

APRIL 1995 / \$3.95

Mac User

FIRST MAC CLONES

HOT NEW MACS

(That Don't Come From Apple)

PLUS

Word 6.0 Showdown
Which Word Processor Is the Right One for You?

New Net Traveler
Your Monthly Guide to the Internet

Hot Reviews
Quicken 5.0
ClarisWorks 3.0
Star Trek CD-ROM



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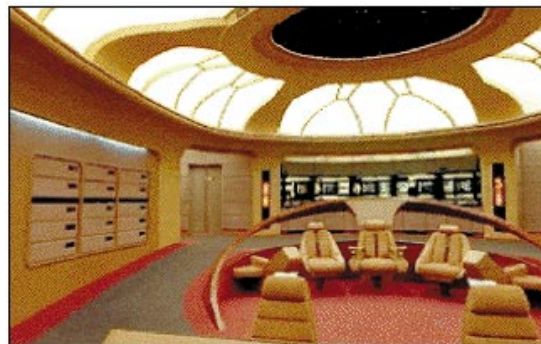
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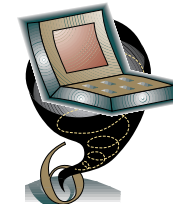
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and **Derek Van Alstyne** 1967 – 1989



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LETTERS

Practical Prognostications

MAGGIE CANON PREDICTS that 1995 will be The Year of the Clone ("New Year's Predictions," January '95, page 21), and I can hardly wait. Over the last decade, I have run a bunch of Macs and DOS/Windows boxes in a rough environment. We've had Apple and IBM brand-name stuff as well as clones. We run our computers long and hard, and we put 'em away wet, when we bother to put them away at all.

When it comes to long-term reliability in a tough environment, this is what we have found: IBM is the worst, and every one of the clones, no matter how cheap, has been better than Apple machines. We love the Mac OS and the plug-and-play integration of the Mac platform, but Apple hardware has never impressed us. What I want now is to see that cute new Mac OS logo boot up on a Sony; a Toshiba; or better yet, a CompuFlyByNight box. Bring on the clones!

Ski Milburn
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Windows Wish List

LAST WEEK I went to a seminar on Windows 95 offered by Microsoft. I've worked extensively with Macs, but my current employer has only DOS machines.

Microsoft is proud of Windows 95. The presenter kept going on about its 32-bit architecture, true multitasking, OLE, plug-

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and-play capabilities, new intuitive GUI, a trash can on the desktop, and one thing he was particularly proud of: how a status bar that measured the progress of the process came up when copying files.

"I want it now," my boss said. If he had bought Macs for the office three years ago, he would have had most of those features for the past three years! And not pseudo-plug-and-play but the real thing.

I don't understand why businesses do not switch over to the Mac. Every day I use my Pentium, I think, "God, if only I had a Mac."

Thanks. I feel better now.

Rich Keightley
keightley.1@osu.edu

Spinning Our Web

JUST THOUGHT I'd write to say I have just discovered your new World Wide Web site (<http://www.macuser.ziff.com/~macuser/>). What a great idea! I haven't received the December issue of the magazine yet, but imagine my delight when I found the very articles I was looking forward to reading available on-line. Thanks a lot. This is a wonderful service!

Rob Goodall
Rob_Goodall@mindlink.bc.ca

THANKS FOR THE MacUser home page (<http://www.macuser.ziff.com/~macuser/>) on the World Wide Web. As a longtime subscriber, I have come to depend on MacUser as an important source of accurate information in my role as a support coordinator. This new tool, a dynamic home page, adds to your credibility as a leading-edge publisher of Mac-related information! I'll be accessing it at least once a week.

John H. Treble
via the Internet

Color Them Cheap

I'M SHOPPING FOR an economical color printer for "serious" home use and read with great interest your "Low-Cost Color Shootout" (January '95, page 70). Sadly, you left me and others who work with PostScript graphics wanting more information.



OPEN FOLDER

The end of the world has been forecast for thousands of years, although the deadline keeps getting pushed back. Now we have it on good authority that the computer world could end on December 31, 1999. According to Peter de Jager, who wrote to us via the Internet, on that day, "more than 80 million PCs will be switched off as people leave work. When they return, their computers will not know the correct date." We might worry about that tomorrow, but tonight we're gonna party like it's 1904.

The future can be a scary place, especially when your software is set to self-destruct. Luis Shein, of Piedmont, California, points out that Adobe Photoshop 3.0 was designed to stop working January 1, 1995. Although this was simply a case of a security precaution from Photoshop's beta-test cycle run amok (it's since been fixed with a software patch), Luis spies a software-company conspiracy to make us buy new versions of their software on a regular basis. "Companies such as Adobe are trying to condition users to accept this scheme!" he writes. For our pithy answer to Luis' letter, be sure to run out and buy a copy of next month's MacUser.

Never let it be said that Open Folder isn't a place for serious thought. Our January comment that Technical Director Henry Bortman is running System 9 on his 1984-vintage Mac prompted Eugene Ko to weigh in via the Internet: "Have you considered the serious ramifications that using software that hasn't been designed yet could have for the space-time continuum?" Of course we have, Eugene, but we figured that if it hasn't stopped any of the beta testers for Windows 95, why should it stop us?

The cutting edge is sharpening every second, but that doesn't faze Mimi Rehor, who dropped us a note from the Mac IICI she keeps on a sailboat anchored off the coast of Miami, Florida. "We're totally solar-powered, unless there's no sun for four days," she writes. You may think you're safe out there, Mimi, cut off from the Infobahn and the electrical grid. But answer us this: Will that protect you when December 31, 1999 rolls around?

ASK DR. POWER MAC

I AM CONSIDERING a motherboard upgrade for my one-year-old Centris 650 with a CD-ROM drive and 40 MB of RAM. I have been told it would be more cost-effective to just sell my 650 and purchase a Power Mac 7100. Is this a good option?

Mike Lawless
via ZiffNet/Mac

I OWN A PERFORMA 600CD and want to upgrade to a Power Mac 7100AV. Will the upgraded machine have any differences from a real Power Mac?

Robert Klein
Bowling Green, KY

/The AV upgrade costs about \$1,700 (non-AV, \$1,500). A new Power Mac 7100/80 with 8 MB of RAM, a 700-MB hard drive, and a CD-ROM drive costs about \$3,200. Which is the better deal depends on how much money Mike can get for his Centris 650. But he should definitely plan on saving his old RAM.

The upgraded machine will perform as well as a new 7100AV, because it includes the same motherboard. The only difference in speed between the upgraded machine and a new machine will be the hard drive.

I WISH SOMEONE could tell me why Apple seems to have no plans to port HyperCard to the new platform. Here we have an application that is processor-hungry and relatively slow. Why would I buy a new computer now, when there's virtually no hope of the application I use the most going native in the near future?

David Axworthy
Tulsa, OK

/We don't have word on when Apple will make a native version of HyperCard. A native version of SuperCard, a program similar to HyperCard but with more-robust multimedia capabilities, should be shipping by the time you read this. You can contact Allegiant Technologies, the maker of SuperCard, at 619-587-0500.

IF IBM'S UPCOMING PowerPC machines follow the same hardware specs, will I be able to buy an IBM PowerPC machine and install the Mac OS?

Don Adams
DonAWWd@aol.com

/According to Apple, machines based on the Common Hardware Reference Platform (CHRP) will be able to run the Mac OS. These machines will be available sometime in 1996. IBM should have PowerPC systems out sometime in the first half of this year, but it's unlikely that these models will run the Mac OS. For more information, see "Here Come the Clones," February '95, page 76.

You said the printers you profiled use QuickDraw, but you did not describe what would happen if the user tried to print EPS graphics from Adobe Illustrator or PageMaker. You'd get a low-resolution printout based on the screen image, right? You also failed to mention that at least one of the printers can use PostScript rasterizing software to handle PostScript files. I'd have loved to learn how well those add-on software packages worked — or didn't.

Next time, let's see a little more on the high end of the low end, for those of us who are serious enough about our Macintoshes to invest significant money in a color printer and software but are not ready to plunk down ten grand or more for the high-end machines.

Jon Okerstrom
via the Internet

/A screen-resolution image (72 dpi) is the *best* you can hope for when printing PostScript data to a QuickDraw printer. Often the result is even worse — a garbled mess of text characters. There are several software options that use your Mac to process PostScript data for output on a QuickDraw device: StyleScript, from GDT Softworks, and Hewlett-Packard's PostScript Software offer true Adobe PostScript output for the Apple StyleWriters and HP DeskWriters, respectively. T-Script, from TeleType-setting, and Freedom of Press, from Custom Applications, are general-purpose PostScript emulators that can be used with any QuickDraw printer. Although these products are fine for very occasional graphics work, they place considerable processing demands on your Mac. Unless you can afford to tie up your Mac for extended periods of time, or unless you've got a spare 68020-or-better Mac to dedicate to printing chores, a PostScript printer is a prerequisite for serious graphics work. / JSA

I ENJOYED READING your January '95 article comparing low-cost color printers, which appeared just as color printers have become a considerable option for the home.

However, your "10 Easy Ways to Screw Up" sidebar states, "There's no way for a printer to detect when an ink cartridge is empty." When an ink cartridge on my Color StyleWriter Pro becomes empty, an error light for the corresponding cartridge lights on the printer and Print Monitor displays an alert that the particular cartridge needs to be replaced.

Josh Wardell
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More Information, Please

I ENJOYED READING your PIM review ("Electric Assistants," January '95, page 82) and agreed with most of the content, but you did overlook one important feature: how much trouble these programs have exporting and importing from Newton. Of the PIMs I have tried, none easily exports to the Newton without some programming and none appears to link well with the potential features in the Newton's scheduler or with any other scheduler available.

Bob Rashid
rashid.1@osu.edu

/We looked into discussing PDA integration in our feature but determined that there were no viable options beyond programming, hacking, or tweaking. We hope we'll be able to address this subject in the future. / MF

I WISH APPLESCRIPT support had been considered in your review of PIMs. Without a demand for scripting support, there is little incentive for developers to continue their investments in this area.

You note that none of the PIMs reviewed offers full-fledged project management. One solution would be to add project-management features to those PIMs. The right solution, however, is to allow the information to flow from the calendar of my choice to the project-management application of my choice. AppleScript support allows that. We now have a newsroom-management project underway with links between Now Up-to-Date and Chena Software's superbly scriptable InfoDepot.

Kerry J. Northrup, Gannett Co.
knorthrup@gci1.gannett.com

WIMPs Welcome Here

MY BIGGEST QUIBBLE with John Dvorak's column ("Welcome to WIMP," January '95, page 196) is about his us-against-them attitude. Such attitudes only help fuel a costly marketing war and widen the divide between the two companies poised to help the common person realize the advantages of a computer-assisted environment.

Dvorak's worst fear is the loss of the intellectual influences of Apple for the more "bottom line" approach of Microsoft and Intel. Frankly, I'm glad Microsoft and Intel recognize the motivation of money. They're not going to develop something if it won't sell and perform. If Apple saw the bottom

line as clearly, maybe they would put an end to such disasters as the IIVx or SCSI Manager 4.3.

The whole idea of compatibility is to bring the best of both worlds together. This means merging the Mac's ease of use and graphics superiority with the low cost, speed, and marketing savvy of Microsoft/Intel PCs. I'm looking forward to the WIMP machine of the '90s.

Andrew Walker
walkman@tiac.net

JOHN DVORAK SEEMS to be the closest thing to an honest computer columnist left in the business. I hope he continues to accurately point out the weaknesses and strengths of Macintosh computing. Idiots might want only feel-good columns, but I for one am glad he usually doesn't write them.

Ben Boyle
boyle@spacsun.rice.edu

JOHN DVORAK'S COLUMN alone is worth the cost of a subscription. Some folks may not like his style, but he's usually right. It's too bad that the criticisms he makes are never taken seriously by those he levels them at.

Jim Whitacre
jwhitacr@bigcat.missouri.edu

Yo, Apple

APPLE HAS ALWAYS led the industry in technological innovation but trails Microsoft and Intel in marketing. Why, Apple, do you not follow Intel's lead and run "PowerPC Inside" commercials? Why is Apple producing a 486 board only for the Power Mac 6100? Why not build it for all Mac processor-direct slots and advertise that "for \$700, you can have a Windows system in your Macintosh. Two computers for the price of one!"

Apple ads appear so negative and seem to address themselves to people who already *have* Macs. Parade your system in front of everyone. Have exciting commercials that say, "our computer kicks their computer's butt!" Compaq's commercials for the Presario show its voice-activation capability. Apple developed this *first* — why didn't they show it? Why not show a surreal virtual landscape, and then pull out to reveal a Mac running QuickTime VR while you hear a

slogan such as "Macintosh: the power to go where no one has gone before." If you've got it, *flaunt* it!

Scott D. Sauer
via the Internet

Cache on Delivery

I'D LIKE TO SHED some light on your December '94 CD-ROM article ("Built for Speed," page 76), especially in regard to caching driver software. Most caching benefits occur when a CD-ROM and files are frequently accessed and during repetitive tasks. Since most users access their CD-ROM files repetitively, they'll usually see improved performance with caching. It's true that in some instances caching software can degrade performance, due to the initial caching of data. Additionally, caching may bring negligible results when the cache is not "hit," the cache is too small, or an inappropriate cache type is selected. Well-designed software allows the cache to be disabled and the cache size and type to be adjusted to meet each user's needs.

The unimpressive results of your final driver tests were due in part to the tests conducted, which did not include repetitive file or data access. Tests such as opening files, searching for files, changing the view type in the menu, and specific word searches would yield more impressive results.

Simon Brown, MacPEAK
Austin, TX

I FOUND YOUR article on CD-ROM drives very informative, but I don't understand your failure to mention the MacProducts Magic CD other than in passing. It was not only the fastest drive but was also outstanding in price/performance, customer service, and design. You should have praised this drive and others more.

Jim Petula
Galvanize@aol.com

/ You're right. We should have given the drives from DGR, MacConnection, and MacProducts more credit in the text. These three companies produce above-average products at bargain prices. / CE

This Net Works

JOHN RIZZO'S ARTICLE on PC-to-Mac networking ("Savvy Small-Office Networking," January '95, page 115) promotes an inaccurate myth in the Macintosh world. Until I tried actually working with it, I too

thought that Novell NetWare was harder to use than other server software, such as AppleShare. I was led to believe this by the generally prevalent attitude in the Mac community that NetWare was complex.

However, I found it easier than I expected. A simple perusal of the manual was all that was necessary for me to get my seven-Macintosh classroom going without a hitch. NetWare is fast and requires no maintenance, other than regular backups, and it is much less expensive than AppleShare 4.0 for small networks (consisting of five to ten Macs). Your advice to steer clear of it is unsubstantiated.

Sterling Ledet
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/ Using NetWare 3.12 (\$2,495) with Macs means also purchasing NetWare for Mac (\$995 for the server software, plus \$30 for each Mac). NetWare 4.1 (\$2,495 for ten users) is cheaper, since it doesn't require extra software for Macs. However, either one is significantly more expensive than AppleShare 3.0.1 (\$1,199) and 4.0.2 (\$1,899), which are fine for five to ten users. Although it is true that the NetWare client software requires minimal learning by Mac users, it is considerably more difficult to set up and maintain than AppleShare, and such difficulties add to the cost of owning NetWare. NetWare setup requires a trained technician who can navigate through the command-line interface of the NetWare server software. / JR

Even Easier Access

IN "THE EASY-ACCESS MAC" (January '95, page 119), you say, "QuickTime does provide tracks in which you can store captions, but it's up to QuickTime authors to learn the exacting art of captioning and actually include captions."

You're right about the "exacting art," but it *can* be done by anyone with QuickTime 2.0 and MoviePlayer. Anyone can type the text into a word processor or even into SimpleText. Then copy it and Option-Shift-paste it into a selection in a QuickTime movie. The text should appear below the movie in the font and color you gave it in SimpleText.

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Sounding Off

I KNOW IT'S hard to review complex software products in a few hundred words, but your review of Macromedia's SoundEdit 16 (January '95, page 53) misled your readers.

You say that “you won’t do better than using SoundEdit 16.” This is absurd. SoundEdit is not the best audio editor on the market by a long shot. Let’s forget the high end of the market; OSC’s Deck II and Alaska Software’s Digitrax are in the same price range as SoundEdit, and both have professional recording and editing environments. Each offers automated mixing, MIDI sync, and QuickTime support. Digitrax also offers effects such as flanging and real-time EQ. SoundEdit 16’s tone control is not real-time. Its mixing is rudimentary. Its flanging is limited in scope. Other “effects” are practically useless.

Audioshop 2.0, from Opcode Systems, is cheaper and superior for almost every garden-variety audio-editing task. Like SoundEdit 16, all these editors use disk files instead of RAM. I’d even recommend Alberto Ricci’s Sound Effects 0.91 (\$15) and \$200 or \$300 worth of RAM — since Ricci’s editor is RAM-based — over SoundEdit.

SoundEdit 16 is a significant improvement over SoundEdit Pro, but given the changes in the middle of the multimedia audio market in the past 12 months, it is way overpriced and underpowered.


Craig O’Donnell

**Author, *Cool Mac Sounds*
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The Techno Pied Piper

WE WERE DISMAYED by the “Open Folder” suggestion (Letters, January ’95, page 11) that dead Mac mice be hung from trees and used as wind chimes. We have friends at schools and nonprofits unable to use their old Macs for lack of a mouse. We pay \$10 each for old Mac mice, dead or alive. Then we fix them.

David Lerner, Tekserve
72456.246@compuserve.com

/ That’s an even better recycling idea, to be sure, but now you’d better brace yourself for an infestation of electronic rodents. / PP 

CORRECTIONS

The price we listed for the HeadMaster head-mounted pointing device from Prentke Romich (“The Easy-Access Mac,” January ’95, page 119), was incorrect. The correct price is \$1,195.

Educational-software developer Michael Carter’s first name was inadvertently omitted from “Learning Power: Software for Kids” (December ’94, page 90).



No Mac Is an Island

A SMALL, BRUSHED-ALUMINUM briefcase flips open to become the screen and keyboard on the

PowerBook clone a vendor dropped off at my office yesterday. The keyboard itself is a false bottom to the briefcase; it flips up to reveal a pair of batteries, an auto-coiling power cord, a detachable wireless microphone, and a nest for an optional cellular phone. It's a PowerPC-based laptop running the Mac OS (and Windows, optional), with 12 MB of RAM. Built in to the grooves along the edges of the briefcase are a flip-out phone jack, an antenna for wireless networking, and a PCMCIA slot. Very James (or Jane) Bondian, and a definite fashion statement, available in metallic hues of green, blue, or purple. Due out in mid-1995 and available at all major electronics stores for just \$1,100.

"Blue's my color! Where do I sign?" you exclaim. Well . . . this being the April issue, I thought I'd pull your virtual leg a little. Still, all this talk of licensing and clones — not just by Apple but also by the first few takers: Radius, Power Computing, and Japanese toy maker Bandai — certainly does fuel the imagination.

I daydream about a world where the store shelves sag beneath the burgeoning weight of Mac software and clones, packed in side by side with the Real Deal — Apple Macintosh systems. The electronics stores will feature Blue Light specials on fully loaded Macs and Mac clones, every maker locked in a life-or-death struggle to deliver the best product for the lowest price, offerings at the altar of the increasingly implacable and exacting customer. This kind of fawning attention I could live with.

And beyond desktop systems — way beyond desktop systems — I am seeing the crisp simplicity of the Mac OS on products Apple never dreamed of, or never actually

produced, at any rate. It becomes an interface for whole new kinds of telephones, home-entertainment systems, musical instruments . . . a Dick Tracy watch, a sports-car dashboard.

I long for the day when my VCR has an Apple interface that makes it easy to record my favorite shows while surfing myriad new channels for other shows that might fit my viewer profile.

Apple knows that the brightest promise of licensing, the light at the end of a long and scary tunnel, is the promise of throwing a wedge into the market that makes lots more room for Mac-based products. More market share, a bigger slice of the pie, more square feet on the retail shelves, more software. The Mac's name in lights on that mainstream marquee.

So let's assume this all happens. Why, when I walk into my local computer store where the shelves are jammed with Mac-compatible products, am I going to choose Apple's products? I suspect that a few Apple people have asked themselves that same question.

Here are some suggestions on what will make people buy Apple products:

Give them a six-color logo for the price of one. Given the same price on a clone system or an Apple Macintosh with equal capabilities, many buyers will choose the tight integration and ease of use the Apple logo represents. I suspect that customers will even pay a slight premium, say 5 percent, to get their

hands on a Mac. But don't get greedy, Apple, get market share!

Get your industrial design out there. And I do mean out there. At first blush, the appreciable differences between current Mac form factors and those of other PCs, including the sexy new Radius Mac clone, are — well, slim. Don't let your industrial-design edge go the way of your interface edge. No one creates products that tap into the emotional and tactile reaches of the user brain like Apple. Run through your design shop, open the cages, and unleash

the amazing refinements on, say, some of those slick flat-panel systems you've been showing off. Take the Mac we know and love, set the form on its ear, and turn out a new generation of desktop designs. Make them fresh, unprecedented, sculptural. Make them something that people are proud to show off.

More than that, make them available, and soon.

Hold on to some of your trump-card technology, but err on the side of open systems. Capitalize on other companies' innovations, leverage technology and component standards so you kill the compatibility conflict, and turn your mad and brilliant scientists loose on more-distinctive and -meaningful innovations — say, for example, an accelerated schedule for that next-gen interface?

So I offered a little more than my two cents. Sosumi. If Apple is to stay afloat in a sea of clones — or even among just a few good clones in critical markets — it will need to set its sails just right and keep a big, bright spinnaker out in front. 🚩

I daydream about a world where the store shelves sag beneath the weight of Mac software and clones.



Farewell, Farewell

WELL, THERE'S NO EASY WAY to say this, so I'll just come right out with it: This is my last

column for *MacUser*. As of now — well, I mean, as of a few *hours* from now, when this column is finished, assuming that there's nothing I later feel needs fixing, which, let's be honest, is pretty unlikely; it's probably more realistic to say, "as of tomorrow, or tomorrow night at the very latest," but now that I think of it, that'd put us somewhere in late Friday, after my editor has gone home for the night anyway. So what the hey, why don't we make it, "as of very first thing Monday morning, four days from now, after I've had a chance to let the manuscript sit for a while so I can review it again later with a fresh eye, perhaps while having a good soak in the tub, oh yeah, and I can go out and get that new Beatles CD and listen to it while I soak and edit, I shall have relinquished all my editorial duties at *MacUser*." So you see what I mean about there being no really easy way to say it.

There are plenty of little reasons why I'm forsaking this gravy train of milk and honey. At the top of the list, I'm afraid, is the editing of this column. For one, the gosh-darned tommyknocker who copy-edits my manuscript tattle-tuttles the text all to heck, for Pete's sake, usually by softening all the harsh language. Second, I've been consistently disappointed by my editor's lack of courage regarding my travel-and-expense vouchers. I mean, take a close look at this high-quality object you're holding. Perfect-bound, glossy, fully typeset, and with CMYK full-color printing throughout. Could *you* afford to print a half a million of these every single month for ten years? I certainly couldn't. So the publisher can unquestionably afford to send me to New Zealand for a few weeks to take a look at the ground-breaking Mac companies that, I'm

absolutely confident, I would have found flourishing near the spectacular Franz Josef Glacier in picturesque Westland National Park. But no-o-o-o, my editor thought the trip was too speculative. So much for my last hopes of winning a special Pulitzer. I mean, my biological clock is ticking, you know.

And also, as you've most likely guessed, there's the struggle to grow as an artist, to leave behind the personal limitations of yesterday and burst free to soar to new plateaus of my craft. I refer of course to the unceremonious way the publisher spiked a \$70,000 endorsement fee. We've all seen ads in which popular personalities are profiled endorsing hard liquor. It's been done to death. Last year, however, a consortium of American vice industries made me the exciting offer to be featured in an ad endorsing not only high-quality 140-proof whiskey but also putting my personal stamp of approval on a special new youth-oriented cigarette as well. But no, The Powers That Be at this magazine made some sort of snap decision — fueled no doubt by jealousy — and put the kibosh on the deal.

Oh, and a senior editor made a disparaging remark about my porcelain clown collection too. But all these were minor concerns. There was only one major rift within the lute, and that's what pushed me to resign: my firm and unswerving conviction that Microsoft Windows is the acme among graphical user interfaces. How I've tried to deny this

stirring inside me lo these many years. For the sake of the children and this lavish home that GUI-xenophobia has given us, I've struggled onward, lashing out against the "enemy" with all I have. But the writing is on the wall, and so I'm following the gravy train to that Mecca known as DOS and Windows-Oriented Trade Publications, having concluded that *MacUser* was only an oasis on the long desert haul thereto.

What precipitated this? I finally got hold of a beta of Windows 95, and it immediately filled me with happiness and warm feelings. See, everything about it is state-of-

the-art as of 1989, and after a little reflection, I realized that, you know, 1989 was a pretty good year for me. *The Simpsons* burst upon the American screen and enchanted the nation with its saucy irreverence. *Star Trek: The Next Generation* started to really shape up. I finally bought a tape deck for the Gran Fury; Communism fell; I eagled a challenging 290-yard par 4 at George Wright Golf Course; I saw Tony Bennett in a small club; and best of all, it dawned on me that I'd probably make it to the end of my Selective Service eligibility term without getting drafted. So call it nostalgia, but I'm enchanted by this plucky megalithic user interface.

You can also call it sheer, cheese-grating terror. Look, Bill Gates has promised that soon enough *everything* from my cable box to my wristwatch will have the Windows operating system at its heart. What kind of a life would it be to come home at the end of a long day and collapse into the sofa for a *Mystery Science Theater 3000* marathon,

PROBLEM:

Deep inside, he's known he was living a lie.

SOLUTION:

Andy comes out — for Windows.

only to find that my cable box will tune in nothing but the Country Music Channel? I say we all start sucking up *now* and not make the big guy angry.

In a couple of months, you can read me every single month in *Field and Stream*, where I've accepted a position as Windows columnist. But before I bid you all farewell, I have to make a quick correction to last month's column regarding Microsoft Word: It's not Microsoft's fault at all. I heard a bizarre rumor at a developers' conference last year and, Gerald-esque investigator that I am, tracked it down to a suburban home in Scottsdale, Arizona, the residence of one Alison Ulrich, the woman who writes every single piece of software for all personal computers everywhere.

Incredible, I know; I scarcely believed it myself. It seems that in 1974, in a freak legal mishap involving an incorrectly processed change-of-address card, Ms. Ulrich was given right of "first refusal" to every commercial programming project worldwide, in perpetuity. And, being of hardy Midwestern stock, she hasn't turned down a single

assignment yet. After thanking her for her excellent work on the game Apple Panic in 1977, I conducted an interview that solved several deep mysteries. A vital excerpt:

ANDY: So then, all these bloated, slow programs on the market today are your fault?

ALISON: Yeah, I know and I'm sorry, but what can I do? Back in the '70s, I had the time to really code down to the bones. But with millions of users clamoring for thousands of products a week — I mean, I'm just one person. So a couple of years ago, I just said "to hell with it," and wrote one 20-megabyte program that does everything.

ANDY: Wait . . . one program that does *everything*?


ALISON: Darn tootin'. It's a word processor; it's a spreadsheet; it has graphics, image editing, multimedia, porno, data-recovery tools, everything. Now, when a new software prospectus comes in, I just fire up my Mac SE here, hide all the features the company didn't ask for, design an icon, save it, and — boom — there it is. I'm not happy about sending out a 27-megabyte solitaire game, but at least it means I can catch a

movie every once in a while. I haven't written any really new code since 1991.

ANDY: So the explanation of why so many Mac programs are just clones of the Windows version is that they literally *are* the Windows version?

ALISON: Don't get me started on Windows! I was *kidding*. I sent it to the kid as a *joke*. Jeez, smart as a paddle across the backside, he is, but that boy's got the sense of humor of a box of Kleenex.

The rest of this interview will be printed, in four installments, in *Field and Stream*.

My final words to you, my loyal readers: Thank you for your support and kind words over the years. To my detractors, thank you for misspelling my name so your letters never reached me. And to those of you who think that anything in this column is *not* merely an April Fool's joke, visit your local clergyman for a copy of the informative pamphlet "So You Think You Need to Get a Clue," sponsored by The Interfaith Council. Or e-mail me (andyi@world.std.com), and I'll be pleased to taunt you personally, in the old Highland manner. 

NEW ON THE MENU

CPUS /

The Shape of Macs to Come

Radius and Power Computing take different routes to new clone market.

THE YEAR OF THE CLONE? We've had the year of mobile computing and the year of the CD-ROM. The prediction may be premature, but 1995 will be remembered as the year the Mac was cloned.

Radius, Power Computing, and Cutting Edge have signed licensing agreements with Apple that give them the right to do what was once unthinkable: to manufacture and market computers that behave exactly like Apple's Macs.

These companies are eyeing very different territories in this new era. Radius, a longtime vendor of Mac displays, video adapters, and digital-video equipment, will toss its hat into the Mac-compatible ring with a high-end digital-video-editing system, tentatively called the VideoVision Workstation. Power Computing, a new startup created specifically to produce Mac clones — will go after the mass market, with a complete line of models that offers more-flexible configurations and lower prices than Apple's Macs. Cutting Edge offers a low-cost alternative.

Radius' Vertical Reach. Radius will, in some respects, be acting more like a VAR (value-added reseller) than a clone maker in its first offering. Initially, the company plans to utilize its current line of digital-video products — VideoVision Telecast audio- and video-digitizing cards and the 4-GB RAID StudioArray — and combine these elements with a Power Mac 8100 motherboard in a slick new tower design. RGB and NTSC monitors and a Betacam SP video-editing deck will round out the hardware setup. The system will come bundled with Radius Edit software, a new digital-video-editing package designed to emulate the analog editing

systems familiar to video professionals.

The price tag for the Radius package falls in the \$30K range. There's no word on when it will ship, but Radius indicated that the VideoVision Workstation is the first in a family of products that may include low-



end systems and a high-end PCI-based model. 408-541-6100.

Power Computing's Mass Appeal. While Radius is aiming for the high end, Power Computing's offerings will fit the more traditional image of clones: modular off-the-shelf designs,

low cost, flexible configurations, quick delivery. Power Computing's president, Stephen Kahng, has numerous PC-clone credits to his name, among them heading the company that designed the successful Leading Edge clone.

Unlike Radius, however, Power Computing is designing its Mac clones itself. The first two models, expected to ship in April, are roughly equivalent to Apple's Power Macs 7100 and 8100 (68040- and PCI-based models are also planned). These machines use Apple ROMs and some Apple ASICs, but their motherboards are based on Power Computing's own designs, which are tailored to fit into standard low-cost PC enclosures.

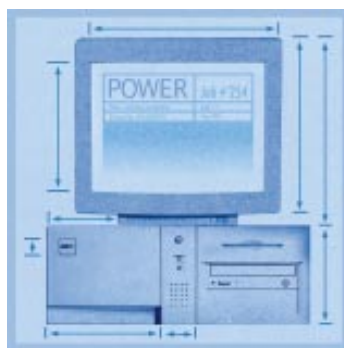
Power Computing pledges that its clones will be 100 percent compatible with Apple's Macs. In fact, Apple will certify the compatibility of the first models. Anything that will run on a Power Mac will run on a Power

Computing clone. We've seen one boot and run many of your favorite programs.

Two key advantages Power Computing plans to offer over Apple are flexible configuration options and speedy order fulfillment. All of its sales initially will be mail-order. You'll be able to phone them, specify a custom configuration, and have the system delivered to your doorstep the next day.

Don't look for dramatic price cuts with this first round of clone models; rather, expect to see pricing at roughly the same level as that of baseline Mac models. These machines will boast heftier configurations for the price, however — more RAM, more storage bays, more slots, larger-capacity hard drives. You may even get a standard VGA-monitor connector, a quad-speed CD-ROM drive, bundled software. Who knows, maybe even a keyboard you don't have to pay extra for. 408-526-0500.

Cutting Edge Aims Low. You will also be able to run the Mac OS on Cutting Edge computers. The Cutting Edge Quatro 850 will contain a Mac Quadra 650 68040-based logic board, purchased from Apple, in a small-tower box, with room for a total of five storage devices (the floppy drive counts as one). Cutting Edge initially will sell 25-MHz models with no FPU's. It later plans to sell 33-MHz models. Although not quite on the cutting edge technologically, Cutting Edge's computers may earn two important distinctions. They will



likely be the first Mac OS clones customers can buy — they should be shipping by the time you read this — and the first, in their 8/270 base configuration, to retail at under \$1,000. This price will include a NeXT-style mouse and keyboard but no monitor. 619-441-6991. / Henry Bortman

SYSTEM SOFTWARE /

New OS Pieces Surface

COMPONENTS OF COPLAND, Apple's future operating system, are on their way. Open Transport, Apple's overhauled networking architecture, and QuickDraw 3D, a new PowerPC-native 3-D-graphics model, will make their debut on Apple's new PCI-based Macs, due this summer.

Open Transport. Apple's complete rewrite of the Mac's networking software, Open Transport provides PowerPC-native versions of the AppleTalk and TCP/IP protocols (IPX will come later). Open Transport presents a simplified interface for configuring Macs on a network — particularly if users choose the new beginner mode. Those who surf the Net will like Open Transport's ability to hot-switch TCP/IP connections without rebooting.

Open Transport will also make network managers happy, because for the first time, they'll be able to get information such as a Mac's network address directly from a user's machine. It will also enable them to preset users' network configurations and install them simply by copying files to users' System Folders.

Apple will make Open Transport available as a retail product for any user running System 7.0.1 or later on a 68030, 68040, or Power Mac, but distribution and pricing

plans were not available at press time.

QuickDraw 3D. Apple's new system-software extension QuickDraw 3D aims to level the playing field between workstations and Power Macs. It offers superfast wire-frame and shaded rendering. To make using 3-D easier, Apple is including a new file format known as 3DMF, which allows users to move 3-D data between applications without any change to models, lights, and textures — a feat currently impossible on the Mac. Apple is also providing application developers with user-interface guidelines to make using 3-D applications easier.



With QuickDraw 3D, three-dimensional models can be cut, pasted, and stored in the Scrapbook, just like any other data type. QuickDraw 3D is also extensible. Template Graphics will offer OpenGL (an SGI standard) for developers who need it. Expect to see hardware accelerators for QuickDraw 3D for NuBus- and PCI-based Power Macs.

Apple is currently offering the 3DMF file-format specification to developers. Expect to see a handful of applications that support QuickDraw 3D this summer. 408-996-1010.

/ Henry Bortman and Sean J. Safreed

Microsoft Project Focuses on Ease of Use

PROJECT-MANAGEMENT software — with its convoluted interface and arcane terminology — has clearly shown its roots in the world of mainframes and minicomputers. But Microsoft Project 4.0 aims to break the mold with a promising combination of power and accessibility.

For starters, Project's menus, tool bars, and other interface elements are identical or very similar to their counterparts in Microsoft Word, Excel, and PowerPoint —

so if you're at home using those applications, you won't feel out of place using Project. Instead of using traditional Gantt charts, you can opt to use a familiar calendar view. And Project goes out of its way to help you master the intricacies of the project-management process — Cue Cards offer step-by-step instructions on common tasks such as adding people and equipment to projects, and PlanningWizard

(who looks like Albert Einstein — is he the father of Bob?) watches over your work and pops up to give you tips on shortcuts and advice when your methods have gone astray. 800-426-9400 or 206-882-8080. / Susan Janus

BUG FIXES /

Microsoft, HP, VST Squash Bugs

IN AN ATTEMPT TO SILENCE user grumbling about sluggish performance in Word 6.0, **Microsoft** said it will ship another release of the software. Word 6.0a is geared to address three main complaints about the current version: long load times, especially on systems with hundreds of fonts installed; some extension conflicts; and poky speed, especially when running in emulation on Power Macs. Speed gains with the new version will be most noticeable with such functions as word count and repaginate. The patch will also provide an easier upgrade path from Word 5.1 to 6.0a, by making keyboard shortcuts consistent in the two versions. Word 6.0a is to be available free of charge in the first quarter of 1995. A bug fix for Excel 5.0 is also slated for that time frame. 800-426-9400 or 206-882-8080.

Hewlett-Packard is shipping a free repair kit for its DeskWriter 520 printers (and other PC-only models) affected by a paper-feed problem. The problem affects units produced between June 1993 and March 1994. HP sends the repair kit automatically to registered owners, but users can call 800-656-2324 or fax 510-657-1473.

VST Power Systems, maker of external PowerBook batteries, has changed its supplier to Hyundai of Korea. Some of VST's ThinPack series used to come from Portable Energy Products, the supplier used by Technögggin, which was forced to discontinue its PowerPlate series due to leaking battery acid. VST maintains that few of its PEP-supplied ThinPacks were affected, but fallout from the Technögggin saga has affected its sales. VST says it will continue to provide service to owners of PEP-supplied batteries. 508-287-4600. / Pamela Pfiffner

MACUSER/ZMAC UTILITY OF THE MONTH



Sealed with a Click

IF YOU USE THE INTERNET or commercial on-line services, you've probably taken advantage of the e-mail gateways to send a message from CompuServe to AppleLink, for instance — provided you've remembered to turn the AppleLink address ZIFFNET into the CompuServe syntax >INTERNET:ziffnet@applelink.apple.com. This month's utility, ZMac's PostHaste, takes the hassle out of sending e-mail between services. Type a hot-key combination, and up pops PostHaste's window, where you simply paste in your correspondent's address and select the To and From services. PostHaste instantly formats the address and places it on your Clipboard.

Created by Adam Stein, of Insanely Great Software, ZMac's PostHaste is available exclusively from the ZiffNet/Mac service on CompuServe (GO ZMC:MACUSER), ZiffNet Selections on AppleLink, and ZiffNet/Mac services on eWorld (Shortcut: MacUser). / Mark Simmons

POWER MAC UPDATE

PowerPC Powers Pippin and 3DO Players

Multimedia players for the home due in 1995.

POWER PC CHIPS aren't confined to powerhouse business systems. A new generation of PowerPC-fueled devices is making its way to the home market. The Pippin, a new multimedia CD-ROM player based on the PowerPC processor, is being developed by Apple and marketed by the Japanese firm Bandai. Similarly, Matsushita, parent company of Panasonic, and 3DO have announced that the next generation of 3DO systems will use a PowerPC chip.

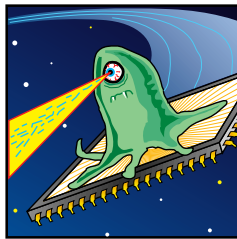
Bandai (known for the "Mighty Morphin Power Ranger" action characters) will give the moniker Power Player to the Pippin when it debuts late in 1995. Bandai will be the first licensee to use the Pippin design, but other companies may bring out systems later in the year.

The specs for the Power Player call for a PowerPC 603 and a quad-speed CD-ROM drive using a run-time version of the Mac

OS. It will hook up to a television and likely carry a price tag of around \$500. The unit may support various input devices, including mice, keyboards, and such custom devices as a game pad.

Since the Pippin is based on the Mac OS, many Mac multimedia titles will run on the player with only minor modifications. Likewise, titles written for the Pippin will run on most Macs. Currently, CD-ROM makers CyberFlix and Presto Studios have committed themselves to bringing out titles for the Pippin platform. The Pippin can also handle technologies such as Apple's QuickTime VR — Star Trek: The Next Generation Interactive Technical Manual, from Simon and Schuster Interactive, has been shown on the Pippin.

Although their system is completely different from Apple's Pippin, Matsushita and 3DO are also committed to the PowerPC.



MICROPROCESSORS /

PowerPC Chip Eclipses RISC Competitors

LEADING THE WAY for RISC computing, Apple shipped more than 750,000 Power Macs in 1994. The Power Mac also accounted for more than 90 percent of all systems containing the PowerPC 601, according to *Microprocessor Report*. Thanks to Apple's decision to move from the 680x0 processor to the PowerPC, the PowerPC outsells the closest competitor, the Sun SuperSparc, by a 4-to-1 margin. Look for 603- and 604-based systems from Apple, IBM, and others to continue the PowerPC lead. / SJS

A PowerPC-based accelerator for the current generation of 3DO Interactive Multiplayers will be available late in 1995, and new systems standardized on the PowerPC will be released in 1996. No announcement has been made about which specific PowerPC model 3DO will use.

Although 3DO has traditionally focused on the entertainment market, its plans call for expanding such areas as multimedia education and remote interaction with other multiplayer systems. The company has indicated that a complete line of peripherals will be available for its systems, including modem, mouse, and keyboard.

/ Sean J. Safreed

DESKTOP VIDEO /

Media 100 Delivers Crisp, High-Quality Video on Power Macs

PROPRIETARY VIDEO SYSTEMS such as Data Translation's Media 100 or Avid's Media Suite Pro have typically faltered on Power Macs, because of a lack of native-mode software and less than stellar NuBus performance. Now, thanks to native software and QuickTime compatibility, the new version of Media 100 has worked out its Power Mac kinks.

Power Macs are becoming the platform of choice for video producers, and the Media 100 2.0 uses such Power Mac 8100 features as its multiple SCSI buses to full advantage. In addition to achieving better speed on the Power Mac, Media 100 now includes an improved 80K-per-frame data rate, a new mode for trimming two clips side by side, a revamped project-based media-management scheme, and remote control of serial VTRs. An included QuickTime codec allows Media 100 clips to be transferred to applications such as Adobe After Effects and back again, which makes it easy to achieve effects at Power Mac speeds that are not possible within



the Media 100 software.

Several options enhance the functionality of the Media 100. Data Translation has lowered the base price to \$8,995. The base system does cuts-only video editing, and a \$995 FX option accelerates video dissolves by using hardware built in to the Media 100 system. For example, a one-second dissolve (30

frames) renders in just six seconds with the hardware acceleration. The \$3,995 Power Option adds batch digitizing, logging, and hardware acceleration for a selection of special effects such as wipes and barn-door transitions.

For higher-quality video, the \$3,995 HDR option raises the maximum throughput to as much as 150K per frame but requires 80 MB of RAM and a fast disk array. The basic Media 100 system requires a Quadra 840AV or a Power Macintosh 8100/80 with 48 MB of RAM or more. 508-460-1600. / Jeffy Milstead

DESKTOP VIDEO /

Truevision Targets Broadcast-Quality Video

Targa 2000 relies on fast video buffer.

PROCESSING VIDEO on the desktop usually requires compromises in quality or heavy investment in hard-disk arrays. But now a new card from RasterOps' Truevision division may set a new benchmark for price and performance.

According to Truevision, the \$5,495 Targa 2000 offers true broadcast-quality video output, thanks to a video architecture called DVR. With an access rate of up to 234 MB/second, DVR uses a high-speed video buffer with up to 64 MB of DRAM (20 MB is standard) that temporarily stores incoming

frames on the Targa board before they're compressed and stored on-disk. This buffer virtually eliminates the data loss that results in stuttering or dropped frames.

DVR is not the only unique aspect of the Targa 2000. The board handles both Mac video at up to 1,152 x 870 pixels at 24 bits and video output to an NTSC or PAL monitor. The NTSC monitor effectively becomes an extension of the Mac desktop and can be used to accurately preview video processed on the card. NTSC video is supported at full 640-x-486-pixel resolution at 60 fields per second. Stereo audio recording and playback are also supported at 16 bits at sample rates of either 44.1 or 48 kilohertz, for DAT-quality audio.

In April, Truevision will offer the Targa 2000 Pro, a \$7,995 package that includes the Targa 2000 and a second NuBus board that handles component video; it is aimed at professional users who need component RGB, BetacamSP, and YPrPb input and output.

RasterOps has been lying low as of late, but it's coming back with a revamped and pared-down line of video-display cards for

All You Need for CD-ROM Mastering

HANKERING TO ROLL your own CD-ROMs or archive your data quickly and cheaply? MicroNet's all-in-one Publishing Station gives you everything you need in one box to start mastering CD-ROMs.

The \$8,590 unit combines MicroNet's Master CD Pro writer with a 200-MB SyQuest removable-cartridge drive and a 4-GB Raven Professional disk array, thus eliminating the need for an external dedicated hard drive. Transfer your project from the SyQuest to the disk array, and then start recording. Master CD Pro lets you write data at single, double, and quad speeds; the disk array supports RAID 0 (striping), for fast data transfer, or RAID 1 (mirroring), for better data integrity. Available with either a Fast and Wide SCSI-2 PDS or a NuBus host adapter, the array can achieve data-transfer rates of up to 19 MB per second. 714-453-6100. / Pamela Pfiffner



the Macintosh. The company now sells just two boards, both 7-inch NuBus cards: the PaintBoard Prism and the Prism GT. The \$749 Prism video board offers resolutions up to 1,152 x 870 pixels at 24 bits and includes hardware-based pan and zoom. The \$999 Prism GT has the same capabilities and includes faster QuickDraw acceleration. 800-729-2656 or 317-577-8788.

/ Sean J. Safreed



Dial In to New Tunes with MusicNet

CAUGHT IN A RUT when it comes to music? If you love music but don't have the time or money to buy tunes you've never heard before, MusicNet, a CD-ROM subscription service from MNI Interactive, might be the answer. At an estimated price of \$10 per disc, MusicNet CD-ROMs are mailed to users every few months. Each new CD-ROM covers 250 of the latest releases from all genres of popular music. Information windows for each album include three 30-second music samples, complete track listings, credits, and an artist discography, and some offer a QuickTime video clip. Call a toll-free number to order albums that catch your ear. Expect to pay between \$12 and \$16, plus shipping and handling, for each CD. The first CD-ROM in the series, featuring notable albums released in 1994, also includes text from *Rolling Stone's 1994 Rock & Roll Yearbook*. 800-375-6874 or 415-904-6222. / JS

UTILITIES /

Aladdin Uncorks Desktop Tools Modules

BRANCHING OUT from its popular Stuffit line of compression products, Aladdin Systems offers seven new productivity-enhancing alterations for the Mac interface in its new Aladdin Desktop Tools utility package.

Speed-ups. Several Aladdin Desktop Tools modules are designed to speed up your Mac. Desktop Speedboost accelerates copying, duplicating, and trashing items from the Finder. Several files can be copied at one time, and copies can be sent into the background. The Desktop Shortcut module lets you find files quickly and creates a menu for quick access to the most important files.

Easy Access. The Desktop Viewer module lets you view a file even if you don't have the application that originally created it. GIF and PICT graphics, sound, and plain text are supported, and Desktop Viewer is compatible with Claris' XTND translation technology. Desktop Printer creates desktop printer icons à la QuickDraw GX, letting you drag and drop print jobs to specific printers and switch devices without going to the Chooser.

Other modules include Desktop Makeover, which makes cosmetic changes to the Finder; Desktop Magic Tools, which expands the functionality of Finder commands; and Desktop Secure Delete, which securely erases files. \$90. 408-761-6200. / Jason Snell



PDAS /

Newton Gains Momentum

MessagePad 120 leads units from Motorola and Digital Ocean.

AFTER AN AWKWARD PAUSE, Newtons — a new model (MessagePad 120) from Apple, a rugged unit with a backlit screen (Tarpon) from Digital Ocean, and a two-way wireless incarnation (Marco) from Motorola — are back in the news.

MessagePad 120. An incremental remodeling of its 110 predecessor, the MessagePad 120 features slight improvements such as sturdier plastics; thinner glass (although the screen is still hard to read); a detachable lid; and easier access to the PCMCIA slot lock, so you don't have to lift the lid to eject a card.

More significantly, Apple has increased built-in memory — up to 2 MB — and upped the power rating for the PCMCIA slot. The increased memory means you don't have to have a RAM card to store all your frequently used applications and data, leaving the PCMCIA slot free for communications add-ons. And the increased power rating of the slot (325 milliamperes, compared to 115 milliamperes) means you can now use paging cards, among others, that drew too much current for the 110 to handle.

As for software, the 120 comes bundled with Notion, from Starcore, and PocketQuicken, from Intuit. Newton software and hardware development is gaining momentum, as vendors such as CE Software and Symantec join the fray.

The \$699 street price of the 2-MB 120 includes an external fax modem and one month of NewtonMail (eWorld) services. A 1-MB 120 without a modem or NewtonMail sells for \$599. 408-996-1010.

Tarpon. Digital Ocean, maker of the Group family of wireless-AppleTalk-network products, has also entered the PDA market. Its Tarpon product is based on the Super-Tech 2000, a waterproof, ruggedized, oversized version of the Newton, from Harris. Digital Ocean has filled the extra space in this larger form factor with its wireless-network technology. This enables the Tarpon

to communicate via spread-spectrum radio (within an 800-foot radius) to either a communications server or a Digital Ocean Starfish Ethernet Access Point. The communications server provides a connection to a wide-area network; the Ethernet access point integrates the Tarpon into a wired Ethernet network.

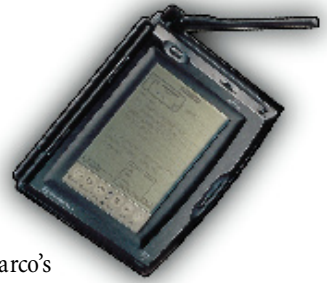
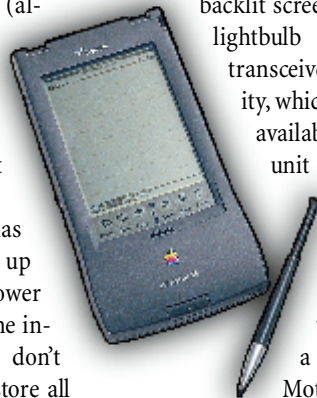
Thankfully, the Tarpon also features a backlit screen. Of course, this built-in lightbulb and the Tarpon's radio transceiver do use a bit of electricity, which is why all the remaining available space in the 2.5-pound unit is filled with a very large NiCd battery. It's expected to cost around \$3,000. 913-888-3380.

Marco. As the first Newton-based PDA to include a two-way wireless radio, Motorola's Marco Wireless Communicator addresses what

many believe is the reason why PDAs haven't really taken off yet. The Marco's success will be an indicator of just how much users value two-way wireless communication.

The Marco uses Motorola's own ARDIS network to send and receive messages — which is great if you want to communicate with other ARDIS customers. But suppose you don't know any other ARDIS users. Not to worry: You can sign up for RadioMail, a messaging gateway service that transparently links users on the ARDIS network to other messaging systems, such as America Online, CompuServe, and the Internet.

Although it's based on the 1-MB MessagePad, the Marco weighs in at 2 pounds. Depending on the additional mail services you choose, Motorola expects the Marco's street price to be \$900 to \$1,400. 800-894-7353. / Henry Bortman



Magic Cap Links Sony's PDA

THE NEWTON'S NOT THE ONLY PDA in town. The folks at General Magic — they're the ones behind the original Mac interface — have put their graphical Magic Cap software into the Sony Magic Link PIC-1000, a 1.2-pound handheld personal intelligent communicator.

The Magic Link integrates PIM tasks with e-mail, fax, and telephone functions, including built-in access to America Online and AT&T's PersonalLink service. Software for CompuServe and other on-line services is also available. Also included is an address book that automatically updates senders' information, an appointment calendar that sends meeting invitations, a notebook, a spelling checker, a spreadsheet program, and Intuit's PocketQuicken.

Messages can be sent via the Magic Link's internal 9,600-kbps fax modem or with an optional wireless-pager PCMCIA card (\$220). The Magic Link can also be used as a telephone with an optional headset (\$80). A built-in microphone lets you attach voice messages to e-mail. The Magic Link, with its infrared port and included AV Remote application, even serves as a remote control for your Sony VCR or stereo.

Unlike the Newton, the Magic Link doesn't recognize handwriting but rather relies on drawing or on typing via an on-screen keyboard or the optional portable keyboard (\$130). Your Mac can act as a front end too, with Intellink's Magic Exchange (603-888-9817), a Mac program for Magic Link data exchange and backup.

Priced at \$995, the Magic Link ships with 1 MB of RAM — an extra 1-MB RAM card is available for \$220. Motorola and Matsushita are also expected to release Magic Cap devices this year, and General Magic plans to release Magic Cap as an application for Mac and Windows. 800-556-2442. / John Rizzo



NEW & NOTABLE

HARDWARE /

▼ **Media Vision Reno.** Weighing 1.2 pounds and capable of being powered by four AA batteries, this CD-ROM player is designed with portability in mind. Attached to a PowerBook or a desktop Mac via SCSI, it serves as a double-speed CD-ROM drive. By itself, it's an audio-CD player with external controls. \$349. 800-845-5870 or 510-770-8600.



Micropolis AV Drives. These drives are optimized for the continuous sustained data stream required by digital-audio and -video applications. The Scorpio 9 1991AV (\$5,775) is a 9.1-GB 5.25-inch drive, the Capricorn 4 3243AV (\$3,355) is a 4.3-GB 3.5-inch drive, and the Taurus 2 4221AV (\$1,810) is a 2.1-GB inch-high drive. They each offer audio/video data-transfer rates of 4 MB per second. 818-709-3300.

Xanté Accel-a-Writer 812. Rated at 8 pages per minute, this 1,200-dpi printer prints on paper sizes up to 8.5 x 14 inches. Powered by a 33-MHz RISC processor and containing 16 MB of RAM (upgradable to 64 MB), the Accel-a-Writer 812 sports serial, parallel, and AppleTalk interfaces, with EtherTalk and TCP/IP optional (\$395). Adobe PostScript Level 2 is also standard. \$3,495. 205-476-8189.

Summagraphics SummaColor Pro 1311 and 1317. Aimed at graphic artists and designers, these thermal-transfer color printers use Summagraphics' MicroDot technology to control dot size and improve color consistency. The 1311 (\$6,495; with Ethernet, \$7,295) prints on letter- and legal-sized paper, and the 1317 (\$8,995; with Ethernet, \$9,695) can print full bleeds on 11-x-17-inch paper. Each features Adobe PostScript Level 2; 12 MB of RAM (upgradable to 136 MB); and AppleTalk, parallel, and serial ports. 512-835-0900.

TDK Systems DF2814APB Modem. A v.34 PCMCIA modem card that attaches to 500-series PowerBooks via Apple's PowerBook PCMCIA Expansion Module, it supports 28.8-kbps data transmissions and 14.4-kbps send/receive fax transmissions. \$499. 916-265-5395.

Consumer Technology Presenter 3 Mac/PC. Providing Macs with the power to output good-quality video to TVs and VCRs is the goal of this video adapter. The Presenter 3 Mac/PC utilizes line-averaging technology to reduce

screen flicker and includes a set of large fonts to improve readability on TV screens. \$429. 503-643-1662.

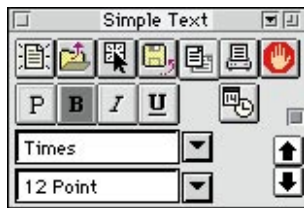
SOFTWARE /

ARCserve 1.5. New features in this backup utility for stand-alone and networked Macs include data authentication, SCSI Manager 4.3, and native Power Mac support. ARCserve verifies the integrity of a backup by performing a byte-by-byte comparison between the backup's source and its destination. The program now scans for viruses before backing up and lets users restore files by pointing and clicking. Five-user license, \$245. Cheyenne Software. 516-484-5110.

Employee Appraiser. Employee performance evaluations can tax the writing skills of even the most diplomatic manager, but Employee Appraiser combines a word processor with a database of writing samples that address a wide range of worker-performance issues. Critiques come in three levels of directness, from blunt to gentle, and the program can even scan documents for potentially inflammatory words. \$129. Austin-Hayne. 415-610-6800.

TurboCAD 2.0. Running native on Power Macs in its new version, this drafting and precision-drawing software features menu-assignable macros; new alignment tools such as the gap tool, which automatically inserts spaces into walls; and a library of symbols that can be dragged and dropped into place. Although the base version of TurboCAD (\$150) is intended for 2-D work, a 3-D version (\$296) adds tools for the creation of 3-D wire-frame objects and surfaces. IMSI. 800-833-8082 or 415-454-7101.

▼ **OneClick.** Aficionados of tool bars and icon palettes will want this utility. OneClick can add any number of palettes to any application — even adding and removing palettes based on the work you're doing. OneClick comes with preconfigured palettes for some popular applications and allows you to easily assign keystrokes and menu commands to buttons; advanced users can use OneClick's scripting language to create buttons that handle sophisticated tasks. AppleScript is also supported. \$130. West Code Software. 619-487-9200.



Sargon V: World Class Chess. The veteran chess program once popular on the Apple II advances a square in this new version. Players can view the chessboard in either a 2-D or a 3-D perspective, and moving pieces is a simple click-and-drag operation. The new beginner mode shows players what spaces a given piece can move to and lets them store any series of moves for later review. \$20. Activision. 310-207-4500.

MACINTOSH PRICE INDEX

THE UNITED COMPUTER EXCHANGE index reflects average selling prices of new and used Macs as of January 6, 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)		• \$575
Classic II (4/40)		• \$500
Color Classic (4/80)		• \$700
LC III (4/80)		• \$825
Performa 475 (4/160)	\$1,099	\$975
Performa 550 CD (5/160)	\$1,299	\$1,175
Performa 575 CD (5/250)	\$1,799	\$1,475
llsi (5/40)		• \$400
llci (5/80)		• \$650
llfx (8/160)		• \$950
Quadra 605 (4/80)		• \$650
Quadra 610 (8/160)		• \$850
Quadra 630 (4/250)	\$1,099	\$1,000
Quadra 650 (8/230)		• \$1,875
Quadra 660AV CD (8/230)		• \$1,375
Quadra 700 (8/230)		• \$1,300
Quadra 800 (8/230)		• \$2,200
Quadra 840AV CD (8/230)		• \$2,400
Quadra 900 (8/230)		• \$1,700
Quadra 950 (8/230)	\$3,599	\$2,500
Power Mac 6100/60 (8/250)		• \$1,300
Power Mac 6100/66 CD (8/350)	\$1,749	*
Power Mac 7100/66 (8/250)		• \$2,100
Power Mac 7100/80 CD (8/700)	\$3,149	*
Power Mac 8100/80 (8/250)		• \$2,800
Power Mac 8100/100 CD (16/1GB)	\$4,399	*
Power Mac 8100/110 CD (16/2GB)	\$6,299	*
PowerBook 145B (4/80)		• \$850
PowerBook 150 (4/120)	\$1,449	\$1,200
PowerBook 165 (4/80)		• \$1,350
PowerBook 165c (4/80)		• \$1,450
PowerBook 170 (4/40)		• \$1,250
PowerBook 180 (4/80)		• \$1,700
PowerBook 180c (4/80)		• \$2,100
PowerBook 520 (4/160)	\$2,099	\$1,750
PowerBook 520c (4/160)	\$2,699	\$2,250
PowerBook 540 (4/240)		• \$2,800
PowerBook 540c (4/320)	\$4,499	\$4,250
Duo 250 (4/200)		• \$1,500
Duo 270c (4/240)		• \$2,050
Duo 280 (12/240)		• \$2,750
Duo 280c (4/320)	\$3,599	\$3,200

* = discontinued model or configuration

* = used models not yet available in quantity

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



Epson Stylus Color and Tektronix Phaser 140 / Inkjet printers offer dazzling color at affordable prices.

SOON TO BE AS UBIQUITOUS as paper clips and letter openers, color printers are increasingly proliferating, in both the home and the office. Two new offerings further advance the trend — the Epson Stylus Color and the Tektronix Phaser 140 are both inkjet printers, but the similarities don't go beyond that. Featuring impressive near-photographic output and street-priced at approximately \$500, the Epson printer is tailor-made for home users. The \$1,695 Tektronix printer, on the other hand, is strictly business — targeted for small

workgroups, it comes network-ready with Adobe PostScript Level 2 and its own RISC processor.

Epson Stylus Color

Equipped with a new, proprietary engine from Epson, the Stylus Color stands apart from other low-cost inkjet printers with its ability to print at 720 dpi (on special paper) — making it an excellent choice if you frequently need to print photographic images. It also provides a 360-dpi print setting that's adequate for business graphics and a 180-dpi setting for draft documents.

A QuickDraw printer, the Stylus Color uses your Mac to process images, so its speed is directly related to the horsepower of your Mac. Not as compactly built as its closest competitor, the \$525 360-dpi Apple Color StyleWriter 2400, the Stylus Color is just as easy to set up. There are only two ink cartridges to install: one that contains three separate reservoirs of cyan, magenta, and

yellow and one that contains black.

The printer comes standard with a parallel and a serial port, but by press time, Epson plans to make available an optional LocalTalk kit. A Chooser-level QuickDraw driver and two utilities are included.

The printer's paper tray holds either 100 sheets of plain paper, 70 sheets of coated paper, or 50 transparencies. Epson provides special paper for each resolution setting — 360 and 720 dpi — as well as special transparency film.

Tektronix Phaser 140

Vivid saturated colors are the hallmark of the Phaser 140, which aims to compete with the \$1,999 Hewlett-Packard DeskWriter 1200C/PS. Equipped with a Canon engine, the 360-dpi Phaser 140 comes with 8 MB of RAM (upgradable to 24 MB), 17 built-in fonts, and a parallel and a LocalTalk port. A \$295 EtherTalk option is also available; we highly recommend it if you want optimal speed from this printer. All of the printer's ports are active simultaneously.

Setup is a breeze. You install four inkjet cartridges — one each for cyan, magenta, yellow, and black. The Phaser 140 provides basic color-matching options for your monitor and for offset presses. The company's proprietary TekColor Finepoint dithering algorithm enhances the appearance of blends and scanned images.

The Phaser 140's paper tray holds as many as 100 sheets of paper. Although you can print on plain paper, we highly recommend using Tektronix's special coated paper for best results.

Print Quality and Speed

To see how the Epson and Tektronix inkjet printers stack up against the competition, we tested output quality and speed and compared each printer's results with those of its closest competitor — for the Epson printer, that's the Apple Color StyleWriter 2400, and for the Tektronix printer, it's the HP DeskWriter 1200C/PS. Our test platform was a Centris 650 with 24 MB of RAM. Tests were run in standard and best modes on both coated and plain paper.

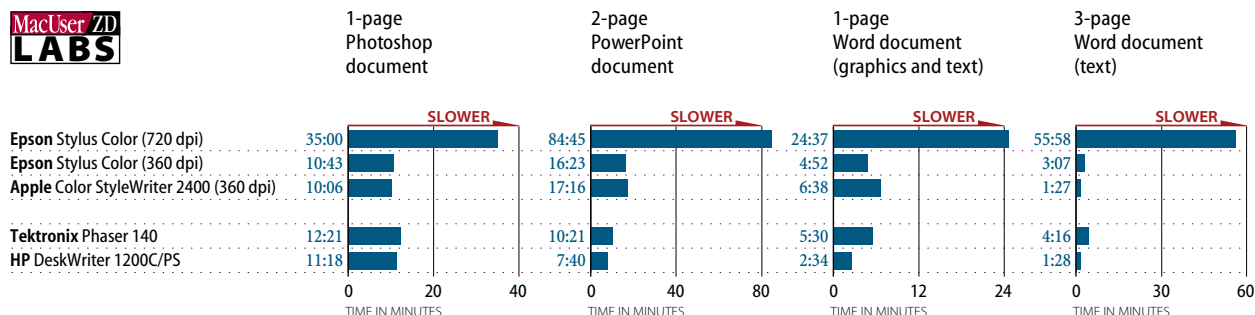
Reviews Rating Key

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

Turtle Race / inkjet printers chug along

Inkjet printers aren't known for their speed, but some are faster than others. For all the results shown here, we printed at best-quality settings and with coated paper, except for the three-page Word

document, for which we used normal-quality settings and plain paper. Times for the HP and Tektronix printers are for tests conducted over EtherTalk.



We used highly detailed scanned photographic images to produce our one-page 7-MB Photoshop test document. The Epson Stylus Color at 720 dpi was the clear winner in this test, producing the highest-quality photographic output of all the printers we tested for this review, including the more expensive Tektronix and HP printers. Highlights and shadows reproduced beautifully, although the colors weren't quite as bright as we would have liked. One caveat: Printing at 720 dpi requires special media and extra long printing times, so you'll want to choose this setting only for photographic images.

At 360 dpi, the Stylus Color didn't fare as well — color output looked dull in comparison with the Apple printer's. In tests using text documents, however, the Stylus Color bested its rival, producing sharp, crisp characters.

The Tektronix Phaser 140 showed a slight edge over its HP rival for photographic output quality, printing the Photoshop document with more-vivid saturated colors. The intensity of its blacks was especially impressive. Text output quality, on the other hand, wasn't on a par with the HP printer's — the Phaser 140's text output was noticeably heavier and had jagged edges.

Results of our speed tests showed that both new printers have trouble keeping up with the competition. As mentioned, the Epson Stylus Color at 720 dpi is as slow as molasses — it placed a dismal last in all our tests (taking a whopping 56 minutes to print three pages of black text!), but it's worth the wait if you're printing photographic images. At 360 dpi, the Stylus Color

chugged right along, even breezing by the Apple printer for the two-page PowerPoint and the one-page Word documents.

In all our tests, the Tektronix Phaser 140 was surprisingly slow compared to the HP DeskWriter 1200C/PS. For the Photoshop document, we tested each printer first over LocalTalk and then over EtherTalk. Even though the EtherTalk option adds to the price of each printer, it's definitely worth the investment if you frequently print large bit-mapped images or complex graphics.

Over LocalTalk, the Tektronix printer churned away for 19 minutes before it produced our Photoshop document, compared with 15 minutes for the HP printer. EtherTalk accelerated the process, but the Tektronix printer still couldn't keep up with its rival — it took about 12 minutes, versus the HP printer's 11 minutes.

For our two-page PowerPoint document, which incorporated color business graphics and blends, the Phaser 140 again lagged behind the HP printer, which beat the Tektronix printer by nearly 3 minutes (ditto for the one-page Word document, which incorporated a color pie chart and a logo).

To print our three-page text document in standard mode and using plain paper, the Phaser 140 took more than 4 minutes, compared with the HP printer's 1.5 minutes.

The Bottom Line

With color printers becoming more affordable every day, users who wouldn't dream of using anything other than color software and a color monitor will likely come to the same conclusion with regard to printers.

The new Epson Stylus Color represents a breakthrough of sorts in the inkjet-printer class, offering high-quality prints of photographic images at an unheard-of price. But you do need patience — the printer is excruciatingly slow when printing at 720 dpi, and you need to use that setting to get the highest-quality photographic prints.

We were less impressed with the Tektronix Phaser 140, which suffered from sluggish speed and disappointing text output quality. Although it produced vivid color prints, its output was only slightly better-looking than that of its closest rival, the HP DeskWriter 1200C/PS, which was much faster. / Tony Bojorquez and Susan Janus

Epson Stylus Color

Rating: ★★★★★

Price: \$500 (street).

Pros: Outstanding 720-dpi photographic output. Excellent text output quality.

Cons: Colors lack brightness. Excruciatingly slow at 720 dpi.

Company: Epson America, Torrance, CA; 800-289-3776 or 310-782-0770.

Reader Service: Circle #401.

Tektronix Phaser 140

Rating: ★★★

Price: \$1,695 (list).

Pros: Vivid color output.

Cons: Slow. Disappointing text output quality.

Company: Tektronix Color Printing and Imaging Division, Wilsonville, OR; 800-835-6100 or 503-682-7377.

Reader Service: Circle #402.

Epson ES-1200C and PixelCraft Pro Imager 4000 / Professional-level scanners aim high for quality and low for price.

ROCK-BOTTOM PRICES have lured many entry-level users into buying color scanners, and now graphics professionals are able to take advantage of the same savings. Two new color flatbed scanners — the Epson ES-1200C and the PixelCraft Pro Imager 4000 — offer high-resolution scans at remarkably low prices. With a list price of \$1,499, the Epson ES-1200C is the most affordable high-quality scanner you can purchase. The \$2,995 PixelCraft Pro Imager 4000 isn't as attractively priced, but it offers superior-quality scans in addition to bundled software for color separations.

Epson ES-1200C

The ES-1200C is configured for both single- and triple-pass scanning: single-pass for faster scans and triple-pass for higher quality.

We recommend single-pass for most purposes — it saves lots of time, and we found very little difference in quality between scans produced with a single pass and those produced with a triple pass. The ES-1200C supports 30-bit color and features an optical resolution of 600 x 1,200 dpi, with a maximum interpolated resolution of 4,800 dpi.

For reflective scanning, the ES-1200C supports a maximum paper size of 8.5 x 11.7 inches. To scan transparencies, you'll need to buy the optional \$959 transparency unit. You can elevate the scanner's lid to accommodate bulky items, and a platform extension on the side of the scanner supports materials that extend beyond the scanning platen. The scanner comes with two SCSI ports, so it can go anywhere in your SCSI chain.

We especially liked the software that comes with the Epson scanner. Second Glance Software's ScanTastic ps, available as either a Photoshop plug-in or as a DA, provides preconfigured settings for six types of final output device: screen display, monochrome or color inkjet printer, 600-dpi laser printer, fax, or imagesetter. Once you've selected your output setting, you identify the type of document you're scanning (line art, color, or gray scale) and ScanTastic calculates the appropriate resolution.

If you want more control over the scanning process, you can use ScanTastic's intuitive manual controls to make adjustments to images before you import them into an image-editing program. You can, for example, control color tones either graphically, by adjusting curves, or numerically. Balance controls use an eyedropper tool, and you control saturation by modifying a spectral equalizer that works on the same principle as the equalizer on your stereo system.

To control other parameters, such as



brightness, contrast, and sharpness, you employ either numerical controls or slider bars.

PixelCraft Pro Imager 4000

Designed for users with more prepress experience than the Epson scanner requires, the Pro Imager 4000 is a single-pass 30-bit color scanner that has an optical resolution



The \$1,499 Epson ES-1200C color flatbed scanner (left) teams quality with affordability. The PixelCraft Pro Imager 4000 produces slightly higher-quality scans and includes color-separation software.

of 600 x 2,400 dpi and a maximum interpolated resolution of 2,400 dpi. It handles 8.3-x-11.7-inch paper for reflective scanning, and a built-in platen handles transparencies as large as 8 x 10 inches. The lid is double-hinged, so if you're scanning thick documents, the scanner will close properly. The Pro Imager 4000 has only one SCSI port, so the scanner must be located at the end of your SCSI chain. Unfortunately, you have to deal with clumsy DIP switches to set the SCSI ID.

For software, the scanner comes with PixelCraft's QuickScan 4000 Adobe Photoshop plug-in. QuickScan's controls aren't as simple to use as the Epson scanner's software controls, but they're well suited for adjusting images for halftone reproduction on a press. You can select highlight and shadow points, set dot values, control print density, and adjust tone curves. QuickScan provides resolution settings based on three types of final output device: halftone printer, screen display, and film recorder. The scanner additionally comes with PixelCraft's ColorAccess color-separation

software, which accurately converts color images from RGB to CMYK.

We tested the output quality and speed of the Epson ES-1200C and the PixelCraft Pro Imager 4000 scanners, using two test documents — a highly detailed line-art image and a photographic image that incorporated a gradient background and a wide range of colors and tones. We printed the scanned photographic image on a Tektronix Phaser II_{SB}x dye-sublimation printer and the line-art image on a 1,200-dpi Xanté Accel-a-Writer 8200. Our test platform was a Power Mac 7100/66 with 40 MB of RAM.

We found that the PixelCraft scanner produced the most-accurate scans, but not by a very wide margin. The Epson scanner's images suffered from some minor artifacts, but these weren't significant enough to seriously affect the overall quality of the scanned images. The Epson scanner also tended to produce images that had a slight blue cast, but we easily corrected the problem with the ScanTastic software.

Scanning the line-art image, the PixelCraft scanner excelled at reproducing detail

and it did a great job of maintaining smooth lines and curves. The ES-1200C's scans were also of very high quality, but details weren't quite as clean as those of the Pro Imager 4000's scans.

Because each scanner is aimed at production environments, speed is a key factor. Our tests showed the PixelCraft scanner to be the faster of the two for scanning color photographic images — it took 65 seconds to scan our test image at 300 dpi, compared to the Epson scanner's 87 seconds. For line art, the opposite was true, however — we clocked the Epson scanner at 19 seconds, versus the PixelCraft scanner's 56 seconds.

The Bottom Line

Graphics professionals can't go wrong with either the Epson ES-1200C or the PixelCraft Pro Imager 4000. If you want the highest-quality scans you can get for less than \$3,000, the PixelCraft is well worth considering. It boasts excellent color accuracy, and you get the added plus of color-separation software and a built-in transparency module. The Epson scanner falls slightly behind the PixelCraft product in output quality, but it's half the price. For \$1,499, it offers 30-bit color, respectable speed for scanning color photographic images, and excellent scanning software.

/ Roman Victor Loyola

Epson ES-1200C

Rating: 

Price: \$1,499 (list).

Pros: Inexpensive. Good output quality. Excellent software.

Cons: Slow for scanning color photographic images.

Company: Epson America, Torrance, CA; 800-289-3776 or 310-782-0770.

Reader Service: Circle #403.

PixelCraft Pro Imager 4000

Rating: 

Price: \$2,995 (list).

Pros: Excellent output quality. Color-separation software. Built-in transparency module.

Cons: Twice the price of the Epson scanner. DIP switches for SCSI ID. Single SCSI port. Slow for scanning line art.

Company: PixelCraft, Oakland, CA; 800-933-0330 or 510-562-2480.

Reader Service: Circle #404.

Visioneer PaperPort / Capture paper documents and file them electronically.

WITH A FAX MODEM or a printer, it's easy to get documents out of your Macintosh, but getting hard copy into your computer so that you can store it digitally or send or print it has always been fairly difficult, if not expensive. Now Visioneer has made input as easy as output, with its elegant and inexpensive hardware/software PaperPort system.

Sized to Fit

The \$399 PaperPort is small enough to fit between your keyboard and your monitor. It measures only 12.5 inches wide, 3.75 inches tall, and 3 inches deep. It has no on/off switch; when you're ready to scan a letter, business card, or any other document as wide as 8.5 inches, you just feed it into the scanner, which comes to life when it senses the paper in front of it and performs the scan, typically in five to ten seconds.

When the scanner starts, it automatically launches the PaperPort application. The application lets you view and clean up the scanned images; stack them on top of each other; and save them in PaperPort, PICT, TIFF, Windows PCX, or Windows BMP formats. The application's annotation palette contains tools for adding text labels (useful for filling out a scanned-in form), sticky notes (for adding keywords or comments to a scanned document), arrows, freehand marks, and color highlights.

If you want to print a scanned document, you simply drag it to the printer icon in the application's main window. (If you have a fax modem, you will also have a drag/drop/fax icon.) To convert a scanned document to editable text, you drag it to the icon representing Calera's WordScan, an OCR (optical character recognition) program included with the PaperPort. (The PaperPort can also create drag/drop/OCR icons for Caere's OmniPage and OmniPage Professional and Xerox's TextBridge.) A \$49 add-on called PaperPort E-Mail Link adds icons that allow you to drag, drop, and send images via PowerTalk, QuickMail, cc:Mail, or Microsoft Mail; it also includes freely distributable software that lets other Mac, DOS, and Windows users view images in the PaperPort format.

The Bottom Line

The PaperPort is a neat idea elegantly implemented, but don't expect to get it up and running without some hassles. In the first place, if you have a modem and a printer or a network connection, you probably don't have a free serial port for the PaperPort. Visioneer offers pointers and discount coupons for several solutions, but all add cost and complexity. Second, you



Designed to fit between your keyboard and your monitor, the Visioneer PaperPort comes with its own elegant scanning software.

need a minimum of 1.8 MB of free RAM to scan anything and much more for full pages, image cleanup, and OCR.

Finally, OCR remains an imperfect art. Although the PaperPort captures text clearly and legibly, using WordScan to recognize a one-page press release took three minutes on a Power Mac 8100/80, and in three tries, we got 14, 9, and 17 errors. The PaperPort works best if you simply use it to save your documents as images that you can store digitally. / Henry Norr

Visioneer PaperPort 2.0

Rating: ★★★★★

Price: \$399 (list).

Pros: Inexpensive. Compact. Elegant scanning software. Works automatically when paper is inserted. Software has convenient drag-and-drop icons for printing, faxing, and OCR.

Cons: Requires free serial port. Software requires at least 1.8 MB of free RAM. Bundled OCR package slow and often inaccurate.

Company: Visioneer, Palo Alto, CA; 800-787-7007 or 415-812-6400.

Reader Service: Circle #405.

ClarisWorks 3.0 / Compact and well integrated, ClarisWorks now costs less and still does it all.

NO ONE WOULD CALL ClarisWorks 3.0 a major makeover for Claris' integrated productivity program, but it brings a few choice refinements, cross-platform compatibility, and a substantial price cut to the popular package.

The update retains the look, feel, and functionality of its predecessor. Its word-processing, outlining, spreadsheet, charting, database, drawing, painting, and communications features still work pretty much



The new Footnote Assistant in ClarisWorks, one of several interactive Assistants, sets up footnotes for you in one of two academic styles.

the way they did in versions 2.0 and 2.1 (see review, August '93, page 54, and "Getting the Works," September '93, page 166). ClarisWorks still makes it easier than anything else on the market today does to combine different kinds of data in one document. If, for instance, you want to add some numbers to a memo or bring clip art into a newsletter, just go to the tool palette, click on a tool for creating a spreadsheet or a picture, and draw out a new frame in your document.

Smart Assistants

Chief among the new features in version 3.0 are eight Assistants, interactive aids designed to take the hassle out of some common but relatively complex tasks, such as printing envelopes; preparing presentations; and creating address lists, newsletters, footnotes, calendars, and tables.

Like Microsoft's Wizards, the Assistants ask users to make a few basic design choices

and supply necessary data, after which the program does the grunt work of building the required document. Assistants, though, turn out to be smarter than Wizards: The Footnote Assistant, for example, lets you choose between the two note styles most commonly used in the academic world, and it knows what information each style requires for a wide variety of purposes, from dissertations to filmstrips.

Complementing the Assistants are new, professionally designed templates for creating résumés, certificates, invitations, and promotional flyers, as well as a check ledger, a mortgage analyzer, and an investment tracker.

The other major improvement in the new release is full compatibility with ClarisWorks 3.0 for Windows. Aside from the minor problems that can arise if the fonts on the two systems don't correspond, version 3.0 files should be painlessly interchangeable between platforms.

Other enhancements include a word-count command, a document-summary window (for attaching keywords, author information, and other data to a file), and a new XTND filter that adds MacWrite Pro to the long list of formats the program can read and write.

Best of all in this age of bloated behemoths, ClarisWorks is still fast and elegant, and its appetite for resources continues to be relatively restrained. On Macs with 680x0 processors, the program's suggested RAM allocation has increased from 800K to 975K. For the native Power Mac version, the suggested amount is 2,289K, but only 975K of that has to be real RAM if you're using virtual memory or Connectix's RAM Doubler. An Easy Install now fills about 9.5 MB on-disk, up from 3.5 MB, but most of that goes to items you can live without if space is tight. The application itself occupies only 837K on a 680x0 Mac and 1.5 MB on a Power Mac, and unlike Microsoft Works 4.0, which requires a 68020 or later processor, ClarisWorks still runs on every Mac

model introduced in the last nine years, including the Plus, the SE, and the PowerBook 100.

ClarisWorks has always been a terrific package, and in version 3.0 it's even better. However, it's far from perfect. In fact, it won't take you long to come up with a wish list for version 4.0. Features we'd like to see include direct in-cell editing and cell annotation in spreadsheets, a Zmodem tool for telecommunications, and the ability to read FileMaker Pro databases. In addition, some of the new features in version 3.0 need refinement. The document-summary information, for example, would be much more useful if you could search it (to find all files with a particular keyword or author, for instance), and word count should work on selections instead of just on entire documents. Furthermore, the new release doesn't take much advantage of System 7.5: It supports PowerTalk mailing but doesn't support Drag and Drop, Apple Guide, or AppleScript.

One final gripe: Claris now provides only a bare-bones manual, expecting users to refer mainly to the electronic help system, but we found that system annoyingly slow to launch and awkward to navigate.

The Bottom Line

ClarisWorks has always been our choice among integrated packages, even when its suggested retail price was \$299, more than twice that of Microsoft Works and Symantec's GreatWorks. By cutting the price to \$129 and adding some useful features while keeping the program lean, Claris has removed all doubt: Despite some shortcomings, ClarisWorks 3.0 is the best of breed in its category. / Henry Norr

ClarisWorks 3.0

Rating: 

Price: \$129; upgrade, \$39 (list).

Pros: Strong set of features for word processing, spreadsheets, databases, communications, and graphics. Smooth integration. Fast and relatively compact. File-compatible with Windows version.

Cons: No support for many System 7.5 technologies. On-line help slow and sometimes confusing.

Company: Claris, Santa Clara, CA; 800-325-2747 or 408-727-8227.

Reader Service: Circle #406.

Blueprint 5 / One of the least expensive 2-D-CAD programs around is also one of the best.

SEVERAL YEARS AGO, there were more than a dozen 2-D-CAD programs for the Mac; today fewer than half remain on the market. Among the survivors is Graphsoft's Blueprint, the 2-D counterpart of the award-winning and feature-rich MiniCad. Still affordably priced, Blueprint 5 has emerged as one of the preeminent programs for mechanical and architectural drafting, boasting more than a dozen new tools. Furthermore, because it is Power Mac-native and has a new code base, Blueprint 5 is considerably faster than earlier versions.

Even Placement

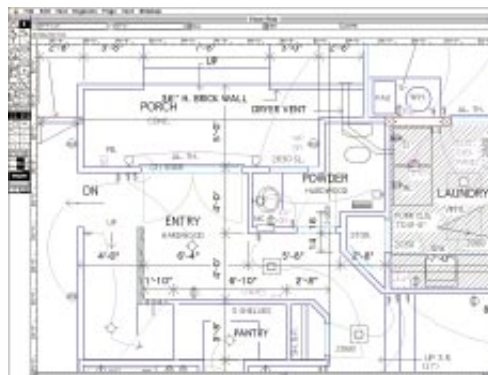
One of the most innovative new tools in Blueprint 5, one we haven't seen in any other CAD program, is the ability to distribute selected objects evenly along a path. For instance, if you're a landscape designer who wants to place pine trees 4 feet apart around an office complex, you can use the new Duplicate Along Path command to have the program duplicate the trees at 4-foot increments along the path you define. Alternatively, you can specify the number of duplicates, instead of the distance between them, and Blueprint will space the objects evenly for you.

Another innovative feature is Blueprint's new zoom option, called Fit to Objects. Fit to Objects fills your screen with the currently selected object or objects, which is helpful for working on complex drawings. We'd like to see this feature standard in every draw and CAD program.

Blueprint 5 is packed with new tools, many of them first introduced in MiniCad 5. The Move Page tool lets you move your drawing around on the page, which is particularly useful when you're printing a blueprint, since you can make sure your entire drawing will be within the area your printer can output. The Extend tool automatically lengthens an object to meet any selected line. You can also resize or skew an object around a vertex you select and join

walls with a y-joint or a butt joint. There are even handy Tape Measure and Protractor tools. Additionally, since its new 2-D Properties command can calculate the area, perimeter, centroid, moments of inertia, and radii of gyration of a single closed object, engineers will find Blueprint useful for more than drafting.

Blueprint is also more sophisticated about text than earlier versions, which limited you to using a single font, style, and size



For those who need a 2-D-drafting tool, Blueprint 5, with many new features, is more practical than its predecessor for architectural work.

in each drawing. Now you can use multiple fonts, styles, and sizes, but you still can't use multiple justifications in the same text block.

Perhaps the most noteworthy change in Blueprint 5 is native support for the Power Mac. Depending on the operation, Blueprint 5 running on a Power Mac 7100/66 is anywhere from three to ten times as fast as Blueprint 4 running on a Quadra 700. Quadra owners will see speed improvements as well, since Blueprint 5's source code has been totally rewritten and optimized for snappier response.

Off the Mark

Other new, useful, and time-saving additions in Blueprint 5 have a few quirks. For instance, the new Offset tool creates a copy of a selected object, offset by the number of degrees you specify. It offsets rectangles, arcs, circles, and polygons nicely but has a problem with radiused corners. When you

offset a radiused corner, the Offset tool flips the radius and the corner inverts.

Like many draw programs, Blueprint 5 now lets you nudge objects along, pixel by pixel, using the arrow keys. However, since Blueprint normally uses the arrow keys to reposition drawings, nudging is annoyingly modal. You have access to nudge mode by using a menu command or typing a key combination. Pressing the Option key and using the arrows for nudging would be a better method.

Level Workings

Blueprint 5 still has an excellent approach to organizing CAD drawings. You can use levels to document each floor of a multi-story building and classes to identify the piping, electrical, and HVAC components. You can also turn off any class or level if, for instance, you want to examine the heating structure only on the first floor. Additionally, precise placement and alignment of objects is easy with Blueprint's Smart-Cursor, which highlights the midpoints, endpoints, centers, intersections, and tangents of objects.

Blueprint can import and export drawings in the PICT, EPS, and DXF formats, in case you want to work with other CAD programs or desktop-publishing applications.

The Bottom Line

Continued attention and persistence in the 2-D-CAD market have paid off for Graphsoft. Blueprint 5 can handle most drafting tasks easily, even though, unlike its closest but more expensive competitor, IDD's \$449 MacDraft, it lacks an internal database and a report generator. When you just need a good drafting tool, Blueprint does the trick and has a nice price to boot. / James K. Anders

Blueprint 5

Rating: 

Price: \$295 (list).

Pros: Inexpensive. Faster than earlier versions. Many new, useful features, including incremental duplication along a path and instant zoom-in to selected objects.

Cons: Offset tool flips radiused corners. Awkward modality for nudging.

Company: Graphsoft, Columbia, MD; 410-290-5114.

Reader Service: Circle #407.

NewGen Chromax / NewGen's first color printer goes to the head of the dye-sub class.

NEWGEN MAKES ITS FIRST foray into the color-printer market with the \$15,995 NewGen Chromax, a 300-dpi dye-sublimation printer capable of printing full-bleed, tabloid-sized pages. We found the printer eminently suitable for any application that requires large-format, photo-realistic output. Combining excellent registration, a speedy RISC-based PostScript Level 2-compatible RIP, a wealth of connectivity options, and industrial-strength color-



A winner in the dye-sub-printer class, the NewGen Chromax teams excellent color quality with speed and sophisticated color-management features.

matching features, the NewGen Chromax is a strong new contender in the prepress and graphic-arts market.

Speedy and Cost-Effective

Essentially a plug-and-play printer, the Chromax uses a speedy Minolta engine that boasts better registration than any of the engines we've seen in other large-format dye-sub printers. It handles paper sizes up to Super B (12 x 19.2 inches, with a maximum printable area of 11.81 x 17.52 inches) and uses either four-color CMYK, three-color CMY, or black ribbons. The engine itself takes 6 minutes, 45 seconds to print a four-color Super B-sized page, making it one of the fastest on the market. Moreover, the cost for such a page is a very competitive \$6.40, making the Chromax one of the least expensive printers to operate.

The engine is driven by a Phoenix

PostScript Level 2-compatible RIP running on a 33-MHz AMD 29030 RISC processor. In our tests, the PostScript clone proved well behaved — it handled complex QuarkXPress pages containing Illustrator and FreeHand files as well as large photographic-image files without so much as a hiccup. With the printer's standard 48 MB of RAM, it's also as fast as any other RIP we've seen in a dye-sub printer. For even greater speed, you can expand the RAM to as much as 192 MB, using standard 72-pin SIMMs. The 170-MB internal hard drive can be used in part for font storage, but it also holds the Phoenix PostScript software, which you can easily update by downloading new software from the Mac.

The printer comes standard with AppleTalk, parallel, and serial RS-232 interfaces, but most users will want the extra speed procured from the optional \$499 Ethernet card, which handles EtherTalk, NetWare, and TCP/IP. Each one of the printer's ports are active simultaneously and support full autosensing and autoswitching.

The Chromax also excels in color control and accuracy, thanks to the inclusion of ColorMatch (DayStar Digital's implementation of the Kodak KCMS color-management system, which is especially useful for handling Photo CD images) and a KCMS device profile (a Precision Transform, or PT in Kodak-speak). ColorMatch comprises the Kodak color-matching engine; a set of input, monitor, and output PTs; monitor-calibration software; an Adobe Photoshop plug-in; and a Quark XTension.

ColorMatch lets you print RGB images to the Chromax through KCMS, which gives you a very close match between the color on your monitor and output from the Chromax. You can also convert RGB files to CMYK through KCMS, using PTs for SWOP, Eurostyle, and Toyo inks and for several desktop printers and color copiers.

To print press simulations with the Chromax, you must use QuarkXPress with ColorMatch's Quark XTension. The XTension lets you open a TIFF image, select a source profile, and preview and print the output. You can also use a CMYK profile as a source profile, which lets you simulate SWOP or Eurostyle inks, for example, while printing with the Chromax.

If you use KCMS to create CMYK separations, you'll get a dead-on color match from the Chromax. If you're using CMYK drum scans, however, the color matching may not be quite as good as that from a conventional proof, such as a 3M Matchprint, because KCMS makes some assumptions about ink limits and GCR (gray component replacement) that may not exactly match the settings the drum scanner uses.

NewGen plans to offer even more functionality in the future. We looked at a beta version of a Quark XTension that lets you print DCS files with the Chromax, using high-resolution data rather than a screen preview. In addition, a Photoshop direct-export module that exports images very quickly, via SCSI, to the printer is in the works. NewGen also plans to add support for trapping and overprinting early this year.

The Bottom Line

The NewGen Chromax is an exceptionally full-featured printer that yields excellent image quality at a very competitive price. The inclusion of DayStar Digital's ColorMatch color-management software adds a great deal of value and ensures very accurate color. With the Chromax, NewGen has set a new standard in price, performance, and functionality for dye-sublimation printing. / Bruce Fraser

NewGen Chromax

Rating: ★★★★★

Price: \$15,995; Ethernet option, \$499 (list).

Pros: Excellent registration, output quality, and color accuracy. Competitive price on both the printer and the media. Firmware is easily upgradable. Takes standard 72-pin RAM.

Cons: Kodak's KCMS offers only limited control over CMYK ink densities.

Company: NewGen Systems, Fountain Valley, CA; 800-756-0056 or 714-641-8600.

Reader Service: Circle #408.

Adobe Acrobat 2.0 / The next generation of portable-document publishing has arrived.

ADOBE CREATED the first portable-document software suite, Acrobat, which enables you to create electronic documents that others can view regardless of the applications and operating system they use. Now that several competitors have created their own portable-document software, Adobe has leapfrogged them all with an updated Acrobat that addresses the original version's weaknesses and adds some nice new features.

Picture-Perfect

The best improvement in the new version is Acrobat's software license: Acrobat Reader, which lets users read PDF (portable-document format) files, is now freely distributable. This means electronic publishers can be assured that any person with a computer — a Mac or a Windows, DOS, or UNIX machine — can read their documents without having to pay the \$50 Adobe used to charge for each reader license. It's also easier to read the text in PDF files. Clicking on an article magnifies the text, and Acrobat can move you through the article as you click your mouse — an invaluable step toward making documents once meant for paper readable on-screen.

With Acrobat Exchange, which lets you create bookmarks, thumbnails, and hyper-text links within a single PDF file, you can now also create links to any documents — of any kind — stored on any hard disk mounted on your desktop. Additionally, the third-party freeware, Internet Link plug-in, which uses Acrobat's new plug-in architecture, lets you establish links to any files available on the Internet.

Another plug-in, Acrobat Search, lets you search through any number of Acrobat files on your network, using a powerful engine that includes wildcard and phonetic options. However, in order to search for documents, you must have indexed them with Acrobat Catalog, an application in the Acrobat for Workgroups package and currently available only for Windows.

Acrobat 2.0's new security features let you password-protect PDF files and make

readers unable to print, copy, or make changes to a document. However, secure files can't be read by Acrobat Reader 1.0, which is the only PDF reader available for DOS and UNIX systems.

To keep documents looking exactly the way you created them, Acrobat lets you embed into your Acrobat documents part or all of any font you use. If you don't want to create a huge PDF file loaded down with embedded fonts, Acrobat will approximate any fonts that aren't available, by using Adobe Type Manager (ATM) and two multiple-master fonts. Acrobat's use of ATM is less obtrusive than it was in version 1.0 — instead of installing ATM in the Control Panels folder, Acrobat places ATM in the Acrobat folder, where it loads only when Acrobat is running.

The Bottom Line

Competition has driven Adobe to learn the lessons of Acrobat 1.0 well. Acrobat 2.0's free viewer now makes it easier to reach a wide audience, and its new security measures reassure authors that their work is safe. These functions, along with improved on-screen readability and the power to make links to files on your hard disk or across the Internet, prove that Acrobat remains the leader in the category it created.

/ Jason Snell

Adobe Acrobat 2.0

Rating: 

Price: Acrobat 2.0 (includes Acrobat Exchange), \$195; Acrobat Pro 2.0 (includes Acrobat Exchange and Acrobat Distiller), \$595; Acrobat for Workgroups (includes 10-user Acrobat Exchange license, Acrobat Distiller, and Acrobat Catalog for Windows), \$1,595 (list).

Pros: Free viewer. Improved security. Multiple font-embedding and -replacement features. Strong text-search functions. Improved on-screen readability.

Cons: Creation of searchable indexes must be done with Windows machine.

Company: Adobe Systems, Mountain View, CA; 800-833-6687 or 415-961-4400.

Reader Service: Circle #409.

Helix Express 3.0 / Despite a welcome boost in speed, iconic database program remains behind the times.

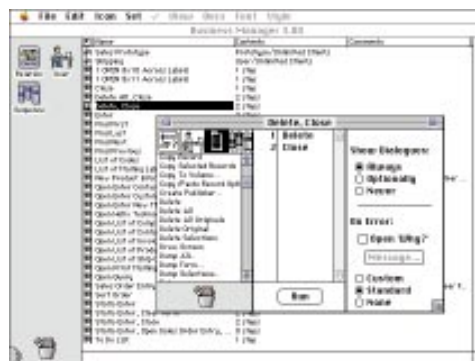
USING HELIX EXPRESS' unique icons instead of procedural commands works well when you're creating a basic relational database, but it doesn't work so well if you need support for SQL and ODBC servers or if you're trying to find just the right icon to use in a complex database construction. In addition, it has taken Helix Express several years to catch up with some vital features of System 7, such as Apple events and publish-and-subscribe, and to speed up its sluggish performance — as it does now in version 3.0.

Iconic Interaction

Learning to use Helix Express is nothing like learning more-mainstream relational-database programs — such as ACI US' 4th Dimension, Microsoft's FoxPro 2.6, and Blyth Software's Omnis 7³ — that use procedural programming languages. You use three tool and command types — relation, sequence, and user — each of which appears as an icon on your desktop. Within each of these icons is another set of icons you combine to create your database. With the relation icons, you create a main window and the fields for your database. The sequence icons set up the relations between fields, much as a script does in other relational-database programs. For instance, if you want the information in one field added to another, you put one of the sequence icons into your database. For exporting and security, the user icons let you set up printing or create different levels of access for different users. Additionally, the program has subsidiary icons for queries, views, and templates, among other things.

Once you've fiddled with the iconic desktop and understand how to use the basic and subsidiary icons, you can build Helix Express databases that work well for many basic business uses. However, in order to feel comfortable, you have to cast aside any programming knowledge you might have. You also must dig through several levels of icons to find the commands you need,

which can make building a Helix Express database frustrating. Additionally, since each icon essentially contains a capsule of code, there is no script, much less a code editor, and debugging a complex database can be a nightmare. Furthermore, you're tied to using the Helix Express 3.0 server software for your database — the program doesn't support SQL or ODBC, which makes it impractical for many bigger businesses



Helix Express 3.0 boasts new conditional sequences and buttons to help you create a basic database more quickly.

that already store their information on Informix or Oracle database servers.

One long-overdue addition to Helix Express is Apple-events support, which finally makes practical use of BLOB (Binary Large Object) data fields, introduced in version 2.0. BLOBs let you place virtually any desktop item, from sounds and QuickTime movies to pictures and entire folders filled with files, into a Helix database. However, since version 2.0 did not support publish-and-subscribe or Apple events, there was no way for users to easily view embedded documents without finding and launching the creating application. Now that Helix Express 3.0 has Apple Event External Access (AEEA), you can retrieve information from Helix Express databases when you're using an Apple-event-savvy application or dynamically launch a file that is embedded in your Helix Express database.

However, Helix Express still has to catch up with the current operating system — the program doesn't support AppleScript,

QuickDraw GX, or PowerTalk.

Helix Express 3.0's single-user speed is considerably faster than that of its predecessor, and in our tests, the program easily matched or outpaced some other relational-database programs when it came to sorting, searching, and writing to disk. Additionally, its multiuser speed has remained up to par in version 3.0. If you have a Power Mac, however, you won't get an additional speed boost with Helix Express 3.0, since it's not Power Mac-native.

Helix Express now supports color and provides a set of conditional sequences and buttons, which are essentially prewritten code you can use in creating your database. The program also has some long-overdue improvements in its ability to report and handle information. For instance, with new client/server administrator screens, your Helix Express database can give an administrator key information about database use, such as who is logged on to the server. The enhanced Power Query lets you do Boolean searches, using multiple criteria.

The Bottom Line

If you're already familiar with other relational-database programs or feel comfortable enough with scripting to take on the procedural languages in 4th Dimension, FoxPro, or Omnis 7³, you'll get more power and better support for current technology with those programs than you will with Helix Express 3.0. Only if you're not comfortable learning complex procedural languages does using Helix Express 3.0 make sense, even though it will still take you time to master Helix's hierarchical iconic structure. Additionally, getting support from the company itself or from third parties can be difficult. / Don Crabb

Helix Express 3.0

Rating:

Price: \$589; unlimited run-time license, \$495 per year (list).

Pros: Doesn't require programming knowledge. Faster data entry and retrieval than in earlier version.

Cons: No support for AppleScript, QuickDraw GX, or PowerTalk. Incompatible with SQL and ODBC servers. Not Power Mac-native.

Company: Helix Technologies, Prospect Heights, IL; 800-364-3549 or 708-465-0242.

Reader Service: Circle #410.

Quicken 5.0 / Forecast your finances with our favorite user-friendly personal-finance program.

IN MANY WAYS, Quicken is a model of what a Mac program should be: intuitive and inexpensive yet surprisingly powerful and practical. With this refreshing upgrade, Intuit has refined several of the program's already admirable features and has introduced some new ones, many of which add to the program's usefulness as a financial-planning tool.

Financial Future

The most dramatic new feature is Quicken's Financial Calendar, which can automatically track account transactions and record them on a monthly calendar. This calendar is fully integrated with Quicken's account registers — any transaction you record in a register automatically appears as an event on the calendar, and any transaction you enter into the calendar appears in the appropriate register.

This calendar is particularly useful for scheduling payments. To do so, you simply double-click on the appropriate date in the calendar, and a dialog box appears in which you enter the transaction. You can

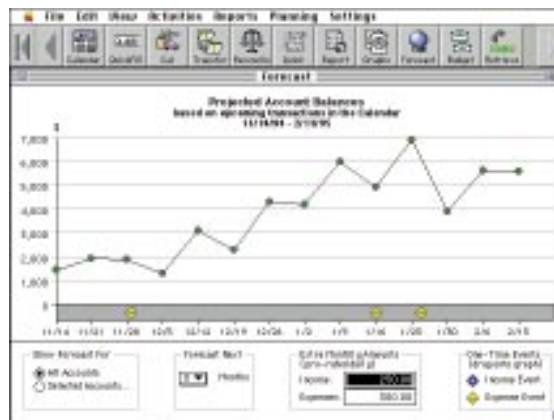
monthly car payment or a biweekly paycheck deposit. Quicken will remind you of each recurring transaction on the appropriate date.

Quicken's ability to let you manage your future finances has been beefed up in other ways as well. The program now includes its own integrated tax planner. In the tax-planner window, you type general income-tax information, such as income, filing status, deductions, withholdings, and estimated-tax payments; Quicken then gives you an instant calculation of your tax liability. You can even create one or two alternative scenarios to see, for instance, what your tax liability will be if you file jointly with your spouse instead of separately.

You can forecast not only your tax liability but also your total financial picture. In response to a single click, Quicken checks your current account balances; figures in any scheduled transactions; and creates a graph that shows you projected account balances 1, 3, 6, or 12 months into the future. You can drag additional one-time expense or income events, such as a salary bonus or a tax payment, onto the graph to see what effect they will have on your cash flow on any particular date.

Quicken has always been able to generate a wide range of reports, from net-worth calculations to lists of transactions in all or selected accounts over a particular time period. Now, you can instantly generate a QuickReport — a streamlined report that compiles a listing of

all the transactions that pertain to one specific payee, category, or account. You can, for instance, request a QuickReport that shows all your grocery expenses for a year or all deposits made to your savings account. Another new kind of report, the Comparison Report, is a side-by-side comparison of financial data from any two time periods.

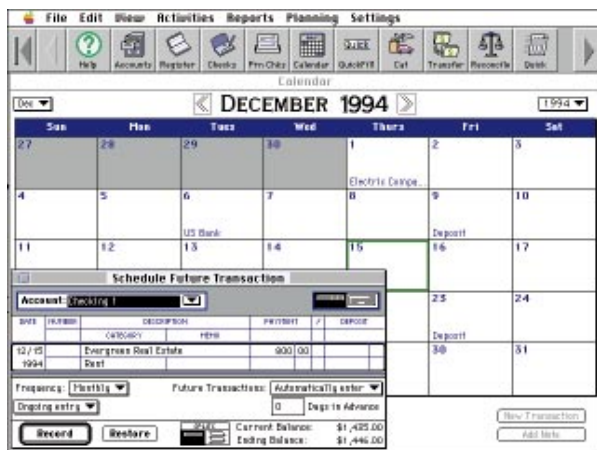


Forecast your financial plans with the new graphs in Quicken 5.0.

In general, the Quicken interface has been spruced up, most notably with a colorful, fully customizable tool bar that gives you one-click access to the program's most powerful features. You can open an account register, write a check, transfer funds, look at the calendar, reconcile a bank statement, or open your list of transaction categories by using the buttons on the tool bar.

The on-line help is more generous than ever. Each time you launch Quicken, you're treated to a new Quicken Tip, a practical hint about one of Quicken's features or shortcuts. In the program, besides using the context-sensitive help system and Balloon Help, you can also consult Qcards, small windows with step-by-step instructions for handling certain Quicken tasks, such as reconciling a bank statement or setting up a new account register.

Quicken 5.0 is also packed with other shortcuts that speed up data entry. For example, when entering the date of a new transaction, you now have to type only the day; Quicken fills in the month for you. The QuickFill feature memorizes transactions as you enter them; when you start entering a transaction, Quicken finishes entering it for you, from the name of the payee to the transaction's category — if you've entered a



Quicken's new calendar automatically shows transactions in all your financial accounts by date and lets you schedule individual and recurring transactions.

set up Quicken to record this transaction automatically on the date indicated or to simply remind you 0 to 30 days in advance to make the payment. You can also schedule recurring transactions, such as a

similar transaction before. In this version of the program, QuickFill shows the transactions on which it bases its assumptions, in its own window, where you can edit or delete them. You can also drag a transaction from this QuickFill window onto a day in the calendar to record that kind of transaction on that day.

Another cool new enhancement is QuickMath, which lets you add, subtract, multiply, or divide numbers in any dollar-amount field in Quicken. To use QuickMath, you press the = key and type numbers and +, -, *, /, or = keys to perform calculations such as adding up several checks to be included in one deposit. Your computations pop up on a paper-tape-like readout. When you click on the Total button on the readout or press the Enter key, Quicken calculates the total from the tape and places it in the field. With this feature, you can quickly subtotal a series of numbers without having to use a separate calculator.

We could find only a few minor flaws in Quicken 5.0. It still allows categories and classes to be only as long as 15 characters and descriptions as long as 30 characters, so you can have an Auto category but not an Automobile Expenses category. It runs on nearly all Macs, from a PowerBook 100 to a Power Mac 8100, but its additional new features make it a bit more sluggish than earlier versions on slower Macs.

The Bottom Line

Quicken has always been one of the most useful programs around. Version 5.0 is a satisfying upgrade with a well-designed financial calendar and additional new tools that make recording and extracting personal financial data easier and faster than ever. / Joseph Schorr

Quicken 5.0

Rating: ★★★★★

Price: \$49.95 (list).

Pros: Intuitive financial management. Numerous reports, shortcuts, and conveniences. Calendar-based financial planner.

Cons: Slower than previous version on older Macs.

Company: Intuit, Menlo Park, CA; 800-624-6930 or 415-322-0573.

Reader Service: Circle #411.

Polaroid SprintScan 35 / Bargain-priced and compact, this slide scanner delivers sharp results.

IF YOU NEED a fast slide scanner but think you can't afford one, think again. With high resolution and speed that rivals that of slide scanners costing almost three times as much, the new \$2,495 Polaroid SprintScan 35 is both proficient and affordable.

Small Wonder

The SprintScan scans 35mm slides and film by capturing 8 bits of color data at resolutions up to 2,700 dpi; this high resolution is particularly useful if you need to enlarge your images. It has a very small footprint, measuring only 7 inches high, 6 inches wide, and 10 inches deep, and weighs 10 pounds. The small size makes it an easy addition to already cramped desktops.

We scanned a 35mm slide with the SprintScan and compared the speed and output quality against the results we obtained with the more expensive (\$8,995) Kodak RFS 2035 Plus slide scanner, one of the top choices in our November '94 report (see "Top-Quality Scanners," page 82).

At 2,000 dpi, the Kodak scanner's maximum resolution, the RFS 2035 Plus was slightly faster than the SprintScan: It scanned the slide in 54 seconds, compared to 59 seconds for the SprintScan. At its maximum resolution, 2,700 dpi, the SprintScan scanned the same slide in 95 seconds.

The output quality from both scanners was very good. The image from the Kodak scanner had slightly better color depth, but it took a keen eye to notice the difference. The SprintScan produced good color results as well as sharp images; the RFS 2035 Plus' images were blurry by comparison.

In addition to including scanner drivers, the SprintScan and the RFS 2035 Plus each come with Photoshop plug-ins. The plug-ins provide color-balance controls for setting white and black points and sliding bars for setting brightness, contrast, saturation, midtones, and sharpness. The Kodak scanner's software does have an automatic-color-balance feature and a more intuitive interface than the SprintScan's software. For instance, in the SprintScan's plug-in,



Don't be fooled by the diminutive size: The speedy Polaroid SprintScan 35 scans slides and film at a higher resolution than its more expensive competition.

the update button has an eye icon similar to that of the Photoshop application button and the exposure button looks like a generic Photoshop-file icon. It's tough to figure out which icon represents which function unless you keep the manual nearby. On the other hand, the SprintScan plug-in can control gamma curves for each color channel, something the RFS 2035 Plus' software can't do. And the SprintScan's plug-in has a button for automatic exposure control, which estimates the best contrast and brightness values, and an update feature, which adjusts the previewed image whenever you make a change in your scanning setup.

The Bottom Line

The Polaroid SprintScan 35 is a good deal. Its speed rivals that of more expensive scanners, it gives you good color balance and sharpness, and it comes with software that provides a nice variety of features.

/ Roman Victor Loyola

Polaroid SprintScan 35

Rating: ★★★★★

Price: \$2,495 (list).

Pros: Fast. Inexpensive. Compact size. Good output quality. Gamma controls.

Cons: Unintuitive interface.

Company: Polaroid, Cambridge, MA; 800-816-2611 or 617-386-3573.

Reader Service: Circle #412.

PHOTOGRAPHY / LEON

MapInfo 3.0 / Beefed-up graphical and analytical tools mark the latest release of the Mac's top mapping program.

DESKTOP MAPPING software is a powerful tool for analyzing geographic business data, and no program in its price range is more powerful than MapInfo. The latest release — version 3.0 — extends MapInfo's graphical prowess, hones its data-access skills, and enhances its interface.

Putting Your Business on the Map

MapInfo combines a relational-database manager with graphical mapping features. The program maps your data by linking it with geographic features. When you import a data file into MapInfo's database, the program assigns *x* and *y* coordinates to each record by matching its geographic compo-

maps by using the images as backgrounds. The program can read a wide range of image-file formats, including TIFF, GIF, and PICT.

If you plan to use MapInfo to manage sales territories or other types of districts, you'll appreciate the enhancements to the program's redistricting feature, which lets you create and realign territories and perform calculations on the associated data. Unlike the previous version, which made you manually modify the data associated with a territory after the territory was redefined, version 3.0 adjusts the data automatically — a huge time-saver.

Thematic mapping, which displays data values with shading or patterns, has also been improved. You have many more options for telling MapInfo how to graphically represent data on a map, so you can display more than one variable at a time. For example, you can use pie and bar charts as your map symbols or use more than one attribute, such as color and size, to represent multiple variables with one symbol.

Other new features give you improved control over the creation and editing of custom map objects. The program supports a greater number of nodes than its predecessor for regional and polyline objects, and you can select all the nodes in a region or polyline simply by selecting one and then Shift-clicking on another, which makes it easier to edit detailed objects. Also, when you select and drag an object, you can now view the object as you drag it, which makes positioning it easier.

MapInfo is a sophisticated tool, and as such, it comes with a fairly steep learning curve. To make the program easier to learn and use, version 3.0 features a simplified interface and dialog boxes that help guide

you through complex tasks. Three new ButtonPads replace the previous version's tool palette and provide one-click access to frequently used commands. The Drawing ButtonPad makes it much easier to select colors, fill patterns, line thicknesses, line styles, and symbols quickly. A new status bar at the bottom of the screen reports on the current zoom level and map layer.

Unlike version 2.0, the new release is fully scriptable, with support for AppleScript and UserLand's Frontier. The package provides several sample scripts to help you get started. All in all, by combining MapInfo 3.0 with Apple's scriptable Finder and your favorite scriptable database program — FileMaker Pro or 4th Dimension, for example — you can create incredibly powerful mapping applications.

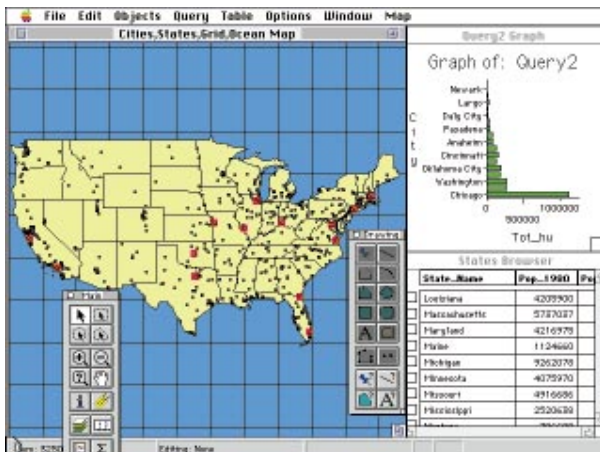
Crucial Links

Version 3.0 also addresses another of the previous version's problems: lack of easy access to existing corporate databases. The process of retrieving data from a large corporate database, massaging it into a format compatible with a Mac database server, and accessing the data with MapInfo was often tedious and error-prone.

Enter MapInfo's SQL DataLink, which the company sells separately for \$595. It provides predefined scripts that let you retrieve and plot data from Oracle and Sybase host databases, regardless of their location. With MapBasic, MapInfo's powerful programming environment for creating custom applications, you can control remote queries and build custom client/server applications that let you automate the updating of your local map databases. This data-access goody was previously available only with the Windows version.

The MapBasic programming environment, a \$795 add-on to MapInfo, has also been improved. The latest version includes an expanded command set, the aforementioned control over SQL DataLink processes, and support for the creation and use of custom buttons. Additionally, it now lets you edit one file as you compile another and allows you to link program modules to create a single executable file.

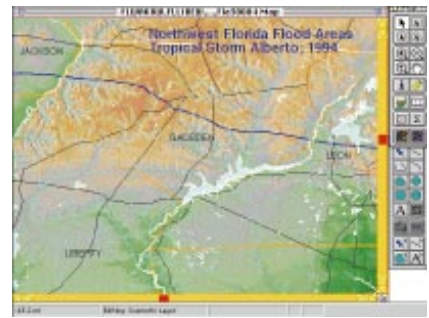
You can team MapBasic with other applications, using Apple events. Like MapInfo, it also supports external scripting environments, such as AppleScript and UserLand's



MapInfo 3.0's redesigned interface features new ButtonPads that offer convenient access to frequently used tools.

nent, such as a ZIP code or street address, to a MapInfo table that has already been assigned the coordinates necessary to place data on a map. This process is called geocoding, and once it's completed, you can map your data onto one of the thousands of detailed digitized maps included with the package or onto your own maps that you create from scratch, using a digitizing tablet.

Among the impressive new features in version 3.0 is the ability to incorporate scanned images, such as aerial photographs and satellite images, into map layers, so you can enhance the appearance of



Raster images, such as the topographic map used here, can now be incorporated into the maps you create with MapInfo 3.0.


Frontier, and can run HyperCard external commands. In addition, MapBasic produces scripts that can run without modification under MapInfo for Windows 3.0, an important feature for mixed Mac and PC environments.

Both MapInfo and MapBasic come with excellent Apple Guide help files (you need System 7.5 to take advantage of Apple Guide) as well as a detailed, useful set of manuals. A CD-ROM full of ready-to-use maps and sample data is included with the package.

MapInfo, MapBasic, and SQL DataLink are available for Sun and HP-UX workstations as well as for the Mac and for PCs running Windows.

The Bottom Line

With version 3.0, MapInfo has improved on an already powerful package. A revamped interface, more-powerful data-visualization features, enhanced map-annotation and -editing tools, and improved data-access features make MapInfo a first-rate program for analyzing geographic data. If your business data makes more sense displayed on a map than it would in a spreadsheet or database table, then we recommend MapInfo to you without reservation.

/ Don Crabb 

MapInfo 3.0

Rating: 

Price: \$1,295; MapBasic, \$795; SQL DataLink, \$595 (list).

Pros: Excellent data-visualization and map-annotation tools. Improved interface. Good data-access capabilities.

Cons: Steep learning curve.

Company: MapInfo, Troy, NY; 800-327-8627 or 518-285-6000.

Reader Service: Circle #413.

Connectix QuickCam / Low-cost camera brings video to the masses

UNTIL NOW, CREATING your own still pictures and QuickTime movies required a significant hardware investment. Connectix's QuickCam, a 4-bit gray-scale camera that attaches to your Mac's serial port, is a low-cost option for people who want to dabble in multimedia.

The QuickCam — a racquetball-sized sphere — can sit atop either its custom-made rubber pyramid base or, thanks to a socket on the underside of the camera, a standard tripod. The QuickCam can capture images ranging from 80 x 60 pixels to 320 x 240 pixels and either still frames or video in 16-level gray scale.

Frame Up. The QuickCam's full-motion video signal is designed especially for QuickTime and requires at least System 7.0 and QuickTime 2.0. Video can be recorded at a variety of frame rates: You can get up to 30 fps (frames per second) at 80 x 60 pixels, but only 4 fps at 320 x 240 pixels. The recording of sound through the QuickCam and the speed of your Mac also affect the frame rate.

Serial Killer. The QuickCam's audio-input capability is nice but limited. Using the QuickCam to record sound reduces the speed of data transfer through the serial port and makes video-capture frame rates drop. The QuickCam can record sound only at 5 KHz — about the quality of a telephone call.

The grainy pictures and video you get with the QuickCam make it unsuitable for serious desktop publishing or video, but its low price makes it perfect for casual use. It provides an inexpensive way to create digital pictures for holiday newsletters and can give kids the power to create multimedia school presentations, either by using the still- and video-capture software that ships with the QuickCam or by using a simple video-editing package such as VideoFusion's QuickFlix! The QuickCam also ships with an After Dark-compatible screen-saver module that

displays on your screen what the QuickCam is seeing. This feature is guaranteed to cause anyone who walks past your Mac to do a double-take.

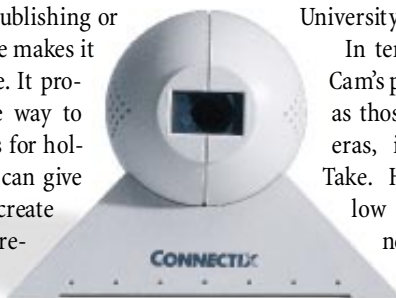
You can additionally use the QuickCam as a security device (it is able to make time-lapse movies) and for quick-and-dirty videoconferencing (employing software-conferencing applications such as Intelligence at Large's Being There or Cornell University's CU-SeeMe).

In terms of quality, the QuickCam's pictures are just not as good as those from other digital cameras, including Apple's QuickTake. However, the QuickCam's

low price and general usefulness and versatility make it quite a tempting impulse buy for those who

want to explore the multimedia frontier.

/ Jeffrey Sullivan and Jason Snell



Connectix QuickCam ★★★ / Price: \$149 (list). Company: Connectix, San Mateo, CA; 800-950-5880 or 415-571-5100. Reader Service: Circle #414.

Art Explorer and Flying Colors / Software for budding artists

AS ANY KID KNOWS, crayons just don't cut it anymore. Today's creatively inclined children are more likely to manipulate pixels than Play-Doh. If this is the case in your house, check out two new products that earned accolades in our house: Adobe's Art Explorer and Davidson's Flying Colors.

The programs take the same approach: You choose a background scene (outer space, castle/dungeon, landscape, undersea) and create a picture, using basic painting tools and digital "stamps." For instance, you can stamp flowers onto a field, sneak a wizard into a castle, or — in a more original vein — plant a snowman in the middle of a barren moonscape. Every action — stamping, pouring paint, opening a menu — is accompanied by some kind of sound.

Each program is easy to tailor for particular age levels and has a basic mode, with minimum tools and menu commands for younger children, as well as intermediate and advanced modes. Each program also has plenty of options and activities to keep everyone busy for hours.

Art Explorer. In Art Explorer, you can choose the size of a stamp (small, medium, or large) before you place it, but you have to select the item in the document — after you've placed it — in order to make other size changes or to flip or rotate it. These extra steps are not only tedious but also

impossible if, for example, you're working with a clump of flowers you've stamped one at a time. Art Explorer's work environment is so artistically rendered that differentiating between the background design and the tools is sometimes hard, and the large size of the tools cuts down on the area of the window you can work in.

Flying Colors. For ease of use from installation to quitting, Flying Colors is the clear victor. For example, in Flying Colors, once you've selected a stamp, you can click on any of the on-screen controls to flip, rotate, or size it or to make contrast changes before placing the stamp. Flying Colors' background choices are displayed in their own dialog box, not in the Open dialog box as in Art Explorer, and Flying Colors has more of its options available on-screen at any time.

Art Explorer offers some advanced effects, such as Trace Edges and Diffuse (plucked from the company's SuperPaint program), that aren't available in Flying Colors, and it has a nifty "creature builder" option. Furthermore, Art Explorer's stamps are artistically more sophisticated than Flying Colors'. Flying Colors has the clear edge in the special-effects department, however, because its use of "cycling" colors makes objects shimmer and pulse on-screen. You can make a yellow-orange sun pulsate or make smoke swirl in the glass tubing on the wizard's table, which is a lot more fun than glitter paint ever was. / Sharon Zardetto Aker

Art Explorer ★★★ / Price: \$49.95 (street). Company: Adobe Systems, Mountain View, CA; 415-961-4400. Reader Service: Circle #415.

Flying Colors ★★★ / Price: \$59.95 (list). Company: Davidson & Associates, Torrance, CA; 800-545-7677 or 310-793-0600. Reader Service: Circle #416.





Grammatik 6 / Grammar hammer

WHEN IT COMES TO identifying problems in your writing, Grammatik 6 is as good as or better than any other grammar checker. However, like all the other grammar checkers on the market, Grammatik works best if you're reasonably comfortable with grammar to begin with. If your grammar skills are fairly rusty — which, naturally, would make you a likely candidate to rely on a grammar checker in the first place — you may discover that Grammatik's suggestions can be vague or confusing. What's even worse, sometimes they're just plain wrong.

Grammatik's greatest strength is its ability to rewrite a sentence for you, something most other grammar checkers do poorly, if at all. For example, both Grammatik and the built-in grammar checker in Microsoft Word 5.1 and 6.0 flag sentences written in the passive voice, but only Grammatik gives you suggestions (usually good ones) on how to rewrite them. Unfortunately, it makes rewriting suggestions less than half the time, so you have to turn to the on-line help for guidance more often than not. Furthermore, although the on-line help is comprehensive as well as context-sensitive, it's also filled with dry, textbook-style definitions of esoteric grammar-related words and rules that aren't particularly helpful for solving *your* grammar problems — especially if you don't know how to fix a dangling participle or rein in a run-on sentence. Our other complaint is that Grammatik can't open fast-saved

Microsoft Word documents and doesn't recognize Word 6.0 files at all.

Grammar to Fit. Grammatik does get high marks for flexibility. It has a plethora of grammar-checking styles, including Very Strict, Formal Memo or Letter, and Technical or Scientific, so it can make suggestions for various types of writing. You can even turn individual rules on or off separately within each style, so you can customize the style to best suit the work you're doing.



If you have a basic understanding of American-English grammar, Grammatik provides an excellent adjunct to your own proof-reading and editing by flagging questionable words, phrases, punctuation, structure, and spelling — and occasionally suggesting a fix. With the variety of writing styles it gives you, Grammatik 6 is flexible and does a decent job of identifying problematic constructions and recommending reasonable fixes. If, however, you don't remember much of the grammar you were taught in school, Grammatik 6 may confuse you and can actually make your writing worse. / Bob LeVitus

Grammatik 6 ★★½ / Price: \$49.95 (list). **Company:** WordPerfect, Novell Applications Group, Orem, UT; 800-451-5151 or 801-225-5000. **Reader Service:** Circle #417.

HP OfficeJet / Home-office switch-hitter

WHEN YOU DISCOVER YOUR desktop space disappearing, taken up by the fax machine, the printer, and the copier necessary for your home office, you might wonder why you can't have just one machine to do it all. Hewlett-Packard must have had the same thought, since its new OfficeJet combines all three devices in one, compact unit.

Trinity of Tools. The OfficeJet weighs 21 pounds and is 17 1/4 inches wide, 15 1/2 inches deep, and 11 1/8 inches tall. It features a paper tray that accommodates 100 sheets (good enough for light, home-office use but inadequate for regular business use) and provides the paper for the printer, the copier, and the plain-paper fax machine.

You can make up to 99 copies at a time with the OfficeJet's copier, which works like the copy function on a fax machine: It takes about 50 seconds to copy a page, and it doesn't have a flatbed, so you can't use it to copy pages from a book or magazine. Unlike a fax machine, however, the OfficeJet copier allows you to print copies at various reductions.

The fax mechanism is a plain-paper fax machine that can send up to 20 pages at a time. It's not a fax modem. If you want to fax something from your computer, you have to print it and feed the



pages through an automatic document feeder. The fax supports broadcasting, speed-dialing, and delayed fax transmission and, unlike some temperamental fax machines, does not demand a dedicated fax line.

The printer in the OfficeJet is basically HP's

DeskJet 520 inkjet printer. It handles envelopes and transparencies as well as regular paper. Although HP says that the OfficeJet can print 3 ppm, we could never wrench more than 2 ppm out of it — it will never get pulled over for speeding. Nonetheless, its 600-x-300-dpi output is easy on the eyes and good enough for business correspondence.

Symbiosis Sorrows. Using an OfficeJet is a clever way to make maximum use of minimal space, even though its printing, copying, and faxing functions are fairly slow. Furthermore, if any part, such as the fax mechanism, goes down, you lose not only your fax machine but also your printer and your copier while you wait for repairs. Additionally, the OfficeJet comes only with software for DOS and Windows PCs. To use it with your Macintosh, you have to shell out an additional \$100 for GDT's PowerPrint, a collection of third-party printer drivers and a special cable that let you print from a Mac to virtually any DOS/Windows printer (see Quick Clicks, October '94, page 66).

If conserving desktop space is more important to you than speed and Mac-friendliness, the HP OfficeJet may find a good home in your home office. / Gregory Wasson

HP OfficeJet *** / Price: \$959 (list). Company: Hewlett-Packard, Santa Clara, CA; 800-752-0900. Reader Service: Circle #418.

Cartoon History of the Universe

Awesome animated stories

IF THE THOUGHT OF HISTORY conjures up images of 50-pound textbooks or naps in the back of class, give Putnam New Media's Cartoon History of the Universe (CHOU) a try. In reaching its lofty goal of making the often dry subject of history fun, CHOU is a smashing success, and the result is a fabulously animated, highly interactive adventure through time. Featuring 700 screens, 2,000 animations, five hours of dialogue and sound, and 17 puzzles and games, CHOU packs two CD-ROMs to their limit, and it's so witty and clever that you'll wish it came on four.

Trekking Through Time. You get a wisecracking guide, the Professor — if you find his voice grating, you can turn the volume down to zero. In his study, you discover CHOU's centerpiece — a time machine. Step into it, and explore the frequently hilarious animated cartoon history, from the Big Bang to Alexander the Great.



The history is delightful — bright and chock-full of clever animations and wonderful acting, sound effects, and tunes. The noncartoon stuff — the Professor's study and time machine; the puzzles and games; the 3-D drawings; and the 1,200-entry, hot-linked index — are also exceptional in their detail and execution.

Based on the best-selling book by Larry Gonick, CHOU is one of the finest examples of state-of-the-art multimedia we have seen. That it is frequently side-splittingly funny makes it the must-have CD-ROM of the year. Now if they could only do the same thing with calculus . . . / Bob LeVitus

Cartoon History of the Universe 🍌🍌🍌🍌 / Price: \$40 (street). Company: Putnam New Media, Reston, VA; 703-860-3375. Reader Service: Circle #419.

theTypeBook / Automated font cataloging

DESKTOP PUBLISHERS who need style sheets to help them select fonts usually have to design a DTP template showing sample characters in various font sizes. They then have to tediously type the lettering, choose a font, edit the result to control overflows, print each



page, and repeat the process for the next font. Since service centers own hundreds of fonts, you can see how theTypeBook, which creates style sheets automatically, can save hours.

Well-Rounded Solution. For each font you choose, theTypeBook can print up to six sample layouts: a master display of a single font at various sizes and leadings, another of different fonts on the same page, and still others of Key Caps charts and large point sizes. You can easily substitute your own text, such as an ad slogan, for the default passages in columns and footers.

This commercial release of theTypeBook has such essential features as the ability to preview specimen pages on-screen and System 7.5 compatibility, and enables you to navigate character maps with the click of a mouse. A crisply written quick-start guide, friendly technical support, and a modest price outweigh its documentation deficiencies. / Douglas Dominic

theTypeBook 4.0 🍌🍌🍌🍌 / Price: \$59.95 (list). Company: Rascal Software, Santa Clarita, CA; 805-255-6823. Reader Service: Circle #420.



Star Trek: The Next Generation Interactive Technical Manual

Where no Mac has gone before

QUICKTIME VR DEBUTS in a fascinating interactive CD-ROM that takes you on a tour of the USS *Enterprise* and gives you a primer on the science of the 24th century.

Virtual Starship. Star Trek: The Next Generation Interactive Technical Manual (ST: NGITM) lets you see what it's like to beam up to the *Enterprise* and survey different rooms on the ship, from the bridge to Captain Picard's quarters. QuickTime VR lets you pan 360 degrees around a virtual space, glancing up and down and zooming in and out at will. You can click on numerous hot spots in each room to see close-up pictures and read information about ship panels, alien objects, and even the crew's personal effects. You can also rotate selected objects (including a phaser and a scary-looking Klingon knife) to view them at any angle. Furthermore, you can take a guided tour of the spaceship, narrated by Commander Riker (Jonathan Frakes). All the VR images move fairly smoothly, even on a 68030 Mac.

Although the text that accompanies the visuals is interesting (reading a multipage treatise on the fictional science of Warp Theory can make you feel like you've fallen down the rabbit hole in *Alice in Wonderland*), the interface in ST: NGITM often forces you to scroll through it slowly line by line. Whether you read the text or not, however, all the fantastic information makes for hours of fun exploration. / Jason Snell

Star Trek: The Next Generation Interactive Technical Manual 1.0
★★★★ / Price: \$69.95 (list). Company: Simon and Schuster Interactive, New York, NY; 800-983-5333 or 212-698-7000. Reader Service: Circle #421.



ultraSHIELD 2.5 / Bytes behind bars

A LESS EXPENSIVE and easier-to-use version of usrEZ's ultraSECURE, ultraSHIELD lacks some of the advanced options of ultraSECURE, such as triple DES (Data Encryption Standard) encryption. However, it can give you top-notch security and control over access to files and folders.

ultraSHIELD demands a name and a password at startup, neither of which has to be the primary user's. You can set up the program to accommodate several users and passwords, with each user having a different kind of access to the Mac's files and folders. ultraSHIELD can also keep an audit log of all activity, including file sharing. Furthermore, it supports two encryption schemes: DES and a proprietary format.

Powerful security software such as ultraSHIELD isn't for casual users. For instance, you must deinstall ultraSHIELD whenever you update your system software or optimize your hard disk; if you forget, you can lose the data you've tried so hard to protect. If your only concern is protecting your data from precocious children or curious customers, consider using a low-key program such as Apple's At Ease instead. However, if you genuinely need rock-solid security and can do without a few hard-core features of the sort the three-letter agencies demand, ultraSHIELD will give you what you need at a fair price. / Gregory Wasson

ultraSHIELD 2.5★★★★ / Price \$149 (list). Company: usrEZ, Irvine, CA; 800-482-4622 or 714-756-5140. Reader Service: Circle #422.



Fine Print

Can these five 1,200-dpi PostScript laser printers produce the imagesetter-quality output you need? Or are they just expensive?

By **Henry Bortman**

PHOTOGRAPHY / GIAMPIERO BENVENUTI

A DECADE HAS PASSED SINCE APPLE introduced the LaserWriter. A startling advance in office printers, the LaserWriter not only offered 300-dpi resolution — considered high at the time — but also used a new page-description language, Adobe PostScript, that brought unheard-of capabilities for printing text and graphics from the desktop. The original LaserWriter, if not exactly a bargain at \$7,000, was an instant success.

But 300-dpi output had its limitations. Although many people used LaserWriter output for flyers and newsletters — it was quick, easy, and cheap — its quality couldn't hold a candle to that produced by traditional typesetter and copy-camera techniques. Text tended to be a bit fat and had noticeable jaggies, even at 12-point; at sizes smaller than 7- or 8-point, it approached illegibility. Output of photographic images, although orders of magnitude better-looking than that from the dot-matrix printers of the day, was still a hefty step down the quality ladder from what you could find on the front page of the morning paper.

Desktop publishing really took off when, a decade ago, Linotype introduced the first high-resolution PostScript imagesetter, the Linotronic L100P, a 1,270-dpi PostScript output device capable of generating true camera-ready text and halftones. What made the

L100P so stunning was not only the high resolution of its output but its imaging technology as well. Rather than fusing dry toner to paper, the Lino (as it was affectionately called) exposed light-sensitive film or paper that was then developed like a photograph. Toner technology is inherently sloppy about placing its little dots on the page; the photographic technique imagesetters use, in contrast, is very precise and consistent.

What the Linotronic L100P made possible, for the first time, was the generation of true camera-ready copy directly from the desktop. Of course, you had to pay a rather ponderous \$30,000 to install it. And dealing with the development chemicals wasn't quite as painless as installing a new toner cartridge. But the output was impressive.

Desktop Imagesetters

Desktop publishers, however, still dream of the day when they can have imagesetters of their very own. They want the quality of today's imagesetters without all the muss and fuss — and, of course, without the expense. Because when you've been working all weekend, and you've just put the finishing touches on your client's job, and it's Monday at 4:00 A.M., and you have a 9:00 A.M. deadline, you'd really like to be able to just click on the Print button, walk down the hall, and pick up your output. And be done. Instead of waiting for the service bureau to open and, checkbook in hand, begging the staff to put a rush on your order.

So it was with a skeptical eye that we embarked on our testing of five 1,200-dpi laser printers, the highest-resolution ones

THE TOSHIBA ENGINE'S method for changing paper sizes is clunky: One tray fits all, but you have to insert plastic spacers into the tray for various paper sizes. The spacers — four come with each printer — are easy to break and even easier to lose.

available when our testing began (but see the "Trends" sidebar). When their vendors told us they had at last fulfilled desktop publishers' dreams — that they had indeed produced desktop imagesetters — our response was, naturally, "We'll see . . ."

We should make one point clear before we go any further. In judging these printers, we didn't evaluate them as departmental printers that produce a single copy, or half a dozen copies, of a document that's just going to be passed around the office. Many of today's crop of

600-dpi printers are perfectly adequate for such tasks (see "Powerful Printing Partners," September '94, page 98). What we focused on was whether laser printers had gotten good enough to produce "camera ready" output: originals you can take to your local print shop for reproducing hundreds or thousands of copies.

And so in addition to doing MacUser Labs' traditional printer-speed and output-quality tests, we took our testing one step further: We went to press. We took sample output from the five contestants, along with output from two reference devices — the 600-dpi HP LaserJet 4MV (see review, December '94, page 58) and the 2,400-dpi Agfa SelectSet 7000 imagesetter — to see how well the output reproduced on an offset press and on a photocopier.

But before we share the results of our press runs with you, let's take a look at some of the basic features the five new high-resolution printers offer.

Setting Up, Plugging In, Turning On

Two of the 1,200-dpi printers we tested — the Xanté Accel-a-Writer 8200 and the PrePRESS (formerly Varityper) VT1200 — are virtually identical. Each has a 16-ppm Canon LBP-BXII engine, the same engine the 600-dpi HP LaserJet 4MV uses. This engine can't handle the 12-x-19-inch paper typically used for full-bleed tabloid work. As with previous Canon engines, the toner and the OPC (optical photoconductor) are sealed in a single cartridge, making it relatively easy to change the toner. This particular cartridge design, however, has some small plastic and metal pieces that are easy to break or bend, causing the printer to malfunction.

Each printer also has an Adobe PostScript Level 2 RIP (raster-image processor). The only difference we could see between the two printers was the sticker on the front panel. And the price: The PrePRESS VT1200, in the configuration we tested, costs about \$7,500, some \$450 more than the Accel-a-Writer 8200.

The other three printers in our lineup — the GCC SelectPress 1200, the NewGen ImagerPlus 12, and the Xanté LaserPress 1200 — also have a common design. They each have an 8-ppm Toshiba TN-7270 engine, which was previously used in the GCC SelectPress 600 and the LaserMaster Unity series. On the plus side, this engine is compact, requiring a smaller enclosure than the Canon engine. And it can handle 12-x-19-inch paper, making it possible for you to do full-bleed tabloid work (the SelectPress 1200 can print edge to edge on all standard paper sizes).


The Toshiba engine has several shortcomings, however. For one,

The Bottom Line

MacUser ZD LABS HIGH RESOLUTION — up to 1,200 dpi — is the alluring feature of these laser printers. Some might call them personal imagesetters — a bit of a stretch, in our opinion. But if outputting to an imagesetter is impractical, you will find that the 1,200-dpi Xanté Accel-a-Writer 8200 can give you an incremental quality boost over the best of the 600-dpi printers. Is that worth a price differential of \$4,000 or more? You have to decide for yourself.

- ⊕ = OUTSTANDING
- = ACCEPTABLE
- ⊖ = POOR

PRICE/PERFORMANCE CUSTOMER SERVICE PRINTING SPEED OUTPUT QUALITY

	PRICE/PERFORMANCE	CUSTOMER SERVICE	PRINTING SPEED	OUTPUT QUALITY
 Xanté Accel-a-Writer 8200 ● ● ● ⊕ Rated highest overall in our output-quality tests; as fast as any printer we tested; and costing several hundred dollars less than its twin, the PrePRESS VT1200, this is the 1,200-dpi printer to get if you need the next best thing to an imagesetter.	●	●	●	⊕
●●●● PrePRESS VT1200	⊖	●	●	●
●●●● Xanté LaserPress 1200	●	●	⊖	●
●●●● NewGen ImagerPlus 12	●	●	⊖	●
●●●● GCC SelectPress 1200	⊖	●	⊖	⊖

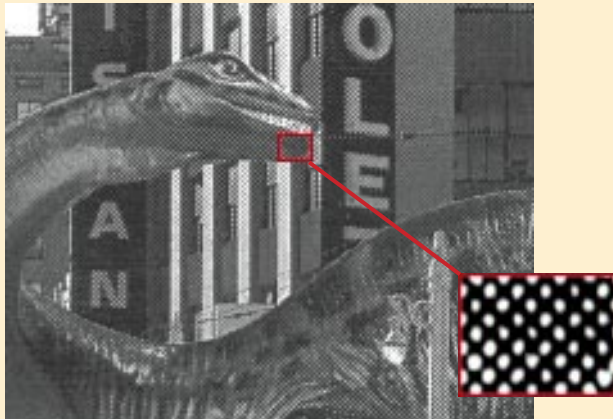
Hot Off the Press / tips for better printing

YOU'VE SEEN IT: Someone takes a picture of everyone in the department, scans it, places it in the office newsletter, prints it on a laser printer, and sends it to the neighborhood instant-print shop for duplication. The original looks OK, but when the copies come back: mud!

Several factors contribute to this problem, the biggest culprit being *dot gain*. Uncoated paper — the kind you're most likely to use — absorbs ink, causing the dots in your halftones to spread a little. The result: Everything gets a bit darker.

You can adjust your photos for dot gain before printing them on your laser printer. Ideally, you should ask your print shop to tell you the press's shadow dot, the darkest shade of gray the press can hold before the output plugs up and goes black. Professional print shops will be able to answer this question easily. But if you're sending your job to an instant-print shop, chances are you'll have to wing it; we called several during testing, and none of them knew what we were talking about. So here's a quick rule of thumb: If your job's going to a high-quality photocopier, figure a shadow dot of 95 percent; if a paper plate will be used, 80 percent; and if it will be printed with a metal plate, 85 percent.

To make this adjustment in Photoshop, open your image and select Adjust>Levels from the Image menu. Near the bottom of the Levels dialog box is Output Levels, next to two text boxes. You're going to enter a number in the left-hand text box, telling Photoshop that no matter what the shades of gray in your image are, you don't want it to output anything darker than your shadow-dot value.

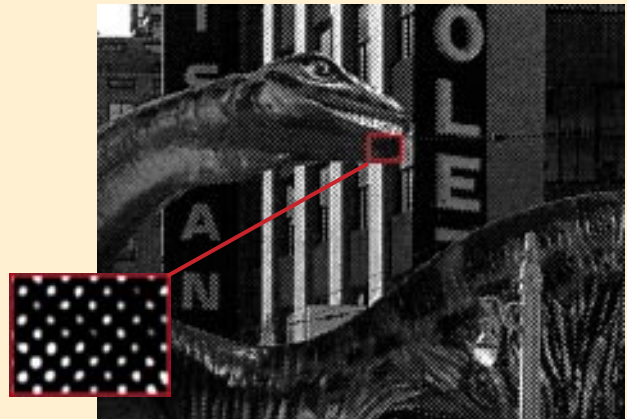


Before dot gain, the halftone image looks correct, with the area in the red square dark gray.

Where do you get this magic number? Let's take the 80-percent shadow-dot figure, the ballpark number for a paper plate, as an example. You subtract 80 from 100, because 100-percent gray is solid black. So you're calculating the percentage difference between black and the darkest gray you want your image to contain (the shadow dot) when it comes out of your laser printer. You multiply the result (20 in this case) by 2.5, because printers measure gray shades in percentages and Photoshop's Levels dialog box measures gray shades in pixel values, on a scale of 0 to 255. Multiplying by 2.5 converts a percentage to a pixel value, and that final value is 50 in our example. That's the number you enter into the left-hand text block in the dialog box. Then close the dialog box.

The image on your screen will now look somewhat dull. It will look that way coming out of your laser printer too. Don't worry. You've set up your image correctly for the *press*, and that's what you care about. You'll want to do this for each of your gray-scale images.

At MacUser Labs, we used a more elaborate calibration process to prepare laser-printer output for our highest-quality, offset-press test run. After we adjusted for dot gain, we used a gray-scale strip to create a custom transfer curve for each laser printer, to calibrate the printer to the offset-print shop's copy camera. We also calibrated our computer monitor to printed output from the offset press. The result was offset-press output that was as good as it could possibly be, given the capabilities of the laser printers in the test.



After dot gain, the image's overall appearance is too dark; the highlighted area has plugged up almost to black.

its method for changing paper sizes is clunky: One tray fits all, but you have to insert different plastic spacers into the tray for various paper sizes. These spacers — four come with each printer — are easy to break and even easier to lose. In contrast to the Canon engine, the Toshiba engine has the toner separate from the drum. This arrangement makes replacing the consumables more cumbersome, and the design is more susceptible to accidental toner spill.

Speed and Good Looks

In testing these printers, we began with our usual roundup of speed and output-quality tests. To measure each printer's speed, we printed three documents. The first was a complex Illustrator drawing, liberally sprinkled with ramps and masks, the kind of stuff that gives printers indigestion. The result was unambiguous (see figure

1): The three printers that have Adobe PostScript Level 2 RIPs — the PrePRESS VT1200, the Xanté Accel-a-Writer 8200, and the Xanté LaserPress 1200 — each finished the job in 8 minutes, give or take a few seconds. The other two — the GCC SelectPress 1200, with its PhoenixPage PostScript Level 2 clone RIP, and the NewGen ImagerPlus 12, with its Weitek PostScript Level 1 clone RIP — took nearly twice as long. Not an altogether impressive showing for the PostScript-clone RIPs.

Our second speed test measured how long the printers took to process a large Photoshop gray-scale image — a 200-dpi 11-x-17-inch TIFF image, to be precise. Again, the three printers with the Adobe PostScript RIP outran the NewGen printer, with its Weitek RIP, although by a smaller margin than in the Illustrator test. Surprisingly, though, the GCC printer, with its PhoenixPage RIP, was

the fastest in this test.

The third speed test involved printing a complex 11-x-17-inch PageMaker layout containing EPS line art, PICT and TIFF gray-scale images, and a selection of downloadable fonts. Once again, the three printers with Adobe PostScript RIPs came in first. The NewGen printer was slightly behind, and the GCC printer trailed in the dust. Curious about why the SelectPress 1200 did so poorly, we selectively removed elements from the PageMaker file until we isolated the culprit — a compressed PICT image from a Kodak Photo CD. When we removed it, the SelectPress 1200's speed fell into line with the ImagerPlus 12's. Clearly, the PhoenixPage RIP is not nearly as efficient as the other RIPs at imaging PICT files. If you have a SelectPress 1200 already, convert PICT files to TIFF if you want to speed printing.

To judge output quality, we printed *MacUser's* copyrighted Print Quality Test Page, which contains text, line art, and gray-scale images. This test page is available from ZiffNet/Mac (see end of article). We showed the output samples, along with a sample of the same page printed on the 600-dpi HP LaserJet 4MV and on the 2,400-dpi Agfa SelectSet 7000 imagesetter, to a jury consisting of novices as well as DTP/prepress experts.

The test page contains several elements, each of which you can use to evaluate the quality of a certain aspect of a printer's output (see the "High-Resolution Output" sidebar). To our surprise, our

TO OUR SURPRISE, our jurors were not particularly impressed with the 1,200-dpi output compared to that of the reference 600-dpi HP LaserJet 4MV, which had Resolution Enhancement technology (REt) and Enhanced Grays enabled.

jurors were not particularly impressed with the 1,200-dpi output compared to that of the reference 600-dpi HP LaserJet 4MV, which had Resolution Enhancement technology (REt), for text and line art, and Enhanced Grays, for gray-scale images, enabled. Only the PrePRESS VT1200 and the Xanté Accel-a-Writer 8200 received ratings superior to those of the HP LaserJet 4MV; these printers consistently scored better than the reference printer — but not by very much. As for the three printers with the Toshiba engine — the GCC SelectPress 1200, the

NewGen ImagerPlus 12, and the Xanté LaserPress 1200 — the jury judged their output to be inferior to that of the HP LaserJet 4MV on the whole, with the GCC printer scoring particularly poorly.

We ran one additional set of output-quality tests. On each printer, we printed a series of ten tabloid (11-x-17-inch) pages, each covered entirely with a single shade of gray, the lightest being 10 percent (light gray) and the darkest being 100 percent (solid black). Although all the printers did quite well at printing the solid-black page — a task that eluded laser printers in their early years — none could print an evenly balanced solid-gray page at any percentage. Bands and streaks were clearly visible on all the samples — not exactly what you hope to see when you're looking for imagesetter quality.

Going to Press

But our tests were not finished, not by a long shot. We still wanted to find out whether these printers could in fact perform the task heretofore reserved for imagesetters — and the job for which they were designed — producing camera-ready copy for a press. Given the 85-line default screen on all the tested printers, we figured people were most likely to do one of three things with their output. They would photocopy the original — the easiest and, for 100 or fewer copies, cheapest method of duplication. They would take their output to an instant-print shop, which for runs of, say, 100 to 1,000 copies, would most likely use a paper plate (actually a sandwich of plastic and paper, used as an alternative to a standard aluminum plate in an offset press). Or if they were looking for the best-possible quality or planned to do a run of more than 1,000 copies, they might go to a more professional offset shop, which would probably use a metal plate.

So we tried all three. We carefully prepared each printout to produce the best possible results on the target duplication system. For the three sets of test printouts, this involved adjusting for dot gain (see the "Hot Off the Press" sidebar). For the high-quality, metal-plate offset-print run, a more controlled process than paper-plate offset printing or photocopying, we performed additional calibrations to ensure maximum quality. We calibrated our monitor to preprinted samples of our print shop's press output, because the on-screen image functions as the prepress image. And for each printer, we generated a custom *transfer curve*, an adjustment we made with Photoshop to compensate for the difference between the prepress image, or in this case the on-screen one, and that of the press. This

Trends / resolution continues to increase

VENDORS ARE STILL HOT ON THE TRAIL of imagesetter-quality desktop printing. Three printers released after our testing was completed may provide the next step in the journey toward the Holy Grail.

The LaserMaster Unity 1800 PM-R (\$9,995 list) is an 1,800-dpi printer that can produce 12-x-19.5-inch output. It comes with LaserMaster's TurboRes II for resolution enhancement and TurboGray for performing gamma adjustments. The Unity 1800 PM-R comes standard with 48 MB of RAM and LaserMaster's Pipeline PostScript Level 2 clone RIP. The Unity 1800 PM-R has the unusual feature of being able to print film for imagesetting when you use it with LaserMaster's PressMate color printer.

LaserMaster also offers the 1,200-dpi Unity Turbo XL-O (\$7,995 list), which has 32 MB of RAM. It uses LaserMaster's Truelmage, a PostScript Level 1 clone, and comes with TurboRes I, TurboGray, and ClearCopy enhancement features. LaserMaster, Eden Prairie, MN; 612-941-8687; 612-944-0522 (fax).

NewGen Systems' first foray into the realm of 1,800-dpi output is with the ImagerPlus 18 (\$7,995 list), which has a maximum imaging area of 11.69 x 19 inches and a PostScript Level 2 clone RIP. It comes with Image Enhancement Technology, for improving text, line art, and gray-scale images. Its standard RAM is 48 MB. NewGen, Fountain Valley, CA; 800-756-0556 or 714-641-8600; 714-641-2800 (fax).

/ Roman Victor Loyola

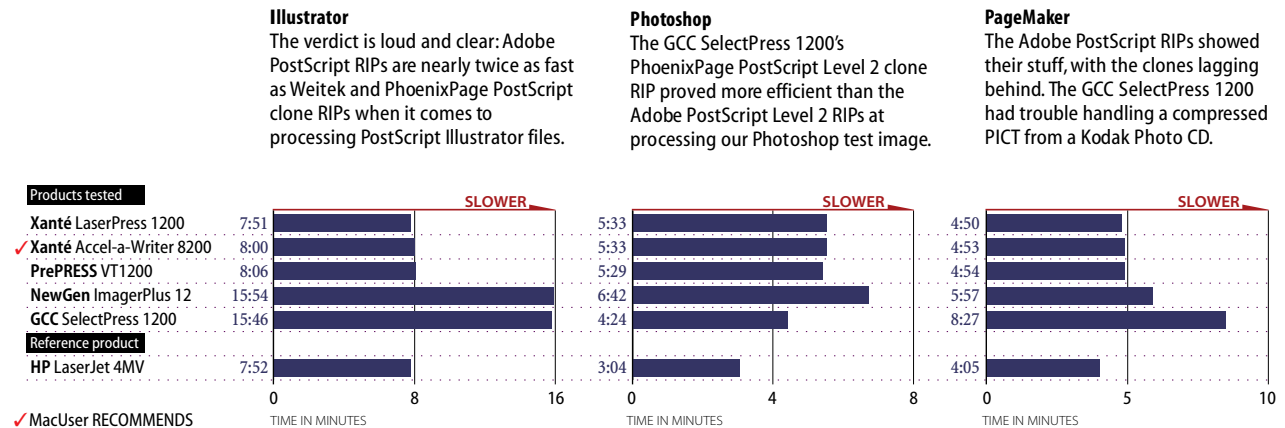
figure 1



Photo Finish / high-resolution-printer speed tests

High-resolution laser printers aren't speed demons, but they're certainly faster than a trip to your friendly neighborhood service bureau. To measure the speed of the printers for this report, we ran three tests. The Illustrator test measures the speed of a printer's RIP when printing raw PostScript data, in this case a complex drawing containing ramps, masks, and other computationally intensive elements. The Photoshop test measures a RIP's ability to process a large bit-mapped image. Finally, the PageMaker test measures a RIP's overall processing speed when printing an 11-x-17-inch page containing EPS line art, TIFF and PICT gray-scale images, and a variety of typefaces.

Because printing at 600 dpi requires a printer to process only a fourth of the data required to produce 1,200-dpi output, the 600-dpi HP LaserJet 4MV, our reference printer, crossed the finish line first in the Photoshop and PageMaker tests.



procedure guaranteed predictable results when the output was photographed by the shop's copy camera.

The results of the photocopy test were particularly interesting: Today's high-quality photocopiers can rival an offset press in some cases. We used a Kodak 1575, selecting the Photo setting, which gave the best results of the choices available. What we found was that the Agfa imagesetter's output didn't hold up as well as the output of some of the laser printers for all the elements of the test page. In particular, the line-art element, a drawing of an engine that contains .125-point lines, although beautifully rendered on the imagesetter's original output, had a lot of dropout on the photocopies. The text also showed some dropout. Similarly, the HP LaserJet 4MV's output, which looked impressive on the original, flagged a bit when photocopied; the gray-scale photo lost a lot of detail, and the text showed both dropout and a tendency to plug up. The best overall results on the photocopy test were those of the PrePRESS VT1200 and the Xanté Accel-a-Writer 8200. The NewGen ImagerPlus 12 also did well.

Our second test involved an offset-press run, using a paper plate. Paper plates are not exactly synonymous with quality, a fact our test run verified. The results were all over the map — not even the imagesetter's output fared well on this one. In fact, the .125-point-line engine drawing, beautifully rendered in crisp thin lines on the imagesetter's original output, disappeared completely on the copies that came off the paper-plated press. The type from the imagesetter also suffered from extensive dropout.

The thin-line engine element also showed significant dropout on the paper-plate reproductions of the output from the PrePRESS VT1200, the Xanté Accel-a-Writer 8200, and the Xanté LaserPress

1200 — the three printers with Adobe PostScript RIPs. These printers can print thinner lines and crisper type than their competitors, but this becomes a liability when their output is reproduced from a paper plate, which lacks the necessary subtlety to take advantage of their capabilities.

Output from the HP LaserJet 4MV reference printer also had problems. The gray-scale photo, judged to be good on the original output, was dark and plugged up after its close encounter with the paper plate. The Accel-a-Writer 8200 and the PrePRESS VT1200's gray-scale photos held up reasonably well on this print run, as did that of the ImagerPlus 12. In fact, the latter distinguished itself as best overall on the paper-plate test run.

Finally, we sent the printers' output to a professional offset-press shop, which used a copy camera to generate photographic negatives from our originals and burned the negative image onto a metal plate. Metal plates yield far better results than paper ones.

As we expected, the imagesetter's output fared the best on this print run. The metal plate was able to hold all the detail in the gray-scale photo as well as the engine's thin lines and the crispness of the type. The HP LaserJet 4MV also did well on this test. The output showed some graininess in the gray-scale photo and a bit of pinching and dropout on the text and thin-line elements.

The PrePRESS VT1200 and the Xanté Accel-a-Writer 8200 turned in mixed results for this print run. The gray-scale photos held up impressively and the text also looked good, but the thin-line engine drawing suffered from severe dropout, practically disappearing altogether. We recommend that you avoid using lines thinner than .25-point if you use either of these printers to generate camera-ready copy.

MacUser ZD LABS High-Resolution Output / not up to imagesetter standards

2,400-dpi reference: Agfa SelectSet 7000
RIP: Adobe PostScript Level 2

4 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 5 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 6 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 7 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 8 point *The Quick Brown Fox Jumped Over The Lazy Dog.*

IMAGE IS EVERYTHING. To test the output quality of the 1,200-dpi laser printers for this report, we used a modified version of the *MacUser* Print Quality Test Page. To obtain points of comparison, we also printed our test page on a 600-dpi HP LaserJet 4MV and on a 2,400-dpi Agfa SelectSet 7000 imagesetter.

Here are some tips on how to evaluate the results. Start by looking closely at the SelectSet 7000's output. At first glance, the large halftone image may appear a bit washed out, but actually, it displays a full range of gray-scale shades more accurately than the other output samples, in which many of the dark-gray shades are shifting to black. If you look closely at the texture of the cloth in the upper left corner of the photo, for example, you'll see much more detail in the imagesetter output. Compare also the subtlety of detail in the reflections in the tray on which the objects in the photo are sitting.

The line art of the engine near the top left of the test page comprises very thin lines: an eighth of a point (about two thousandths of an inch). Some printers lose parts of the lines completely, and others render a thicker line to avoid this dropout problem, but only the imagesetter can reproduce them accurately. In the vertical and horizontal lines near the top right of the test image, look for consistent widths and even spacing among the lines in each set of lines.

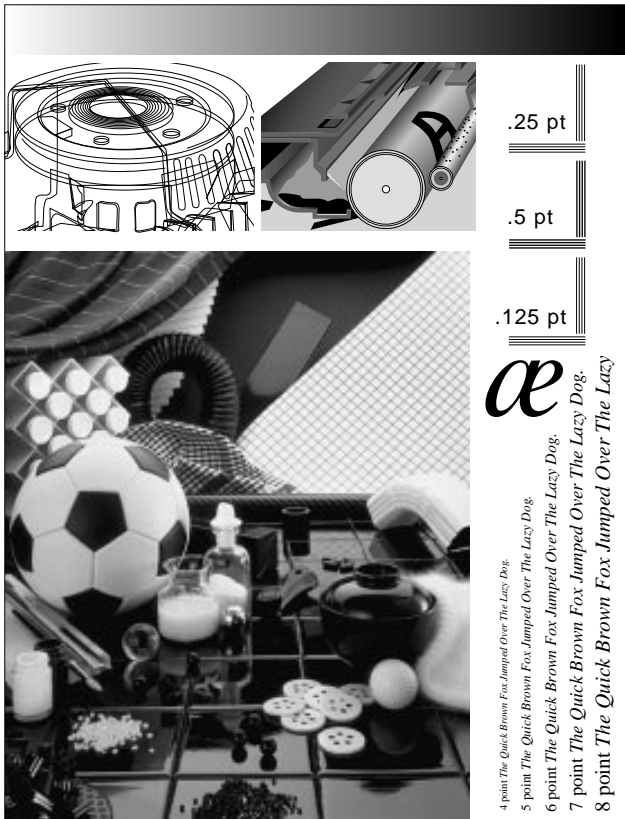
Finally, turn the page sideways and check out the 4-point type. With a 300-dpi printer, you'd be nuts to even consider printing 4-point type, but these 1,200-dpi printers can produce it clearly. Still, the SelectSet 7000's type is unquestionably the sharpest of all. One good spot to check is the *counter* (the enclosed loop) on the lowercase *e* — notice whether it's open or starting to fill in.

600-dpi reference: HP LaserJet 4MV
Engine: Canon LBP-BXII
RIP: Adobe PostScript Level 2

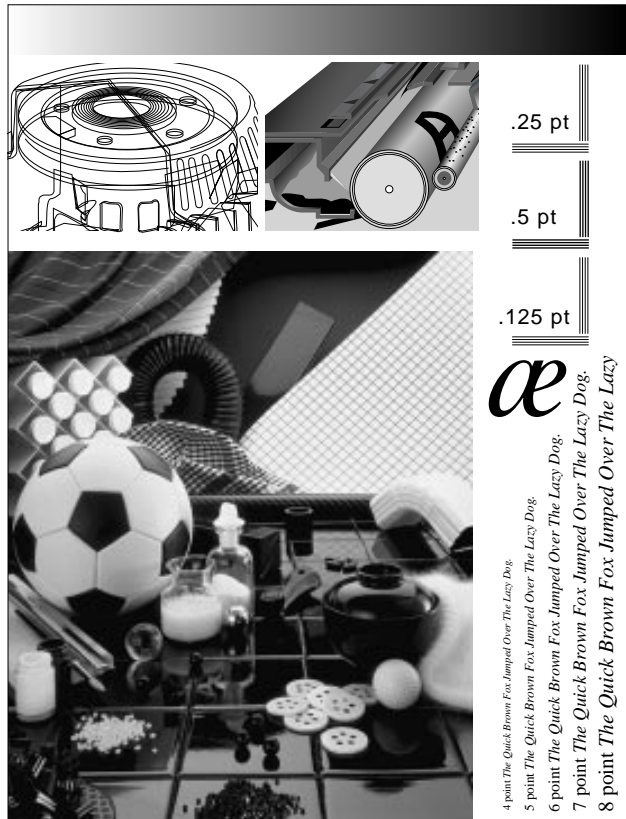
4 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 5 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 6 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 7 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 8 point *The Quick Brown Fox Jumped Over The Lazy Dog.*

▲ Xanté Accel-a-Writer 8200
Engine: Canon LBP-BXII
RIP: Adobe PostScript Level 2

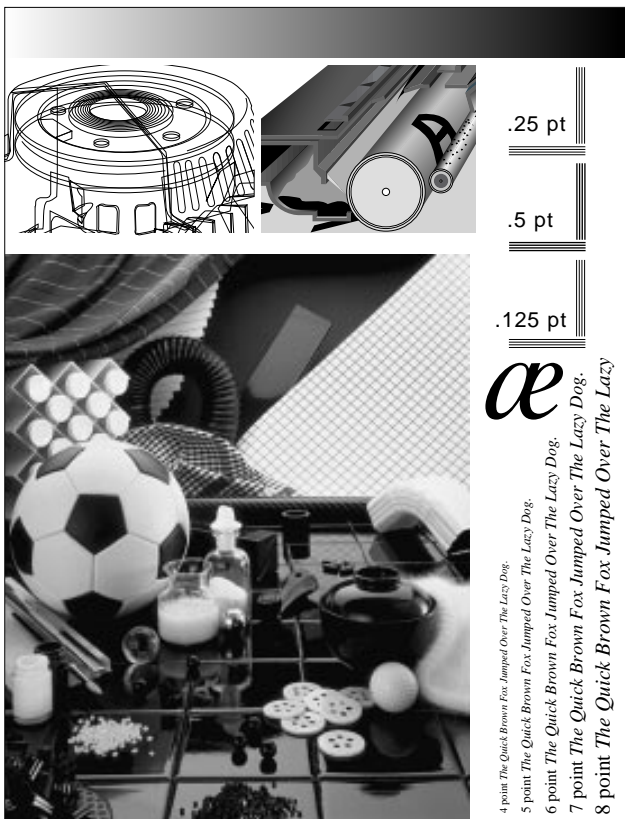
4 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 5 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 6 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 7 point *The Quick Brown Fox Jumped Over The Lazy Dog.*
 8 point *The Quick Brown Fox Jumped Over The Lazy Dog.*



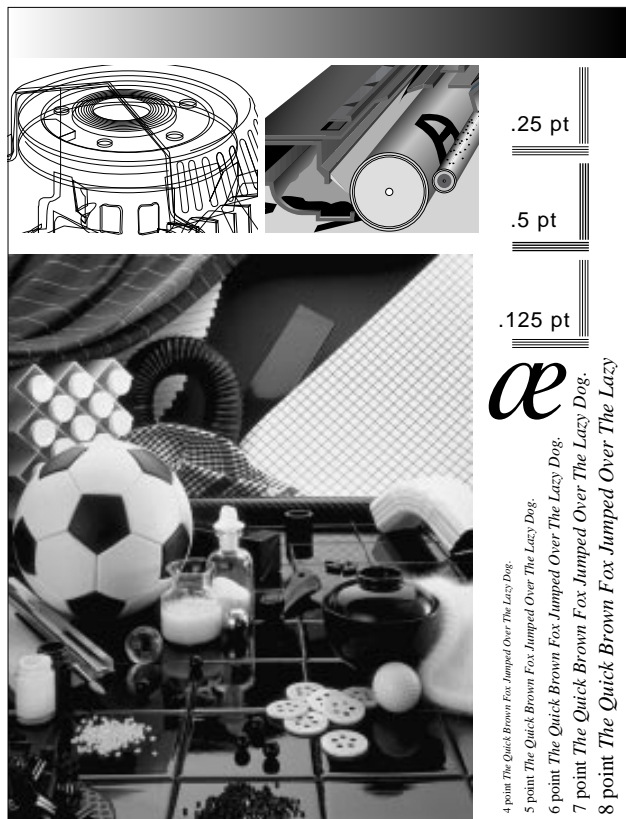
▲ **PrePRESS VT1200**
 Engine: Canon LBP-BXII
 RIP: Adobe PostScript Level 2



▲ **NewGen ImagerPlus 12**
 Engine: Toshiba TN-7270
 RIP: Weitek PostScript Level 1 clone



▲ **GCC SelectPress 1200**
 Engine: Toshiba TN-7270
 RIP: PhoenixPage PostScript Level 2 clone



▲ **Xanté LaserPress 1200**
 Engine: Toshiba TN-7270
 RIP: Adobe PostScript Level 2

HIGH-RESOLUTION LASER PRINTERS

The gray-scale photos from the GCC SelectPress 1200 and the Xanté LaserPress 1200 printed very flat, losing detail. The NewGen ImagerPlus 12's photo output had good detail but was streaky in spots. Both the SelectPress 1200 and the ImagerPlus 12 did well on the engine and the text — their original line and text output was thicker and more solid than that of the other printers, and this paid off on the press. The engine drawing from the Xanté LaserPress 1200, however, like the drawings from the other printers with Adobe PostScript RIPs, suffered heavily from dropout.

The Hard Choice


There's a moral here. If you want the best-possible quality, output your document to an imagesetter and duplicate it on an offset press with a metal plate. Desktop laser printers do not yet offer an alternative that can match this process in quality.

Not everyone has ready access to an imagesetter, however, and not every job requires one. If you're in the market for a high-resolution printer and don't plan to photocopy or print the output on a press, weigh carefully whether you need the extra boost in output quality 1,200 dpi can give you. We found the quality of the 600-dpi HP LaserJet 4MV's direct output adequate. Our jury found that only the Xanté Accel-a-Writer 8200 and its twin, the PrePRESS VT1200, produced better output, but their edge over the LaserJet 4MV was incremental.

Consider this: You can buy two LaserJet 4MVs for the price of one Accel-a-Writer 8200 and still have a lot of pocket money left. In the configurations we tested, the LaserJet 4MV has a street price of just under \$3,000 and the Accel-a-Writer 8200's is just over \$7,000. You can get cheaper, stripped-down versions of the Accel-a-Writer that support maximum resolutions of 600 dpi and 800 dpi. If you later decide you need a 1,200-dpi printer, you can modify one of these machines by getting Xanté's user-installable kit, which modifies the laser so that it can image at 1,200 dpi and which includes more RAM for storing the higher-resolution pages.

And for those who are trying to decide between the Xanté Accel-a-Writer 8200 and its identical twin, the PrePRESS VT1200, we would recommend the Xanté printer. The PrePRESS VT1200 costs around \$450 more, which buys you a 170-MB external hard drive preloaded with 35 Varityper Type 1 fonts. But for \$450, you can probably find a better hard drive and stock up on some fonts of your own choosing. ☹

Henry Bortman, *MacUser's* technical director, will never use paper plates again — except at picnics. Special thanks to Peter Truskier and Bruce Hillman of Star Graphics for their help in generating the test pages for this report. *MacUser* project leader Roman Victor Loyola managed the testing for this report.

 *MacUser's* copyrighted Print Quality Test Page, the benchmark-test file used to test the high-resolution printers for this report, is available on-line from ZiffNet/Mac. See page 4 for instructions on accessing ZiffNet/Mac.



GCC SelectPress 1200

Rating: ★★½
List Price: \$8,698 (as tested).
Street Price: \$6,915 (as tested).
Pros: Fast TIFF output. Edge-to-edge printing.
Cons: Slow. Mediocre print quality. Cumbersome paper tray.
RAM: 40 MB (as tested).
Ports: Serial, parallel, LocalTalk, SCSI, Ethernet (2 connections, 1 for 10BASE-T and 1 for 10BASE-2).
Hard Drive: 170-MB internal.
Fonts: 285.
Resolutions: 300, 600, 1,200 dpi.
Paper Sizes: Monarch envelope (3.88 x 7.5 in.) through 12 x 19 in.
Line Screen: 85 lpi (default at 1,200 dpi).
Company: GCC, Bedford, MA; 800-422-7777 or 617-275-5800; 617-275-1115 (fax).



NewGen ImagerPlus 12

Rating: ★★½
List Price: \$6,694 (as tested).
Street Price: \$5,950 (as tested).
Pros: Best output quality for paper-plate printing. Lowest price.
Cons: Slow. Cumbersome paper tray. Mediocre press output.
RAM: 40 MB (as tested).
Ports: Serial, parallel, LocalTalk, SCSI, Ethernet.
Hard Drive: None.
Fonts: 35.
Resolutions: 600, 1,200 x 600, 1,200 dpi.
Paper Sizes: Size 10 envelopes through 11.9 x 19.5 in.
Line Screen: 85 lpi (default at 1,200 dpi).
Company: NewGen, Fountain Valley, CA; 800-756-0556 or 714-641-8600; 714-641-2800 (fax).



PrePRESS VT1200

Rating: ★★½
Direct Price: \$7,495 (as tested).
Pros: Fast. Excellent overall output quality. Excellent text.
Cons: Large footprint. Dropouts on line art of press output.
RAM: 40 MB (as tested).
Ports: Serial, parallel, LocalTalk, SCSI, Ethernet.
Hard Drive: 170-MB FWB Hammer external.
Fonts: 70.
Resolutions: 600, 800, 1,200 dpi.
Paper Sizes: Monarch envelope (3.88 x 7.5 in.) through 11.75 x 25 in.
Line Screen: 93 lpi (default at 1,200 dpi).
Company: PrePRESS Solutions, East Hanover, NJ; 800-631-8134 or 201-887-8000; 800-443-1102 or 201-884-6210 (fax).



Xanté Accel-a-Writer 8200

Rating: ★★½
List Price: \$7,390 (as tested).
Street Price: \$7,050 (as tested).
Pros: Fast. Best overall output quality. Excellent text.
Cons: Large footprint. Dropouts on line art of press output.
RAM: 40 MB (as tested).
Ports: Serial, parallel, LocalTalk, SCSI.
Hard Drive: None.
Fonts: 35.
Resolutions: 600, 800, 1,200 dpi.
Paper Sizes: Monarch envelope (3.88 x 7.5 in.) through 11.8 x 25 in.
Line Screen: 85 lpi at 1,200 and 800 dpi; 77 lpi at 600 dpi.
Company: Xanté, Mobile, AL; 800-926-8839 or 205-476-8189; 205-476-9421 (fax).



Xanté LaserPress 1200

Rating: ★★½
List Price: \$9,595 (as tested).
Street Price: \$8,700 (as tested).
Pros: Fast. Good gray-scale output quality.
Cons: Mediocre press output. Expensive.
RAM: 48 MB (as tested).
Ports: Serial, parallel, LocalTalk, SCSI, Ethernet.
Hard Drive: None.
Fonts: 35.
Resolutions: 600, 1,200 dpi.
Paper Sizes: Monarch envelope (3.88 x 7.5 in.) through 12 x 19 in.
Line Screen: 85 lpi at 1,200 dpi; 77 lpi at 600 dpi.
Company: Xanté, Mobile, AL; 800-926-8839 or 205-476-8189; 205-476-9421 (fax).

War of the Words

A formidable army of full-featured challengers threatens Microsoft's once secure word-processing dominance. **By Connie Guglielmo**

THE BATTLE LINES HAVE BEEN DRAWN. In the normally sedate world of Mac word processors, long-standing loyalties are crumbling as some users of Microsoft Word — for years the most popular Mac word processor — rebel against the latest version, 6.0. New versions of longtime wannabes FullWrite, MacWrite Pro, Nisus Writer, and WordPerfect for Macintosh, armed with loads of brand-new features, improved performance, and tempting competitive-upgrade pricing, have rolled onto the field to challenge Word's dominance.

No matter which word processor you use, it's time to reexamine your allegiance. Should you upgrade to a new version of the application you're using or jump ship and switch to a new one?

To help with this choice, we took a long, hard look at the latest versions of the five most popular full-featured word processors available for the Mac: FullWrite 2.0, from Akimbo Systems; MacWrite Pro 1.5v3, from Claris; Microsoft Word 6.0; Nisus Writer 4.0; and WordPerfect 3.1, from Novell. MacUser Labs gave us detailed information on each application's speed, but the bulk of our effort went into an in-depth examination of seven important sets of

features: character- and document-styling tools, editing and proofing tools, publishing and layout tools, table-creation tools, graphics and drawing tools, mail-merge, and on-line help.

The Products in Perspective

At the center of the word-processor battle is Microsoft Word 6.0. For the first time, an upgrade to Word had most of the same features as its Windows counterpart (historically, the Mac version has lagged behind). Word 6.0 for the Macintosh is virtually identical in appearance to Word 6.0 for Windows — so much so that nearly all the screen shots in the Word 6.0 manual are taken from the Windows version. This distinctly nonstandard interface has prompted protests from some users (see the "Word-Wary" sidebar).

On the plus side, both the Mac and the Windows versions have a common file format, further strengthening their cross-platform ties. Also, many of Word 6.0's new features simplify complex tasks, most notably through Wizards, which are dialog boxes that ask how you'd like to format a document and then generate templates to match your specifications. Other strengths of Word 6.0 include



PowerPC compatibility and fluid interaction with other Microsoft Office products, thanks to OLE (Object Linking and Embedding) 2.0 technology. OLE allows you to import Excel 5.0 spreadsheets directly into Word 6.0 tables, for example, or export Word outlines directly into PowerPoint 4.0.

Cross-platform compatibility is also a great strength of WordPerfect, which is available for DOS, Windows, UNIX, VAX, and NeXT systems as well as for the Mac. Although WordPerfect's DOS origins plagued its interface in earlier incarnations, PowerPC-ready version 3.1 sports an elegant new design, with well-organized, intuitive tool bars that can be hidden easily when not in use. WordPerfect 3.1 also vies with Word 6.0 and Nisus Writer 4.0 as the most full-featured word processor — and does so admirably, offering, among other things, AppleScript macros, good use of System 7.5's Apple Guide interactive help, and a superior table generator.

MacWrite, originally bundled free with every Mac, introduced point-and-click word processing. Although its origins gave it an entry-level reputation, Claris shakes that image with MacWrite Pro 1.5. The PowerPC-ready release, 1.5v3, is packed with a new table-

of-contents generator; floating tool palettes that make getting to most formatting functions a breeze; collapsible tool palettes; and even built-in Spanish, French, and German dictionaries.

Nisus, Nisus Writer's predecessor, originated many of the "innovations" found in other word processors, including features such as zoom views, macros, and multiple undos, plus exclusive features such as noncontiguous text selection, multiple Clipboards, and an extremely powerful find/replace tool that can operate across multiple documents.

Nisus Writer 4.0 boasts more than 100 new features, including a streamlined interface with eight floating tool palettes for quick access to commands, built-in support for text-to-speech conversion in five languages, and new table and equation editors. Nisus Writer has won popularity worldwide with its extensive support for non-Roman alphabets, and Nisus Software offers add-on Language Keys (\$100 each) for Arabic, Hebrew, Japanese, and Russian.

FullWrite 2.0 traces its ancestry to the late 1980s, when the original FullWrite delivered an array of then groundbreaking features, including long-document support, powerful annotation functions,

and layout tools. FullWrite never quite caught on (some say it was ahead of its time, some say it was too late), and it passed through the hands of several developers and had several incremental upgrades before reemerging, fully revamped, in late 1994.

FullWrite 2.0 retains the program's original, nontraditional metaphor, which lets you work with your document in any of five views. Each view is essentially a separate layer, and although you can edit your document in any view, each is geared to a specific editing process: One shows icons representing layout styles; another tracks sections of a document that have been changed during an editing session; a third presents documents in outline format; and the fourth and fifth views show margins, headers, and footers in single-page and two-page layout views, respectively.

New in FullWrite 2.0 is a modular design that uses FullWrite Extensions to add or remove functionality from the program. If you don't require certain capabilities, such as mail-merge, you can minimize RAM usage and save disk space by removing the related extensions. FullWrite 2.0 rejects iconic buttons and puts all its power into pull-down menus and dialog boxes. This approach delivers an uncluttered interface, but reaching some common commands, such as spell checking, is tough.

Taking Up Space: In RAM and On-Disk

In addition to variations in features and interface, these five word processors have different levels of resource hunger. Word 6.0 is downright ravenous: It requires a 68020-or-better Mac running System 7 and equipped with a minimum of 4 MB of RAM (8 MB for a Power Mac). We recommend 8 MB for standard Macs as well — in our experience using Word with System 7.5, that much RAM is a virtual necessity. What's more, a standard install of Word 6.0 requires 9.5 MB of hard-disk space; a full install, including all Help files, sample documents, and dictionaries, requires a gargantuan 23

MB! Word 6.0 gives you a lot — but you need a lot of space to accommodate all that largesse.

FullWrite 2.0, on the other hand, remains true to its lean tradition: It works on any Mac running System 6.0.4 or later, uses as little as 1.5 MB of RAM, and requires less than 4 MB of hard-disk space. However, this lightness of being doesn't lead to nimbleness — FullWrite was the most ponderous performer of the routine tasks we used for our testing (see figure 1).

For overall speed, WordPerfect 3.1 is the snappiest Mac word processor you can buy. Word 6.0 falls in the middle of the pack — but despite some users' complaints (see the "Word-Wary" sidebar), it compares well to our reference product, Word 5.1a, when performing most of the common tasks we used for our testing. However, our informal survey of experienced users of Mac word processors kept turning up the same comment: that Word 6.0 simply *feels* slow — from the somewhat groggy response of the menu bar to the convoluted, multistep opening of the Print Preview window. Our advice: Use MacUser Labs' test results for guidance, and then try the word processor of your choice on a system equivalent to your own before you buy. If it feels fast enough for you, it is fast enough for you.

The Seven Key Feature Sets

A full-featured word processor should have all the right features — and no more — and should implement them smoothly through an intuitive, easy-to-use interface. We examined seven important groups of features; here's how well each application accomplishes its goals.

Character- and Document-Styling Tools

At their most basic, word processors (and their users) are concerned with fonts and their arrangement into words on a page. The best word processors keep style-formatting tools, including line spacing, margins, and paragraph indents, close at hand. Word, WordPerfect, and MacWrite Pro offer tool bars and pop-up palettes that keep style options just a few mouse clicks away.

MacWrite Pro allows you to create up to 256 character styles (specifying fonts and characteristics such as size and color) and up to 256 paragraph styles (including type attributes, indents, margins, line spacing, and so on). All the styles you create can be accessed via a pop-up Styles palette, which can be collapsed to its title bar for unobtrusive storage on the desktop.

Nisus Writer and FullWrite have well-designed style dialog boxes that allow you to set paragraph styles and give each style a name. WordPerfect's Style bar (one of seven new tool bars) lets you choose a formatting style from a pop-up window. The program also lets you assign a keystroke combination to a style. However, WordPerfect contains neither the character-based styles offered in MacWrite Pro nor the multi-section document formatting familiar to Word users.






Perhaps the most noteworthy innovation for helping you create preformatted documents is Word's Wizards. Word includes ten Wizards

Character- and Document-Styling Tools	
FullWrite 2.0	B-
MacWrite Pro 1.5	B
Microsoft Word 6.0	A-
Nisus Writer 4.0	B
WordPerfect 3.1	B+

The Bottom Line

MacUser LABS THESE FIVE FULL-FEATURED word processors all perform admirably in straightforward document-creation tasks, with solid tools for styling and arranging type on a page. The best of the batch go further by making those tools easy to reach and use; ensuring snappy response on a wide range of Macs; and making it easy to create complex documents incorporating graphics, tables, and even sound and QuickTime movies.

- ⊕ = OUTSTANDING
- = ACCEPTABLE
- ⊖ = POOR

	PRICE/ PERFORMANCE	CUSTOMER SERVICE	FEATURES	SPEED
 WordPerfect 3.1 A clean and accessible new interface, reasonable price (\$199 estimated), speedy performance, and manageable system requirements make WordPerfect 3.1 our top choice among a solid crop of Mac word processors.	●	⊕	⊕	⊕
 Nisus Writer 4.0	●	⊕	⊕	⊕
 Microsoft Word 6.0	●	⊕	⊕	●
 FullWrite 2.0	●	⊖	●	●
 MacWrite Pro 1.5	●	●	●	●

Listing is alphabetical within groups of equal mouse ratings.

figure 1

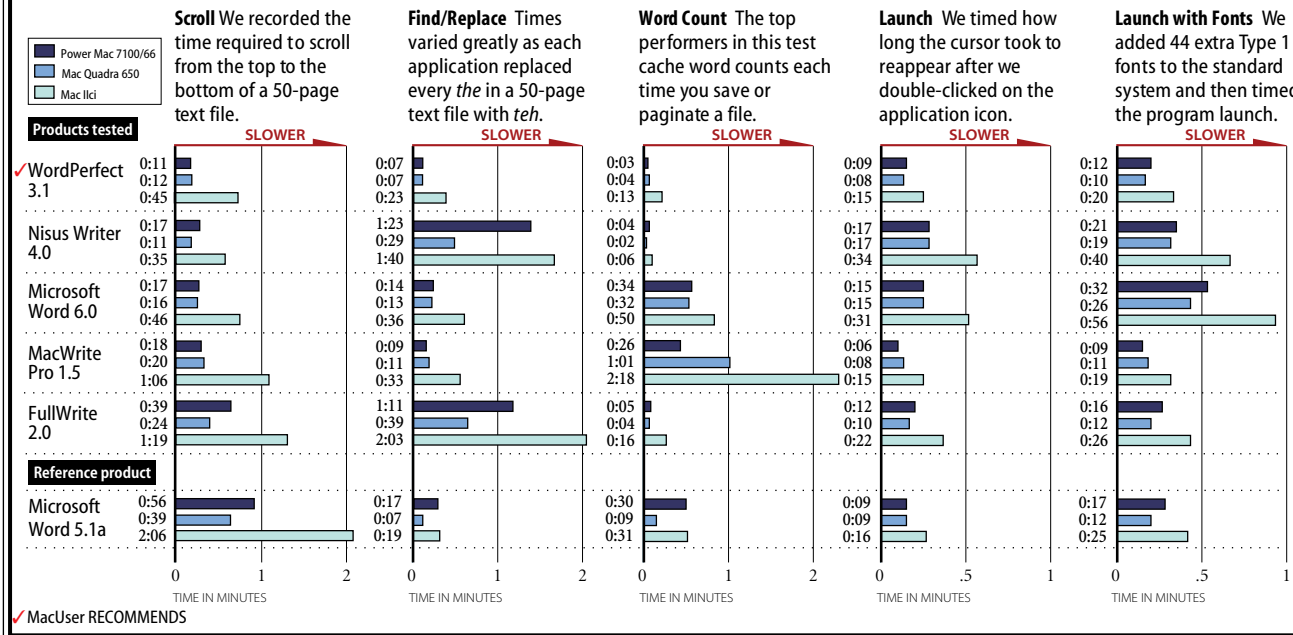
MacUser LABS Does Speed Limit? / newer doesn't always mean faster

No one buys a word processor for speed alone, but sluggish speed, hour after hour, day in and day out, may soon drive you batty.

To give you an idea of how responsive each of these five full-featured word processors would feel on *your* Mac, we tested each one on three different Macs: a IIci with 8 MB of RAM and an 80-MB hard drive, a Quadra 650 with 8 MB of RAM and a 250-MB hard drive, and a Power Mac 7100/66 with 16 MB of RAM and a 500-MB hard drive. Each

was running System 7.5 (minus QuickDraw GX and PowerTalk) with Adobe Type Manager 3.8 installed.

We tested native Power Mac versions of the programs on the Power Mac 7100/66; all other testing was with 680x0 versions of the applications, which ran in emulation on the Power Mac 7100/66. Results are listed in order of each application's overall speed, with the fastest at the top; test results for Microsoft Word 5.1a are included for comparison.



for creating everything from agendas, memos, newsletters, and résumés to tables and legal pleadings.

Another useful Word styling tool is AutoFormat, which applies styles based on how each paragraph is used in the document (header, bulleted list, and so on). AutoFormat gives you the option of accepting or rejecting styles before it applies them, and although it's not foolproof, it can be a real time-saver.

Editing and Proofing Tools

One of the most basic forms of error correction, the Undo command, lets you take back that hasty keystroke that just trashed your doctoral thesis. Nisus Writer 4.0 is the Undo titan, offering "unlimited" undos (actually, you're limited to a little more than 32,000, but who's counting?). Word offers "just" 100 undos but outdoes Nisus Writer by displaying your last 100 commands in a pop-up menu. You can make your document revert to any point in the sequence by simply clicking on the relevant command.

Spelling checkers are standard equipment in word processors; however, this generation of products also offers options that automatically fix spelling errors as you type. Word offers AutoCorrect, which fixes common spelling mistakes (for instance, changing *teh* to *the*) when you've finished (mis)typing the word and press the space bar or Tab. You can customize AutoCorrect to fix your most common spelling, capitalization, and punctuation errors.

Word's new AutoText (called Glossary Entries in previous versions) saves you from having to retype text or import graphics (such

Editing and Proofing Tools

FullWrite 2.0	B-
MacWrite Pro 1.5	B-
Microsoft Word 6.0	A-
Nisus Writer 4.0	B
WordPerfect 3.1	B+

as logos) you use frequently. You simply give these items abbreviated names; then, after you've typed the abbreviation, you use a Command-key combination (or issue a menu command) to replace the abbreviation with the associated text or graphic.

WordPerfect takes an all-in-one, streamlined approach to automatic corrections, with its QuickCorrect feature. By checking boxes in the QuickCorrect Preference box, you can instruct the program to automatically fix common spelling errors as you type, capitalize the first character of a sentence, change the second character of a word from uppercase to lowercase, correct spacing between words, and expand abbreviations that you add to the QuickCorrect dictionary.

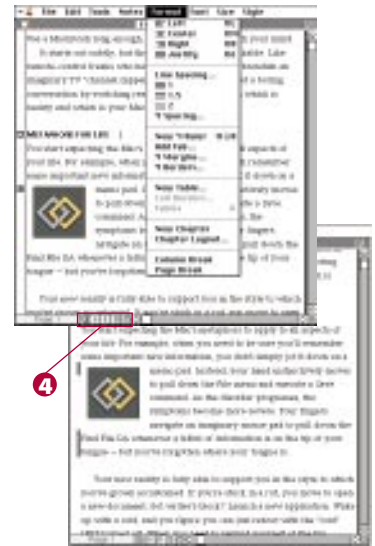
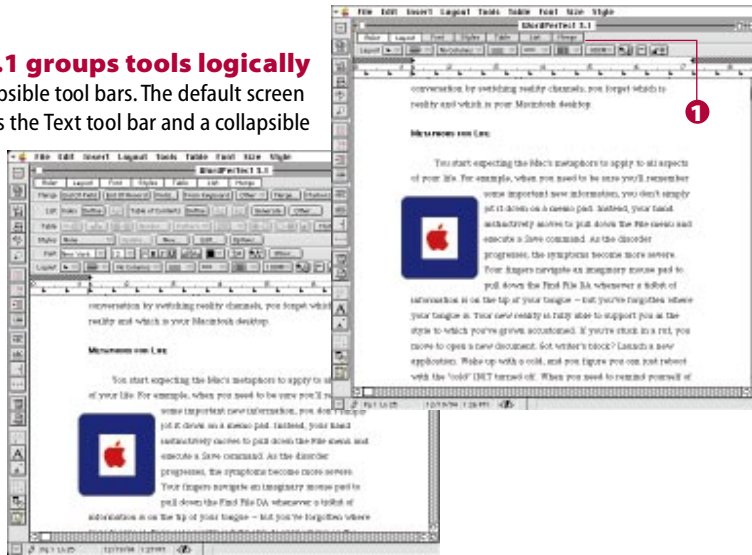
Nisus Writer allows you to create abbreviations for words and phrases (but not graphics) and then expand the abbreviations individually or all at once. You can use this feature to assign corrections for words you commonly misspell; the program doesn't provide a dictionary of commonly misspelled words.

FullWrite takes a similar approach, but it provides a list of common mistakes to get you started. Through its glossaries, FullWrite also lets you store frequently used text, but you must create a *glossary macro* for each abbreviation. Although simple, this procedure

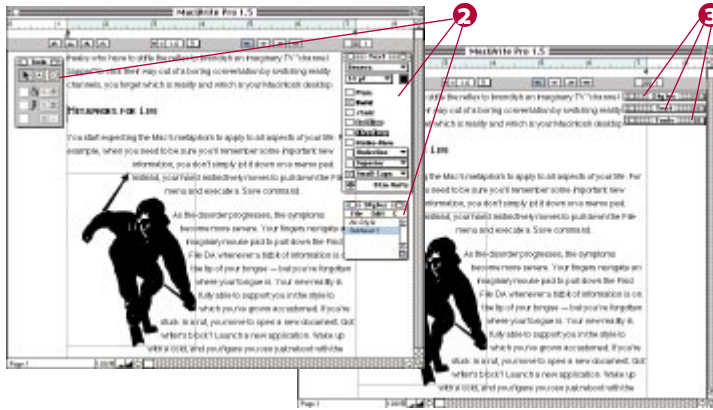
figure 2

Working with Words / tool presentation differs among programs

WordPerfect 3.1 groups tools logically in a series of six collapsible tool bars. The default screen (foreground) presents the Text tool bar and a collapsible ruler. You use a set of buttons (1) in the main menu bar to open each (or all) of the tool bars (background).



FullWrite 2.0 places even the most commonly used commands in pull-down menus — the only on-screen buttons (4) change document views. The default view is Icon Bar (foreground), in which icons representing document styles appear in the left margin. In Change Bar view, the areas of the document that have been edited are marked (background).



MacWrite Pro 1.5's main screen contains few formatting controls, relying instead on floating tool palettes (foreground, 2). The palettes can be hidden when not in use or collapsed into small title bars (background, 3).

requires somewhat more effort than similar ones in the other applications do.

MacWrite Pro 1.5's irritating Spell As You Type option beeps when you type a word it doesn't recognize, but it doesn't make any changes for you; MacWrite Pro has no provisions for expanding abbreviations.

Only Word and WordPerfect offer grammar checkers, but they're so slow and brain-dead that few users will try them more than once. All five programs offer simple thesauri; MacWrite Pro, Nisus Writer, and FullWrite offer synonym finders only. Word and WordPerfect provide synonyms and antonyms, although Word makes you ask for antonyms.

Publishing and Layout Tools

Each word processor provides powerful page-layout features such as multicolumn support, text wrap around graphics and text, captions, and tools for creating tables of contents. In addition to those features and a highly usable newsletter Wizard, Word 6.0 contains several new publishing tools. These include the AutoCaption feature, which — guess what? — automatically adds a caption to a

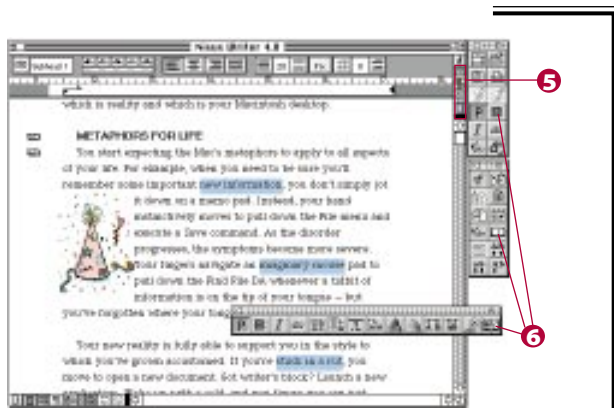
table, graphic, or equation. There's also a handy Drop Cap command, which allows you to turn letters and words into drop-cap format — a task that used to be cruelly difficult.

If you're working with long documents, you can now see more than two pages at once (finally!) in an editable thumbnail view that lets you drag and drop text and graphics among the thumbnails. And although Word has long supported multiple columns, version 6.0 offers newspaper-style columns of variable width.

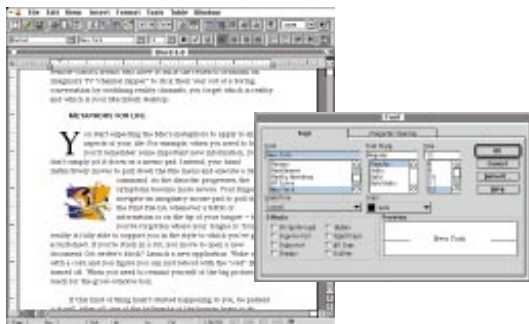
WordPerfect 3.1's layout features include variable-width columns; a caption tool; a well-designed and -implemented hyphenation engine; a fast table-of-contents generator, available via a pop-up menu; and another feature DTP users will appreciate — a Widow/Orphan Control check box. Word 6.0 additionally provides widow and orphan control, but making use of it requires you to

Publishing and Layout Tools

FullWrite 2.0	C+
MacWrite Pro 1.5	C+
Microsoft Word 6.0	B
Nisus Writer 4.0	B+
WordPerfect 3.1	B+



Nisus Writer 4.0 uses buttons in the right margin (5) to toggle among tool bars for text, graphics, sound, and layout view. Multiple tool palettes (6) offer some redundancy of common commands, so you can work with only those palettes you need most often.



Microsoft Word 6.0's main work screen presents a plethora of iconic buttons (background), many of which are powerful and convenient but far from self-explanatory. This version of Word also introduces tabbed dialog boxes (foreground) in a generally successful effort to avoid multiple nested dialog boxes.

invoke an entire series of nonintuitive menu commands.

Nisus Writer offers several novel features for designing pages, including an option that lets you create a one-page flyer with three panels (a two-fold brochure). You can also display single and facing pages, arrange pages in booklet format, and easily generate a table of contents. Nisus, along with Word and WordPerfect, also offers automated indexing of long documents.

FullWrite 2.0 offers less-robust orphan control than the other programs, but otherwise it and MacWrite Pro 1.5 provide little beyond the layout basics of multiple columns, text wrap, and headers and footers. These tools are well implemented, however, and are all many users will ever need.

Table-Creation Tools

WordPerfect 3.1's table tools take top honors. Not only can you quickly specify the number of rows and columns in your table but you can also use WordPerfect's formula bar to calculate sums or averages of the entries in a row or a column.

Word 6.0's Table Wizard helps you create and format spiffy-looking tables quickly, and the tables can offer even more advanced

math ability than in WordPerfect's tables — but only if you use Word in conjunction with Microsoft Excel 5.0 and if your system has enough RAM to load both programs at once. By means of OLE technology, when you paste an Excel spreadsheet into Word 6.0, it becomes a Word table. Double-clicking in the table opens Excel and places its tool bar atop your Word document, so you can edit the cells, use Excel macros, and so on. Although it's powerful, this capability is taxing to all but the most muscular Macs.

In both MacWrite Pro 1.5 and FullWrite 2.0, you create table skeletons by specifying the numbers of rows and columns, in a dialog box. MacWrite Pro provides only a spartan grid, but FullWrite lets you select from several line weights and styles, including dotted, solid, and invisible.

Nisus devotes an entire manual to its table tool, a version of Macreations' Tycho TableMaker. The table maker is straightforward and easy to use, but because it's an auxiliary application, it lacks some of Nisus Writer's core strengths, including undos, scriptability with macros, and noncontiguous selection.

Graphics and Drawing Tools

Each of these word processors allows you to incorporate graphics into your documents. WordPerfect 3.1, Word 6.0, Nisus Writer 4.0, and MacWrite Pro 1.5 go one step further and let you import PICT, TIFF, and EPS graphics — the formats used by the most-popular clip-art publishers. FullWrite is limited to importing images through the Clipboard: It retains PostScript information as long as you don't try to edit an EPS image within FullWrite's picture panel; if you do, the image is converted to a 72-dpi PICT.

All the programs except MacWrite Pro provide basic drawing tools. WordPerfect is the standout: In addition to the standard pen and fill tools, also offered by Nisus Writer and FullWrite, and the Illustrator-style Bézier-curve drawing tools, like those in Word, WordPerfect's Graphics tool bar offers free rotation of graphics and single-button application of *watermarks* (ghosted images placed "behind" text on a page) and *overlays* (graphics superimposed on the text). Word and FullWrite also let you create watermarks and overlays, but the process for doing so is not as elegant as it is in WordPerfect.

Nisus Writer's graphics tools are impressive but use a paradigm that may confuse new users: Graphics must be assigned to one of two categories: free-moving graphics, which exist in a document's *graphics layer* and can be placed anywhere in a document or anchored to a piece of text, and *character graphics*, which occupy the same layer as the type and flow with the surrounding text.

In addition, all the programs except FullWrite allow you to embed QuickTime

Table-Creation Tools	
FullWrite 2.0	C
MacWrite Pro 1.5	B-
Microsoft Word 6.0	A-
Nisus Writer 4.0	B
WordPerfect 3.1	A

Graphics and Drawing Tools	
FullWrite 2.0	C+
MacWrite Pro 1.5	C+
Microsoft Word 6.0	B+
Nisus Writer 4.0	B
WordPerfect 3.1	A-

Word-Wary / users cite Word 6.0's 'sins'

THE INTERNET AND ON-LINE SERVICES ARE AFLAME with messages from Microsoft Word users who are disappointed — and sometimes angry — with version 6.0. A large number of *MacUser* readers have also written in to express their disillusionment. Listed here are the five top “deadly sins,” along with summaries of answers provided by Martina Lauchengco, Microsoft’s product manager for Word 6.0 for the Mac.

Windows Envy: In the name of conformity with Word 6.0 for Windows, Word 6.0 for the Macintosh has been given a Windows-like appearance and long-standing Word for Mac conventions have been abandoned, causing confusion and frustration.

Microsoft’s Response: Word 6.0 was designed with two primary goals: ease of use and cross-platform compatibility. Both the Windows and the Mac versions of Word were changed in version 6.0 to ensure that users would have the same experience on either hardware platform; the new shared interface for Word 6.0 was no more familiar to Windows users than it was to Mac users.

Greed for System Resources: Minimum system requirements of 4 MB of RAM and a 68020 processor are unrealistic and deliver extremely poor speed; even a 68030-based Mac with 8 MB of RAM runs unacceptably slowly.

Microsoft’s Response: Minimum system requirements printed on any software box should be taken with a grain of salt. Word 6.0 can run on a 68020 system with 4 MB of RAM, but quite slowly. Acceptable speed requires at least a 33-MHz 68030 machine with 8 MB of RAM; for truly “snappy” speed, you need to use a Quadra or a Power Macintosh.

Slothful Performance: Several basic functions within the application (moving windows, printing, and so on) are slower in Word 6.0 than they were in Word 5.x — even on Power Macs running the native Power Mac version of Word 6.0.

Microsoft’s Response: Word 6.0 is not across-the-board slower than Word 5.1a. [*MacUser Labs’ tests confirm this.* — Ed.] However, some tasks are slower on Power Macs running Word 6.0 in native mode than they were on Quadas running Word 5.1a. This slowdown is caused by portions of the Mac system that haven’t been ported to the native Power Mac code, and it affects all applications, not just Word.

Anger Toward Fonts: Launching the application takes far too long, particularly for users who have large numbers of fonts installed.

Microsoft’s Response: This problem, along with some others, is being addressed. See the New on the Menu section of this issue for details on a maintenance upgrade, Word 6.0a.

Too Proud for Extension Harmony: Word 6.0 conflicts with several of the most common Mac system extensions and control panels. Some readers claim conflicts with Connectix’s RAM Doubler, one of 1994’s most successful Mac products, and Adobe Type Manager, perhaps the most prevalent non-Apple system add-on.

Microsoft’s Response: We test all Mac products for conflicts, and Word 6.0 is compatible with current versions of the most popular extensions and control panels. If a conflict arises, make sure you have the latest version of the extension or control panel in question. Also, get a copy of “Optimizing Your Mac for Word 6.0” or the continually updated “Summaries of Known Extension Conflicts with Word 6.0 for the Mac,” available (in Word 6.0 format only) from Microsoft’s on-line forums and through the company’s toll-free product-information number (800-426-9400). / Jim Shatz-Akin

movies in your documents, and all the programs let you record sound notes on Macs that support audio input and allow you to embed them in documents.

Mail-Merge

The five word processors take the same basic approach to *merging* documents (generic form letters, for example) with data lists containing specific information (such as customer names, addresses, and so on): You create a document that includes *field names*, such as First Name and Address, and then merge it with a data list (created from scratch or imported as text from a PIM or database program) to produce a set of “personalized” documents. This function can be a real time-saver once you’ve set it up, but painstaking trial and error have traditionally

been required to ensure that each data file has entries corresponding to all the field names and that the individual data entries are separated properly (by tabs, commas, slashes, and so on).

Nisus Writer and FullWrite offer little improvement over this traditional approach, other than by providing useful on-line help on the topic. WordPerfect’s Merge ruler bar makes the process a little simpler, by letting you store custom field names as you build a data file and then insert them into your form document later.

MacWrite Pro doesn’t streamline the merging process much, but it does add a powerful wrinkle in the form of macros, intelligently built in to the Merge dialog box, that let you use IF/THEN statements to control merges. This means, for example, that you can create a batch of letters to customers on your mail-order list and use an IF/THEN command to tack on a message about sales tax only to those customers within your state.

Word’s Mail Merge Helper dialog box walks you through the creation of a form document and a data list and offers the tremendously convenient ability to batch-create custom mailing labels or envelopes at the same time as it performs a mail-merge. The step-by-step approach is good for new users, but users of older versions of Word may be confused initially by the all-new dialog box.

On-Line Help

All five word processors provide extensive context-sensitive on-line help — although you won’t find the word *help* in FullWrite’s written documentation. Well-written manuals are also the rule. (Nisus Writer wins the documentation-tonnage contest, with a daunting set of five manuals that provide exhaustive detail about every aspect of the program.) All get high marks for their built-in, text-based help systems and for their support of Balloon Help. A few offer additional features to help you find your way.

WordPerfect supports System 7.5’s Apple Guide: In addition to standard help dialog boxes, WordPerfect Guide uses animations to step you

Mail-Merge	
FullWrite 2.0	C
MacWrite Pro 1.5	B+
Microsoft Word 6.0	A-
Nisus Writer 4.0	C
WordPerfect 3.1	B

On-Line Help	
FullWrite 2.0	B
MacWrite Pro 1.5	B
Microsoft Word 6.0	B+
Nisus Writer 4.0	B
WordPerfect 3.1	A-

figure 3

Features of Word Processors / tools, functions, and product support

	FullWrite 2.0	MacWrite Pro 1.5	Microsoft Word 6.0	Nisus Writer 4.0	✓ WordPerfect 3.1
List price	\$395	\$249	\$339*	\$299*	\$395
Street price	\$290	\$99†	\$305	\$299	\$199§
Upgrade price (registered user/competitive)	\$99/\$120	\$29/§69	\$129§§/NA	\$99/NA	\$69/\$99
Disk space for default install (Mac/Power Mac)	3 MB/3 MB	4 MB/5 MB	10 MB/13 MB	8 MB/8 MB	9 MB/11 MB
Minimum RAM (Mac/Power Mac)	2 MB/2 MB	2.5 MB**/8 MB	4 MB/8 MB	1.7 MB/1.7 MB	2 MB/4.5 MB
Minimum processor	68000	68020	68020	68000	68000
Power Mac-native		●	●		●
Supports System 6.x	●	●			●
Thesaurus	●	●	●	●	●
Spelling checker	●	●	●	●	●
Grammar checker			●		●
Macintosh Drag and Drop support	●		●	●	●
Bézier-curve drawing tools	●		●	●	●
Imports EPS graphics	●	●	●	●	●
Imports QuickTime movies		●	●	●	●
Records sounds	●	●	●	●	●
Imports Excel data			●	●	●
AppleScript support		●	●		●
Number of undos	1	1	100	unlimited	1
Extra fonts	none	none	4	5	25
Money-back guarantee	none	30 days	90 days	30 days	90 days
Free tech support by phone	NA††	90 days	90 days	90 days	180 days
Company	Akimbo Systems Somerville, MA 800-375-6515 617-776-5500 617-776-5512 (fax)	Claris Santa Clara, CA 800-325-2747 408-727-8227 408-987-3932 (fax)	Microsoft Redmond, WA 800-426-9400 206-882-8080 206-936-7329 (fax)	Nisus Software Solana Beach, CA 800-890-3030 619-481-1477 619-481-6154 (fax)	Novell Orem, UT 800-328-2875 801-225-5000 801-229-1566 (fax)

✓ MacUser RECOMMENDS

*Estimated price; vendor doesn't supply a list price.

†Promotional street price of \$99 expected through mid-1995.

§Estimated street price as of March 1995 provided by vendor.

§§Registered-user upgrade available only to users of MacWrite Pro 1.0 or 1.5 (not earlier versions of MacWrite).

**1 MB if using System 6.x.

††Tech support available only by mail or on-line.

§§§Includes \$30 mail-in rebate coupon.

through several tasks. It tells you, for example, to pull down a menu and select an option, waits for you to do so, and then takes you to the next step in your task.

In addition to its helpful Wizards, Word 6.0 goes beyond conventional on-line help with an option (turned on by default) called Tip of the Day, which appears at launch. Purporting to offer useful tidbits of information to new users, it veers oddly from helpful to Zen-like: "Things that go away by themselves can come back by themselves," reads one cryptic tip.


Strong Contenders Make Choosing Difficult

You can create impressive, professional-looking documents with any of these five word processors for the Mac, but we recommend that you choose WordPerfect 3.1. It has a balance of powerful features, an easy-to-use interface, modest system requirements, and a reasonable price. The program's tools are grouped logically, it's the snappiest of all the products we tested, and its on-line help system and document templates make generating sharp-looking documents quick and easy. What's more, it runs on any modern Mac.

The new interface in Nisus Writer 4.0 makes its tools convenient and accessible, and its array of features is unparalleled in the field: The program's macro language, ability to search text strings across

multiple documents, and foreign-language support are squeezed into an impressively compact and efficient package.

Word 6.0's feature set matches and even beats WordPerfect's in a few areas; its document Wizards are easy to use and generate great-looking documents. Word's downfall lies in its hunger for system resources and its sluggishness on all but the more powerful Macs. Although our lab tests indicate that it is, in fact, faster than Word 5.1a for some tasks, to most of our experienced colleagues, it simply *feels* slow and unresponsive. Plus, 9.5 MB of hard-disk space for a standard install is just too chubby for a word processor.

MacWrite Pro 1.5 and FullWrite 2.0 are each solid, full-featured word processors that fall slightly short of their more sophisticated rivals. FullWrite's extensible architecture will appeal to users who scrimp for every byte of RAM, but the program's powerful features would be more useful if they weren't buried in menus and submenus. MacWrite Pro places the most frequently used tools within convenient reach of the mouse, but its graphics-editing and table tools aren't as advanced as those of the other products. 

Connie Guglielmo, a former *MacWEEK* staffer, processes words about Mac products on a regular basis. Mark Bieler, associate director of MacUser Labs, oversaw the testing for this report.

Taking Care of Business

These 21 accounting packages demolish the myth that the Mac can't be a powerful financial partner. **By Cheryl England**

It's time to put an end to it. How many times have you heard that truly professional accounting software is written solely for DOS or Windows machines? Despite the prevalence and persistence of this myth, it's not true — and it hasn't been true for years.

We knew that. But before we started researching this story, we didn't realize that the number — and the depth — of accounting packages for the Mac is remarkable. It wasn't until we sat down with members of the Apple Business Consortium (ABC) that we found out how much we had to learn (see the "Expert Advice" sidebar).

Our central finding: There's versatile, powerful Mac accounting software available for every business — from the mom-and-pop corner store to the Fortune 500's most ponderous conglomerate. We narrowed the field to 21 general accounting packages, all of which contain general-ledger functionality. We then divided the products into three groups — entry-level, midrange, and high-end — and sorted them in order from the simplest to the most complex.

These aren't hard-and-fast categories, however. If you're considering a product that's at the high end of the entry-level category, you'll also want to consider products at the low end of the midrange category. With that in mind, read on to find out the major strengths and — in some cases — the glaring weaknesses of each product.

ENTRY-LEVEL PROGRAMS

Entry-level programs are ideal for small- or medium-sized businesses in which only one person handles the finances. Generally, programs in this category are less expensive and easier to use than the other types of accounting programs. These programs are all

integrated — they combine accounting functions such as general ledger, accounts receivable, and accounts payable in one package.

CASHBIZ / *for the simplest of needs*

This bare-bones program is designed for very small businesses that do their accounting on a *cash basis* (income and expenses are not realized until money changes hands). Like a personal-finance program, CashBiz lets you write checks, track credit-card expenses, and monitor loan payments. But CashBiz also offers a few very basic general-ledger, invoicing, and accounts-receivable features.

CashBiz features a customizable chart of accounts. The program produces balance sheets and income statements and can prepare customer invoices, customer statements, and cash-flow and aging reports. The program can recall recurring invoices for up to 99 different cycles and can balance checking accounts automatically. It can import Quicken files and export data to spreadsheet, database, graphics, word-processing, or tax-preparation programs.

CASH LEDGER / *dependable but limited*

Cash Ledger's data-entry screens are straightforward; you either enter checks, write checks, or record deposits. Pop-up menus containing your chart of accounts and a list of vendors are always available. Cash Ledger does not provide a list of customers, however, so you can't track deposits by customer. You can change opening balances at any time, and you can modify any transaction in an open period. You can view and print transaction reports for closed as well as open periods. Financial reports are clear and comprehensive.



And although Cash Ledger does not include payroll features, it does link to CheckMark's well-designed Payroll program.

MACMONEY / *love it or hate it*

MacMoney straddles the fence between being a personal-finance program and a true accounting program. It supports multiple checking accounts, cash accounts, and credit cards, but it can't track inventory or generate a payroll. The optional \$79.95 InvoiceIt module runs side by side with MacMoney, using the same accounts and many of the same windows. This setup makes for an easy-to-use invoicing system that tracks receivables and records customer payments. The program's form-based interface is intuitive, reports are easily customizable, and data can be sorted effortlessly.

Although MacMoney has a loyal user base, the program doesn't shine when compared to its competition. MacMoney and InvoiceIt combined cost a bit more than a more full-featured accounting program such as M.Y.O.B. If all you want is a personal-finance program that can also do a bit of accounting on the side, then MacMoney might be a reasonable choice.

SIMPLY ACCOUNTING / *managing small projects*

Simply Accounting is a useful tool for any small-business owner who must manage the costs associated with a variety of projects. This integrated package can handle basic accounting, inventory, payroll, and project management. Simply Accounting's greatest strength, however, is its job-costing system.

The program gives you a lot of flexibility in categorizing costs. For

example, a contractor can view labor, materials, or subcontractor costs for a project, based on the date the costs were entered. The payroll functions are strong; for example, the program can automatically calculate the correct percentage of payroll tax to allocate to a particular job. Reports — especially financial statements — are flexible and easy to generate.

Unfortunately, the program does not offer batch posting or batch printing, which makes Simply Accounting unwieldy for users who must deal with numerous transactions.

IN-HOUSE ACCOUNTANT / *solid but uninspiring*

In-House Accountant is a versatile accounting program that fulfills all basic accounting needs from managing checkbooks and household accounts to performing more-sophisticated business analyses. In-House Accountant uses a single data-entry window for all transactions, so you can zip from one account to another without changing modules.

You can change any entry in your current fiscal year, so you don't need to close the books at the end of each month. When you enter a transaction, all related items are automatically updated. In-House Accountant produces a standard set of reports, including income statements and balance sheets, and it can create various graphs. But in spite of its clean design and solid feature set, In-House Accountant pales when compared to the less expensive M.Y.O.B.

M.Y.O.B. / *for the accounting-impaired*

M.Y.O.B. earns high praise for ease of use. This integrated program

The Bottom Line

NO MATTER WHAT YOU NEED in an accounting package, one of these products is sure to have it. In fact, you may be surprised to find that *several* of the packages have the key features you need. And because the lines between entry-level, midrange, and high-end packages are not nearly as clear-cut as they were a few years ago, you may find yourself considering packages from two of the three categories.

- ⊕ = OUTSTANDING
- = ACCEPTABLE
- ⊖ = POOR

ENTRY-LEVEL PROGRAMS

	PRICE/ PERFORMANCE	CUSTOMER SERVICE	EASE OF USE	FEATURES
M.Y.O.B.	⊕	⊕	⊕	⊕
<p>For entry-level needs, you can't beat M.Y.O.B. (\$139.95). This friendly program provides serious hand-holding for nonaccountants, and it does so without sacrificing full accounting functionality. We only wish it were multiuser.</p>				
QuickBooks	⊕	⊕	⊕	⊕
Peachtree Accounting for Macintosh	⊕	●	●	⊕
In-House Accountant	●	●	●	●
Simply Accounting	⊕	●	●	●
Cash Ledger	⊖	⊕	⊕	⊖
CashBiz	●	●	⊕	⊖
MacMoney	⊖	⊕	●	⊖

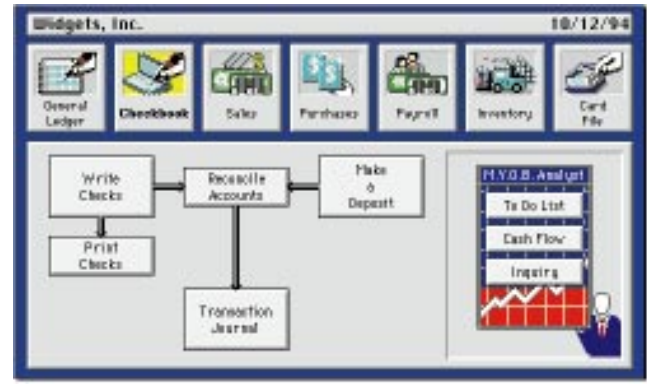
MIDRANGE PROGRAMS

	PRICE/ PERFORMANCE	CUSTOMER SERVICE	EASE OF USE	FEATURES
Multiledger	⊕	⊕	⊕	⊕
<p>In the midrange, there's only one real winner — Multiledger (\$199). This bargain-priced program squeezes in-depth features, speed, an intuitive interface, and multiuser capabilities into one sleek package. A payroll package is an extra \$129.</p>				
Connected Accounting	⊕	●	●	●
Mac P&L	●	●	●	⊕
Peachtree Insight Accounting	●	●	●	●
Components	⊖	●	⊖	●

HIGH-END PROGRAMS

	PRICE/ PERFORMANCE	CUSTOMER SERVICE	EASE OF USE	FEATURES
FlexWare	⊕	●	●	⊕
<p>When it comes to high-end programs, FlexWare nudges out the competition, thanks to its strong feature set, flexible customization options, and reasonable price (\$695 per module). This modular program is an excellent choice for users with general accounting needs.</p>				
A4	⊕	●	●	⊕
Dynamics C/S+	●	⊕	●	⊕
Dynamics LAN	●	⊕	●	⊕
Maconomy	⊕	●	●	⊕
POS/OE 4 Mac	⊕	●	●	⊕
Fourth Power Service Accounting	●	●	●	⊕
Great Plains Accounting	●	⊕	⊖	●

In each category, listing is alphabetical within groups of equal mouse ratings.



You don't need to be an accountant in order to use M.Y.O.B. effectively. This friendly program features an abundance of help and easy-to-navigate screens such as this opening checkbook screen.

comes with a variety of tools to help you set up the system and to explain accounting basics: a videotape, a CD-ROM, an on-screen "getting started" interview, 100 templates for the most popular types of businesses, an extensive manual, and 30 days' free technical support. M.Y.O.B. is also extremely forgiving. For example, you can enter an opening balance whenever you want (not just at setup), you can keep an unlimited number of months open at once, and you can select any checking account while performing tasks such as applying payments or writing refund checks. You can customize forms such as invoices, checks, and purchase orders, and you can quickly bring up a list of your receivables or pending purchase orders.

Even with the flexible interface and copious help, you still get full accounting functionality. The program includes general-ledger, accounts-payable, accounts-receivable, checkbook, inventory, invoicing, job-costing, and reporting features — everything you need in order to keep your company's financial operation running smoothly with a minimum of fuss.

QUICKBOOKS / a top-notch competitor

The newly shipped QuickBooks is a full-featured, double-entry accounting package that competes with M.Y.O.B. QuickBooks includes general-ledger, accounts-receivable, inventory, purchasing, invoicing, payroll, and check-writing features. Job-intensive businesses will appreciate the program's job-based budgeting options and the simple way it automates billing for reimbursable expenses.

QuickBooks' invoicing and purchase-order features go beyond those found in most other entry-level products. You can insert lines on an invoice or purchase order (for spacing or comments), and you can add an unlimited number of subtotals on invoices. Items can even be purchased with a simple check. You cannot, however, customize the design of a printed invoice, purchase order, or check.

QuickBooks' reporting and graphing features are top-notch. On most reports, you can double-click on any line to see a more detailed view. You can filter data in a variety of ways, and reports can be customized to include items such as budgets, actuals, comparisons, and data from several previous years. QuickBooks even lets you display reports across fiscal- and calendar-year boundaries and lets you toggle between cash and accrual reporting.

It lacks a few features: QuickBooks can't create a quote, it doesn't import transactions or link with other programs, it doesn't support multilevel inventory, and its passwords are available only globally.

PEACHTREE ACCOUNTING FOR MACINTOSH /for accountants only

A frequently underappreciated program, Peachtree Accounting for Macintosh will appeal to accountants looking for a straightforward, solid performer. Peachtree Accounting for Macintosh includes general-ledger, accounts-receivable/billing, accounts-payable, payroll, inventory, job-costing, bank-reconciliation, purchase-order, and reporting features. The program's security features are top-notch and include detailed auditing features.

In some ways, Peachtree Accounting for Macintosh is amazingly simple. You can set up a checking account and then create an unlimited number of checkbooks to access it. No matter where you post information, the program automatically transfers it to the appropriate area (for example, to the accounts-payable or accounts-receivable area). You can easily switch from one accounting function to another by clicking on the appropriate icon in a palette. Trained accountants will find the menus logical and consistent.

Be aware, however, that Peachtree Accounting for Macintosh can be intimidating if you are not familiar with traditional accounting practices. Although the program includes context-sensitive help, a tutorial, and a manual that defines accounting terminology, nonaccountants can easily become confused about where to find the information they need.

MIDRANGE PROGRAMS

Midrange programs cost more than entry-level programs, but they offer more depth. Most are multiuser, but they do not have a client/server implementation. These programs can be either integrated or modular, with accounting functions separated into individual programs. If you're just getting started with accounting software, you

may need a trained accountant or consultant to help you install these packages.

PEACHTREE INSIGHT ACCOUNTING /strong inventory, payroll

This modular, batch-posting system includes general-ledger, accounts-payable, accounts-receivable/billing, inventory, and payroll modules. Peachtree Insight Accounting can easily handle a lot of data, and it can turn some tricks that other similarly priced programs can't. For example, you can create up to 256 divisions, 999 departments, and 999 profit centers, including 99,999 general-ledger accounts within each. You can create individual reports for each entity, and you can have an unlimited number of general-ledger-account distributions per transaction. Peachtree Insight Accounting can calculate and compare current, year-to-date, previous-year, and industry-average values for 12 key financial ratios.

The program also lets you forecast cash needs; create summary and detailed aging reports; calculate commissions; and create shipping, standard, or service invoices. If you have a lot of inventory to track, you'll appreciate the program's support for multiple warehouses and warehouse transfers as well as its ability to calculate inventory aging. Payroll features are also strong — the program offers 5 standard and 12 custom earnings codes (including tips).

Peachtree Insight Accounting does have some glaring weaknesses, however. For example, it doesn't support pending invoices or purchase orders and it can't turn quotes into invoices.

MAC P&L /excellent inventory handling

A multiuser, integrated package, Mac P&L (formerly Accountant, Inc.) includes general-ledger, accounts-receivable, accounts-

Entry-Level Accounting Programs

Cash Ledger

Rating: ★★½

List Price: \$99.

Pros: Extremely easy to install and use. Clear reports. Dependable.

Cons: Performs cash-basis accounting only. Very limited functionality.

Ideal Users: Very small, simple businesses that do not need invoicing.

Company: CheckMark Software, Fort Collins, CO; 800-444-9922 or 303-225-0522; 303-225-0611 (fax).

CashBiz

Rating: ★★½

List Price: \$14.95.

Pros: Extremely easy to use. Imports Quicken files. Inexpensive.

Cons: Performs cash-basis accounting only. Very limited functionality.

Ideal Users: Very small or home businesses that need to track expenses and invoice customers.

Company: M-USA Business Systems, Dallas, TX; 800-933-6872 or 214-386-6100; 214-404-1957 (fax).

In-House Accountant

Rating: ★★½

List Price: \$199.

Pros: Uses only one entry window for all transactions. No posting required. Good on-line help.

Cons: No payroll. Limited inventory capabilities.

Ideal Users: Small or home businesses where ease of use is the top priority.

Company: Software America, Monterey, CA; 408-645-7810; 408-655-2450 (fax).

M.Y.O.B.

Rating: ★★½

List Price: \$139.95; with payroll, \$239.95.

Pros: Extremely easy to use. Good technical support. Very forgiving. Flexible templates tailored to various businesses.

Cons: No multiuser option.

Ideal Users: Small or medium-sized businesses in which the person who handles the books has numerous other responsibilities.

Company: BestWare, Rockaway, NJ; 800-322-6962 or 201-586-2200; 201-586-8885 (fax).

MacMoney

Rating: ★★½

List Price: \$89.95.

Pros: Custom reports available. Easy sorting of data. Optional invoicing module.

Cons: Does not support double-entry accounting. No payroll.

Ideal Users: Very small or home businesses that need to track expenses and invoice customers.

Company: Survivor Software, Inglewood, CA; 310-410-9527; 310-338-1406 (fax).

Peachtree Accounting for Macintosh

Rating: ★★½

List Price: \$169.

Pros: Can have up to 26 open periods. Can create custom reports. Offers on-line access to definitions of accounting terms.

Cons: Cumbersome import function. Does not calculate finance charges.

Ideal Users: Accountants who want to use a straightforward, traditional, and full-featured program.

Company: Peachtree Software, Norcross, GA; 800-247-3224 or 404-564-5700; 404-564-5888 (fax).

QuickBooks

Rating: ★★½

Street Price: \$120.

Pros: Excellent report writer. Job-based budgeting options. Can display reports across fiscal- and calendar-year boundaries.

Cons: Reports cannot be exported. No multiuser version.

Ideal Users: Small firms that need to track various jobs or projects or that need extensive custom reports.

Company: Intuit, Menlo Park, CA; 800-624-6930 or 602-295-3221; 800-858-6090 (fax).

Simply Accounting

Rating: ★★½

List Price: \$89.

Pros: Easy to set up and use. Good interface. Good job costing. Three levels of security.

Cons: No batch posting or printing. Does not support many features found in newer products.

Ideal Users: Small businesses that perform work on a per-job basis.
Company: Computer Associates International, Islandia, NY; 800-773-5445 or 516-342-2000; 516-342-5734 (fax).

payable, payroll, inventory, and project-analysis features. The program's interface is straightforward and logical, organized according to task. Companies whose main business is distribution or light manufacturing will especially appreciate Mac P&L's excellent back-ordering system, which allows for negative inventory, and the program's ability to handle inventory for subcomponents is especially handy for manufacturers. Mac P&L includes over 100 reports and produces a complete audit trail of all transactions.

Mac P&L lacks a built-in forms editor, however. The program supports AppleScript, so you can link to third-party forms editors (as well as to other programs such as contact managers), but using an external product to customize forms can be cumbersome.

MULTILEDGER / a bargain hunter's dream

Chock-full of features, MultiLedger is a fast, flexible, integrated accounting program. MultiLedger combines general-ledger, accounts-receivable, accounts-payable, job-costing, profit-center, and inventory modules. (An optional, well-designed payroll module is available for \$129.) If you need point-of-sale features, you can link MultiLedger to programs such as Ensign Systems' POSIM. The program is PowerPC-native and can be used by up to ten users at once. And, in a product category not known for generous technical-support policies, CheckMark offers 60 days' free support. After that, you can purchase a year of unlimited support for \$79.

When you first open MultiLedger, you may be surprised by the simple presentation — you can opt for setup, transactions, or reports. But beneath that simplicity is a highly flexible program. For example, MultiLedger lets you create up to nine departments, so you can see information in three dimensions rather than the standard two. The program also responds quickly when you pull up information and post transactions.

COMPONENTS / it could've been a winner

Components' implementation as an "accounting construction kit" is the source of both its major strengths and its major gaps. Using objects, you can build journals, reports, and graphs in every module. The program includes modules for general ledger, accounts

Date/Disc Sale	Date	Customer Name	Amt Due	Amt Paid	Disc/Adjust	
3/22/95	19/099	Data Management	95.00	0.00	0.00	
3/ 3/95	19/101	Deendable Too	3290.40	0.00	0.00	
3/12/95	19/097	Cico & Holt Eq	225.00	0.00	0.00	
3/ 1/95	19/100	Fuller Leasing	125.00	0.00	0.00	
3/ 4/95	2/12	19/098	Kason Plastics	125.00	0.00	0.00
3/16/95	19/100	Kelly Industri	600.00	0.00	0.00	
3/ 5/95	2/13	19/102	Hedoo Distribu	2375.00	0.00	0.00
3/ 9/95	2/16	19/112	Northern Conco	-600.00	0.00	0.00
3/ 2/95	2/11	19/105	P & P Electron	625.00	0.00	0.00
3/14/95	19/107	PHO Aircraft P	425.00	0.00	0.00	
3/ 9/95	2/16	19/113	Sedar Industri	290.00	0.00	0.00
3/ 7/95	19/108	TGG Maintenance	45.00	0.00	0.00	
3/ 9/95	19/111	Thompson Group	-19.00	0.00	0.00	
3/ 2/95	19/106	Turnell & Reso	275.00	0.00	0.00	
3/11/95	2/19	19/110	NVO3 Laborator	225.00	0.00	0.00
3/22/95	19/103	Nivellaw Equipa	590.00	0.00	0.00	

receivable, accounts payable, and job costing/time billing. Although the system is highly customizable, it is also hard to set up. Components' forte is its multiuser job-cost/time-billing module. The program recognizes revenue upon either billing or time-slip entry, allows unlimited trust-account journals, and can create individual client trust-account ledgers. Billings can be transaction, contract, contract plus expenses, or any number of variations. Components also includes a sophisticated report writer. Unfortunately, Components' interface is weak and the modules are not well integrated. In fact, the only way to share data among modules is via a kludgy import/export function.

CONNECTED ACCOUNTING / industrial-strength accounting

Medium-sized businesses that need an industrial-strength accounting package that's priced at less than \$3,000 will find quite a bit to like in Connected Accounting. This integrated, multiuser package includes general-ledger, accounts-receivable, and accounts-payable functions. You can also add an inventory-management package, which includes order-entry, purchase-order, and inventory functions, and a job-costing package, which includes

Midrange Accounting Programs

Components

Rating: ★★
List Price: \$795 to \$1,495 per module.
Pros: Strong job-costing/time-billing features. Good report writer.
Cons: Weak module integration. Difficult to set up. Password security does not offer multiple levels.
Ideal Users: Businesses that specialize in professional or creative services.
Company: Satori Software, Seattle, WA; 206-443-0765; 206-728-7068 (fax).

Connected Accounting

Rating: ★★
List Price: \$895 to \$1,795 per module.
Pros: Can create custom reports. Supports component inventory. Tracks multiple sales taxes.
Cons: Inconsistent interface. Cannot open multiple modules simultaneously. No payroll.
Ideal Users: Medium-sized businesses, especially those in light manufacturing or distribution.
Company: EveryWare Development, Mississauga, ON, Canada; 905-819-1173; 905-819-1172 (fax).

Mac P&L

Rating: ★★
List Price: single-user, \$299; 3 users, \$599.
Pros: Easy-to-use interface. Supports AppleScript. Includes over 100 reports. Excellent back-ordering system.
Cons: No built-in ability to customize forms or reports. Cannot compare previous year's data to current year's.
Ideal Users: Distribution or light-manufacturing businesses.
Company: State of the Art, Irvine, CA; 800-854-3415 or 714-753-0203; 714-753-0374 (fax).

MultiLedger

Rating: ★★
List Price: \$199.
Pros: Easy to install and use. Very flexible. PowerPC-native. Good bargain. Optional payroll module.
Cons: Does not handle component inventory. Can have only one journal open at a time.
Ideal Users: Small to medium-sized businesses that need a fast, flexible, full-featured program.
Company: CheckMark Software, Fort Collins, CO; 800-444-9922 or 303-225-0522; 303-225-0611 (fax).

Peachtree Insight Accounting

Rating: ★★
List Price: \$395.
Pros: Provides detailed audit trails. Excellent financial-analysis abilities. Supports multiple warehouses.
Cons: Cash-account reconciliation isn't automatically updated from all modules. User must print several reports prior to posting.
Ideal Users: Businesses that need strong inventory, payroll, and financial-analysis features.
Company: Peachtree Software, Norcross, GA; 800-247-3224 or 404-564-5700; 404-564-5888 (fax).



An industrial-strength program, Connected Accounting lets you review customer activity in detail. For example, you can call up a screen showing all customer activity and then drill down to see the details of a particular transaction.

job-costing, purchase-order, and time-sheet-entry functions.

Because Connected Accounting is based on the Omnis 7 database program, you can create custom reports by using the standard Omnis report writer. Connected is also cross-platform, supporting Macs as well as Windows-based computers. Special features include the ability to backdate aging reports; drill-down capability; support for multiple companies, profit centers, and departments; and the ability to keep up to 18 periods open at once.

HIGH-END PROGRAMS

As you might imagine, high-end programs are expensive but extremely powerful. These programs can retain much more historical data than the other types of packages and are built to handle extremely high transaction volumes. Maintaining these types of programs generally requires one or more full-time accountants. All but one of the eight high-end programs we reviewed are modular, and many of them sport client/server implementations.

A4 / high-end integration

This flexible accounting program packs general-ledger, accounts-receivable, accounts-payable, order-entry and invoicing, purchase-order, job-costing, inventory, reporting, and mail-merge modules into one neatly integrated package. Although A4 doesn't include a payroll module, it links to Aatrix's Ultimate Payroll program.

Because A4 is based on ACI US' 4th Dimension, the program offers some advantages that other accounting programs do not. For example, you can use 4D Calc (which comes with the program, along with 4D Write and 4D Backup) to perform detailed analysis on real financial data as well as to create forecasts. A4's modules are tightly integrated, since they access the same central database, and A4 excels in retaining historical information. In addition, you can use 4th Dimension to customize A4 and its reports.

GREAT PLAINS ACCOUNTING / aging but still strong

One of the old-timers of accounting, Great Plains Accounting is a full-featured, traditional accounting package that's been surpassed by snazzier, more flexible high-end packages — including Great Plains' own Dynamics. But the product still has a loyal following,



Tightly integrated modules and the ability to access several windows at once are hallmarks of A4. This high-end program is built on the 4th Dimension database.

thanks to its in-depth features, variety of modules, and fair price.

The biggest drawback of Great Plains Accounting has nothing to do with a lack of features. The program has 11 modules — general ledger, accounts payable, accounts receivable, payroll, inventory, purchase order, job costing, order entry, import, reporting, and system management — and offers excellent data integrity; however, the program's character-based interface makes it harder to install and use than many of the other high-end packages. Fortunately, Great Plains Software is known for its high-quality technical support and its large network of qualified consultants.

FOURTH POWER SERVICE / filling a niche

Fourth Power Service is an integrated accounting program that excels at tracking billable time and expenses. The basic program is single-user and includes general-ledger, accounts-receivable, accounts-payable, financial-reporting, job-costing, and invoicing functionality. For \$2,795, you can get a two-user version.

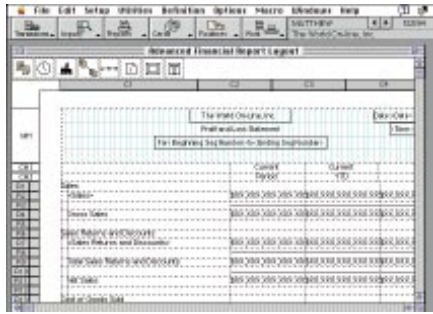
Project managers will appreciate the help Fourth Power Service provides beyond that of traditional accounting systems. A custom task list allows you to track costs on a line-item basis relative to budgets or quotes. Not only does this allow you to track the profitability of a current job but it also helps you estimate costs for future jobs. Fourth Power Service lets you produce custom client proposals and create time sheets for billing purposes. Invoices can be automated, and time costs can be tracked relative to a specific project. Fourth Power also has a nifty Quick Reports feature, which lets you create basic reports that you can then export for further customization.

POS/OE 4 MAC / details, details, details

Several point-of-sale (POS) packages are currently on the market, but only POS/OE 4 Mac includes a full-fledged general ledger. Although the program is integrated, you can get a variety of adjunct packages to add functions such as multistore polling, on-line credit-card processing, ZIP-code lookup, and UPS and generic manifest.

POS/OE 4 Mac does an outstanding job of handling the operational aspects of a business, including such functions as invoicing, purchasing, and inventory tracking. POS/OE will automatically

The powerful report writer of both Dynamics LAN and Dynamics C/S+ lets you design about any layout you can imagine. The program shows you the results of your design as you go.



A fast, powerful program with an attractive three-dimensional interface, Maconomy is also highly flexible. For example, you can change the job budget and you can print an order confirmation on any type of form, standard or custom.



load a vendor's part number and price onto a purchase order, propose the appropriate order quantity, and compute and track the expected delivery date for each item. The program easily accommodates drop shipments and international currency and languages.

POS/OE 4 Mac's customer file can accommodate multiple ship-to addresses and tracks complete invoice, order, and payment histories. Customers and prospects can be classified based on the source of the sales lead, and the program can automatically compile customer profiles according to the customer's purchase history for particular classes of products.

FLEXWARE / a high-end value

FlexWare, a fast and powerful general accounting system, has 12 modules: general ledger, accounts payable, accounts receivable, order entry, purchase order, inventory, job costing, point of sale, payroll, lead tracking, reporting, and system management. You can also purchase a development system that gives you access to the

program's source code, so you can create any type of specialty application you need.

The modules offer full, seamless integration. You can customize reports and add them to FlexWare's menus and password-protect individual levels of the database. The interface is very Mac-like, although inconsistencies crop up from time to time. FlexShare, FlexWare's client/server software, allows up to 99 simultaneous users.

FlexWare is a good bargain for general high-end accounting needs. The product's individual modules offer most of the functionality of those of Great Plains Dynamics at a much lower cost.

DYNAMICS LAN / keeping Macs in mind

Designed on the Mac, Great Plains Dynamics LAN is a full-featured, cross-platform, LAN-based financial-management product that has ten modules: general ledger, accounts receivable, accounts payable, payroll, inventory, report manager, invoicing, importing, system management, and a developer's kit for accessing the program's

High-End Accounting Programs

A4

Rating: ★★★★★
List Price: 3 users, \$3,995; 6 users, \$5,645; 15 users, \$8,945.
Pros: Tight integration of data. Highly customizable. User interface includes icon bar for navigation.
Cons: No payroll. Does not track serial numbers.
Ideal Users: Medium-sized to large Mac-based businesses that work frequently with the same customers.
Company: Softek Design, Telluride, CO; 303-728-5252; 303-728-6767 (fax).

Dynamics LAN

Rating: ★★★★★
List Price: \$1,000 to \$2,000 per module.
Pros: User interface is customizable. International network of trained consultants. Supports distributed processing. Source code available.
Cons: Interface inconsistencies. Some modules are missing.
Ideal Users: Medium-sized to large businesses that need a strong, customizable accounting package.
Company: Great Plains Software, Fargo, ND; 800-456-0025 or 701-281-0550; 701-281-3700 (fax).

Dynamics C/S+

Rating: ★★★★★
List Price: \$4,000 to \$50,000 per module (varies with number of users).
Pros: User interface can be customized. International network of trained consultants. True client/server implementation.
Cons: Interface inconsistencies. Some modules are missing.
Ideal Users: Medium-sized to large businesses that need a strong, customizable client/server package.
Company: Great Plains Software, Fargo, ND; 800-456-0025 or 701-281-0550; 701-281-3700 (fax).

FlexWare

Rating: ★★★★★
List Price: \$695 per module; System Manager, \$95; FlexShare, \$995; 1 user, \$295; 5 users, \$995.
Pros: Source code available. Supports AppleScript. Fast. Flexible.
Cons: Interface inconsistencies. Weak documentation.
Ideal Users: Medium-sized to large businesses that need a full-featured client/server system.
Company: State of the Art, Irvine, CA; 800-854-3415 or 714-753-1222; 714-753-0374 (fax).

Fourth Power Service

Rating: ★★★½
List Price: Single user, \$795; 2 users, \$2,795; additional users, \$200 each.
Pros: Job costing managed at task level. Good interface. Multiuser version includes passwords for data security.
Cons: No on-line help. No payroll.
Ideal Users: Job- or project-based service industries such as advertising agencies, graphic-design houses, or production houses.
Company: Honeybee, Westmount, PQ, Canada; 800-667-1233; 514-989-8167 (fax).

Maconomy

Rating: ★★★★★
List Price: \$6,500 and up, depending on the server and the number of concurrent users.
Pros: Extremely fast. High-end security. Very customizable. Good graphical interface.
Cons: Complex installation requires professional assistance. No payroll.
Ideal Users: Large companies that have high transaction volumes.
Company: Maconomy NE, Marlboro, MA; 508-460-8337; 508-460-6327 (fax).

Great Plains Accounting

Rating: ★★★
List Price: \$295 to \$1,195 per module.
Pros: Large variety of modules. Supported by a strong network of trained professional consultants.
Cons: Difficult to install. Character-based interface is hard to learn.
Ideal Users: Businesses that want a traditional general accounting package without a lot of flare.
Company: Great Plains Software, Fargo, ND; 800-456-0025 or 701-281-0550; 701-281-3700 (fax).

POS/OE 4 Mac

Rating: ★★★½
List Price: Single user, \$2,500; 3 users, \$4,995.
Pros: In-depth data tracking. Many automation features. Custom reports.
Cons: Small number of preformatted financial reports.
Ideal Users: Medium-sized retail businesses that need to manage their operations.
Company: E.E.S. Companies, Framingham, MA; 800-503-4444 or 508-653-6911; 508-650-1872 (fax).

source code. Although Dynamics sports a very graphical interface, it doesn't always adhere to the Mac interface guidelines.

Dynamics runs on Macs and Power Macs as well as Windows and Windows NT-based machines. A powerful distributed-processing system allows Dynamics to delegate tasks on a client-by-client and server-by-server basis, which means that you can let your most powerful Macs handle the most process-intensive tasks.

The existing modules can be customized, and new modules can be created by any qualified Dynamics installer, with Great Plains' Dexterity language. Users can also customize Dynamics' user interface by creating special buttons, routines, and help. Dynamics, however, still does not offer modules for sale-order processing, purchase-order processing, or bank reconciliation.

DYNAMICS C/S+ / *Dynamics with a client/server twist*

This version of Dynamics supports the same modules and offers the same features as Dynamics LAN, but Dynamics C/S+ is a true client/server system. Servers can be Macs, Windows or Windows NT machines, or any of a variety of UNIX machines. Clients can be Macs, Power Macs, or Windows or Windows NT machines. If you like what you see in Dynamics but need a client/server implementation, then you'll be happy with Dynamics C/S+.

MACONOMY / *fast, flexible, and secure*

An ultrahigh-performance package, Maconomy excels in processing large volumes of transactions, responding instantly to queries, and performing activity-based costing. Maconomy, which is based on the Oracle database, is a true client/server system that supports a variety of UNIX servers, including Apple's Workgroup Server 95+ with A/UX as well as System 7.0.1-based servers.

Highlights include date-based posting; three-dimensional activity-based costing (you can, for example, track data across fiscal-year boundaries), the ability to run several tasks at once, the ability to synchronize information across all open windows as well as among modules, and an extremely high-end access-control system. You can easily customize data-entry screens and query screens for individual users, and you can customize reports or develop new ones by using an included SQL-based development tool. You can export data in tab-delimited format.

You have a choice of two bundles: Trade or Job Cost. Each includes general-ledger, budget, customer, vendor, payment, statistics, access-control, and SQL run-time modules. The Trade bundle also includes inventory, production, order-entry, and purchase-order modules. The Job Cost bundle includes service-item, price-list, and job-costing modules. Neither bundle includes a payroll module, but you can generate 1099s with the SQL report writer.

THE UPSHOT

We've only begun to touch the surface of what these programs can do. In fact, the boundaries between categories are rapidly blurring. Features that were once reserved for top-level products are creeping downward at an ever quicker pace. That's good news for users who want to run their central business functions solely on the Mac.

At the entry level, we found several strong contenders. M.Y.O.B and QuickBooks are neck and neck, but trained accountants may prefer Peachtree Accounting for Macintosh. Business owners who

Expert Advice / *getting the straight scoop*

WHEN YOU WANT STRAIGHT ANSWERS, you go to the source. To get the skinny on accounting software, we went to the gurus at the Apple Business Consortium (ABC). Founded in 1991 by Apple Computer and six leading Mac-business-software developers, the nonprofit organization's goal is to generate awareness of business applications for the Mac. Today the ABC partnership includes more than 30 developers and 350 consultants.

To get this story, *MacUser* asked its ABC liaison, Nancy Neipp, to select from the consortium's members several impartial consultants to evaluate packages. These experts were chosen for their breadth and depth of understanding of Mac accounting packages. The products they reviewed were ones they used regularly.


Evenhanded as the 14 consultants were, Neipp tapped an additional 10 members to help advise us on mouse ratings. More voices, we figured, would remove any shred of partiality. The individuals in the second group contributed their opinions only on products in which they were proficient.

This group of professional accountants and consultants reassured us that the Mac is a solid choice for handling the financial aspects of any business. Too often, Mac-based offices invest in PCs for their accounting departments simply because they aren't aware of the excellent accounting applications available for the Mac. ABC's consultants help businesses find the product best suited to their needs, install the system, train users, and provide ongoing support.

Contacting ABC is as easy as 1-2-3. To get more information about Mac accounting and business software or to be referred to a consultant in your area, call ABC's Solutions Hotline at 800-681-4636. Or get advice from the ABC bulletin boards on AppleLink (Community Connection folder) or America Online (keyword: MBS).

To Nancy Neipp; to the reviewers, Carole Constantineau; Steve Corwin, accountant; Maia Craig, of Checks & Balances; Jack Irby, of Jack Irby Consulting; Bill Jeffrey, of Jeffrey & Associates; Debbie Koltun, of Accounting Evolutions; Len Levin, of Business Systems Consulting; Laura Matthews; Vicki Meier, CPA; Kathy Nohr, of Nohr & Associates; Silsby Pelissero, of A La Carte Systems; Steve Robinson, of Mac Made EZ; Todd Salkovitz, of Macintosh Accounting Consultants; Martha Scheer, CPA, P.C.; Peggy Sturm, of Peggy Sturm and Associates; and Jeff Travers, of Travers & Co.; and to the others who helped, we thank you.
/ Patty Ames

work on a per-job basis may prefer Simply Accounting. MultiLedger is the clear midrange leader, with Peachtree Insight Accounting, Connected Accounting, and Mac P&L in a close race for our second choice (and maybe even first if you need one of their special features, such as Mac P&L's support for AppleScript).

At the high end, the choices get tougher. FlexWare earns our overall *MacUser* Recommends stamp of approval, thanks to its excellent price/performance ratio. But Maconomy is the only choice for large corporations that need to rapidly, securely, and easily handle lots of transactions. Great Plains' Dynamics series is also a top contender, providing more functionality per module than FlexWare, but for a hefty price. And the high-end specialty packages, Fourth Power Service and POS/OE 4 Mac, are excellent choices in their niche. 



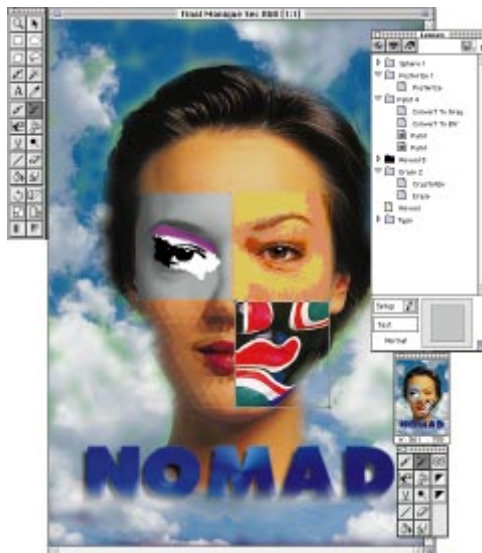
For more specifications of the products reviewed, check out the comparison table in the *MacUser* and ZiffNet/Mac areas on CompuServe and eWorld. See page 4 for information on how to access ZiffNet/Mac.

Quark Takes on New Markets

Innovative multimedia, graphics applications supplement QuarkXPress.

NOT CONTENT TO RULE the high-end page-layout roost, Quark has its sights set on the image-editing and multimedia markets, with two new products set for release in 1995.

Nomad. Code-named Nomad and based on technology licensed from JVC, Quark's new image-editing application uses proxy images and an object-oriented approach to working quickly on large color files. Nomad sports the usual complement of image-editing tools found in such programs as Adobe Photoshop and HSC Software's Live Picture, but it differs in how it handles image manipulation. Users apply a set of operations — currently called a Lens, parlance derived from JVC's original Pixelens program (see *New on the Menu*, February '94, page 42) — to any part of the image. Effects can be modified locally, used in conjunction with another Lens, or saved as a separate routine. Lens operations can be exported and used on another file. Coupled with Nomad's scripting and batch-processing functions, the Lens approach is a handy way of applying consistent special effects, custom transformations, and color correction to a series of images. Quark has



licensed numerous components of Pixelcraft's esteemed ColorAccess software as Nomad's color-separation engine.

Orion. Quark's foray into multimedia

wisely plays off the company's installed base of QuarkXPress users who want to convert existing documents into multimedia titles or create new ones. Code-named Orion, the product consists of a suite of XTensions that transforms QuarkXPress into a multimedia-authoring tool by allowing users to import QuickTime movies and sounds into QuarkXPress picture boxes. Each QuarkXPress page functions as a screen. Users direct action and link screens by assigning functions to buttons created with a supplied application called Button Maker. More-complex sequencing is possible with Orion's simple scripting language. For viewing finished work, developers distribute a cross-platform run-time player free of charge with each title.

Final names and pricing for the products had not been set at press time. Expect to see Orion this summer; Nomad is slated to ship in the fall. 800-676-4575 or 303-894-8888. / Pamela Pfiffner

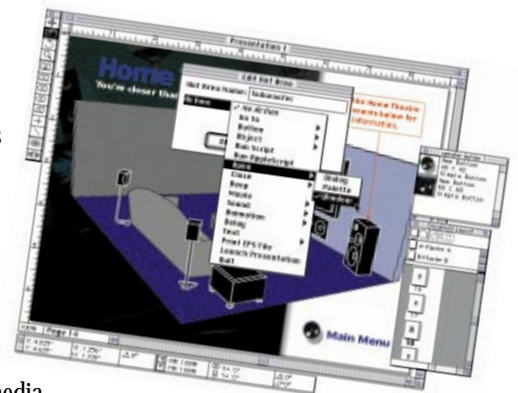


ILLUSTRATION /

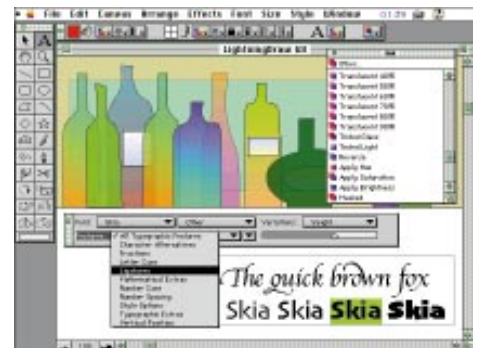
LightningDraw Draws on QuickDraw GX

THE PROMISE OF QUICKDRAW GX, Apple's new graphics architecture, has remained largely untapped. The technology offers great flexibility in graphics, typography, and color (see "Apple's New System 7.5," September '94, page 79, and "System Software for the '90s," December '93, page 105), but taking advantage of these features means rewriting applications, a task many developers have been reluctant to undertake. Smaller, more nimble companies such as Manhattan Graphics, Pixar, and SoftPress have stepped into the void, with ReadySetGo!, Typestry, and UniQorn, respectively. Now a startup called Lari Software joins their ranks, with LightningDraw GX, a GX-ready illustration package.

LightningDraw puts a comfortable interface on QuickDraw GX by including freehand, brush,

pen, scissors, and multigon tools, among others. It adds a reshaper tool that lets you grab anywhere on a curve to change the line and a slider that lets you control the magnitude of the movement. In addition to merge and overlap, for combining shapes, and skew and rotate functions, for altering objects, LightningDraw also includes unique special effects such as Bloat, Contract, Roughen, and Twirl. The program brings GX's versatile color handling to the fore, making it easy to add translucency and tints with a menu click.

LightningDraw's text tools tap into GX's typographic gymnastics too. Even when you skew, distort, or add perspective, text remains editable. Using LightningDraw's text palette, you can also take advantage of the special features built in to GX fonts, such as ligatures,



swashes, and width variations (see "Golly GX," December '94, page 119).

LightningDraw also supports ColorSync color-matching technology and GX drag-and-drop printing. Priced at \$149, it ships with QuickDraw GX, which is required to run the program. 800-933-7303 or 919-968-0701. / PP

GRAPHICS TABLETS /

Hitachi and CalComp Debut New Tablets

BUDDING ARTISTS and experienced doodlers alike will find it easier to express their creativity in programs such as Fractal Design's Painter and Macromedia FreeHand with two new pressure-sensitive graphics tablets from Hitachi and CalComp.

The Hitachi MultiPad and the CalComp Drawing Slate II each offer an active area of 6 x 9 inches, a resolution of 2,540 lines per inch, and 256 levels of pressure, with software



drivers that support pressure-threshold controls for greater pen accuracy for painting and drawing. Clear overlays enable the use of tracing templates.

At \$270, Hitachi is the lowest-priced 6-x-9-inch tablet on the market. The Mac version includes the necessary cabling to connect via the ADB or serial port. The same hardware works across a wide variety of systems, including Windows machines and Sun, Hewlett-Packard, and Silicon Graphics workstations, although different kits that include the proper cable and driver software are necessary. 408-747-0777.

Although priced higher for the same resolution as the Hitachi device, the \$395 CalComp tablet adds a row of user-configurable buttons along the top. Several buttons trigger preset macros for common functions such as copy and paste, and a recorder included in the package lets you set user-definable commands. CalComp also offers models for Windows, Sun, and Silicon Graphics systems. 800-932-1212 or 714-821-2000. / Sean J. Safreed

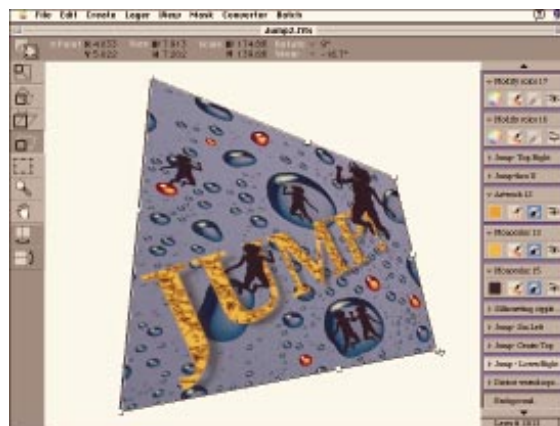
IMAGE EDITORS /

Live Picture 2.0 Tackles CMYK Files, Adds Paths

LIVE PICTURE has earned accolades from high-end users, but one nagging complaint persisted: It lacked a CMYK mode. But now the latest version, Live Picture 2.0, from HSC Software, seeks to address those concerns with some support for CMYK editing.

Although IVUE, Live Picture's proprietary format, uses RGB data at its core, Live Picture has always allowed users to import CMYK images, which the program converts to IVUE format, and then export them as CMYK files. However, now Live Picture 2.0 also lets users adjust CMYK dot curves as well as control gray-component replacement (GCR), undercolor removal (UCR), and so on. A CMYK color picker and on-screen densitometer are available at all times, and Pantone colors are supported, as is a fifth spot-color plate.

Other enhancements in the new version



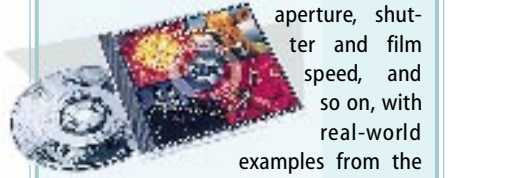
include the ability to import and export clipping paths, the addition of four-point perspective for creating 3-D effects, support for third-party Live Picture plug-ins, and the option of relinking images for more-efficient processing. HSC has also lowered Live Picture's memory requirements to 20 MB of RAM (down from 32 MB) while increasing its rendering speed. \$3,995. The upgrade is free to owners of version 1.5.5. 805-566-6200. / PP

FINE PRINT

Another Side of CD-ROMs

FOR DESKTOP PUBLISHERS, CD-ROMs are more than just a source of high-resolution clip art and images. Interactive CD-ROMs can teach you new skills or help you decipher complicated topics. <> **Understanding Exposure** teaches you how to shoot better photographs. This \$80 CD-ROM steps you through the principles of light,

aperture, shutter and film speed, and so on, with real-world examples from the portfolio of Bryan Peterson, whose book accompanies the disc. An interactive workshop lets you try different settings on sample images so you can see for yourself how an aperture of f/16 changes the depth of field. This CD-ROM has info for anyone who works with images. DiAMAR Interactive. 206-340-5975. <> London-based Quay2 Multimedia has just come out with **QuarkXPress 3.3 Training on CD**, a straightforward introduction to the page-layout program. Using animated screens and low-key, reassuring narration, the \$99 CD-ROM delves into each menu and dialog box, walks through several sample projects, and includes a glossary that spells out QuarkXPress' approach to leading, for instance. 408-492-1051. <> Closer to home, **Casey's Tutors** offers CD-ROMs on both Adobe Illustrator 5 and Photoshop 3. Each disc explores each program in detail before revealing the shortcuts. Casey's Page Mill. \$249 each. 800-544-5620 or 303-220-1463. <> If you want hands-on tips, then you might subscribe to **DTP Teacher**. Every other month, you receive a CD-ROM and booklet that show how to create projects in a variety of programs. Demo software and sample images are included. \$99 for three issues. ASC-DTP. 408-779-4852. <> If you want to see for yourself how dot gain affects an image, then check out **ColorExpert**. This \$149 disc-and-booklet set contains movies, illustrations, and text that explain color publishing, from color models to scanning to imagesetting to proofing to printing — there's even material on digital cameras and stochastic screening. ColorExpert. 416-360-3894. / PP



GRAPHICS HOW-TO / BY JANET ASHFORD

Watercolors Without Water

A landscape artist blends chalk and water in Painter 3.0 for a soft watercolor look.

THE NATURAL-MEDIA TOOLS in Fractal Design's Painter are so much like the real thing that artists can use many of the techniques they've developed with traditional media. But unless you're using a Power Mac, Painter's sophisticated electronic brushes can be slow to respond, lagging behind the sweep of the artist's hand. Cher Threinen-Pendarvis worked out an alternative to Painter's watercolor brushes that lets her create her landscapes of the California coast quickly. Threinen-Pendarvis customized Painter's faster-working chalk and water brushes so she can "paint" more spontaneously. Her watercolor landscapes are designed to be printed on Iris inkjet printers and are sold as limited-edition prints. Threinen-Pendarvis, of San Diego, is the coauthor, with Jim Benson, of *The Painter Wow! Book* (Peachpit Press).



Janet Ashford designed the interface screens and composed the original music for the Photo CD disk accompanying The Official Photo CD Handbook (Peachpit Press).

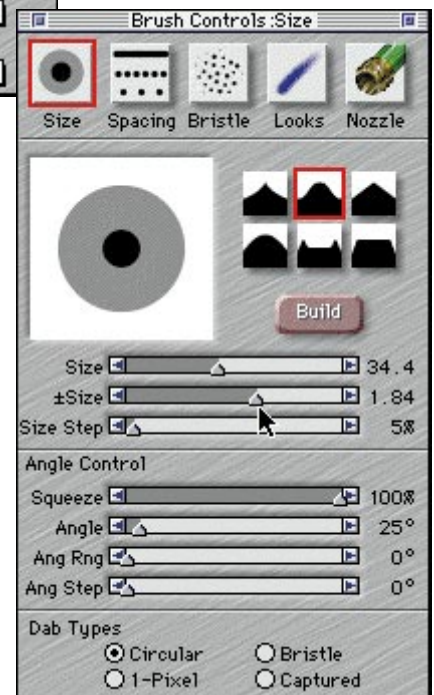


1. Making a sketch. During a visit to Tomales Bay, north of San Francisco, Threinen-Pendarvis sketches the scene with colored pencils. Back at home, she opens Painter; clicks on Papers, in the Art Materials palette; loads the More Paper Textures library; and chooses Big Canvas at a scale of 100 percent for the look of rough watercolor paper.



a

2. Building custom brushes. Instead of "wet" brushes, Threinen-Pendarvis uses the faster Artist Pastel Chalk brush and blurs the strokes with a custom water brush. For a softer look, she changes the chalk brush's Method Subcategory from Grainy Hard Cover to Grainy Soft Cover (a). Under Brush Controls: Size (b), she increases the chalk brush's Size (width) as well as its \pm Size (the difference between thick and thin strokes, which are controlled with a pressure-sensitive stylus).

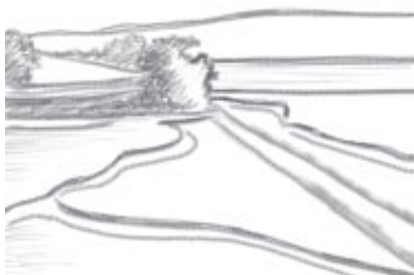


b



3. Varying the brush effects. Using the Save Variant command, Threinen-Pendarvis creates three custom brushes of different sizes. A sample of strokes shows the difference between Painter's default large water brush (a), the default Artist Pastel Chalk brush (b), and one of her custom chalk brushes before (c) and after (d) smoothing with a water brush. Building brushes ahead of time lets her work more spontaneously.

4. Painting the scene. Scanning a pencil sketch doesn't result in the same line quality as drawing directly on the computer, Threinen-Pendarvis believes. Working on her Mac at 300 dpi, she sketches a rough electronic version in dark gray with the smallest of the customized chalk brushes (a). The pressure sensitivity built in to the brushes lets her add subtlety with thick and thin lines. She uses the two larger chalk brushes to block in color (b). With her custom water brush, she blends areas of color, and then uses the chalk brushes at 40-percent opacity to create washlike effects over the previous work (c). After proofing the scene on paper, she decides to add tension to the composition by changing its proportions. With Painter's new Canvas Size command, she extends the canvas to the right, to 14 inches. She paints the additional area to match the rest of the image (d). As a final touch, she emphasizes the focal point by shining sunlight where the trees and waterways converge.



c



d



5. Printing the painting. Harvest Editions, of Santa Ana, California, prints the painting on an Iris 3047 printer onto Reeves BFK, a traditional print-making paper. For final output, interpolation software doubles both the resolution and the size of the image. A UV coating keeps the magenta and yellow inks from fading. Threinen-Pendarvis employed similar techniques and brushes to create a digital watercolor of San Antonio beach in Baja California (shown here).

EXPERT TIPS / BY BOB SCHAFFEL AND CHUCK WEGER

Charting a Course for Color

When it comes to color reproduction, are you still stumbling around in the dark? Let Bob and Chuck be your guides through the treacherous terrain of color printing.

“YOU CAN’T GET theyahh from heahh.” No, we’re not referring to travel directions in New England — trying to reproduce the colors of the world we live in with ink on paper is just as maddening. In this column —

the first in a series we’ll devote to the topic — we’ll map the terrain of color reproduction and lay the groundwork for exploring how you can get the colors you want on the printed page.

Everyone has a pretty clear idea of what green grass, blue sky, or an orange ought to look like. We call the colors of these objects *memory colors*, because they provoke a strong human response. Although color discrepancies are sometimes intentional, seeing an apple colored like a cherry disturbs us and destroys the flow of information. First we have to consider what’s wrong in the image, and then we have to figure out why we’ve been presented with an affront to our understanding of nature. Of practical economic importance, inaccurate color reproduction in a clothing catalog, for instance, can generate a landslide of returned items from dissatisfied consumers (why do you think some mail-order companies give colors such vague names as bark, milk, or pond?).

Well, it’s amazing what we’re willing to swallow. We look at pictures on transparency or print film and tell ourselves, “This looks just the way I saw it. It will print great.” Maybe, maybe not. What’s represented on film may seem to look like what we saw, because it’s pretty hard to exactly recall even those memory colors. But here’s the real problem: What we are looking at may be produced by light components different from those that were actually created by the original objects. Unfortunately, many

people involved in production — designers as well as experienced production personnel — do not understand the scientific underpinnings of the problem, an understanding that may help them make more-informed decisions along the way.

Light Years

Think about it: When we print a color document, we’re trying to reproduce the subtlety and range of infinite colors by using only four inks — cyan, magenta, yellow, and black. It’s an impossible task, but human beings are flexible enough to accept that printed colors look real. But why do cyan, magenta, yellow, and black inks ultimately fail to capture all of nature?

The answer lies in the scientific models we use to describe light. “Waves of electromagnetic radiation” is a convenient way for physicists to describe light. When the wavelength of an electromagnetic wave is long enough (approximately 380 nanometers) and the wave enters our eyes, we respond physiologically and see bluish light. This is one end of the spectrum of visible light. As the wavelength increases, we see different colors, and when the wavelength is about 700 nanometers, we see the last tinges of reddish light and then cease to respond visually.

When we see a more or less even combination of all the visible wavelengths at once, the light looks white. Color is the balance of light waves of various wavelengths reflected into our eyes. Plotting this phenomenon with three-coordinate graphs gives us the CIE (Commission Internationale de l’Eclairage, or the International Commission on Light) color space, or the range of human vision.

This explanation is fine for physicists, but the rest of us need a simpler model, so we fool ourselves. We take light from three roughly equivalent segments of the visible spectrum — red, green, and blue — and when we add them together, we believe that we’re looking at the same white light that nature creates (this is why red, green, and blue are called the *additive primary* colors).

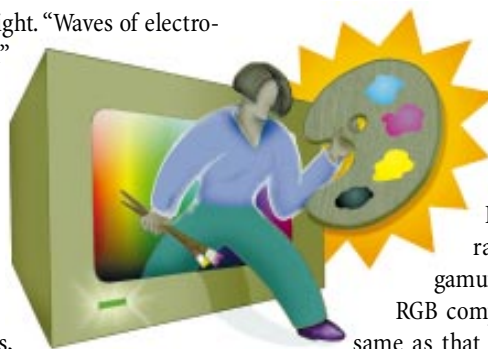
The bad news is that although the light looks like nature’s white, some of the wavelengths in this RGB model of light are lower in intensity than those of the white found in the natural world. As a result, some of

the colors that are found in nature simply can’t be reproduced by mixing various amounts of red, green, and blue.

In other words, the range of color (the gamut) available from RGB components is not the same as that in nature’s gamut.

Sometimes we say that the color space of RGB is not as large as the full CIE color space of human vision.

The good news is that our eyes’ retinas are particularly sensitive to those red, green, and blue wavelengths. So the compromise of employing the additive primary



BOB & CHUCK'S TOP 10 TIPS / for working with color

JUDGING COLOR IS PERHAPS THE MOST subjective and difficult job we as desktop publishers have. It isn't made any easier by the fact that, for economic reasons, we usually have to make color decisions based on monitors or proofing systems that produce color differently from the way printing presses do. Here are some tips for helping you achieve consistent color:

1. Stamp out background patterns. Sure, we admire the fancy patterns that many screen savers (as well as System 7.5's Desktop Patterns control panel) can put on our screens. But having a busy or bright pattern surrounding an image we're trying to color-correct affects our visual judgment and makes it hard for our eyes to focus on the picture. Set the desktop to a dark, neutral gray (Pattern #4 in Desktop Patterns is OK) — not the starship *Enterprise*.

2. Keep the shades down. You look at your screen in the morning and you think the yellow on that cheese is too washed out, so you increase its saturation. Then late in the day, you check it once more and that yellow looks too heavy. What's going on? Ambient light, that's what. For consistent color judgment, view images in an environment that stays the same, day after day. *Don't* keep your monitor by a window, or at least pull the shades down when you're judging color.

3. Check for out-of-gamut colors. Many image-editing applications now have gamut alarms to warn us if a color on the screen won't reproduce properly when output. Photoshop 3.0.1's Gamut Warning option (on the Mode menu) highlights colors that won't print.

4. Watch those acronyms. Photoshop (and some other programs) lets you make separations with GCR (Gray Component Replacement) and/or UCR (Under Color Removal). These are each appropriate in certain circumstances (and we'll talk about them in one of the pieces in this series), but they can ruin your image if overused. A good rule of thumb is to set Photoshop's GCR to Light (under Preferences: Separation Setup). An even better rule: Talk to your print shop or service bureau before fiddling with separation setups.

5. Color-correct in RGB. Unless you *really* know what you're doing, make your color corrections in RGB in Photoshop. That way, the black-generation algorithm can do its job properly and you won't have to worry about CMYK formulas for common colors.

6. Keep your monitor linear. All monitors change over time, both in brightness and in color balance. More than that, though, monitors'

controls can get tweaked carelessly. When you get the brightness and contrast where you want them, tape the knobs. A better solution: Use a monitor calibrator, such as one from Radius, RasterOps, or DayStar Digital, or the Colortron spectrophotometer, from Light Source, to ensure that your screen stays constant. By doing this, you'll help ensure that your brain stays calibrated too.

7. Benchmark your system and your brain. When you're satisfied that you have your color system working the way you want it to, scan some typical images and then run them unretouched through your color-separation program. Save the resulting files and the original transparencies or prints. Now you have a reference point to return to any time you suspect that something in your system is out of whack.

8a. Specify custom colors carefully. This one has been said *sooo* many times, but people keep forgetting it: Take care when specifying custom colors in your page-layout application, unless you really mean to use a fifth color on-press. In QuarkXPress, that means checking the Process Separation check box when you define colors; in PageMaker, it means making sure the Process button is selected in the Define Colors dialog box. Doing this ensures that your custom color will be made with CMYK inks rather than generating a fifth piece of film (which you probably didn't want but may have to pay for anyway). And when you *do* change those Pantone colors into CMYK approximations, remember that the printed color *won't* look like the one in the Pantone swatch book, since it's being approximated with a CMYK formula.

8b. But recognize the limitations. If you really do want fluorescent green, remember that you just can't get it with CMYK inks. Consider printing with a special ink — and a fifth plate — to make sure you get the effect you need.

9. Compare and contrast. Color proofs (even the high-priced ones such as Matchprints and Cromalins) are only approximations of the color you'll see off the press. Keep copies of press runs and proofs together, view the colors side by side, and learn how your particular proofing system varies from the presses you use.

10. Get scientific. Use one of the new spectrophotometers such as the Colortron to find out the actual scientific components of colors in your photographed art — or even in the original objects, such as fruit or table linens. Then use that information to color-correct without resorting to guesswork.

colors as the basis of a model for visual perception works because our brains can compensate for the missing wavelengths.

Three into Four

Well, what then is printing (from the point of view of manipulating our simpler, RGB color model)? It provides a way to control different mixtures of RGB that are reflected into our eyes in patterns that we recognize as images.

To reproduce nature's colors on a press, we need to alter the balance among the RGB components of light that are reflected into our eyes from the page. To do this, we exploit a visual phenomenon with our additive primaries. When we mix green and blue light, we see a secondary color called cyan;

when we mix red and blue, we see magenta; and finally, red and green look yellow.

Aha! If we manufacture inks from pigments that look cyan, magenta, and yellow and print them at different strengths (balances), using halftone patterns, we ought to be able to control the amount of red, green, and blue reflected. Thus, cyan ink absorbs red light, magenta absorbs green, and yellow absorbs blue. Cyan, magenta, and yellow (called the *subtractive primary* colors) printed together ought to look black, but as most designers know, they really look like mud. It's hard to manufacture subtractive inks that absorb their additive complementary light entirely.

Herein lies the real problem: The color space of CMY is, in reality, a small fraction

of the RGB color space, which in turn is smaller than nature's color space. To make matters more complicated, since we like to see real black, we add black ink. Although this improves the look of our printing, it does not add any of the missing colors of nature. So here it is — CMY(K) can reproduce nature only when the colors of nature fall within the CMY(K) color space. As we said, "You can't get theyahh from heahh."

But we can try, as we'll see in future columns. In the meantime, check out "Bob & Chuck's Top 10 Tips" for things you can do today. ☞

Bob Schaffel is technology director of the Professional Prepress Alliance. Chuck Weger is an independent consultant and publisher of the Photoshop Monitor newsletter.

NETWORKING

NETWORK OPERATING SYSTEMS /

NetWare 4.1 Delivers the Goods

THE MOST POPULAR NOS (network operating system) around, Novell NetWare, just got cheaper, faster, and more powerful. NetWare 4.1 offers new services for Mac and PC users and gives Macs better access to improved existing services. Mac support, formerly a \$995 extra cost (plus \$30 for each Mac), is now free with NetWare 4.1 (\$2,495 for ten users). In addition, you can now connect an unlimited number of Macs to a NetWare network.

In version 4.1, Novell (800-453-1267 or 801-429-7000) has enhanced NetWare's file and print services with file-by-file compression, better support for CD-ROMs and optical discs, configurable disk-block sizes (for obtaining faster disk access), and the ability to control printers not directly connected to the server. A new routing protocol for AppleTalk, IPX, and TCP/IP speeds up routing by 300 percent, and the addition of RSA public/private key encryption beefs up security considerably. In addition, NetWare's e-mail and messaging architecture now boasts peer-to-peer capabilities, easier maintenance, and smaller memory requirements.

In the easier-access realm, NetWare Directory Services (NDS) is

no longer restricted to PC users. From a Mac equipped with the NetWare 4.1 Mac client software, you can now use NDS to perform a single log-in to multiple servers and services via MacIPX instead of AppleTalk.

Mac users still need AppleTalk to access file and print services, but Novell is planning to eliminate this requirement in its NetWare Client for Macintosh, due this summer. The new software will give Macs full NCP (NetWare Core Protocol) and IPX support. This added protocol support will speed up Mac performance and allow Macs to do anything on a NetWare LAN that a PC can do, including network management. It will also give Macs access to any new service added to NetWare. / John Rizzo



10BASE-T ETHERNET HUBS /

Manageable Hub Prices

WHETHER YOU NEED managed 10BASE-T Ethernet hubs or the less expensive unmanaged variety, newly shipping products make both of these options more affordable.

Now you can get reasonably priced 10BASE-T Ethernet hubs with up to 85 manageable ports in the IntelliStack line of hubs, from Sonic Systems (800-535-0725 or 408-736-1900). The intelligent base hub costs \$1,299; comes with SNMP capability; and has 16 ports, including an AUI backbone port. For additional ports, you simply stack on as many as four 16-port expansion hubs (\$999 each). These otherwise dumb hubs become manageable when added to the intelligent base hub. The included LANscape SNMP Lite software has a graphical interface and lets you manage SNMP devices on AppleTalk and TCP/IP networks. LANscape can notify you of problems with alert dialog boxes, through e-mail, in a log, or even via a pager.

If bargain hunting is your top priority, you may not be ready to invest in intelligent hubs. Dayna Communications' new MiniHub-5 (5 ports, \$189) and MiniHub-8 (8 ports, \$239) aren't intelligent, but they offer

low prices and some modest diagnostic capabilities. The Smart-Lights on each hub's front panel signal link status, collisions, activity, and information transmission, and the in ports on the MiniHubs, unlike those on many other unmanaged hubs, let you daisy-chain hubs without using a cross-over cable or setting a switch. 800-531-0600 or 801-269-7200.

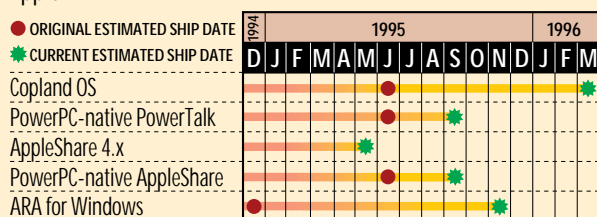
Asanté Technologies (800-662-9686 or 408-435-8388) recently redesigned its line of unmanaged hubs, with more ports, for a lower price. For instance, the 24-port 10BASE-T hub, which is called the 10THub\24, lists for \$749 — almost as little as the company's previous 12-port model. The 10THub\12 and the 10THub\8 now boast prices of \$499 and \$249, respectively, and the 6-port BNC hub, called the BNCHub\6, sells for \$399. / Nancy Peterson



NETWATCH /

Apple Looks Forward, Slips Back

EXCITING DEVELOPMENTS are on the horizon at Apple, but the horizon remains distant for some products. The Copland operating system is expected to bring a new network user interface and improved network speed, with multitasking and PowerPC-native AppleShare and PowerTalk. However, with Copland slipping into 1996, Apple has indicated that native AppleShare software may ship before Copland (the next release of AppleShare will improve speed but will not be native). ARA for Windows has been delayed until later in the year. These MacUser estimates are based on information provided by Apple.



PHOTOGRAPHY / TOM UPTON

FAST ETHERNET AND ATM /

Speedy Networking Gets Real

GET READY FOR FASTER NETWORKS. Some familiar vendors are bringing Mac users Fast Ethernet (100BASE-T) and ATM (Asynchronous Transfer Mode) at realistic prices. Fast Ethernet's maximum speed of 100 megabits per second is ten times that of conventional Ethernet — and ATM, intended for use on a network backbone and as a way to transmit multimedia data over long distances, promises speeds up to 155 megabits per second.

The first Fast Ethernet cards will be available this spring, with hubs to follow later in the year. Farallon (800-995-7760 or 510-814-5000) and Asanté (800-662-9686 or 408-435-8401) will each ship NuBus Fast Ethernet cards this spring, with PCI cards to follow before Apple ships the first PCI-bus Macs this summer. Prices haven't been announced yet, but it's likely that a Fast Ethernet card will cost less than \$300 — good news for those worried about converting to yet another new technology. Fast Ethernet migration will also be eased by Farallon's decision to support switching between 10BASE-T and 100BASE-T on PCI as well as NuBus cards. Apple's and Asanté's PCI cards will support both standards as well. However, at press time, neither company had decided whether to support

switching on its NuBus cards.

Apple is talking other speedy network technologies, including FDDI (Fiber Distributed Data Interface) and two flavors of ATM: ATM 25 and ATM 155. The first ATM products from Apple will be PCI and NuBus cards for the 25-megabit-per-second ATM 25. They should bring the cost of ATM below \$1,000 per machine. Other cards are likely as customer demand warrants, according to Apple.

In the higher-speed ATM arena, Fore Systems (412-772-8686) expects to ship 100-megabit-per-second and 155-megabit-per-second ATM NuBus cards by the beginning of April. Prices for those cards range from \$1,795 to \$1,995. However, given Apple's aggressive pricing — and Fore's plan to ship PCI cards before this fall — you may well see prices drop before long. / Shelly Brisbin



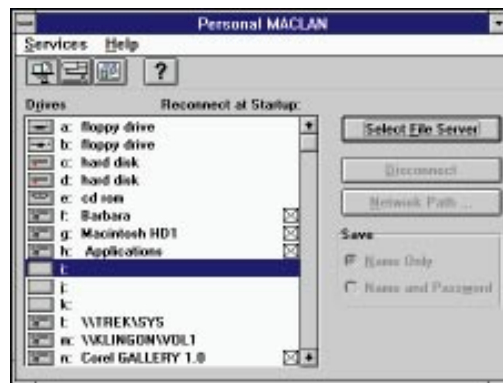
MAC-TO-PC LANS /

Better PC Links to AppleTalk Nets

YES, APPLE'S LONG-AWAITED AppleShare and AppleSearch client software for Windows PCs has finally shipped. AppleShare Client for Windows (\$199 network license for unlimited PCs; free for customers who purchased an Apple Workgroup Server after December 31, 1994) lets Windows PCs connect to AppleShare-compatible file-server volumes, and AppleSearch Client for Windows (available for a nominal shipping and handling charge; also included with AppleSearch 1.5) lets PC users perform any search that Mac users can, including searches over the Internet. For both products, Apple is using a new AppleTalk protocol stack from Miramar Systems that lets PCs connect to AppleTalk nets while remaining linked to PC nets. For information, call the Apple Network Information phone line at 408-862-3385.

Miramar (800-862-2526 or 310-577-9646) is also making use of the new AppleTalk stack for Windows in Personal

MACLAN Connect 5.0 (\$199), which is expected to ship in April. Version 5.0 is the first peer-to-peer Mac-to-PC AppleTalk connection that enables two-way file shar-



ing and printing between Macs and PCs. Miramar has added a Windows Chooser that lets Windows users log on to any AppleShare-compatible server and print to AppleTalk printers. And unlike AppleShare Client for Windows, Personal MACLAN Connect 5.0 makes PC directories and hard drives available to Mac users, who can also print to devices attached to a PC. / JR

Apple Goes Wireless

APPLE IS TESTING the wireless waters with the **Apple Mobile Message System** (\$549), a bundle consisting of **Socket Communications' PageCard** PCMCIA pager card, **ExMachina's Notify!** and **Update!**, **Adobe's DateBook & Touch-Base Pro Bundle** software, and a wireless messaging service called the **Apple Notification Service** (\$19.95 per month). The PageCard, which has a display on one end, can work as a stand-alone device or can fit in PowerBook 500s, Windows laptops, and Newtons. ◇

Apple has cut U.S. prices for the **Apple Workgroup Servers** 6150, 8150, and 9150 by 5 to 11 percent. The server configurations now range from \$2,549 to \$8,709. ◇ Another bargain: an Ethernet-to-Ethernet router for only \$1,499. It's the **InterTalk EN**, from **Transware** (800-999-6387 or 415-903-2300). ◇ **NightShade** (starting at \$199), from **Atemi** (217-352-3688), encrypts everything that goes over your network, even over ARA links. The program uses a fast RSA public-key encryption algorithm or the slower DES and Triple-DES encryption schemes. NightShade works over AppleTalk and NetWare, with TCP/IP capability due later this year. ◇ **Farallon** (510-814-5000) has combined its daisy-chainable EtherWave technology with its PhoneNet LocalTalk adapters to create the **EtherWave MultiPrinter Adapter** (\$419), which lets you connect a network of LocalTalk printers to a 10BASE-T Ethernet network. ◇ **GDT's PowerPrint 2.5** product line for connecting to PC printers (\$149 to \$499) now includes versions for LocalTalk and NetWare, with support for printing in gray scale and 32-bit color. 800-663-6222 or 604-291-9121. ◇ You can use high-fidelity telephone hardware with **PhonePro 1.5** (starting at \$349), voice-mail/fax/database-access software from **Cypress Research** (408-752-2700). Version 1.5 works with **Pleiades Research's** 16-bit, 44-kHz **Digital Storefront** and other fax modems. ◇ **MicroNet Technology** (800-800-3475 or 714-453-6000) is giving you a run for your money, bundling **Run's RunShare** file-transfer accelerator with its **Raven Pro** and **RAIDbank Pro** hard drives. / JR



NETWORK HELP / BY KURT VANDERSLUIS

Network Help

The industry's leading network-troubleshooting sleuth tells you how to make Internet files readable, solve AppleShare-connection mysteries, and improve Ethernet performance.

Illegible Internet Files

Q. I've downloaded some GIF and JPEG files from an Internet newsgroup, but I can't view them. What am I doing wrong?

Julie Major
Fremont, CA

A. It's what you haven't done that is probably the problem. Once you've saved the files on your Mac's hard disk, you first need to trim out any extraneous text, such as a description of the picture or information on where it came from, that might be in the file. You'll then translate the file into a Mac format your applications can read.

Most newsgroup binary files use a UNIX-specific file format called uuencoded. The business part of these files begins with a statement such as Begin 644 (or some other three-digit number). Open the file with a word processor and trim out any text before this Begin statement. Also trim any text after the "end" statement. Then save the document as "text only."

To translate the file into a Mac format, you're going to need a translation utility. I use Stuffit Deluxe for this purpose, because it has translators for many types of foreign files, but you can also choose among some public-domain and shareware utilities. You can use either Suntar or UUTool, which are available in the usual on-line places (see end of article) as well as at several ftp sites

Write to **Network Help**

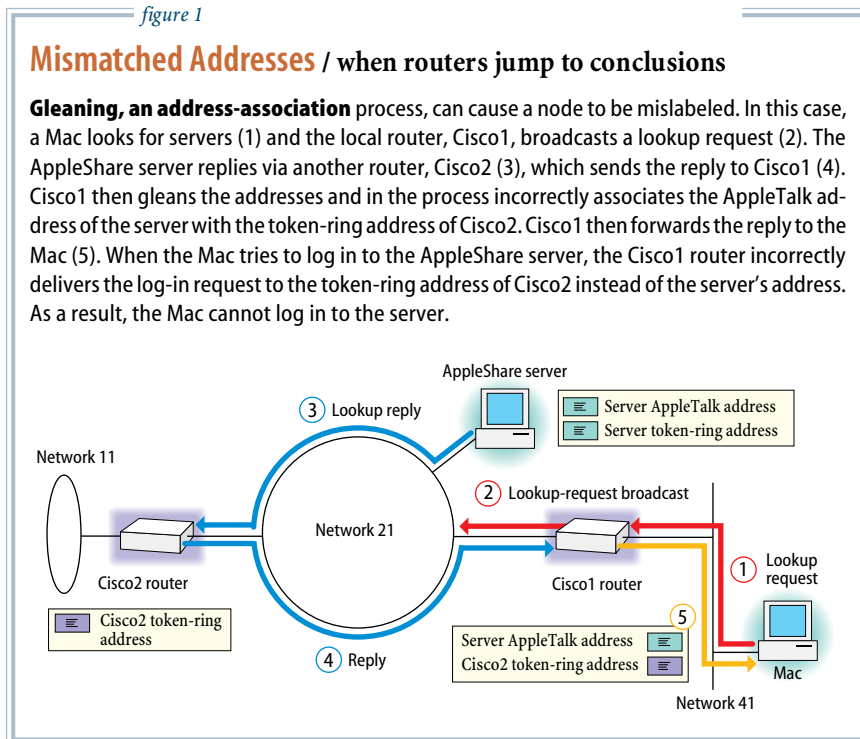
c/o MacUser
950 Tower Lane
18th Floor
Foster City, CA 94404

You can also send your question to Kurt VanderSluis on AppleLink at KVANDERSLUIS.

figure 1

Mismatched Addresses / when routers jump to conclusions

Gleaning, an address-association process, can cause a node to be mislabeled. In this case, a Mac looks for servers (1) and the router, Cisco1, broadcasts a lookup request (2). The AppleShare server replies via another router, Cisco2 (3), which sends the reply to Cisco1 (4). Cisco1 then gleans the addresses and in the process incorrectly associates the AppleTalk address of the server with the token-ring address of Cisco2. Cisco1 then forwards the reply to the Mac (5). When the Mac tries to log in to the AppleShare server, the Cisco1 router incorrectly delivers the log-in request to the token-ring address of Cisco2 instead of the server's address. As a result, the Mac cannot log in to the server.



on the Internet. After you've translated the files, they should be ready for viewing with a commercial graphics program such as Photoshop or with a shareware utility such as GraphicConverter, which can read and write many graphics formats.

Gleaning AppleShare

Q. We have an AppleShare server on our token-ring LAN. Macs that are not on the same segment as the server are usually unable to log on to the server, even though it is visible in the Chooser. If they do connect, the server often disconnects unexpectedly.

Scott Genung
Bloomington, IL

A. This problem sounded so interesting that I drove from St. Louis, where I was teaching a class, to Bloomington to help

Scott troubleshoot his network. Using AG Group's TokenPeek, Scott and I found that the problem, which can happen on Ethernet LANs as well, results from the way that Cisco routers use AARP (AppleTalk Address Resolution Protocol).

Each AppleTalk node has an AppleTalk address as well as a token-ring or Ethernet address. When a device sends a packet to an AppleTalk node, the device looks in its *AARP table* to find out the token-ring address associated with that device's AppleTalk address. Nonrouter devices can *glean* addresses, a process in which the device learns a new AARP address association by inspecting an incoming packet. Although most AppleTalk routers do not glean packets, certain Cisco routers do glean, and this is the cause of Scott's problem.

Gleaning can cause an incorrect association of AppleTalk and token-ring (or Ethernet) addresses. Figure 1 illustrates how this works. When a Macintosh searches for an AppleShare server, the Chooser asks its local router, in this case Cisco1, to find servers in network 21 (step 1). The router then broadcasts a lookup request to network 21 (step 2), and the AppleShare server responds (step 3) to one of the routers on its network. In this case, the router that the AppleShare server picks to respond to is Cisco2.

Cisco2 looks at the reply's destination AppleTalk address (network 41) and forwards the packet to Cisco1 (step 4). Here's where the trouble starts. Cisco1 gleans this packet and incorrectly associates the AppleTalk address of the AppleShare server with the token-ring address of Cisco2. Cisco1 then forwards the reply to the Mac (step 5). When the Mac subsequently asks Cisco1 to forward a log-in request to the server, Cisco1 looks in its ARP table and delivers the request to the token-ring address of Cisco2, which means the server never gets the log-in request.

We fixed Scott's problem by adding one line to the Cisco routers' interface description and flushing the ARP tables. This line turns gleaning off:

```
no appletalk glean-packets
```

It's version 9.1 of the Cisco-router software that gleans ARP address associations. If you are running 9.1, you should upgrade to the 11.1 release of April 1994. You're OK if you use versions 9.21 or 10.2 of the Cisco-router code, which don't glean ARP addresses. Apple's AppleTalk Internet Router is another router that gleans. It can cause spotty performance instead of the more dramatic symptoms we saw here. (Please feel free to e-mail me if you want a fuller explanation.)

Dueling Fonts

Q. We run into a problem with shared documents when different users have various versions of the same font with different type characteristics. How can I tell which version of a font a user has?

Mickie Vorhes
Des Moines, IA

A. You can use a network-management package to read a packet trace. Then you can track down the font-version information by

searching for the `%%BeginFont:` text string. The version information is provided as shown in this sample for a print job that used SuperATM.

```
%%BeginFont: AdobeSansXMM
%!PS-AdobeFont-1.0:
  AdobeSansXMM 001.000
%CreationDate: Fri Oct 23 17:23:37 1992
```

Another way to find a PostScript font's version information is with ResEdit. If you open up the POST resource #501, you'll find the version information in strings #1 and

#2. For TrueType fonts, examine the sfnt resource of the font. At the very end of the sfnt resource (which is mostly hexadecimal gobbledygook), you'll find the font's copyright information. The font's version number is sometimes missing here, but you'll always find the year the font was made. ☒



You can find Suntar, UUTool, and GraphicConverter in the MacUser and ZiffNet/Mac areas on CompuServe and eWorld. See page 4 for details on how to access ZiffNet/Mac.

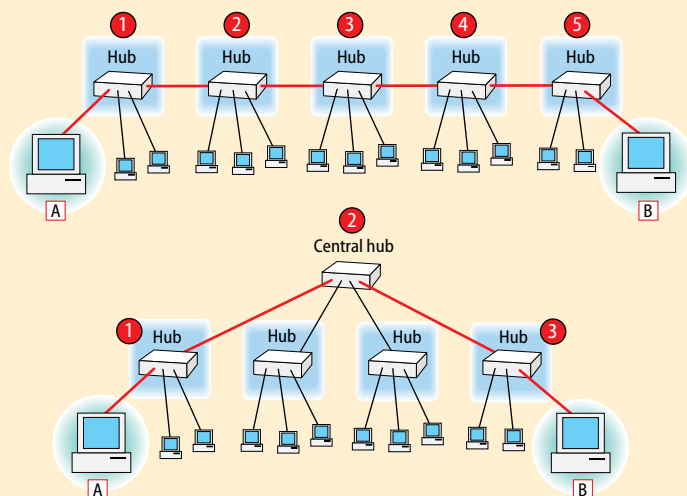
BREAKING THE RULES / serial hubs

Q. Our network topology evolved without any real design plan. A typical path between two devices is server-hub-SmartHub-hub-hub-EtherWave (PC)-Mac. Do we need to plug all the small hubs in to one main hub, providing a path such as server-SmartHub-hub-Mac?

Peter de Blanc
Philadelphia, PA

A. You are breaking the Ethernet rules by having more than four repeaters between devices, although you may not be suffering for it. There are two reasons for this rule. The first is that repeaters degrade an Ethernet signal slightly. The additive effect of successive repeaters can accumulate to the point where the signal becomes unreadable. This is a larger consideration when the distance between repeaters is long and the signal has the opportunity to decay as it travels; it's of less concern if the repeaters are in the same data closet. The second reason is that each repeater introduces a very small delay in the signal. Although this delay is much less than you'd notice in actual performance, it's enough to affect the collision-detection characteristics of Ethernet and slightly reduces the overall network distance you are allowed.

Even though your network has exceeded the four-repeater limit, you may not be experiencing any problems if the overall network distance and the distance between repeaters is short and if the repeaters are of high quality. If there is a problem, users will experience slow performance. Check the statistics on your SmartHub: If your rate of alignment errors (or framing errors) is less than 1 error packet per 1,000 good packets, there's no cause for concern. Still, if it's not inconvenient, you should probably rewire your hubs now so that they're connected according to the rules. Even if your network isn't having troubles now, future network growth may cause problems to surface.



You risk performance degradation when you have more than four repeaters between any two points on a network. If you rearrange the hubs hierarchically, you need to go through only three repeaters to get from point A to point B.



MAC TO PC / BY JOHN RIZZO

Behind the Technology Curve

From Newtons to PowerBooks, Apple's mobile-computing technology is in serious danger of falling behind that of its competitors.

FOR SEVERAL YEARS NOW, Apple has enjoyed a technological lead in mobile computing and communications. The PowerBook gave us a place to rest our wrists and a trackball that solved the laptop problem

of where to put the mouse. More important, Apple realized that mobile computing required mobile communications; they gave the PowerBook the networking capabilities of desktop Macs and, with ARA (Apple Remote Access), made remote links easy.

More recently, though, the most-useful innovations for mobile Mac users haven't been coming from Apple. The PowerBook is no longer the most innovative laptop; ARA is showing its limitations; and the Newton is best known as the subject of Gary Trudeau's satire in *Doonesbury*.

If you still think the PowerBook is hot, take a look at IBM's ThinkPad. Its wrist rest opens for easy user access to the hard drive and RAM. A standard PCMCIA slot can accept all sorts of communications goodies. (PCMCIA costs extra on PowerBook 500s.) The ThinkPad's main drawback is its inferior software — Windows.

That doesn't mean Apple has the most innovative operating system for mobile communications, though. That distinction belongs to General Magic, creator of Magic Cap, software that runs on Sony's Magic Link and other upcoming hand-held devices. For mobile communications, Magic Cap is a generation ahead of most personal-computer operating systems, including System 7.5, Windows 95, and OS/2 Warp. Fortunately, Magic Cap will be ported to Macs and Wintel (Windows on Intel) as an application environment later this year.

What all this means is that you'll probably be using mobile technology that was

not invented by Apple and that there are some things Apple needs to do to keep mobile Mac communications current.

Cross-Platform ARA

ARA is great for easy remote access to your Mac and your AppleTalk network, but it has two limitations: its inability to connect to the rest of the computing world and its slow speed.

Apple will partly address the first issue when it introduces ARA for Windows, later this year. With this product, a Wintel laptop equipped with ARA will be able to access AppleTalk as well as PC networks. However, this won't enable PowerBooks to access PC networks; the latter have standardized on PPP (Point-to-Point Protocol), which Macs don't support.

Because PPP is a more efficient protocol than ARA, Apple is able to address the cross-platform and speed problems of ARA by implementing PPP for the Mac. In fact, PPP is starting to show up in Mac remote-access servers (such as Shiva's LANRover/2E Plus and Tribe's TribeLink) that encapsulate AppleTalk inside PPP, giving users ARA's friendly interface *and* PPP's efficient data transmission.

Although this encapsulation does improve performance, Macs still won't be able to access PC networks directly until the Mac's system software supports PPP. Apple says it intends to add PPP to the Mac and ARA but hasn't said when. Most likely Apple

won't add PPP until it ships Open Transport, a revision of the Mac's network system software that will make the Mac less dependent on AppleTalk, with other protocols becoming more or less plug-and-play.

Novell has been pushing Apple to adopt PPP, just as the Utah company also has been working on enabling the Mac to use Novell's PC protocols for better access to NetWare, both locally and remotely. Version 4.1 of NetWare includes Mac support of IPX (Internetwork Packet Exchange) and NDS (NetWare Directory Services). Later this year, a new product called NetWare Client



for Macintosh will add native support for NCP (NetWare Core Protocol), enabling a Mac to do anything a PC can on a NetWare network, including remote log-ins over PPP.

Byting the Hand-Held OS

Magic Cap is another communications technology Apple would do well to adopt. Magic Cap will improve the communications capabilities of PowerBooks as well as Wintel laptops when General Magic ships its ports later this year, but Apple could add links to MacOS that would make Magic Cap even more powerful. As an investor in General Magic, Apple has the right to use pieces of the technology but has not said how (or

ILLUSTRATION / LIN WILSON



figure 1 / **True automation of communications** is the strength of General Magic's Magic Cap operating system. It lets you send faxes, e-mail, and pager messages from within many applications. The icon bar at the bottom is for accessing tools and navigating Magic Cap.

even if) it will do this, mostly because it would rather promote the Newton.

General Magic calls the boxes that run the software Personal Intelligent Communicators (PICs), whereas Apple dubs them Personal Digital Assistants (PDAs). Both perform similar tasks, but I find the Magic Link the more useful device. I like the ability to type (on-screen or with an optional portable keyboard); it's faster than the Newton's handwriting recognition. But mainly, the Magic Cap software is better at communications tasks real people do.

PICs running Magic Cap integrate communications tasks within applications while hiding the connection technology from the users. You can send a fax or e-mail to anyone listed in your PIM, which acts as a directory for all of your communications software. You can also send e-mail or faxes directly from any application, without having to deal with fax or e-mail software.

Much of this is made possible by a General Magic communications-automation technology called TeleScript. The simple act of plugging a phone line into Sony's Magic Link prompts Magic Cap to bring up an e-mail window. Click on a single button, and the PIC dials all of your on-line services, one at a time, and downloads all of your e-mail. TeleScript can also send intelligent agents over a network to do your bidding — performing queries, getting mail, even making on-line purchases and transactions. For instance, you can use Magic Link's built-in Pocket Quicken software to make credit card purchases by telephone.

Besides being used in personal computers and hand-held PICS, Magic Cap's TeleScript will be used on on-line services; the first service to include it is AT&T's Personal-Link service for Magic Cap users. Personal-Link has many of the features common to

on-line services, such as Internet access and electronic shopping, and it can also accept intelligent agents sent by Magic Cap devices. For instance, a smart directory lets you send messages to people whose e-mail addresses you don't know. Just type a name and click on a button; an intelligent agent searches the directory, delivers the messages, and brings you back address cards that go in your PIM file.

Fortunately for General Magic, WinPad, Microsoft's operating system for hand-held devices, has been delayed for a year or more. However, note that Apple's Newton has the advantages of having shipped a year earlier than Magic Cap — it is cheaper, supports more types of cards for its PCMCIA slot, and has more applications available. Unlike the Newton, Magic Cap PICs do not support ARA, so access to AppleTalk networks must be through gateways.

The Race Isn't Over

Can Apple regain the technological edge in mobile computing? Perhaps, but the more important question for users is, does it matter? Some Mac users see innovation almost as a feature in itself, as one of the reasons to use Macs in the first place. But a not-invented-here attitude has gotten Apple into trouble in the past, keeping the Mac isolated from the mainstream.

With Apple not controlling some of the technology you use, it's up to Apple to keep up with the times and implement the hot technologies for MacOS. For instance, PowerBooks would be more compelling if they all had PCMCIA slots. But with Mac clones coming, we may sooner see MacOS running on a PowerPC-based ThinkPad. ☞

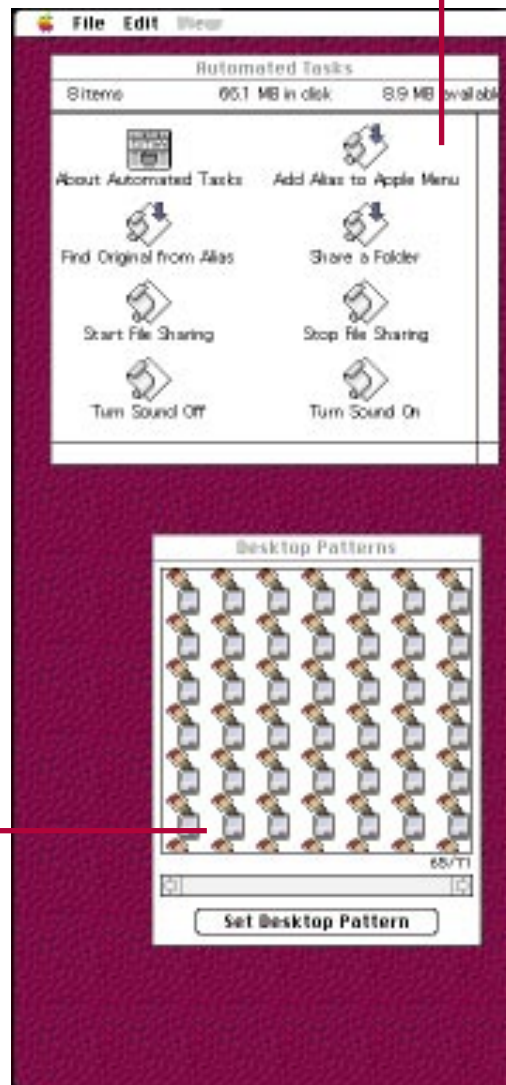
MacUser technical editor John Rizzo is the author of MacUser Guide to Connectivity and How Macs Work.

System 7.5 Finder Secrets

APPLE PACKED A LOT OF NEW STUFF INTO SYSTEM 7.5, from QuickDraw GX to PowerTalk to the new Apple Guide help system. Some of the enhancements aren't immediately obvious, however, unless you know where to look. Here are a few of the coolest improvements in the latest and greatest version of the Mac operating system, along with some undocumented features that can make your Mac even more powerful. / **BY BLAKE ROBERTS**

Custom Patterns:

Make do-it-yourself desktop patterns by pasting a graphic into the Desktop Patterns control-panel window.



The New Find Command

In System 7.5, the Find command launches a Find File utility that is more powerful and easier to use than the old Find command; knowing about several of the utility's undocumented features can make it even handier.

Option-click on the first field in Find File, and you get access to four additional search criteria: contents, name/icon lock, custom icon, and visibility (see main figure). Be forewarned: Because Find File doesn't index mounted volumes, searching by contents is slow.

If you drag a file onto one of the Find File fields, the attributes of that file, such as its file type, creator, and creation date, automatically appear in Find File's search

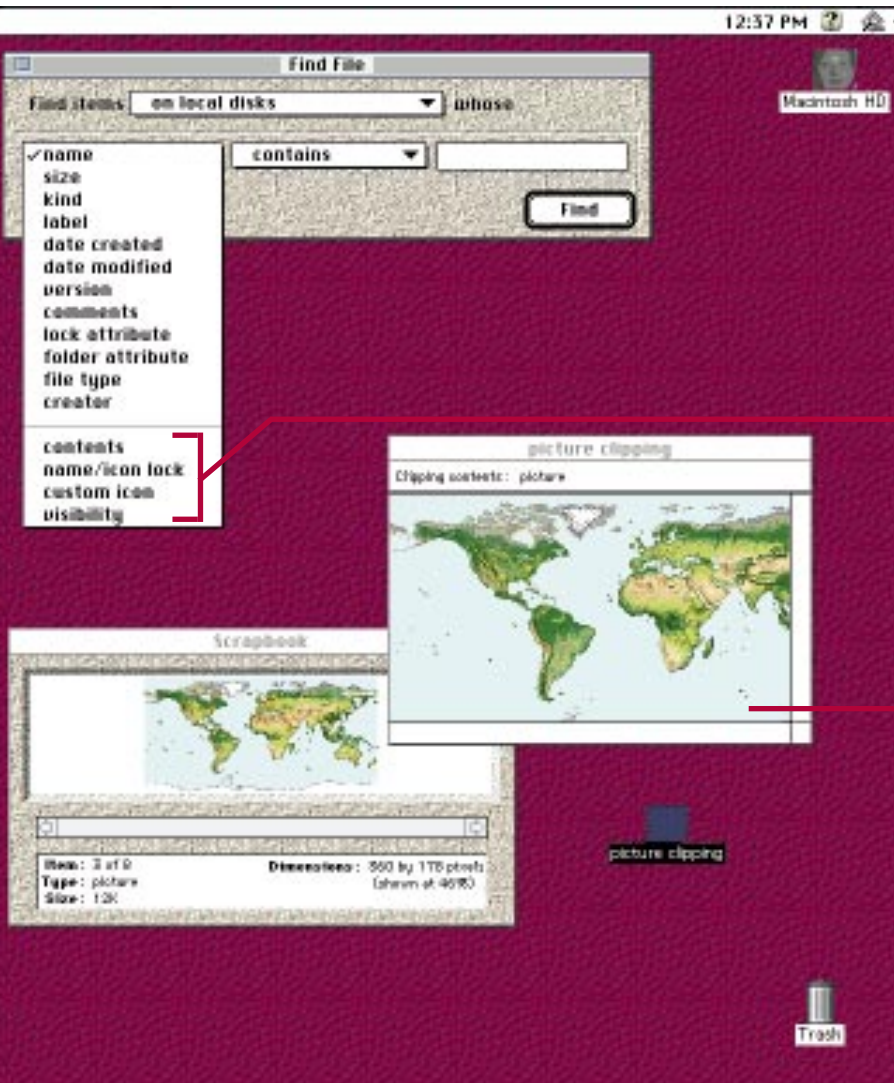
fields. This is an easy way to enter type and creator information for which you don't know the code (for instance, would you remember that the creator code for Microsoft Word is MSWD?).

Drag and Drop

New with System 7.5 is Macintosh Drag and Drop, one of those features you may remain unaware of until somebody shows it to you. Once you know about it, you'll wonder how you lived without it. If you're using a Drag and Drop-aware application, such as WordPerfect, you can select text or a graphic and simply drag it to the desktop, where a copy of the data will appear in the form of a clipping file (see main figure). Also, with

AppleScript:

System 7.5 comes with AppleScript scripts that automate some tasks, such as turning sound on and off and creating aliases.



The New Find Command:

Reveal hidden Find File criteria by Option-clicking on the first field in the Find File window.

Drag and Drop:

System 7.5 lets you drag text or graphics to the desktop to create clipping files. You can open them by double-clicking.

some applications and utilities, such as Apple's own much improved Scrapbook, you can drag text files or clipping files directly into an open document window instead of pasting them in.

Custom Patterns

Apple must have really smarted a couple of years ago when a non-Mac magazine rightly asserted that the procedure for changing desktop patterns on the Mac was nonintuitive. In System 7.5, there's a completely new Desktop Patterns control panel that even the editor of a non-Mac magazine would understand. You can paste just about any PICT file into the control panel. For example, from the Finder, use Get Info on your favorite

application. From within the Get Info dialog box, click on the icon in the upper left corner. Copy it to the Clipboard (Command-C). Next, open the Desktop Pattern control panel, paste the contents of the Clipboard (Command-V), and click on the Set Desktop Pattern button (see main figure). Shazam — without restarting, your desktop fills with little icons.

What's not documented is that you can also use the control panel to customize the background pattern of system utilities, such as Find File and Calculator. Open the Desktop Patterns control panel; choose the pattern you want; hold down the Option key, which changes the button from Set Desktop Pattern to Set Utility Pattern; and click the button.

AppleScript

To make it possible to automate tasks within the Macintosh computing environment, Apple designed a macrolike language called AppleScript, which comes with System 7.5. Although AppleScript scripts aren't easy to create, several useful sample scripts come with System 7.5. You can find them by selecting Automated Tasks from your Apple menu. They include several scripts designed to make computing easier. For example, to save time putting aliases in the Apple menu, you can automatically create an Apple-menu alias for any application or document — simply select that item and choose Add Alias to Apple Menu from the Automated Tasks in the Apple menu.

Disk Cache

The Disk Cache setting in the Memory control panel isn't new — it's been around since System 6 — but it works a lot better in System 7.5. The disk cache still keeps most-recently-used information in memory to speed up your Mac. Previously, however, setting the cache higher than 512K tended to slow things down rather than speed them up. With System 7.5, you can set it as high as you want — provided you can afford to

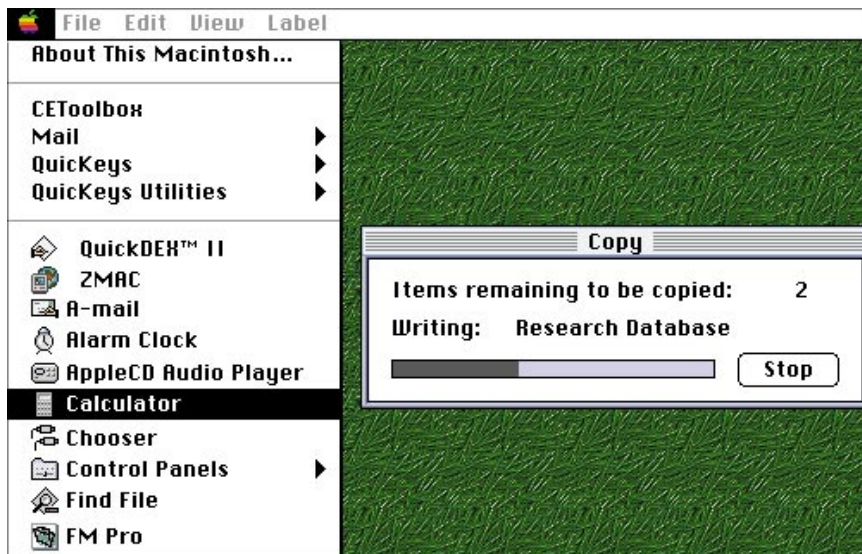


figure 1 / Since the advent of System 7.0, you haven't had to wait to do work while your Mac is copying files, because you can access applications via the Apple menu. The advantage in System 7.5 is that doing concurrent work will be faster than in 7.0 or 7.1.

spare the RAM. According to Apple, you probably shouldn't set it above 3 or 4 MB, the point at which speed gains plateau.

Concurrent Copying

Ever wish you could do other work while waiting for files to copy in the Finder? Although clicking on the desktop only results

in a stern beep, there are ways to use other applications while copying is in progress. To switch to an already open application, go to the Application menu, in the upper right corner of your screen, and choose from the applications listed. You can launch an application that isn't already open by using the Apple menu, in the upper left corner (see figure 1). Hint: If you put an alias to a hard disk in your Apple Menu Items folder, you can use System 7.5's hierarchical menu to locate any application on the disk.

Concurrent copying has actually been part of the Mac OS since the release of System 7.0, but System 7.5 has been optimized so that files can be copied concurrently without slowing down your Mac as much. Of course, this feature works best on faster machines.

The Old Find Command

One final secret points to the adage "Make new friends but keep the old." The Find command in System 7.5 is a lot more powerful than the one in previous versions of the operating system, but it also takes longer to use, because it actually launches an entire file-finding application. To do a quick and simple Find, press Command-Shift-F while in the Finder. This invokes the old Find command, which (because it's built in to the Finder) will appear almost instantly. ☞

Blake Roberts is a recovering Apple engineer who now works as a freelance writer.

Mysteries of the 7.5 System Folder

MOST NEW FILES in the 7.5 System Folder need no explanation, but some are a mystery. Here's some help:

Assistant Toolbox is an extension that adds special PowerBook features, including "persistent RAM disk," which automatically saves the contents of the RAM disk on shutdown and restores them on startup. It also automatically mounts newly available hard disks when awakened from sleep.

Clipping Extension lets System 7.5 create desktop clipping files.

EM Extension calls up Extensions Manager if the space bar is held down at the beginning of the startup process.

Find File is an extension that causes Command-F to launch the new Find File DA. Without this extension, Find File can still be selected from the Apple menu and command-F brings up the old Find dialog box.

PowerPC Finder Update extends the width of the About This Macintosh box to prevent truncation of the longer Power Mac names.

QuickTime Musical Instruments is an extension that provides music synthesizers to play MIDI tracks in QuickTime 2.0 movies.

QuickTime PowerPlug provides Power Mac-native code for QuickTime 2.0.

SCSI Manager 4.3 improves disk operations for all 68040 machines, except the Quadra 630, and for the Power Mac Upgrade Card; all Power Mac models already have this code in ROM.

SR Monitor is an extension that monitors and interprets speech on AV and Power Mac models with PlainTalk microphones.

WorldScript Power Adapter is an extension that provides support for Language Kits on Power Mac models.

A longer report explaining all the files in the System 7.5 System Folder is available in the MacUser and ZiffNet/Mac areas on CompuServe and eWorld. See page 4 for details on how to access ZiffNet/Mac. / Joseph O. Holmes



MOBILE MAC / BY SHARON ZARDETTO AKER

Surviving Word 6

PowerBook users of Word 6 have even more to complain about than those who are deskbound. Here's how to deal with some PowerBook-specific problems.

SO MANY WORD 6 APRIL FOOLS' JOKES occurred to me when I realized that this column was destined for the April issue that I couldn't decide which one to use. But Word 6's irritations are no laughing matter for those

trying to use the program on a PowerBook. In addition to the problems plaguing every Mac with Word 6 (outrageously long launch time, sluggishness, and annoying Windows interface), PowerBook owners must deal with a screen-hogging collection of tool bars and with the program's insatiable need to hit the hard disk (thereby eating up battery power). Contrary to rumor, about the only bad thing Word 6 *doesn't* do is actually make your PowerBook heavier after you've installed it.

Just last summer, a Microsoft representative assured me that Word 6 would be kinder to PowerBooks than Word 5 was. But

there's no doubt that Word 6's behavior is actually significantly worse. More recently, another Microsoft representative said to me, "When developing Word, the emphasis was placed on cross-platform core compatibility. Unfortunately, this focus causes Word to be less optimized for the PowerBook." Talk about an understatement.

So let's say you have no choice about what word processor you use on your PowerBook: Some higher power (a supervisor or a network administrator, that is, not Bill Gates) makes those decisions for you.

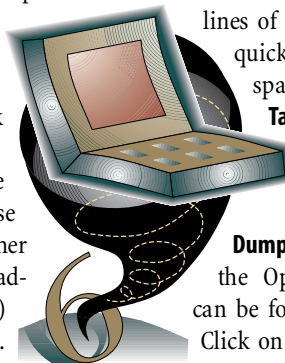
Here are some suggestions for making life with Word 6 a little less stressful on both you and your battery.

Screen Clutter

The Word 6 environment normally displays two tool bars at the top of the screen and a status bar at the bottom; add a tool bar for a special function (such as recording macros), and you're left with a window barely 3 inches tall — enough for about 14 lines of text. Wow! Here are four quick ways to reclaim some space:

Take the ruler out of the window, by using the Ruler command, on the View menu.

Dump the status bar, by using the Options command, which can be found on the Tools menu: Click on the View tab, and in the



POWERBOOK SECRETS / opening an all-in-one PowerBook

THE EASIEST-TO-OPEN POWERBOOKS are the 100-series PowerBooks (excluding the 100 itself, which I covered in March); once you've "split" the case, every component you need is readily exposed. Just don't forget to take antistatic precautions, as detailed here in February.

To begin the process, shut down the PowerBook and take out the battery. Remove the I/O door from the back (if it hasn't already snapped off by itself, that is), by bending it gently in the middle until the hinge pegs pop free.

With the PowerBook upside down, remove the four screws from its bottom with a Torx #10 screwdriver. Don't worry if the loosened screws remain in their wells; they'll come out when you turn the PowerBook over.

Carefully turn the computer right side up again (the two pieces are held together at this point by a single screw and a delicate cable), and remove the small screw under the modem port with a Torx #8 screwdriver. Here's the tough part: Working at the back of the computer, lift

the top of the case about an inch so you can see the ribbon cable that connects the two halves. Gently pull upward at the bottom end of the ribbon cable, so the connector pulls loose from its socket. Take a good look at the way the ribbon "folds," so you can put it back that way when you're finished. Next, lift the top of the case up and away from you to unlock the fasteners at the front — they'll make an uncomfortable cracking sound, but that's normal.

With the top off the case, both the screen and the keyboard are gone and you can see all the components — such as memory, modem, and hard drive — you're likely to want to upgrade.

Putting the computer back together is a little tricky, because of the very delicate ribbon cable. Attach the top of the case at the front first, so that the fasteners lock together again. Lower the back to about an inch from the bottom half, and then reconnect the ribbon cable — with its folds in their original positions — before closing the case and putting all the screws back where they belong. / Rich Wolfson



Window section, uncheck Status Bar.

Get rid of the horizontal scroll bar, by unchecking it in the same section of the Options dialog box.

Use the Full Screen command, on the View menu, to get rid of all the tool bars as well as the status bar and the scroll bars. (Put the vertical-scroll controls back into the window by using the Options dialog box and checking Vertical Scroll Bar.)

But no tool bars at all is sometimes worse than too many. Reposition and reorganize the tool bars so only the commands you want are displayed. A single tool bar across the top doesn't take too much room and can accommodate the "wide" tools, such as the Style and Font drop-down menus. Having two vertical tool bars at the left of the screen leaves a window wide enough to display a full-width document.

To move a tool bar, drag it by any empty area inside it, which makes it float. Use its size box to stretch it vertically, and drag it to the left edge of the screen; it will snap into place.

To reorganize the buttons in a tool bar, just Option-drag them into new positions — even if the new position is on a different ruler. To get rid of a button, Option-drag it off the tool bar; make sure you let go of the Option key before you release the button, or you'll turn the button into its own floating tool bar. You can incorporate the commands (they include the Page Up and Page Down buttons) on the PowerBook tool bar into any of your main tool bars.

Hard-Disk Hits

As PowerBook users are well aware, the more of an application or a document is held in memory, the less disk access there is; most are also familiar with the excessive disk hits Word 6 triggers. There are some things you can do to improve the situation.

Start with two system-level procedures. First, allocate as much memory to Word as possible (3,000K is a bare minimum for acceptable performance, 5,000K is highly recommended), so that more of Word and its open documents can be held in memory. Second, experiment with increasing the Disk Cache setting in the Memory control panel. This will allow those parts of Word that are still called up from the disk to be temporarily stored in the cache (which, despite its name, is a RAM cache).

More Text, Less Graphics

Once you have as much memory allocated to Word as possible, you can use its Advanced Settings options (see figure 1) to alter its internal allocation of memory — how the memory is divided between the document and the application. But first you



figure 1 / **Word 6's** hidden Advanced Settings dialog box lets you allocate extra memory to open documents, but how to specify settings isn't obvious. Here, I typed the CACHESIZE option name and setting over those for STARTUP-PATH.

have to add the Advanced Settings command to the Tools menu: Choose Customize from the Tools menu, and click on the Menus tab in the dialog box. Select Tools in the Categories list and ToolsAdvanced-Settings in the Commands list, click on the Add button, and close the dialog box.

If your documents don't contain bit-mapped graphics, you can free up memory that's normally reserved for displaying such graphics; by default, there's a full megabyte set aside. Choose the Advanced Settings command, and follow this procedure:

1. Select Microsoft Word from the Categories pop-up menu if it's not already displayed as the current option.
2. In the Option text box, type this: **BITMAPMEMORY**.
3. In the Setting text box, type **512** (512K is the minimum setting).
4. Click on the Set button, and then close the dialog box.

If things slow down after these steps, go back and make the allocation a little larger or delete the setting entirely by selecting it in the list and clicking on the Delete button.

Don't let the stupid interface in this dialog box throw you. When it first opens, one of the items in the Options list, such as STARTUP-PATH, will be selected and its particulars displayed in the Option and Setting text boxes. There's no way to clear the text boxes or indicate that you want to create a new option, such as CACHESIZE or BITMAPMEMORY. Just type the new option name and setting over the ones initially

displayed in the text boxes — the setting for the initially displayed option won't be altered or erased.

More Doc, Less App

Whether or not you're able to free up some memory with the BITMAPMEMORY set-

ting, you can allocate more memory to open documents with the following procedure. (It means less of the application will be in memory, so use this in conjunction with a higher disk-cache setting, as mentioned earlier.)

1. Open the Advanced Settings dialog box.
2. Select Microsoft Word from the Categories pop-up menu.
3. In the Option text box, type this: **CACHESIZE**.
4. In the Setting text box, try **256**. (The minimum is 64K, which is Word's default; Microsoft recommends using no more than 128K as a setting on a 4-MB Mac, based on Word's default of an overall 2,000K memory allocation on a machine that size.)
5. Click on the Set button, and then close the dialog box.

Finally, to make the most of the memory you have, work in Normal view (it's also faster than using the Page Layout view) and don't use the Fast Save option, which bloats the size of the document out of proportion to its contents.

A final quick note: Microsoft says that Word 6 is compatible with 68020 and more-powerful processors, so PowerBook 100 owners are out of luck (or not, depending on how you feel about Word 6!).

Sharon Aker absolutely had to use Word 6 on her PowerBook for this column but is about to fall back to Word 5 if she can tear herself away from the Macro editor. Rich Wolfson has yet to open a computer blindfolded, but he's contemplating trying it — on Sharon Aker's PowerBook.



NET TRAVELER / BY MICHAEL SWAINE

Art-Link Letter

From beatniks to banned books, the Internet makes the perfect place for a culture crash.

YOU ARE NOT THE KIND of guy who would be at a place like this at this time of the morning. You have a *life*. So what are you doing out on the World Wide Web at 2 A.M.? You're getting some *culture*, that's what.

You've been web-hopping for hours, making the scene at sites dedicated to music, literature, art. A small voice inside you insists that *everything* is out there somewhere, if only you know the URL.

Groovin' at the Louvre

Earlier you browsed through the current exhibits at Le WebLouvre (<http://sunsite.unc.edu/louvre/>) and found a down-and-dirty discussion of art over at Kenny Greenberg's place (<gopher://gopher.panix.com/11/nyart>). Following a tip, you whispered **subscribe ARTCRIT <your name>** to the bouncer at the door at listserv@vm1.yorku.ca and got in on some heavy art talk.

You moved to the beat of obscure tracks from unsigned bands downloaded from the Internet Underground Music Archive, at <http://www.iuma.com/>.

Seized by an unexpected urge to read Little Women, you drifted over to interloc@shaysnet.com, a free book-finding service, and then to the Project Gutenberg electronic-book archive, at <ftp://mrcnext.cso.uiuc.edu/pub/etext>. You finally score your Alcott at Carnegie-Mellon's <gopher://english-server.hss.cmu.edu/>.

After a few pages, you realize that one place you know you *won't* find Little Women is the Banned Books On-Line Web page (<http://www.cs.cmu.edu:8001/Web/People/spok/banned-books.html>). It is a good place, however, to get a copy of a contemporaneous tome, *Leaves of Grass*. Then, your

appetite whetted for verse, you grab your bongos and check out Literary Kicks (<http://www.charm.net/~brooklyn/LitKicks.html>), a tribute to Whitman's spiritual heirs, the Beats. From Alcott to Whitman to Kerouac: That's the kind of progression that seems logical only on the Net.

The Great GIF Crisis

What you don't need to do in your relentless quest for culture is to try to download every artistic GIF image you can before all the images disappear from the Net. Early this year, CompuServe announced that GIF includes a patented algorithm owned by Unisys and suggested that the developers of programs that use the format would have to pay a licensing fee. It didn't take long before tall tales — that people who run World Wide Web sites that have GIF images would have to remove their files or pay a fee, for example — emerged.

But although GIF images were never in as much danger as, say, the National Endowment for the Arts, it remains to be seen what might happen to the applications that read and write them. If the GIF brouhaha has had any real effect on-line, it's that people are now seriously discussing alternatives to the GIF format. Such new formats might provide us with images that have higher resolutions or shorter download times (or both), and that's good news for everyone, especially digital-art lovers.

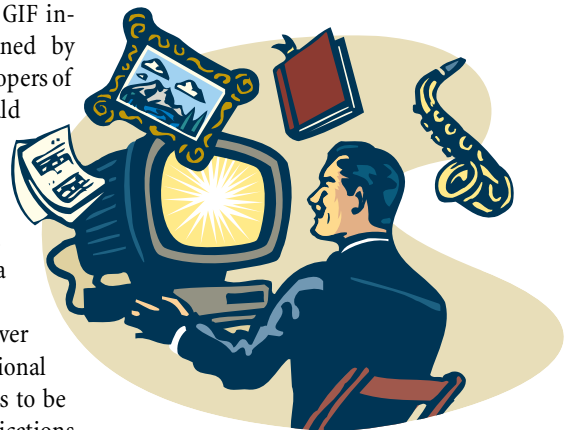
Even so, the idea of big companies trying

to sandbag popular formats annoys you to-night and you decide to send some mail to Bill Clinton at president@whitehouse.gov to register your views on patent and copyright law and the Internet.

On second thought, you've already received an electronic form letter from Al Gore. Maybe you'll slide over to the Electronic Frontier Foundation instead, at <http://www.eff.org/> or <ftp://ftp.eff.org/>. At 2 A.M., you're in no shape to try to explain technology to politicians.

Where's the Sound?

Ever tried to play a sound or a movie on a Web page, only to be greeted with a dialog box saying that the necessary application couldn't be found? Don't despair — you can find the necessary "helper" applications for use with browsers such as Mosaic,



Netscape, and MacWeb at <ftp://ftp.ncsa.uiuc.edu/Mac/Mosaic/Helpers>.

Don't Know GIF from GUI?

MacUser maintains a list of frequently asked questions (FAQs) about the Internet, *MacUser* itself, and this column specifically at faq@macuser.ziff.com. You can reach me at traveler@macuser.ziff.com. ☺



BY ANDY IHNATKO AND BOB LEVITUS / *Tips compiled by Christopher Breen*

Help Folder

A last-ditch Mac-fixing method, two advantages of System 7.5, and ways to transfer files from any old computer to your Mac.

Missing Icon Recap

BOB: Reader Frank Kofsky contacted me via CompuServe to point out that an answer in the November '94 Help Folder (page 163) about rebuilding the desktop doesn't always fix such problems as icons turning plain. There are at least two freeware utilities — Desktop Reset and TechTool — that may help if rebuilding the desktop doesn't work. You can get them on-line (see end of article) or from user groups.

Furthermore, as several astute readers pointed out, icon problems are occasionally the result of an incorrectly set bundle bit. If rebuilding the desktop doesn't cure your icon problems, look for a freeware BNDL fixer. I use SaveABNDL (available on-line), and I hear there are several others around.

Disks That Do DOS

Q. Is there a thingamajig that will let my Mac create a disk that can be read by an IBM PC?

Jerry Sansing
San Pedro, CA

BOB: Well, one thingamajig that does it is System 7.5. Selecting Erase Disk from the Finder's Special menu lets you choose among Macintosh, DOS, or ProDOS (Apple II) formatting (see figure 1).

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 on-line service, and get a
reply from Bob (76004, 2076) or Andy
(72511, 204). We pay \$25 – \$100 for any
undocumented tips we publish. Send
them to Christopher Breen (72241, 1036).

Third-party utilities such as DOS Mounter, from Dayna Communications (801-269-7200), do the same thing. But since they cost about the same as an upgrade to System 7.5 and System 7.5 includes tons of other cool features, I'd opt for the new system software.

ANDY: And do keep in mind that all that'll give you is a readable DOS disk; you still have to have Mac applications that can create readable files for people wriggling under the iron heel of a DOS or Windows program. Many Mac applications, such as MacLink/Plus Translators, from DataViz (800-733-0030 or 203-268-0030), can make PC-readable files. It's also worth mentioning that System 7.5 can read DOS disks and work with DOS files without complaint.



figure 1 / **With System 7.5**, formatting disks for multiplatform offices is easy.

Last-Chance Mac Cure

Q. My Mac is driving me nuts. It's constantly crashing, acting odd, and getting on my nerves. I can't open DAs, apparently because of a type -94 error. Norton Utilities, HELP!, and SAM don't fix it.

Please help me before I tear my hair out.

Max Minkin
Essex, MA

BOB: Sounds like your system software is badly hosed. Anytime your Mac is crashing, acting odd, and not responding to any of the fixes you try, you should perform a *clean install*. It's a lengthy procedure, so exhaust other repair techniques first.

A clean install, unlike simply reinstalling the system software, replaces every file and every resource in your System Folder with a brand-spanking-new one.

To perform a clean install on Macs with pre-System 7.5 system software, drag your System and Finder files out of the System Folder and into the Trash (don't bother emptying the Trash until you've finished this entire procedure), rename your System Folder as Previous System Folder, and re-start. When the flashing question mark appears, insert the Install Disk 1 disk and perform an Easy Install to create a brand-new System Folder on your hard disk.

Now move the third-party extensions, control panels, fonts, and preferences files from the Previous System Folder to the new System Folder. Since it's possible one of those items contributed to your problem, I'd move them back one at a time, restarting the machine after each move. Be sure *not* to move any Apple extensions or control panels, such as Labels or Monitors. That would defeat the purpose of the clean install.

Finally, if you have folders called Aldus, Claris, or other software vendors' names, move them from the Previous System Folder to the fresh System Folder.

The clean-install procedure is easier if you have System 7.5: Just start up your Mac



figure 2 / **A clean install**, which can fix a sick Mac, takes time. In System 7.5, you get to skip a few steps by clicking on the right buttons.

TIPS / Word Processing

FILEMAKER RECORDS IN WORD

Here's a way to put a record from a FileMaker Pro database — in editable form — into a word processor that supports graphics editing, such as Microsoft Word or WordPerfect:

In FileMaker, enter Preview mode for the record you want to use, press Command-C, switch to your word processor, and paste. Double-click anywhere inside the pasted graphic to enter graphics mode.

Each text block is now editable, and you can apply any effects, such as rotation and scaling, that your word processor supports.

Gregory E. Wurz
Washington, DC

SPEEDING UP WORDPERFECT

To significantly speed scrolling in a WordPerfect document, turn off Show Codes. Depending on your system, showing codes can slow scrolling significantly. If you must see the codes but want to take less of a

speed hit, size the code window to show fewer lines of code.

Donny Hornstein
Dallas, TX

COLORIZING SIMPLETEXT

Although SimpleText's menu doesn't reflect it, colored text can be pasted into, saved, and edited in SimpleText files. All you need to do is copy one character in the color you want from an application such as MacWrite Pro or ClarisWorks (sorry, Microsoft Word and WordPerfect won't work), paste it into your SimpleText file, highlight the pasted text, and start typing. The color will be retained.

Alternatively, download a copy of Alessandro Levi Montalcini's shareware program SimpleText Color Menu, which adds a Color menu to SimpleText.

Bill Chenault
via eWorld

with the Install Disk 1 disk in your floppy drive or the System 7.5 CD-ROM in your CD-ROM drive; click on the Continue button on the splash screen; when the main Installer window appears, type the keyboard shortcut for a clean install (Command-Shift-K); choose Install New System Folder; click on OK in the dialog box that appears (see figure 2); and click on the Clean Install button. When it's through, you'll have a fresh System Folder. Then move the third-party items from the Previous System Folder, as described earlier.

In both cases, be sure to delete the System file and the Finder from the Previous System Folder right away, so you don't have more than one of each file on your hard disk.

ANDY: Since you used the help of three thorough pieces of software — Norton Utilities for checking the integrity of the disk and its data structures, Teknosis' HELP! for comparing the contents of your System Folder with a vast database of known system and extension conflicts, and SAM to check for viruses — you do indeed need to resort to such measures as a clean install. (You could have a very subtle hardware problem, but a -94 error doesn't suggest that.)

Those who don't have such software on hand should do the obvious first: Restart with the extensions off (hold down Shift while restarting), rebuild the desktop (hold down Command-Option while restarting), and then move all your preferences files out of the System Folder temporarily.

If you do go to all the trouble of a clean install, you might as well reinstall your

applications from master disks, especially if one of your children has started to walk and talk since the last time you did so.

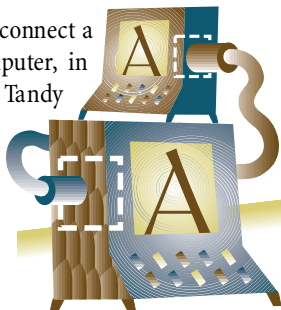
Trading Files

Q. How do I connect a non-Mac computer, in my case a Tandy TRS-80, to my Mac, so I can transfer text files between them?

Eric Plosky
Syosset, NY

BOB: The easiest way is to send them by modem. Just fire up a communications program on the TRS-80 and have it dial up your Mac, which should be running a telecom program set to auto-answer. Then use a send-text command on the TRS-80 and a receive-text command on the Mac. Simple.

ANDY: It's that simple if you have two modems and two phone lines. But on the off chance that you don't, there are two more solutions. The easier, although inelegant, one is to use your TRS-80's modem to upload the text file to an on-line service and mail it to yourself. Then log back on with your Mac and download the file. The tougher but more soul-satisfying method is to connect a serial cable between the two computers. Snap a null-modem adapter (buy it at your local electronics store; it's about the size of a pack of matches and costs about ten bucks) onto the end of the cable that fits into the TRS-80, and it'll be just as if the two were connected by modem. Start up



telecom software on both; establish identical communications parameters, such as speed and parity; and transmit the files.

Or you could try this: Put the document on-screen, put the screen of the TRS-80 on the bed of your scanner, scan the screen, and use OCR software to convert to text. Scroll to the next screen. Repeat as needed. And if anyone asks where you got the idea to try this, feel free to take all the credit.

TIPS / Microsoft Office

INSTALLATION INSIGHTS

Installing Microsoft Office? It takes time, no question. But here are a few extra steps that will make it easier to install all or part of it again later.

Instead of doing an installation initially, copy the Office floppies' disk images to a separate volume, such as a 44-MB SyQuest cartridge. To do this, hold down the Command key while double-clicking on the Microsoft Office Setup application icon; click on the top radio button, which is for installing Office from a server; choose a volume for installation; and insert each of the floppies in order. Now you can install all or part of Office at any time by running the Office Setup application from the volume you just copied the disk images to.

CD-ROM FOR FLOPPY OWNERS

A CD-ROM version of Office should be available by the time you read this. Owners of the disk version can get this CD-ROM for \$15 from Microsoft at 800-426-9400. [Thanks to ZiffNet/Mac member Nanther Thangarajah and Microsoft's Don Pickens for their collaboration on these tips. — CB]

Parade o' Macs

Q. Is there one list anywhere containing the current Apple line of Macs? With so many products coming in and going out, it's hard to keep track.

Marco Gutierrez
via ZiffNet/Mac

ANDY: It's weird, but few people have heard of the slim paperback entitled *Apple Facts*. It lists everything Apple makes and includes specs, features, advantages, and what each product is good for — all in fairly direct language. It's updated periodically, and best of all, it's free. Just trot on down to your friendly local authorized Apple dealer, and ask for a copy. If they claim they've never heard of it, tell them to call 800-825-2145 and order a few dozen. Just don't call that number yourself; it's for dealers only.

And don't overlook the AppleFAX line (800-505-0171), a 24-hour automated service that can fax product data sheets to you for free at any hour. A wonderful resource for those 4 A.M. trivia games in which you need to know the difference between a Performa 475 and a Performa 476.

Finally, you can hop on that Information Superhighway thingy you've doubtless read about in *Time* and *Newsweek* and download such data sheets. Apple has an official presence on CompuServe (as APPLE), on Apple-Link and eWorld (in the Apple Customer Center), and on the Internet (ftp site at ftp.info.apple.com and gopher site at info.hed.apple.com; the Web site's URL is http://www.info.apple.com).

BOB: Or check out the elegant Mac Catalog

TIPS / Communications

E-MESSAGES THAT TALK

You can use ClarisWorks 2.1 to create a "talking terminal" — a Mac that can read aloud the contents of your on-line sessions — as long as you have Apple's Speech Manager installed. Here's how to do it:

Open ClarisWorks; select Preferences from the Edit menu; click on the Communication icon; and click on the Speak Text option, which is in the upper right corner.

Now, when you log on to your favorite BBS from within a ClarisWorks communications document and open e-mail or news messages, the Speech Manager will read them to you as they scroll by.

A. Tanaka
Vancouver, BC, Canada

VOICE ANNOTATIONS

To send voice messages on the Internet, simply create a voice annotation in a blank document of any program that can create voice annotations, such as Microsoft Word or MacWrite Pro. (In Word, for instance, you select Voice Annotation from the Insert menu and then record your message.) Then all you need to do is attach the document to your e-mail message. To make the files as

small as possible, record at Good or Better quality rather than at Best quality.

Jim Young Jr.
via the Internet

A SPEEDIER APPLEMAIL

Having lots of fonts on your Mac can slow down AppleMail considerably. To speed it up, you don't have to remove the fonts from your system — instead, you can slim down the list in AppleMail's Font menu, using ResEdit. Follow these steps:

1. Open a copy of AppleMail 1.0 or 1.1 with ResEdit. Open ID 10 of the MENU resource, press the Return key to bring up the text box, and enter the name — with the exact spelling — of each font you want to use.

2a. For AppleMail 1.0, open ID 9 of the CODE resource, locate offset \$1160, and replace **A94D** with **4E71**.

2b. For AppleMail 1.1, open ID 9 of the CODE resource, locate offset \$E1A, and replace **A94D** with **4E71**.

This should make it much faster to perform such tasks as opening AppleMail.

German A. Alvarez
Bogota, Colombia

Database (see figure 3), exclusive to ZiffNet/Mac (see end of article). It contains a complete list of all Apple Macs and their specifications and tells you whether or not they're still shipping. If you don't have FileMaker Pro, make sure you get the Mac Catalog RT version of this file.

CD Side of Sound


Q. How can music clips from an audio CD be recorded on my Mac? Recording with the Sound control panel and CD Remote is awkward and limited. Is there a better way?


Walt Sturrock
Denville, NJ

ANDY: I know I answered this one last year, but I've since found a better way to turn digital audio from a CD into digital audio on a hard disk — use Disc to Disk (\$199), from Optical Media International (800-347-2664 or 408-376-3511). It converts the sound to any of five standards, including Mac, DOS, and music-industry standards (I'm taking the company's word for it on that last one). It doesn't require QuickTime or CD audio drivers. But what really distinguishes it is

that it copies the digital data itself, not just an analog representation.

You can still pull this conversion off for free with QuickTime 1.61 (or later) and almost any movie player (such as, er, MoviePlayer): Just use the movie player's Import command, and you can convert tracks into QuickTime movies. But you won't get the quality you get with Disc to Disk.

BOB: If you're using the free method, you can use the freeware program Movie2Snd (available on-line) to convert the QuickTime sound tracks into more-useful System 7 sound files. 

 You can find the programs referenced in this article in the MacUser and ZiffNet/Mac areas on CompuServe and eWorld. See page 4 for instructions on accessing ZiffNet/Mac.

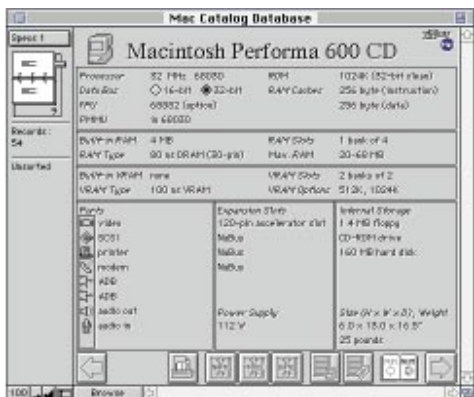


figure 3/To aid in your buying decisions, there are several sources that offer Mac specs. The Mac Catalog Database, available on MacUser's on-line service, ZiffNet/Mac, also tells you whether or not a specific Mac is still shipping.

The Cupertino Papers

I REALLY MISS THOSE days when all I had to do was tweak the users of the Mac for being so

pigheaded about their machine — acting as if nothing else worth a powder had ever existed. Since then I've had to spend more and more time needling Apple itself about how it could do a better job of selling the Mac, especially against Microsoft's Windows strategy. Apple always seems to act like it hasn't figured out that its No. 1 enemy is Microsoft rather than PC clones or potential Mac-clone makers.

Well, this problem finally came to a head last month, when I received a bundle of confidential memos from a disgruntled Apple executive — call them the Cupertino Papers. They detail Apple's plan to bet the company on a successful answer to Microsoft's latest strategy of conquering the consumer market with something called Bob.

What About Bob?

As background, let me tell you a little about Bob. First imagine the logo: a yellow smiley face wearing thick-rimmed glasses — Bill Gates smiling all the way to the bank. Now consider the Mac OS logo. It came first. Yes, the Bob smiley face is just another Microsoft attempt to copy an Apple idea. But there's more to it than that, because Bob is designed to be a front end to the PC that acts as your permanent friend and helper (oh yeah, it also launches programs). Because Bob was designed by social scientists, some people actually think it can open up the consumer market. It seems Apple does. Why else would it be frightened to

death of Bob and the smiley face? Apple is so concerned about Bob that it is planning an entire corporate face-lift and change in overall strategy. This is all Michael Spindler's doing, and it's a little scary. Here's what Apple is planning to do:

1. Incredibly, drop the colorful Apple logo and replace it with that odd Mac OS face.
2. Announce on January 1, 1996, that the new name of Apple Computer Corporation will be Power Mac Corporation (PMC). PMC will, later that month, introduce a complete new line of Power Macs, each sporting that little Mac "head" logo.
3. All residual Apple II/IIGS and 68000-based Macintosh support will be stopped. The Apple II will have no support whatsoever (as if it had any now!) as of January 1, 1996, and the old Macs will not be supported after January 1, 1997.
4. The term *Macintosh* will be dropped completely from the lexicon as of July 1, 1996, and be replaced with *pre-Power Mac* or *68000-based machine*.
5. This one will probably never be implemented, but it's in the memo: Any employee using the word *Apple* or *Macintosh* can be summarily fired!
6. Implementation of Scotty, a human-centric software package not unlike Microsoft's Bob. The Cupertino Papers contain no details regarding this, and I personally have never heard of the project. But I have to assume that this is where Microsoft got the

idea for Bob. Maybe a reader can shed some light on it.

7. Increase software licensing. There was an entire memo on this strategy, and it seemed to indicate that PMC would eventually get out of the hardware business but continue to develop software. Power Macs would be made by others and sold under the Power Mac label to keep up the illusion that the company was still in the hardware business. An enclosed spreadsheet showed how PMC could be a \$20 billion company by the year 2000 if the market share of the Power Mac increased by 20 percent.

8. Move the entire Power Mac Corporation to Texas, where taxes are generally lower and there are no state income taxes.

There was a long write-up about how Apple "blew it" the last time

it tried to move. The strongest argument in favor of Texas stems from the presence of Compaq, Dell, Texas Instruments, and other PC-clone makers there and PMC's need to steal sales and marketing people more than Silicon

Valley nerds. The memo

also said that the Apple "deadwood" within the company would probably not relocate or be asked to relocate, thus improving the performance of the company.

9. Open a chain of retail superstores called Power Mac Computing! (with a very large exclamation mark, which will serve as the logo for the chain of stores). The stores will promote the Power Mac, needless to say.

10. Finally, PMC intends to start a CD-ROM development division. Its first CD-ROM will be Dvorak's Annual *MacUser* April Fool's columns. They are found in each April issue of *MacUser*.

Hey, it could happen! ☒

