



If money is tight, the Ricoh CS300 (list price, \$599; estimated street price, \$470) is your best bet. It isn't able to capture images as perfectly as some of the other scanners, but if you put in a little elbow grease, you'll be able to get fine images. For the price, the workload is bearable.

★★★★½	Epson ES-1000C	●	+	+	+
★★★★	Agfa StudioScan IIsi	●	+	●	+
★★★★	Epson ES-1200C	-	+	+	+
★★★★	La Cie Silverscanner III	-	+	+	+
★★★★	Relisys Reli4830-T	●	●	+	+
★★★★½	Hewlett-Packard ScanJet 3c	●	+	●	●
★★★★½	UMAX Vista-S8 LE-Plus	●	●	●	+
★★★★	Apple Color OneScanner	●	●	●	●
★★★★	Canon IX-4015	●	●	●	●
★★★★	Microtek ScanMaker IHR LE	+	●	●	●
★★★★	Relisys Reli9624-T	-	●	●	+
★★★★	Sharp JX-330M	-	●	●	●
★★★★	Tamarack Z1-600	+	●	●	●
★★★★½	Info Products Image-Reader for Macintosh	+	●	-	-
★★★★	Mustek Paragon 600 Pro	+	●	-	●

LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.

terms of image quality, software features, or ease of use?

To find out, we tested 18 color scanners with prices in the \$350-to-\$1,600 range. We evaluated each scanner's image quality, software features, scanning speed, and documentation. In general, we found that all the scanners can produce color images suitable for low-end desktop publishing. The ease with which we could get top-notch results varied from scanner to scanner, however, depending on available software features and the quality of the documentation.

Back to Scanning Basics

The most important thing to look for in a scanner is the ability to capture high-quality images. To be top-notch, a scanner must accurately capture a wide range of colors and be able to handle images that contain varying levels of brightness and high degrees of contrast. It should do all that while maintaining sharp focus and preserving the fine details in an image. Images produced from a high-quality scanner show little or no posterization (color banding) and few artifacts (residue that the scanner brings in).

In part, the quality of a final scanned image is determined by a scanner's bit depth. The higher the bit depth, the more color information the scanner can capture per pixel. For example, a 24-bit scanner captures 8 bits of data per color (red, green, and blue), for a total of 24 bits. A 30-bit scanner captures 10 bits of data per color.

However, 30-bit scanners don't give you more colors in an image than 24-bit scanners do. (Each of the scanners we tested can produce 16.7 million colors.) Scanned images contain a maximum of 24 bits of color information. Thus, 30-bit scanners throw out the extra bits to create 24-bit images. The more bits a scanner can capture, however, the better its chances of capturing the correct bits. The correct bits display the colors more accurately and give your image better quality. Indeed, our top-rated scanners — from Agfa, Epson, La Cie, Nikon, and Relisys — were all 30-bit models.

Looks Are Everything

To formally test the scanners, we first used each one to scan a professional color photograph of a fruit stand on a sunny day (see the "Apples and Oranges" sidebar). We then had a service bureau make a Matchprint from each scan. We compared these Matchprints to the original photo to see how closely each scanner reproduced the original. We also did some informal scans of other color images, such as a snapshot of a staff member's children, to find out how well these scanners handled everyday, imperfectly lit images.

Overall, we found that most of the scanners produced acceptable images from professional as well as amateur photos, even when we didn't make any adjustments to the scan. Not one of the scanners, however, was able to produce extremely high-quality images (ones that could be mistaken for our original photos) without any adjustments. Be forewarned: To get the highest-possible quality from these scanners, you'll need to perform some adjustments, using the scanning software, before you scan the image or use Photoshop to adjust the image after you've scanned it. The amount of tweaking you'll need to do will depend on how well the scanner captured the image in the first place. Here's what we found.

The Nikon ScanTouch, a 30-bit scanner, produced the highest-quality images overall. This scanner gave us the most-consistent colors, and it maintained excellent focus and good detail in dark

SCANNERS

areas, such as the shadows behind the fruit stand, and bright areas, such as the sunlit oranges. The ScanTouch's only fault was that the earth tones it produced — such as the beige in the wood placards and the green in the grapes — were muted.

Five other 30-bit scanners produced output that was very nearly as impressive as that of the Nikon ScanTouch. Four of these — the Epson ES-1000C and ES-1200C and the La Cie Silverscanner DTP and Silverscanner III — have Epson engines, so their output had a lot in common. The fifth scanner, the Relisys Reli4830-T, has a Relisys engine. The Epson and the La Cie scanners produced vivid colors for the apples and oranges. Color tones for the grapes, wood crates, and placards, however, seemed muted. The image produced by the Relisys Reli4830-T had good color quality but was a little too dark overall.

Seven more scanners — the Agfa StudioScan IIsi, Apple Color OneScanner, Canon IX-4015, Hewlett-Packard ScanJet 3c, Ricoh CS300, Tamarack Z1-600, and UMAX Vista-S8 LE-Plus — fell squarely into the middle ground when it came to color quality. All these scanners could decently reproduce a majority of the objects in our photos, but each also had a specific flaw that required us to tweak the scan to get acceptable output. For example, colors in images produced by the Apple Color OneScanner looked washed out, so we had to increase the saturation. The HP ScanJet 3c didn't create enough contrast between colors, so we had to experiment with the contrast controls.

We were disappointed by the color quality of images produced by the Microtek ScanMaker IIHR LE, Mustek Paragon 600 Pro, Relisys Reli9624-T, and Sharp JX-330M. All these scanners produced



Apples and Oranges / good results — and bad — with low-cost scanners

A FRUIT STAND ON A SUNNY DAY — our test image presents a variety of tough reproduction challenges for scanners. It contains a wide array of bright areas (such as the sunlit tomatoes) as well as dark areas (such as the shadows that fall on the fruit at the back of the stand). The

oranges, apples, tomatoes, and grapefruit are bright and colorful; the watermelons are subtle in color; and the wooden placards contain natural-looking earth tones. The text on the placards provides a good test of sharpness. Here's how the scanners performed.

NATURAL COLORS



GOOD Our favorite scanners were the ones that captured colors accurately. The Nikon ScanTouch, for example, consistently produced natural, accurate colors. Note the warm reds in the tomatoes, the subdued reds in the watermelons, and the earthy brown tones in the placard.

LIGHT AND DARK



GOOD None of the scanners could reproduce all the detail contained in the dark areas of the original image. The La Cie Silverscanner DTP struck a good balance between retaining some of the shadow detail and keeping colors bright and natural.

SHARP FOCUS



GOOD Most of the scanners produced sharply focused images. In this example from the La Cie Silverscanner III, note the text on both placards — it's clear and easily readable.



BAD At the opposite end of the spectrum, the Mustek Paragon 600 Pro produced colors that would be found only on an alien planet. Note how the intense reds in the tomatoes and watermelons affect the browns of the placard.



BAD The Apple Color OneScanner, on the other hand, produced more detail in the dark areas than a lot of the scanners. But note how the colors in the oranges look extremely washed out and unnatural.



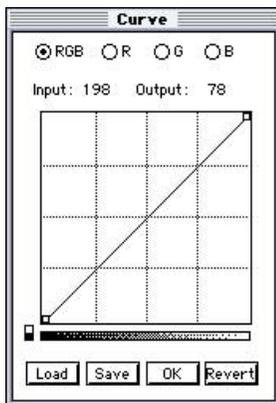
BAD A few of the scanners failed our tests for focus, however. Here the text on the placards is noticeably blurry and seems thick. This image was produced by the Info Products ImageReader.

Taking Control / *the tools you need*

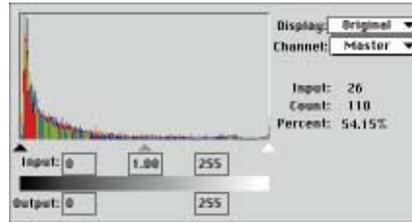
NO MATTER HOW PERFECT THE PHOTOGRAPH, you may still need to make some adjustments to it before you scan it. And for a flawed photograph, adjustments are a necessity. Although scanners vary widely in the types of software tools they offer for making adjustments, here are five tools we think are critical for scanning.



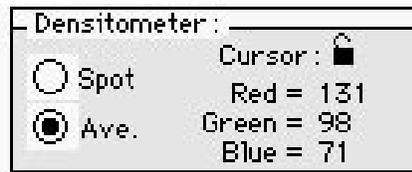
● **Brightness and contrast.** The Brightness slider controls the overall lightness and darkness of an image; the Contrast slider controls the range of difference between the darkest and lightest pixels. Keep in mind that these tools affect the image as a whole — if you want to adjust only specific areas (such as objects with highlights), you should use a curve-control tool.



● **Curve control.** This tool lets you adjust the tones in an image. Each chart grid represents a progression from dark to light, with the lightest points located in the upper right. You can use the curve control to expose more detail in shadow areas and to distribute highlights across a wider range of the image. This example shows the default setting. If you pull the midpoint of the line up, the midtones in your image become more prominent.



◆ **Histogram.** This tool lets you tweak the tonal range of the pixels in an image. If an image has too many pixels in the dark range, it will lose shadow detail. If it has too many pixels in the light range, highlights will become blown out. In this example, you can see by looking at the left side of the scale that the image has a lot of pixels in the dark areas. Similarly, by looking at the right side of the scale, you can see that the image has only a few pixels in the light areas. You can also use a histogram to discard part of an image — for example, you can cut off some of the dark pixels shown at the left end of the scale.



◆ **On-screen densitometer.** An on-screen densitometer lets you take the measurements of the grayscale, RGB, or CMYK values of a previewed image. You can use this tool to check for color casts in an image. In this example, you can tell that the odd color cast you're seeing is due to too much red in the area you're measuring.



◆ **Balance control.** A balance control allows you to select the white, mid-, and black points of an image by using an eyedropper or some other selection tool. You use an eyedropper to select a spot in your image. The spot you pick sets the values for the white, mid-, or black point, depending on which eyedropper you use. If you set the color points correctly, your image will look clean.

images with very dark shadow areas and unnaturally bright colors. The Mustek Paragon 600 Pro produced especially poor images. If you purchase one of these scanners, you'll need to spend more time adjusting your scans than you do with the other scanners.

The Info Products ImageReader for Macintosh was the only sheet-fed scanner we reviewed — and the sheet feeder wasn't reliable. It often jammed when we scanned our 4-x-6-inch color photo (we experienced fewer jams, however, when scanning an image on letter-sized paper). Even worse, since the ImageReader's software wouldn't let us cancel the scan when the sheet feeder jammed, we had to force-quit the scanning application — an act which usually caused a system crash. When we did get the ImageReader to properly scan our photo, the resulting image was dark and blurry and had weak highlights.

Monochrome Scanning

So far, we've concentrated on color output. But what if you need to scan only black-and-white images or text? Will you see as many differences among the images produced by the various scanners?

To find out, we first scanned a black-and-white drawing that contained sharp curves and areas of fine detail. We printed the scanned output on a high-quality 1,200-dpi GCC SelectPress 1200. To our surprise, all the scanners passed this test for fine detail with flying

colors. In fact, we couldn't see any difference among the prints produced by each scanner when looking at them from a normal reading distance. Only when we magnified them with a loupe could we spot any distinctions — the Apple Color OneScanner and the Microtek ScanMaker IIHR LE produced drawings with the smoothest lines.

There may come a time when you want to scan words instead of pictures. Most of the scanners come with software that lets you perform OCR. When you scan a text document, the OCR software translates the bitmapped characters into letters that you can edit in a word processor. OCR software is useful for getting documents into an editable format without retyping them.

OCR software is rarely 100 percent accurate, however. For example, on a scan of a smudged document, such as a poor-quality fax, OCR software may incorrectly translate a letter *C* into a *G*. It's up to you to check for accuracy, using either a spelling checker or your own eyes.

The Lowdown on Scanning Software

Each vendor provides the software — a Photoshop plug-in, a TWAIN driver, or a scanning application — you need in order to drive your scanner. Some vendors even include two types of software so you can choose which you prefer to use. In order to adjust

SCANNERS

your image properly, you need a basic set of software tools (see the "Taking Control" sidebar). Beyond this basic set, the more tools the software provides, the easier it is to tweak your images.

All the vendors, except for Apple and Hewlett-Packard, provide scanning software in the form of a Photoshop plug-in. (Many vendors also include either the full version of Photoshop 3.0 or a limited version, Photoshop LE, which lacks features such as certain filters but which can be upgraded to the full version.) After installing the plug-in, you can access it via the Import option on Photoshop's File menu. When you open the plug-in, it acts like a subapplication within Photoshop.

The plug-ins that come with the Epson and Relisys scanners have the most tools. Epson bundles Second Glance's ScanTastic, a plug-in that has automatic settings and easy-to-use adjustable controls. Relisys bundles Jetsoft's ArtScan, a PowerPC-native plug-in that contains a wide array of tools. Both of these plug-ins are available separately, so if you choose a different scanner and don't like its software, you may be able to get one of these packages instead. Just make sure that the plug-in is compatible with your scanner.

All the plug-ins, except the one included with the Info Products ImageReader, let you make adjustments to your image during a prescan, before you capture it to disk. A prescan is a quick, low-resolution (72 dpi) scan you use to test your scan settings. You can tweak settings in a series of quick prescans, and when they're just right, apply them to your final, high-resolution scan. The ImageReader's lack of prescan adjustment tools is a flaw that can lead to poor-quality results. Because you can't make any adjustments before you scan, you're stuck with the 8 bits per color that the ImageReader decides to capture, even if they're not the bits you want. We were also disappointed that the software provided with the Canon IX-4015, the Mustek Paragon 600 Pro, and the Nikon ScanTouch lacked good tools.

As we went to press, Microtek shipped fine new software for the ScanMaker IIHR LE that replaces the adequate — but unspectacular — tools we tested. The new package includes a complete set of controls and a helpful preview mode that displays two views of your scan — the original, unadjusted image and one that reflects all your settings.

The HP ScanJet 3c uses a TWAIN-compliant driver (TWAIN is an industry standard for controlling imaging devices). The driver works much like a Photoshop plug-in — if an application is TWAIN-compliant, you can scan your images directly into it. This ability is convenient if you want to include an image in a page-layout program or word processor without having to go through Photoshop first. The ScanJet 3c's software includes a curve control, brightness and contrast controls, and hue and saturation controls.

A few scanners come with a scanning application such as Light Source's Ofoto — a program that excels at automating scanning tasks. The only drawback to a scanning application is that it doesn't let you scan images directly into Photoshop. Most vendors get around this limitation by including a Photoshop plug-in or a TWAIN driver along with the application. Apple, unfortunately, is an exception to this rule — the Apple Color OneScanner uses Ofoto instead of a Photoshop plug-in. If you want to use the Apple Color OneScanner to scan images into Photoshop, you'll need to pay an extra \$80 or so to get a third-party driver such as ScanTastic.

Automatic Features

If you're a novice user and the concept of image manipulation intimidates you or if you're a desktop publisher who occasionally wants to produce quick-and-dirty scans for placement in a rough layout, then you should look for software that offers automatic features (of the scanners we tested, only the Sharp JX-330M lacked any automatic controls). Some scanning software can automatically determine the brightness, contrast, and color balance for an image or can automatically run a sharpen filter. Note, however, that to get the best results, you need to manually adjust your scans.

It's in the area of automation that Light Source's Ofoto shines. This scanning application is chock-full of automated controls that can be extremely helpful for novice users or for publishers who want to produce quick-and-dirty scans. Ofoto's automatic controls range from ones that adjust highlights and shadows to ones that perform simple color corrections. Some vendors bundle Ofoto with their scanners, but you can also purchase the application separately. Again, however, check to make sure that Ofoto is compatible with your scanner.

Among Ofoto's bag of tricks is a feature that helps you automate color matching. There's nothing more frustrating than scanning a bunch of photos, carefully taking the time to adjust the colors, and then printing them, only to find that the printed colors don't match those on the screen. Although you can use various manual calibration techniques to fix the color-matching problem, you may not want to go through all the trial and error these techniques require.

Ofoto lets you select from among several preconfigured calibration models — output paths that use precalculated settings based on the type of output device you want to print to, such as a color inkjet printer, a dye-sublimation printer, or an imagesetter. When

Directory / vendors of scanners tested

Agfa Ridgefield Park, NJ 800-685-4271 201-440-2500 508-583-4168 (fax)	Info Products Campbell, CA 800-775-7576 408-374-7290 408-378-1068 (fax)	Relisys Milpitas, CA 800-835-7354 408-945-3113 408-945-1499 (fax)
Apple Computer Cupertino, CA 800-538-9696 408-996-1010 800-510-2834 (fax)	La Cie Beaverton, OR 800-999-0143 503-520-9000 503-520-9100 (fax)	Ricoh San Jose, CA 800-955-3453 408-954-5326 408-432-9266 (fax)
Canon Computer Systems Costa Mesa, CA 800-848-4123 714-438-3000 714-438-3099 (fax)	Microtek Lab Redondo Beach, CA 800-654-4160 310-297-5000 310-297-5050 (fax)	Sharp Electronics Mahwah, NJ 800-237-4277 201-529-8200 201-529-9113 (fax)
Epson America Torrance, CA 800-289-3776 310-782-0770	Mustek Irvine, CA 800-468-7835 714-250-8855 714-250-3372 (fax)	Tamarack Technologies Orange, CA 800-598-3918 714-744-3979 714-744-4582 (fax)
Hewlett-Packard Palo Alto, CA 800-722-6538 208-396-2551	Nikon Melville, NY 800-526-4566 516-547-4355 516-547-0305 (fax)	UMAX Technologies Fremont, CA 800-562-0311 510-651-8883 510-651-8834 (fax)

Getting Your Money's Worth / low-cost scanners compared

You may not pay a lot, but will you get a lot? All the scanners we reviewed are reasonably priced, but some include more software or hardware features or better warranties than others. For example, some vendors include full versions of Photoshop with their scanners; others

include a more limited version of the program, Photoshop LE; and others don't include a copy of the program at all. Similarly, some scanners offer superhigh resolutions and others have more-modest specifications. And when it comes to support policies, some vendors

	LIST PRICE	ESTIMATED STREET PRICE	BIT DEPTH	OPTICAL RESOLUTION	MAX. INTERPOLATED RESOLUTION	MAX. SCAN AREA	SCSI TERMINATION	ADOBE PHOTOSHOP	ADOBE PHOTOSHOP LE	LIGHT SOURCE OFOTO
Agfa StudioScan IIsi	NA*	\$950	30 bits	400 x 800 dpi	2,400 x 2,400 dpi	8.5 x 14 inches	external		●	
Apple Color OneScanner	\$859	\$859	24 bits	300 x 300 dpi	1,200 x 1,200 dpi	8.5 x 14 inches	external			●
Canon IX-4015	\$799	\$730	24 bits	400 x 1,200 dpi	1,200 x 1,200 dpi	8.5 x 11.7 inches	external			●
Epson ES-1000C	\$850	\$800	30 bits	400 x 800 dpi	3,200 x 3,200 dpi	8.5 x 11.7 inches	internal		●	
Epson ES-1200C	\$1,499 ^o	\$1,200 ^o	30 bits	600 x 1,200 dpi	4,800 x 4,800 dpi	11.5 x 17 inches	switchable	●		
Hewlett-Packard ScanJet 3c	\$1,179	\$975	30 bits	600 x 600 dpi	2,400 x 2,400 dpi	8.5 x 14 inches	external		●	
Info Products ImageReader for Macintosh	\$399	\$350	24 bits	300 x 600 dpi	300 x 600 dpi	8.5 x 14 inches	external		●	
✓ La Cie Silverscanner DTP	\$899	\$899 (direct)	30 bits	400 x 800 dpi	3,200 x 3,200 dpi	8.5 x 11.7 inches	switchable		●	
La Cie Silverscanner III	\$1,499	\$1,499 (direct)	30 bits	600 x 1,200 dpi	4,800 x 4,800 dpi	8.5 x 11.7 inches	switchable	●		
Microtek ScanMaker IIHR LE	NA*	\$600	24 bits	600 x 1,200 dpi	2,400 x 2,400 dpi	8.5 x 13 inches	external		●	
Mustek Paragon 600 Pro	NA*	\$450	24 bits	300 x 600 dpi	1,200 x 1,200 dpi	8.5 x 14 inches	external			
✓ Nikon ScanTouch	\$1,720	\$1,200	30 bits	565 x 1,200 dpi	2,400 x 2,400 dpi	8.5 x 14 inches	external		●	●
Relisys Reli4830-T	\$1,299	\$1,000	30 bits	400 x 1,600 dpi	4,800 x 4,800 dpi	8.5 x 14 inches	external	●		
Relisys Reli9624-T	\$2,499	\$1,600	24 bits	600 x 2,400 dpi	9,600 x 9,600 dpi	8.3 x 11.7 inches	external	●		
✓ Ricoh CS300	\$599	\$470	24 bits	300 x 600 dpi	2,400 x 2,400 dpi	8.5 x 11 inches	external		●	
Sharp JX-330M	\$1,499	\$1,180	24 bits	600 x 600 dpi	2,400 x 2,400 dpi	8.5 x 14 inches	external	●		
Tamarack Z1-600	\$699	\$650	30 bits	300 x 600 dpi	2,400 x 2,400 dpi	8.5 x 11 inches	internal		●	
UMAX Vista-S8 LE-Plus	\$995	\$800	24 bits	400 x 400 dpi	6,400 x 6,400 dpi	8.5 x 11.7 inches	external		●	
✓ MacUser BEST BUY										

*Vendor does not provide list prices.

^oOptional.

^sUp to the dealer.

you select one of these paths, the software sets the image's resolution and tweaks the color balance of the image so that the on-screen version will closely match the printed version. Scanners from HP, Epson, La Cie, Relisys, and UMAX also include software that allows you to choose settings for various types of output devices. But beware when using these settings — many of them are generic and may not always be suitable for your particular printer.

Agfa's software is also easy to use. The StudioScan IIsi comes with a complete, coordinated set of software tools that step you through the scanning process. You get four Photoshop plug-ins and several filters that let you capture images and perform color correction. To drive the StudioScan IIsi, you have a choice between FotoLook, which has a complete set of editing tools, or FotoSnap, a driver that automatically calibrates the scanner and sets the proper scanning resolution. After your scan is complete, you perform color correction in Photoshop by using the third component to Agfa's package, a set of FotoFlavor filters. Once you've done all your corrections, you can use FotoTune Light — the fourth component — to match the colors of your scanned image with those of your final output.

What Else Do You Need?

Once you've checked out a scanner's image quality and its software, what's left? Plenty. Here are some other goodies you'll want to check out before making a final purchasing decision.

Resolution. Contrary to what you may think, a scanner that sports a high resolution does not necessarily give you high-quality images. Instead, the scanning resolution you need is determined by the final output device you plan to use. If you plan to view your scans only on a monitor, then you should scan your images at the same resolution as your monitor. For images you plan to print to an imagesetter,

however, you need to know the line-screen frequency of the output device (see Essential Techniques, September '95, page 101). For an imagesetter with a line-screen frequency of less than 133 lpi (lines per inch), you multiply the line-screen frequency by 1.5. Multiply line-screen frequencies above 133 lpi by 2. Next, multiply the result by the percentage (converted into a decimal number) by which you plan to enlarge or reduce the image. The result is your optimum scanning resolution. For scans that you want to output on a continuous-tone printer instead of an imagesetter, you need to divide the final image area by the original image area and then multiply the result by the printer's resolution to get your scanning resolution.

Note that there's a difference between a scanner's optical resolution and its interpolated resolution. Interpolation is the increasing of perceived resolution through the mathematical creation of new pixels. Using the interpolated resolution comes in handy when you need to smooth jaggies on line art and scan images at a larger size than the optical resolution supports.

Scanning Speed. For most home users, scanning speed is not an issue, but for small businesses, time is money. How much time you spend scanning depends on two things: how long it takes to color-correct an image and how long the actual scan takes. To gauge the scanners' working speed, we timed each scanner as it scanned a 5-x-7-inch color photo at 300 dpi. The fastest scanners were the Sharp JX-330M, the Canon IX-4015, and the UMAX Vista-S8 LE-Plus, each of which took about 30 seconds to scan our test image. The slowest were the Microtek ScanMaker IIHR LE and the Info Products ImageReader, each clocking in at around 3 minutes. If you use Ofoto, be prepared for sluggish scanning speeds — Ofoto is generally two to three times slower than any Photoshop plug-in, although this slowdown is often negated by the amount of color-

offer everything from money-back guarantees to toll-free tech-support whereas other vendors leave you on your own.

Of course, you may not need all the features a scanner offers — you may already own Photoshop, or your output requirements may not call

for extremely high resolutions, or you may have no use for OCR (optical character recognition). By using our handy table, however, you can pinpoint the scanner that offers just the right combination of features at just the right price.

PHOTOSHOP PLUG-IN	TWAIN DRIVER	OCR SOFTWARE	CURVE CONTROL	HISTOGRAM	BALANCE CONTROL	ON-SCREEN DENSITOMETER	SHEET FEEDER	TRANSPARENCY HOLDER	MONEY-BACK GUARANTEE	TOLL-FREE TECH SUPPORT	EXTENDED WARRANTY	WARRANTY
●		●	●	●	●	●	●†	●†	\$	●	●	1 year
			●	●	●	●				●	●	1 year
●		●	●		●		●†			●		2 years
●		●	●	●	●	●	●†	●†		●	●	1 year
●		●	●	●	●	●	●†	●†		●	●	2 years
	●	●	●		●		●†	●†		●	●	1 year
●							●		●	●		1 year
●		●	●	●	●	●	●†	●†	●	●		1 year
●		●	●	●	●	●	●†	●†	●	●		1 year
●		●	●	●	●	●	●†	●†	\$		●	1 year
●	●	●	●	●	●	●	●†	●†	●	●		2 years
●		●	●	●	●	●	●†	●†				1 year
●		●	●	●	●	●	●†	●	\$	●		1 year
●		●	●	●	●	●	●†	●	\$	●		1 year
●		●	●	●	●	●			\$			1 year
●		●	●	●	●	●	●†	●†		●		1 year
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†Price includes software. List price without software, \$999; estimated street price without software, \$800.

correction work Ofoto does for you.

Maximum Scan Area. All the scanners we reviewed let you scan images as large as 8.3 x 11 inches — a sufficient size for most home and business users. Some scanners, however, can handle a slightly larger imaging area, up to a maximum of 8.5 x 14 inches.

Optional Hardware. Most scanner vendors offer optional transparency adapters, which let you scan slides or other transparencies, up to the maximum size of the scan area. (If all you want to scan is 35mm slides, you should also check out sub-\$1,500 slide scanners such as the Mirror Scan Slide Scanner.) Transparency holders can cost \$300 to \$1,000, although most cost \$500 to \$800. Many vendors also offer sheet feeders, which are handy for scanning lots of paper — for instance, when you perform OCR. Sheet feeders cost \$500 to \$600, and most hold 50 sheets of paper at a time.

Documentation. If you are new to scanning, you may not understand the complexities of image adjustment and color theory. Good documentation not only explains how to set up and use the scanner but also includes some tips for getting good scans and contains detailed instructions on how to use the various software tools.

We were pleased when vendors included a scanning primer containing information on color management, output resolution, and basic image editing. The best manuals and scanning primers came from Agfa, HP, and La Cie. The manuals from Canon and Sharp included basic information on scanning resolutions but contained no background information on imaging.

The Final Choice

Overall, we were pleased to find such a wide array of good color scanners. If you need to scan only black-and-white images or perform OCR on text documents, opt for one of the less expensive

scanners, such as the Ricoh CS300 or the Tamarack Z1-600. For those who plan to scan a variety of images — black-and-white and color — the choices get tougher.

The Nikon ScanTouch produced the best color images overall, and it comes bundled with a Photoshop plug-in and Ofoto. With a price tag of \$1,200, it is, however, one of the more expensive scanners we tested. Other quality leaders included the Epson ES-1000C and ES-1200C, the La Cie Silverscanner DTP and Silverscanner III, and the Relisys Reli4830-T. The Epson ES-1000C and the La Cie Silverscanner DTP are excellent choices if you're looking for a scanner with a great price/performance ratio. (Note: If you need a higher resolution than that provided by the ES-1000C and the Silverscanner DTP, we recommend either of these scanners' bigger siblings, the ES-1200C and the Silverscanner III.) We also liked the Relisys Reli4830-T, another top pick in the price/performance category.

For those who are cost-conscious and willing to put in a little work to tweak images, the Ricoh CS300 is a good choice. We don't recommend the Info Products ImageReader and the Mustek Paragon 600 Pro, however, in spite of their bargain prices. We found their image quality to be among the poorest and their software tools among the weakest.

All the other scanners fall somewhere between these extremes. They're fine products and can hold up to the demands of most business, home, and casual desktop-publishing use. Overall, we were pleased by the ease with which we could get these products running — and by the speed with which we could get all those photos of our spouses, kids, and pets scanned. ☺

Roman Loyola is a *MacUser* assistant editor.

TOP SPINS: 50 NEW CD-ROMS

Why settle for anything less than the best? We didn't. Our annual roundup of the top CD-ROMs includes the best we've seen this year — and our weary eyes have seen everything from talking dictionaries to dead bodies.

Of the hundreds of CD-ROMs we reviewed for this article, many were informative, entertaining, and highly interactive. But many others were buggy, boring, or low in content. Those that met our standards scored high in several areas: quality of content, overall fun, interface usability (how easily we could navigate the disc), and production (how good the video, sound, and graphics were).

Many hours of subjective testing went into weeding out the worst, but there was a method to our madness. We checked reference titles for accuracy, and we enlisted the aid of subject-area experts to ensure that the discs were as informative as they were enjoyable. We played games to their conclusions, and we counted the number of entries or the minutes of video a disc contained.

The discs that earned our highest ratings scored well in every category from interface to fun and attracted a broad range of users. Those that scored lower were generally marked down because their audience was too limited or their interface was awkward. Nonetheless, our top-50 list includes only the finest products. We're sure that music lovers, game players, and even fly fishermen will find something to love in this hodgepodge of hits.

BY NIKKI ECHLER AND REBECCA OLSON

REFERENCE

Talking dictionaries and interactive encyclopedias breathe life into dusty facts and figures by using a wealth of QuickTime clips, hypertext, and clever animations. The ability to store entire libraries of information on lightweight, easy-to-access discs makes research virtually painless.

The Way Things Work / ★★★★★ / DK Multimedia / \$79.95 list

It's not often that a reference work pops, bubbles, steams, and squeaks with as much whimsical charm as does *The Way Things Work*. Interactive illustrations show off hundreds of inventions, from hydroelectric turbines to toilet tanks, and a click brings you the bio of the machine's inventor. Kids and adults alike will be enraptured by this outstanding CD-ROM adaptation of David Macaulay's book, in which explanations of complex scientific principles are as innovative as the inventions they describe.

Microsoft Wine Guide / ★★★★★½ / Microsoft

\$39.95 estimated street

Short of a lengthy trip to France, there's no better way to learn about one of the world's decadent pleasures. You can follow a year in the life of a vineyard; check out a world atlas of wine; or search a database of 2,000 wines by country, region, grape variety, style, star rating, or food match. You can even go wine tasting with Oz Clarke and brush up on the wine world's slang. With a little practice, you won't even feel foolish raving about the resounding tannin in an impeccable '85 cabernet.

American Heritage Talking Dictionary / ★★★★★

SoftKey International / \$59.95 list

Attention, all English-speaking crossword cheats! This dictionary finds words for you. Provide a few letters, a definition, or even part of a definition and the dictionary fills in the blanks — a feature that's great for finding synonyms, antonyms, and anagrams. Even more impressive is the disc's ability to pronounce words. (We could understand only one of the two speakers, however.) The disc includes over 200,000 entries plus Roget's Thesaurus (1.5 million words).

Microsoft Cinemania '95 / ★★★★★ / Microsoft

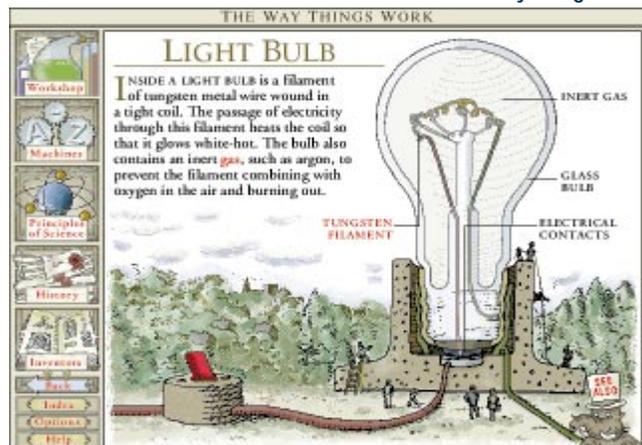
\$59.95 estimated street

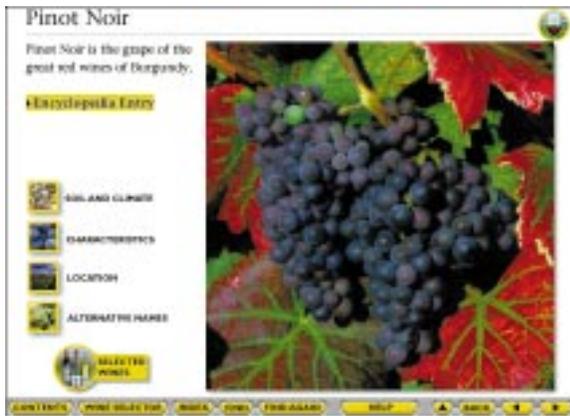
This year's updated version of Microsoft's box-office smash will have film fanatics drooling over its vast collection of movie clips, quotes, and stills from golden oldies to recent releases. A few mouse clicks move you from a movie's script to the leading lady's biography to a complete list of her previous films, in an endless series of informational twists that would leave Hitchcock green. Critics such as Roger Ebert also dish out reviews for more-discriminating viewers.

Microsoft Encarta '95 / ★★★★★ / Microsoft / \$99.95 estimated street

Writing school reports was never so easy. The Encarta encyclopedia puts an end to rummaging through heavy stacks of books by offering over 26,000 articles jammed with movies, color illustrations, and sound bites. Each entry comes laden with

▼ **The Way Things Work**





▲ Microsoft Wine Guide

hypertext cross-references that make research as easy as clicking a mouse. You can either browse through the encyclopedia randomly or locate specific topics by word, subject, time, place, or media type.

National Geographic Picture Atlas of the World / 📖📖📖

The National Geographic Society / \$99.95 list

Long renowned for its color photographs of diverse cultures, The National Geographic Society has combined high-quality images with a variety of geographic data. The result is a compelling world atlas. Pick a country (or a continent); see its political or physical map; check out current statistics on such topics as population, religion, and climate; and then dive into the enormous library of photos that seem ripped out of the magazine itself. You'll also find video clips for many countries and audio samples of speech and music.

Nine Month Miracle / 📖📖½ / A.D.A.M. Software / \$39.95 list

If you still believe the stork brought you into the world, flip through the pages of Adam and Eve's electronic family album and find out where babies *really* originate. This month-to-month look at pregnancy, from conception to birth, is brought to life through photography, detailed animation, and expert narration. Follow animated sperm through Eve's fallopian tubes; console the mom-to-be through heartburn and hemorrhoids; or witness a gut-wrenching film clip of an actual birth. A not-so-graphic cartoon explanation of the same process is offered for curious kids.

A.D.A.M. The Inside Story / 📖📖 / A.D.A.M. Software / \$69.95 list

To wear a fig leaf or not to wear one? That is the question presented at the start of this anatomy overview. From there it doesn't get much more complicated. The disc clearly and simply explains most physiological functions, from breathing to digestion, with text and straightforward animation. This disc is perfectly suited for high-school students or for adults who slept through their biology courses.

Human Anatomy / 📖📖 / Gold Standard Multimedia / \$99 list

Although others may be interested, biology and medical students who don't have a cadaver on their desks are clearly the target audience for Human Anatomy. The still images are somewhat gray and unclear, but after all, the guy's dead. A quiz section helps you prepare for exams. Don't expect this title to entertain: It's methodical, educational, and scientific.

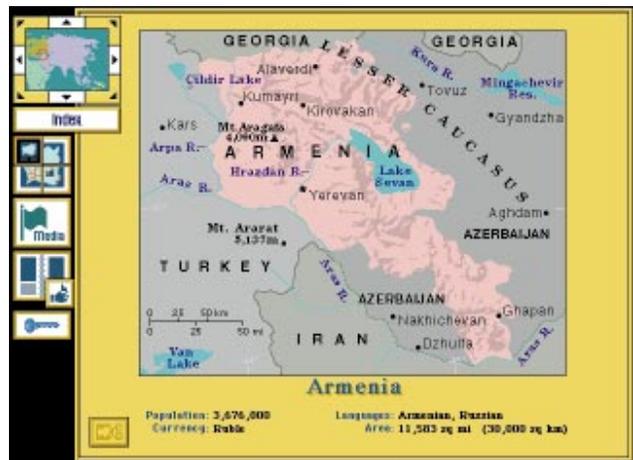
Sports Illustrated Multimedia Almanac, 1995 Edition / 📖📖

StarPress Multimedia / \$44.95 list

From horse racing to the Super Bowl, the 1995 edition of this almanac has all things sporting. Missed last year's NBA playoffs? Use this disc to review Hakeem Olajuwon's glory. Thought soccer wouldn't mesmerize the nation? Suck in your pride and watch the U.S. team advance in the World Cup. This disc has articles, pictures, and video; there's even a trivia quiz with which to impress your friends.

NATURE AND ANIMALS

You can't feed the animals on these digital tours through the wild kingdom, but you can find out about what makes them tick, growl, hiss, or bark.



▲ National Geographic Picture Atlas of the World

Stunning photography and videos take you to exotic locations, simply by popping in a disc.

OceanLife Volume 4: The Great Barrier Reef / 📖📖📖 / Sumeria \$49.95 list

Anemonefishes sway in an exotic water dance, partners to the 240 other species of fish that swim through this stunning look at the Great Barrier Reef. Tear yourself away from your real-life fish tank and access the two-and-a-half hours of film clips that capture the intense colors and beauty of marine life. More than just a collection of pretty fish, this two-disc set is loaded with facts about fish behavior and morphological structure and includes maps of the region.

Wild Africa / 📖📖📖 / Sumeria / \$49.95 list

Herbivores to carnivores, savanna to the Serengeti — Wild Africa's compilation of sights and sounds makes for a virtual safari adventure. The disc includes detailed maps of three of Tanzania's famous parks as well as video, photos, and text about many of the plants, animals, and birds that inhabit the parks. An original sound track speaks of tropical nights and ancient breezes, and the extensive, well-done videos are accompanied by informative narration. What does a yellow-barked acacia tree look like, you ask? The answer lies within.



▲ Wild Africa

How Animals Move / 📖📖 / Discovery Multimedia \$39.95 list

How do birds fly? Why can't I fly? At some point, most of us stop asking these childhood questions, but not necessarily because we know the answers. How Animals Move gives you those answers. A general overview provides text and video clips that show interaction among muscles, ligaments, bones, and joints. Animal lovers will also get a kick out of more than a dozen games and experiments that educate as they entertain. You can delve further by taking a guided tour or by charting your own course. A file-cabinet metaphor makes navigation easy.

Microsoft Dangerous Creatures / 📖📖 / Microsoft \$59.95 estimated street

This slick introduction to the animal kingdom captures the sights, sounds, and feel of the lairs of some of the world's most dangerous creatures. Kids will love the disc for the wealth of facts, film clips, and animations that their school books lack, but adults may find the cutesy cross-referencing and skimpy content slightly condescending. If you're the type who learns more from *Sesame Street* than from a PBS documentary, you'll appreciate this lighthearted approach to nature.



▲ Passage to Vietnam

Multimedia Dogs: The Complete Interactive Guide to Dogs

👤👤👤 / Inroads Interactive / \$39.95 direct

For those seeking a new best friend, Multimedia Dogs stands a breed apart. This comprehensive collection of doggy data includes facts and photos for *almost* every breed. A sliding bone scale will help you find out which canine is most likely to lick your face after a hard day's work, and a clear-cut training guide teaches you how to keep your new pal from talking back. Ordinary production quality and a no-frills interface are the disc's only drawbacks.

HISTORY

History takes the modern age by storm with an outpouring of titles that re-create events from the Old West to the Space Age. You'll find a wealth of authentic film clips, award-winning photos, fun games, and cultural commentary. Although not meant for serious research, these overviews should satisfy any casual user.

Passage to Vietnam / 👤👤👤👤 / Against All Odds

\$39.95 estimated street

Dazzling is the word that best describes this endeavor, a disc that brims with captivating photos and exquisite, indigenous music. Given a week to document Vietnam, 70 top photographers were up to the task. Witness a flock of fishing boats gliding seaward under cooling skies, or check out a web of precarious bridges spanning a steaming river. Alternatively, visit one of five virtual galleries that showcase the works and words of some of the photographers.

Leonardo the Inventor / 👤👤👤 / Future Vision Multimedia

\$49.95 list

Mona Lisa won him artistic renown, but Leonardo da Vinci the *inventor* has been largely ignored. More fun than a tour of the Louvre, this fanciful disc showcases da Vinci's inventions by turning his sketches into working models and showing off

5 CLASSICS YOU CAN STILL BUY

These CD-ROM titles didn't *break* any molds — they created them. Kudos to these breakthrough products that still manage to educate and entertain:

1. **A Hard Day's Night** / The Voyager Company
2. **The Living Books Series** / Brøderbund Software
3. **Myst** / Brøderbund Software
4. **Microsoft Musical Instruments** / Microsoft
5. **Spaceship Warlock** / Reactor

the modern-day descendants of his inventions. Fans can learn more about this Renaissance man by browsing through his biography or a full list of his artworks.

Apollo XIII A Week to Remember / 👤👤👤

Legacy Space Marketing / \$39.95 list

The movie grabbed the spotlight, but the disc deserves recognition too. The absorbing collection of newspaper clippings, film reels, and interviews with the astronauts and controllers who took part in the ill-fated space flight weaves an eerily suspenseful tale of what should have been the third lunar landing. The interface, however, is uninspiring — you click on tiny rockets at the bottom of the screen to propel yourself through the week-long ordeal.

Nile: Passage to Egypt / 👤👤👤 / Discovery Multimedia / \$39.95 list

Cruise down the Nile as captain of your own felucca, and use the tools on board to take a closer look at historical shoreline attractions. Glimmering lights in the distance show up on your on-craft monitor as video time capsules or interactive games. Although not designed as a heavy-duty research tool, this disc provides a solid overview of the history of Egypt. Use it to navigate history like a true explorer.

Amnesty Interactive / 👤👤👤 / The Voyager Company / \$10 list

For those who aren't up to speed on worldwide human-rights issues but would like to know more, this disc is ideal. Complete with pictures, stories, and political histories of several human rights and a library of the major human-rights documents, this trip through activist history is everything the title suggests. When you're done, you'll be able to toss the name Rigoberta Menchu into conversations intelligently.

Microsoft Ancient Lands / 👤👤👤 / Microsoft

\$59.95 estimated street

Enlist the aid of a guide to show you around, or wander on your own through the politics, history, and culture of ancient Greece, Rome, and Egypt. You can casually explore these ancient lands via a trail of colorful graphics and info-bits that won't choke you with tons of dry data. Microsoft's easy-to-use interface and extensive use of hypertext makes history an adventure each time you play the disc.

The Myth of the Ten Lost Tribes / 👤👤👤 / Creative Multimedia

\$29.99 estimated street

Myths often fall by the wayside now that our elders aren't telling stories around the campfire. Stacey Keach, the narrator of this title, is a good replacement for granddad, though. This disc offers ideas about where Jacob's ten sons may have led their tribes when the Assyrians conquered northern Israel. The interface is difficult to use, but the maps are good and the bios of historical figures are interesting. Don't be alarmed if you, too, are surprised that Jacob's offspring ended up in Utah.

Wyatt Earp's Old West / 👤👤👤 / Grolier Electronic Publishing

\$49.95 list

Serious historians may not learn much by meandering through Wyatt Earp's old stomping grounds, but those who have never been to the Old West will enjoy poking around this virtual town. A gruff-voiced narrator explains the stops on your self-

▼ Leonardo the Inventor



▶ The Residents' Gingerbread Man



guided tour as saloons and stables come alive through more than 500 old photos and film reels. A free Wyatt Earp mouse pad makes up for all the time you'll spend soaking up dirt in the Boot Hill Cemetery after an unsuccessful gunfight.

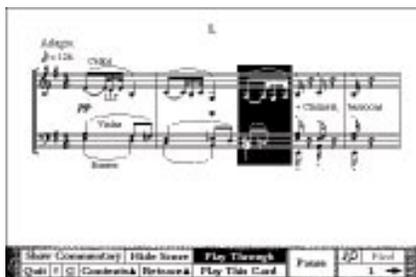
MUSIC

The classic works of Dvorak share space on our music shelf with releases from the freaky figures of The Residents and a hilarious tribute to Spinal Tap. Many of the discs can also be played on audio-CD players, just in case interacting becomes overwhelming.

Antonin Dvorak: Symphony #9 "From the New World"

👄👄👄 / The Voyager Company / \$59.95 list

Robert Winters' newest disc takes you through every detail of Symphony #9, from individual instruments to biographical data for Dvorak. Pluck a single instrument out of the orchestra and hear it soar unaccompanied (the English horn in the largo of the second movement is like nectar) or review a particular section of the score, listening to the music and watching as the notes appear on-screen. Navigating the symphony is a breeze. Pictures are limited, but in this context, what does it matter?



▶ Antonin Dvorak: Symphony #9 "From the New World"

Bob Dylan: Highway 61 Interactive / 👄👄👄 / Graphix Zone

\$59.95 direct

Bob Dylan fans, take note. Highway 61 lets you walk through Dylan's old haunts in Greenwich Village during the '60s, hear music from the Columbia recording sessions, and browse through song lyrics. An illustrated collage leads into an extensive virtual world that culminates in a Dylan concert. Along the way, enjoy snippets of music by folk heroes such as Woody Guthrie or the sage words of fellow artists such as Roseanne Cash and Eric Clapton.

Puppet Motel / 👄👄👄 / The Voyager Company / \$39.95 list

Dim the lights, turn up your speakers, and prepare for a long night as a guest in Laurie Anderson's 33-room Puppet Motel. The artist premieres over an hour of new music in this performance piece, which lets you play electronic violins, connect the dots to your own constellation, or search through the attic of Anderson's imagination. Users with the right connections can also hook up to the World Wide Web and download some of Anderson's movies.

This Is Spinal Tap / 👄👄👄 / The Voyager Company / \$34.95 list

Metal's heaviest band makes its digital debut with this rockumentary, which features the entire 82-minute motion picture along with two additional commentary

5 WE'D RATHER HAVE AS BOOKS

Why waste money *and* time installing discs when you can get the same effect by flipping through the pages of the books that spawned them? Here are five discs we prefer in book form:

1. Material World: A Global Family Portrait

StarPress Multimedia

2. Men Are From Mars, Women Are From Venus

Harper Collins

3. Murmurs of Earth / Warner New Media

4. Better Homes and Gardens Complete Guide to Gardening / Multicom Publishing

5. Escape From Management Hell / Zelos Digital Learning

tracks by the cast and crew. Spinal Tap groupies can cut right to their favorite scenes by clicking on tour photos in this hilarious small-screen version of the classic rock 'n' roll send-up that deafened America — volume control on this disc ranges from 0 to 11.

Rock 'N Roll Your Own / 👄👄👄 / Compton's New Media / \$39.95 list

You don't have to be a professional musician — just act like one with this wildly entertaining sound studio that lets you mix and record your own chart busters. Customize up to eight song tracks with more than 80 prerecorded song loops and hundreds of hysterical sound bites, or add your own music and sound effects to create a truly original score. Each song track, ranging from country to rap, gets visual with music videos and dramatic graphics.

The Residents' Gingerbread Man / 👄👄 / ION / \$49.95 list

Weird — very weird — and yet riveting. Heads roll in psychedelic accompaniment to the beat of the new release by The Residents, a San Francisco-based group of musicians who cater to the unusual. Trial and error provides the only way to navigate the twirling designs of color and music that pose as an interface — there's no help button to give you guidance. But, as the manual states, "some experiences are not experiences until they are experienced."

HANDS-ON

Feed him a fish, and he'll eat for a day; teach him to fly-fish, and he'll have fun for weeks. These comprehensive hands-on guides make use of QuickTime magic to help you improve your swing, create your own comics, or serve up tasty Thai dishes.

▶ The Multimedia Cartoon Studio



4 Paws of Crab / 🍌🍌🍌 / Live Oak Multimedia / \$44.95 list

Sample some Thai culture, and get a taste of Thailand's national history while learning to dish up native delights in this quirky, but clever, cookbook. Detailed recipes include illustrations as well as definitions for unfamiliar cooking terms and ingredients. You can order up to 17 hard-to-find dry ingredients by printing an order form and mailing it to a supplier in California.

ESPN Golf: Lower Your Score with Tom Kite / 🍌🍌🍌 / Intellimedia Sports / \$59.95 list

Tom Kite, the golf pro, has something to teach golfers. A two-disc set, this comprehensive title provides help on swinging, putting, posture, driving, gripping, and more. Tom Kite assists you through a series of helpful videos and even provides a series of exercises to help you improve, say, putting. If a mental block is hampering your game, fear not: Dr. Bob Rotella, sports psychologist, will talk you through it.

ESPN Winning Hoops with Coach K / 🍌🍌🍌 / Intellimedia Sports / \$59.95 list

People love to insult a winning team: Just ask Coach Kryzewski of Duke University. He doesn't address *that* issue on this CD-ROM, but he does teach you several more-valuable things. You'll find how-to information on everything from shooting to passing to defense to what kind of workout is best for a big guy. Coach K often shows a game clip to illustrate how his tips work in a real game.

The Multimedia Cartoon Studio / 🍌🍌🍌 / Byron Preiss Multimedia / \$59.95 estimated street

A grab bag of goodies lets you create your own comic calendars, to-do lists, stationery, fax covers, and cartoons. You can personalize predrawn scenarios with your own witty blurbs and a wide array of props. Also, Bob Mankoff, cartoonist for *The New Yorker*, teaches you his trade through 21 funny tips. A library of cartoons and animations shows off previously unpublished works for those who prefer the hands-off approach to cartooning.

Fly Fishing: Great Rivers of the West / 🍌🍌🍌 / IVI Publishing / \$34.95 direct

If you're casting around for new discs, hook into this fantastic guide to fly-fishing six trout-laden rivers of the American west. Learn about technique, tackle, and flies through step-by-step instructions and video clips. Serious fans will appreciate the detailed maps that show routes to each river, the information on where to buy flies and find guides, and the lists of regulations pertaining to each site.

GAMES

Out-of-this-world graphics and star-studded casts will keep you up at night figuring out puzzles or fighting enemy forces. Golf fans won't be able to



▲ **The Daedalus Encounter**

resist the chance to play with the pros at the PGA, and armchair sleuths will become embroiled in murder mysteries.

the universe from Vader and the Empire? With *Dark Forces*, you don't have to resort to your imagination and a few Kenner action figures. In this Doom-like game, you play a Rebel agent trying to uncover the Empire's plans to build a super army. The game is complete with 3-D action and graphics that would impress even Han Solo.

The Daedalus Encounter / 🍌🍌🍌 / Virgin Interactive Entertainment / \$59.99 direct

Tia Carrere leaves the friendly confines of *Wayne's World* and stars in this three-disc sci-fi adventure as a fellow soldier in an interstellar war. You play a human brain/



▲ **Fly Fishing: Great Rivers of the West**

spaceship/probe being, and your mission is to stop your craft from crashing into a star. It's a full entertainment package, with lots and lots of puzzles to go along with the gripping movie sequences.

Jewels of the Oracle / 🍌🍌🍌 / Discis Entertainment / \$69.95 list

If you enjoy relaxing with the daily newspaper brainteasers, you'll enjoy *Jewels of the Oracle*. This disc will keep you busy for hours — or even days — with its collection of mental exercises and puzzles. Set in a lost mythical training ground for the mind, the games emphasize creativity and freedom over fending off adversaries or beating a clock. The point-and-click interface won't break your concentration, and the graphics outshine those of crossword puzzles.

Journeyman Project Turbo / 🍌🍌🍌 / Sanctuary Woods / \$49.95 estimated street

The original *Journeyman Project* was a gripping game — but the play was so slow that you could clip grocery coupons and read the obituaries while you were waiting for the next screen. But now the program's gone turbo, and the speed breathes new life into this eye-catching game where you travel back in time to stop evil forces who want to change the future.

Star Trek: The Next Generation Interactive Technical Manual / 🍌🍌🍌 / Simon and Schuster Interactive / \$69.95 list

Beam yourself aboard the USS *Enterprise* and poke around Captain Picard's private quarters in this 3-D replica, which comes complete with an owner's manual. Thanks to QuickTime VR technology, you can traipse through the ship's rooms, moving or looking in any direction, simply by dragging your mouse. If you're afraid of getting lost in space, take the ship tour, which is narrated by Commander Riker. True Trekkies will find this disc out of this world.



▲ **PGA Tour Golf III**

Club Dead /  / Viacom New Media / \$59.99 estimated street
No, this isn't a game in which MTV VJ Kennedy is killed by a falling disco ball. You're a convict who's been whisked away from prison and placed in a posh resort to find out why its visitors end up dead. It's got some great tunes — but you'd expect that from a disc produced by MTV.

PGA Tour Golf III /  / Electronic Arts / \$59.95 estimated street
You don't have to worry about tee times or the weather when you play this game of golf. This disc features three PGA courses, a soothing sound track, and gorgeous graphics. The interface is easy to use: You don't have to fiddle with controls while you're trying to decide which club to use. You can enter tournaments, and the game will tally up your total purse. It's almost as good as being there.

Who Killed . . . ? Series /  / Creative Multimedia
\$21.95 direct
You have six hours to question witnesses, collect evidence, and piece together enough clues to solve the murder in each of three deadly scenarios. Two discs are new this year: Who Killed Brett Penance? and Who Killed Taylor French?, both of which star actress Sheryl Lee. These bare-bones mysteries lack the glitzy graphics that make other games so enthralling, but their classic, puzzle-solving appeal is elementary, my dear Watson.

World of Xeen /  / New World Computing / \$69.95 list
Role-playing fanatics will enjoy the latest in the Might and Magic series for the Mac. This CD-ROM combines two Might and Magic games previously available for the PC into one game for the Mac. There are three possible solutions, one for each game and a third that involves completing both games. The colorful graphics and attention-getting sound will immerse you in this medieval fantasy.

Rebel Assault /  / LucasArts / \$24.99 direct
Based on the *Star Wars* movie series, Rebel Assault lets you play a Rebel rookie in training to battle against the Empire. You'll learn how to maneuver your X-Wing so you can blast away TIE fighters in actual battle, you'll fight Imperial walkers on frozen tundra, and you'll defend your home planet from enemy forces.

CHILDREN

These sure-fire kid pleasers have been Dad-tested for your children's approval. And that was no easy task — there are literally hundreds of children's titles available.

Earth Explorer /  / Apple Home Learning / \$44 list
Explaining global ecosystems and the difficulties humans have trying to preserve them to kids *could* be as much fun as playing in a toxic-waste dump. But Earth Explorer makes these topics fun — while conveying a remarkable depth of information. Quizzes teach facts but also encourage kids (ages 10 and up) to look at issues from all sides before forming opinions.

Imagination Express Destination: Rain Forest /  / Edmark / \$35 estimated street
OK, you say, *another* program that urges kids to write stories by creating scenes against backgrounds. This disc offers rain-forest authenticity and great self-sizing, animated stickers. Every creature (including Homo sapiens) is linked to a book that explains its ecosystem. Kids (ages 6 to 12) soon learn that heroes can snack on *paca* but shouldn't bat an eyelash viper.

Big Top's Cartoon Toolbox Starring Felix the Cat /  / Big Top Productions / \$54.95 list
Felix and an entourage that includes Poindexter and evil Master Cylinder are here, in prebuilt animated clips that kids (9 and up) can paste into background scenes, along with sound effects and props. The frame-by-frame approach may be daunting for younger kids, but once they figure it out, the range of possibilities is truly rich.

Elroy Goes Bugzerk /  / Headbone Interactive / \$49.95 list
Sent to the country for the weekend, Elroy fears he'll never find a bug to beat the urban vermin his rival is entering in this year's Insectathon. Then he spots the rare

Get Info / A.D.A.M. Software 619-483-2229 **Against All Odds** 415-331-6300 **Apple Home Learning** 408-996-1010 **Big Top Productions** 415-978-5363 **Byron Preiss Multimedia** 818-295-6600 **Compton's New Media** 619-929-2500 **Creative Multimedia** 503-241-4351 **Discis Entertainment** 416-250-6537 **Discovery Multimedia** 800-457-1239 **DK Multimedia** 212-213-4800 **Edmark** 206-556-8484 **Electronic Arts** 415-245-4525 **Future Vision Multimedia** 914-426-0400 **Gold Standard Multimedia** 904-373-1100 **Graphix Zone** 714-833-3838 **Grolier Electronic Publishing** 203-797-3530 **Headbone Interactive** 206-323-0188 **Inroads Interactive** 303-444-0632 **Intellimedia Sports** 404-262-0000 **ION** 415-455-1466 **IVI Publishing** 612-996-6000 **Legacy Space Marketing** 713-242-1011 **Live Oak Multimedia** 510-654-7480 **LucasArts** 415-721-3300 **Maxis** 510-254-9700 **Microsoft** 206-882-8080 **The National Geographic Society** 301-921-1330 **New World Computing** 818-889-5600 **Sanctuary Woods** 415-286-6100 **Simon and Schuster Interactive** 212-698-7000 **SoftKey International** 617-494-1200 **StarPress Multimedia** 415-274-8383 **Sumeria** 415-904-0800 **SunStar Interactive** 203-785-8111 **Viacom New Media** 212-258-6000 **Virgin Interactive Entertainment** 800-874-4607 **The Voyager Company** 914-591-5500

Technoptera, a stink-bomb-wielding robo-bug. To help Elroy catch this creature, kids (8 and up) must use facts about *real* insects to solve a series of humorous puzzles.

Arc of Doom /  / SunStar Interactive / \$49.95 list
Earth is plagued by a mysterious series of unnatural "natural disasters," and the Alpha Team sent to investigate is missing. Players (ages 10 and up) assemble a Beta Team and use knowledge of earth science and geography to rescue the lost group and unravel the mystery behind the cataclysms. The game sneaks abundant facts into action-filled play.

SimTown /  / Maxis / \$39.95 direct
SimTown puts kids (ages 8 to 12) in charge of building a community from the ground up. There are plenty of amusement parks and arcades, but beware: Resources must be used wisely for a town to prosper, and video games use lots of electricity! Once a town has been set up, kids can peek inside buildings and visit the citizenry. ☘

Nikki Ehler is a *MacUser* assistant editor. Rebecca Olson is *MacUser's* research assistant. Roman Loyola and Jim Shatz-Akin contributed to this report.





QUICK LABS

• Princeton Monitor Graduates Cum Laude • Apple's Latest LaserWriter • Hard-Drive Fireballs

Questions. We get questions. So, to clarify a few things, here are answers to the most frequently asked questions, or what we call Quick FAQs.

Can the results in this section be compared to the results in the larger labs-based roundups? No, they can't. Frequently our features focus on a more specialized type of hardware. As a result, the tests we use for our larger lab reports differ from those we use for Quick Labs. But since the testing for Quick Labs remains the same, you can compare these results each month.

What are the criteria for a product to be included in Quick Labs? We look only at newly released monochrome printers, single-mechanism hard drives, and

color monitors. If we don't receive any new products for a particular set, we may substitute a different product category. So far, we've received plenty of products.

What happens if you receive too many products? In that case, we test products according to FIFO — first in, first out. We also may limit a vendor to a certain number of products.

Will Quick Labs replace the lab-based roundups of monochrome printers, hard drives, or monitors? No, we will still do the comprehensive roundups you've come to expect from us. Quick Labs complement those feature articles by providing you with timely information on the latest products.



TWO NEW LASER PRINTERS

The latest entry into the competitive personal-laser-printer market is the Apple LaserWriter 4/600 PS, a 600-dpi PostScript printer that's small enough to fit unobtrusively on a desk. It comes with 64 TrueType and 35 PostScript fonts, a 100-sheet paper tray, a LocalTalk port, and a power-saving sleep feature. The LaserWriter 4/600 PS supports drag-and-drop printing, even if your machine doesn't have QuickDraw GX installed, and it comes with software that lets the printer show up in EtherTalk zones. It produced gorgeous grayscale graphics and sharp text; however,

slightly poky speeds make this printer more suited for use in small businesses and homes.

The Dataproducts Typhoon 16 (pictured) is a speedy workgroup printer that's designed to handle high print volumes. It comes with Dataproducts' Virtual Printer Technology (VPT), which allows it to exist as separate nodes on a network. VPT lets a network administrator easily customize printer settings for different departments and also monitor printer usage. This 600-dpi PostScript printer supports tabloid-sized paper and has a 250-sheet paper tray. With the help of Dataproducts' DpTek

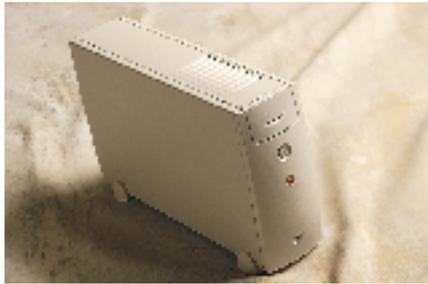
TrueRes resolution enhancement, text and line art look sharp; our grayscale images were a bit grainy, however.

To test speed and output quality, we printed numerous pages of text, line art, and grayscale graphics. We timed the printers producing a variety of documents, from simple to complex, and weighted the results to reflect everyday usage. You can't compare the results for the personal printer and the workgroup printer, however; we printed longer, more complicated documents on the workgroup printer.

REVIEWER / ROMAN LOYOLA TESTING / JIM GALBRAITH

✓/OUTSTANDING	✓/ACCEPTABLE	✓/POOR	ESTIMATED STREET PRICE	RESOLUTION	WARRANTY	TEXT QUALITY	GRAPHICS QUALITY	PAPER HANDLING	SUPPORT	COMMENTS	PAGES PER MINUTE
✓	✓	✓	\$850	600 dpi	1 year	✓	✓	✓	✓	Gorgeous grayscale graphics and leading-edge software features.	0 6 12
✓	✓	✓	\$3,699	600 dpi	1 year	✓	✓	✓	✓	Blazing speed and versatility make for a top-end workgroup printer.	0 6 12

*Tested as a personal printer.



TEN NEW HARD DRIVES

There's a pattern to the drives we tested this month — all except one are based on either a Quantum Fireball 1-GB mechanism or a Quantum Trailblazer 850-MB mechanism. These new mechanisms proved reasonably fast in our MacBench 2.0 Disk Mix test. Even better, vendors are selling drives based on these mechanisms at bargain prices. Overall, the

1-GB drives are better bargains than the 850-MB ones — for example, the Spin Fireball 1080 costs only \$30 more than the Spin Trailblazer 840, yet it has about 200 MB more storage capacity.

The lone 4-GB drive, the ClubMac Grand Prix 4200MB, was no slouch either. It's fast and well constructed, and its price per megabyte (\$.29)

is one of the lowest we've seen.

The Apple 850MB External is pictured and comes with La Cie's Silverlining formatting software. We tested drive speed by using MacBench 2.0. The results are relative to that of a 250-MB Quantum IDE drive in a Quadra 630, which has a score of 10.

REVIEWER / CHERYL ENGLAND TESTING / KRISTINA DE NIKE

✓/OUTSTANDING	✓/ACCEPTABLE	✓/POOR	ESTIMATED STREET PRICE	FORMATTED CAPACITY	PRICE PER MEGABYTE	WARRANTY	CASE	SOFTWARE/MANUALS	SUPPORT	COMMENTS	MacBench 2.0 Disk Mix Score
○○○○			\$399	808.4 MB	\$.49	3 years	✓	✓	✓	A solid drive, from design to warranty to speed.	6.5
○○○○			\$499	1,039.9 MB	\$.48	3 years	✓	✓	✓	Like its smaller sibling, a pleasing drive overall.	6.5
○○○○			\$1,199	4,102.9 MB	\$.29	2 years	✓	✓	✓	An outstanding price for a lot of storage and good speed.	7.5
○○○○			\$499	1,039.8 MB	\$.48	5 years	✓	✓	✓	A basic, no-frills drive with a nice price and a long warranty.	6.5
○○○○			\$399	1,039.8 MB	\$.38	2 years	✓	✓	✓	Yet another bargain drive. We like the trend.	6.5
○○○○			\$459	1,039.8 MB	\$.44	2 years	✓	✓	✓	A drive that's got everything you need, but no more.	6.5
○○○○			\$419	808.4 MB	\$.52	2 years	✓	✓	✓	A lot like its bigger sibling, including its price.	6.5
○○○○			\$369	808.4 MB	\$.46	2 years	✓	✓	✓	We like the drive, but we love the 1-GB version.	6.5
○○○○			\$449	808.4 MB	\$.56	1 year	✓	✓	✓	Sleek case and acceptable speed, but Apple lags on warranty.	6.5
○○○○			\$549	1,039.8 MB	\$.53	1 year	✓	✓	✓	A fine drive but a bit more costly than many competing products.	6.5

LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.



FIVE NEW LARGE-SCREEN COLOR MONITORS

The Princeton Ultra 15 (pictured) is this month's best buy, thanks to its good image quality and low price. It includes a set of 12 on-screen controls that are easy to configure, but the controls at the base of the monitor may be too close together for comfort. This monitor, as do the Mitsubishi Diamond Scan 20H and the CTX 2085, has an exaggerated tube curvature, causing glare, which can be irritating if you sit in front of your monitor for long periods.

The Mitsubishi monitor, however, has

superior controls. It comes with 28 built-in settings and software that lets you perform even more fine-tuning.

You'll either love or hate the Sampo AlphaScan 17gx's controls. It has six buttons, each operating with a mode selector, for controlling the 12 settings. The buttons are two-sided: Push the left side to decrease a setting; push the right side to increase it. You don't get any readings when you set a control, however — you must judge everything by eye,

which can mean waffling back and forth to get the right setting.

The image-quality scores reflect the results of our tests for image sharpness, focus, brightness, uniformity, pincushioning, color range, color accuracy, and vibrancy. Maintaining focus and sharpness is more difficult on larger monitors, so 20-inch monitors tend to score lower than smaller models. A score of 1.0 is considered acceptable.

REVIEWER / ROMAN LOYOLA TESTING / MARTIN WONG

✓/OUTSTANDING	✓/ACCEPTABLE	✓/POOR	ESTIMATED STREET PRICE	SCREEN SIZE	MAXIMUM RESOLUTION	WARRANTY	MANUALS	SUPPORT	CONTROLS	COMMENTS	IMAGE-QUALITY SCORE
○○○○			\$330	15 in.	1,280 x 1,024 pixels	3 years	✓	✓	✓	A good display for the cost-conscious.	1.5
○○○○			\$1,300	20 in.	1,152 x 870 pixels	3 years	✓	✓	✓	Affordable, but a lackluster performer.	1.0
○○○○			\$1,699	20 in.	1,280 x 1,024 pixels	3 years	✓	✓	✓	Great controls but mediocre image quality.	1.0
○○○○			\$729	17 in.	1,152 x 870 pixels	2 years	✓	✓	✓	A solid product with love-it-or-hate-it controls.	1.0
○○○○			\$972	17 in.	1,280 x 1,024 pixels	3 years	✓	✓	✓	Good image quality, but the price is a bit steep.	1.0

LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.

GET INFO / APS Technologies 816-483-6100 Apple Computer 408-996-1010 ClubMac 714-768-8130 CTX International 909-598-8094 Dataproducts 703-648-0930 La Cie 503-520-9000 Mitsubishi Display Products 714-220-2500 Princeton Graphic Systems 714-751-8405 Sampo Technology 404-449-6220 Samsung Electronics America 201-229-4000 Spin Peripherals 508-787-1200

ILLUSTRATION /

Deneba Refines Canvas

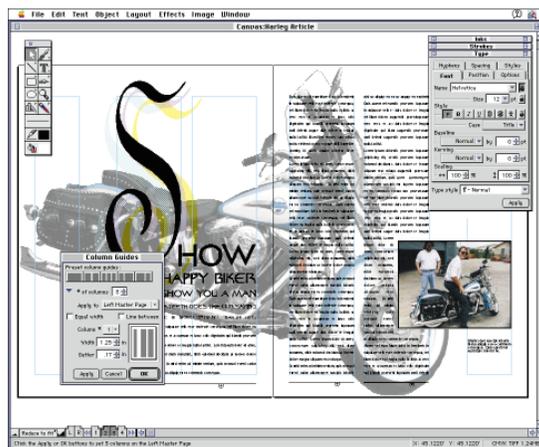
Version 5 offers pro tools, sleek interface.

OFTEN OVERLOOKED in the battle for the illustration market, Deneba's Canvas has nonetheless attracted fans in scientific fields, who like the program's precision-drawing tools. But Deneba wants more. By revamping the interface to Canvas and adding a slew of such features as improved image-editing tools and sophisticated typographic and page-layout options, Deneba hopes to attract professional illustrators and designers looking for an all-in-one application for their graphics needs.

To start, Canvas 5 sports a sleek interface that packs the power of numerous programs without confusing the user. The Toolbar has been reduced in size and has tear-off palettes for selecting options. Each palette offers a tab metaphor for accessing various options. For instance, the Inks palette contains options for colors, gradients, hatching, symbols,

and textures — each under a separate tab. Each tab can be configured to show the most-used settings.

New image-editing options make Canvas



5 useful for image manipulation. Although it doesn't offer all the bells and whistles of Adobe Photoshop, it does support a fairly complete array of tools for image editing, including masking. It has its own filters for adding special effects, but it also supports

Photoshop-compatible filters. Most Canvas tools that work on drawing objects work on paint objects as well, giving users a great deal of flexibility in manipulating pixels.

Deneba also added page-layout features in spades. A new document type transforms the large pasteboard in Canvas 5 into multiple pages, and new icons in the window show the number of pages in the document, allowing easy, PageMaker-like navigation from page to page. There are numerous options for setting type, and you can assign styles on the paragraph and character level.

Of course, Canvas 5 equals Adobe Illustrator and Macromedia FreeHand in several ways. A new pasteboard offers a canvas as large as 38.5 square feet. New graphic styles let you set fill, stroke, and pen options for use on any vector object, and you can turn any vector object into a custom arrowhead or pattern fill. Deneba has even added transparency options for vector objects, similar to those available with

Illustrator's Pathfinder filters.

Priced at \$595, Canvas ships with two CD-ROMs of clip art, fonts, and symbols. Upgrades from version 3.5, \$149.95. Upgrades for owners of competitive DTP applications, \$150. 305-596-5644. / Sean J. Safreed

BUYOUTS /

Adobe Buys Frame

NOT CONTENT TO OWN Aldus and its popular page-layout program, Adobe is buying Frame Technology and its tool for long-document layout, FrameMaker. By acquiring Frame, for a pricey \$500 million, Adobe gains access to the huge structured-document market, which includes instruction manuals, government reports, and so on, and grabs a sizable stake in the UNIX market — a place PageMaker feared to tread.

FrameMaker also brings to the table a hefty investment in HTML — the language of the World Wide Web — and SGML — the language of the federal government. Along with its support of Acrobat, FrameMaker is positioned to help Adobe continue its assault on the Internet and on the world's largest employer, the U.S. government.

Is there a clash of Makers on the horizon? No, says Adobe. PageMaker will focus on graphic-rich color publishing while FrameMaker moves toward document management à la Interleaf Publisher. / Pamela Pfiffner

SPECIAL EFFECTS /

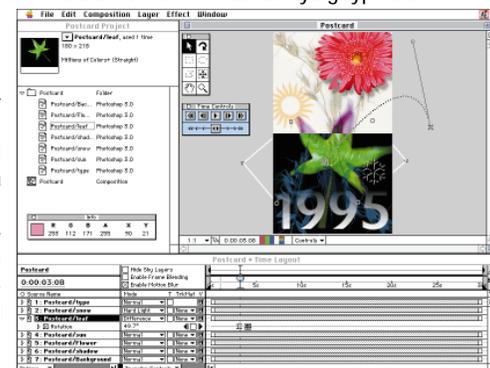
Adobe Integrates After Effects

VIDEO ARTISTS DRAW ON AN ARSENAL of applications. Elements made in Adobe Photoshop and Illustrator become animation effects and video titles in Adobe After Effects, but the translation hasn't been seamless. Now with After Effects 3.0, Adobe tightly integrates this former Aldus product with Photoshop and Illustrator and adds features found only in costly workstation packages.

Already a sophisticated multilayer compositing tool, After Effects 3.0 adds support for Photoshop files. When imported into After Effects, Photoshop 3.0 files retain all layer information — including transfer modes, which replace the clumsy Compound Arithmetic filter found in previous versions of After Effects. Transfer modes produce shading by combining several layers of pixels, and when combined with animation, they can be used to achieve effects such as flying type that darkens a background as it moves across it.

Support for Adobe Illustrator files is also new. After Effects retains Illustrator's Bézier information throughout the animation process and renders objects into pixels only at rendering time, which means moving elements look sharp and never lose detail when enlarged. There is even a new Bézier tool for creating masks.

After Effects 3.0 (\$995) includes 50 special-effects filters. The After Effects 3.0 Production Bundle (\$1,995) includes broadcast and film-production features. Thankfully, Adobe removed After Effects' hardware copy-protection key. 206-628-2749. / SIS



MiniFont Skirts Large Envoy Docs

THE ABILITY TO KEEP FONT FIDELITY without bloating file sizes is a vitally important feature when publishing high-resolution documents electronically. A new offering from Tumbleweed Software balances fidelity and size by using new font technology from Ares Software.

MiniFont. Ares' FontChameleon technology, which builds typefaces out of one master font by using tiny font descriptors, gains a more flexible cousin in MiniFont. Unlike FontChameleon, MiniFont can display typefaces (with optional 4- or 16-level grayscale anti-aliasing) without using a preinstalled master font. Any application that incorporates the MiniFont player can generate text on-the-fly after downloading the MiniFont descriptor file. However, the added flexibility does have a hitch: MiniFont files can be 8K to 16K in size, compared to FontChameleon's tiny 4K font descriptors.

Tumbleweed Publishing Essentials. The first product to incorporate MiniFont will be Tumbleweed's Publishing Essentials (\$695), an expanded suite of tools for use with Novell's Envoy portable-document software. By using

MiniFont, Publishing Essentials will improve Envoy's rudimentary font-handling capabilities. At first, you'll need the bundled Enhanced Envoy Viewer to view MiniFont-embedded documents created in Publishing Essentials, but a MiniFont-savvy version of the free Envoy Viewer may follow later this year.

Powerful text searches of documents are now part of the Envoy mix, thanks to the included Tumbleweed Viewer Extension. The extension adds support for both the Verity Topic and Rich Text Retrieval search engines, which rank the importance of text based on its size and style. And the process of setting up hypertext links becomes much easier with Link Builder, which uses your document's styles to automatically create links.

Best yet — and sorely missed from Envoy 1.0 — Publishing Essentials finally gives users the ability to create Envoy documents from PostScript, EPS, and Adobe Acrobat PDF sources, providing an easy avenue for creating high-fidelity documents from applications such as Adobe PageMaker and QuarkXPress. 415-363-7024. / Jason Snell



SCANNERS /

SuperCoolscan Goes Pro

Nikon slide scanner gets even cooler.

THE NIKON COOLSCAN instantly became the hottest slide scanner around when it was introduced two years ago. Its compact size, quick speed, and low price made scanning 35mm slides and negatives an attractive proposition for casual and professional users. Now with the new LS-1000 SuperCoolscan, Nikon brings even more professional features to the light table.

In the new SuperCoolscan, Nikon has improved the LED (light-emitting diode) illumination source used in the earlier LS-10 Coolscan by using LEDs with a higher intensity (LEDs are extremely stable but not terribly bright). For greater dynamic range, the new model also captures 36 bits of color data, compared to 24 bits for the Coolscan. The scanner now has automatic as well as manual focus.

The \$2,695 SuperCoolscan is also faster



than its \$1,795 predecessor. At its top resolution of 2,700 dpi, the SCSI-II device can scan a slide in about 40 seconds and a negative in 60 seconds, which — according to Nikon — makes it the

fastest slide scanner available.

To begin scanning, you pop a mounted slide into the front of the unit or use the filmstrip reader that holds up to six negatives at a time. For batch scanning, the SF-100 optional autofeeder loads up to 50 mounted slides. Unlike the earlier LS-10 Coolscan, which remains in the product line, the SuperCoolscan is not available as an internal unit.

The SuperCoolscan ships with a redesigned Nikon Scan plug-in for scanning directly into Adobe Photoshop. The new plug-in offers an on-screen densitometer as well as tools for sharpening, setting the white/black point, and more. 516-547-4200. / PP

The Upper Case

OPEN ANY TYPE CATALOG and you're likely to find a display font that suits your taste — something ornate, something sassy. But sometimes a well-chosen drop cap is all you need to make a bold statement. **Letraset** has your letter in its Phototone Alphabets CD-ROM collection of 500 individually photographed letters. Used individually as an initial cap or strung together as display type, these



75- and 300-dpi CMYK TIFF files show painted, sculpted, and illuminated letters from all kinds of signs and buildings, be it a G in double neon or a brass E on a brick wall. The collection also features punctuation marks and numbers as well as a complete alphabet made from common materials such as wire and buttons. \$199. 800-343-8973 or 201-845-6100. **Getting the look of cut stone takes time and talent in a draw program such as Adobe Illustrator — but not if you have Chisels, from Kara Fonts.** These Illustrator 5.0 files have the look of cut

stone, thanks to careful application of gradients. The five Chisels fonts in volume one are based on common type designs such as Avant Garde and Optima. The package comes with the KF-Headsetter utility for converting individual letters into editable words in Illustrator. \$199. 800-475-8694 or 310-578-9177. **For modern interpretations of hand-drawn or wood-block initial caps, try Ardi Computer Graphics' Initial Caps collection.** The latest in the series, volume 7, offers six styles, including colorful Victorian block caps and cherubic fantasies, all delivered as CMYK or black-and-white EPS files. \$149. 214-404-9171. **Some**



say the height of decorative letters was during the era of illuminated manuscripts. **Planet Art's Medieval Alphabets CD-ROM** contains scans of the real hand-drawn letters from a variety of ancient sources. You have to open up these Photo CD files in Photoshop and selectively cut and paste the



ones you want, but it's easier than sequestering yourself in a monastery to draw these ornate designs yourself. \$90. 800-200-3405 or 213-651-3405. / SJS

ONLINE PUBLISHING / BY TONYA ENGST

From the Web Press to the Web

Publishing on the Internet isn't like publishing on paper. Here's a guide to what HTML is and what publishing tools you can use to write Web documents.

IMAGINE BEING ABLE to publish documents that can potentially reach millions of people all over the world, with almost no printing or distribution costs. That's the appeal of the Internet's World Wide Web,

which lets online readers view styled documents with ease. (For more information on connecting to the Net, see "Making the Internet Connection," May '95, page 66.)

Individuals and organizations can use the Web to publish information ranging from personal home pages featuring family photos to business sites offering sales information, feedback forms, product samples, and more. But although creating documents for the Web *is* publishing, it's not the same as publishing with traditional page-layout tools such as Adobe PageMaker, QuarkXPress, or even Microsoft Word.

Creating Web pages is surprisingly easy once you get the hang of it, and since Web pages are built out of plain text, you don't even need any special authoring tools — although they can simplify the process immensely. The language of the Web is HTML, HyperText Markup Language, which you use to format your text for the Web. HTML-coded text is sent over the Internet to a Web browser, which interprets the HTML codes and displays your document on-screen. Since different Web browsers can interpret those codes in different ways, you can never have complete control of how your page will appear when viewed (see the "Eye of the Beholder" sidebar). This is why HTML isn't necessarily the answer if you want to move your existing design-heavy documents to the Web — in such cases, using a portable-document technology such as Adobe Acrobat might be a better bet.

HTML files are written in plain text that

consists entirely of letters, numbers, and other common characters, with no formatting (no 8-bit characters such as curly quotes and accented letters are allowed, although HTML can create some equivalents). Every Web page has a unique Internet address, called a URL (Uniform Resource Locator), based on what Internet site it calls home and where it resides in that site's file system.

To "publish" your home page, you put HTML files on a Web server, a computer having a continuous Internet connection and running Web-server software. Many Internet providers let users store home pages on their Web servers, but if you have a continuous Internet connection, you can easily run your own Web server on a Mac with software such as StarNine's WebSTAR (formerly MacHTTP).

How HTML Works

In many ways, HTML works like old word-processing programs: It uses tags to surround blocks of text you want to format a certain way. Most HTML tags come in pairs. The start tag appears between angle brackets and the end tag appears between angle brackets and is preceded by a slash. For example, to tag text as a main topic heading, you use an <h1> tag (think of h1 as standing for Heading #1), like this:

```
<h1>Welcome to Molly's Home Page!</h1>
```

A Web browser will display the heading in a font, style, and size specified by the

browser's display preferences, but you can be assured that <h1> text will be more prominent than <h2>, which will be more prominent than <h3>, and so on through <h6>, the lowest-priority heading in HTML. In addition to setting header text, HTML tags can set off block-quoted text; create numbered or bulleted lists; make definition lists, with hanging indents; and more.

Some HTML tags don't create elements such as headings but do influence the text's appearance. For example, the text below has been tagged to have a "strong" appearance, which many browsers interpret by displaying the text in bold:

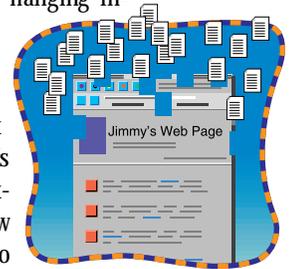
```
<strong>My Mac needs more RAM!</strong>
```

If you have the willpower to memorize about ten of these tags, you are on your way to mastering HTML.

If you can cope with slightly more-complex tags, you can make hypertext links. A link appears on a Web page as underlined and/or highlighted text (again, depending on a user's preference), and Web users click on that text to follow the link. You can make a link to any page, as long as you know the page's URL. For example, <http://www.apple.com/> is the URL to Apple's home page. To link to Apple's home page, you might use this HTML:

```
<a href="http://www.apple.com">Apple home page</a>
```

This HTML uses an <a> tag (also known as an anchor tag) followed by the *href* attribute (*href* stands for *Hypertext REFERENCE*), an equals sign, and then the URL to Apple's home page in double quotes.



To find the URL of the page you want to link to, use a Web browser to go to the page, copy the URL to your Clipboard, and paste it into your HTML document.

HTML Tools

Although you can use any word processor to make a home page, there are dedicated HTML tools that make the process easier by allowing you to apply styles to HTML text just as you would apply italics to text in a word processor. Other tools hide HTML tags, replacing them with iconic equivalents. Still others don't provide a facility for *authoring* HTML but translate other file formats into HTML on the fly.

Starting from Scratch. Since the Internet is famous for copious amounts of shareware and freeware, it's no surprise that several noncommercial HTML packages are available on the Net. (All the following packages are shareware or freeware, unless otherwise noted.) Here are three of the best HTML authoring packages available:

Bernie Dodge's **HomeMaker**, a HyperCard stack, is by far the easiest package. The stack asks you questions and creates a home page. You can also use HomeMaker to get

started and then customize the page.

Rick Giles' **HTML Editor** displays HTML text in whatever style you've assigned to it but is likely of interest only to owners of 680x0-based Macs, because it runs too slowly in emulation on a Power Mac.

Robert Best's **HTML Web Weaver** works best for tagging imported text rather than creating new pages from scratch.

Converting Existing Documents. Users of page-layout programs can avail themselves of tools that map text styles and style sheets to HTML equivalents and export text as HTML. Frame Technology's **FrameMaker 5.0** includes an HTML export tool, and Adobe PageMaker users will get built-in HTML support when PageMaker 6.0 ships later this year with an HTML-converter Plug-in. For now, you might try Jeff Boulter's **Dave** or Mitch Cohen's **WebSucker**, both of which convert PageMaker 5 text into HTML.

QuarkXPress users who are serious about investing in HTML should check into the sophisticated **BeyondPress** (\$595), from Astrobyte (303-534-6344), which automates the conversion of QuarkXPress text blocks into HTML. Less pricey options include **Quark to HTML**, by Jeremy Hylton,

and **HTML Xport**, by Eric Knudstrip.

If you have word-processor documents to convert to HTML, try Chris Hector's **rtftohtml**, which works with word processors that save into RTF (Rich Text Format). Leonard Rosenthal's **HTML+** filter works with any Claris XTND-savvy word processor, such as WordPerfect or ClarisWorks. UserLand Software's clever **AutoWeb** uses automated scripts to make creating and updating a Web site nearly instantaneous.

Hard-Core Solutions. If you wake up one morning and find you've turned into a hardcore HTML author, consider using **Nisus Writer** (\$310), from Nisus Software (800-890-3030 or info@nisus-soft.com). By itself, Nisus Writer offers powerful search-and-replace and text-selection features that are quite useful in HTML authoring, and Sandra Silcot's **Nisus Writer HTML macros** tailor the program for Web authoring. Another option is the **BEdit** text editor (\$119), from Bare Bones Software (508-651-3561 or bbsw@netcom.com), in combination with Lindsay Davies' elegant **BEdit HTML Tools** extensions.

The **NaviPress** authoring tool (price not determined at press time), from NaviSoft (805-968-8804 or interest@navisoft.com), and the **WebWizard** add-on to Microsoft Word 6.0 (\$79), from NICE Technologies (408-476-7850 or nicetech@nicetech.com), will be available soon.

HoTMetal Pro (\$195), from SoftQuad (416-239-4801 or hotmetal@sq.com), is popular in the Windows market, but its disappointing first Mac version doesn't fit the typical interface and usage expectations of Mac users.

Extra Reading

To learn more about HTML authoring and related topics, check out the Apple Internet Web site and mailing lists at <http://abs.apple.com/apple-internet/>. An HTML version of this article, featuring links to referenced products and Web sites, is available at http://www.macuser.ziff.com/~macuser/mu_1095/pub1.html.

The noncommercial software mentioned here can be found in the `/text/html` directory of any Info-Mac mirror site or at <ftp://ftp.tidbits.com/pub/tidbits/tisk/html/>.

Tonya Engst is coeditor of TidBITS, the online Macintosh weekly. Her home on the Web is <http://king.tidbits.com/tonya/tonya.html>.

Eye of the Beholder / every Web browser is different

THE VARIETY OF WEB BROWSERS means that unlike using the precision control of page-layout programs, designing HTML pages is an imprecise science.

We took the following small HTML document and viewed it with three Web browsers: Netscape Navigator (top), MacWeb (middle), and the text-based UNIX browser Lynx (bottom). Even this simple file displayed quite differently in the three browsers:

```
<html><head><title>Molly's Page</title></head>
<body>
<h1>Welcome to Molly's Home Page!</h1>
My world view has changed now that I use the Web. I learned
<strong>lots</strong> of tips for HTML authoring from the
excellent <a href="http://abs.apple.com/apple-internet/">Apple
Internet Mailing Lists' web site.</a>
</body></html>
```

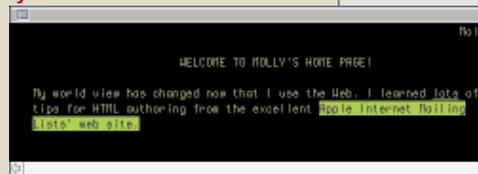
Netscape Navigator



MacWeb



Lynx



GRAPHICS HOW-TO / BY JANET ASHFORD

From Pencil to Mouse

Creating an old-Russian-style illustration begins with a photograph and ends with a digital original.

TRANSLATING THE WORLD of three dimensions into two is the object of every illustrator. The 17th-century Dutch painter Jan Vermeer used the mirrors and prisms of a camera lucida to project his portrait subjects onto a flat surface for tracing. Since the invention of photography, artists have continued this tradition by using photos as a reference, especially for figures. In the digital world, a scanner can easily capture the hand-drawn look of a pencil tracing. I wanted to create an illustration for a fairy tale about two sisters, and my daughter and her friend made the perfect figures for the illustration. To capture the shapes, I scanned a tracing of the figures and captured the lines in Adobe Streamline. The final drawing, in Adobe Illustrator, followed the style of a turn-of-the-century Russian fairy-tale book.

Janet Ashford is the coauthor, with Linnea Dayton, of Adobe Illustrator: A Visual Guide for the Mac (Graphic-sha/Addison-Wesley, 1995).



1. Preparing the photo.

After scanning the photo of my daughter and her friend, I converted the photo to grayscale (Mode: Grayscale) in Photoshop, increased the contrast (Image: Adjust: Brightness/Contrast), and used the Sharpen Edges filter (Filter: Sharpen: Sharpen Edges) to define the edges for tracing.



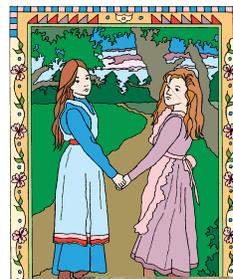
2. Roughing the outlines.

I drew over a laser-printed proof to create a rough sketch, using pencil on matte acetate (a). I refined the tracing and added a landscape background and decorative borders (b). I scanned the 8-x-10-inch original at 300 dpi as line art and opened it in Streamline to prepare for autotracing.



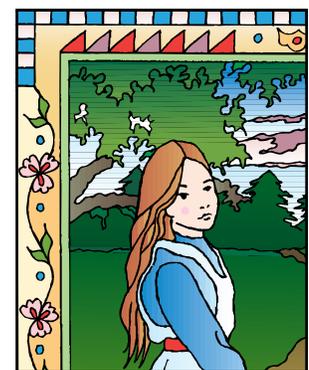
3. Coloring the mood.

In Streamline, I autotraced the scan, using the Outline mode (File: Convert) to define the shapes and capture the natural lines of the pencil drawing. Opening the result in Illustrator, I filled the shapes with flat color as a preliminary color study (a). The illustration employs a similar style but a brighter palette than that used in an old Russian illustration (b).



4. Finishing the illustration.

To add a sense of depth and modeling to the figures and background, I made a palette of color gradients and refilled most of the shapes. The gradients are either from the original color to white, to add highlights, or to a darker tint, to add depth to the illustration.



EXPERT TIPS / BY BOB SCHAFFEL AND CHUCK WEGER



To Err Is PostScript

PostScript errors. You get 'em. You hate 'em. Here's a quick guide to slaying the most-common PostScript errors.

“THE DOCUMENT IS OK but cannot be printed.” If ever there was an error message to inspire you to throw a brick at your monitor, this is it. Another favorite is the **–8133** system error, which translated into English

means “general PostScript error.” What do you do when a PostScript error won't let you print?

PostScript printing errors usually occur for one of two reasons. The first is that there has been a problem with the printer driver. The second is that you've created a document of such unusual complexity that the output device can't cope with it. Let's take a look at each case.

Drive My Printer

The PostScript printer driver contains a combination of coding from the operating system (the LaserWriter 7.x or 8.x extension), the application, and the PPD (PostScript Printer Description) file chosen in the Chooser and/or the Page Setup dialog box and usually residing in the System Folder (Extensions: Printer Descriptions). The LaserWriter driver prepares the output code by converting QuickDraw code into PostScript. The application may add PostScript code of its own to bypass or enhance the LaserWriter's functionality. The PPD customizes the code for each output device.

Programming errors in the driver's code are rare. But it's possible to induce the “The document is OK but . . .” message by choosing the wrong printer type in the Page Setup dialog box or by choosing the wrong PPD for the output device. Double-check these settings before hurling that brick.

In the case of complex pages, the obvious culprits — using all of your software's special effects on a single page, for instance —

are often not the problem. Remember that if you produce illustrations and color separations in two different applications and then place them in a page-layout document, those three programs may conspire to throw a gargantuan task at your output device's RIP. PostScript printers have become more robust in the past few years, but it still behooves you to keep documents as simple as possible — that is, don't nest EPS files inside EPS files and so on.

Er, PostScript

There are 30 types of PostScript errors. The error message you receive will be in the form: `%%[Error: type of error; offending command: the PostScript code that caused the error]%%`. Some errors are so rare that the chance of getting hit by lightning is greater than seeing them. Several appear with frustrating frequency, however.

A **limitcheck** error often comes with an offending command that contains **stroke**, **fill**, or **clip**. It means a built-in implementation limit has been exceeded. In illustrations, look for paths with too many segments (autotracing software does this), blends that fill objects, or torturous paths used to create silhouettes in images.

A **rangecheck** error is usually caused

by human error when specifying something — such as the width of the film used in the output device — in the Page Setup dialog box. In this case, the offending command may be the word **setpageparams**.

A **dictfull** error (with a PostScript Level 1 RIP only) is sometimes caused by a faulty printer driver but can also occur when you nest EPS files inside one another.

The nested files are inadvertently trying to add definitions to one of the many dictionaries in the host file, which has already used up its pre-determined allocation.

An **undefined** error appears when the RIP's interpreter cannot find a command in any of its

built-in or user-supplied PostScript-code dictionaries. Reboot the device, and then make sure it initializes properly. Sometimes, however, you may see a stream of garbage or blank boxes instead of the offending command. They represent binary data and usually mean there's a problem with a placed scan.

At some point, you'll want to try error-handling software. (For more on PostScript error handlers, see “Packing a Preflight Tool Kit,” December '94, page 127.) These tools locate and describe errors and provide clues for debugging problems. To learn more about PostScript errors, get a copy of the *PostScript Language Reference Manual* (Addison-Wesley) and a textbook such as Ross Smith's *Learning PostScript, A Visual Approach* (Peachpit Press). A little knowledge of PostScript can go a long way. ▲

Bob Schaffel is emerging-technologies consultant for R. R. Donnelley & Sons. Chuck Weger is a consultant and publisher of the Photoshop Monitor newsletter.



NETWORKING

FAST ETHERNET /

Fast Cards Ahead of Open Transport

FAST ETHERNET WON'T reach top speed on PCI Macs right away — at least not until Apple ships Open Transport 1.1. Version 1.0 of Apple's next-generation networking software, released in June, is not tuned for network speeds above 10 Mbps. True, the PCI/100BASE-T combination under Open Transport 1.0 is much faster than 10BASE-T Ethernet, but version 1.1 should bring

Mac network speeds in line with those of PC-based Fast Ethernet.

Apple won't ship its own 100BASE-T cards until Open Transport 1.1 is ready at the end of this year, but Open Transport delays haven't kept other companies out of the market. There's currently a boom in Fast Ethernet products: Some Mac vendors have full lines, including cards, hubs, and

bridges, for connecting 10BASE-T networks to Fast Ethernet networks, and PC vendors such as Digital and Rockwell have written Mac drivers for their current PCI Fast Ethernet cards.

The problems with Open Transport are less critical for NuBus Fast Ethernet, because NuBus cards don't require Open Transport software. NuBus has a slower interface than PCI, but Farallon

says that its PCI Fast Ethernet cards are slower under Open Transport 1.0 than are its NuBus Fast Ethernet cards. Dayna, however, says that its PCI Fast Ethernet cards are somewhat faster than the NuBus versions. Under Open Transport 1.1, though, PCI will be the clear choice for speed. / John Rizzo

Fast Ethernet Ship Dates / ready for PCI

Company	100BASE-T NuBus card	100BASE-T PCI card	100BASE-T hub	10/100BASE-T bridge	Phone
Apple	NA	year end	NA	NA	408-996-1010
Asanté	NA	now	now	fall	408-435-8388
Dayna	now	now	now	fall	801-269-7200
Digital	NA	now	NA	NA	800-777-4343
Farallon	now	now	now	now	510-814-5000
Rockwell	NA	now	NA	NA	805-968-4262

PCI Fast Ethernet cards began shipping in June for around \$250 apiece. Mac vendors are following up with hubs and bridges. Neither Apple nor the few PC vendors who plunged into the Mac PCI-card market have announced NuBus Fast Ethernet cards or hubs.

NETWORK MANAGEMENT /

Saber Revamps TechWorks' Tools for New Bundle

ELVIS HAS LEFT THE BUILDING. Saber Software (214-361-8086) has upgraded and repackaged the GraceLAN suite of network-management products it purchased from TechWorks last year. The purchase included the Update Manager and Network Manager applications. GraceLAN Asset Manager remains a TechWorks product.

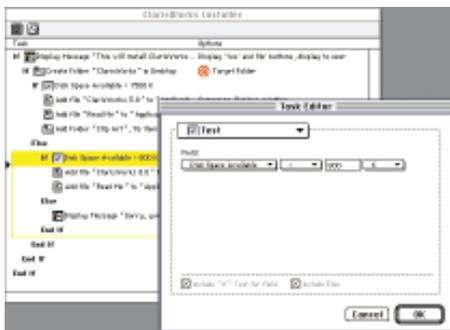
Saber has rewritten Update Manager and given it the new name Software Distribution. It's now bundled with Network Manager and a new utility called Desktop Manager in a single product called Saber LAN Workstation for Mac OS.

Software Distribution automates delivery of software over a network by putting files into compressed "packages" and sending them to users at scheduled intervals. The new version includes a scripting language that allows network managers to customize installation procedures by making installation conditional on particular criteria, such as the presence or absence of older versions of an application.

Desktop Manager is similar to the desktop-management component of Saber's PC-

based network-management application. It allows network administrators to remotely configure the network portion of a user's desktop in order to make servers, update packages, and other items available. Icons representing these shared resources appear on users' desktops, making them easier to locate and access.

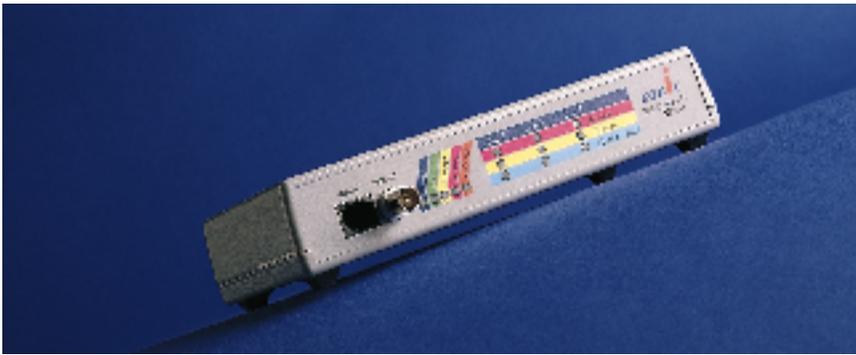
Saber LAN Workstation for Mac OS is distributed on CD-ROM and sells for \$199 plus \$49 per network node. Upgrades are available for owners of GraceLAN products. / Shelly Brisbin



PDA QuickMail

MOBILE MARCO USERS can get to their e-mail with the help of CE Software's MobileVision software, which connects a QuickMail server to the ARDIS wireless radio network. Motorola's Marco Wireless Communicator uses Apple's Newton operating system and includes a wireless packet radio modem. MobileVision resides on the Marco and on a QuickMail server. ARDIS delivers QuickMail messages from the server to a user's Marco. A set of rules built in to MobileVision's server software lets users retrieve only messages meeting a certain filter (subject, priority, and so on) or simply view a list of messages received.

An InfoTAC Personal Data Communicator must be connected to the QuickMail server, and each Marco user must have an ARDIS account. A single-user MobileVision license is \$200; a ten-user license is \$1,500. CE Software plans MobileVision releases for other LAN mail systems and for other data networks. 800-523-7638 or 515-221-1801. / SB



REMOTE ACCESS /

Sonic Systems Dials In with PPP

THERE'S MORE THAN ONE WAY to connect traveling Mac users to the office's AppleTalk network. The new QuickStream/3 server, from Sonic Systems (800-535-0725 or 408-736-1900; sales@sonicsys.com), is the company's first entry into the remote-access market and supports AppleTalk networks via PPP (Point to Point Protocol) connectivity rather than ARA (Apple Remote Access). As with ARA, PPP connections allow users to mount shared volumes and use other network resources remotely, just as they could if they were connected to the LAN via Ethernet or LocalTalk.

The QuickStream/3's three serial ports support major modem brands, and each can communicate at speeds up to 115.2 kbps. The

server, which sells for a very low \$999, includes 10BASE-T and 10BASE-2 (thin) Ethernet ports.

The QuickStream/3 supports TCP/IP and AppleTalk. Windows or UNIX users can use any PPP client to connect to a QuickStream/3 server on a TCP/IP network. The server does not support IPX or other PC LAN protocols, however.

Like many ARA servers, the QuickStream/3 includes Mac management software. It also supports CHAP and PAP authentication, common security schemes in TCP/IP environments.

Sonic wrote its own PPP client, SonicPPP for the QuickStream/3, and an unlimited license is included with each server. SonicPPP works with other PPP servers, such as those run by Internet providers. / SB

E-MAIL /

CE Charts a Course for QuickMail

BEFORE VERSION 3.5 had even reached the shelves, CE Software (800-523-7638 or 515-221-1801) released a road map for the future development of QuickMail. Contrary to usual industry practice, CE has announced specifics about versions 3.7 and 4.0, both of which are expected to ship during the next 12 months.

QuickMail 3.7 broadens links to the outside world. Telecommunications server software, separate from QuickMail's existing server software, will allow multiple simultaneous modem connections to a QuickMail server. It will also support TCP/IP connections to the QuickMail server via MacTCP and the Communications Toolbox. The telecom implementation will be modular, allowing support for new connection technology (wireless, ISDN, and so on) in the future.

At the client end of the remote connections, QuickMail will support off-line message creation and storage, allowing a traveler to respond to mail while disconnected

from the server. QuickMail client software will also include its own dial-in implementation. Currently, remote users must rely on Apple Remote Access or QuickMail's outdated QM Remote to make connections.

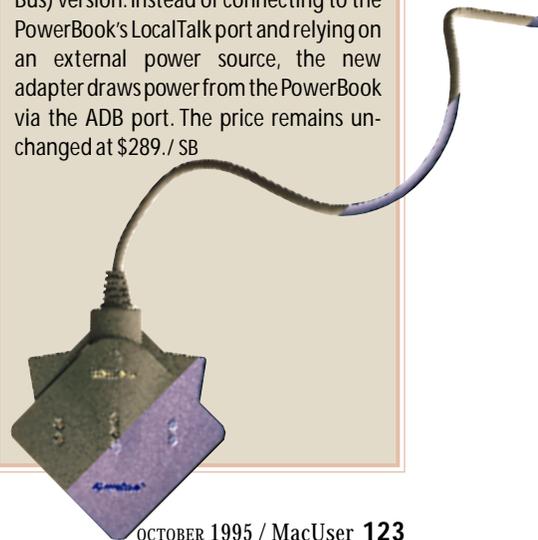
Other additions to version 3.7 will include data compression and the ability to enclose entire folders of files with a mail message.

Details of version 4.0 are still sketchy, but CE has announced plans to upgrade server-administration features. The QuickMail road map promises mail-management and mail-measurement tools, which will allow administrators to analyze and control mail usage. Servers running version 4.0 will support multiple public folders. Also in the works is an overhaul of the current QuickMail forms application.

CE has not announced pricing for new purchases of QuickMail versions beyond 3.5, but for those who purchased QuickMail before September 15, the company will offer free upgrades to version 3.7. / SB

Hubs Aplenty

LOCALTALK IS NOT DEAD, according to NetSpan (800-638-7726 or 214-690-8844), which acquired a 12-port LocalTalk hub from PCom and is now marketing it as the **MultiStar LT**, priced at \$695. The company plans to sell a 24-port version of the managed hub as well. * 10BASE-T isn't gone either. **Sonic Systems** (800-535-0725 or 408-736-1900; sales@sonicsys.com) has introduced a 16-port unmanaged Ethernet hub called the **StarBase T/16**. It costs \$429. * **HoloGate** e-mail gateways, from **Information Access Technologies** (510-704-0160; hologate-sales@iat.com), now support SMTP (Simple Mail Transfer Protocol) mail, making it possible for users of QuickMail, Microsoft Mail, NovaLink, FirstClass, and SnapMail to receive messages from Internet users from within their LAN mail system. Like other HoloGate modules, the new SMTP software is available either as part of a mix-and-match, two-module basic package (\$500 per package) or as an add-on for current users of HoloGate (\$500 per module). * **MR Mac Software** (619-453-2845) has released version 3.0 of **Network Security Guard** (\$259). The upgrade improves password checking and auditing, and it allows network administrators to generate reports and analyze each networked Mac's file-sharing setup and system configuration. Current users can upgrade for \$50 — or for \$30 if they order online (send e-mail to upgrade@mrmac.com) and use a credit card. * At the user end of the network, **Farallon** (510-814-5000; info@farallon.com) has replaced its original **EtherWave MacPowerBook Adapter** with an ADB (Apple Desktop Bus) version. Instead of connecting to the PowerBook's LocalTalk port and relying on an external power source, the new adapter draws power from the PowerBook via the ADB port. The price remains unchanged at \$289. / SB



NET TOOLS / BY CHUCK WEGER

Build a Superfast DTP Network

Reorganizing your network, accelerating file transfers, and upgrading to faster hardware can all keep your graphics network humming.

IN THE GRAPHIC ARTS, we move *big files* — a couple of megabytes per page layout and up to 100 MB or so for a single color image. Luckily, you can speed up a DTP network with faster hardware, smarter configuration,

and new network standards. For simplicity's sake, we'll assume that you're using a fast server with fast Macs and disk drives, all on a 10BASE-T Ethernet network, so those pieces aren't the cause of bottlenecks. If you're using a PowerPC-based Apple Workgroup Server, be sure to use AppleShare 4.1, which is significantly faster than its predecessors.

Rearranging Things

The first thing you can do is replace your hub with a switching hub. Ordinary Ethernet hubs put everyone on the same party line; if many Macs try to send files or print at the same time, network speed goes *way* down. Switching hubs set up a private line between two network devices while they are exchanging data; no other Macs see the traffic. On busy networks, a switching hub can provide a speed boost of around 30 percent.

Network-acceleration software, such as RUN's RunShare (800-478-6929 or 201-529-4600), also looks for network quiet time. It grabs unused bandwidth on the network that occurs between transactions and "fills in the gaps."

If your network is large, you can divide it into separate physical segments with a router. Keep Macs that exchange files frequently and the printers they use on the same side of the router, isolating their transactions from the rest of the network. If your server runs a UNIX, NetWare, or Windows NT operating system, putting multiple Ethernet cards in the server and

connecting each to a different network segment will speed things up by giving users on each segment a direct line to the one place everyone needs to go — the server. Unfortunately, Apple Workgroup Servers don't yet support multiple network cards.

If the bottlenecks have really got you down, move to one of the new network standards. The brightest star on the horizon is Fast Ethernet (100BASE-T). Upgrading all or part of your network to Fast Ethernet means buying new hubs and Ethernet cards and possibly doing some rewiring. If most of your Macs don't transfer large amounts of data, limit your Fast Ethernet upgrade to servers or other busy machines.

Fast Ethernet and 10BASE-T cards are

available for NuBus Macs and for Apple's new PCI-bus Macs. With or without Fast Ethernet, PCI offers another chance to speed up network access: PCI's 33-MHz speed beats NuBus' 10-MHz speed by quite a lot.

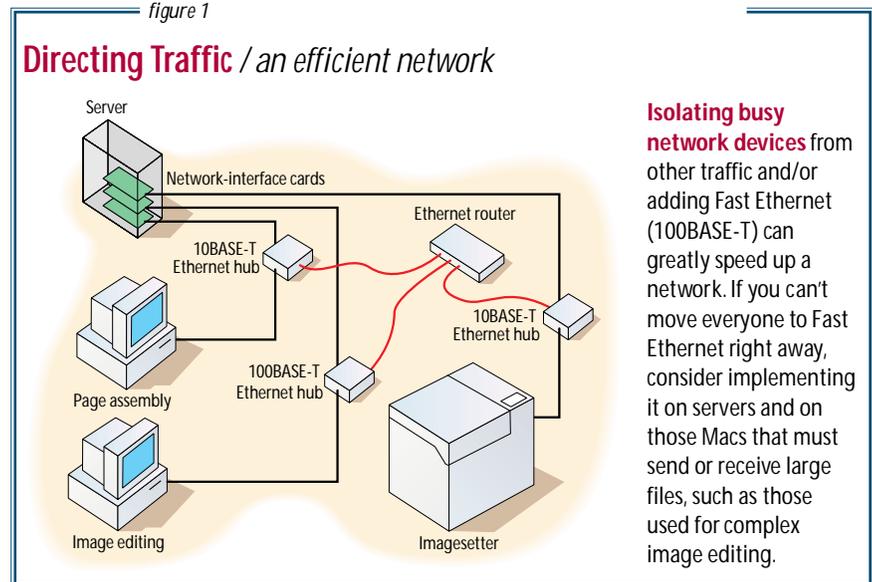
Stay Off the Net

There's one other way to prevent heavy traffic from clogging your network: Keep the data completely off the wire! OPI (Open Prepress Interface) servers do just that, by making low-resolution preview images for use on your design workstations; those Macs never see the huge, high-resolution image files stored on the OPI server and used in printing. You'll need OPI-compatible server software to employ this option. (For more about OPI, see Expert Tips, March '95, page 113.)

If none of these options moves things quickly enough to suit you, there's always sneakernet. ▲

Chuck Weger is a consultant and conference chair of CONCEPTS 96.

figure 1



MAC TO PC / BY JOHN RIZZO



Macintizing Windows

What's the easiest and most efficient way to run Windows 3.1? Here's a hint: It's not on a PC.

LIKE A LOT OF YOU, I've been waiting over a year now for SoftWindows 2.0. Version 1.x of the PC-emulation program does a good enough job of running DOS and Windows software on your Mac, but it has one serious

deficiency — it emulates the older 286 processor, not the 486, which means that any Windows software that requires something called *386 enhanced mode* won't run.

Insignia Solutions has just released the new version of the PC emulator, and it was worth the wait. SoftWindows 2.0 (estimated street price, \$299) keeps Insignia's promise of true Intel 486DX emulation, allowing you to run all DOS and Windows programs on your Power Mac. However, the new version also provides Mac users with some bonuses that just aren't available to those stuck with real Intel hardware: improvements in drivers, networking, and automation that actually make it easier to set up, use, and maintain Windows 3.1 on a Mac than on a PC.

Better Than the Real Thing

Windows drivers are the bane of many PC users' existence. Different drivers for video, sound, networks, and peripherals work with one application or another — or not.

Say you install a new Windows app and a message comes up telling you that it wants 256 colors rather than 16,000. On a PC, that means switching to a new video driver, a change that may slow your machine down. If the required driver isn't installed on your system, you'll have to search for a floppy disk that came with your PC. Or you may end up on the phone with technical support, adding lines of code to the SYSTEM.INI and CONFIG.SYS files. But in SoftWindows, you have none of these problems, because Insignia's version of Windows uses a single video

driver — the Mac driver, which works with any Windows software you install.

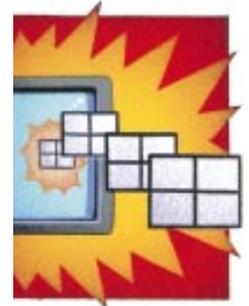
Because SoftWindows 2.0 supports Microsoft's Windows Sound System, which works with most Windows software, there's no hassle with sound drivers. You can play sound for business applications as well as for Windows CD-ROMs and use the Mac microphone to record sound for applications such as Word and Notes. SoftWindows lets you use the Mac's Sound control panel to control input and output volume. It's a piece of cake to operate compared to some of the sound software used on PCs. One drawback is that SoftWindows doesn't emulate Sound Blaster audio cards, which means that although Windows programs such as Encarta can play sound, DOS games that use Sound Blaster (and compatible) cards will be silent. SoftWindows still does Windows better than it does DOS.

SoftWindows makes it easier to work with network drivers and protocols too. With SoftWindows, all Windows network applications use the Mac's Ethernet or token-ring drivers. As for protocols, SoftWindows 2.0 works with TCP/IP, Novell's IPX, Microsoft's NETBEUI, DECnet, and Banyan's VINES-IP. This means you can use Windows applications to connect to the Internet, NetWare, Microsoft NT Server, Windows for Workgroup, and LAN Manager, among others.

Of course, you can do this on a real PC, but SoftWindows gives you additional options. Some Windows networking apps use

Open Datalink Interface (ODI), a high-level driver that enables you to use multiple network protocols simultaneously. Other applications require Microsoft's NDIS, and others still can run with either NDIS or ODI. SoftWindows comes with both of these, and it lets Windows applications use the Mac's networking software as well.

Windows apps in SoftWindows, for example, can use ODI or the Macintosh's MacIPX. (SoftWindows comes with NetWare client software that looks for MacIPX and uses ODI if it can't find it.) The advantage of MacIPX is that it allows multiple Mac and DOS/Windows connections to NetWare at the same time.



TCP/IP in SoftWindows 2.0 is simpler to use than its PC counterpart too, because all Windows TCP/IP applications running under SoftWindows use MacTCP. Moreover, Windows apps in SoftWindows all use a single, universal DLL file to connect to Windows Socket Services, whereas in "real" Windows, each application has its own DLL file. If you were doing the troubleshooting, which setup would you prefer?

Another advantage is that MacTCP lets you run multiple applications at the same time. Since the Mac OS treats SoftWindows (and all the Windows software running in it) like a Mac app, you can run simultaneous Mac and Windows TCP/IP applications. So while you're browsing the Web with the latest version of Netscape for Windows, you can ftp a file with TCP Connect/II.

Because SoftWindows supports Apple events and AppleScript, you can automate DOS and Windows to a degree not possible with Windows on a PC. Apple events in

ILLUSTRATION / DAVID TALLINGHAST

SoftWindows 2.0 can activate any series of DOS or Windows keystrokes. (You'll find AppleScript scripts for SoftWindows 2.0 on ZiffNet/Mac on CompuServe and eWorld.) AppleScript scripts and Mac apps that use Apple events (such as Microsoft Excel) can control the emulated PC, launching Windows apps, entering data, and printing reports. Apple events work even over a

network; Microsoft Visual Basic for Windows doesn't. Or you can use AppleScript to "Macintize" a PC app running in SoftWindows by creating a front end that hides DOS and Windows. For example, an AppleScript script might launch SoftWindows 2.0, connect to a Windows-based database on a network, and prompt users for input.

SoftWindows' AppleScript support also

lets Mac users who don't have SoftWindows access PC applications. Instead, a Mac running SoftWindows can act as a PC-application server. If you enable program linking in the Mac's Sharing Setup control panel, Mac users running AppleScript-compatible Mac applications can link to the SoftWindows machine over a LAN or even ARA.

Right now, Apple-events automation requires that you use AppleScript, HyperCard, QuicKeys, Excel, or other Mac software with Apple-events features to do programming. However, Insignia has indicated that some future version of SoftWindows will be AppleScript-recordable — that is, you'll be able to instruct AppleScript to create scripts automatically simply by registering what you're doing in SoftWindows.

Another nice Mac touch in SoftWindows 2.0 is Apple Guide support. SoftGuide offers Apple Guide help for DOS and Windows newcomers, covering topics such as using the File Manager and DOS floppy disks.

With all this Macintization of Windows, one might wonder just how compatible SoftWindows is with PC software. An early SoftWindows beta version I tested ran more than a dozen Windows applications without a hitch. In fact, the same beta version was compatible enough with the 486 processor to run a beta version of Windows 95.

But don't look to this version of SoftWindows for speed. Your best bet for faster SoftWindows is a faster Power Mac. How much faster will SoftWindows be on a 132-MHz Mac 9500? I don't know, but I'll let you know when I find out. Watch this space. 

John Rizzo, formerly MacUser's technical editor, is now a free-lance reviewer of Mac and PC products.



figure 1 / **Windows a foreign language?** Like older versions, SoftWindows 2.0 runs Microsoft Windows on your Mac, but now there's Apple Guide help.

The 1995 MacUser

SHAREWARE AWARDS

HONORING THE 30 BEST MAC SHAREWARE PRODUCTS OF THE YEAR.

Shareware and freeware programs offer Mac users one of the best deals in the computer industry: inexpensive, or free, programs you can try out *before* you pay for them. *MacUser*, in conjunction with Ziff-Davis Interactive, honors the producers of this year's best shareware with the annual *MacUser*/ZDI Shareware Awards.

You can download these and other shareware programs from online services, such as CompuServe, America Online, and eWorld. This entire collection of winners is available on ZiffNet/Mac, *MacUser*'s online service (see How to Reach Us for access information; the filename for each program follows its name in this listing). Those who don't have online accounts can get shareware from a friend who does, from a local Mac user group, or from a software distributor such as Educorp (800-843-9497 or 619-536-9999).

By Gregory Wasson



UTILITIES

This is possibly the most popular category of shareware and the most varied. The common quality of these three selections is that they make using your Mac easier.

The Winner Is . . .

StuffIt Expander and DropStuff with Expander Enhancer

(STUFEX.SEA and DROPST.SEA). Aladdin's pair of System 7 compression utilities (\$30 for both) form a dream team. These two utilities can compress and decompress files, using almost any Mac, DOS, or UNIX compression scheme you can name. If you deal with a lot of online files or simply want to free up some space on your hard disk, this duo is indispensable.

Honorable Mentions

ShrinkWrap (SHRINW.SIT). This drag-and-drop utility by Chad Magendanz is a freeware replacement, with improvements, for Apple's Disk Copy program. It lets you convert floppy disks into Disk Copy images and open the images quickly and intuitively.

ScrapIt Pro (SCRAPPRO.SIT). John V. Holder's Scrapbook alternative (\$15) lets you do things the Apple Scrapbook won't, such as name items, display a table of contents, and print thumbnails.

SYSTEM ENHANCEMENTS

The Mac has the best little interface in the computing world, but that doesn't stop users from tweaking it with add-ons.

The Winner Is . . .

HoverBar

(HOVERB.SIT). Guy Fullerton's program launcher for System 7.5 (\$5), similar to commercial offerings such as Square One, is way too cool. Among its features are a floating program-launch palette and multiple clipboards.

Honorable Mentions

Décor (DECOR.SIT). You can turn a picture of your dog or the graphic of your choice into your desktop backdrop with this program (\$10) by François Pottier.

Desktop Strip (DESKST.SIT). Sigurour Asgeirsson's utility (\$20) brings the convenience of the Apple PowerBook Control Strip to desktop Macs.

PERSONAL TOOLS

With the right software, your Mac can fill just about any role you need it to, from helping you get organized to protecting your privacy or making groovy sounds.

The Winner Is . . .

CryptDisk

(CRDISK.SIT, demo version). This \$20 security product by Will Price lets you password-protect and encrypt your files. The only place to get information on obtaining the full version is at the ftp site <ftp://ftp.primenet.com/users/w/wprice/README>.

Honorable Mentions

Guy Friday (GUYFRIDA.SIT). Matthew Klein's \$24 free-form PIM (personal information manager) lets you enter data in any order you want, has a powerful search feature, can dial phone numbers, and can send you reminders.

SoundEffects (SEFFEC.SIT). This sound editor (\$15) by Alberto Ricci lets you distort recorded sounds by applying a variety of sound effects.

PUBLISHING TOOLS

Whether you need to get the word out online or on paper, these programs simplify the process.

The Winner Is . . .

Tex-Edit Plus

(TEXEDP.SIT). This System 7-only text editor (\$5) by Tom Bender is a boffo replacement for Apple's SimpleText or TeachText. You can use it to search and replace text in a document as well as to format text you send and receive from online services. It supports AppleScript too.

Honorable Mentions

Acrobat Reader (ACROBR.SIT). Adobe Systems' free viewer for PDF documents was long in coming but worth the wait. It lets you view, navigate, and print PDF files, which seem to proliferate online.

HTML Web Weaver (HTMLST.SIT). This text editor (\$25) by Robert C. Best III lets you easily generate HTML documents for use on the World Wide Web.

GRAPHICS

Conversion may not be a religious experience when applied to graphics files, but it's a crucial function that each of these programs fulfills.

The Winner Is . . .

GraphicConverter

(GRACON.SIT). This graphics-conversion program (\$35) lets you translate to or from virtually any raster- or vector-graphics format you want. It's powerful, fast, and well supported by its author, Thorsten Lemke.

Honorable Mentions

clip2gif (CL2GIF.SIT). This one's simple, small, and free. It converts PICT graphics to JPEG or interlaced-GIF files — important for use on WWW sites. Thanks, Yves Piguët.

EpsConverter (EPSCON.SIT). Artemis Software's utility (\$24.95) converts any EPS file into an Adobe Illustrator 3- or 5-compatible EPS file, for easy editing and transfer to other programs.

NET TOOLS

Having one's own home page is fast becoming *the* status symbol of the '90s. Here's a trinity of tools for the Internet geek in all of us.

The Winner Is . . .

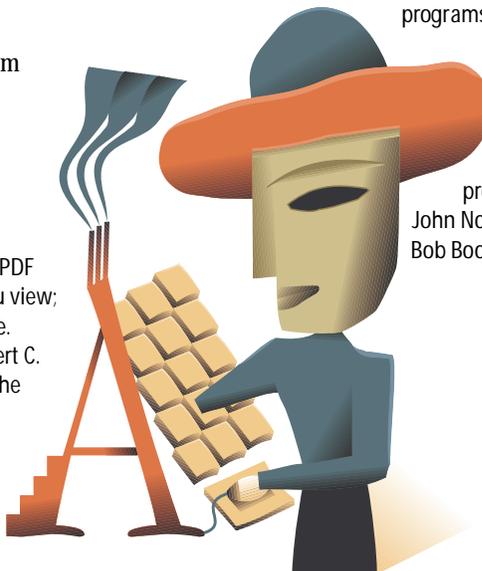
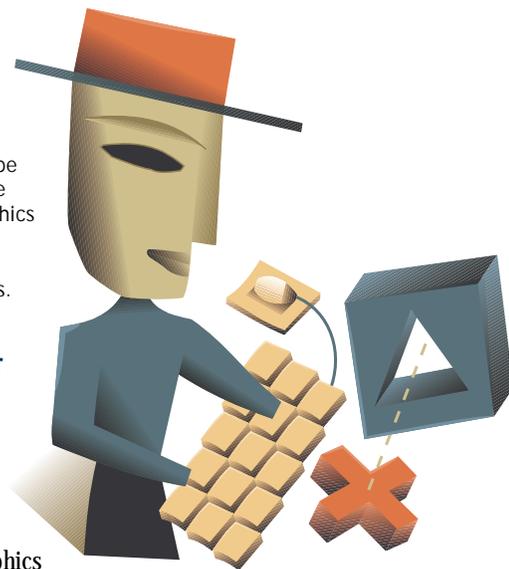
MacHTTP

(MAHTTP.SIT). This astonishing System 7 utility by Chuck Shotton does far more than set up a World Wide Web home page — it actually lets you set up your Mac as a WWW server. It brings capabilities to the masses that used to be the exclusive domain of an elite few.

Honorable Mentions

Internet Config (INCONF.SIT). This free time-saving tool by Peter Lewis lets you set preferences for all your Internet programs simultaneously.

Value-Added NewsWatcher (VANEWSWA.SIT). An efficient tool for browsing and managing Internet newsgroups, this freeware program was created by John Norstad, David Brewster, and Bob Boonstra.



ELECTRONIC PUBLICATIONS

The growing importance of the Information Superhighway has produced a wide variety of free online publications such as this year's standouts. (Note: Look for issues by using the publication's name as a keyword.)

The Winner Is...

MacSense

Brimming with wonderful graphics, useful information, and practical tips about the Mac, this electronic zine from Christopher McVeigh sets high standards for the rest of the online-publishing world.

Honorable Mentions

Information Alley. Tips and tricks about all things Mac are the focus of this monthly publication put out by Apple's Customer Services Division.

PowerPC News. This text-only electronic publication from Chris Rose thoroughly covers news about PowerPC technology and products.

EDUCATIONAL

Keep the gray matter stimulated with these scientific wonders.

The Winner Is...

MPj Astro

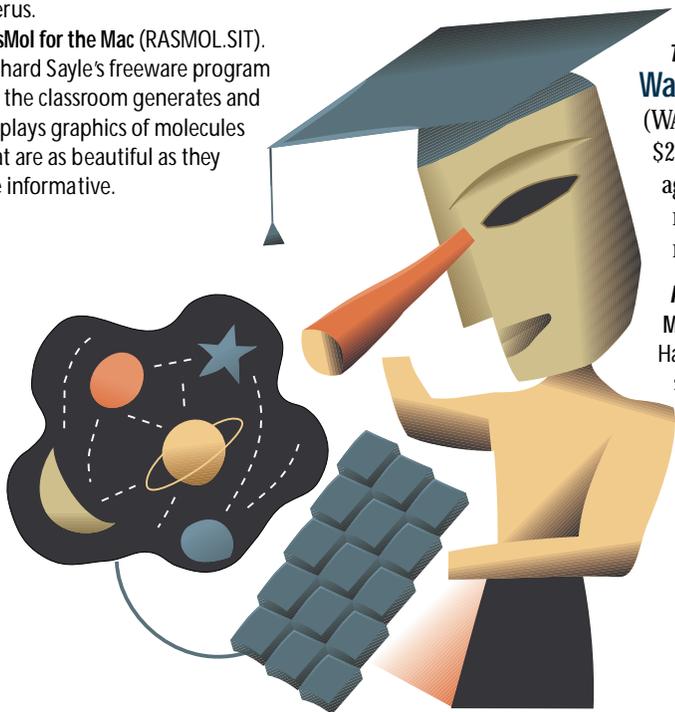
(MPJASTRO.SIT). Definitely the heppiest shareware guide to the universe known to Mac-kind, this outstanding astronomy program (\$25) from Microprojects lets you view the heavens from any place in the world and bring up a list of important celestial objects you can see if you gaze up at the starry skies tonight. Great interface. Easy to use.

Honorable Mentions

Menstrual Cycle and Location of the Uterus (MENCYC.SIT and UTERUS.SIT). These free QuickTime movies by Roy Stringer show the typical 28-day human menstrual cycle and contain a 3-D rendering of a uterus.

RasMol for the Mac (RASMOL.SIT).

Richard Sayle's freeware program for the classroom generates and displays graphics of molecules that are as beautiful as they are informative.



FUN AND GAMES

There's a whole lot of downloading going on when it comes to this popular category of online software.

The Winner Is...

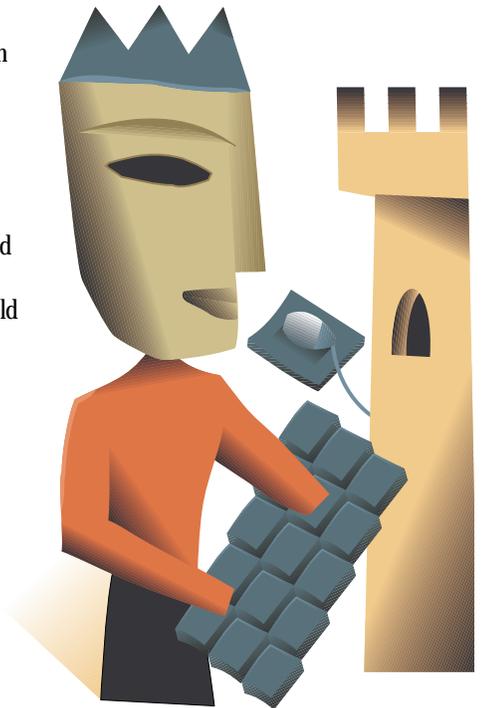
Realmz

(REALMZ.SIT) This role-playing game (\$25) by Tim Phillips and Fantasoftware plunges you into a world of crypts, dungeons, and castles, where your job is basically to seek out adventure. It has developed a cult following that many commercial offerings would envy.

Honorable Mentions

Apeiron (APEIRO.SEA). Andrew Welch just keeps producing one fine game after another. This shareware version (\$15) of the classic Centipede is an arcade all-star.

Prince of Destruction (PODEST.SIT). This arcadelike adventure game (\$25) by Andrew Barry and Tonio and Pamina Loewald sets you off on an exciting hack-and-slash journey.



NEWTON

These programs make bold strides toward making those little handheld devices as practical as they are easy to carry.

The Winner Is...

WakeUpWeek

(WAKEWEEK.SIT). Newtonians will appreciate Ben Gottlieb's \$20 program, which helps them get organized. It's a set of agenda-management tools for handling and viewing Newton notes, to-dos, and appointments in an intuitive and efficient manner.

Honorable Mentions

MPG (MPG.SIT). This very popular \$20 Newton powerhouse by Hardy Macia acts as a mileage log, to help you keep track of travel statistics.

PocketMoney (POCKMO.SIT). Another Newton add-on by Hardy Macia, this \$20 program lets you balance various bank accounts on your Newton. ▲

Gregory Wasson is a MacUser contributing editor and the primary software librarian of FamilyPC Online, the online (AOL) companion to FamilyPC magazine. He can be reached on CompuServe at 72511,36 or on America Online as FPC Greg.

MOBILE MAC / BY SHARON ZARDETTO AKER



Protect Your PowerBook

A PowerBook is more vulnerable than a desktop Mac, so it needs protection from thugs, clumsy strangers, and even you.

BECAUSE IT'S PORTABLE instead of deskbound, a PowerBook is exposed more often than other Macs to certain hazards, such as being forgotten under a plane seat, having someone grab it from a hotel room or

airport, or having someone "borrow" it long enough to have a look at your private files.

If you value your PowerBook and its contents, it pays to be more security-conscious than your average Mac owner.

An Ounce of Prevention

Prevention is, of course, the best medicine. And although it pains my late-'60s flower-child heart to admit it, the best prescription when you travel with your PowerBook is a healthy dose of caution together with a dash of distrust and a pinch of paranoia. Keep your eye on your PowerBook. And keep your *hands* on it in a crowded public place.

If you can't keep your hands on your PowerBook every second, here's something you can keep on it instead: the SonicPro PowerBook Alarm (\$70), from SonicPro International (call the distributor, Versa Lock,

for the product; 800-248-5625 or 818-886-8962). This small motion detector attaches to a PowerBook (see figure 1) with very sticky double-sided tape. Once you've activated the alarm by entering a code into the numeric pad, moving the PowerBook sets off a 110-decibel screech that can be canceled only by punching in the correct code. If you have a habit of dozing off while waiting for a delayed plane, you can use a SonicPro alarm to serve as a combined wake-up/burglar alarm if someone tries to snatch your PowerBook from your side.

A Pound of Cure

If prevention isn't enough, insurance may be what you need. You can find inexpensive

policies, but look carefully at the type of coverage each offers before you buy. Here are some tips that may help you choose the best policy:

Unless you get insurance that specifically covers your PowerBook when you're traveling with it, you'll probably be disappointed. General insurance such as homeowners' or renters' may not cover theft; most policies specifically exclude business equipment. Even if your PowerBook is included, coverage seldom extends to theft that occurs outside of your home. Look for insurance that covers you when you're in transit.

Damaged Goods

Coverage for traveling PowerBooks is not the only issue when you choose insurance. Although a policy may cover damage at home or abroad, it may be particular about what type of damage it covers. One that covers a computer only when it's in your "care



POWERBOOK SECRETS / the prewired AppleTalk network

TO SHARE A PRINTER or information between two Macs that aren't in the same room at home or in a small office, you don't have to pull wires through walls and ceilings or snake them across floors — as long as you have phone jacks near your computers.

Plain old phone wires are all the wiring you need for AppleTalk networking; with the wires already in place, all you have to do is tap in to them correctly and add a simple piece of hardware. Basic phone wiring consists of two *pairs* of wires: red and green, and black and yellow. Newer phone wiring may have additional pairs, but only one pair — the red and green — are used for a single phone line. That means the black-and-yellow pair are available for AppleTalk. (If you have multiple phone lines, any unused wire pair will do.)

The first step is to make sure the second pair of wires is actually

connected. To do so, remove the phone-jack cover and see if the black and yellow wires are connected to the screws that serve as terminals (they'll be labeled by name or with a *b* and a *y*); use the red and green wires as your model for the connection if you have to do it yourself.

Now the even easier part: adding network connectors. Connectors, such as Farallon Computing's PhoneNET Connector, come wired to use the black-and-yellow-wire pair on a network. So all you have to do to hook into the network is plug your "remote" computer in to the phone jack. Do the same with any other phone jack you want to include in the network, and plug in another device, such as a printer. Voilà — there's your network. You can access the printer from a remote room or access another Mac if it's connected to the printer or directly to the network.

/ Rich Wolfson

and custody" is limited. It will pay for damage when your PowerBook crashes to the floor as you jump up to make your flight, but it won't pay for a damaged PowerBook if you check it as baggage or ship it. (If you're shipping your PowerBook and don't have insurance, consider insuring it with the shippers for the full value; otherwise, you'll get no more than the default value, probably around \$100.) If a helpful bellhop who's carrying your PowerBook lets it slip off her shoulder to the floor, you're in a gray area that could go either way.

'Mysterious Disappearance'

On the issue of theft, some policies are less generous than others. For instance, some won't cover a lost PowerBook when there's no evidence of theft, a.k.a. "mysterious disappearance" in insurance jargon. If this wording appears in a policy, it means that you aren't covered in instances such as a PowerBook's being stolen from an unlocked car. If the PowerBook is stolen from the trunk, which later shows evidence of someone breaking in, coverage is available. (Beware of policies that won't cover theft from an "unattended vehicle" at all.)

Evidence of theft is, to a degree, open to interpretation: If you doze off while waiting for your plane and your PowerBook isn't at your side when you wake up, an insurance company can argue that there's no indication of theft. On the other hand, a few eyewitnesses to your running after the alleged perpetrator yelling, "Stop, thief!" is probably acceptable. Make a spectacle of yourself if the situation calls for it.

Narrowing Your Choices

Two computer-insurance companies that friends of mine have been happy with — including the way their claims were handled — are Data Security Insurance (800-822-0901 or 303-442-0900) and Safeware Insurance Agency (800-800-1492 or 614-262-0559). Each charges about \$75 per year for \$5,000's worth of coverage. In going through their basic policies and speaking with representatives, it's apparent to me that Safeware is more mobile-friendly: It doesn't adhere to the "care and custody" issue (a PowerBook that's damaged or that disappears when it's checked as baggage is covered), and the company is not hung up on "evidence of theft" (if your PowerBook

disappears from your hotel room, complaining to the management and the police is usually sufficient proof of theft). Look carefully at any policy you're considering and ask lots of questions before you sign.

For Your Eyes Only

My life is an open book, so I don't particularly care if someone goes through the files on my PowerBook — except, of course, for the sense of violation that ensues. But you may have more, well, *serious* pursuits than I, in which case data security may be important. If so, check out security-software packages. They vary in the levels of security they provide, ranging from keeping away casual onlookers to locking out professional data thieves.

To prevent casual snooping, a program that requires a password to bring it out of sleep is adequate. PBTools (estimated street, \$60), from VST Power Systems (508-287-4600) — a package I often recommend for its battery-tracking capabilities — takes this approach. But it's easy to bypass: Start up without extensions or with a floppy disk, and you can get at anything on the hard disk.

For higher-level data security, you can use folder-level security software such as FolderBolt Pro (estimated street, \$90), from Kent Marsh (800-325-3587 or 713-522-5625). It password-protects selected folders and the items in them, whether you try to open them from the desktop or from within an application or even if you copy them to another disk and try to open them on a different system.

For disk-level protection, you can try Kent Marsh's NightWatch (estimated street, \$70) or DiskLock (estimated street, \$90), from Symantec (800-441-7234 or 503-334-6054). These packages use driver-level protection schemes that lock out unauthorized access to the entire hard disk on startup and wake-up. "Driver-level" means that they alter the hard drive's driver, that invisible piece of software that controls communication between the Mac and the hard drive. (Keep in mind that you won't be able to replace or update the driver while either of these protection devices is in place — you have to deinstall the device first.) These



figure 1 / **Even if you snooze**, you won't lose your PowerBook if you arm it with SonicPro's alarm.

products work only with SCSI drives, not with the IDE drives used in the PowerBook 150; both companies expect IDE versions to be available soon.

T-Shirt Contest

In my July column, I ran a contest to see who could identify the significance of the Drive-Savers phone number 800-440-1904, explaining I had won a small prize from the company for noticing something special about the number. (By the way, this was a onetime, single-prize event from Drive-Savers. It won't do any good to call the company to try and win; I'm afraid the contest is over.) I offered a prize to the first person who sent me the correct answer and have been inundated with messages, about 80 percent of which had the correct information: 1904 is the default date that shows in the upper right corner of the screen for most Macs if all their power is cut off. There's no significance to the digits 440, although several people suggested that they referred to the once-common configuration of 4 MB of RAM and a 40-MB hard drive. Mark Westley cleverly suggested that 440 vibrations per second is the frequency of the note A, as in Apple.

Marc Bodine, of New York, had the swiftest of mail carriers — he was the first one with the correct answer, a full day ahead of everyone else. He showed great intelligence and taste by opting for an alternative first prize: a copy of my most recent book, *The Mac Almanac*. The *MacUser* T-shirt goes to the second person across the finish line, Nicholas Riley, of Cambridge, Massachusetts, who beat the deluge of answers by mere hours. Congratulations. 🐘

Sharon Aker and Rich Wolfson live in an overwired home with underinsured computers but plan to fix that balance soon.

NET TRAVELER / BY MICHAEL SWAINE



Selective Surfing

It doesn't take an act of Congress to get rid of offensive or annoying Internet content.

YOU SAW IT ON CNN: A runaway teen returns safely home after being lured away by a stranger who sent her sexually explicit material over the Internet. The Net can be a dangerous place. Like the rest of the world.

Or like the U.S. Senate, which on June 14 passed a bill denying Internet users the basic rights of free speech now exercised in books, magazines, and face-to-face conversation. Bill Duvall thinks there's a better way to protect children. He wrote the software that sent the first packet across the Internet back in 1969, and he won the first *MacUser* Editor's Choice award for a development product. His latest brainchild is SurfWatch, available from SurfWatch Software (415-948-9500). It's a program that helps parents, teachers, and employers block access to sexually explicit Internet sites. SurfWatch blocks entire newsgroups, plus World Wide Web, ftp, Gopher, and chat sites. It uses a list of sexy sites, updated by subscription (\$5.95 a month), and a pattern-matching scheme to ferret out sexual content by reading packets as they arrive at your Mac. It works with MacTCP-based connections, not online services. SurfWatch costs \$50.

Of course, SurfWatch can't deflect all offensive content, which is the Catch-22 of all information filtering: Until you've seen it, you don't know whether it's objectionable. This is true whether you're trying to screen out sex, kill commercials, or just divert a rushing info stream. Imperfect as filtering tools are, though, they can be a godsend when your information cup runneth over.

The E-mail Malaise. Take e-mail. Some mail readers (Qualcomm's Eudora Pro, Claris E-mailer, and InterCon's Postal Shark) can filter incoming mail. If you get hundreds of messages a day, set up some filters.

Hundreds of messages a day?

Well, say you're interested in creating a World Wide Web page. So you subscribe to the Apple Internet Authoring mailing list (by sending the message "subscribe apple-internet-authoring <your name>" to listproc@abs.apple.com) and the HTML Authors Guild list (send "subscribe html-authors-guild <your email address>" to majordomo@lists.stanford.edu). You then take the weekend off and discover 400 messages waiting for you on Monday morning.

Now that you know what to expect, you can set up rule-based filters to do triage on this mess. Keep the Web-related stuff in one mailbox, or send messages from certain brain-dead bozos directly into the Trash. You can filter by subject, keeping everything involving MacHTTP or Common Gateway Interfaces (CGIs), for example.

Just the News That Fits. John Norstad's NewsWatcher is one of the best tools for accessing Usenet newsgroups, but it doesn't yet have filtering. However, David Brewster and Bob Boonstra's exemplary (and free) spin-off, VA NewsWatcher, does provide filtering; it's available at ftp://grocne.enc.org/pub/VA.NewsWatcher/. With VANewsWatcher, you can kill, keep, or highlight (in one of five colors) any posting, based on its subject, author, keyword, or date. Say you're looking for a used Power Mac. You could subscribe to the comp.sys.mac.wanted

newsgroup and set up a filter to keep only postings with Power Mac in the subject line, and delete the rest. Or if you don't want to miss other bargains, set the filter up to simply highlight Power Mac messages in red, sorting the highlighted postings to the top.

Or you could let someone do it for you: The Stanford Netnews Filtering Service, which you'll find at <http://woodstock.stanford.edu:2000/>, enables you to build a profile of your interests and then regularly sends you Usenet articles that match your profile.



Tip of the Month

You can use two e-mail filters simultaneously for a finer-toothed comb. If you really like reading what Jane Jones has to say on your favorite mailing list but don't have time for the rest, create a filter that drops list postings into a convenient folder but sends Jane's contributions to your in box.

Don't Know E-mail from Snail Mail?

MacUser maintains a list of frequently asked questions (FAQs) about the Internet, *MacUser* itself, and this column specifically. Send mail to faq@macuser.com. *MacUser's* address on the World Wide Web is <http://www.macuser.ziff.com/~macuser/>. You can reach me at traveler@macuser.com. ☞

BY CHRISTOPHER BREEN AND BOB LEVITUS



Help Folder

Fanning the fiery debate about disk-level compression, avoiding disaster when playing Mac mechanic, and learning the basics of installing fonts.

TimesTwo Two Times

BOB: A reader recently berated us for “trashing” the disk-level-compression software TimesTwo (Help Folder, June '95, page 112). She also gave a solution that we hadn't thought of to help out another reader who was having trouble with TimesTwo 1.0 (he couldn't reformat his drive with this program installed, nor could he remove the program): “Tell him to try to get his hands on TimesTwo 2.0. He can use that to remove TimesTwo 1.0.”

CHRIS: Of course, because the maker of TimesTwo, Golden Triangle, went down in flames with nary a word of warning to its customers, version 2.0 is no longer available and cannot be obtained through the normal channels.

BOB: You'll have to beg, borrow, or steal a copy if you need it.

In case you're wondering why we haven't named our helpful, yet embittered, reader, it's because she wants to remain anonymous. You see, I got a second letter from her saying that her hard disk, with TimesTwo 2.0 installed, crashed. She blames the compression program, at least in part, for making her data irretrievable.

CHRIS: If you have had trouble with TimesTwo but you still want to use disk-level-compression software, you can get eDisk,

from Alysis (800-825-9747 or 415-928-2895), for just \$30. However, it's a lot safer to use file-level compression.

Grounding Rules

Q. I've read that you should be grounded before you try to install memory or perform other surgeries on your Mac. Is grounding necessary even if the Mac is unplugged? If so, how do you properly ground yourself?

Joshua G.
via the Internet

CHRIS: Here in Northern California, we consider a vegetarian diet and daily chanting essential for proper grounding. Rainwater mixed with wheat grass is also . . .

BOB: Cut it out!

CHRIS: Bob, I'm sensing some hostility here.
BOB: Joshua, ignore that man. You heard right: You should always ground yourself before mucking around inside your Mac. Grounding yourself discharges static electricity, which can be harmful to your Mac's motherboard and internal peripherals such as SIMMs, cache cards, and NuBus cards.

How do you do it? The easiest way to ground yourself is to touch the metal part of your Mac's power supply before beginning surgery (this works only if your Mac is plugged in). You should touch it again every now and then during the procedure, just to be safe.

Another method is to wear a grounding strap around your wrist and attach it to a grounded object. I've never used one and have never damaged a component — but just because I'm a daredevil doesn't mean you have to be one.

CHRIS: Zapping your components is easier than you think. It takes only 20 volts or so to

damage a computer chip. The thrill you feel when you scrape across a carpet and touch a doorknob is 175 times stronger than this charge. Therefore, I present Chris' Grounding Ground Rules:

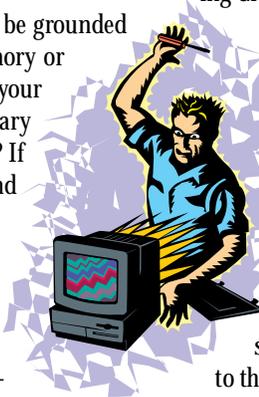
1. Always wear a grounding strap when you open your Mac, and if possible, attach the strap to the earth ground of an AC outlet (the screw that holds in the face plate). Barring this, attach it to the Mac's chassis.
2. Never attach a grounding strap to the inside of a monitor or to the inside of a Mac that has a built-in monitor. Monitors carry serious voltage, and without much effort, you could fry yourself like a piece of bacon.
3. If you can't use a grounding strap and insist on dissipating static electricity by touching the Mac's power supply or chassis, make sure you touch these objects fairly often. And don't take a break to comb your hair or recreate the twist scene from *Pulp Fiction* on your bedroom carpet — these actions are sources of static buildup. If you can avoid working in a carpeted room altogether, great.
4. When you handle circuit boards or SIMMs, hold them by the edges and not by the components.

Font Facts

Q. Where should I put my printer fonts if I have a Power Mac 7100 but no printer? (Please don't use my real name.)

Clueless in Seattle

BOB: Well, Clueless, this one's simple. If you're running System 7 or later (which you most assuredly are, since all Power Macs require it), all you have to do to install a font



WRITE TO HELP FOLDER/TIPS

c/o MacUser
950 Tower Lane
18th Floor
Foster City, CA 94404

Don't want to wait for an answer? Post your question on ZiffNet/Mac, MacUser's online service, or send e-mail to helpfolder@macuser.com or tips@macuser.com. We pay \$25 to \$100 for any undocumented tips we publish.

is to drag it onto the System Folder icon. Presto. It's installed — properly — regardless of whether it's a TrueType or a PostScript font.

The difference between TrueType and PostScript fonts is a subject that could fill several pages. The biggest distinction is that TrueType fonts come in a single suitcase; PostScript fonts come in two pieces, a suitcase (which contains the screen font) and a printer font.

So, if you're installing a PostScript font, drag both pieces onto the closed System Folder; if you're installing a TrueType font, all you need to worry about is one piece.

CHRIS: Since we're speaking to a member of the clue-impaired, I should also mention that even though you don't have a printer, there is a darned good reason to hang on to your printer fonts. It's called ATM (Adobe Type Manager). If you're running ATM and don't have the printer fonts installed, any PostScript text will take on some of the less attractive characteristics of an Aztec pyramid (see figure 1).

BOB: Good point. ATM requires printer fonts even if there isn't a printer within miles of your Mac.

DOS Tactics

Q. Do you foresee any problems if I dedicate my Power Mac's external drive solely to DOS and use a DOS compression program

to do it? I've installed the DOS Compatibility Card. My internal drive has Mac and DOS partitions.

John Elkmann
via America Online

CHRIS: Making the external drive DOS-only is no problem. You can put DOS in a container on a Mac-formatted drive or simply format the entire external drive as a DOS C: drive. But I won't guarantee that the DOS compression software will work. Just because there's an Intel chip stuck to the DOS Compatibility Card doesn't mean that you have a true-blue DOS computer lurking inside your now tainted Mac. Sure, it will work quite nicely with many DOS and Windows applications — I hear that DOOM runs just swell — but will fall on its tiny silicon face with some others. Try before you buy, or make double-sure that a money-back guarantee from your software retailer is in full effect before dish-ing out your simoleons.

After Dark Desires

Q. I had to turn off After Dark (2.0y), because it conflicts with the Japanese Language Kit extension. Will not using a screen saver significantly shorten the life of my monitor?

Seiji M.
via the Internet



figure 1 / **Plagued by the jaggies?** For those running ATM, the jagged look might be caused by not having both parts of a PostScript font (right) installed.

CHRIS: I've changed my tune in the four years since I wrote "After Dark . . . is one of the more beautiful and whimsical solutions to the problem of screen burn-in" (Quick Clicks, October '91, page 87). After Dark is still just as beautiful and whimsical as it ever was, but I'm no longer convinced that screen burn-in is a problem on modern monitors.

If you absolutely can't live without After Dark — and I know there are innumerable treksters out there who just can't get through the day without listening to Leonard Nimoy yodel that awful little ballad from the Star Trek collection — you have a couple of options. Version 2.0z fixes the problem you're experiencing, as well as some other conflicts, and can be obtained for free from Berkeley Systems (800-344-5541 or 510-540-5535). Or if you want to go whole hog, you can upgrade to version 3.0b

TIPS / Utilities

ANIMATING AFTER DARK

Here's a way to make After Dark's PICS Player module play several PICS files in succession, rather than the same PICS file over and over: Make several duplicates of the original PICS Player module (in the After Dark folder), and name the duplicates something like PICS Player #2, PICS Player #3, and so on. Open After Dark, open each PICS Player module, and configure each one to play a different PICS file. Select the Randomizer module, and load your PICS Player module and duplicates. Then watch as After Dark randomly plays your collection.

Stephen E. Snider
San Diego, CA

CONFLICT CATCHER CATCH-UP

Owners of Conflict Catcher II can add printer drivers to the list of items they can switch on and off (a feature in Conflict Catcher 3), using ResEdit. Working on a copy of the Conflict Catcher control panel, open the TYP5 resource and double-click on the resource called No INIT Required. To

add printer drivers to Conflict Catcher's list, simply type **PRER** — case is important — after the last line of text, which should be **appexft**. Save your changes, and restart. The next time you examine your Conflict Catcher list, you will see all your printer drivers.

Jeffrey Robbin, Conflict Catcher's creator
Casady & Greene

MACTOOLS TRASH COLLECTOR

The TrashBack component of Symantec's MacTools provides several ways to delete TrashBack files (files you've trashed that are still on your hard disk). The problem is that no matter which way you delete the files, you must search through TrashBack's hierarchical menu structure for the documents you'd like to remove. Here's another way to view and remove these files:

Restart your Mac with the Shift key down, to disable extensions. Inside the startup volume, you'll find a new folder called TrashBack Protected Files, which holds a mess of folders and files. Simply trash the files you want to lose forever, and restart. The TrashBack list will reflect these changes.

Andrea Okerholm
Sharon, MA



for about \$20, including shipping.

On the other hand, if you're still concerned about burn-in but can get by without this bit of fluff, use the brightness and contrast knobs on your monitor to dim the screen if you intend to be away from your desk for an extended period.

BOB: I love After Dark, but I don't like running any more control panels or extensions than are absolutely necessary. So I switched to Tom Dowdy's freeware screen-saver application, Darkside of the Mac. Because it's an application, it rarely conflicts with anything. And it runs most After Dark modules — all but the Star Trek ones.

Screen Cleaning

Q. What's the best way to regularly clean my PowerBook screen?

C. Pencer
via CompuServe

BOB: I use Klear Screen spray and Klear Kloths, which I order from APS (800-947-8599 or 816-483-1600). Using a mild glass cleaner and a soft cloth is sanctioned by Apple and is definitely less expensive than my approach. But hey, my monitor and PowerBook screen are expensive optical components, so I use nothing but the best on them.

Sixteen bucks gets you a huge bottle of the Klear Screen spray and six soft cloths designed specifically for cleaning optical-grade plastic and glass without scratching it. You can also use it on laserdiscs and CDs. I can play my Matthew Sweet *100% Fun* CD again!

CHRIS: As you may have noticed during my tenure here at Help Folder, I tend to be attracted to penurious solutions. Now if I wanted to simply demonstrate a healthy thriftiness, I'd recommend Radio Shack's \$3.99 Anti-Static Spray Cleaner (part number 64-3310). But for that real cheapskate thrill, I do — quite literally — have another solution.

Around the Breen *maison*, we simply make up a batch of a solution we call Juice. Here's the formula: one part denatured alcohol plus five parts distilled water.

The alcohol works as a light solvent, and because it evaporates, no soapy film is left behind. Just slosh it into a spray bottle, and when you're ready to desmudge anything from a favorite Edith Piaf LP to a computer screen, spray a small amount on a soft cloth

— a hunk of your old flannel jammies will work just fine — and wipe *les lapins de la poussière* away.

BOB: That's "rabbits of the powder," for those of you who need a hint.

CHRIS: I should emphasize that you do *not* want to spray this stuff — or anything else — directly onto your computer screen or PowerBook. No, it won't eat a hole in the surface, but the last thing you need is water and alcohol cascading into the innards of your hardware.

The Service-Bureau Search

Q. How do I find a service bureau? More specifically, I need one that can handle files on SyQuest cartridges and has a 600-dpi printer. I've called printers, dealers, and service reps, but nobody knows how to find this thing called a service bureau.

Ouida Wolfgang
Warminster, PA

CHRIS: It depends on where you live, of course. Because Bob and I reside in areas where the roads are virtually paved with silicon wafers, we can walk downtown, randomly fling a brick, and have a darned good chance of hitting one of these establishments. You may have a bit more trouble in Bucks county.

BOB: Probably the best and safest way to find a reliable, reasonably priced service bureau is to ask for recommendations from a local user group or BBS. If that's not a possibility, you should be able to find one on your own. They're all over the place if you know where to look — try under *Typesetting* in the Yellow Pages.

CHRIS: While you're browsing through the Yellow Pages, take a gander under the *Printers* heading too.

BOB: They're listed under *Typesetting* and *Printers* because most service bureaus have typesetting as their main business, although more and more are specializing in color output.

One warning: Shop around, because prices can vary wildly. What one shop will sell you for \$60 may cost you only \$30 at another.

Floppy Fans

Q. My systems coordinator is continually swearing up and down that we should never use floppy disks for anything but backup and transportation. He warns over and over

that we should store a copy of all our data on a hard disk. In his latest rampage, he said that the fans in the Mac "automatically" deposit dust on the first disk you insert in the floppy drive and that this dust will inevitably destroy data.

Does this guy have a valid point, or is the only point on the top of his head? I'd like to show our staff the real scoop in writing.

Eugenia Dayo
Anchorage, AK

BOB: Show this to the pinhead: Bob says, "Calm yourself. Millions of people have used hundreds of millions of floppies successfully. If they had all lost data, you would have heard the screaming from around the globe, all the way back to Alaska. Furthermore, to blame data loss on the Mac's fan design does its generally excellent engineering a disservice."

CHRIS: And tell him Chris says, "Floppies can be more reliable than hard drives. I'm using a couple of old Jasmine drives, which failed me years ago, to shore up the southwestern corner of my house, yet I'm able to this day to play an ancient copy of Lunar Rescue from its original floppy."

However, I will admit that on some older Macs — specifically the IIci and the IIcx — the fan sucks air directly through the floppy-insert slot, causing dust to coat not only floppy disks you insert but also the floppy-drive innards. If you have one of those Macs, all you have to do is cover the slot after you've inserted a disk — a Post-it works fine as a slot cover.

BOB: On the other hand, old pointy has a valid point — data stored on floppies will someday be lost. The big question is, When? All media — magnetic disks, magnetic tape, optical discs, whatever — has a limited life expectancy. Anything you store on any kind of media will someday die. But most media, floppies included, should last years before failing.

Anything worth saving should be saved multiple times, preferably on multiple media — say, one copy on floppy, another on tape, and yet a third on your hard disk. ☞

Bob LeVitus is the director of evangelism for Power Computing. Christopher Breen hasn't been able to weasel a new Mac clone out of Bob.



You can find the shareware and freeware programs referenced in this article in the MacUser and ZiffNet/Mac areas on CompuServe and eWorld. See How to Reach Us for instructions on accessing ZiffNet/Mac.

Talk Like an Egyptian

Well, maybe not an Egyptian — but if you want to learn a new language, the Mac has the means to teach you.

BY NANCY PETERSON

IN MY PAST LIFE as a Spanish teacher, one of the assignments I gave my charges was to put labels on objects around the house — *la lámpara* on a lamp, *la ventana* on a window. I like to think this assignment helped them along the path toward fluency, although the angry father who swallowed a label his eighth-grade daughter had attached to *una albóndiga* (meatball) might not have agreed.

Mac Tutor

Mac software tackles the task of teaching language in a variety of ways. One of the best solutions I found is **Rosetta Stone** (list price, \$395), from Fairfield Language Technologies (703-432-6666). The beauty of Rosetta Stone is that it teaches you to *think* in the new language rather than translate. You simply match pictures with vocabulary — first with individual words and then with phrases,

whole sentences, and finally paragraphs. Because you control the speed at which you receive information, you're unlikely to get frustrated and go running for the comfort of a bilingual dictionary. If you're put off by the \$395 price tag on the 92-chapter programs, you can get a version that includes 22 chapters in five of the languages for \$99.

The programs that best utilize the Mac's multimedia capabilities are those in the **Learn to Speak** series (available in Dutch, English, French, Japanese, and Spanish; estimated street price, \$95), from The Learning Company (800-774-4568 or 615-558-8270). These easy-to-navigate programs combine traditional exercises with QuickTime movies of foreign

I still believe that surrounding yourself with the sight and sound of a foreign language is the surest way to learn it, but now I've found a better tool than handmade labels: the Mac, with its diverse set of resources for expanding your linguistic repertoire. Whether you want an electronic teacher, games, literature, or an online community of foreign-language speakers, the Mac is your ticket abroad.

lands and native speakers. Despite these advantages, I found **Learn to Speak** sluggish overall, and its two-person (or more) text conversations induced some bad flashbacks to high-school language textbooks. And like a high-school textbook, **Learn to Speak** requires translation and memorization for success.

Business travelers who want to master the basics should check out **Berlitz Live!** (available in Japanese and Spanish; estimated street price, \$80), from Sierra Online (800-757-7707 or 206-649-9800), another series that relies heavily on translations. Berlitz Live!'s outstanding cartoon graphics feature conversations about — appropriately — business and travel, and the programs include helpful cultural notes. (For instance, it's rude to "spear your food with your chopsticks.")

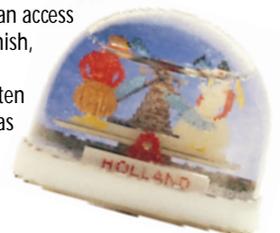
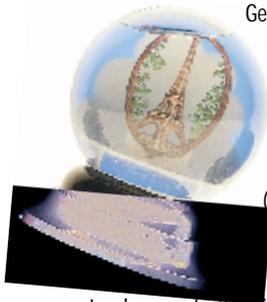
Regardless of the program you choose, it's a good idea to equip yourself with a Mac microphone. All three of these programs let you record your own voice to compare your pronunciation with that of a native speaker. You might be shocked to hear your own accent, but it's for your own good.



Learn by Playing

If all this sounds too much like school, sample some software that combines lessons with recreation. These programs are probably best suited for intermediate students (or those burned-out on tutorials); all but one, however, include features that make them accessible even to beginners.

I hardly speak a lick of French, but I was engaged by **Le fils d'Astérix** (list price, \$60), from Gessler (800-456-5825 or 703-345-1429), and **Transmanche Adventure** (list price, \$50), from Karma Labs (800-843-9497). The Astérix CD-ROM brings to life a popular French comic book, adding super sound effects and dramatizations of the characters' voices. You can access English, Spanish, Italian, or German written translations as you listen to





the story in French; a separate section lets you study the comic frame by frame

and work on your pronunciation. Transmanche Adventure is a game that involves buying and selling products for maximum profit in Paris and London. You communicate in both French and English, depending on which country you're in. If you become totally confused, you can access English translations (although you'll lose points).

Students of Spanish can play **¿Dónde está Carmen Sandiego?** (○○○○; list price, \$80), from Gessler. It's just like the popular English version and just as excellent. This program doesn't give you translations, though, so you'll probably need at least an intermediate understanding of Spanish to solve the mystery of Carmen's whereabouts.

If you're tired of the dry dialogues in some tutorial programs, take a break with the **Language Now!** series (○○✳; available in French, Italian, and Spanish; estimated street price for CD-ROM, \$75), from Transparent Language (800-752-1767 or 603-465-2230). Each disc contains three original stories, accompanied by drills and English translations; you can also record your voice and check your pronunciation. Additional stories, including titles by authors such as Cervantes, Kafka, and Flaubert, are available for \$15 to \$40 each. Unlike the other programs described here, Language Now! is strictly a black-and-white, text-



based affair — you might want to hold out for version 4.0, which will have graphics and should be shipping soon.

Live Interaction

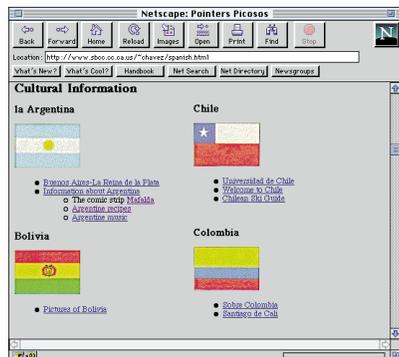
You've got the basics down, but you're not quite ready to face a Parisian waiter? Go back to your Mac, and get online. In the foreign-language forums you can eavesdrop on conversations until you're ready to jump in, and many forums are open to those who need to fall back on English. I had great success coaxing people into conversation by trading English lessons for lessons in another language.

You'll find foreign-language forums on any of the online services. On CompuServe, for instance, the Foreign Language forum and the World Community forum have conversations in just about every language you can imagine. If you want to focus on German, check out the Deutsche Computer forum; for Chinese, go to the Hong Kong forum; for Spanish, try the Mexico forum.

To find foreign-language newsgroups on the Internet, first figure out how to show a full list of newsgroups (it'll depend on the software you're using) and then scroll to the groups that begin with soc.culture. These newsgroups are likely to use a variety of languages. Don't limit yourself to surfing the newsgroups, though — root around. In one Net location (<http://www.sbcc.ca.us/~chavez/spanish.html>) ✳, I found a Spanish comic strip as well as Argentine recipes in Spanish. I downloaded the recipes and learned the language while I cooked.

Por Fin

The best part is that this lesson in culture and cuisine did not involve any handmade labels — testimony to the Mac's efficiency and safety as a foreign guide. So until you can go to the Andes (or Mount Fuji or the Matterhorn), let your Mac bring the Andes to you. ▲



The Two Dads

BY RIK MYSLEWSKI AND JIM SHATZ-AKIN

JIM: I don't get it. They're equally big, bulbous, and baby-faced, and yet while one can be charming, the other's alarming.

RIK: Bill and Newt?

JIM: No. Big Bird and Barney.

RIK: You've been a dad for just two months, and you're already contemplating Saturday-morning aesthetics.

JIM: Seriously, though, why do your daughters love Living Books' **Ruff's Bone** □, while the same company's **The Berenstain Bears Get in a Fight** bores them?

RIK: Subtle distinctions: Sweet versus saccharine. Childlike versus childish. Smart versus smarmy.

JIM: **Arc of Doom** versus Carmen Sandiego.

RIK: You got it — but to be fair, although Arc scores higher on the "hip" scale, Carmen matches it for educational content and boasts one of the strongest female characters in kids' software.

JIM: Some have voices so sticky-sweet that I can't imagine how you can stay in the same room while your kids are using your Mac.

RIK: Get used to it, bud. Very young children — that's your Bailey in a few years — find warm-'n'-fuzzy characters comforting. And they can sit through programs *over and over and over . . .*

JIM: So I should just take a shot of insulin and wait until Bailey's ready for Quentin Tarantino?

RIK: No. There's hope: Kids like humor, and some software has gags that we grown-ups can enjoy too.

JIM: **Elroy Goes Bugzerk** ♦ is a good example: It's clear that the developers were amusing themselves as well as the little ones.

RIK: But even great shtick can get old *real* fast: the dreaded *Saturday Night Live* syndrome.

JIM: Randomness can help — many Living Books have characters that do different things each time you click on them.

RIK: Even better are variable-plot games or exploratory stories like **Cosmic Osmo and the Worlds Beyond the Mackerel**.

JIM: Add a dash of wit, and plots can thicken without congealing into nauseating goo.



Arc of Doom ○○○✳

Ages: 10 – adult.
Price: CD-ROM, \$49.95 (list).
It's Carmen Sandiego with attitude. Kids learn about geography and ecology as they try to halt natural disasters in this sci-fi game.
Company: SunStar Publishing, New Haven, CT, 800-660-4480 or 203-785-8111.
Reader Service: Circle #421.

Cosmic Osmo and the Worlds Beyond the Mackerel ○○○○✳

Ages: 5 – adult.
Price: CD-ROM, \$49.95 (list).
Kids guide Osmo, a pudgy space alien, through puzzles and surprises in a wide-open exploratory story.
Company: Cyan, Spokane, WA; 800-718-8887 or 509-468-0807.
Reader Service: Circle #422.

Elroy Goes Bugzerk ○○○○

Ages: 7 – adult.
Price: CD-ROM, \$49.95 (list).
Kids learn insect facts while helping smart-alecky Elroy and his pleasantly sarcastic dog, Blue, win the Insectathon.
Company: Headbone Interactive, Seattle, WA, 800-267-4709 or 206-323-0073.
Reader Service: Circle #423.

Ruff's Bone ○○○○

Ages: 3 – 8.
Price: CD-ROM, \$40 (estimated street).
Lovable, luckless Ruff the dog looks high (outer space) and low (underground) for a misthrown bone that's always one step ahead of him.
Company: Living Books, Novato, CA, 800-521-6263 or 415-382-4400.
Reader Service: Circle #424.

The Game Room

BY BOB LEVITUS

TRULY SERIOUS GAME PLAYERS must wander away from the software section of a store's computer-game aisle from time to time and have a look at gaming hardware. This month's column covers a trio of hardware products that will add new dimensions to your Mac games.

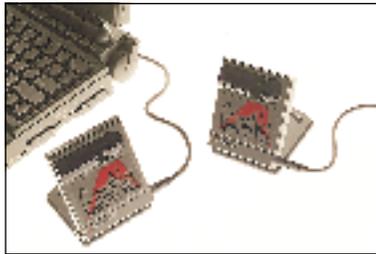
The GameNet makes connecting up to opponents to play games over a network as easy as playing patty-cake. The Mac GamePad and the Jetstick open up a slew of games you couldn't play without them.

GameNet

Look, Ma, No Wires

The GameNet is a pair of adapters you plug in to two or more Macs to connect them wirelessly. And why do you want to do that? To play networked games, of course. In fact, a two-person copy of Marathon comes with the adapters. (These same adapters can also be used for file sharing, printing, and PowerBook synchronization.)

Setting up the GameNet is a breeze — just plug one of its connectors in to the ADB port and the other in to the printer port of your Mac and, voilà, you have a



LocalTalk connection. There's no software to install. You don't even need a power cord, since the devices draw their power from the ADB.

Once you've installed the adapters, you can sit anywhere you want in a room up to 25 x 25 feet in size and still be connected. Aiming the adapters at the ceiling gives you the widest range for connecting, because they use diffuse infrared light.

Overall, the GameNet has one of the highest "wow" factors of any product I've played with this year. I have only one complaint: At \$160, it ain't cheap.

Mac GamePad

Control Freak

The Mac GamePad is a joystick and game-control pad all in one. The strength of this device is its flexibility.

The GamePad can work like controllers for Super Nintendo or Sega Genesis game consoles if you choose to control the eight-direction movement pad with your thumb. But you can also use it as a joystick by simply screwing in the stick attachment that comes with the GamePad. It also has four "fire" buttons you can define to trigger up to four different actions. Or you



can switch off all those features and use the device as a mouse.

Its control-panel software is smart — it lets you assign sets of actions to the buttons and the movement pad for each game you play. You can also use the software to alter the sensitivity and repeat rate of actions.

With its low price, good looks, and extensive configurability, the Mac GamePad is a welcome addition to almost any gamer's arsenal.



Jetstick

It Flies Right

The rugged feel of the Jetstick joystick leads me to believe its maker's claims that the buttons and triggers can withstand 10,000,000 shots. I suspect that the Jetstick can take more abuse than the Mac GamePad, although try as I might, I couldn't break either of them during weeks of frenzied testing.

The Jetstick is well suited to flight-simulation-type games, because of its responsive feel and specialized grip. But it's not as flexible as the Mac GamePad. For instance, the Jetstick has only two configurable fire buttons, whereas the Mac GamePad has four. Of the two, only the GamePad gives you a choice of thumbpad or joystick. Both have software you can customize for any game, but the Jetstick's software isn't as refined as the Mac GamePad's.

If you need a joystick for flight sims, the Jetstick is a good choice, because it gives you a realistic feel. The Mac GamePad, on the other hand, can be used with a greater

Cheat Sheet

BY ROMAN LOYOLA

Sting Like a Hornet

You've just plugged in your new joystick for your flight sim but now realize that it'll take more than a delicate touch to conquer the wild blue yonder.

Here are a few tips as well as an undocumented feature in the popular flight sim F/A-18

Hornet, by Graphic Simulations.

- **If you want to avoid detection** by SAM sites and planes, fly at an altitude below 100 feet. Use your shadow to help guide your distance from the ground.

- **Don't waste your ammunition.**

One way to conserve is to monitor the distance of your target before you fire away. An AMRAAM missile is pretty accurate when it's within 10 miles. A Sidewinder is accurate within 5 miles.

- **One feature you won't find** in your manual is a way to fly planes other than an F/A-18 Hornet in this simulation program. You can fly others by holding down the Option button when you select Tour of Duty. Then enter one of the following sets of mission numbers and airplane names:

#	PLANE	MISSION
01	MG27	BLACK GOLD
02	AWAC	BIRD DOWN
03	MG27	YOU CAN'T HIDE
04	MG27	HEMLOCK
05	SU27	JUST SAY NO
06	MG27	DUCK HUNT
07	B52G	BOMBER RUN

Remember to enter them exactly as they're listed here, because the program is case-sensitive.

- **If you want the ability** to alter the mission on a pilot file, get F/A-18 Mission Chooser. It's available from most online services.

variety of games, is more configurable, and costs much less. ▲

Bob Levitus is a MacUser contributing editor and Power Computing's director of evangelism.

GAME POINT

The GameNet is one of the neatest complements to game playing I've seen. It makes it easy to connect two or more Macs wirelessly.

As for joysticks and game controllers, I liked the Jetstick for use with flight simulators. But if you're looking for a controller that's flexible enough to use with many types of games, you'll find the Mac GamePad a better and less expensive choice.

GameNet

Price: \$160 (estimated street), including a two-player copy of Marathon.
Company: Photonics, San Jose, CA; 800-997-2326 or 408-955-7930.
Reader Service: Circle #425.

MacGamePad

Price: \$30 (estimated street).
Company: Advanced Gravis, Burnaby, BC, Canada; 604-431-5020.
Reader Service: Circle #426.

Jetstick

Price: \$55 (estimated street).
Company: CH Products, Vista, CA; 619-598-2518.
Reader Service: Circle #427.



Performance Anxiety

SO I'M IN NEW YORK TO WATCH THE video downlink for the rollout of Apple's newest PowerPC 604-based computers as

well as a new color laser printer. As the show progresses, I start to think that Apple has the right idea here: Show equipment for the graphics and publishing community that easily outperforms anything else available. Everything is going smoothly until I see the big blunder. Just when Apple can deliver a coup de grâce to the PC, it drops the ball.

During the presentation (and, by the way, let's get some personality transplants for these "new" Apple spokespeople!), Apple decides to put a new 604-based Power Mac up against a dual-processor Pentium system for some heavy-duty Photoshop special effects. It's not known if the concentric-multiprocessing Pentium system can actually optimize the software — probably not. Whatever the case, the Apple folks begin a Gaussian blur or some equally arduous process on both machines at the same time. Tick tick tick. Everyone waits in anticipation. Tick tick tick . . . bingo! The Mac finishes first! Yes! Everyone is ecstatic. Now when will the Pentium finish?

Holy Toledo, they cut away from the Pentium and start spouting some gibberish about the new machines. Hang on, I'm thinking. Does the Pentium take all day? Does it finish one second after the Mac? What? We are left in the lurch by this boneheaded change in direction. Doesn't anyone at Apple have a sense of the dramatic? Don't they think someone might want to see exactly how slow the Pentium really is? I suppose the Pentium's time to the finish line will remain a secret forever.

This incident really upset me. Especially since the real data coming out regarding Photoshop performance indicates that a 604 can run math-intensive functions two times as fast as a Pentium can, owing to an

incredibly superior floating-point system within the chip. I'm further distressed by publications such as *Microprocessor Report* (June 19, '95, page 12) that ignore these realities and look only at raw integer performance in chip comparisons of the Pentium and the 604. That particular story has no comparison of the seemingly more important floating-point performance of the two chips. I say "seemingly more important," because people are using these fast systems for graphics, not just for word processing and data management. *PC WEEK* tests indicated that the 604-based Power Macs are twice as fast as Pentium-based PCs for graphics apps. This finding was further confirmed by *PC Magazine*. If someone can reduce a ray-trace rendering time from four hours to two hours, don't you think that's an advantage worth promoting?

Of course it is, but Apple doesn't seem to understand this at all. And Apple's lack of understanding was epitomized by the failure to ridicule the Pentium as it labored over that Gaussian blur onstage.

Advice to Apple: Advertise performance. Put the Power Mac side by side with a variety of typical PCs. Show the performance differences on TV and in print media. In many countries, this kind of comparative ad is illegal, because it shows distinct advantages. Apple should capitalize on its clear performance advantage. Get a clue!

In the past, and up until Windows 95, there was still a leftover perception (not totally exploited by Apple, either) that the Mac

was easier to use and set up than a PC. The gap insofar as ease of use is concerned has narrowed. The Mac is still easier to use, but not by as much as some people would like to believe. Worse, the Mac's versatility is less than that of a PC, because most PCs have some form of multitasking. Combine that with cheap peripherals, and what can Apple offer in response?

Performance. Performance has always led the desktop-computing parade. That's why there's such an overall panic to increase performance in every way, all the time. Processors are faster. Hard drives are faster and bigger. Everything improves at breakneck speed. When Apple was using the 68000 chip family and the PC world was using the 80X86 family, performance was very close. The 68000 had some minor advantages in the early going, but nothing

spectacular. But no matter, Motorola seemed to get distracted and Intel suddenly shot ahead with the 486 and the Pentium. It was obvious a few years ago that Motorola was falling behind Intel in the performance game. Then along came the PowerPC chip. It's now clear that the PowerPC is the superior chip in integer and floating-point benchmarks — floating-point tests in particular. And there's no reason not to believe that this chip family will hold steady and maintain the edge.

Given all that, how do Apple's leaders plan to exploit this clear advantage? If they have a plan, it's a well-kept secret. Kind of like the secret length of time it took that dual-Pentium system to finish the calculation during the latest Power Mac rollout. ▲

