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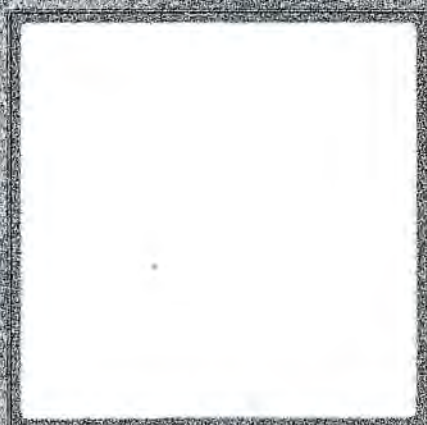
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O  
U Your Power Mac™  
H  
A You are in  
V  
E Microsoft® Word 6.0.1.  
A Your mind  
J Is racing.  
O  
B Your fingers  
T Are racing  
O To keep up  
D  
O With your thoughts.

Y You begin  
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W With  
R A lowercase letter.  
I This mistake is corrected  
T  
E Automatically.

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R Of Undo.  
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V And 100 levels  
I Of Redo.  
S  
E Just in case.



in  
here  
mistakes  
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forgiven





Y You begin a new  
O Sentence with  
U An abbreviation  
W You created.  
R It becomes  
I An entire phrase.  
T Automatically.  
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R You change  
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I Typefaces  
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E Words.


Y Until you have finished.  
O You click AutoFormat.  
U And the block of words  
Can become  
W A letter.  
R A proposal.  
I A story.  
T Automatically.  
E You write. Because you can.



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work  
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And  
Microsoft® Office  
Become one.

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You assemble your thoughts  
Effortlessly.  
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Presentation.  
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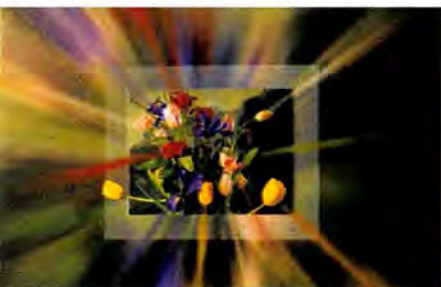


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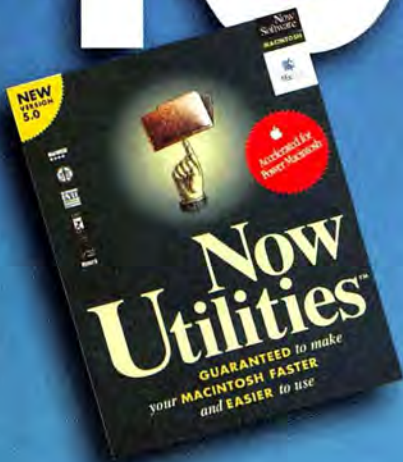
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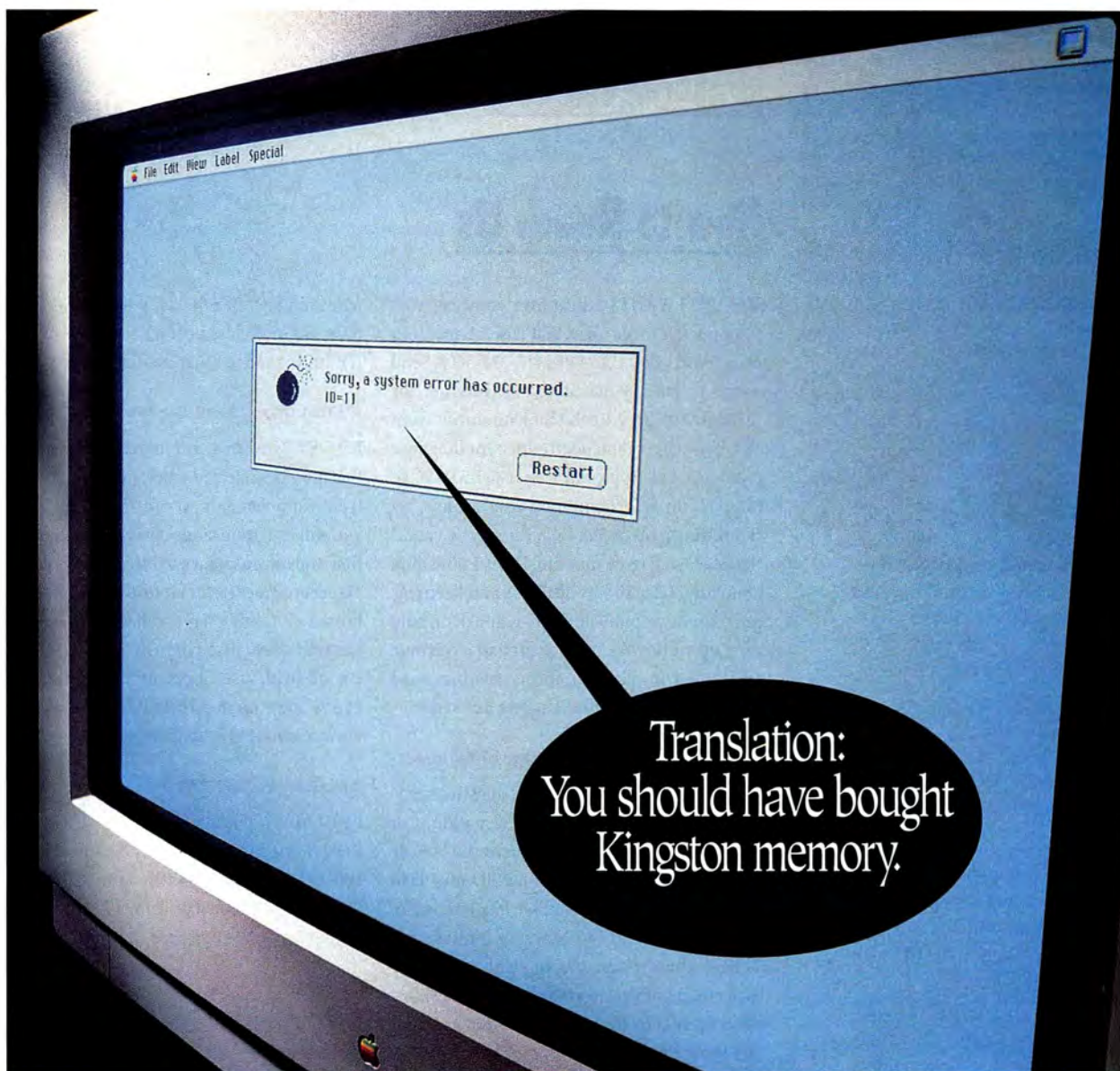
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# MacUser

COMING SOON:

# 96

## MARCH

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Find out the winners of the 11th Annual MacUser Editors' Choice Awards this March. The Eddy Awards represent the premier products in 40 different categories as judged by the editors of MacUser. As always, our editors use the most rigorous standards of excellence in making their selections. And, as always, you can use this list as a trustworthy buying guide.

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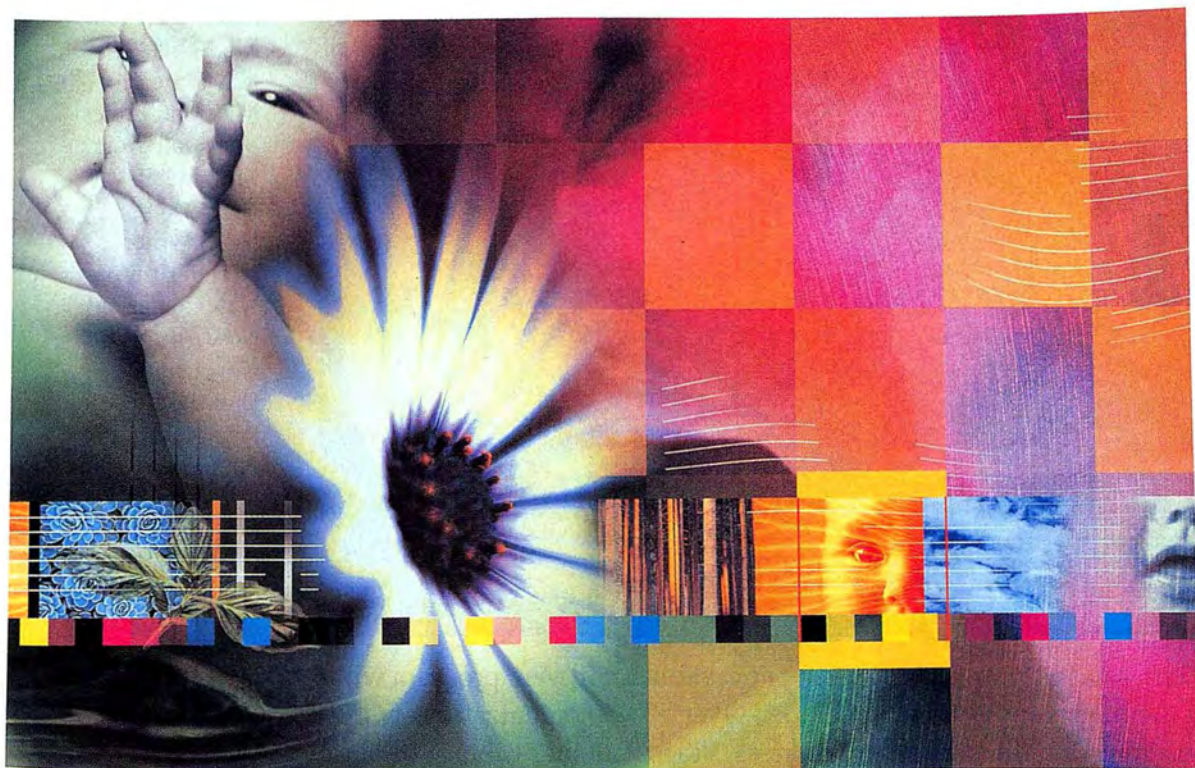
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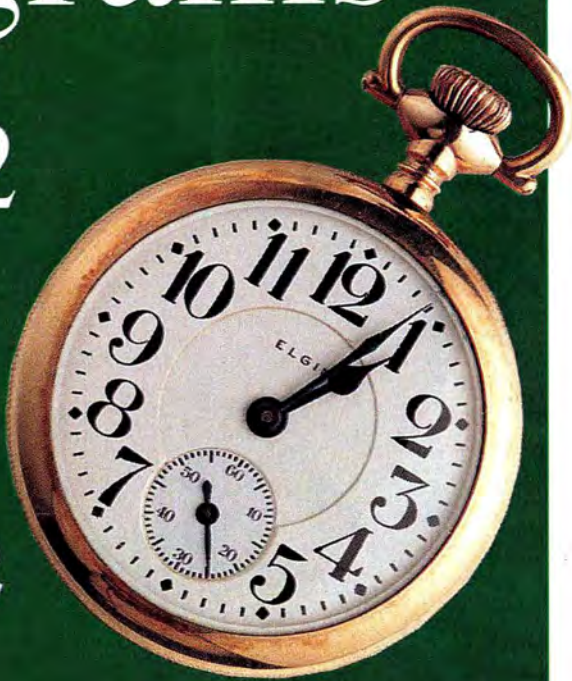
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# LETTERS

## Macintosh 89

YOUR NEWS STORY on Windows 95 (New on the Menu, October '95, page 30) was a better treatment of the subject than is usual from Mac people. However, many of Windows' compatibility problems result from the plethora of PC-hardware manufacturers. Let dozens of companies build Macs, and see what happens!

Macs still do not have a preemptive multitasking system. And before Mac users say much about software compatibility problems with Windows, they should consider the list of software incompatible with System 7.

And must Mac users be *so* arrogant about their machines? They seem to scoff at — and usually can't use — any device that does not have an icon to click on.

**Greg Brenneman**  
via the Internet

WINDOWS 95 LOOKS and feels just like the Macintosh operating system, and this could spell the end for Apple. But you know what? The look and feel of Windows 95 reaffirms the Mac interface. Just a couple of years ago, DOS users ridiculed the Mac's "childish" interface. Now all those PC users are eating their words!

**Eric Herbas**  
via the Internet

IT'S ABOUT TIME Apple aggressively advertised against Windows 95 (as it did in the October issue of *MacUser*), but why place a four-page ad in a Mac magazine when the

ad is addressed to PC users? Apple's absolutely right in sarcastically contrasting the Mac OS with Windows, but the ad blitz should have been directed at the Windows audience, not at those of us who have already seen the light.

**Wilbur M. Rabinowitz**  
via the Internet

ONE THING I *do* know: You wouldn't see Mac users lining up at midnight to make their machines run more like PCs running Windows.

**Rob Marquardt**  
guyspam@aol.com

## Apple Anxiety

JOHN DVORAK'S OCTOBER '95 column ("Performance Anxiety," page 218) was right on the money! Many of the features most often mentioned in Windows 95 advertisements are things the Mac OS has had for years. Why didn't Apple advertise these same features years ago?

Most businesses have replaced all their PCs within the last five to seven years. If Apple had been aggressively marketing the Mac, showing off all its advantages, maybe more companies would have forgone the next generation of PCs and converted to the Mac.

As a recent graduate of the University of Michigan (where the Mac is king) who is now forced to use an IBM PC at work, I sure wish they had.

**Jonathan Chittenden**  
via the Internet

I AGREE WITH John C. Dvorak. The Wintel platform has one helluva marketing company behind it — Microsoft.

Apple has done probably some of the best R&D ever when it comes to user interfaces, but it doesn't have an R&D arm for advertising. In the end, it forgets how good its machines are and doesn't go far enough in promoting them.

Meanwhile, Microsoft would sell cars with holes in the tires if it could.

**Ron Holmes**  
holmesrg@cs.curtin.edu.au



## OPEN FOLDER

**W. C. Fields advised** actors never to work with children or animals. Let's add this to the warning list: Magazines should never discuss style and grammar. But we broke this rule in the October '95 Open Folder, and the letters poured in. Many of them complained about Alberto Tabone, who said English was a derivative of Latin. "English is not a Latin language — it's Germanic, despite the attempts of intellectuals to stuff it into a Latin form," wrote Pete Ottman. Our joke about "SVSTEM VII" and "VINDOVS XCV" forced Christopher Gunty to point out that "Romans did not replace Ys and Ws with Vs in chiseling letters into granite — only Us." Latin may be a dead language, but it's sure not a dead topic.

**The prominent place** that Open Folder occupies might suggest it's the first place eager readers turn to. But reader Rick Vogel suggests that you can't read an issue of *MacUser* right out of the mailbox: "First, you must prepare it for reading. Grasp the magazine firmly, fan all the pages, and allow all the inserted cards to fall into the garbage. Repeat several times. Then flip through the magazine until you find heavy objects. Rip them out. Finally, open the front and back covers and tear off the foldout pages." You've got it wrong, Rick — you're supposed to save all those cards and collect and trade 'em with your friends. I'll give you three *New Republic* subscription cards for an *Entertainment Weekly*....

**A trading card** of its very own might be all some magazines aspire to, but *MacUser's* fame goes way beyond that, mostly thanks to the fanatic devotion that makes Mac users... shall we say, unique? Witness A. Lee Bennett, Jr.: "If you point your Web browser to <http://www.oo.com/~bennett/>, you'll be able to see how I tell the world about my favorite computer magazine." On that page, you'll find a photo of the license plate that adorns Lee's truck: "MAC-USER." Now *that's* what we call a devoted reader. Top that, *Sports Illustrated!*

## WRITE TO LETTERS

c/o *MacUser*  
950 Tower Lane  
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Foster City, CA 94404  
[letters@macuser.com](mailto:letters@macuser.com)

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# Our inny just became an outy.

It's time to start looking at things from the outside in. Apple's new PowerBooks now come with



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JOHN DVORAK IS RIGHT about Apple's marketing. Apple has been too nice lately. We need to go back to the days of the sledgehammer smashing Big Brother's face and the lemmings marching off a cliff. Nothing is more effective than the truth. Imagine a TV commercial that shows the seconds ticking by while a Pentium-based PC finishes something the Power Mac completed in the first half of the commercial.

If Apple wants to really play dirty against Windows 95, it has access to the ultimate weapon. The host of the most popular radio talk show in history is a big fan of the Mac. He owns a couple of Power Macs, and he is an expert at exploiting the competition's weaknesses.

So here's the big question: Does anyone at Apple have the guts to advertise on Rush Limbaugh's program?

**Fred Johnson**  
70651.3171@compuserve.com

A CLASSIFIED AD that I found in my local university paper says it all: "New computer, Hardly used, including Windows 95. Will trade for ANY Mac. Call . . . for more information."

**Dan Tappin**  
dat220@dvinci.usask.ca

### PCI Power?

ACCORDING TO YOUR performance ratings, the Power Mac 7200/75, with its 75-MHz processor, is roughly 10 percent *slower* than the 6100/66AV for processor and business tasks ("Power Macs: The Sequel," October '95, page 84). I would hardly call this an "outstanding performer." It seems like a step backward!

**Clif Davies**  
via eWorld

/ Much of the speed difference between the 6100/66 and the 7200/75 can be attributed to the Level 2, or L2, cache, which shipped standard on the 6100/66 but is available only as an option (for about \$200) on the 7200/75. The 15-to-20-percent performance boost the L2 cache normally provides would allow a 7200/75 to handily outrace a 6100/66. We called the 7200 models "outstanding performers" in the context of price/performance, and we stand by that declaration. / JSA

I'M GETTING CONFUSED here: Your May '94 article ("Power Macs: Full Speed Ahead," page 76) says that a Power

Macintosh 7100/66 with an AV card is considerably slower than one without. But then all your benchmarks in "Power Macs: The Sequel" indicate that a 7200/75 is slower than a 7100/80AV. So would I do better to buy an old 7100/80 without AV than to buy a 7200/75?

**Charles Kuttner**  
ChKuttner@aol.com

/ As would be expected from a chip with a higher clock speed, the 7100/80 offers a slight speed boost over the 7200/75, and the effect is underscored by the presence of a Level 2 cache, which comes standard on the 7100/80. Speed isn't everything, however: The 7200/75's PCI expansion slots are a significant advantage over the 7100's NuBus slots, since NuBus-card offerings are sure to dwindle as time goes on. / JSA

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## Tongue-Tied

I'VE BEEN A *MacUser* subscriber for seven years and have never written until now. But Nancy Peterson's article "Talk Like an Egyptian" (October '95, page 146) was so good that I felt compelled to send you a note.

I wish *MacUser* and its competitors would give us more articles that evaluate software and inform readers on how they can make practical use of their computers for education and business.

Thanks for publishing an excellent magazine. Keep up the good work.

David Jenkins  
CafeDJ@aol.com

## Fine China

GREAT ARTICLE, Maggie Canon ("A China Beachhead," October '95, page 23). In Beijing, we've seen Chinese who have no Mac training use Macs at a copy center. We also helped start a Mac user group in Beijing. As a bonus, we adopted our daughter Emily near Beijing in May.

John and Jackie Harrah  
via eWorld

I COME FROM CHINA. The first personal computer I used there was an Apple II, but as time went on, Apple's products disappeared. I'm glad to hear that Apple has an approach to the Chinese market today, but it may be too late. The market is dominated by Microsoft and PC products.

Zhuang Sun  
zhsun@vt.edu

## Weaving Our Web

TONYA ENGST'S ARTICLE "From the Web Press to the Web" (October '95, page 117) was one of the most readable how-to articles I've seen on HTML. It didn't overwhelm me with every HTML nuance possible. I'm going to link to it from my HTML training page for educators.

Shelly Peretz  
speretz@interaccess.com

## MATLAB Matters

WE WOULD LIKE to correct several inaccuracies in your review of MATLAB 4.2c (October '95, page 68).

You state that MATLAB 4.2c "has added the ability to create 3-D mesh, surface, and volumetric plots." But these features have been present for two years, since MATLAB 4. MATLAB 4.2c did introduce Power Mac and MATLAB Notebook support.

The statement that "MATLAB doesn't take advantage of basic graphical-interface features, such as scroll bars in windows, much less more-current features such as Macintosh Drag and Drop and AppleScript" is incorrect. MATLAB 4.2c includes support for Drag and Drop, AppleScript, PlainTalk text-to-speech technology, QuickTime output of MATLAB movies, and file output in many Macintosh formats (including PICT and EPS).

The reviewer apparently misunderstood the MATLAB Notebook, which allows users to interact with MATLAB from within Word 6.0, via AppleScript. As a result, users can produce live technical documents that include MATLAB computations, data, and graphics.

The review states that MATLAB versions 4.0 and later are incompatible with version

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3.5 and earlier and that "you'll have to change the code in all your earlier M-files if you want them to run." In fact, only 9 commands out of approximately 1,000 in MATLAB were changed, and most M-files written for version 3.5 run without modification. Most MATLAB for Macintosh users have already updated to MATLAB 4 with little difficulty.

**James M. Boyles, Manager  
Mac Development Group, The MathWorks**

/ Indeed, MATLAB does have AppleScript and Drag and Drop support. However, we were pointing out that some areas of MATLAB lack basic Mac OS features such as scrolling of graphics and copy-and-paste. And as for compatibility with version 3.5, MATLAB's manual lists 38 changed functions, not the 9 that Mr. Boyles claims. / JR

YOUR REVIEW COMPARED MATLAB with software that is intended for different purposes. Certainly, comparing MATLAB with other programs in areas in which MATLAB is not intended to serve as a primary tool does not do justice to the program.

The MathWorks' MATLAB is a matrix-

numeric-computation program with plotting and model-simulation capabilities. Mathematica is a symbolic-computation and rendering program. Matrix-numeric computation and symbolic computation are entirely different. The computing engines required for these distinct tasks are not at all equal.

I use MATLAB, Mathematica, and Maple; they all have distinct strong points and complement each other rather than compete. For numeric computation, MATLAB is faster, both in programming and execution. For preliminary mathematical analysis and documentation of a problem, I prefer to use Mathematica. For symbolic computation, I prefer Maple.

**Carlos Murillo  
via the Internet**

/ I agree with you that MATLAB is a good matrix-computation program and said so in the review. However, The MathWorks is framing MATLAB as an "advanced visualization [tool] for generating publication-quality graphics and performing visual data analysis." For that purpose, there are other products that do a better job, such as those from

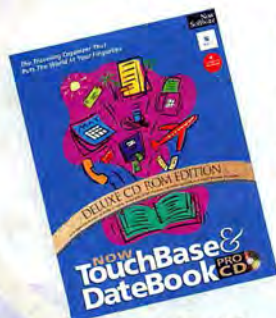
Spyglass and Wolfram. Although they are indeed different from each other, these products can use real (not just symbolic) data for graphic analysis. / JR

### OneWorld (Not Three)

YOUR REVIEW OF the Global Village OneWorld Combo (September '95, page 62) inaccurately gives the impression that the OneWorld Combo is a remote-access server. The OneWorld Combo is a complete telecommunications server that combines a full-featured network fax server, an Apple Remote Access server, and a network modem into a plug-and-play package that is as easy to set up as a laser printer. It does not require a separate Macintosh server or a combination of multiple vendors' components, and as an integrated server, it provides common, centralized management and administration for all functions.

The review erroneously states that "the [server has] difficulty handling more than about three ARA call-in connections at a time." Because the OneWorld Combo is a two-port device, it would be impossible to

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ever attempt more than two concurrent ARA connections.

The review states that the product is "somewhat pricier than comparable telecommunications servers." We are unaware of any other product that provides a similar combination of server functions, and we are unaware of any combination of separate products that provides lower total cost.

**Charles Oppenheimer, VP/General Manager  
Mac Division, Global Village Communication**

/ We regret that due to an editing error, our review was indeed incorrect regarding the OneWorld Combo's ability to handle three ARA connections simultaneously. We agree that the Combo's strength is its versatility and usefulness as a multifunction communications server, and we consider the Combo's management software and features to be first-rate. / SB

### What's Wrong with This Picture

WE WERE DISMAYED by your review of the KanImage digital-photography system ("Photo Opportunities," November '95, page 82) and would like to respond.

The source of the color error you reported must be due to a departure from our recommended densitometer settings during testing. The resulting erroneous black point caused a color reversal that cannot be fixed in Adobe Photoshop. Users who follow the manual faithfully report only the finest color reproduction.

Our clients — which include Condé Nast, Time Warner, Home Shopping Network, Nike, Harper Collins, and Macy's — could not continue to use the camera if it produced the results you report. With hundreds of installations worldwide, our technology continues to define the state of the art in image capture.

**Michael Feniello, Vice President of Sales  
KanImage**

/ The KanImage representative who showed us how to use the system wasn't surprised by the results we received, informing us we could make any necessary color corrections in Photoshop. Color casts aside, your explanation doesn't address the problem we encountered with narrow dynamic range. We stand behind the story. / PP

### Old News

AFTER READING THE "Selective Surfing" column (Net Traveler, October '95, page 141), I downloaded VA NewsWatcher, the Usenet newsreader you recommended. I

can't see why anyone would want to use this instead of a UNIX-based newsreader such as trn or Tin.

VA NewsWatcher is slow. In the time it took me to sort through all the articles and filter out the things I didn't want, I could have read through half the articles, using trn.

I suppose if a person had never used a *real* newsreader before, VA NewsWatcher would seem great. And it's got that Mac interface going for it. But as a person who's been using trn and trn for years, I have to say that I'm distinctly unimpressed.

**Keith E. Gatling  
kgatling@mailbox.syr.edu**

/ Perhaps you're so speedy in your UNIX-based newsreader because you have the commands memorized, or maybe it's the speed of your UNIX workstation. I'm guessing you're also intimately familiar with command-line-based text editors, which you'll need when posting articles or creating kill files with a UNIX-based newsreader. I'll keep my Mac, thanks. / SB

### Webaholics R Us

YOU GUYS HAVE *by far* the best Web site for the Mac fan (<http://www.zdnet.com/~macuser/>)! It contains the most useful info and the best graphics and is generally the most aesthetically pleasing site of its kind.

The graphics you add to stories such as the Web version of "Power Macs: The Sequel" (October '95, page 84) are great — I was able to see what was inside those new machines! At the Macworld Expo in Boston — and when the new PowerBooks were announced — you were right on it, with full-featured articles the very day the news broke!

And, of course, it's great that you don't require registration or a password. I don't like the idea of having to swap demographic data that can be sold or used to inundate me with unwanted junk mail. Thank you for putting out a great site!

**Steve Weisel  
Doit2it@aol.com**

### CORRECTION

Odyssey Interactive should have been listed as the publisher of Apollo XIII: A Week to Remember ("Top Spins: 50 New CD-ROMs," October '95, page 106). Odyssey's toll-free phone number is 800-539-6272.

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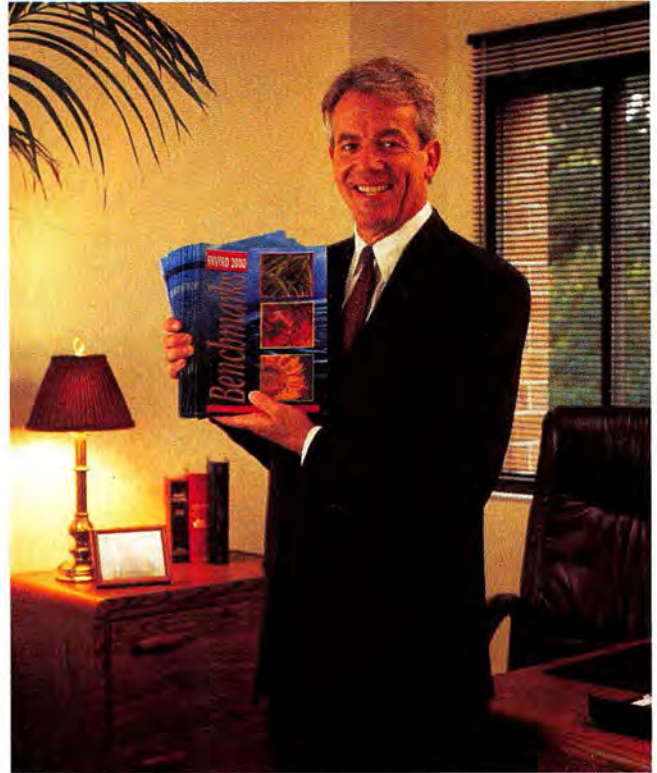
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# The MacUser Psychic Hot Line

## DRAMAS, SCANDALS, AND BAD PRESS marked 1995 for the Mac community. In other words, it was a rather typical year.

Having covered Apple for 15 years, I can say one thing with some certainty: No matter what the miscues, mistakes, and boardroom battles, the company always seems to bounce back. So I don't really feel like I'm going out on a limb by predicting yet another comeback for Apple in 1996.

But if you want to know what else is going to happen in '96, you're in luck, because the MacUser Psychic Hot Line is ready to roll with some obvious and not-so-obvious prognostications.

**Apple will marry money.** The dark blue suitor IBM has been spurned once, but don't count it out just yet — there are many good reasons for such a match. IBM needs to establish a viable consumer presence, which Apple's brand name could provide. At the same time, Apple desperately needs more manufacturing muscle, and IBM has both the chip foundries and the manufacturing might to provide it. Let's not kid ourselves, though — this would be a marriage of convenience rather than love.

A more romantic pairing would be with the Italian suitor Olivetti. Olivetti wants a PC presence in the U.S., and it likes the Mac (it's already invested in Power Computing). Because Spindler is a European, the cultural clash might be less traumatic too. No matter who wins Apple's hand, though, a solid marriage will help Apple survive in a Windows world.

**Power Computing will prevail.** Although naysayers questioned Apple's choices of clone partners, especially the startup Power Computing, those pundits were wrong. Power Computing is off to an excellent start. Its products are on target, it's innovative (check out its Web page at [www.powercc.com](http://www.powercc.com) for a good example of

using online technology effectively), it's hiring great engineering talent, and it's got a lot of appealing products planned for 1996. Now all it needs to do is make sure it can get parts!

**There will be a surge in mergers.** Another Apple clone partner, Radius, will merge or be acquired. Several storage companies will be bought out or merge with one another. Entertainment- and education-software companies will be the darlings of Wall Street, and several will be acquired (most likely by Microsoft) or merge with one another. Mail-order companies will consolidate. All natural for a maturing industry.

**Apple and IBM will sing like canaries.** The dream of a single computer that can run multiple operating systems will come true, as IBM, Apple, and whoever start building CHRP (Common Hardware Reference Platform, pronounced chirp — get it?) boxes that can run the Mac OS, Windows NT, and UNIX (AIX). This could be the best news of all for Apple. Since Apple clearly has trouble building enough boxes to meet demand, an open standard without the constraints of licensing fees and contracts should fling the gates open for multitudes of hardware vendors to make CHRP boxes that would run a variety of OSs — you'll get to pick. And now that it's been proven that supporting multiple OSs isn't more expensive than supporting one standard (as reported in a recent Gartner Group study), people should be able to choose the OS they prefer.

*Now that it's been proven that supporting multiple OSs isn't more expensive, people should be able to choose the OS they prefer.*

**Copland will be later than sooner.** Admittedly this one's a no-brainer, but it's disappointing nonetheless. In fairness to Apple, operating systems are so hard to do that they're practically late by definition. But Copland's tardiness could hurt Apple more than anything else next year, as Windows NT looms large over the landscape. However, you can expect to see some Copland-like interface features trickling down to System 7.5 sometime in late summer. And System 7.5? It will be able to run on the new CHRP boxes.

**Windows NT will be the real threat.** Apple will no longer be able to joke about NT meaning Not There. NT, with its multiprocessing, its multithreading, and its memory-protected services will be a much bigger threat to Apple than Windows 95 ever could have been. This is not catch-up time for Microsoft; it's catch-up time for Apple. This is not to say Apple won't respond — it's got a new product aimed right at NT coming out in the first quarter.

**Apple will break the speed barrier.** The promise of RISC will be realized, as Macs with clock speeds of 200 MHz become available and the PCI bus makes graphics zoom, all for a fraction of the cost of just 12 months ago. And as fully native Copland code starts to reach users, even owners of the original Power Macs are going to see significant speed gains. And faster Macs are *always* good news.

Well, those are *my* psychic predictions for 1996. If you think I've missed one or if you have a prediction of your own, send me your e-mail at our Letters to the Editor address: [letters@macuser.com](mailto:letters@macuser.com). ☐



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## Web That Smut!

# THIS COLUMN IS FOR THE LAST OF YOU

### Internet holdouts. Your pigheaded refusal to help line the pockets of those friendly and

monolithic communications giants ends today, for as a public service this month, I'll be dragging you kicking and screaming into the Internet community, with the most exciting new party game to hit the scene since the first time someone in a basement shouted, "Left foot . . . blue!"

Bear with me for a moment. You probably already know that the incredible explosion of the World Wide Web is partly attributable to how easily the Web allows two electronic "pages" separated by vast geographic and ideological distance to be linked together and freely accessed. In addition, the Web allows properly motivated people to view images of a fundamentally naughty nature. I say that these are two great tastes that taste great together and have developed Web That Smut!, the thrilling new online game that combines the intellectual stimulation of the film-nerd party classic *The Coppola Connection* with the competitive thrills of the smash game show *Name That Tune*.

The object of Web That Smut!: to proceed from a perfectly innocent starting point on the Web to . . . hang on — I've got the text of the legislation written down somewhere. Aha! — "words and/or images of a prurient nature which violate reasonable standards of good taste in the town and/or county of its source or destination of transmission."

Here's how to play. You and your opponent sit at opposite sides of a Mac with Internet access and a Web browser up and running. Your opponent names a Web site. You then offer an opening bid of how many mouse clicks it will take to move from that friendly locale to an image of graphic smut. Just as in the TV original, you barter the wager back and forth until one of you loses your nerve.

**You:** I can Web That Smut! in five mouse clicks.

**Opponent:** (after a wary pause) Web That Smut!

You then have the agreed upon number of mouse clicks to locate any text or graphics that, when accessed, immediately take your mind's eye back to the lecture your clergyman gave your entire Sunday-school class when he caught your friend staring at the depilatory ads in *Woman's Day*.

To illustrate: You begin at Apple's top Web page (<http://www.apple.com/>).

Glancing through the contents, you wisely spend your first mouse click jumping to Outside Resources. From there, Apple and Macintosh User Groups seems the obvious choice, but after carefully examining the entire page, you click on Online Publications of Interest instead; the casual mention of "eZines" in the item's description makes you suspect that it's a sure path to pay dirt. Or perhaps not, as you're presented with a list of dry technical journals and industry news. Beads of sweat form as you realize that you have only four mouse clicks left and that those'll run out quickly if you need to work your way through a Best of the Net page.

But what's that you spy in the middle of the screen? You're saved! Amusing Rants on Internet Topics! As a longtime Net jockey, you understand only too well the significance of the word *rant*, and so it is with no little confidence that you stab the pointer down on DaveNet. Hmm. Nothing there but

a file reference . . . that's no good. Skip to Dave's home page, and see if there's a directory of sorts. Netscape and your unaccelerated-graphics card require a moment to draw the page, but when it's done, you see the finish line right there in front of you — in the form of a link marked Sexuality. The window's title bar now reads A Society of Parents and . . . a thoughtful, well-reasoned, and entertaining commentary on the need for parents to take an active

role in their children's development and activities? What the hell is this?! But wait, Dave comes through, inserting a gratuitous photo of a nude lady at the very end just to get Senator Exon steamed, with a link to the Libido page thrown in for good

***But wait, Dave comes through, inserting a gratuitous photo of a nude lady at the very end just to get Senator Exon steamed.***

measure. By now, members of the crowd can no longer contain themselves, and they shout "Exoooooooooooooooooooo!" as you race around the office on your rolling chair.

All the thrills of big-time TV-game-show action, without the inconvenience of having to drag home a whole bunch of ugly Harvest Gold major appliances afterward. And the rules are so simple:

**1.** Any mouse click that activates a link to either a file or another Web page counts toward the total. Clicks within the scroll bars are free.

**2.** You cannot hit a site more than once in any one round, but if you need to back-track, you may do so without penalty. When Web That Smut! is played at championship levels, however, each click on the Back button counts; this is the game's equivalent of doing the *Times* crossword puzzle in ink and marks you as one big and crunchy master of Web naughtiness.



3. Mouse clicks must be limited to the content area of your browser's window. The What's New and What's Cool buttons are verboten, as is the keyboard — you can't perform a keyword search.

4. A contestant has Webbed That Smut! when the screen contains an image featuring either nudity, creative forms of counterproductive dress, or text of a prurient nature as described by Senator Exon. For instance, any appearance of the word *Winnebago* or *Turnstile* scores an immediate Exon for you or for your team. Merely accessing a file doesn't count; the text, sound, or imagery must be plain for all to see for the Exon to be recognized by the scorekeeper.

And then there's Web That Smut!: The Drinking Game. As with all good drinking games, the rule maker had to formulate the rules while drunk, so I downed a whole bottle of Sam Adams Triple Bock and waited for the magic to happen. When my vision returned four days later, I read the resulting manuscript, and I must say I really don't approve of what I wrote at all. So

my advice on this one is to just pop a tape of *The Bob Newhart Show* into the VCR and try to get a game of Hi, Bob! going concurrently.

The solo version of Web That Smut! is a variation I've developed entitled Championship Conservative Chain Gang. According to the original text of Exon's Communications Decency Act, distributing offensive materials via the Internet or acting as a means of access to same invites a two-year jail term. The object of Chain Gang is therefore to change the fate of the world by getting as many archconservative political figures on a prison chain gang as possible in one uninterrupted pass, via the Web sites they control. You get points for the length as well as the quality of the chain. Witness my best game to date:

Beginning at the Web page of über-Reaganite Dick Armey (<http://www.house.gov/armey/>), two clicks brings you to the top of the House of Representatives, headed by Newt Gingrich. Three from there lands you in the Flat Tax Home Page, with plenty of links to the conservative world, such as the archconservative Political NewsTalk

Network, which happily gives you access to the Christian Coalition's Web page. Cool! Now we've got Ralph Reed smashing rocks along with Newt and Dick! A deep browse turns up a Q&A article by none other than Pat "I Am Not a Televangelist" Robertson, with one and only one link to the outside.

Fortunately, that's all we need, as that crucial link in turn leads us to the Best of the Web contest page. From there, four mouse clicks takes us to the Frequently Asked Questions page of the alt.sex newsgroup, from which startling pictures of women modeling terribly revealing and clearly uncomfortable leather-and-chains ensembles is but one click away.

And the name of that crucial site linking all these conservatives to the Leather Goddess? Why, it's a link to the United States Constitution page at Cornell University.

It's pretty cheap irony when you think about it, but I'll take it anyway. ☺

Andy Ihnatko can be reached at [andyi@world.std.com](mailto:andyi@world.std.com) and isn't ashamed that readers can Web That Smut! from his Web page (<http://www.zdnet.com/~macuser/andyi/>) in three clicks.

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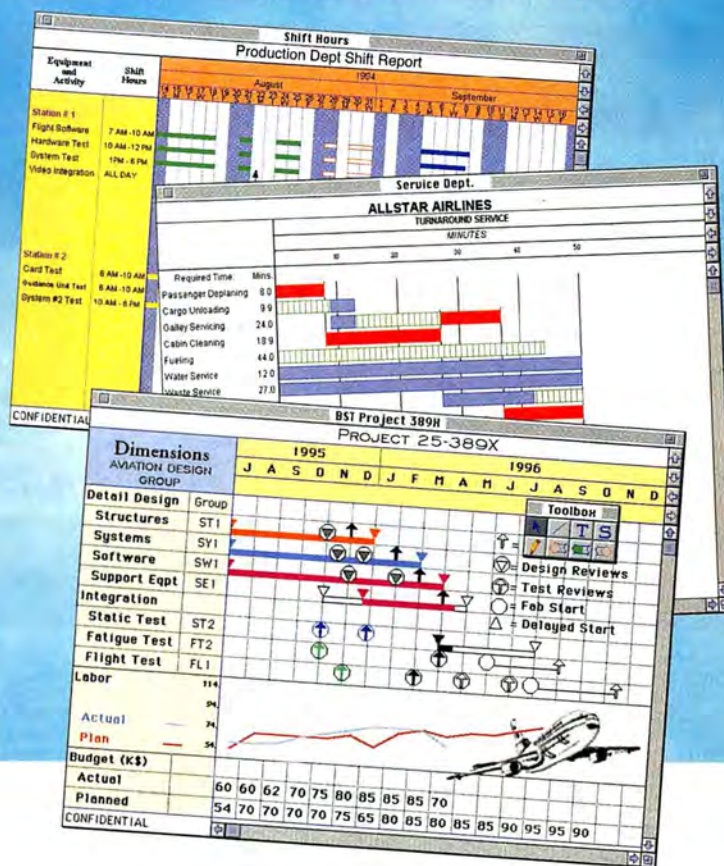
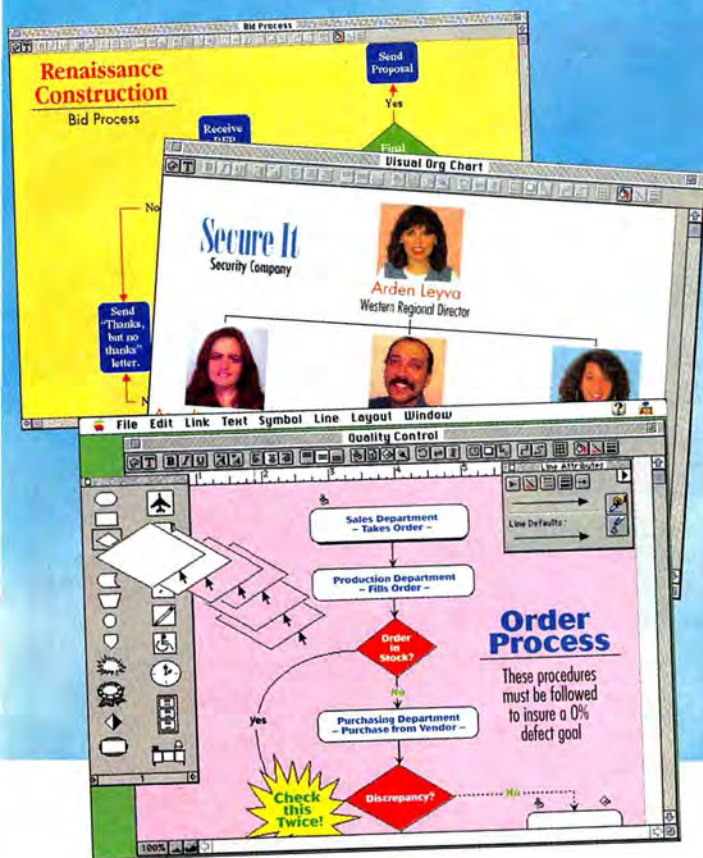
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# NEW ON THE MENU

CLONE WATCH /

## Power Breaks Apple's Speed

### Dual-bus systems let you have it both ways.



WHAT'S THE FASTEST Mac you can buy? If you thought it was Apple's Power Mac 9500/132, with its 132-MHz 604

processor, you'd be wrong. Meet the fastest "Mac" ever: Power Computing's PowerWave 604/150. But speed isn't all Power brings to the party. The PowerWave lineup from Power will offer users a choice between an all-PCI system and a mixed PCI/NuBus system. Hot!

Power's long-term goal is to provide several models — from low-profile desktop machines to full-height towers — and to allow users to choose from among a variety of processor and bus-slot options. But Power's initial PCI offering comprises three systems: the PowerWave 604/150 and 604/132, which are both minitowers, and the PowerWave 604/120, a desktop model.

The PowerWave 604/150, as its name implies, sports a PowerPC 604 processor running at 150 MHz. Apple isn't expected to offer this higher-speed chip until sometime next year. The PowerWave 604/132 parallels Apple's top-of-the-line Power Mac 9500/132. Power's systems contain a 132-MHz 604 processor and optionally are available with 256K, 512K, or 1 MB of L2 cache. Because the PowerWave has a smaller motherboard, it provides only 8 RAM DIMM slots, in contrast to the 9500's 12. The speed of the PowerWave 604/120 is expected to be on a par with that of Apple's 8500/120, although other features of these systems vary quite a bit. All three Power systems will be available in user-configurable combinations of RAM and disk-drive capacity.

None of the systems comes with built-in VRAM. Instead, Power preinstalls ATI's Xclaim GA accelerated-graphics adapter.

This is the same card Apple ships in the 9500/120, with one difference: The Power-supplied version contains a VGA port as well as a Mac-style monitor port.

#### Get on the Bus, Gus

OK, so speed records come and go: What really sets Power's PowerWave systems apart is their approach to expansion slots. Apple made the transition to the PCI expansion bus with its latest Power Macs, the 7200, 7500, 8500, and 9500. Compared to the NuBus expansion-bus standard found in most Macs since March 1987, the PCI bus is fast. And unlike NuBus, which no one besides Apple used, PCI is a standard — it's widely used in today's PCs, which means lower prices for the accelerated-graphics adapters, Ethernet cards, high-speed-SCSI cards, digital-video-capture cards, and the like used by many Mac users.

## Radius, DayStar Forge Ahead

RADIUS AND DAYSTAR aren't standing still, either. Radius announced two new systems that represent an incremental change to the company's clone-product line that provides users with more options than before. DayStar Digital unveiled a lower-priced version of its multi-processing (MP) machine, the Genesis MP. **Radius.** Imagine a 120-MHz Power Mac 8100 reconfigured to fit into a desktop enclosure rather than a minitower, and you've got the 81/120, Radius' first desktop model. Its motherboard is the first Radius has engineered itself. Based on Apple's 8100 motherboard, it

adopts the I/O daughtercard approach of Power Computing's first round of clones (although, curiously, Power has reverted to putting I/O functions directly on the motherboard in its PowerWave systems).

The 81/120 contains a 120-MHz 601+ processor (a smaller, faster version of the 601), 256K of Level 2 cache, 16 MB of RAM, an 840-MB hard drive, a quad-speed CD-ROM drive, and three NuBus slots. It has no built-in VRAM (users do get the same DRAM-based graphics port found on many of Apple's original Power Mac models). Radius is expecting to offer this configuration



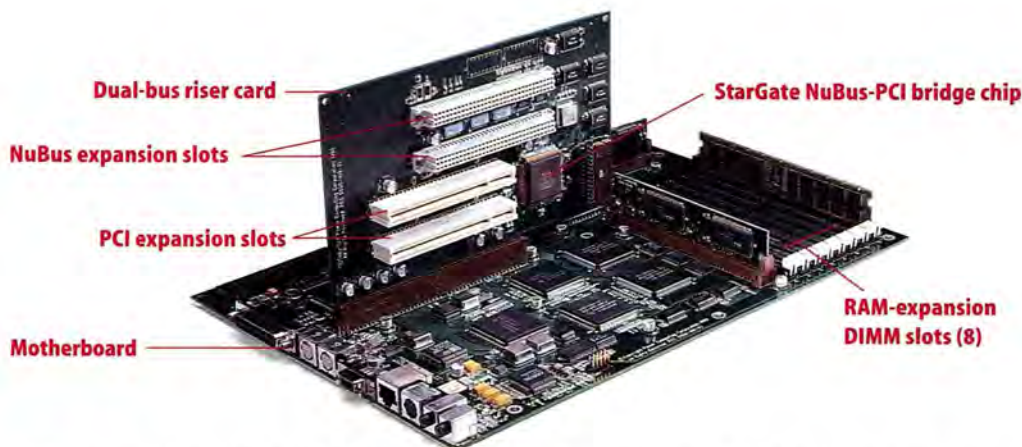
for "under \$3,000" — how far under isn't clear.

To offer users flexibility in choosing configurations, Radius lets Ingram, its exclusive distributor, put bundles together. In its Go Configure program, Ingram offers several bundles preconfigured for specific categories of users. Look for a page-layout bundle, a multimedia-authoring bundle, a Web-authoring bundle, and so on. Neither pricing nor the exact details of these bundles was available at press time. But you can expect to see Radius monitors, accelerated-graphics adapters, and digital-video cards figure prominently in them.

These systems will not only come with a full set of hardware selected for the task at hand but will have the necessary software too. And Radius/Ingram will take an extra step many users will appreciate. The operating system and the bundled applications will be preinstalled and preconfigured — for example, the multimedia-authoring bundle will come with many of the standard Mac OS extensions and control panels (which can wreak havoc during digital-video production) removed or disabled. And the



# Record



Fine. But what if you've already spent thousands of dollars on NuBus add-on cards? Users eager to take advantage of the speed boost provided by the new PowerPC 604-based 8500 and 9500 aren't as enthusiastic about having to buy a whole new set of PCI cards to maintain the functionality they've achieved with NuBus-based Mac systems. And some cards users rely on (digital-sound cards from certain vendors, for example) aren't expected in PCI form till mid-1996.

That's where Power's PowerWave systems come in. They're the ultimate transition machines: They offer both PCI and NuBus slots. Unlike Macs, Power's PowerWave systems do not have any bus-expansion slots built directly onto their motherboards. Instead, a PowerWave motherboard contains a custom slot for plugging in a riser card, which in turn contains bus-expansion slots

(see motherboard photo). Power offers two riser-card options. With all PowerWave systems, you can choose a riser card that has two NuBus and two PCI slots or one that has three PCI slots. And if you change your mind later, when you've finally outgrown the last of your NuBus cards, you can purchase a riser-card upgrade for about \$100.

This feature alone is guaranteed to make Power's new systems popular. No other vendor, including Apple, has plans to build a dual-bus system, although Apple did have a hand in making the Power PowerWave systems possible. Power's new systems contain a special processor-bus bridge chip, called the StarGate, that performs this dual-bus magic. Apple engineers worked closely with Power in developing StarGate, to ensure the integrity, compatibility, and performance of these dual-bus systems. Speaking of performance, although Power could not make

systems available to us for testing in time for this story, the company's engineers assured us that the speed of PCI as well as NuBus cards, even when cards of both types are installed in a dual-bus system, is at least as fast as their speed in comparable single-bus systems.

## The Software Parade

Power has upped the ante on software bundles with its new systems too. Like other Power clones, PowerWave systems will ship with ClarisWorks, Now Up-to-Date, Now Contact, Now Utilities, Quicken, and 250 Bitstream fonts. All PowerWave systems will also include the Nisus Compact word processor; Grolier's Encyclopedia CD-ROM; and Launch, a multimedia magazine on CD-ROM.

Power is also negotiating with several other major software vendors to offer discounts on various software bundles. Microsoft Office, which includes Word, Excel, PowerPoint, and Microsoft Mail, will be one such option. Adobe products — Photoshop, PageMaker, Illustrator, Premiere, and Type On Call — will be available singly or as a group bundle. Power says it will ship the current versions of all the software products it bundles.

PowerWave-system pricing wasn't set at press time, although Power did say that 150-MHz systems will be priced roughly the same as similarly configured 9500s, 132-MHz systems on a par with comparably outfitted 8500s, and 120-MHz systems in line with equivalent 7500s. The company didn't want to talk too much about unannounced six-slot-tower or low-profile desktop models, however. And a cone of silence continues to surround discussion of Power's future multiprocessing systems. But stay tuned to this station. 512-258-1350. / Henry Bortman

CD-ROM that ships with the systems will be capable of reinstalling the included software in its configured-as-shipped state, with a single installer-button click. No other vendor offers this amenity.

Radius has also bumped up the speed of its System 110 (its original desktop-publishing package); it's now a System 120 and contains a 120-MHz 601 processor. Its other specs — 540-MB and 2-GB drives, a Thunder IV GX-1600 accelerated-graphics card, Photoshop 3.0.4, Adobe Type Manager, and Adobe Type Reunion — remain the same. So does its estimated street price of \$8,600.

Conspicuously absent from Radius' recent announcements is a 604-based PCI system. All we can say is, Be patient. And, in case you're wondering, yes, Radius is interested in multiprocessing (MP) too. 408-541-6100.

**DayStar.** Speaking of MP, DayStar's Genesis MP has a new cousin. In addition to the original \$15,000 6-PCI-slot configuration, based on Apple's 9500 motherboard and containing a quad-604/132-processor card, DayStar is now

offering a 3-PCI-slot model, based on the 8500 motherboard. This one is a bit slower, containing a quad-604/120-processor card. And at \$10,000, it costs a lot less, relatively speaking.

Because the new system contains an 8500 motherboard, it provides built-in VRAM stuffed with the maximum complement of 2 MB and includes S-video input/output capability. The 3-slot model contains only 8 RAM DIMM slots, in contrast to the 9500-based system's 12 slots.

DayStar is shipping the 3-slot system with 16 MB of RAM preinstalled; the 6-slot system ships with 32 MB. 770-967-2077.

As the inaugural year of the Mac clone nears an end, there may be fewer than the dozen clone vendors predicted by enthusiastic marketers last winter, but the Mac OS landscape is looking quite interesting. Lest any of your Wintel friends scoff at the volume of total clone sales to date, you might point out that Power Computing, in its first year in business, expects to sell more computers than did Compaq, Dell, and Gateway combined in their initial 12 months. / HB





# Taxing Situations

Intuit's MacInTax suite targets ease of use.

BUSINESS OWNERS may not get a break from taxes this year, but they are getting their own edition of Intuit's MacInTax. MacInTax for Business joins personal-tax programs MacInTax and Block Financial's Kiplinger TaxCut as this year's IRS-busters. All three have Head Start versions available in mid-November, with final versions to follow in mid-January.



The CD-ROM-based MacInTax for Business (\$79) steps business owners through the process of filling out all federal income-tax forms and includes online, context-sensitive links to IRS publications such as *Tax Guide for Small Business* and personal-finance books such as Nolo Press' *Tax Savvy for Small Business*. The sole-proprietorship version is a more business-tax-oriented version of MacInTax; a version for corporations, S-corporations, and partnerships has

25 modules for tax forms for states and cities that have more-complex tax laws (\$50 per module).

For taxpayers who don't need Schedule C, the personal edition of MacInTax will be available in a Deluxe CD-ROM version as well as on floppy disk. The CD-ROM version will include links to pertinent publications, such as *The Money Income Tax Handbook* and *How to Pay Zero Taxes*, as well as video advice from tax experts. State modules are now available for every state that has an income tax. Street prices are \$40 for MacInTax and \$50 for MacInTax Deluxe. State modules are \$25 each, directly from Intuit.

All the MacInTax products let you import information from last year's MacInTax and Quicken but not from QuickBooks. In response to complaints about product problems and service last year, Intuit says it is involving its tax analysts in more steps of the production and plans to double staffing on its customer-service lines. Intuit, 800-964-1040 or 619-453-4446.

Block Financial's tax-preparation software package has a new name, Kiplinger TaxCut, but little else about it has changed. Like MacInTax, it steps you through the process of filling out your 1040 and related federal income-tax forms. State modules are available only for California and New York. Kiplinger TaxCut, \$35; state modules, \$25 each (estimated street). Block Financial, 800-235-4060. / Carolyn Bickford

## MACUSER/ZMAC UTILITY OF THE MONTH



### Mighty Morphin'

THE INSANELY POPULAR 3D Morphing Power Cube is back again this month. This virtual plastic photo cube spins and dances on your screen. Select images of your loved ones, and watch them come to life while your computer sits idle. With version 2.0, you can place images not only on cubes but on spheres too. Your computer will become the center of attention as your loved ones spin, bounce, and morph into one another. Your friends will gasp as the new fractal generator produces mind-blowing animated fractals. Adding to the excitement, 3D Morphing Power Cube supports QuickTime movies and comes to you in brilliant 16-bit color.

Created by Roger Bauchspies, ZMac's 3D Morphing Power Cube 2.0 is available exclusively from ZD Net/Mac beginning November 30 on CompuServe (GO ZMC:MACUSER), eWorld (Shortcut:MacUser), and — for the very first time — on the World Wide Web (<http://www.zdnet.com/~macuser/>). / Sasha Pave

## Apple and Sony Ship Next-Generation PDAs

PLAYING CATCH-UP with each other, Apple and Sony have released upgrades for their handheld personal digital assistants. Apple's Newton 2.0 operating system now ships with the existing Newton MessagePad 120 (\$699), and Sony has released the second-generation Magic Link PIC-2000 (\$899), running the Magic Cap 1.5 operating system.

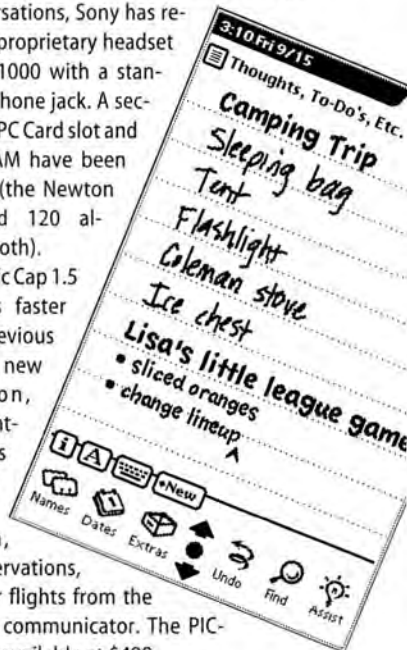
Both these operating systems can now communicate over cellular phones; Newton 2.0 adds fax receive, with an optional fax modem. The Magic Link PIC-2000 includes a built-in send-only fax modem, which now operates at 14.4 kbps. Newton 2.0 also incorporates some of the features included in the original Magic Link, such as support for an optional keyboard.

Newton 2.0 adds better handwriting recognition, improved organizational tools that include an outliner, and eWorld client software (the Magic Link comes with America Online client software). The Newton Backup Utility for Mac and Windows is included with the MessagePad 120.

Sony's Magic Link PIC-2000 now boasts several unique features, such as backlighting you can turn on and off. Sony says the included lithium ion battery lasts six hours with backlighting on and ten hours with it off. The PIC-2000 also now works as a hands-free phone with built-in microphone and speaker. For private conversations, Sony has replaced the proprietary headset of the PIC-1000 with a standard headphone jack. A second Type II PC Card slot and 2 MB of RAM have been added too (the Newton MessagePad 120 already has both).

The Magic Cap 1.5 software is faster than the previous versions. A new application, OAG Flightline, allows you to get flight information, make reservations, and pay for flights from the Magic Link communicator. The PIC-1000 is still available at \$499.

Apple, 408-974-1010. Sony, 408-432-1600; [www.sony.com/SEC/Magic](http://www.sony.com/SEC/Magic). / John Rizzo





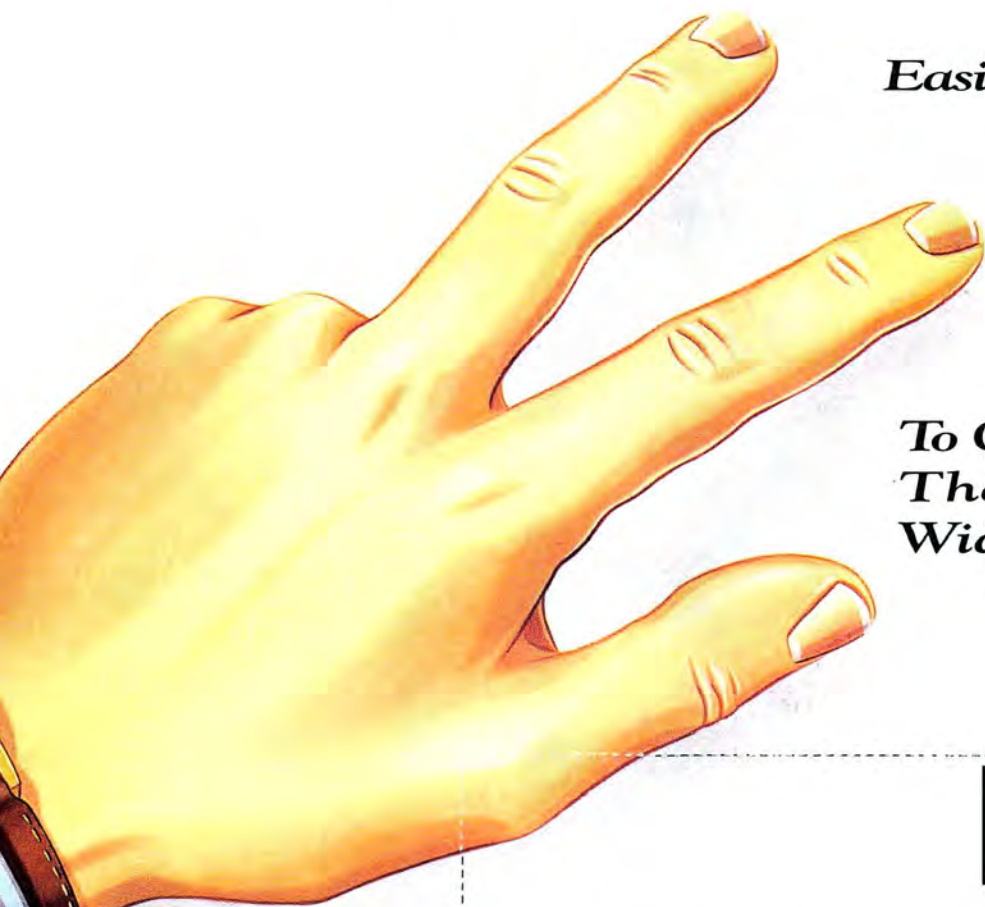
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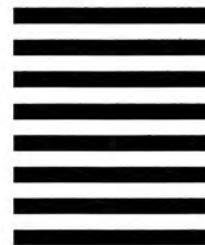
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Lincoln Millstein, *The Boston Globe*, June 15, 1995

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# The Road to Copland

## Apple plots piecemeal approach to new OS.

THE HOOPLA SURROUNDING the release of Microsoft's Windows 95 operating system raises questions about the next major version of Apple's operating system, code-named Copland. Apple plans to take a new approach to its release, rolling out pieces of the OS to developers in stages, thus ensuring a more stable general release.

In the past, Apple has widely distributed to developers first an alpha release and then a successive series of beta releases of new system software. A system release was not considered to have reached the alpha or beta stage until all of its components had reached that stage.

Instead, with Copland, Apple will first provide, in late 1995, what it calls a "tools" release to an extremely limited set of developers. These are the folks who produce the

compilers and other software-development tools that all other developers depend on to create their software. The tools release will contain early versions of Copland's core operating-system features, such as the micro-kernel and the new file system.

By doing this, Apple will help ensure that when it distributes a more general devel-

oper release, early in the spring of 1996, developers will have a working set of tools available to them. The primary goals of this second release will be to enable application developers to check their existing programs for Copland

compatibility and to give extension and control-panel developers a foundation for rewriting their products. All extensions and control panels will need to be rewritten to work with Copland.

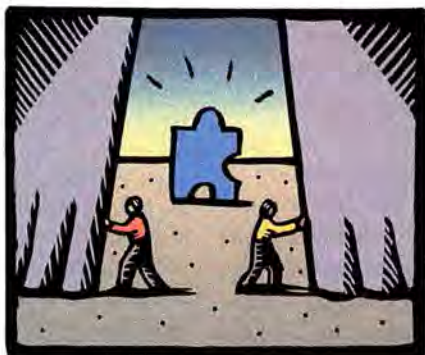


ILLUSTRATION / RANDY LYHUS

Apple is also considering another departure from tradition with Copland. In the past, Apple made new system releases available to customers only when they were ready for commercial distribution. But, intrigued by the success of Microsoft's widespread customer beta seeding of Windows 95, the folks in Cupertino are evaluating the efficacy of following a similar approach with Copland.

And when might customers expect to receive such a release? Or, for that matter, when might Copland go final? Apple won't say. Rather than making predictions it might be unable to live up to, it's decided to delay further prognostication until it sees what problems crop up in the two development releases. This decision, although probably wise, casts doubt on whether the company still expects to deliver Copland by mid-1996, as previously announced.

In the meantime, the OpenDoc SDK (software development kit), which is a major component of Copland, was due to be released in November. That's good news for developers. But mum's still the word on when you'll be able to get OpenDoc in your hands and do something with it, nor is Apple ready to say how OpenDoc will be delivered to customers. / Henry Bortman

### PCI CARDS /

## Windows 95 Comes to the Mac

WINDOWS 95 ON THE MAC may seem redundant, but Orange Micro's latest software makes it possible to run The Other OS on the Mac with the company's OrangePC 486 cards. On the hardware front, the company introduced the first PCI-based PC coprocessor cards for the Mac.

Version 3.8 of the OrangePC driver software lets OrangePC 486-card owners run Windows 95 and OS/2 Warp. The software ships with all new OrangePC cards and is available as a \$129 upgrade for current card owners. The next version of the software, due by year's end, also supports Windows NT.

Orange Micro is coming out with two lines of PCI-based coprocessor cards for distinctly different markets. The current line of OrangePC cards will remain aimed at corporate customers. These PCI cards will have faster graphics, space for more RAM (64 MB), and lower prices than previous NuBus models. The top-of-the-line configuration, which includes Windows 95 software, ships with 16 MB of RAM, a 100-MHz 486 DX4 chip, a 256K Level 2 cache, and 2 MB of VRAM. It costs \$1,786. A low-end model with the same VRAM and cache configurations but a less speedy 66-MHz 486 DX2 and 8 MB of RAM will sell for \$1,266.

Orange Micro also unveiled the first in its MacPC line of consumer-oriented coprocessor cards. MacPC (\$699) is a PCI card containing a 66-MHz 486 DX2, 4 MB of RAM, 16-bit Sound Blaster hardware, and ports for gaming peripherals. 714-779-2772. / JR

### PRINTERS /

## HP's Paper-Eating Monster

THE HUSTLE AND BUSTLE in the home market has led to a flood of inkjet printers — notably from Hewlett-Packard. But HP hasn't forsaken its corporate roots. The LaserJet 5si MX is a heavy-duty, high-capacity printer designed for demanding office environments.

With a rated engine speed of 24 ppm and a paper capacity of up to 3,100 sheets, the \$4,899 5si MX seems more like a photocopier than the 600-dpi laser printer it is. Three input trays are standard, and a fourth 2,000-sheet bin (\$1,299) is sold separately. Maximum paper size is 11 x 17 inches. Paper-handling options include duplex printing (\$669) and a 100-envelope feeder (\$549). On the output side, HP sells the Multi-Bin Mailbox (\$1,889), a 2,600-sheet sorter/stacker apparatus similar to those found on photocopiers.

The PostScript printer is powered by a 40-MHz RISC chip and ships with 12 MB of RAM, upgradable to 76 MB, and HP's Jet-Direct card, for connecting to Ethernet/LocalTalk networks. 800-752-0900. / Pamela Pfiffner





# Return of the PIMs

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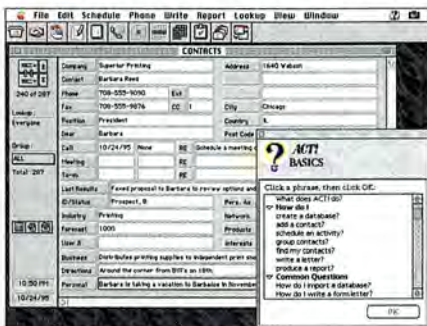
THREE TRAILBLAZERS in the world of personal information managers return this winter with updated versions brimming with new features.

**Full Contact 3.0.** With version 3.0, expected to ship in late November, Full Contact has a new publisher — Pitch Software — but the same development team that created the original product. Among the highlights of this new version are “smart linking” of events, notes, and other items to one another; Macintosh Drag and Drop support; small-workgroup connectivity via publish-and-subscribe; and a built-in word processor with mail-merge functionality. \$199; upgrade from earlier versions, \$40. 408-374-5504.

**TouchBase & DateBook 4.2.** With its third publisher in two years, this PIM tag team moved from Aldus to Adobe before finding a home at Now Software. Unlike Now's Contact/Up-to-Date workgroup combo, TouchBase & DateBook are targeted at individuals and at small

businesses. Version 4.2 gets a big speed boost, thanks to the addition of PowerPC-native code. A CD-ROM version of the product includes a load of reference information (all in TouchBase & DateBook format) geared for travelers, from city guides to a directory of toll-free telephone numbers. \$50; CD-ROM version, \$70; upgrade from any previous version, \$20; CD-ROM upgrade, \$30. 800-544-2599 or 503-274-2800.

▼ **ACT! 2.5.** Unlike its brethren, Symantec's ACT! hasn't changed publishers, but ACT! 2.5 does offer a changed interface, which allows users to open multiple windows simultaneously. A one-button data-synchro-



nization feature has been added to make reconciling databases on desktop and portable machines easier. ACT! 2.5 also supports the attachment of files to contact records via drag-and-drop and in-

cludes an Apple Guide-based quick-start guide. \$170; upgrade, \$50. 800-441-7243 or 503-334-6054. / Jason Snell



CD-ROMS /

## Louvre Story

TALENT YOU'RE BORN WITH, but culture and taste can be acquired. These CD-ROMs may prepare you for even the snootiest cultural affairs.

▲ **Le Louvre.** This CD-ROM salute to the world's most famous art museum has plenty going for it: No busloads of tourists mobbing the Mona Lisa, a stylish interface as easy to navigate as *le métro*, and a generous helping of the Louvre's most famous paintings. You can survey the Louvre's collection by time period, artist, school, or even actual location in the museum. The real Louvre has a lot more paintings, the Venus de Milo, an underground shopping mall, and \$8 *fromage* sandwiches. But at \$49.95, the disc wins on affordability, especially after you figure in airfare. Visit both if you can. BMG Interactive Entertainment. 212-930-6768.

**Discovering Shakespeare.** Just across the Channel, England's most famous cultural treasure — William Shakespeare — is still waiting for the definitive CD-ROM treatment. This Bard disc is billed as an “encounter with Shakespeare you'll never forget.” When you see the interface, you might wish you could. Nevertheless, there's an awful lot of information about Shakespeare's life, times, and lawsuits but, alas, none of his plays. \$29.95. IVI Publishing. 800-432-1332. / James Bradbury

INPUT DEVICES /

## The Gyroscopic Mouse

GYROSCOPES AREN'T just for navigating military ships anymore. Gyraton uses these rotational devices to control your Mac's cursor — from distances of up to 75 feet and from behind barriers, such as below your desk.

Like a conventional mouse, Gyraton's GyroPoint Desk (street-priced at about \$100) connects to your Mac's ADB port to work on land (or mouse pad) but also in the air as a presentation pointing device. The GyroPoint Pro (street-priced at about \$200) is designed for presentations, so there are no cords attached.

Gyraton says these gyroscopic pointing devices have a greater range of motion (360 degrees) than infrared devices. That's because the GyroPoint isn't limited to line-of-sight contact. The gyroscopes inside the pointing device sense the motion of your hand. Then the RF radio built into the nose sends a signal to a receiver, which signals the Mac to move the cursor appropriately. 800-316-5432 or 408-255-3016. / Nancy Peterson

## Call It the ScanPort?

LOOK FAMILIAR? Hewlett-Packard tends to seize opportunities when it sees them, so it's teamed up with Visioneer for HP's next generation of ScanJet scanners. The ScanJet 4s (top) is a personal sheetfed scanner modeled on Visioneer's popular PaperPort (see New on the Menu, December '95, page 49). The ScanJet 4c (bottom) is a desktop flatbed scanner that offers the same features as the previous ScanJet 3c but adds PaperPort 3.0 software. The software allows users of either scanner to apply OCR (optical character recognition) to scanned files on the fly and to organize and share documents via links to other applications.

The ScanJet 4s (\$429 list) offers 200-dpi resolution (400-dpi resolution in enhanced mode) and 4-bit grayscale. The 600-dpi ScanJet 4c (\$1,179) offers a top resolution of 2,400 dpi and 30-bit color and ships with Adobe Photoshop LE and Caere's OmniPage LE OCR software. An automatic document feeder (\$559) and a transparency adapter (\$759) are available as options. 800-752-0900. / Pamela Pfiffner







# Yield to Temptation

The XCLAIM™ GA True Color Graphics Accelerator from ATI reveals a vista of 16.7 million accelerated colors at resolutions you'll be powerless to resist – up to 1600x1200. And you'll experience performance up to eight times faster than unaccelerated graphics\*. The fruit of ATI's years of expertise and proven track record in PCI technology, XCLAIM GA is designed for all PCI-based Power Macs.

In fact, it's based on the same graphics accelerator technology Apple chose for some of their new PCI Power Mac 9500 series. You'll enjoy Mac-specific features like AppleGuide on-line help, as well as unparalleled customer support and a tantalizing price – only \$449 for 2MB, \$649 for 4MB, and \$249 for a 2MB memory upgrade module.

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## NEW & NOTABLE

### HARDWARE /

▼ **Apple Multiple Scan 1705 and Multiple Scan 20.** Similar to Apple's AppleVision 1710AV but without the built-in speakers, the 17-inch Multiple Scan 1705 (\$819) offers resolutions of up to 1,024 x 768 pixels and a .28-mm dot pitch in a shadow-mask tube. Geared for publishing professionals, the newly updated 20-inch Multiple Scan 20 (\$2,149) features a top resolution of 1,280 x 1,024 pixels and a .26-mm dot pitch in an aperture-grille tube.

On-the-fly resolution switching and user-selectable white points are also featured. 800-538-9696 or 408-996-1010.

**Tamarack ArtiScan Pro.** Designed for home or general office use, these three flatbed scanners capture 24-bit color. The ArtiScan Pro 6000C (\$469) offers a resolution of 300 x 600 dpi, the ArtiScan Pro 8000C (\$599) offers a resolution of 400 x 800 dpi, and the ArtiScan Pro 12000C (\$699) offers a resolution of 600 x 1,200 dpi. 714-744-3979.

**nView GraphX Z350.** This active-matrix color LCD panel can display 1.4 million colors at a resolution of 1,024 x 768 pixels or at a pixel-compressed resolution of 1,280 x 1,024 pixels. Included is a 24-button remote control. Meant to be used atop a conventional overhead projector, the GraphX Z350 weighs 5 pounds. \$9,495. 800-736-8439 or 804-873-1354.

**PixelCraft Pro Imager 8100 and 8200.** These two 36-bit color scanners can scan paper of up to 11 x 17 inches in size. Unlike the Pro Imager 8100 (\$11,995), the Pro Imager 8200 (\$12,995) includes an integrated transilluminator, for scanning transparencies as large as 8.5 x 12 inches. 800-933-0330 or 415-562-2480.

**APS Q 2210.** This 3.5-inch hard drive has a capacity of 2 GB, a sustained transfer rate of 3.91 MB per second, and an average seek time of 5.3 milliseconds. \$700 internal, \$800 external. 800-235-2753 or 816-483-6100.

**Samsung SyncMaster 6Ne.** Targeted at small offices and families, this 17-inch color monitor offers on-screen controls and a maximum resolution of 1,024 x 768 pixels. \$699. 800-933-4110 or 201-229-4000.

**Supra SupraFAXModem 288PB.** Users of the PowerBook 100 series can ramp up to high-speed online access with this V.34 (28.8-kbps)

modem. Upgradable via built-in flash ROM, the SupraFAXModem 288PB also offers 14.4-kbps fax capability. \$270. 306-604-1400.

### SOFTWARE /

**4th Dimension 3.5.** The latest version of this popular relational-database program includes optimization for the PowerPC 604 chip, the addition of a freely distributable run-time version of the application, and improved import and export capabilities. \$895; upgrade, \$295. ACI US. 408-252-4444.

**Common Knowledge 3.0.** Extending its reach by adding TCP/IP-network support, Common Knowledge lets Mac, Windows, and DOS users create, modify, and distribute documents jointly across networks. New in version 3.0 is the ability to automatically file documents in specific folders, a read-only option for documents, and background updating of documents as they're changed elsewhere. Price ranges from \$57 to \$79 per user. ON Technology. 617-374-1400; info@on.com.

**WebWhacker.** Have you ever seen a World Wide Web site you wanted to save for later reference? WebWhacker downloads HTML files and associated images from a Web site and then modifies the files so that they point at one another, not back out onto the Web — creating a navigable copy of the site on your hard disk. \$50. The ForeFront Group. 800-867-1101; info@ffg.com.

**WebMaker 2.0.** This utility converts any documents you have created in FrameMaker into HTML files that are ready for use on the World Wide Web. FrameMaker tags are converted into HTML styles, graphics are transformed into GIF images, and hyperlinks are generated automatically. \$99. Harlequin. http://www.harlequin.com.



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## MACINTOSH PRICE INDEX

THE UNITED COMPUTER EXCHANGE index reflects average sales prices of new and used Macs as of October 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
<b>Classic II (4/40)</b>	•	\$325
<b>LC III (4/80)</b>	•	\$400
<b>Performa 5215 CD (8/1GB)</b>	\$2,299	\$1,650
<b>Performa 6220 CD (16/1GB)</b>	\$2,499	\$1,900
<b>Ilisi (5/40)</b>	•	\$300
<b>Ilci (5/80)</b>	•	\$450
<b>Ilfx (8/160)</b>	•	\$550
<b>Quadra 605 (4/80)</b>	•	\$500
<b>Quadra 610 (8/160)</b>	•	\$650
<b>Quadra 630 (4/250)</b>	•	\$700
<b>Quadra 650 (8/230)</b>	•	\$1,100
<b>Quadra 660Av CD (8/230)</b>	•	\$975
<b>Quadra 700 (8/230)</b>	•	\$875
<b>Quadra 800 (8/230)</b>	•	\$1,300
<b>Quadra 840Av CD (8/230)</b>	•	\$1,750
<b>Quadra 900 (8/230)</b>	•	\$1,200
<b>Quadra 950 (8/230)</b>	•	\$1,600
<b>Power Mac 6100/66 CD (8/350)</b>	•	\$1,125
<b>Power Mac 7100/80 CD (8/700)</b>	•	\$1,650
<b>Power Mac</b>		
<b>7200/90 CD (8/500)</b>	\$1,899	\$1,400
<b>Power Mac</b>		
<b>7500/100 CD (16/1GB)</b>	\$2,999	\$2,200
<b>Power Mac 8100/100 CD (16/1GB)</b>	•	\$2,550
<b>Power Mac 8100/110 CD (16/2GB)</b>	•	\$3,000
<b>Power Mac</b>		
<b>8500/120 CD (16/2GB)</b>	\$4,499	\$3,900
<b>Power Mac</b>		
<b>9500/132 (16/2GB)</b>	\$5,299	\$4,400
<b>PowerBook 145B (4/80)</b>	•	\$700
<b>PowerBook 150 (4/120)</b>	\$999	\$700
<b>PowerBook 165 (4/80)</b>	•	\$975
<b>PowerBook 165c (4/80)</b>	•	\$1,100
<b>PowerBook 170 (4/80)</b>	•	\$875
<b>PowerBook 180 (4/80)</b>	•	\$1,250
<b>PowerBook 190cs (8/500)</b>	\$2,199	\$1,700
<b>PowerBook 520 (4/160)</b>	•	\$1,275
<b>PowerBook 520c (4/160)</b>	\$1,899	\$1,500
<b>PowerBook 540 (4/240)</b>	•	\$1,500
<b>PowerBook 540c (4/320)</b>	\$2,799	\$2,200
<b>PowerBook 5300cs (8/500)</b>	\$2,799	\$2,200
<b>Duo 250 (4/200)</b>	•	\$1,100
<b>Duo 280 (12/240)</b>	•	\$1,950
<b>Duo 280c (4/320)</b>	\$2,949	\$1,975
<b>Duo 2300c (8/750)</b>	\$3,499	\$2,900

• = discontinued model

For more pricing information on these and other models, call 800-755-3033 or 770-955-0569, or visit <http://www.uce.com>. And find it on ZD Net/Mac, in Library 1 (Special Reports) of the MacUser Forum (GO ZMC:MACUSER). On eWorld, go to shortcut MACUSER, in MacUser Software Library:MacUser Special Files.



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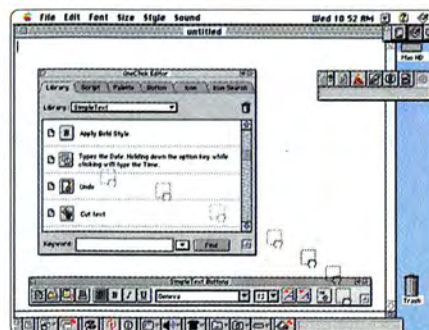
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Suggested retail \$129 • For more info visit <http://www.westcodesoft.com> • Minimum requirements: Macintosh with 68020 processor or higher, 4 MB of RAM, System 7.0 or later. OneClick is a trademark of WestCode Software, Inc. Macintosh is a trademark of Apple Computer, Inc. All other brands or product names are trademarks or registered trademark of their respective holders, and you know who they are. © 1995 WestCode Software, Inc. CIRCLE 33 ON READER SERVICE CARD





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# REVIEWS & Quick Clicks



## HP CopyJet M / HP rolls a color inkjet printer and copier into one affordable device.

VERSATILITY is valued as highly in business as it is in the entertainment field. With this in mind, Hewlett-Packard has introduced a new kind of output device that's sure to win applause from busy workgroups. Street-priced at about \$3,100, the HP CopyJet M teams a capable color inkjet printer with a built-in flatbed scanner, enabling it to serve as both a printer and a color copier.

### Two for One

The new CopyJet M is as easy to set up and use as any Hewlett-Packard color inkjet printer. The difference is that a scanning device sits on top of the printer. In order to install the four ink cartridges — cyan, magenta, yellow, and black — you simply push a button on the side of the CopyJet M and the scanning component lifts up,

allowing you to easily install the cartridges inside.

A long, narrow control panel in the shape of a quarter moon snaps onto the front of the CopyJet. Buttons on the panel let you select various options for printing and copying. There's an adjustable 180-sheet tray for letter-, legal-, or A4-sized pages. Unfortunately, the CopyJet M can't print labels or envelopes.

Built to accommodate the needs of mixed Mac and PC workgroups, the CopyJet M is equipped with 6 MB of memory, a parallel port, and an HP JetDirect print-server card

that allows you to connect the device to either an Ethernet or a LocalTalk network. In addition, the CopyJet M comes with Adobe PostScript Level 2, enhanced PCL 5, and the HP-GL/2 plotting language and

can automatically switch from one printer language to another. However, when the printer switches from PostScript to PCL 5 or vice versa, any fonts you've downloaded to the printer are erased — this is especially annoying, because the printer lacks a SCSI port, so you can't connect a hard drive for storing downloaded fonts. A total of 35 Adobe Type 1 fonts are provided with the CopyJet M.

For printing, the CopyJet M is very similar to the discontinued HP DeskJet 1200C/PS inkjet printer. It prints color graphics at 300 dpi and black text and line art at 600 x 300 dpi. The printer software, a tweaked version of Apple's LaserWriter driver, allows you to select the print quality (Fast, Normal, or Presentation), paper type (plain, coated, glossy, or transparency), and dither type (scatter or cluster) for graphic images.

If you have Apple's QuickDraw GX extension installed, you can take advantage of HP's proprietary ColorSmart Technology, which lets the printer make smart decisions about color and dithering *for you*, based on each element — text, graphics, or photographic images — on a page.

### Taking Some Heat

Like the HP DeskJet 1200C/PS and the recently introduced DeskJet 1600CM, the CopyJet M has a built-in heater that dries ink quickly, minimizing paper wrinkling. The black-ink cartridge is rated for 900 pages at 5-percent coverage on letter-sized paper. For graphics, each cyan, yellow, and magenta cartridge is rated at 1,850 prints at 15-percent coverage. Each ink cartridge has a gauge, so you can easily see how much ink it contains, but you have to open the printer and look inside to see the gauges. It would be nice if the software warned you — before you started to print — when cartridges were running low.

At 7 cents per plain-paper copy, using the CopyJet M is a cheap alternative to using an outside copy center. Employing the CopyJet M as a copier is a no-brainer: You simply place a document on the scanner's glass surface and select the paper type (plain, inkjet,

#### REVIEWS RATING KEY

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



## DO YOU COPY?



The HP CopyJet M's sleek control panel makes copying documents a breeze. If you're not happy with the results you get with the built-in quality settings (to the right of the LCD), you can fine-tune the ink

intensities and the vividness of the color as well as adjust the amount of red, green, and blue. Copied documents on plain paper cost only about 7 cents each.

or transparency), the number of copies you want (99 maximum), zoom options, and copy quality.

The CopyJet M offers three quality settings: One is designed to accurately duplicate light colors, the second is for copying photographs, and the third produces the highest-quality color. If you decide you want to fiddle with ink intensities; adjust the amount of red, green, or blue; or change the vividness of the color, you can. The controls also let you reduce or enlarge images from 50 to 400 percent in 1-percent increments; eight handy preset percentages are available. When you're done, simply push the Start button and the CopyJet M duplicates your document at 300 dpi. Although the CopyJet M can't scan documents larger than 8.5 x 14 inches, its hinged removable cover lifts to accommodate books and other thick documents or objects.

While the CopyJet M is processing a print job, you can go ahead and set up a copy job, using the front panel. As soon as the print job finishes, the CopyJet M will automatically switch over to Copy mode and take care of your copy job — pretty slick.

### Print and Copy Quality

We noted a distinct difference between the CopyJet M's output quality for printed and copied documents. The quality of printed documents was good for plain paper and even better for coated stock and glossy media. Colors were vibrant, although not as vivid as those produced by the DeskJet 1600CM. For black text and line art, the CopyJet M employs HP's REt (Resolution

Enhancement technology) to produce acceptable results, although again, not as impressive as the DeskJet 1600CM's crisp, sharp characters.

Our print-quality ratings are relative to results with other inkjet printers. Inkjet printers are the most affordable color printers, but you should consider quality issues when you compare their output with that of more-expensive color printers based on laser and solid-ink technology.

Although the CopyJet M's copied color documents don't look as good as the printed ones, the quality of photographic images is an improvement over what you get from traditional analog copiers. Still, quality suffers somewhat, due to the usual problems associated with inkjet technology. For example, we printed a color Adobe Illustrator file and then copied the results onto plain paper. Colors on the printed page were sharp and vivid, but the copied output looked dull by comparison. And a blue object actually appeared purple on the copied document — a common problem with inkjet devices when they combine cyan and magenta to try to make blue.

Copied text looks surprisingly good, thanks to HP's text-enhancement technology, which looks for text and treats it differently from other elements on the page. Although copied text isn't as sharp as printed text, it's dense and quite legible.

### Patience Required

You'll like the convenience and cost savings you get with the CopyJet M's copying capability, but the device is no speed demon. To

make ten copies of a single letter-sized page of 12-point text, the CopyJet M took more than 3 minutes. At the highest-quality setting, it took nearly twice as long for the same job and the resulting text looked darker but not better. To make ten copies of a color document, the CopyJet M took 11 minutes in Normal mode.

### The Bottom Line

Innovative and affordable, the HP CopyJet M color copier/printer kills two birds with one stone. It offers such a well-conceived and seamless integration of HP's scanner and inkjet-printer technology that the Hewlett-Packard folks must be wondering why they didn't think of it before. Because of the speed and quality limitations of inkjet technology, however, the best approach is to regard the CopyJet M as a secondary output device for office environments rather than as a one-stop solution for all of a workgroup's color-printing and -copying requirements. / Tony A. Bojorquez

### HP CopyJet M

Price: \$3,649 (list).

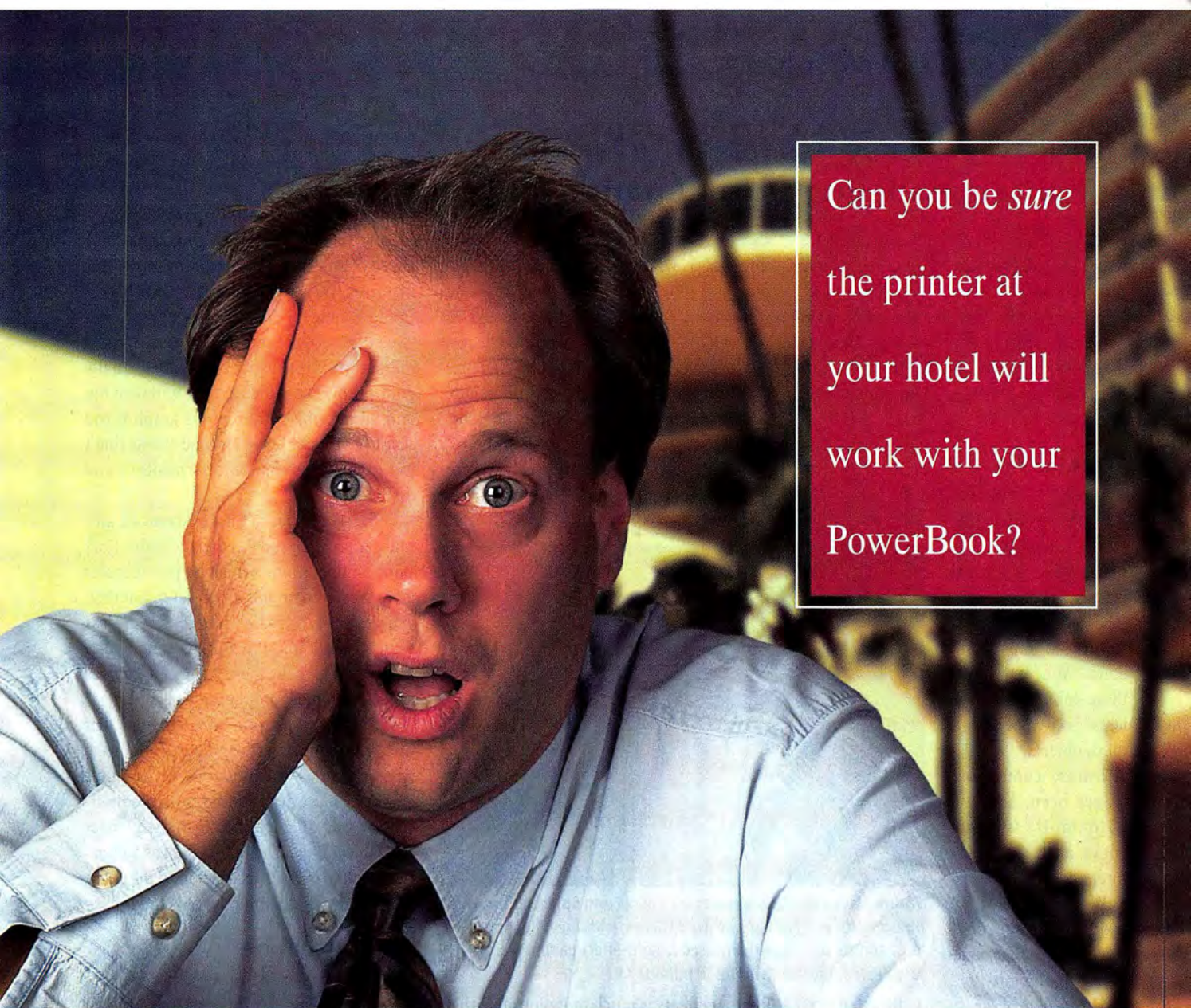
**Pros:** Affordable printing and copying on plain paper. Well-designed integration of printer and scanner. Good, text quality for copied documents.

**Cons:** ColorSmart requires QuickDraw GX. No SCSI port. Poor duplication of blue in copied documents. No support for envelopes and labels.

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

**Reader Service:** Circle #401.





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## Infini-D 3.0 / Easy 3-D package features enhanced modeling and animation tools.

ARTISTS WHO WANT to break into the world of 3-D graphics and animation can dive right in with Infini-D 3.0. The upgrade has more-powerful animation tools, more modeling tools, and a renovated interface that bolsters its continuing strengths: ease of use and an extensive feature set for the price.

### Close Curves

The biggest improvement to Infini-D is the addition of spline-based modeling tools, which provide an impressive level of control for creating objects that can twist, taper, and bend. You can turn these spline-based objects into polygonal-mesh objects.

Texture control has always been, and still is, Infini-D's strength above all else. As before, you can layer an unlimited number of textures on your models. Textures can comprise single or layered PICT still images (with or without embedded alpha channels), PICS sequential images, and QuickTime movies. You can also apply an image as a decal on your textured object. This ability is useful, especially considering Infini-D's new spline modeling tools, because a decal will flex more realistically along an object's surface when you distort the object whereas standard texture maps can give you undesirable results.

Infini-D's interface has been improved throughout. In the modeling-window toolbox, Infini-D 3.0 has tools color-coded by function — shape tools, for instance, are blue and links tools green.

You can now use distant lights as well as spot and point lights. Distant lights give you a diffuse lighting effect that simulates natural light sources. You can add gels and masks to any light source. The gels let you project an image onto the surface of an object and the scene around it. To create a

shadowy effect such as light coming through a window frame, you can use masks to block part of the light. However, you cannot animate the gels or masks, so you can't, for instance, create the effect of light coming through an opening curtain.

In the new floating light-control palette, you can define light-effect parameters, such as drop-off distance, by clicking and dragging control points around graphic representations of your light. This way of creating



**Spline-based modeling tools;** the SplineForm object library, with objects such as spirals and twisted shapes; and a new floating light-control palette with interactive light-effect parameters are just a few of the new features in Infini-D 3.0.

lighting effects is much more intuitive than before. In the previous version, you had to type numerical values into the Light Info dialog box; however, if you prefer, you can still do so.

### Time, Space, and Action

The event-based animation sequencer of Infini-D is essentially unchanged, although Infini-D 3.0 is packed with new animation features. You can now animate ribs and rails within lofted, lathed, and extruded objects. This lets you create, say, a lizard that breathes in and out realistically as it curves itself around a corner — in other 3-D modeling programs, you may have to change the cross sections in your object for the same effect and can end up with some unrealistic distortion. However, Infini-D doesn't have inverse kinematics, the ability to define movement parameters for joints in an object. As a result, its abilities are limited

for the kinds of advanced character animations you can create with a 3-D-animation program that does support inverse kinematics, such as The Valis Group's PixelPutty.

New velocity charts let you control the speed of objects between time events — for instance, you can gradually slow down a rotating sphere by reducing its velocity between subsequent sets of time events in the animation. The velocity charts are virtually goof-proof: The velocity curve will turn red and drop to the bottom of the graph if you define a velocity between time events that's too extreme for the object's position and distance.

Infini-D 3.0 doesn't have advanced animation features such as Strata Studio Pro's Boolean operations, which let you subtract an object from or add an object to another. True, Infini-D costs hundreds of dollars less than Strata Studio Pro, but the state of 3-D art is likely to make these advanced features standard in most animation packages.

Infini-D 3.0 has some strange bugs. For instance, some objects and parts of objects randomly grew to ludicrous proportions and one object disappeared from the modeler but was still identified in the Sequencer and Object Floater windows. Just as this article went to press, Specular found the cause of these problems and released a bug fix.

### The Bottom Line

Infini-D 3.0 isn't the most comprehensive 3-D package you can buy, but it is a robust introduction to 3-D art and animation. Furthermore, Specular is already working on version 3.1, which takes advantage of Apple's new QuickDraw 3D technology. This will add the ability to drag and drop textures from the Finder and should bring about an appreciable speed increase. / David Biedny and Nathan Moody

### Infini-D 3.0

**Price:** \$899 (list).

**Pros:** Easy to use. Extensive feature set for its price. Spline-based editing. Superb texture control. Interactive light controls. Animatable ribs and rails. Velocity control.

**Cons:** No inverse kinematics or Boolean operations. Minor bugs.

**Company:** Specular International, Amherst, MA; 413-536-3100.

**Reader Service:** Circle #402.



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## SyQuest EZ135 Drive / Removable-cartridge drive plays second fiddle.



HOPING TO GRAB its share of buyers shopping for an affordable removable-cartridge drive, SyQuest has introduced the \$239.95 EZ135 Drive, which follows closely on the heels of Iomega's highly acclaimed \$199 Zip drive (see review, July '95, page 40). What made the Zip such a hit was not only its low cost and sleek design but also its ease of use and rugged media. The EZ135 Drive is a bit more complicated to use than the Zip, though, and its media aren't as damage-proof. That makes it a less attractive, although still viable, choice for consumers looking for an inexpensive backup, data-exchange, and secondary-storage device.

### EZ Price

If you've priced other removable-cartridge systems, you can appreciate just how affordable both the EZ135 Drive and the Zip are. Magneto-optical drives and standard

SyQuest drives, for example, can cost \$350 to \$900 apiece, and their cartridges are \$35 to \$50 each. The cartridges for the EZ135 Drive and the Zip, by contrast, are as attractively priced as the drives themselves: A 135-MB cartridge for the EZ135 Drive costs about \$20; the same amount of money will buy the 100-MB cartridge the Zip uses.

However, the cartridges for the EZ135 Drive use different media from those for the Zip. Inside the EZ135 Drive cartridges are rigid Winchester-disk-style platters. In our tests, the cartridges held up well to environmental extremes of heat, dampness, and cold, but they didn't fare as well in our drop tests as the Zip cartridges, which use more-flexible media. We managed to damage an EZ135 Drive cartridge by dropping it several times on the floor.

To be fair, the EZ135 Drive cartridges do come with cushioned envelopes that make it nearly impossible to damage them. But

when you slip a cartridge into the envelope, you can't fit the package into your shirt pocket, which means it's more than likely that a good number of cartridges will be traveling around without their envelopes. By contrast, we made unprotected Zip cartridges ricochet off the walls and floor and every one came through with flying colors.

The EZ135 Drive also falls short of the Zip for usability. To dismount a Zip cartridge, you simply drag its icon to the Trash and the cartridge pops out of the drive. With the EZ135 Drive, you drag the icon to the Trash, push the release button on the front of the drive, wait for the lock lever to disengage, and then push the lever to force the cartridge out of the drive. The EZ135 Drive is also a bit blocky compared to the slim, trim, one-pound Zip, and it weighs twice as much.

### EZ Speed

One advantage the EZ135 Drive *does* have over the Zip, however, is speed. In our MacBench 2.0 Disk Mix test, the EZ135 Drive was more than twice as fast as the Zip. But for everyday common tasks, you're not likely

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CIRCLE 143 ON READER SERVICE CARD



to experience such a big speed difference — for example, an 18-MB file took about 21 seconds to copy to the EZ135 Drive and about 31 seconds to copy to the Zip.

SyQuest's new drive gets along well with existing hardware. The EZ135 Drive cartridge mounted without a hitch as soon as we connected the drive and turned on our test machines. We tested the drive with both

a Quadra 950 and a Power Mac 9500. Cartridges written to by one EZ135 Drive were readable by another. And we had no problems connecting the drive to complex SCSI chains. Surprisingly, however, the EZ135 Drive cartridges aren't compatible with SyQuest 270-MB drives, even though the cartridges are exactly the same size as those used by SyQuest's heftier models.



**The latest entry** into the inexpensive-removable-cartridge-drive arena, the SyQuest EZ135 Drive is speedy but not as easy to use nor as rugged as the competition.

To sweeten the deal for potential buyers, SyQuest offers an impressive collection of free software on the EZ135 Drive cartridge included in the package. La Cie's Silverlining Lite manages Mac hard disks by mounting, unmounting, formatting, and erasing volumes. Dantz's DiskFit Direct backs up your hard drive to your EZ135 Drive, and Leading Technology's PowerMerge Limited Edition synchronizes backed up files. Two Xaos Photoshop plug-ins are also included — four Terrazzo textures as well as a complete version of Paint Alchemy 1.0.2. Last, buyers get a four-level, two-player version of the game Marathon.

## The Bottom Line

Introducing the second product into a brand-new category has an advantage: There's time to learn from your predecessor's mistakes. However, although the SyQuest EZ135 Drive is, as promised, faster than the Zip, speed isn't everything, particularly in the world of consumer-oriented storage products. The new class of inexpensive removable-cartridge drives must, above all, be rugged, portable, and completely intuitive to use. On these counts, we give the Zip the nod, but the EZ135 Drive finishes a strong second. / Nathan Garcia

## SyQuest EZ135 Drive

**Price:** \$239.95; 135-MB cartridge, \$19.95 (list)

**Pros:** Inexpensive. Versatile. Good performance.

**Cons:** Cartridges somewhat fragile. Drive twice as heavy and not as intuitive to use as the Zip.

**Company:** SyQuest Technology, Fremont, CA; 800-245-2278 or 510-226-4000.

**Reader Service:** Circle #403.

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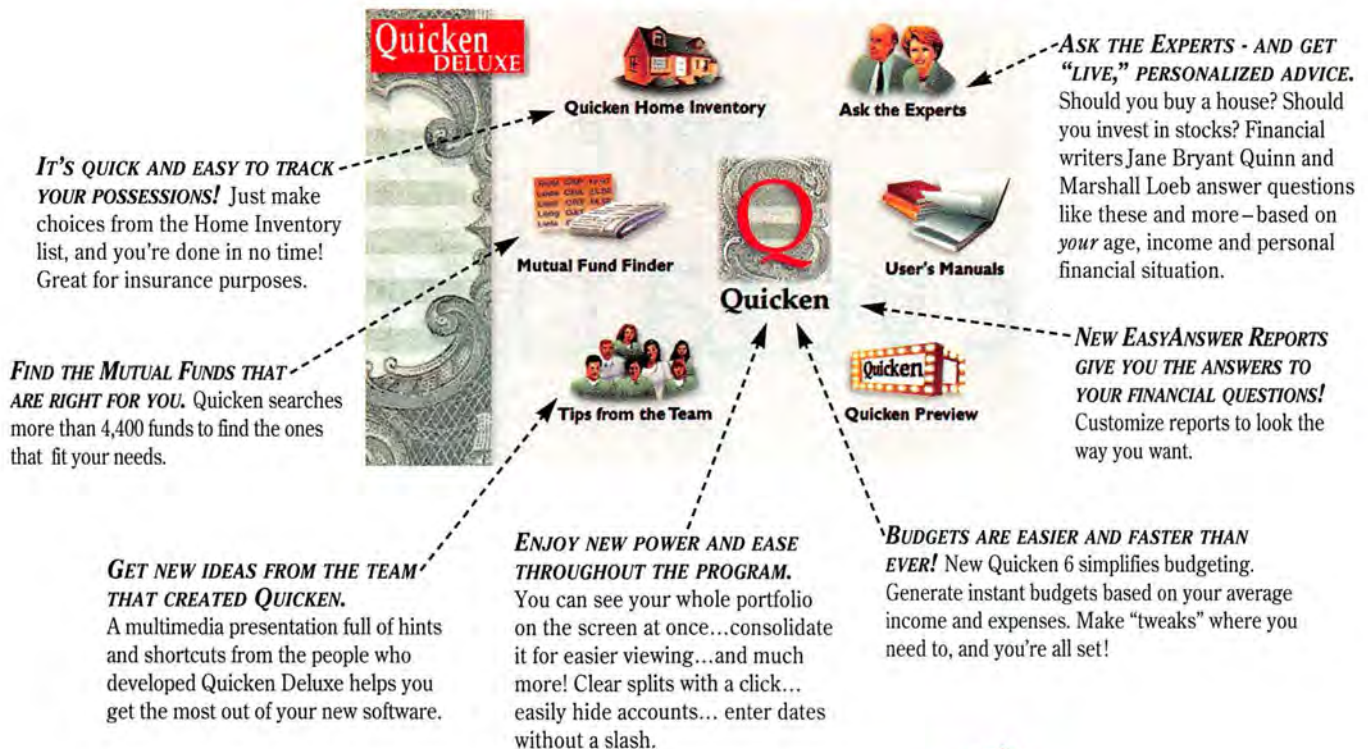
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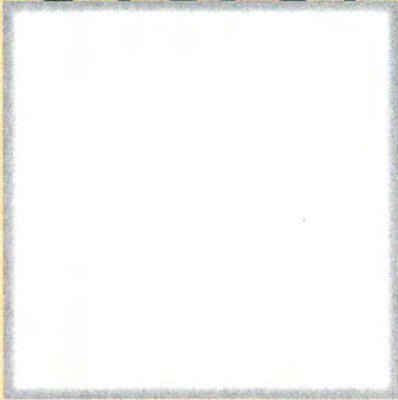
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## Digital Chisel 2.0 and HyperStudio 3.0

### Educational-authoring tools go to the head of the class.

INTERACTIVE MULTIMEDIA applications have obvious benefits for teachers and educators, but sophisticated authoring tools, such as Macromedia Director, come with an intimidating learning curve. Two easy-to-learn authoring programs that don't require any scripting and are tailored specifically for educators have recently been updated. Although the similarities outnumber the differences between Pierian Spring's Digital Chisel 2.0 and Roger

buttons that register either "correct" or "incorrect" when students click on them. Digital Chisel's built-in database tracks and scores each student's performance. Version 2.0 also gives you the option of sending the results directly to Pierian Spring's more comprehensive Digital Campus courseware. Digital Chisel comes with a slew of quiz-oriented templates, including ones for true/false, multiple-choice, and picture-matching tests.

Digital Chisel has sophisticated facilities for creating buttons. You can make buttons out of icons and text, enhance them with 3-D shadows, and drag them to different locations. With the program's elegant object-information palette, you can designate as many as 24 sequential events to be triggered when a user clicks on an object.

Rudimentary painting and drawing tools are useful for creating simple backgrounds for your Digital Chisel screens as well as graphic objects that can serve as buttons. If you want so-

phisticated artwork, however, you'll have to import images created in other programs. Basic frame- and path-animation tools are also included.

To create titles and captions, you build text fields for each screen. Hypertext links can take users from words or phrases to other screens or trigger a variety of events. If you've set up a hypertext link or a button that takes users from one screen to another, you can choose from 18 basic transition effects included with the program. Unfortunately, you can't customize the effects or create your own from scratch.

Digital Chisel events include QuickTime movies, PICS animations, screen-color cycling, pre-recorded sounds, video tracks played on a connected laserdisc

player, audio tracks played on a connected CD player, or spoken text using the Macintosh Speech Manager. You can also have the program trigger one or two events automatically when a user enters a given screen.

Object libraries provide an extensive collection of prebuilt sounds, pictures, and movies you can use in your screens. A nice feature is the ability to simply drag an object from a library to a screen. A CD-ROM filled with clip art, animations, sounds, and other resources also ships with the program.

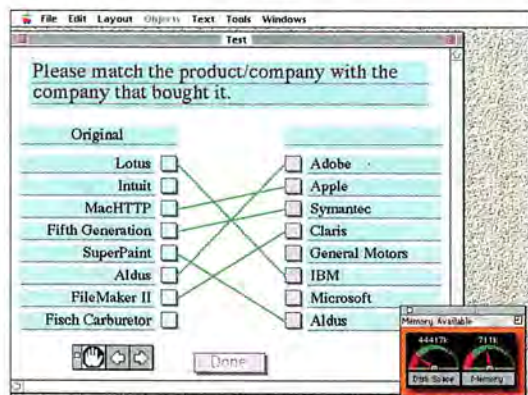
Digital Chisel has one serious interface problem. The Undo command undoes not only your last action but also every action since your last save.

### HyperStudio 3.0

Like Digital Chisel, the PowerPC-native HyperStudio uses a slide-show metaphor. HyperStudio documents are called stacks, and each stack is made up of individual cards. Although HyperStudio's interactive-testing tools can't match Digital Chisel's, HyperStudio really shines at bringing video and other jazzy multimedia resources into the interactive lessons you create.

In addition to creating buttons and objects on HyperStudio cards, you can define "hot" areas that trigger events — something you can't do with Digital Chisel. You can also have context-sensitive pointers appear when users move the mouse over hot areas. The events HyperStudio can trigger are also more varied than Digital Chisel's.

For example, not only can you incorporate existing QuickTime movies into HyperStudio cards but — from directly within HyperStudio — you can also digitize



**Digital Chisel's strength** is its interactive-test facilities, which include tools for tracking each student's performance.

Wagner Publishing's HyperStudio 3.0, each program has distinct advantages, depending on the types of applications you want to develop for your students.

### Digital Chisel 2.0

Digital Chisel uses a slide-show metaphor. Each document you create, called a project, comprises multiple screens, and students navigate through the project one screen at a time. Each screen is made up of a background and objects, such as text fields, buttons, pictures, and QuickTime movies.

The latest version of Digital Chisel is PowerPC-native. Sounds can now play concurrently with other events, and you can enter text directly into a new text box without having to switch into Browse mode, as you had to in the previous version.

A special strength of Digital Chisel is its ability to create interactive on-screen tests. As you build your screens, you can create



**Hyperstudio's interactive applications** can incorporate a wide variety of multimedia elements, including resources from the Internet.



# The meeting's in an hour, the charts are in Windows, and you can't find the sticky with the client's address.



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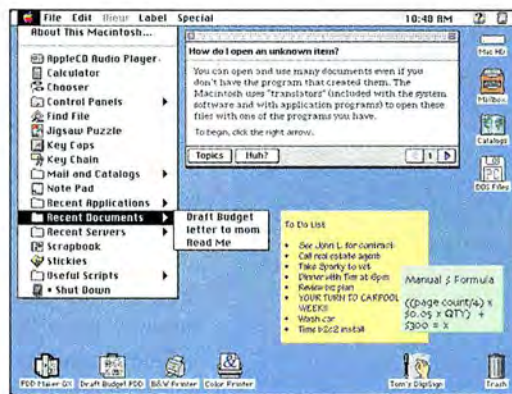
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Macintosh System 7.5 runs on Apple Macintosh, PowerBook and Power Macintosh computers and requires 4 MB of RAM. 8 MB for Power Macintosh systems is recommended for all systems. ©1995 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh, PowerBook and Power Macintosh are registered trademarks of Apple Computer, Inc. in the U.S. and other countries. The Mac OS logo is a trademark of Apple Computer, Inc. All other trademarks are the property of their respective owners.





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## REVIEWS AUTHORIZING

video captured with a camera and a video-capable Mac. That means you can create buttons that either display a live video feed or record a movie when a user clicks on them. And if you're working with a laserdisc player and a video-capable Mac, you can have HyperStudio display the laserdisc track on the Mac that's running your interactive lesson. With Digital Chisel, you're limited to displaying the track on a monitor attached to the laserdisc player. You can also create some interesting picture-within-a-picture effects by setting up movies to play *behind* other objects.

HyperStudio has two unique button features. The New Button Actions (NBA) feature lets you create buttons that trigger special events, such as scrolling text fields and objects that reveal or hide themselves. You can also use HyperStudio's HyperLogo programming language (HyperStudio ships with an in-depth tutorial and reference) to add even more functionality.

For those who are lucky enough to have a SLIP, PPP, or gateway connection to the Internet, HyperStudio offers even more unique features. Included with the package is an application called MediaLinker, which lets you store small files on your hard disk that point to selected resources, such as images and sounds, on the Internet. You can preview the resources and import the ones you want into HyperStudio stacks via the Internet just as you would import pictures or sounds from other applications. For hands-on interaction with the Internet, HyperStudio has NBAs that can send URLs to MacWeb or Netscape Navigator, so users can jump directly to World Wide Web sites from within HyperStudio documents.

HyperStudio's frame- and path-based animation capabilities are similar to Digital Chisel's, as are its navigation and transition

effects. However, its interactive-testing facilities aren't nearly as robust as Digital Chisel's. HyperStudio lets you define buttons as right and wrong answers to questions, and you can export a text file containing a student's right and wrong answers. However, you have to import the file into a separate database or spreadsheet program to analyze it.

HyperStudio's import facilities for clip art and other resources are easy to use, but you can't simply drag and drop resources into cards. HyperStudio lets you bring in more types of files than Digital Chisel does — you can import PICT, EPS, JPEG, PCX, BMP, GIF, MacPaint, and Photo CD images, AIFF and snd resources, and PC WAV and Amiga MOD sound files as well as play tracks from audio CDs. A CD-ROM filled with resources and sample student, personal, and business stacks is included.

HyperStudio has a few interface quirks of its own. Its HyperCard-like design is rather dated, and it limits you to having one stack open at a time. Furthermore, the keyboard command for viewing a stack's next card is the same as the Mac's universal keyboard combination for canceling an action. And HyperStudio's interface often seems cluttered with too many buttons and dialog boxes.

### The Bottom Line

For two programs that are so easy to use, Digital Chisel 2.0 and HyperStudio 3.0 pack a surprising number of features for teachers and educators. If you're interested mainly in creating interactive exams, Digital Chisel is clearly your best choice. However, if your primary goal is to create whizzy multimedia applications that incorporate digitized video and Internet resources, HyperStudio should be at the top of your list. / Eric Taub

### Digital Chisel 2.0



**Price:** Single copy, \$119.95; 5-pack, \$349.95; site license, \$995 (list).

**Pros:** Simple to learn and use. Excellent interactive-test facilities.

**Cons:** Flawed Undo command.

**Company:** Pierian Spring Software, Portland, OR; 503-222-2044.

**Reader Service:** Circle #404.

### HyperStudio 3.0



**Price:** Single copy, \$199.95; 5-pack, \$450; 10-pack, \$795 (list).

**Pros:** Simple to learn and use. Excellent tools for incorporating video and a wide variety of multimedia elements into stacks.

**Cons:** Somewhat dated interface. Interactive-test facilities not as robust as Digital Chisel's.

**Company:** Roger Wagner Publishing, El Cajon, CA; 619-442-0522.

**Reader Service:** Circle #405.



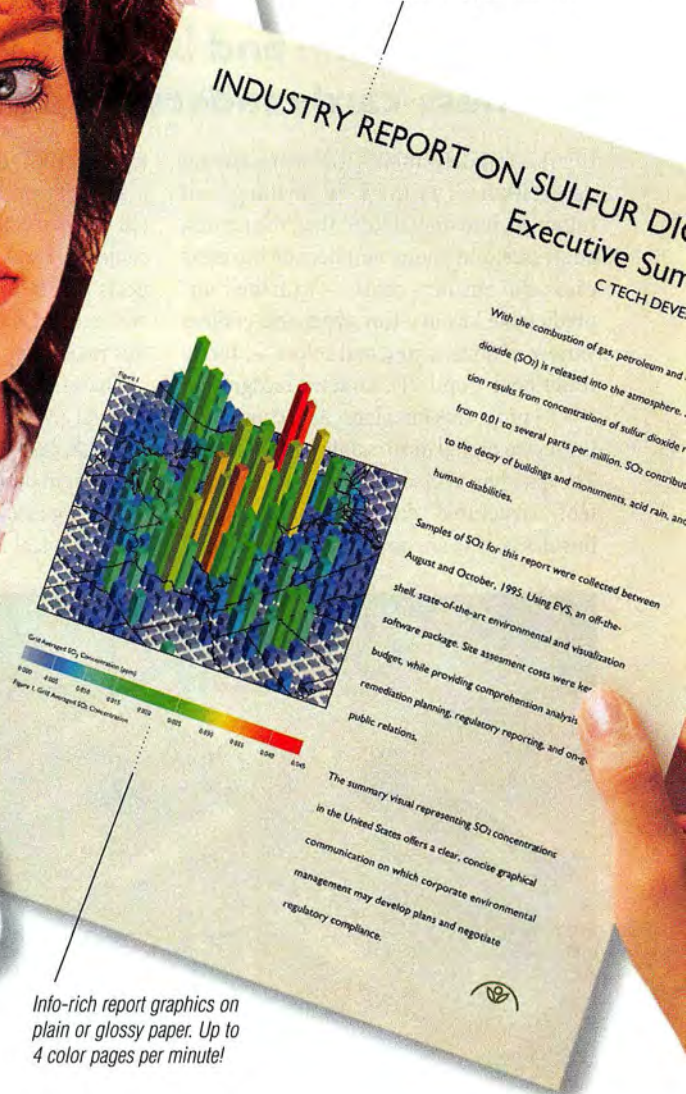
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CIRCLE 125 ON READER SERVICE CARD



## La Cie VIP Scan and UMAX BizCard Reader

### Business-card readers miss the mark.

OF ALL THE INFORMATION we receive on paper, it's hard to think of anything we'd rather get into digital form than the names, addresses, and phone numbers on business cards. But business cards — with their unpredictable layouts; tiny type; and endless variety of fonts, styles, and colors — throw traditional optical-character-recognition (OCR) programs for a loop. And converting the text to digital form is only half the battle: The data has to be organized into a consistent, structured database, even though business cards are anything but consistent

Reader, sold through retail dealers and mail-order outlets, carries a suggested retail price of \$245. The best street price we could find was \$239, although UMAX expects the street price of its product to drop and match La Cie's direct price by the time this review appears.

The VIP Scan also includes a copy of Now Contact 3.0.1. Upgrading to the current version, 3.5, costs \$49.95, but La Cie said it will soon begin bundling the latest release.

The application for both scanners looks like a typical contact-management data-

base. In its default view, it contains 15 standard fields (prelabeled for name, title, address, and other basic information) plus a larger field for notes and another that shows the scanned image of the card. You can rename or hide fields, set default values, switch among several alternative views, or call up a second page with 15 additional fields.

To scan a business card, you place

it in a soap-dish-like tray atop the scanner. You have to insert cards one at a time; there's no automatic feeder. The actual scanning takes only about three seconds, but interpreting the results and placing them in the database takes much longer. Using the default settings (400-dpi, grayscale, fast mode), processing a business card took, on average, about 20 seconds on a Power 120; 30 seconds on a Performa 5200; 35 seconds on a Quadra 605; and 52 seconds on a Duo 250. During all this time, your Mac is completely tied up. A Deferred Processing option, however, lets you scan in a stack of cards and leave the time-consuming recognition job until a more convenient moment.

In some respects, the software performed admirably in our tests: It got most

phone numbers right and usually placed them in the proper fields. But overall, accuracy was a severe disappointment. In a random sample of 100 cards, fewer than half of the 890 fields — 412 to be exact — required no modification at all. In 478 cases, we had to correct mistakes, move data, or key in missing information.

Not surprisingly, the results were better from business cards with relatively large, dark sans serif type, but even with such cards, errors were frequent. Adjusting scanner settings for contrast, speed, resolution (100 to 400 dpi), and grayscale or black-and-white mode sometimes helped, but not always, and we generally found it faster to correct errors manually than to tweak settings and rescan.

A few simple changes in the program might have improved accuracy. Just programming the application so it would put only numbers in the ZIP-code field and enter any phrase containing @ into the e-mail field would eliminate a significant number of errors. Having it check its guesses against a small dictionary of common terms — so when it thought it saw *Hlanger*, for example, it would translate it to *Manager* — would also help. Although the program filled some fields with outright gobbledygook, many of the recognition errors were minor and could be easily corrected or simply ignored. But even if you concentrate only on the basic information — name, company, and phone number — you have to spend a lot of time checking and correcting.

Once you've scanned in your business cards and polished up the results, you can choose whether to keep the scanned image of the card in your database or delete it to save space. You can also choose to export your data to another program (as text or in the native formats of popular Mac personal information managers) or leave it in the scanner's own contact manager. The program doesn't have all the bells and whistles of a full-featured personal information manager, and it can't sort by last name, but it does have a flexible search feature and a variety of label-printing options.

### Gotchas Galore

The scanner has a SCSI-ID selector and a single special 50-pin SCSI connector that's more compact than traditional SCSI connectors. Both La Cie and UMAX provide you



**Identical twins,** the La Cie VIP Scan and UMAX BizCard Reader can read your business cards and enter the information into a contact manager. But both scanners are hit-or-miss when it comes to accuracy.

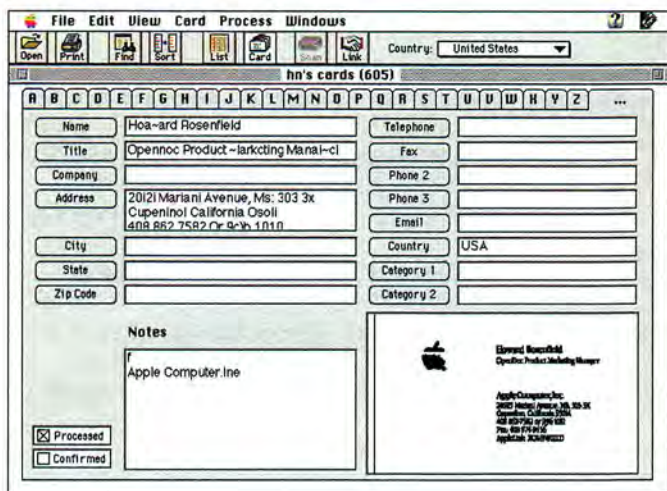
in the information they include and the layout they use. Two new Mac packages — the UMAX Technologies BizCard Reader and the La Cie VIP Scan — address these challenges head-on. Unfortunately, both come up short.

### Birds of a Feather

Both products are built around the same compact SCSI scanner model and include the same software. Even their manuals are the same in substance, although they have different layouts, and only UMAX's has an index.

In fact, aside from the labels, the only differences are in distribution, price, and bundled software. La Cie sells the VIP Scan direct for \$219, whereas UMAX's BizCard





The software that ships with both the La Cie VIP Scan and the UMAX BizCard Reader looks like a contact manager. It has fields for name, title, address, notes, and the like, plus a field that displays the image of the card you're scanning.

## You Mastered The Intricacies Of Style Sheets, Macros, And Graphic Design.

with a cable that has this kind of connector at one end and a standard 25-pin connector at the other, plus a 50-pin adapter for daisy-chaining your business-card scanner to another peripheral.

Unfortunately, we encountered several SCSI problems with each unit. In the first place, because there's only one connector on the unit, it has to be last in line on your SCSI bus — an inconvenient restriction if you have multiple external devices. The scanner has a terminator built in, but it doesn't provide power to the terminator; that means you may not be able to use it with a PowerBook unless you also connect another peripheral to supply termination power.

If you use either the VIP Scan or the BizCard Reader with a PowerPC-based computer, you may have to go to the Memory control panel and turn Modern Memory Manager off. Until we did, we experienced regular crashes after scanning one or two cards on a Power 120, Power Computing's 120-MHz PowerPC-based Mac clone.

Before the technical-support staff at

Power Computing suggested the memory-manager fix, we called UMAX and La Cie about the problem. The call to La Cie was toll-free, but UMAX doesn't offer toll-free technical support. In both cases, the tech-support lines were busy, so we left messages. A La Cie representative called back the next morning to offer assistance, although he didn't come up with the correct solution. UMAX never called back even after we left a second message.

### The Bottom Line

When you consider the enormous variety and artistic self-indulgence of today's business cards, you have to have some sympathy for the developers of these programs. After all, we had trouble reading the fine print with our own eyes on some of the business cards we used for our tests. But accuracy is the name of the game here, and for now these products just don't have enough of it. By the time you corrected all their mistakes, you'd have been able to key in the information you need manually — and save yourself \$200 and a lot of frustration. / Henry Norris

### La Cie VIP Scan

**Price:** \$219 (direct).

**Pros:** Bundled with Now Contact. Has export filters for placing data in personal information managers. Deferred-recognition option. Toll-free tech support.

**Cons:** Inaccurate recognition requires constant correction. Only one SCSI connector. Doesn't provide power to its built-in terminator. No background processing.

**Company:** La Cie, Beaverton, OR; 800-288-9919 or 503-520-9000.

**Reader Service:** Circle #406.

### UMAX BizCard Reader

**Price:** \$245 (list).

**Pros:** Has export filters for placing data in personal information managers. Deferred-recognition option.

**Cons:** Inaccurate recognition requires constant correction. Only one SCSI connector. Doesn't provide power to its built-in terminator. No background processing. Poor customer service.

**Company:** UMAX Technologies, Fremont, CA; 510-651-8883.

**Reader Service:** Circle #407.





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## ClarisImpact 2.0 / Turn raw data into attractive graphics easily with this all-in-one presentation tool.

YOU'RE A BUSINESSPERSON, not an artist — but that doesn't mean you can't create good-looking graphics for your reports and presentations. ClarisImpact fills the gap between analyst and designer by giving you an easy way to turn your statistical data, outline, or scribbled notes into a wide variety of professional-looking business graphics. The latest version still has everything that made the first version so easy to use: uncluttered dialog boxes, extensive online help, and attractive ready-made styles. It's also packed with new features that will save you time and effort. For instance, the DataDraw feature helps you easily transform exported data into an eye-catching graphic. The program has also beefed up its presentation feature, added spreadsheet functionality to its tables, and broadened its selection of flowchart symbols.

### Picture This

ClarisImpact covers all the bases for business graphics. Buttons let you create a table, an outline, a graph, an organization chart, a timeline, or a calendar within a report or presentation. You can also create graphics separately and drop them into your project or export them for use in another program.

If you have a spreadsheet with tasks, start

dates, and durations and you want to turn this information into an attractively formatted timeline, the new DataDraw feature will let you do it in just a few minutes. First, you export your data as a tab- or comma-delimited file. In ClarisImpact, you select DataDraw from the File menu. ClarisImpact will ask you to select the exported file, choose a design style, and match the ClarisImpact timeline fields with your data. Then the program will extrapolate information such as finish dates from your data and create a fully formatted, editable timeline. You can use DataDraw in the same way to turn exported data into a calendar, a table, an organization chart, or a graph.

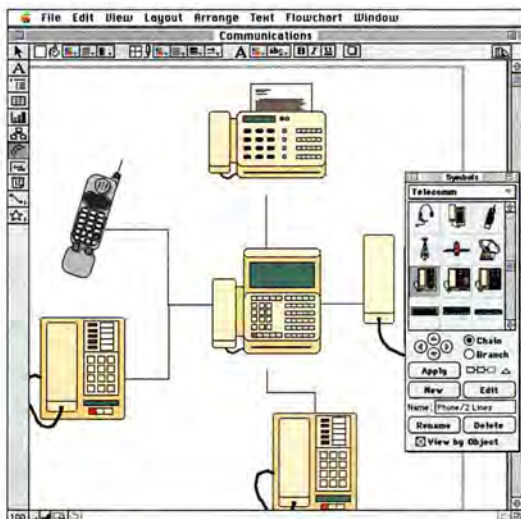
If your source information changes, you don't have to step through the process again. After exporting altered source information, you open its corresponding ClarisImpact graphic and choose Update Graphics from the DataDraw menu option. You can also set up ClarisImpact to check for modified source files each time you open a ClarisImpact graphic created with DataDraw.

Using DataDraw is a slick, simple, and fast way to create basic business graphics, but the feature has a few glitches. You have to strip unwanted records, such as spreadsheet column headings, out of your source

file, because you can't exclude a record while you're importing the source file. And if you've added some records to a source file and you import the changes into a ClarisImpact graphic, the additional information won't always be in the same font or color as the original information.

ClarisImpact 2.0 is richer than ever in graphics resources and variety. And now, in addition to the standard ANSI symbol set and computer-diagram set, ClarisImpact has flowchart-symbol sets for transportation and telecommunications networks, decision trees, brainstorming, root-cause analysis, total-quality management, and

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As Much  
At Home On  
The Internet  
As You Do  
In Your Own  
Living Room.



**ClarisImpact 2.0** has a broad selection of flowchart-symbol sets that let you diagram almost anything, from decision trees to telecommunications networks.





# Presenting The Next Upgrade To Microsoft Word

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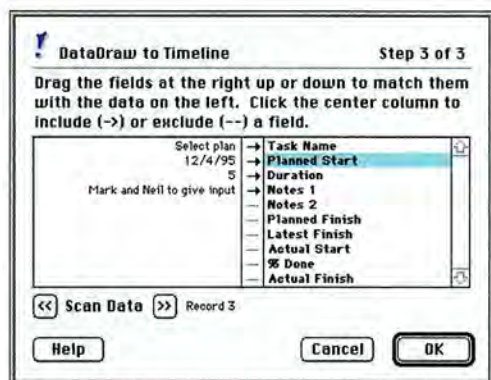
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**With the new DataDraw feature**, you match data exported from other programs with import fields in ClarisImpact 2.0 to create attractive, fully formatted data charts, calendars, timelines, or organization charts.

block diagrams. In flowcharts as well as organization charts, you type text inside the symbols and along the connector lines. The symbols automatically resize to fit the text, but the connector lines don't. If you move the symbols, their connector lines will move with them and remain connected.

Tables now have additional spreadsheet capabilities, beyond support for typical formulas and functions. You can add a column of numbers, crank out an average value, or calculate an internal rate of return. You can also paste a function into a table or have the program automatically calculate and fill in a row with a data series, based on a few initial numbers. You can even sort on up to three fields.

Design styles — collections of colors, line weights, and fonts that look good together — give your business graphics a polished look. In ClarisImpact 2.0, the design-style selection has been somewhat revamped. The more fanciful styles have been replaced with more-professional-looking ones. More of the styles look good when printed in black-and-white — which is useful if you don't have a color printer for your reports. The various styles are available in every feature, so you can create a consistent look within your presentations and reports.

ClarisImpact will not give Microsoft PowerPoint a run for its money, but it has borrowed some good features from the top dog in presentation software. The slide-presentation feature now has a built-in outliner, so you can organize your thoughts. It also has a slide sorter, a virtual light table on which you can rearrange thumbnail versions of your slides. There's also a new

markup feature, which you can use to draw on your slide to emphasize or illustrate a point, and 50 new transition effects. However, ClarisImpact doesn't have a run-time player, so you can't send a presentation to a colleague who doesn't have the program.

Since ClarisImpact creates so many types of business graphics, you probably won't have to import a lot of tables, graphs, or timelines from other programs, but you still might need to export your ClarisImpact graphics or import, say, your company logo or a colleague's outline. ClarisImpact ships with Claris

XTND translators for QuickTime; the CGM, EPS, GIF, ClarisDraw, MacPaint, PICT, and TIFF graphics formats; and the Claris MacWrite, Microsoft Word, Microsoft Write, RTF, and ASCII text formats. ClarisImpact files are fully interchangeable between the Windows and Macintosh versions of the program, although fonts, margins, and page breaks might appear somewhat different.

The ClarisImpact package includes both the PowerPC-native and 680x0 versions of the program. You'll need about 18 MB of hard-disk space to install all the files, mainly because of the extensive 6-MB library of clip art and the hefty 4-MB help file.

## The Bottom Line

ClarisImpact 2.0 is a terrific all-in-one business-graphics program. Although it can't compete one-on-one in feature depth with specialized presentation or graphing programs, it does have a suave simplicity that will help you get your work done — and its new low price won't jeopardize your bottom line. / Shelley Cryan

## ClarisImpact 2.0

**Price:** \$129 (list).

**Pros:** Easy to use. Uncluttered. DataDraw feature streamlines import and graphics creation. Additional and improved flowchart, table, and presentation features. Cross-platform. Inexpensive.

**Cons:** DataDraw's Update Graphics function needs improvement.

**Company:** Claris, Santa Clara, CA; 800-544-8554 or 408-727-8227.

**Reader Service:** Circle #408.

# When Other Techies Have Questions, They Usually Call You.





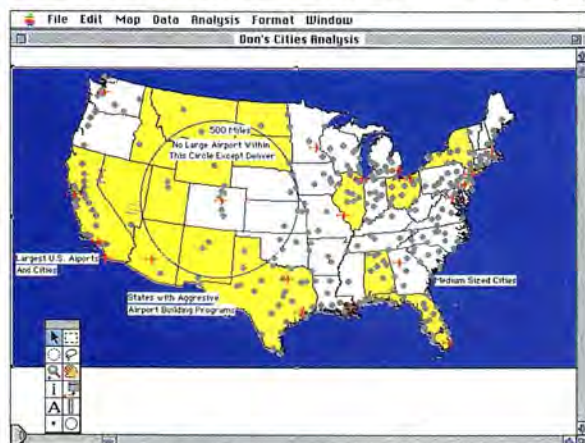
## MapLinx for Macintosh / Windows map expert makes Mac debut.

ADDING A GEOGRAPHIC DIMENSION to data stored in a worksheet or database table can make a world of difference when you're analyzing the data. MapLinx, a newcomer to the Mac's desktop-mapping-software arena, stakes a claim at the low end of the field. By providing an inexpensive, accessible tool for mapping geographic data, such as customer locations and sales territories, MapLinx is an excellent choice for business pros who have little or no experience with mapping software.

### Online Atlas

MapLinx for Macintosh is a port of the very successful MapLinx for Windows 3.0. But Mac aficionados won't be disappointed by the interface — MapLinx for Macintosh gathers all the features available in the Windows program and wraps them up in a nicely designed Mac interface.

MapLinx is essentially an electronic road atlas equipped with a mapping engine. Priced at \$149.95, it's an attractive alternative for business users to mapping programs that are more expensive, more complex, and harder to use. For example, it lacks the built-in database and programmability of ArcView and MapInfo, two of the Mac's most sophisticated and expensive mapping programs. And compared with those of Geoquery, a midrange program that also lacks a database, MapLinx's mapping capabilities aren't as detailed or as accurate.



Combining an electronic atlas with a mapping engine, MapLinx is an accessible tool for businesspeople who want to analyze geographic data. The program can construct pushpin as well as shaded maps to let you view your data.

Geoquery can map data right down to the street level, whereas MapLinx begins to lose its effectiveness for maps that go beyond county-level detail. Geoquery also works in conjunction with more-robust database programs, such as ACIUS' relational 4D, than the flat-file-database-oriented MapLinx and provides more-powerful analytic tools.

Because it doesn't have a built-in database, MapLinx is designed to take in data from a database program, such as FileMaker Pro. You can also use it to map data stored in a contact manager, a spreadsheet, or some other data-analysis application. To get your information into MapLinx, you can either copy it to the Clipboard and paste it, export it as a tab-delimited text file and import it, or publish the data and subscribe to it from within MapLinx. Plan to allocate about a megabyte of memory for every 7,500 records.

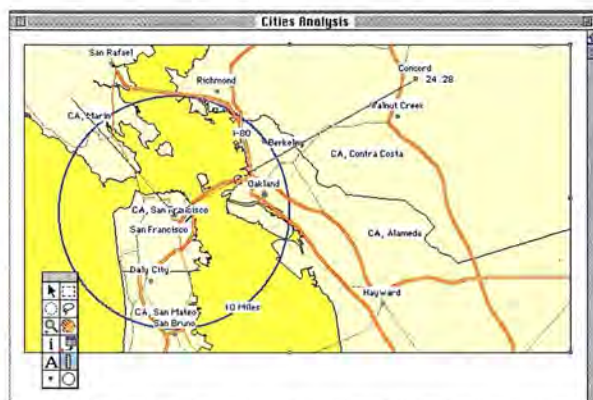
MapLinx's main window initially displays a map of the United States. You can zoom in on any area for a more detailed view of a state, county, or metropolitan area. Views displaying county, state, and interstate highways are also available. To map your data, you construct one of two kinds of maps — one displays data by using pushpin points, the other uses shaded regions.

To locate data as pushpins, MapLinx uses U.S. ZIP codes, a method that results in fairly accurate, but not exact, positioning. Although professional cartographers will not find MapLinx accurate enough for their purposes, the program is precise enough for most sales

and marketing applications. Shaded maps, which use different colors and patterns on map regions to correspond to different ranges in a variable, are particularly useful if you're looking for a way to spot trends in your data.

### Analytic Tools

Once you've mapped your data, MapLinx can help you answer questions about it. Measuring and query tools can tell you something as simple as the distance between one point and another or as complex as the number of Product A buyers located



Measuring and query tools help you answer questions about the data you map with MapLinx.

within 5 miles of a specific store location. You can summarize the results of your investigations in a report, which can provide subtotals by data type or geographic region, or in a list of data records.

We found MapLinx's mapping and analytic tools a snap to use. The program's interface resembles that of the Windows version, but dialog boxes are clearly Mac-style and the Mac version substitutes a floating tool palette for the Windows version's fixed icon bar. The palette has a ruler, box and circle selection tools, a zoom tool, a grabber tool, an information tool that displays the label for a selected point on a map, and a snooper tool that displays the record associated with a selected pushpin on the map. You click on a tool once to use it once and double-click on it to use it more than once.

Most of MapLinx's tools work as you'd expect, but if you get confused, you can view a short description of each tool by turning on Balloon Help. Unfortunately, MapLinx does not support Apple's useful Apple Guide help system.

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# Six Things Not To Forget When Buying Memory.

## How much more memory do I really need?

With the right amount of RAM, more applications can be opened simultaneously, large files and databases can be searched (at about 1000 times the speed of the fastest rotating disk drive), and your Mac is a performance maniac. Without the right amount of memory your Mac is slow, cranky, and may send you messages like "Application could not be opened", or worse, "Application has quit unexpectedly". Not good.

### Memory Worksheet

6 MB	System 7.0
8 MB	Adobe Illustrator
8 MB	QuarkXPress 3.3
<b>22 MB</b>	<b>Software Memory</b>
8 MB	Data, Buffers, etc.
<b>30 MB</b>	<b>Total</b>

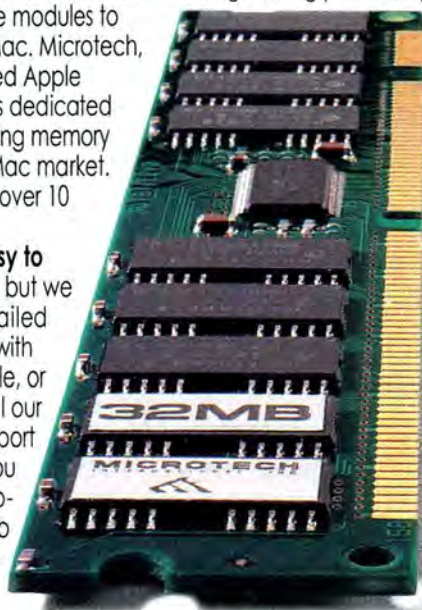
To figure out your true memory needs, add up the recommended memory for the most system software, utilities and application software that will be opened at one time, then add sufficient memory to hold your working data and "undo" buffers. If you need help, send for a free Memory Survival Guide.

**Is it made by Mac specialists?** With few exceptions, most

memory suppliers create and sell about 90% of their modules to the PC market, then modify these modules to work on a Mac. Microtech, an Authorized Apple Developer, is dedicated to engineering memory just for the Mac market. And has for over 10 years.

**Is it easy to install?** Yes, but we still ship detailed instructions with every module, or you can call our toll-free support number if you run into problems. We also make it safe to install. Microtech includes an anti-static wrist band so you don't accidentally zap your memory during installation.

**Is it made for my type of Mac?** Since we have an "engineering partnership"



### DIMMs available

with Apple, every Microtech module is designed for a specific Macintosh. For example, our PowerMemory™ takes full advantage of the RISC processor inside the Power Mac with features like optimized refresh for improved efficiency, and a lower chip count for higher reliability. Unlike most suppliers, we only use self-refresh DRAM in our Coyote™ memory to protect against loss of data when your PowerBook goes to sleep.



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more manageable, MapLinx lets you organize objects into layers, which work just like their clear-plastic-overlay counterparts. For example, you can have a separate layer for each of the following map elements: interstate highways, state routes, landmarks, counties, cities, and phone exchanges. Not only can you manipulate groups of objects easily by using layers but you can also format objects, as well as control the scale for zooming in and out, independently according to layers.

Although MapLinx does not support AppleScript, it can work directly with other programs, using Apple events. In addition to providing basic System 7.x Apple events such as Launch, Open, Print, and Quit, MapLinx provides a set of custom Apple events that allows the easy and direct exchange of data and query results with other applications. Programs that currently support MapLinx Apple events are 4D, ACT!, Control Classic, and Datadesk. MapLinx's Apple-events support is a boon for users who work with data that changes frequently.

Overall, we found MapLinx a capable performer for the price. Our one complaint is that objects we positioned in detailed views often shifted their location slightly when we zoomed in and out.

## The Bottom Line

MapLinx for Macintosh is not a mapping program for professional cartographers — it lacks a built-in database, and it's not programmable. However, it costs a fraction of what you'd pay for a high-end mapping program and its tools are powerful enough to help you make sense of many types of geographic data. The program's easy learning curve is another plus for business users. All in all, we recommend MapLinx — it's a welcome addition to the Mac's data-analysis arsenal from the Windows side of the tracks.

/ Vasco da Crabba

## MapLinx for Macintosh

**Price:** \$149.95 (list).

**Pros:** Affordable and accessible. Apple-events support.

**Cons:** No Apple Guide support. Can make scaling errors.

**Company:** MapLinx, Dallas, TX; 800-387-2162 or 214-231-1400.

**Reader Service:** Circle #409.

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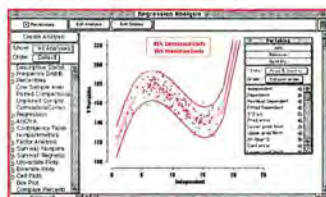
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## Speed Doubler / Rev up your Power Mac

CONNECTIX ASTONISHED just about everyone last year with RAM Doubler, an inexpensive software utility that doubles your RAM. Now Connectix has come up with Speed Doubler, a software-only accelerator. How fast it actually makes your Mac run depends on which Mac you have and which applications you run.

**Three for One.** Speed Doubler is actually a set of three separate and independent extensions. Speed Copy speeds up the copying and deleting of files, much as Symantec's CopyDoubler does. In our tests, Speed Copy was 20 percent faster than the Finder and 12 percent faster than CopyDoubler at copying files. Speed Access replaces Apple's disk cache, which stores frequently accessed disk data in RAM. Connectix claims that Speed Access improves on Apple's cache because it uses more RAM and accesses the hard disk less frequently. Across several common disk-intensive activities, Speed Access had almost no discernible effect. On the other hand, Connectix claims that Speed Access can substantially reduce the time needed for certain disk-intensive tasks, such as sorting large databases. However, a lot depends on how much RAM you allocate to Speed Access (we recommend at least 1 MB), how big your file is, and what task you are doing.

**Into High Gear.** The biggest speed thrust comes from the third extension, Speed Emulator, a souped-up replacement for Apple's 680x0 emulator in Power Macs. Since parts of the Mac's operating system

are still not PowerPC-native, this fast new emulator is relevant to users of any PowerPC-based machines, and for those with native as well as non-native software.

As we expected, speed improvements with Speed Emulator were greatest (35 percent to 113 percent) when we were running applications that were not PowerPC-native. But we also saw a small boost in the speed of PowerPC-native applica-

tions. When we ran MacBench 2.0's Processor test in emulation mode, we found that Speed Emulator improved the score by 121 percent. The biggest surprise was the boost Speed Emulator gave to a 7200/75 running the same test. Even though the 7200/75 uses Apple's supposedly improved emulator, using Speed Emulator resulted in a 173-percent increase in the Processor score.

**Mean and Clean.** We had few compatibility problems with Speed Doubler. A recurring system freeze was eliminated with version 1.0.1. Also, Speed Emulator is not compatible with Apple-brand PowerPC upgrade cards; Connectix says there will be a free upgrade to fix this problem. Speed Doubler and RAM Doubler worked together without a hitch.

If you have a PowerPC-based machine, you can't go wrong with Speed Doubler, especially if you use older software created for 680x0 Macs. If you have a 680x0 Mac, the benefits of just Speed Copy and Speed Access are far less, but the package is still worth considering, particularly if you don't already have a utility such as CopyDoubler. / Ted Landau


**Speed Doubler**  / Price: \$99 (list). Company: Connectix, San Mateo, CA; 800-950-5880 or 415-571-5100. Reader Service: Circle #410.



ILLUSTRATION / MARGARET McMILLAN

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6.4 MB	5.49	18.12	38.25
1.0 MB	1.68	3.87	7.87

\*Test conducted on a Power Macintosh 8100/100AV for PowerCADD 2.0 and a Macintosh Quadra 630 for PowerDraw versions.



Macworld October 1995

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MacUser October 1995

"...PowerCADD's programmability and extensibility may make PowerCADD a better choice than high-end CAD programs."



MacWEEK July 10, 1995

"...a 1.4 MB (PowerCADD) file on the Power Mac updated more than two times faster on the Power Macintosh (redraw speed of five seconds)."

InfoWorld July 24, 1995

"PowerCADD 2.0 boasts faster redraw times, faster editing and processing speeds, improved layer controls, enhanced editing commands, and a redesigned interface."



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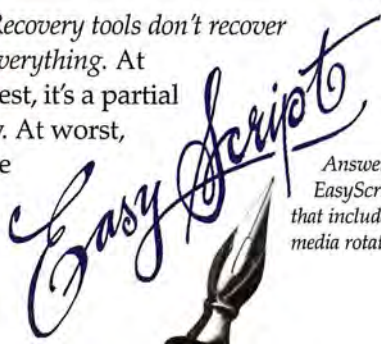
Nobody backs up just for fun. You do it for the day your hard drive goes soft and it's time to restore. That's when you see the difference between Retrospect® and the rest. Only Retrospect easily restores all your data to its former glory.

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Think about this the next time you're "backing up" by dragging: Retrospect can scan 200 files a second to see which files have changed. Can you?

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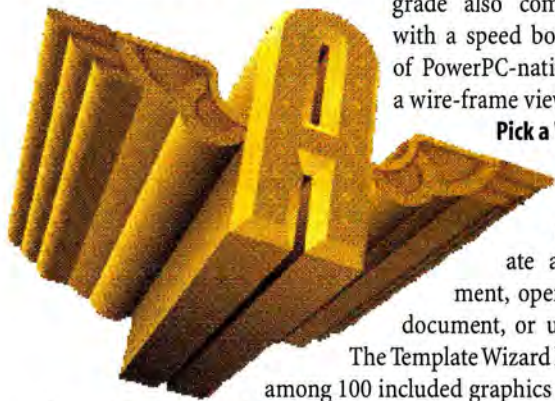
**dantz** To go forward, you must backup.®

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## AddDepth 2 / 3-D made easy

IF YOU'RE LOOKING to add three-dimensional effects to vector-based artwork and text, and maybe even create some basic 3-D designs from scratch, Ray Dream's AddDepth 2 will get you started. New Wizards, step-by-step guides for creating templates and stylized 3-D text, plus a low \$99 price tag and 200 included clip-art images make 3-D drawing accessible to nonartists. This latest upgrade also comes complete with a speed boost (courtesy of PowerPC-native code) and a wire-frame view.



**Pick a Wizard.** When you launch AddDepth, you can create a new document, open an existing document, or use a Wizard.

The Template Wizard lets you select among 100 included graphics templates for logos, headlines, and illustrations and steps you through the process of adding your own display text to them. This operation is extremely easy, but its value depends on how appropriate the designs — including 3-D airplanes, coffee cups, and skylines — are for your project. On the other hand, you can modify each of these designs to make them more applicable to your work.



A second hand-holder, the Step-by-Step Wizard helps you create stylized 3-D text. You select formatting options by clicking on a series of illustrations depicting the letter *m* at different extrusion levels, rotation angles, and perspectives and with varying color effects, bevels, and light sources. Annoyingly, these illustrations don't change based on your selections; they'd be more useful if they functioned as previews.

Although the Wizards could be improved, they contribute to an intuitive interface that helps ease you into working in three dimensions. Novices will also appreciate AddDepth's single drawing window, which switches conveniently between 2-D and 3-D views; an uncluttered tool bar; and the program's straightforward floating palettes.

**Limited Features.** This simplicity comes at a cost, however: AddDepth pales in comparison to the breadth of Adobe Dimensions. For instance, AddDepth doesn't have Dimensions' Revolve command, which lets you quickly draw items with contoured profiles, such as wine bottles and champagne flutes. AddDepth's bevel editor, which lets you design object edges, is limited as well: Front and back bevels must be the same height, and you're constrained to angled, single-surface bevels. On the other hand, Dimensions costs nearly twice as much as AddDepth and has a much steeper learning curve. And AddDepth can export 3-D art as editable PICT files, a task that Dimensions — which works only with high-end draw programs, such as Adobe Illustrator — can't do.

AddDepth is an inexpensive program well suited for nonartists who prefer to be on the easy end of the ease-of-use spectrum.

/ Shelley Cryan

**AddDepth 2 2.0**   / Price: \$99 (list). Company: Ray Dream, Mountain View, CA; 800-846-0111 or 415-960-0768. Reader Service: Circle #411.



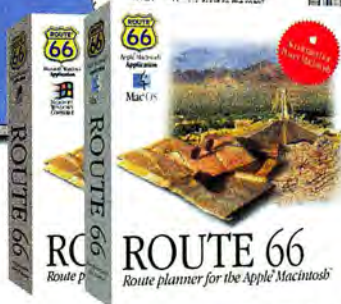
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## QUICK CLICKS



### At Ease for Workgroups 3.0 and At Ease 3.0 / See no evil

SCHOOL LAB ADMINISTRATORS looking for an easy way to secure their networked Macs should look no further than Apple's At Ease for Workgroups 3.0. This upgrade has a variety of security options that are particularly well suited for networked environments in which Macs are shared among multiple users. Its nonworkgroup sibling, At Ease 3.0, inexpensively provides the same functionality for a single Mac not connected to a network.

#### At Ease for Workgroups 3.0

At Ease works by replacing the Finder's desktop with its own desktop, which consists of a series of large buttons. Each button corresponds to a file, and clicking on a button launches its associated file. As an administrator, you determine what buttons are included on a panel and thereby what files each student can access. Different panel sets can be created for different classes. Similarly helpful for classroom environments, At Ease 3.0 supports shared folders (for files, such as clip art, that you want students to be able to access but not modify) and secured drop boxes (where students can leave finished projects for their teachers). In version 3.0, you can even restrict which CD-ROMs, if any, students can mount.

**Restricted Finder.** Version 3.0 has an alternative to the button panel, a new restricted-Finder option that lets students work directly on the Macintosh desktop. The administrator specifies who has access to which files. The restricted Finder works by creating a special folder for each student. This folder has aliases to programs the student is allowed to use; everything that's off-limits is simply invisible to that student. This approach works fairly well, but it gets cumbersome if you want to allow each student access to many files. We would have preferred security more like Apple's file sharing: the ability to turn access to specific folders on and off.

All students must supply their names and passwords to use a protected Mac. Trying to start up with extensions off doesn't bypass At Ease, and neither does starting up from a floppy disk, but more-determined hackers can probably break in.

**Easy Updates.** At Ease is not designed for maximum CIA-level security, but it does combine a moderate level of protection with a versatile system for administering Macs in a school setting. In fact, if your Macs are joined together on a network, At Ease for Workgroups can update changes to setups on all computers with just a single command.

#### At Ease 3.0

Apple offers a nonworkgroup package, At Ease 3.0, for home use. This version is missing the network options, certain classroom-specific features (such as drop boxes), and some of the extra security protection of its Workgroups sibling but is otherwise almost an exact match. And at a street price of around \$30, it's a bargain.

Although there are competing programs that match or exceed particular aspects of At Ease, At Ease remains our choice for best all-around performer for easy-to-use, practical security. / Ted Landau

**At Ease for Workgroups 3.0 and At Ease 3.0** ★★★★★ / Price: At Ease for Workgroups, \$295 (includes license for up to ten users); At Ease 3.0, \$37 (list). Company: Apple Computer, Cupertino, CA; 800-776-2333 or 408-996-1010. Reader Service: Circle #412.



## The Black Box 2.0 / Effortless special effects

CREATING BEVELS, SHADOWS, cutouts, and other special effects in Photoshop can be a time-consuming, trial-and-error process — unless you use Alien Skin's The Black Box. Users of version 1.0 already know how easily this nifty set of plug-ins for Adobe Photoshop 3.0 lets you get the desired effect without a lot of fuss. Version 2.0, with its new preview windows and four additional filters, is an even more impressive product.

**Sneak Preview.** The most useful aspect of this upgrade is undoubtedly the new preview portion of each filter's dialog box. As you make adjustments, such as to the bevel width or shadow strength, the changes display immediately in the preview, virtually eliminating the need to apply and reapply the filter several times to get just the right effect. We almost always got exactly the look we wanted on the first try with this program.

**Easy Bevels.** In addition to the original six filters (Outer Bevel, Swirl, Drop Shadow, Glass, HSB Noise, and Glow), this upgrade contains

four new ones: Inner Bevel, Cutout, Carve, and Motion Trail. We especially liked Inner Bevel, which bevels an object *within* your selection rather than outside. (Outer Bevel, on the other hand, bevels the area outside the selection boundary, giving you a totally different effect.) Inner Bevel is great for creating buttons and background tiles for World Wide Web pages on the Internet.

## Resume

The Black Box works so well (and is so useful) that there's little to complain about. Still, the package could be slightly more versatile if — when possible — the filters could place its effect, such as the shadows created by Drop Shadow, in a Photoshop layer separate from the original image. As it is, when you create a drop shadow for text, the shadow attaches to the text, making the text and shadow one object. Editing the text separately from the effect you've created then becomes difficult.

Nonetheless, with all the time-saving and creativity benefits provided by The Black Box, we can live with this small oversight. If you work in Photoshop often, the Black Box will help you create a special look more quickly and easily than you could by tweaking settings yourself. / William Harrel

**The Black Box 2.0** ★★★★★ / Price: \$119 (list). Company: Alien Skin Software, Raleigh, NC; 919-662-4934. Reader Service: Circle #413.



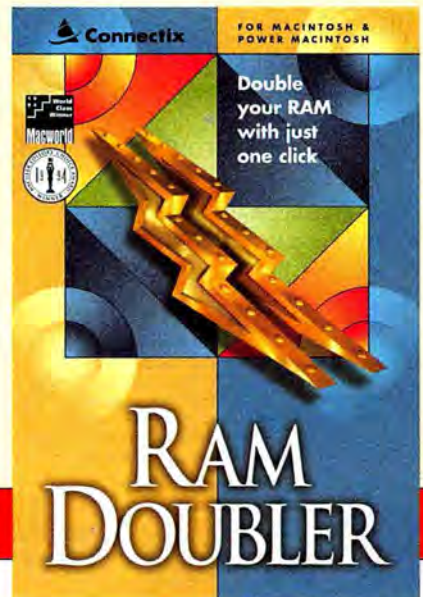
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System Requirements: Macintosh equipped with a 68030, 68040 or PowerPC microprocessor. System 6.05 or later, including all versions of system 7 • 4 MBs required (hard disk required for machines with 4 to 6 MBs) • Not compatible with Mac SE, original Mac Classic, original Mac LC or PowerBook 100 or Mac II without a 68851 PMMU or any accelerator that does not work with virtual memory.



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**The "Un-database."** InfoGenie is actually neither a true personal information manager (PIM) nor a true database program but rather a cross between the two. As a result, InfoGenie is more versatile than a traditional PIM and can adequately fill most users' database needs, with powerful searching across thousands of records in just seconds.

When you open InfoGenie, you choose from two ways to organize your data. You can set up structured fields or simply store your information in a free-form manner. To-dos, class notes, e-mail, magazine articles, and Net finds, for example, are suitable for an InfoGenie free-form data file, whereas data requiring greater structure — such as a mailing list, product catalog, or household inventory — can be organized just as easily in fields. From here, adding, deleting, and scrolling through records is simple.

**Cool Features.** InfoGenie's other cool features include the ability to globally search and replace text strings in a data file, open multiple

files simultaneously, import a variety of e-mail files, share files over a network, print envelopes and labels, and even automatically open user-specified files when you launch InfoGenie.

Thanks in part to an easy-access tool bar that stores key func-

tions and to the program's ability to display data in a basic, list, label, or envelope view, InfoGenie is easy to master. However, we would have liked to see our data displayed in more than one view at a time. Furthermore, InfoGenie can't do some kinds of conditional searches, such as finding records that do *not* contain a word, and it can't save frequently performed searches and

sorts, perform calculations and summaries, or create layouts — all of which other Mac database programs can do.

Despite these limitations, the InfoGenie program is a solid, trusty tool for tackling the burgeoning Information Age. It fulfills the three primary data-management wishes: easy storage, simple retrieval, and speedy searches. If those are all you require, you'll need to look no further than InfoGenie in order to stay organized.

/ Steve Rubel

**InfoGenie 1.0.4** ★★★★★ / Price: \$79.95 (list). Company: Casady & Greene, Salinas, CA; 800-359-4920 or 408-484-9228. Reader Service: Circle #414.



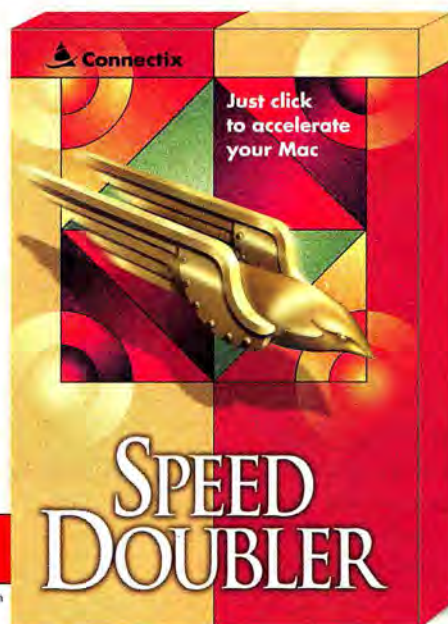
ILLUSTRATION / MARGARET MCMULLAN

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Requirements: Macintosh equipped with a PowerPC 68040 or 68030 microprocessor • System 7.0 or greater • 8 MB physical RAM or greater • Compatible with Connectix RAM Doubler • Not compatible with: Mac Plus, Mac SE, original Mac Classic, original Mac LC or PowerBook 100

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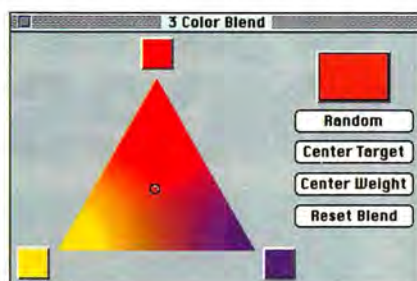
## Color Compass / Pick your own palette

EVEN WITH COLOR standards such as Pantone, you have to make some adjustments in the palettes for each of your graphics and desktop-publishing applications to get consistent colors among them. Color Compass, a stand-alone ColorSync-compatible program, attempts to simplify this process by letting you create color libraries, which you can then save as palettes for a variety of applications, including Adobe Illustrator and PageMaker, Macromedia FreeHand, QuarkXPress, and Deneba Canvas.

To start, you create colors from scratch in Color Compass or import color libraries from the applications Color Compass supports. You can drag any color from an imported color library and drop it into any editing palette. To find the right colors for your palette, you might start out with the two-, three-, and four-color mixing palettes, which create a color by blending the two, three, or four base colors you select. You can have the program randomly select the base colors, a questionable feature if you're doing real color work.

**Perfect Match.** The program gives you a variety of other ways to select and modify color values. The Pantone Color Matcher palette, which matches imported or generated colors to their closest six Pantone equivalents, is arguably the most useful feature in Color Compass, especially since Color Compass doesn't do monitor/printer calibration and you'll need to verify its results by using Pantone swatches. The Tints and Shades palette shows you tonal variations, from light to dark, for any color you select. The Color Edit palette lets you make colors warmer, by adding percentages of

red, or cooler, by adding percentages of blue. The Color Mix palette provides fine control over percentages of RGB and CMYK. The Color Family palette shows you complementary colors that conform to the general saturation and brightness values of the base color.



You can link any of these editing palettes with each other; as you create a color in one palette, that color serves in any linked palettes as a base color for creating new colors. There are 99 levels of Undo,

so you can experiment freely, and the Color Reserve palette lets you save colors you like in a virtual holding pen before you place them in a custom palette.

We'd like to see Color Compass support the Apple Extensible Color Picker; that would make your color palettes available in every Mac program. Although its color-editing tools aren't as sophisticated as the similar color software that ships with Light Source's Colortron, Color Compass gives you a decent method for creating a unified color-management system. / David Biedny

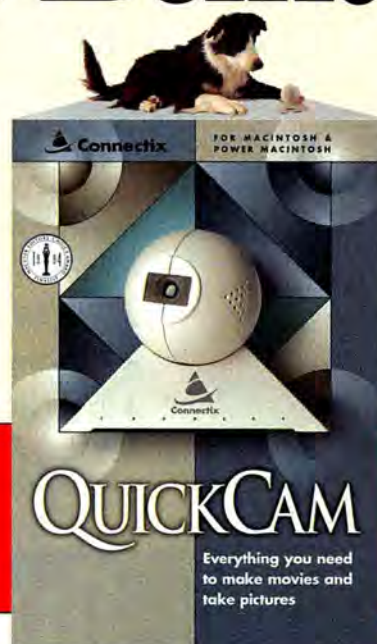
**Color Compass 1.1** / Price: \$129 (list). Company: Praxisoft, Ashburn, VA; 800-557-7294 or 703-729-3391. Reader Service: Circle #415.

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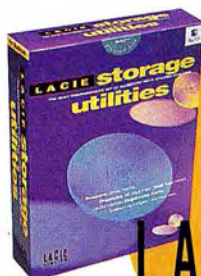


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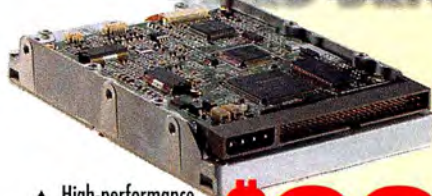
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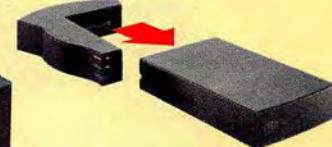
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# GAME PLAN

**Thanks to a slew of new technologies,  
Apple is once again making the Mac  
a hot gaming platform.**

## **9:00 A.M.**

---

YOU TRUDGE INTO THE OFFICE, COFFEE CUP LOCKED FIRMLY TO FIST. HANGING UP YOUR COAT, YOU TURN TO YOUR DESK. YOU STARE IN DUMB SURPRISE AT THE BRAND NEW POWER MAC 7500 AND 19-INCH MONITOR OCCUPYING THE SPACE WHERE, JUST THE NIGHT BEFORE, AN ANCIENT IICI LAY. YOUR FIRST THOUGHT:

“I can’t believe the boss fell for my requisition!”

Your second thought:

“I’ll bet *Marathon screams* on this baby!”

Friends, it’s time to stop kidding ourselves. Despite years of Apple’s claims to the contrary, the Mac is indeed the coolest gaming computer around. Oh sure, the PC has *more* games and the hottest ones often appear there first. But thanks to the PowerPC, a slew of talented game programmers, a host of new Apple technologies, and — perhaps most important — Apple’s recognition that games sell hardware, the Mac is making a comeback in gaming.

We’re at a crossroads in Mac gaming, with a future full of promising technology (such as QuickDraw 3D, QuickTime VR, MPEG, and new sound technology) and a past marked by innovative game designers who coaxed maximum performance from often sluggish hardware, despite little or no support from Apple. Join us as we examine the tricks and tools of Mac computer gaming, both as it was in the past and as it will be in the next few years. Along the way, we’ll treat you to a sneak peek at the hottest games for the holidays.

**BY CHRISTOPHER BREEN**







## SQUEEZING EVERY OUNCE

Let's get one thing straight: Games, more than any other type of application, demand the most oomph from a computer's processor. Admittedly, waiting for a Photoshop filter to work its interminable magic on an old Mac is frustrating, but pokiness doesn't necessarily render the program unusable. Such is not the case with games. If your spaceship flickers or jerks across the screen due to your computer's lack of processing power or slow drive-access rate, that game is destined for a permanent place on the shelf. To push games to the limits of a Mac's performance — and therefore make them playable — programmers who created games during the 680x0-Mac era developed numerous tricks to gain a larger percentage of the computer's processor time and to speed media access — much more than applications typically get. Many of the techniques are still in use today.

**Fighting for Processor Time.** One typical trick for gaining more processor time is to shut down all but the most rudimentary commands handled by the operating system — allowing the user to quit and close windows, for example, but essentially asking the rest of the system to take five until the player leaves the game. Now you know why Norton FileSaver won't churn away during a breakneck Dark Forces session. By shunning the OS, the processor is diverted from background system tasks (such as scanning the network, checking the internal-floppy-drive port for the presence of a floppy disk, and updating the menu clock) and is devoted to crucial gaming functions (such as screen redraws and sound playback). Bungie Software's Marathon, for example, does everything but actually quit the Finder to optimize speed. And get this, GT Interactive Software's Doom II actually gives you an option to quit the Finder. It's a hidden trick, though; you have to hold down the S or M key as you start up the game.

Flight-simulation games such as ParSoft's A-10 Attack! and Graphic Simulations' F/A-18 Hornet use complex algorithms to

rapidly draw polygons that represent your plane and the surrounding scenery. By presenting graphics to the processor as numbers rather than as a collection of pixels, these games enable the Mac to blast these winged wonders onto the screen in less time than it takes to think, "Bombs away!" Even with a moderately frisky processor, such as a 33-MHz 68040, motion is as smooth as silk.

Note that although most of the games you'll see on store shelves this year can be used on 68030 Macs, next year's crop of games will up the hardware ante. By the time Santa returns in 1996, many developers will be writing games solely for Macs that have PowerPC processors. Many games will also require a CD-ROM drive.

**Speeding Up CD-ROM Access.** CD-ROM games that feature huge graphics and sound files have become increasingly popular, yet CD-ROM drives have notoriously slow access rates. Game developers have concocted several techniques to skirt this bottleneck. The folks at Drew Pictures, maker of Iron Helix, discovered years ago that they could speed CD-ROM access by placing files that would be read sequentially next to each other on the disc. With this technique, seek time is cut drastically, which ultimately speeds data delivery to the computer.

Presto Studios, creator of The Journeyman Project series, found that converting PICT graphics files to single-frame, compressed QuickTime movies shortened load time considerably — because of compression, the files are smaller and thus take less time to load. (A historical aside: The additional speed increase in The Journeyman Project Turbo was due to a change in Macromedia Director. Rather than having to use Lingo, the programming language in Director, Presto was able to use the capabilities in Director through direct coding, thereby skipping the Lingo overhead.)

CyberFlix's Bill Appleton, of SuperCard, Lunicus, and Jump Raven fame, is probably the CD-ROM speed king. Appleton has a bunch of clever ruses for increasing CD-ROM performance. For example, in his latest adventure game, Dust, he makes the scenes in

## THE NAME OF THE GAME / the top new games

THE HOLIDAYS ARE UPON US, and you're wondering what to get your favorite Mac gaming fanatic. Or you've been wandering the aisles of that Virgin Megastore, trying to figure out from the descriptions on the boxes which game is the best one. And darned if they don't all look good. Here's a peek at 15 of the hottest games of the season. (All of the games, unless otherwise noted, should be shipping as you read this.) Each game has an estimated street price of between \$35 and \$60, with most hovering around \$50.

### First-Person-Perspective Shoot-'Em-Ups

*With first-person-perspective shoot-'em-ups (FPPSEUs), the setup is simple: You view a world from behind a weapon. As you move, the world scrolls in front of you. As you fire, things die.*

**Dark Forces.** Given that LucasArts is the designer of Dark Forces, it shouldn't surprise you to learn that you're a member of the Rebel Alliance and must take on the dark Imperial Forces of *Star Wars* fame. This game's got more plot and less blood and gore than is typical of FPPSEUs. LucasArts has also redone the art in this formerly for-PCs-only game to take advantage of the Mac's higher-resolution-graphics ability. LucasArts, 415-472-3400.

► **Descent.** The Post Terran Mining Corporation has lost its mining operations to hostile alien invaders. Your assignment is to pilot a single-occupant flying machine, blast the heck out of the invaders by using high-tech weapons, and destroy each mine's central fusion reactor. The coolest (or most sickening) aspect of this networkable game is that you can move in 360 degrees. It's extremely easy to get disoriented in this game. Expect to discard any attachment you have to the concept of up and down. MacPlay, 714-553-3530.

**Doom II.** You play a space marine who discovers that a variety of demons from hell have come to Earth. Your mission is to kill anything that moves, using an increasingly deadly arsenal of horrific weapons. Wonderfully gory. Includes cross-platform networking. GT Interactive Software, 800-610-4847.





## TRICKS OF THE TRADE / clever speedup techniques

IN THE PAST, developers have had to come up with their own clever schemes for speeding up game play. Here are a few of the tricks used in some of the most popular games.



**In order to free up** processor time, some games, such as Bungie Software's *Marathon 2*, shut down all operating-system operations that aren't critical to game play. For example, until the game is paused, the OS doesn't update the menu clock or poll for the presence of a floppy disk.



**Other games**, notably flight simulators such as Graphic Simulations' *F/A-18 Hornet*, use complex algorithms to rapidly draw the polygons that represent the plane and its surrounding scenery. These polygons are presented to the processor as numbers rather than as pixels, thus enabling smooth motion — even on 68040 Macs.



**Game developers use** tricks to help alleviate the slow speed of CD-ROM drives. In *Dust*, when the Stranger moves, the background scenery is in low resolution. A CD-ROM drive can deliver small, low-resolution files more quickly than it can large, high-resolution ones. Once the character stops, the high-resolution file seamlessly replaces the low-resolution file.

which your character is moving (and in which scenery is less likely to catch your eye) low-resolution. These low-resolution files are small and can be delivered rapidly. Once the character stops, the high-resolution version of the graphics file seamlessly takes the place of the low-resolution file.

Regrettably, the problems inherent in slow CD-ROM access are not likely to be solved by significantly faster CD-ROM drives in the near future. Appleton conjectures that 6x (or slightly speedier) drives may be the fastest we can hope for at prices that most consumers can afford, until certain technical problems are overcome.

Extremely fast CD-ROM-drive speeds can cause discs to wobble, making disc reads unreliable. Currently, 10x and 15x CD-ROM drives exist, but they cost a couple of thousand dollars or more — well beyond the pocketbooks of most Mac users.

### APPLE'S TECHNOLOGY BLITZKRIEG

Although game programmers are still rolling their own code, it's new technologies that hold the greatest potential for making huge advances in computer gaming. And where is most of this technology coming from? From the former nemesis of Mac gaming, Apple.

► **Havoc.** As a fighter pilot in this hard-hitting action game, you fly one of three craft through an alien world, blasting at bad guys. The post-apocalyptic terrain is compelling, providing a variety of obstacles that you have to avoid. You can move in 360 degrees, and you can play the game across a network. Reality Bytes, 617-261-2581.



**System Shock.** In this combination FPPSEU/puzzle-based adventure game, you match wits with a rogue computer that has managed to grab the controls of a space station, has slaughtered the station's residents, and has planned to use the station's defensive laser system to vaporize Earth's major cities. Venture into the bowels of the computer, and movement becomes very *Descent*-like — you navigate in a 3-D world, with no sense of direction. Origin Systems, 512-434-4263.

**X-Wing Collector's CD-ROM.** This game for *Star Wars* fans is closely tied to the movie, complete with X-wings and Tie fighters. You blast the enemy while maneuvering your craft. The real clincher comes in a final showdown with the Death Star. As in the movie, you've got to toss torpedos down the Death Star's hole in order to win. LucasArts, 415-472-3400.

### Vehicle Simulators

*If the morning commute doesn't satisfy your need for transportation-based thrills, these games are for you.*

**A-10 Attack!** This outstanding simulator with smooth-as-silk motion is based on the late-'70s ground-attack aircraft, the A-10A Thunderbolt II — known to the aviation-aware as the Warthog. This Hog is one tough mother that carries enough varied ordnance to put a serious dent into just about anything it flies up against. ParSoft International, 214-479-1340.

**IndyCar Racing II.** Finally, a quality auto-racing simulation for the Mac. With nonstop action, realistic race modeling, and more replay modes and camera angles than a Super Bowl half-time extravaganza, this game comes with everything but oil-soaked overalls and the smell of burning rubber. Papyrus Design Group, 617-868-5440.



The most important thing Apple's new technologies will accomplish is processor relief. Forcing the Mac to do all its work with a main processor only, rather than with the help of additional hardware, has been a drag on gaming. True, the PowerPC chip allows game programmers to create some remarkably robust programs. But even this mighty processor cannot long stand the onslaught of future games, which will demand full-screen, photo-realistically rendered, high-resolution, full-motion images accompanied by 16-bit, multichannel sound.

But let's suppose it were possible to shift some of the most processor-intensive tasks away from The Big Chip and onto auxiliary devices. Suppose too that Apple created a 3-D-graphics standard that could tie into the power of these devices. And finally, suppose that Apple supplied a standard set of tools for creating virtual-reality environments, thereby saving developers the trouble of creating their own code or using less integrated off-the-shelf tools. Well, suppose no longer. The technology's here, and the hardware that will produce these high-tech gaming wonders is not far behind.

**QuickDraw 3D.** If we had to pick just one software technology we consider most likely to change gaming for the better, QuickDraw 3D would be it. Just as QuickTime benefited video, QuickDraw 3D simplifies the creation and manipulation of 3-D images. QuickDraw 3D contains a cross-platform 3-D file format (3DMF) that makes it easy to cut and paste 3-D files between programs, a cross-platform programming interface that means developers can create programs for Macs and Windows PCs, and a set of 3-D-interface standards. These standards include 3-D geometry, a shading and rendering architecture, a common approach to 3-D input devices, and — perhaps most important for gamers — a device-and-acceleration manager.

The device-and-acceleration manager lets users of PowerPC computers add dedicated acceleration hardware that shoulders all 3-D-rendering burdens. You recall that our flight-sim buddies create images by using polygons? That's exactly where 3-D-acceleration hardware excels. Smaller polygons rapidly shot to the

screen will help create the most-realistic flight simulations, no matter what the platform. And because the processor does not have to perform 3-D-rendering tasks, it can spend more quality time lobbing monsters and missiles your way.

Apple claims that an accelerator makes QuickDraw 3D run four to seven times as fast as it does without one. But Bill Dugan, Macintosh High Priest at MacPlay, gave us the most apt description we've heard yet of just how fast accelerated QuickDraw 3D will be. According to Dugan, speed will be increased to a point where you will catch on fire.

Apple plans to ship its QuickDraw 3D accelerator before the end of 1995. The card will cost under \$500 and will require a PCI slot. It will also include extra features such as the ability to create transparency effects in real time, higher-quality rendering, and support for constructive-solids geometry. Other vendors also plan to ship similarly priced accelerators; expect to see a crop of such cards by the spring of 1996, if not earlier. (Of course, you'll be able to use these cards for more than just games. For graphic artists working in 3-D, these cards will be valuable add-ons.)

Games that use QuickDraw 3D are still playable on unaccelerated Macs. However, their performance is less spunky, since the main processor must assume all the rendering duties. Without acceleration hardware, QuickDraw 3D is not even as fast as some of the 3-D schemes developed in-house by game developers. For example, when no acceleration hardware is present, MacPlay's *Descent* 1.1 uses its own faster, native 3-D technology rather than QuickDraw 3D.

It's this Catch-22 that's currently holding developers back from creating QuickDraw 3D-based games. Until there's a reasonably large installed base of users who have QuickDraw 3D accelerators, many companies won't develop games that use QuickDraw 3D, simply because their homegrown 3-D schemes will prove to be faster than unaccelerated QuickDraw 3D. Expect to see more QuickDraw 3D-based titles, however, once Apple includes built-in acceleration

**Zone Warrior.** You control a lone spaceship whose mission is to defend an orbiting space station. Capable of 360 degrees of movement, *Zone Warrior* is one tough space sim to master, but the nonstop action, beautiful graphics, and tight response of the craft make it worth the trouble. Casady & Greene, 408-484-9228.

### Adventure Games

*Today's adventure games demand that you explore vast areas and solve prickly puzzles. Thanks to the daily miracles of modern technology, you can now do so with the accompaniment of QuickTime video, 3-D-rendered environments, and 16-bit stereo sound.*

**Dust: A Tale of the Wired West.** You are "the Stranger" — a down-on-his-luck cowpoke who must discover the secrets of an Old West outpost through interactive conversations with such colorful locals as the town drunk, the undertaker, and the fetching ladies who occupy the saloon's second story. Will you be fast enough to outdraw "the Kid"? Quick-witted enough to save the town? Canny enough to figure out what the heck you're supposed to do with the pigs? CyberFlix, 615-546-1157.

► **Frankenstein: Through the Eyes of the Monster.** In this tale, Dr.



Frankenstein's monster is just some poor schmo, falsely accused of murder, who wound up on the wrong table at the wrong time. As the monster, you awaken to the cackling image of Tim Curry's maniacal Dr. Frankenstein. Explore the castle's rendered environments and untangle a passel of mind-numbing puzzles to reassemble your past and come to terms with your lost humanity. MacPlay, 714-553-3530.



## RING IN THE NEW / the advantage of new technologies

IN THE FUTURE, you'll see more games based on some of the newer technologies Apple is creating. Here are a few of the most current games that make use of the latest and greatest from our friends in Cupertino.



**When used with an accelerator,** QuickDraw 3D provides some of the fastest game play found on any computer platform. Without an accelerator, however, QuickDraw 3D may not run any faster than a game developer's proprietary rendering scheme. MacPlay's *Descent* uses QuickDraw 3D when it senses acceleration hardware but reverts to its native 3-D technology when none is present.



**Another add-on card,** Apple's MPEG Media System, allows games using the MPEG movie standard to play back full-screen, full-motion video from a CD-ROM. Currently, Apple's MPEG card is available only as a bundle with certain Macs; expect to see third-party cards soon. Shown here is Activision's interactive mystery game *Return to Zork*.



**At long last,** you've got a real reason to install PlainTalk on your Power Mac. The pit crew in Papyrus' race-car simulator, *IndyCar Racing II*, responds snappily to spoken orders. Thus, not only can you drive the car but you can also get a feel for those hectic moments in a pit stop.

hardware on its computers or once third-party add-on cards become must-have items.

**MPEG Media System.** Another add-on technology that unburdens the main processor is Apple's MPEG Media System. This add-on card allows games using the MPEG movie standard to play back full-screen, full-motion video from a CD-ROM — and this video is the same quality as that of a television movie. Players in a hurry will be delighted to discover that while the MPEG video plays, they are still able to interact with those game components that are controlled by the main processor — no more waiting until a lengthy video

sequence plays out to pull that trigger or flip that switch.

Unfortunately, the current MPEG Media System works only in certain Performa and Quadra models — and MPEG titles play only on Macs that contain an MPEG card. Later this year or early next year, expect to see several vendors release inexpensive PCI cards carrying MPEG chips. In addition, some graphics accelerators will also contain MPEG chips (see "Fast on the Draw" in this issue).

Most of the MPEG-based games you're likely to see will be those of the interactive-fiction or hunting-and-gathering ilk. Activision, for example, has created an MPEG version of its interactive fiction

**Full Throttle.** In this interactive movie, you play a biker named Ben, whose gang, the Polecats, has been ambushed by the folks from a big-time motorcycle company. You've also been framed for murder. Your goal is to save your gang and clear your name. LucasArts, 415-472-3400.

▼ **Galapagos.** Set in the world of Galapagos, you control an organism named Mendel. Mendel can escape from Galapagos only by exploring the world and solving its puzzles. The twist is that thanks to Anark's proprietary artificial-life technology, Mendel learns through feedback you give

it. For example, if you repeatedly force Mendel to jump into a flaming lava pit, it will learn not to trust or obey you. Over time, Mendel develops its own personality — one that's unique to individual players. *Galapagos* is due out in January. Anark, 303-545-2592.

**Titanic: A Journey Out of Time.** An interactive adventure/puzzle-solving game, *Titanic* sets you free to explore the ship as it goes down. Unfortunately, no matter how well you do in the game, you can't prevent the disaster from happening. Expect to see *Titanic* sometime in early 1996. CyberFlix, 615-546-1157.

### Arcade-Style Games

*No puzzles, no plot, and — in general — no particular point: Arcade games are designed for the fleet of finger and quick of eye.*

**Power Pete.** Ostensibly for kids, *Power Pete* is a side-scrolling action game that takes place in the local Toy Mart in the dead of night. The fuzzy bunnies have escaped, and it's up to Power Pete to rescue them before the evil denizens of toydom spell their destruction. Unbelievably cute (and a real hoot to boot), *Power Pete* is a shoot-'em-up for the whole family. MacPlay, 714-553-3530.





game *Return to Zork*. In this game, you travel to the troubled Valley of the Sparrows to unravel the mystery behind the disappearance of East Shanbar. On your way, you interact with characters that appear in a full-screen, full-motion movie. At certain points, the game displays a dialog box and you choose which question or statement to speak. Based on your decision, the movie continues in a pre-specified direction. Apple bundles *Return to Zork* with its MPEG Media System.

**QuickTime VR.** Further unburdening game programmers are the virtual-reality tools contained in QuickTime VR. Debuting in Simon & Schuster's *Star Trek: The Next Generation Interactive Technical Manual*, QuickTime VR provides a way for players to explore seamless, panoramic environments. Rather than sitting back and passively viewing a scene, you walk through that scene, turn and look around, and move closer to interact with objects of interest. Clicking on on-screen "hot spots" embedded in a QuickTime VR file triggers events that play sounds, display text and pictures, or project standard QuickTime or other QuickTime VR files.

QuickTime VR is a natural for adventure games that focus on hunting and gathering. But QuickTime VR can also be incorporated into other types of games. For example, it could be used to create a virtual "ready room" in a flight simulator or a quaint tavern where knights and elves gather in dungeons-and-dragons tales.

### THE SOUND OF THE FURIES

Today's games offer treats not only for the eyes but also for the ears. Mac games are no longer confined to the tinny beeps and boops so reminiscent of those old stand-alone arcade games you found at the bowling alley in '78. Sound is strictly up-to-date in modern Mac games, which include CD-quality, 16-bit audio files; active stereo panning; support for MIDI music files; and in addition to the rather mundane sound-output chores, sound *input*. Just listen to this:

**Sound Manager 3.1.** The latest iteration of Sound Manager is PowerPC-native, and it runs significantly more efficiently than previous versions did on a Power Mac. This means that the PowerPC chip spends less time futzing around with audio tasks and devotes more power to propelling you smoothly through that beautifully

rendered, deadly passageway. And when pinpoint timing and accuracy are the only things maintaining your tenuous grip on life, the last thing you need is a preoccupied processor.

In addition, Sound Manager 3.1 allows simple asynchronous playback of sounds — meaning programs no longer pause until a sound finishes playing. Through a variety of tricks, game programmers have created asynchronous sounds in the past, but these programming machinations are no longer necessary — once again freeing programmers to create cool Easter eggs.

**Music.** Now that we have Sound Manager 3.1, it's almost a shame that we won't need it much longer as a tool for playing background music. As PC users and music professionals discovered long ago, sampled sound is fine for some purposes but sound chips, synthesizers, and MIDI are where it's at. Because PCs don't have the kind of built-in sound capabilities found on the Mac, PC users desiring computer audio have relied on add-on sound cards containing music-synthesizer chips. For the most part, these synthesizer chips produce better sound quality, with a wider range of instrumental sounds, than does QuickTime 2.0's QuickTime Musical Instruments extension. (Just compare the PC and Mac versions of *Doom II* to hear the drastic difference. The Mac's sound is decidedly thin and cheesy by comparison.)

Although you can connect devices containing these synthesizer chips to your Mac, games that use MIDI (music) files refuse to recognize such devices and insist on playing the QuickTime sounds instead. Apple's QuickTime team is considering support for the direct addressing of MIDI devices in an upcoming version of QuickTime. (Prior to version 2.0, QuickTime did not support MIDI files. Thus, only now are games starting to appear that use MIDI files.)

By the time you read this, InVision Interactive will likely have released a software package (the product name was still under consideration at press time) that creates a 16-bit music synthesizer inside your Mac. With InVision's QuickTime driver installed, any game that would normally send MIDI data to QuickTime Musical Instruments will instead channel this data to InVision's vastly superior instrument sounds. In addition to letting you enjoy sound finer

## THEY'RE BAAAAACK! / the sequels

SOME OF THIS YEAR'S TOP GAMES are sequels to past favorites. Here are five games that hold true to form but add something extra this time. You'll find new baddies, enhanced graphics, and updated plots.



**Marathon 2: Durandal.** More bad guys, new weapons, and enhanced graphics. Bungie Software, 312-563-6200.

▼ **The Journeyman Project 2: Buried in Time.** A new plot and possibly the most-breathtaking visuals of any game this year. Sanctuary Woods Multimedia, 415-286-6000.

**Glider Pro CD.** Now you can maneuver your plane outside the house, through new scenes. Casady & Greene, 408-484-9228.

**F/A-18 Hornet 2.0.** More-fluid scrolling of scenery, networking functions, and an add-on package with 28 extra missions. Graphic Simulations, 214-386-7575.

**Wing Commander III: Heart of the Tiger.** Live-action video scenes starring Mark Hamill, the actor who played Luke Skywalker in *Star Wars*. Origin Systems, 512-434-4263.



## GAME TACTICS / what Apple is doing for developers

AFTER IGNORING GAME DEVELOPERS for the better part of a decade, Apple claims that it now *gets* gaming. As well it should. Apple has begun to realize a few key facts: Games sell machines and maintain customer loyalty. The PC has a wealth of games, many of which are not yet available for the Mac. Mac users don't want to miss out on the fun that their PC-using counterparts are having. Here then are some of the tactics Apple is using to make sure Mac users aren't being left in the lurch when it comes to fun and games.

### EVANGELIZING GAMES

Harking back to the days of the 128K Macintosh, Apple has again embraced evangelists — people who sing the praises of a particular product or market and act as a liaison between Apple and developers. Eric Klein, Apple's current game evangelist (yes, that's a real title), hosts game developers in road shows called Game Kitchens. These kitchens — offered several times a year in various locations in the U.S. and Europe — take place in hotel rooms packed with Mac hardware and software (much of it is still in development).

Here, game developers meet face-to-face with Apple and Motorola engineers to work through technical issues related to gaming, the Mac, and the PowerPC. Not only do programmers learn about Apple's current and upcoming products but they also suggest changes that benefit all Mac users. For example, the MIDI track incorporated into QuickTime 2.0 can be directly attributed to input from game developers.

Some Mac developers, such as MacPlay's programmer Chris DeSalvo, are enthusiastic about the kitchens. "When Apple pulls some of the lead techs off Copland to work with us," says DeSalvo, "you can tell they're taking gaming seriously." Other Mac developers, although pleased with Apple's efforts, feel that PC-game vendors benefit the most from the

kitchens, since these developers have much more to learn about the Mac than experienced Mac-game developers.

Although making this kind of effort with PC developers may seem disloyal, it's vital if the Mac is to be considered a serious gaming platform. Remember, Mac gamers want the same games as their PC-encumbered friends. Because of this, Klein and crew spend much of their time convincing PC developers to bring their best games to the Mac. Mac ports of such popular games as Doom II, Descent, Wing Commander, System Shock, Full Throttle, X-Wing, and Dark Forces are the result of Apple's evangelism efforts.

### REDUCTION OF LICENSING FEES

Apple's reduction or elimination of licensing fees has also aided game developers. Previously, Apple charged a fee of around 80¢ per unit for the use of QuickTime VR — an extremely high charge, considering that developers may actually net only \$2 or \$3 per unit. That fee has now been reduced to between 3¢ and 8¢ per unit. (Were we of a more cynical turn of mind, we might venture that the existence of the free, but less capable, Microsoft Surround Video was what pushed Apple to lower the licensing fee.)

### THE PUSH FOR INDUSTRY STANDARDS

Now that Apple is taking games seriously and game vendors are taking Apple seriously, the company is better positioned to help create industry standards. Currently, Apple and game developers are attempting to create a joystick standard that will allow games to address controller devices directly rather than through mouse and keyboard emulation. The result of this standard will be finer control over games that use these external devices and fewer setup hassles for users.

than that produced by QuickTime Musical Instruments and most PC sound cards, this application, unlike an external MIDI device, doesn't require you to give up one of your precious serial ports.

**Speech Recognition.** Not only has sound output been improved but sound input is getting a fair shake as well. Game developers have finally provided users of PowerPC computers with a good reason to install PlainTalk. When playing Access' Links Pro, for example, you can select a club and hit the ball by using a simple voice command. Papyrus' IndyCar Racing II's pit crew likewise responds in a snappy fashion to your spoken orders. And in addition to its support for QuickDraw 3D acceleration, Reality Bytes' 3-D adventure Havoc lets you use voice control to maneuver your ship. Expect to see speech used more extensively in 1996.

### PLAYING ACROSS A NETWORK

These cool tools and fast games are all well and good, but how much fun are they really if you can't use them to pulverize that PC weenie over in Accounting during a Doom II DeathMatch? Thanks to Mac-IPX and a couple of inspired game vendors, now you can. This control panel and accompanying extensions allow you to play such games as Doom II and Descent on Novell IPX networks in a mixed-platform environment. Finally, those PC-versus-Mac arguments can be settled on the field of battle.

If you'd like to make cross-platform network gaming a more international experience, look no further than Westwood Studios/Parker Brothers' Monopoly CD-ROM. You can play Monopoly online

with Mac and PC players from around the world, simply by connecting to their IP addresses through the Internet. No need to worry about currency conversion or language barriers when playing across borders: The game automatically converts currency and localizes language.

### THE FUTURE IS FUN

Gaming looks significantly brighter for Mac players these days. With Apple's enthusiastic support, a slew of new titles and several PC classics being ported to the Mac, QuickDraw 3D, full-motion MPEG video, QuickTime VR, asynchronous sound, gorgeous synthesized music, speech recognition, cross-platform competition, and who knows what other kinds of awesome technologies being cooked up in someone's cubicle late at night, Mac gamers can finally hold their heads high around their PC counterparts.

So go ahead. Close the office door, and fire up that new Mac. Call forth Doom II's demons, unlock the beautiful mystery of Buried in Time's Mayan age, or slip into the cockpit of your own flying Warthog. There's never been a better time to let the games begin. ☞

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In addition to hanging around with Bob LeVitus in MacUser's Help Folder, Contributing Editor Christopher Breen is the coauthor of *The Macintosh Bible Guide to Games*, published by Peachpit Press.



For demos of many of the games discussed in this article, check out the MacUser and ZD Net/Mac areas on CompuServe and eWorld. See How to Reach Us for instructions on accessing ZD Net/Mac.



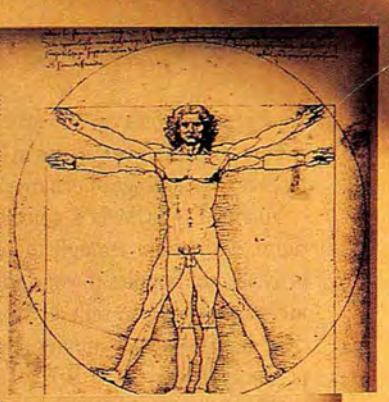
# FEEL the BURN

FALLING PRICES, GREATER RELIABILITY, AND NEW EASE OF USE MAKE MASTERING YOUR OWN CD-ROMS FOR MULTIMEDIA PROJECTS, DATA DISTRIBUTION, OR ARCHIVAL PURPOSES MORE PRACTICAL AND AFFORDABLE. **By Gregory Wasson**

**C**D-ROM is the closest personal computers have come to *Star Trek's* fanciful universal translator: CD-ROM supports a host of data types — including that space-hungry pair, digital audio and video — and delivers them in a format that's accessible to millions of computer users, on Mac and PC platforms, using a wide variety of operating systems and application software. The ability to create CD-ROMs gives you the potential to span the chasm to that vast federation of PC users to deliver your message, demonstrate your product, or pitch your next box-office blockbuster.

CD-ROM is also an extremely durable (nearly indestructible) medium that's well suited to archiving important data. The ability to create CD-ROMs allows you to store





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your precious files on a nearly indestructible medium that withstands far greater variations in heat, humidity, and magnetic interference than storage alternatives such as floppy disks or tape.

Finally, CD-ROM is a conveniently high-capacity storage medium, with room enough to consolidate the files stored in that brickyard of floppies in your office. The ability to create CD-ROMs means that you can rein all those fonts, clip-art collections, audio files, and QuickTime movies into an easily manageable, short stack of silvery discs.

CD-ROM recorders, or "burners," are now in their second generation, and with plummeting prices and more-mature software, CD-ROM mastering is going from the arcane to the mundane. Personal CD-ROM mastering, for backup as well as authoring purposes, is upon us — and we recently put the latest crop of tools through their paces.

To get a handle on personal CD-R (CD-recordable) systems, we took eight machines for a spin. Each was based on a dual-speed mechanism and most were priced around \$1,500 (and falling fast). We sized up each system's ability to back up and archive files and to store data in Mac and PC file formats. In evaluating the drives, we timed each one recording data and considered overall ease of use plus the quality and flexibility of software, documentation, and vendor customer-support policies.

### THE BOTTOM LINE

IN DECIDING which two CD-ROM recorders stood out from the pack, our judging criteria boiled down to two essential factors: software and — always important — price. The quality of the mastering software (specifically Astarte's reliable, easy-to-use Toast CD-ROM Pro software) proved to be the single most important factor for ensuring successful CD-ROM mastering.

**+ / OUTSTANDING      ● / ACCEPTABLE      - / POOR**

**RATING      PRODUCT      PRICE      SOFTWARE      EASE      SUPPORT**  
**OF USE**

**★★★★½ FWB hammerCDR 2X      +      +      +      +**



The speediest recorder we tested, the FWB hammerCDR 2X (list price, \$1,549; estimated street price, \$1,499) offers reliable performance and good value. Its software bundle, which includes the great Toast program and the CD-ROM ToolKit driver, will soon improve with the addition of Dantz's Retrospect backup software.

**★★★★½ Optima DisKovery 650CDR ●      +      +      ●**



The Optima DisKovery 650CDR (list price, \$1,595; estimated street price, \$1,440) lacks support for PC file formats, but Optima's unique CD-R Access mastering software, which allows you to write data to CD-ROM simply by dragging and dropping it onto a disc icon, makes it ideal for hassle-free personal backup.

**★★★★ Smart and Friendly CD-R 1002      +      +      +      ●**

**★★★★ Smart and Friendly CD-R 2000      -      +      +      ●**

**★★★★½ MicroNet Master CD Plus      ●      ●      +      +**

**★★★★½ Olympus Deltis CD-R2      +      -      ●      ●**

**★★★★½ Pinnacle RCD-1000      +      +      ●      ●**

**★★★★½ Dynatek CDM 200      ●      -      ●      ●**

LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.

All the drives we tested support multisession recording (see the "Mastering the Jargon" sidebar). Each CD-R system comes with the necessary power cord, SCSI cable (25-/50-pin system cables only), terminator, blank recording disc, and disc caddy (except for the tray-loading Smart and Friendly CD-R 2000). Three (the Smart and Friendly CD-R 1002, the FWB hammerCDR 2X, and the Optima DisKovery 650CDR) are built around the Sony CDU920S mechanism. All the CD-R drives are remarkably similar in appearance — squat, square desktop boxes.

### IT'S THE SOFTWARE, STUPID

What, then, serves to distinguish one CD-R system from another? Externally, the Smart and Friendly CD-R 2000, with its automatic tray disc loader, is the only unit that differs substantially from the others. Under the hood, however, there is one significant difference — hardware-cache size. Six of the eight recorders come with 1 MB of cache. The MicroNet Master CD Plus offers half that, 512K, whereas the Smart and Friendly CD-R 2000, which is designed specifically for multimedia-disc recording, comes with 2 MB of cache (which can be expanded to as much as 32 MB). A hardware cache acts as a kind of shock absorber that prevents interruptions in the data flow from your hard drive to the CD-R drive during a recording session. This can be critical, since a data disruption can ruin a recording session and reduce your blank disc to an oversized tiddleywink that'll cost about \$10 to replace. CD-ROM recording is an irreversible process that requires long, uninterrupted writes. Unlike with a hard disk, where a data-transmission glitch might cause an error that is easily and automatically overwritten, a miswrite on CD-ROM is forever.

The recorders' cache sizes didn't affect our recording tests, which we conducted with a fast Power Mac, an 8100/80, using a relatively speedy FWB hammer 1-GB hard drive for our data source. Your Mac setup may prove more sensitive to data spikes than ours, however, depending largely on the speed of the hard drive you use for your data source. You must have a hard drive other than your boot drive to store the data you intend to record on the CD-ROM. To store a full CD-ROM's worth of data, you need at least 650 MB, but we recommend having at least 1 GB. Most 1-GB drives sold today are fast enough for 2x-CD-ROM mastering, but if you want to use an older drive (which is likely to be slower than today's typical gig drives), a larger cache will afford you an additional margin of recording reliability.

In general, it's the software that's bundled with the recorders that sets the sheep apart from the goats. All come with mastering programs that control the data-recording process; several vendors additionally supply other useful programs. The Pinnacle RCD-1000, for example, ships with *two* mastering programs as well as a data-backup program and a collection of video clips. The FWB hammerCDR 2X is bundled with FWB's versatile CD-ROM ToolKit driver software, for playing back CD-ROMs, and by the time you read this article, the bundle will also include Dantz Development's Retrospect backup software. The most generous software bundle comes with the Smart and Friendly CD-R 2000, which includes a couple of multimedia-authoring programs (the "lite" version of Macromedia's Authorware and the full version of Macromedia Director).



## Mastering the Jargon / terms every CD-ROM author should know

THE MAC KEEPS YOU blissfully unaware of the many CD formats when you're playing a disc, but when you're creating one, you need to be mindful of them. The terminology of CD-R technology can be intimidating and confusing for novices, so here are explanations of the main CD-R options:

**CD-DA:** An audio-only format used for audio CDs and built on the ISO 9660 CD-ROM format. This is the format used for playback on audio-CD players.

**CD-i (CD-interactive):** A fairly recent CD format used for game and entertainment discs that work with special players connected to television sets.

**HFS (Hierarchical File System):** A format that creates an exact copy of a Mac volume, complete with nested folders, long filenames, and icons. HFS-formatted discs can be read only by Macs. The HFS format is the most convenient format in Macintosh-only settings, since it retains the Mac Finder's look and feel. This format is ideal for backing up, archiving, and distributing

material to be used only on Macs. **Hybrid:** A format that combines HFS- and ISO 9660-format data on a single disc. It's a clumsy, cross-



platform workaround that bypasses the limitations of ISO 9660 for Mac users. No matter what software you use, creating a Hybrid disc can involve the creative juggling of aliases, HFS soft partitions, and ISO 9660 files. The potential for mistakes and ruined discs is greater than with HFS- or ISO 9660-only discs.

**ISO 9660:** A generic, cross-platform format that is looking longer and longer in the tooth. Although ISO

9660-formatted discs can be read on PCs as well as Macs, the format imposes some limitations, such as the DOS filenames convention of 8 + 3 characters, that may force Mac and Windows 95 users to preprocess files and folders before mastering a disc. ISO 9660 is still ideal for the distribution of large amounts of text.

**Mixed Mode:** A combination of audio and any of the other formats already mentioned.

**multisession:** Multiple recording sessions placed in separate passes. The first session has about 22 MB of overhead (the lead-in and lead-out), with the data, or session, sandwiched between the lead-in and the lead-out. Subsequent sessions, which can be recorded later to update or add data, have about 14 MB of overhead each and are linked to the other sessions. Multisession-capable readers see all the sessions as one. Some older CD-ROM drives and drivers cannot fully recognize multisession discs and display only the first session.

**multivolume:** Refers to a disc that has multiple sessions, but

each session, rather than being linked to those on the rest of the disc, is mounted as a separate volume on the Mac's desktop.

**Photo CD:** A format for storing photographic images. Mac CD-ROM drives ship with software for reading this format, but mastering Photo CD discs requires special software from Kodak.

**single-session (disc-at-once):** A single, all-or-nothing recording. Once you've created a single-session disc, you can never add more data. Disc-at-once recording is generally more reliable than multisession recording, which includes links between sessions that can sometimes be lost or not recognized by some readers.



Although some of these extra programs may prove useful, depending on how you plan to use CD-R, we found that the mastering software is by far the most important determinant of success in recording CD-ROMs. In our opinion, the quality of the mastering software should be your No. 1 consideration when selecting a CD-ROM recorder. And our favorite mastering program by far is Astarte's Toast CD-ROM Pro.

### PROPOSING A TOAST

Toast ships with five of the eight recorders (the FWB hammerCDR 2X, the MicroNet Master CD Plus, the Pinnacle RCD-1000, and both Smart and Friendly models). It's also available as a \$100 option with the Dynatek CDM 200. There's at least one good reason why Toast is so popular with CD-R-drive vendors: It's top-notch. It's versatile, powerful, and easy to use, offering support for the full range of CD formats.

Toast supports single-session, multisession, and multivolume recording. What really sets it apart, however, is its ability to create a soft partition, for simplifying CD-ROM-recording sessions. This partition is a temporary, CD-ROM-sized volume that appears on

your Mac's desktop and that Toast uses as a template for the CD-ROM-mastering session. You copy the files you want to put on CD-ROM into this partition, arrange them as you like, and then tell Toast to burn a copy onto the disc. When you have finished recording, the partition goes away and the hard-disk space it occupied is freed up.

Toast also automates and simplifies the tricky process of creating a Hybrid CD-ROM, for viewing on Macs as well as PCs. It automatically renames Mac files to follow ISO naming conventions for PC files (a Mac file called Business Plan Spreadsheet might be renamed BUSINESS.XLS, for example). In addition, the software sets up aliases to shared files in the Hybrid volume's Mac directory. These processes aren't flawless and require careful double-checking, but Toast's automation saves loads of time.

### GRINDING GEAR

Elektroson's GEAR software, the Toast competitor that ships with the Olympus Deltis CD-R2 and the Dynatek CDM 200, supports the same formats and recording modes as Toast, but it lacks the ability to create soft partitions. Worse, GEAR requires every recording



session to be a copy of a complete HFS (Hierarchical File System) volume. This means that if you want to back up only selected folders from your hard disk's root directory, you cannot simply select them and drag them into a temporary folder or volume; instead, you must first copy them into a new folder, copy the new folder to the CD-ROM, and then trash that folder at the end of the recording session. This approach is tedious and is especially awkward for incremental-backup chores. Furthermore, GEAR lacks the ability Toast has to set up Hybrid volumes automatically and its manual offers inadequate guidance for doing it manually. Important details for complicated procedures are scattered in different places in the manual, and the skimpy index makes them hard to find.

In addition, GEAR proved unreliable with the Dynatek CDM 200 recorder, due to an incompatibility with Power Macs that Dynatek acknowledged and addressed by having us edit the GEAR Preferences file. Dynatek will ship Toast instead of GEAR for an additional \$100, and we eventually switched to Toast to complete our tests of the CDM 200 — a step we recommend for anyone considering the drive. In short, we found nothing compelling in GEAR to recommend it over Toast. If you can choose the mastering software that comes with your unit, opt for Toast.

The Pinnacle RCD-1000, in addition to coming with Toast, includes some proprietary software: RCD and Backup. RCD is general mastering software, similar to Toast or GEAR. It behaved quirkily in our tests, however, resulting in occasional quits, and we do not

recommend it — especially since Toast is provided as an alternative. Pinnacle's Backup utility simplifies the use of a CD-R system for backing up hard disks, by performing incremental updates to CD-ROM at scheduled intervals. The idea of combining an automatic backup utility with a CD-R system is good, but we found that discs created with Backup often contained corrupted files. Perhaps the results will be better with the proven Dantz Retrospect software, which FWB plans to ship with the hammerCDR 2X.

### BACKUP IS SIMPLY A DRAG

The mastering software supplied with the Optima Diskovery 650CDR is a different beast altogether from Toast and GEAR. Optima's proprietary, innovative CD-R Access software is a control panel that lets you use a CD-ROM as if it were a floppy. When you insert a blank disc into the recorder, an alert tells you the disc is not formatted. Click on OK to start formatting, and in a few minutes, the disc's icon appears on your Mac's desktop.

You "record" simply by dragging files and folders onto it. You can add more files by dragging at any time, and you complete a recording session by issuing the Finalize command, which completes the write process by creating a new, updated directory on the CD-ROM. CD-R Access is incredibly easy to use and is ideal for personal-backup purposes. Its main drawback is that it can create discs only in the Mac HFS format, so PC users aren't able to use CD-ROMs created with CD-R Access. Furthermore, even other Macintosh users must install a special control panel in order to read CD-R Access discs. Nevertheless, for casual use for backing up files to disc, it's difficult to imagine an easier or more Mac-like procedure. You are completely shielded from all of the intricacies of multisession recording.

At the time we tested these recorders, the Optima CDR650 didn't work with Toast software, but Optima tells us that by the time you read this, you should be able to use Toast, in addition to CD-R Access, with the Optima drive.

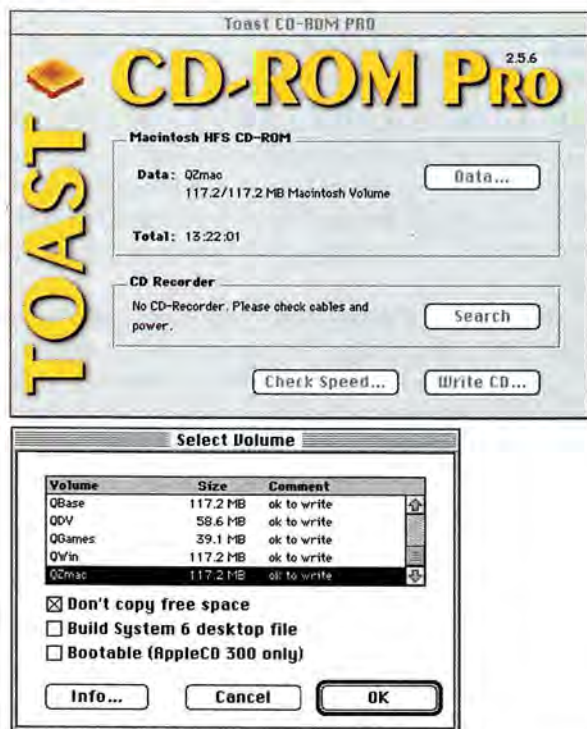
In addition to the program(s) that ship with a given CD-R drive, you can purchase mastering software from third parties. Toast and GEAR are available as stand-alone products. Another alternative is the \$199 PowerPC-native CD Constructor, from Sony Electronic Publishing. Like CD-R Access, this program restricts you to the HFS format (both single-session and multisession), but it offers a soft-partitioning feature lacking in the far more expensive GEAR. CD-It! All, from Optimage, is essentially just a repackaged version of Toast with Optimage's icons and splash screen substituted for Astarte's. The somewhat rewritten manual is only a slight improvement and isn't worth the \$100 premium Optimage charges over Astarte's \$699 list price for Toast. Not all third-party mastering software works with all drives, so shop carefully.

### BURNING SPEED?

We conducted a variety of tests with each drive, including creating Hybrid HFS/ISO discs (except with the Diskovery 650CDR, whose CD-R Access software supports only the HFS format), in order to test ease of use, and making complete backups of a 115-MB hard-disk partition, in order to test raw speed.

To comply with the manufacturers' recommendations, we kept the SCSI chain pretty simple: the Power Mac 8100/80 with a 500-MB

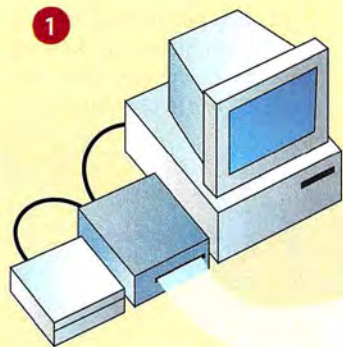
**Astarte's Toast CD-ROM Pro**, the mastering software bundled with many CD-R recorders, allows you to conduct a test write before you burn a new CD-ROM, to ensure that your system's data-transfer rate will be adequate for a successful write.





# The Right Spin / steps for a successful CD-ROM recording

THE PROSPECT of a recording error's trashing your blank disc makes CD-ROM recording a little daunting. And with blank discs going for about \$10 each, mistakes are expensive. Preparation is the best precaution: Set up your recording system appropriately; follow these steps and tips; and with a bit of patience, successful recordings can be yours.



**Tip:** Defragment (optimize) the hard-disk volume that contains the data you want to transfer to disc. A fragmented volume can cause CD-R write failures.

**Tip:** Turn off AppleTalk and all network connections. CD-R units demand your Mac's full attention.

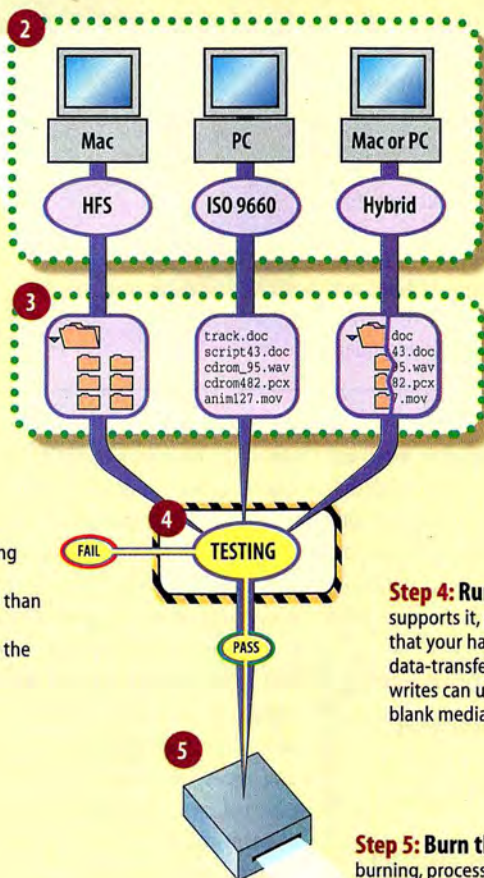
**Tip:** Turn off all extensions except those absolutely necessary for the recorder to function. You may want to create a CD-R-only set with an extensions manager.

**Tip:** If the test write fails, be sure you're using the single-session (disc-at-once) recording option whenever possible. It's more reliable than the multisession process.

**Tip:** Use the blank media recommended by the drive manufacturer.

**Step 1: Prepare your system.** Keep the recording environment as bare-bones as possible for the CD-R unit. Remove from your SCSI chain all SCSI peripherals except for the internal startup drive, an external drive for storing the data you'll be recording onto CD-ROM, and the recorder itself. You cannot record from the startup drive.

**Step 2: Identify your audience, and select the appropriate recording format.** You'll probably use one of three formats — HFS, ISO 9660, or Hybrid. If the CD-ROM is strictly for personal use (as with system-backup archives) or will be distributed only to Mac users, go with HFS. If you're distributing basic text or numerical data files for viewing by Mac and PC users, go with the older ISO 9660 format. If you want Mac and PC users to be able to view complex graphical data, choose the sophisticated (but tricky) Hybrid format.



**Step 3: Organize your data, and prep the files for the format you've chosen.** HFS files are easiest for Mac users, requiring only that you arrange folders as you wish the audience to see them. ISO 9660-format filenames must conform to the DOS filenames convention of 8 + 3 characters; Hybrid discs require adherence to the 8+3 convention too, as well as pointers to files that will be shared by Mac and DOS applications.

**Tip:** Check and double-check the filenames and folder structure of your data before you commit it all to disc. Make sure each folder is organized exactly as you want the viewer to see it (including window sizes and open status, view-by options, and so on).

**Step 4: Run a test write.** If your software supports it, perform a test write to ensure that your hard drive can keep up with the data-transfer demands of the CD-R drive. Test writes can uncover problems before you ruin any blank media.

**Step 5: Burn the disc.** When all signals are go, start the mastering, or burning, process; sit back; and wait.  
**Tip:** Do not use your Mac for other tasks during mastering. Recording cannot take place in the background.



**Step 6: Test the disc before you distribute it.** If your software supports disc verification, let it verify the disc and the integrity of the files immediately after the mastering process.

**Tip:** In addition to performing a software-based integrity check, spot-check the disc yourself to ensure that files are intact, by opening a few files and checking their contents.



## All-in-One Boxes / dedicated systems combine CD-R recorders and hard drives

IF YOU PLAN to use a CD-ROM recorder only in single, predictable bursts of activity — such as for archiving your files once a month or for churning out a handful of discs at the same time each week — you can probably live with the limitations imposed by a low-cost system: having to disconnect all other external SCSI devices, disable file sharing and electronic mail, and turn off all but the essential system extensions. However, if your work calls for quick production of discs at short notice or at irregular intervals, when reconfiguring your Mac is more than just a chore, you may want to consider a dedicated CD-R system.

Such a system combines a CD-R drive and a high-capacity hard drive in one compact box. Although their prices are more than twice those of comparable burner-only systems, remember that these units eliminate the need for

a dedicated hard drive for storing files for transfer to disc. They also simplify SCSI connections and conserve desktop space.

The \$3,295 JVC Personal Rom-Maker integrates a double-speed JVC CD-R recorder and a 1-GB Fujitsu hard drive in a single mini-tower. JVC's proprietary software includes archiving/mastering software that offers a fine degree of control not only over format but also over file placement on disc (letting you place important files closer to the center of the disc, for faster access). The JVC recorder and software do not handle CD-ROM XA or CD-i recording. For info, call JVC at 714-261-9690.

By the time you read this, Dynatek should also be offering a similar all-in-one system, the CDM 4000. This complete CD-R system, expected to list for \$7,499, combines a 1.1-GB SCSI hard drive, a quad-speed CD-ROM drive, a quad-

speed CD-ROM recorder, and a special controller that frees your computer from the rigors of the mastering process. The controller lets you disconnect the entire unit from your SCSI chain after you've created a CD template and finish processing off-line, so you can resume working on your Mac.

Dynatek promises that once the CDM 4000 has completed the first copy of a CD-ROM, you'll be able to make additional copies by swapping in a new blank disc and pressing a single button. The CDM 4000 comes with proprietary software based on Elektroson's GEAR. 800-461-8855 or 416-636-3000.



internal hard drive (the startup drive), the FWB hammer 1-GB external drive, and the terminated CD-R unit. Initial tests showed that any chain more complex than this invited faulty recording sessions that trashed blank master discs. Extra SCSI devices can compete with your data-source drive and the CD-R drive for CPU attention, causing disc-wrecking interruptions in data flow. Removing extra

devices also keeps the SCSI chain as short as possible, minimizing signal noise. We used System 7.5's Extensions Manager to create a CD-R-only configuration of the system that turned all extensions off except those needed for the CD-R unit to work properly. Keeping the usual rogues' gallery of extensions loaded during recording sessions almost guarantees failure.

For the speed test, we transferred a 115-MB hard-disk volume to CD-ROM, and with the exception of the Optima drive, all the drives took 9 to 10 minutes to do the recording. The DiskOver 650CDR stood apart as the slowest unit, taking almost 3 minutes longer than the top-speed hammerCDR 2X and 1.5 minutes longer than its slowest rival, the MicroNet Master CD Plus. With the exception of the Optima drive, the CD-ROM recording speed is consistent with a general rule of thumb: Recording a full 650-MB CD-ROM takes 74 minutes on single-speed drives, half as long on dual-speed drives such as those we tested, one-quarter as long on quadruple-speed drives, and so on. (Quadruple-speed recorders are available today and may be desirable if you generate a high volume of CD-ROMs, but with prices around \$4,000, they're still too expensive for personal use.)

**Elektroson's GEAR** offers some of the same features as Astarte's Toast CD-ROM Pro, but it lacks a soft-partitioning feature, which simplifies the recording of subsets of Mac volumes.

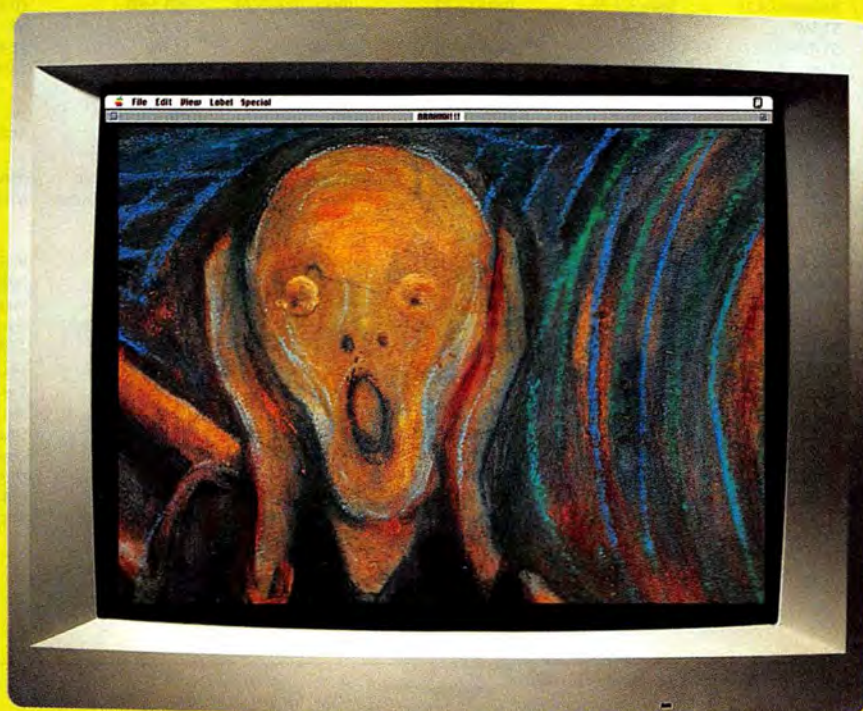


### THE WRITE CHOICE

The FWB hammerCDR 2X earns our top recommendation as a great all-around value. The fastest drive we tested, it ships with Astarte's ultra-easy-to-use Toast CD-ROM Pro mastering software; the planned addition of Dantz's Retrospect backup software completes a truly versatile package.

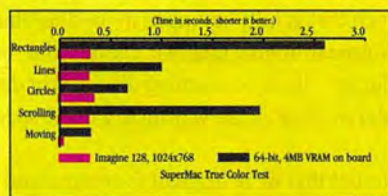


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## The Power to Burn / features of CD-ROM recorders

	Dynatek CDM 200	✓ FWB hammerCDR 2X	MicroNet Master CD Plus	Olympus Deltis CD-R2	✓ Optima Diskovery 650CDR	Pinnacle RCD-1000	Smart and Friendly CD-R 1002	Smart and Friendly CD-R 2000
List price	\$1,695	\$1,549	\$1,499	NA	\$1,595	\$1,495	NA	NA
Estimated street price	\$1,495	\$1,499	\$1,400	\$1,299	\$1,440	\$1,300	\$1,475	\$2,500
Cache size	1 MB	1 MB	512K	1 MB	1 MB	1 MB	1 MB	2 MB (expandable to 32 MB)
Uses caddy	yes	yes	yes	yes	yes	yes	yes	no
Mastering software	Elektroson's GEAR	Astarte's Toast	Astarte's Toast	Elektroson's GEAR	Optima's CD-R Access	Astarte's Toast, Pinnacle's RCD	Astarte's Toast	Astarte's Toast
Backup software	none	none	none	none	none	Pinnacle's Backup	none	none
Other bundled software	none	FWB's CD-ROM ToolKit	none	none	none	Extreme's Up! (video clips)	none	Macromedia Authorware (lite), Macromedia Director
Supported formats	HFS, ISO 9660, Hybrid, CD-i, Video, Generic, Computer/Audio, Audio	HFS, ISO 9660, Hybrid, CD-i, Video, Generic, Computer/Audio, Audio XA, Mixed Mode	HFS, ISO 9660, Hybrid, CD-i, Video, Generic, Computer/Audio, Audio XA, Mixed Mode	HFS, ISO 9660, Hybrid, CD-i, Video, Generic, Computer/Audio, Audio	HFS	HFS, ISO 9660, Hybrid, CD-i, Video, Generic, Computer/Audio, Audio XA, Mixed Mode	HFS, ISO 9660, Hybrid, CD-i, Video, Generic, Computer/Audio, Audio XA, Mixed Mode	HFS, ISO 9660, Hybrid, CD-i, Video, Generic, Computer/Audio, Audio XA, Mixed Mode
Warranty	1 year	1 year	2 years	1 year	1 year	1 year	1 year	1 year
Toll-free tech support	no	no	no	yes	no	no	no	no
Company	Dynatek Automation Systems Bedford, NS Canada 800-461-8855 416-636-3000 416-636-3011 (fax)	FWB Menlo Park, CA 415-325-4392 415-833-4655 (fax)	MicroNet Technology Irvine, CA 714-453-6100 714-453-6101 (fax)	Olympus Image Systems Melville, NY 800-347-4027 516-844-5000 516-844-5339 (fax)	Optima Technology Irvine, CA 714-476-0515 714-476-0613 (fax)	Pinnacle Micro Irvine, CA 800-553-7070 714-727-3300 714-789-3150 (fax)	Smart and Friendly Chatsworth, CA 800-959-7001 818-772-8001 818-772-2888 (fax)	Smart and Friendly Chatsworth, CA 800-959-7001 818-772-8001 818-772-2888 (fax)

✓ MacUser BEST BUY

The Optima Diskovery 650CDR also earns our recommendation, despite some significant limitations. Its clever CD-R Access software, which allows drag-and-drop copying of files to CD-ROM, is slow and limits you to the Mac-only HFS format. Nevertheless,

using it is clearly the most painless route to CD-ROM mastering for many Mac users.

Also worthy of attention is the speedy Smart and Friendly CD-R 1002, which dropped in price by nearly \$200 as this article went to press and which offers speed almost identical to that of the FWB recorder.

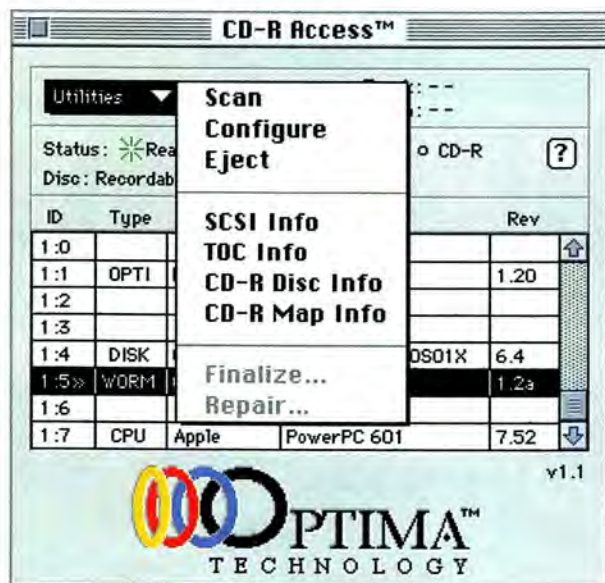
Finally, if you are interested in exploring multimedia-disc production, consider purchasing a \$2,500 Smart and Friendly CD-R 2000. It's respectably speedy, offers a 2-MB cache, and comes with Macromedia Director and Authorware software. It's the only CD-ROM recorder in this bunch that is fully equipped to produce multimedia projects and its software bundle makes it a good value, but serious multimedia producers who are cramming discs full of data should most likely consider moving all the way up to a quad-speed recorder.

The only recorder we tested that we're hesitant to recommend is the Dynatek CDM 200 — at least in its base configuration with Elektroson's GEAR mastering software. If you're considering this drive, plan to add \$100 to the price tag for an upgrade to Toast. It's well worth it.

Whichever recorder catches your fancy, keep in mind that CD-R isn't yet a mass-market technology, despite its growing popularity. The systems still present a somewhat intimidating learning curve for some and are still too expensive for occasional users. But CD-R is very nearly here for the rest of us and, for pioneering spirits, can be a valuable and practical alternative to tape or floppy disks for backup and data distribution. ☞

MacUser contributing editor Gregory Wasson concluded many hours of CD-ROM-recorder testing by consolidating his vast floppy clip-art library onto one CD-ROM.

**Optima Technology's CD-R Access**, which lets you treat CD-ROMs like floppy disks, is a control panel that offers a surprising breadth of features, including a thorough online help system and a variety of tools for configuring and searching the HFS-formatted CD-ROMs it creates.





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# Fast on the Draw

If you've just bought one of Apple's new Power Macs, consider getting one of these superfast graphics cards to go with it. **By Henry Bortman**

If you work with large Photoshop images or Excel spreadsheets that contain embedded graphs, you're probably all too familiar with the impatient little gnome who sits on your shoulder and whispers urgently in your ear: "Faster! Faster!" But buying a Mac that has a faster processor won't necessarily shut the little gnome up. The Mac's graphics-display system can also have a tremendous impact on how responsive your Mac feels and how quickly you can get work done.

If you own one of the new Power Macs or are considering purchasing one, you should check out accelerated-graphics cards. It's obvious why someone buying a Power Mac 9500/132 would be interested in such a card: The 9500/132 has no built-in graphics-display capability. If you don't buy a video card, you won't be able to see anything. But the rest of the new Power Macs ship with some type of graphics-display capability built in. The Power Mac 8500, 7500, and 7200 come with built-in VRAM, and the Power Mac 9500/120 comes with the 2-MB version of the ATI Xclaim GA accelerated-graphics card installed.

Why would owners of these Macs choose to shell out extra money for an accelerated-graphics card? Two key reasons: more speed (some people just can't get enough) and higher resolution. Although Macs that have graphics-display capability built in are fast, installing a third-party card can make your system faster still. And although the Power Macs that have built-in graphics-display capabilities can be upgraded by adding more VRAM to support resolutions of at least 1,152 x 870 pixels at 24 bits, accelerated-graphics cards can support even higher resolutions — some allow resolutions of up to 1,920 x 1,280 pixels, an up-and-coming standard.

To find out just how much additional speed and resolution the first PCI accelerated-graphics cards offer, we tested seven cards from five vendors — ATI Technologies, Diamond Multimedia, EA Research, IMS (Integrated Micro Solutions), and Radius. All the cards support at least 1,152 x 870 pixels with 24-bit color. Several other vendors — Matrox, Miro, Number Nine, and YARC — have cards in the works, but their products weren't available for testing at press time. Many of them should be shipping, however, by the time you read this (see the "Coming Soon" sidebar).



## What We Tested and Why

Because accelerated-graphics cards can benefit everyone from publishing professionals to business gurus, we tested the cards in two Macs: a Power Mac 9500/132 and a Power Mac 7500/100. With the Power Mac 9500, we focused on Photoshop speed, since this machine sells largely into the professional graphics, video-production, and multimedia-authoring markets.

With the Power Mac 7500/100, we broadened our tests a bit. Although many Power Mac 7500 users also spend time working with graphics applications, the lower cost and bundled software of the Power Mac 7500 make it a more likely machine for someone who wants to run every aspect of a business on a Mac. Chores can range from preparing a promotional brochure, using Photoshop and QuarkXPress, to using Excel to track sales and expenses. Accordingly, we performed our suite of Photoshop tests on the Power Mac 7500/100 and then threw in a suite of tests using Microsoft Word and Excel.

Our general impression is that the major breakthrough this first round of PCI accelerated-graphics cards provides is not raw performance, but rather price/performance. In theory, PCI can move data more than three times as quickly as NuBus. Because Apple has long been promoting the speed advantage of the PCI bus, many of you may have expected to see equivalent increases in graphics-display speed overnight. But when we compared the speed of these new PCI

cards in a Power Mac 9500/132 to that of one of the fastest NuBus cards, the Radius Thunder IV GX•1600, installed in a Power Mac 8100/100, we found at most a 25-percent speed improvement. Several PCI cards were actually slower in some tests than the Thunder IV GX•1600.

On the other hand, the prices Mac users have historically had to pay for this speed have been in the stratosphere. Radius' NuBus-based Thunder IV GX•1600, even today, costs close to \$3,000. The company's PCI equivalent, the ThunderColor 30/1600, costs about \$2,000. And many of the PCI cards we tested achieve similar speeds for many tasks but have prices in the \$450-to-\$650 range. We're witnessing an astonishing shift in the price/performance curve — high-speed graphics cards are becoming affordable for a much larger group of users than ever before.

## Speeding Along in a Power Mac 9500

If you spend much time working with Photoshop, you know that even if your system has enough RAM to keep your entire scratch file in memory, scrolling through a large image can be painfully slow. When we timed how long it took to scroll through a variety of Photoshop files on the Power Mac 9500/132, four cards — the EA Research EAsycolor 1600/16, IMS TwinTurbo-128M, Radius Thunder 30/1600, and Radius ThunderColor 30/1600 — distinguished themselves. The ATI Xclaim GA and the Diamond Javelin Video 3400XL lagged somewhat behind. The slowest card, the Radius PrecisionColor 8/1600, took nearly three times as long as the fastest one (see the "Professional Power" chart).

The Radius ThunderColor 30/1600 excelled at scrolling through an RGB file, but the EA Research EAsycolor 1600/16, the IMS TwinTurbo-128M, and the Thunder 30/1600 did better at scrolling through a CMYK image. We subsequently found out that the ThunderColor 30/1600 is optimized specifically for Photoshop at a 1:1 zoom factor, and we had run our tests at a 3:1 zoom factor. When we retested CMYK scrolling at 1:1, the ThunderColor 30/1600 outpaced the other three cards. And it was even faster in comparison when we scrolled with Photoshop's Smooth CMYK Composites option turned on.

Radius claims that its customers prefer to work on images at 1:1 and to use the ThunderColor 30/1600's hardware-zoom feature. Indeed, some users do prefer to work this way: Hardware zooming is instantaneous. But we know many users who complain that when they use hardware zooming, the menu bar, scroll bars, and tool palettes become inaccessible. They find automatic panning disorienting and prefer to use Photoshop's software zooming. In short, it's a matter of personal preference. (At press time, Radius told us it had developed new software that improves scrolling speed at zoom factors other than 1:1. The software upgrade should be available by the time you read this.)

But when we tested the cards' speed for calculation-intensive functions such as Resize and Unsharp Mask, the ThunderColor 30/1600 was the clear winner (although it barely beat the Radius Thunder IV GX•1600 installed in a Power Mac 8100/100). The ThunderColor 30/1600 is really two cards in one: a Thunder accelerated-graphics card and a Photoshop-specific ColorEngine daughtercard. The ColorEngine speeds up calculation-intensive Photoshop functions, such as Resize, Unsharp Mask, Gaussian Blur, and Rotate, by

## THE BOTTOM LINE

**SPEED, SPEED, AND MORE SPEED.** Speed is what drives most users' purchases of accelerated-graphics cards. But we didn't rate the cards on that factor alone; a card's reliability and adherence to Mac standards also weighed heavily. And we took into consideration the range of resolutions each card supports; the support the vendor offers; and, of course, the card's price.

**+ / OUTSTANDING      ● / ACCEPTABLE      - / POOR**

**RATING    PRODUCT                      PRICE    SUPPORT    SPEED    RESOLUTION**

**★★★★★ RadiusThunderColor 30/1600**



For heavy-duty Photoshop use, we recommend the ThunderColor 30/1600 (list price, \$2,499; estimated street price, \$2,000). Although the card is expensive, it runs Photoshop filters quickly and it supports 24-bit color at a 1,600-x-1,200-pixel resolution. It also comes in a lower-resolution version, the ThunderColor 30/1152.

**★★★★★ IMS TwinTurbo-128M**



The best bargain of the lot, the TwinTurbo-128M (list price, \$699; estimated street price, \$625) provides great speed at a price that's substantially lower than what Mac users historically have had to pay. The TwinTurbo-128M also supports super resolution, but only at a 16-bit maximum.

★★★★★	Radius Thunder 30/1600	-	+	+	+
★★★★	ATI Xclaim GA	+	●	●	●
★★★★	EA Research EAsycolor 1600/16	●	+	+	●
★★★	Radius PrecisionColor 8/1600	+	+	-	●
★★	Diamond Javelin Video 3400XL	+	●	-	●

LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.





## PROFESSIONAL POWER / how the cards stacked up when running Photoshop

If you're a Photoshop guru, getting the maximum speed out of your Mac is high on your to-do list. To measure the top speed at which the PCI accelerated-graphics cards were able to handle a variety of Photoshop tasks, we first installed each card in a Power Mac 9500/132. We then installed Photoshop 3.0.4, giving it a 100-MB memory partition, so that our tests would not force Photoshop to access the

Power Mac 9500's hard drive.

We timed how long it took to resize a 50-MB RGB image to 25 MB, scroll through it at 3:1 magnification, convert it to CMYK (which increased its size to 33 MB), scroll through it again at 3:1 magnification, and then apply an Unsharp Mask filter. We chose this sequence for two reasons: First, it represents several of the common tasks Photoshop users perform regularly, and second, it indicates

exactly where and why each card performs well or poorly.

Products that take advantage of calculation-intensive Photoshop operations, for example, perform well when resizing images or applying an Unsharp Mask filter. We also noted that in the RGB-to-CMYK-conversion test, the Radius ThunderColor 30/1600 lagged behind the others. That's because the card performs the conversion itself, rather than using

the Mac's processor. According to Radius, the ThunderColor 30/1600 makes up for lost time by allowing you to scroll through the CMYK file much faster — a theory that did not hold up when we scrolled at a 3:1 ratio. (Scrolling at a 1:1 ratio did bear out Radius' claims, however.) The products are listed in order of overall speed when tested on both a Power Mac 9500/132 and a Power Mac 7500/100.

PRODUCTS TESTED	PHOTOSHOP TASKS				
	Resize / Time required to resize a 50-MB image down to 25 MB in size.	RGB Scroll / Time required to scroll through a 25-MB file in RGB mode.	RGB to CMYK / Time required to convert a 25-MB file from RGB to CMYK.	CMYK Scroll / Time required to scroll through a 33-MB file in CMYK mode.	Unsharp Mask / Time required to apply an Unsharp Mask filter to a 33-MB CMYK file.
✓ <b>MACUSER BEST BUY</b> ■ <b>BEST PERFORMER(S) IN EACH TEST</b>					
✓ Radius ThunderColor 30/1600	31	14	26	21	28
EA Research EAsycolor 1600/16	48	16	16	17	46
✓ IMS TwinTurbo-128M	48	16	16	17	46
Radius Thunder 30/1600	47	15	17	16	47
ATI Xclaim GA	48	25	17	25	46
Radius PrecisionColor 8/1600	48	40	16	41	46
Diamond Javelin Video 3400XL	49	20	19	21	47
<b>REFERENCE PRODUCTS</b>					
4 MB of VRAM *	54	51	19	52	50
Radius Thunder IV GX-1600 °	32	19	36	19	30
	SECONDS SLOWER	SECONDS SLOWER	SECONDS SLOWER	SECONDS SLOWER	SECONDS SLOWER

\* in Power Mac 8500/120  
° in Power Mac 8100/100

offloading them from the Mac's main processor to a quartet of DSPs (digital signal processors). (Radius' Thunder 30/1600 card can be upgraded to a ThunderColor 30/1600 card by the addition of a ColorEngine daughtercard.)

None of the other accelerated-graphics cards we tested have DSPs; instead, they rely on the Mac's main processor to perform these calculation-intensive functions and consequently did no better in these tests than a Mac's built-in graphics-display system. Some vendors offer stand-alone DSP-based Photoshop-specific accelerators — such as the PowerShop, from Adaptive Solutions — that you can use in conjunction with all the accelerated-graphics cards we reviewed.

Interestingly, the ThunderColor 30/1600 performed quite poorly — in fact, worse than the built-in graphics-display system on the Power Mac 8500/120 — when converting an RGB file to CMYK. That's because the card's software instructs Photoshop to use a larger-than-standard tile size when it stores images internally. (Tiles is Adobe's term for chunks of a Photoshop image.) This larger tile size allows the ThunderColor 30/1600 to achieve the greatest possible efficiency on the Photoshop operations that it accelerates, with one notable exception: The larger tile size causes RGB-to-CMYK mode conversions to slow down. Radius claims that its customers typically work in professional environments that have equipment capable of scanning images directly into CMYK mode and so have no need to perform such mode conversions. If, however, you *do* need to perform conversions, don't expect much help from the ThunderColor 30/1600.

### How They Fared in a Power Mac 7500

Not everyone can afford a Power Mac 9500/132. If you have a Power Mac 7200 or a Power Mac 7500, odds are you're not running Photoshop day in and day out. More likely, you use a mix of applications, performing tasks that span the range from producing letters and spreadsheets to doing image processing and creating layouts. So, in addition to running our suite of Photoshop tests, we subjectively examined general system responsiveness and then performed objective tests with Microsoft Word and Excel, the two most popular productivity applications for the Mac.

Subjectively, all the cards we tested felt snappier than the Power Mac 7500/100's built-in graphics-display system. In our lab tests, the top performers with the Power Mac 9500 — the EAsycolor 1600/16, Thunder 30/1600, ThunderColor 30/1600, and TwinTurbo-128M — once again distinguished themselves (see the "Speed for the Mainstream" chart). The ATI Xclaim GA was the fastest card when scrolling through a Word document, but it lagged behind the top four in our other tests.

The Radius PrecisionColor 8/1600 was also, once again, the slowest in many tests. The Diamond Javelin Video 3400XL, however, was acceptably fast in the Excel and Photoshop tests but, when scrolling through a Word document, took nearly three times as long as the Power Mac 7500's built-in graphics-display system. In fact, the Javelin's slow speed when scrolling a Word document bumped it down to last place in overall speed, even though the Radius PrecisionColor was slower in *more* tests. (Diamond has indicated that it's aware of this problem and is working on a software fix,



which should be available by the time you read this.)

We experienced another problem with this card as well. After we loaded our Excel test document, when the Javelin Video 3400XL was installed, Excel put up a dialog box that said, "Not enough memory to display completely." Again, Diamond has claimed that it is aware of this problem and will release a fix soon.

And finally, as with our tests on the Power Mac 9500/132, the ThunderColor 30/1600 left all the other cards in the dust for our Photoshop-filter tests (not shown). It is interesting to note that because the ThunderColor 30/1600 doesn't rely on the Mac's main processor to perform the complex calculations involved in using Photoshop filters, it ran these filters nearly as quickly with the Power Mac 7500/100 as with the Power Mac 9500/132.

## Seeing Is Believing

Not only do accelerated-graphics cards increase the responsiveness of graphics operations but many also support higher resolutions than are possible with a built-in graphics-display system. Some users, however, may prefer super resolution — 1,600 x 1,200 pixels. At this resolution, designers can see an entire two-page spread and still have room around the outside of the layout for displaying a variety of palettes. Alternatively, accountants can see significantly more cells of a spreadsheet.

Of the cards we tested, only two — the ThunderColor 30/1600 and the Thunder 30/1600 — offer 24-bit color at a resolution of 1,600 x 1,200 pixels. (Each also comes in a less expensive model that supports a maximum resolution of 1,152 x 870 pixels at 24 bits.) All the other cards can be set to a resolution of 1,600 x 1,200 pixels only at 8- or 16-bit color. For spreadsheet work, 8-bit color is adequate, but for color-image editing, the ThunderColor 30/1600's ability to provide super resolution at 24 bits is a definite plus. Of course, as with the other advantages Radius' cards offer, you pay (in cold hard cash) for this capability.

Note, however, that not all of today's 20- and 21-inch monitors support a resolution of 1,600 x 1,200 pixels. Eventually, you'll begin

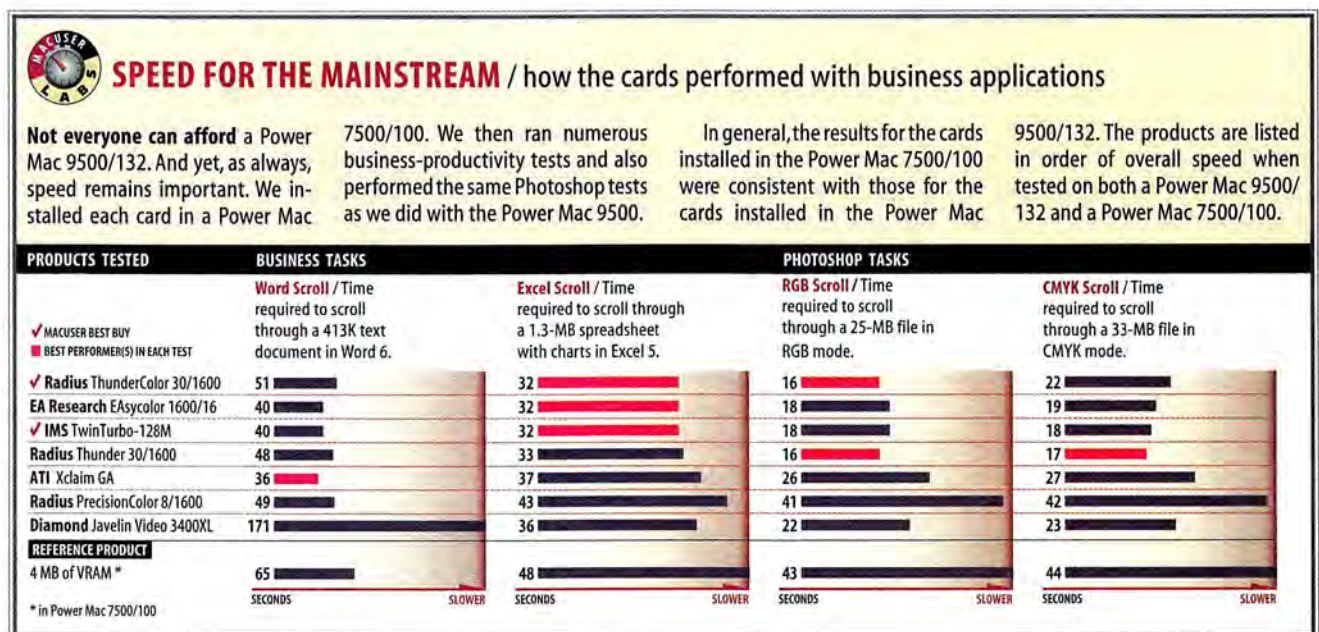
to see affordable monitors that support a resolution of 1,920 x 1,280 pixels. Only three cards — the EAsycolor 1600/16, the Thunder 30/1600, and the ThunderColor 30/1600 — support this resolution. The two Thunder cards even allow you to use 24-bit color when running a monitor at a resolution of 1,920 x 1,280 pixels.

Radius is the only vendor to include a 30-bit RAM DAC (digital/analog converter) on its cards. The Thunder cards can already display 16.7 million colors, but the DAC allows a choice of colors from a palette of billions of colors. This scheme increases such things as color fidelity, making it possible for you to see greater detail in an image's shadow areas. But there's a catch: You can't take advantage of the RAM DAC unless you calibrate your card and monitor with Radius' ProSense Calibrator (\$799 list). For those people who are soft-proofing images, however, the overall cost is worth it.

## Mix-'n'-Match Problems

Just because a monitor and a card support a range of resolutions doesn't mean you can expect smooth sailing. To check for problems that can occur when graphics cards and monitors fail to communicate, we installed each card in a Power Mac 7500/100 and connected the card to an Apple Multiple Scan 20 Display. We then tested all possible resolution and bit-depth combinations for each card.

The most disturbing problem we found was with the EAsycolor 1600/16. To its credit, EA Research makes an effort to provide users with all the possible timings (a timing is represented by a combination of screen resolution and screen-refresh frequency — for example, 1,152 x 870 pixels at 75 Hz) the EAsycolor 1600/16 supports. The EAsycolor 1600/16 displays all the possible timings in a pop-up menu in System 7.5.2's desktop Control Strip. Although it may seem user-friendly to make choosing the timing easy and although knowledgeable users who have monitors that support ultrahigh resolutions or nonstandard timings may appreciate being able to take advantage of their monitors' capabilities, most monitors aren't able to support all possible timings. If you choose a timing that your monitor can't support — as we did, on more than one





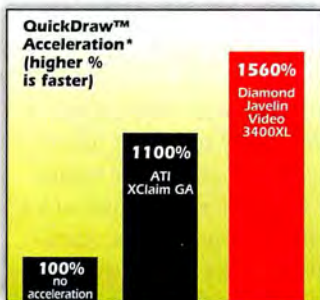
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Resolution	Colors (with 2 MB)	Colors (with 4MB)
640 x 480	16.7M	16.7M
800 x 600	16.7M	16.7M
1152 x 870	65k	16.7M
1280 x 1024	256	65k
1600 x 1200	256	65k

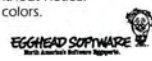


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\*Based on QuickDraw acceleration tests using Ziff-Davis MacBench 2.0. Tests completed on a Power Mac 9500/120 with a resolution of 1024 x 768 at 16.7 million colors.





**COMING SOON** / what to expect next from accelerated-graphics cards

THE FIRST ROUND of PCI accelerated-graphics cards — those reviewed for this article — represent only the tip of the iceberg. By the time you read this, many of the vendors whose products we evaluated will be offering upgrades and/or add-ons. Some will be offering new products. In addition, several vendors whose cards weren't available in time for testing expect to ship Mac PCI graphics accelerators. Here's what to expect.

**QuickTime Acceleration.** The Diamond Javelin Video 3400XL, the EA Research EAsycolor 1600/16, and the IMS TwinTurbo-128M each contain hardware that accelerates QuickTime-video playback in scaled-up window sizes. At press time, however, software to take advantage of this feature wasn't yet available.

**Better Color.** EA Research is also intending to market cards that support super resolution in 24-bit color. These cards will contain a 30-bit RAM DAC, for greater color fidelity when they are used in conjunction with the company's

forthcoming EAsycolor Calibrator.

**Faster Speeds.** Number Nine (617-674-0009) will ship the Imagine128, a card that the company is promoting as the only "true" 128-bit graphics accelerator, which Number Nine claims will make its card faster than any of those currently available. The Imagine128 will be available in two versions: a 4-MB model that will list for \$899 and an 8-MB model that will list for \$1,499.

**More Choices.** Miro (415-855-0940) will offer three miroCHROMA accelerated-graphics cards. The miroCHROMA 1024 (\$249 list), the 1152GT (\$599 list), and the 1600GT (price not determined at press time) will contain 2, 4, and 8 MB of VRAM, respectively.

**QuickDraw 3D Acceleration.** Matrox (514-685-

2630) will release the MGA Millennium in 4-MB (\$649 list) and 8-MB (\$999 list) versions. As well as accelerating standard (2-D) QuickDraw, the Millennium will provide a significant boost to QuickDraw 3D. This should prove valuable not only for playback but also for creating rendered 3-D images and animations.

The Screamer, from YARC (805-499-9444), will also provide QuickDraw 3D acceleration. In fact, YARC is positioning its card as a QuickDraw 3D accelerator that can also drive a monitor.

The 2+2 model (2 MB of VRAM for display, 2 MB for a dedicated depth buffer that improves the smoothness of 3-D animations) will list for \$995; the 4+5 model (4 MB of display VRAM, 5 MB for a depth buffer) will list for \$1,495.



occasion — your screen will go blank or display gibberish.

The workaround is far from obvious and requires a multitude of steps. Unfortunately, the EAsycolor manual neither warns you about this danger nor discusses what to do if the problem occurs. This surprise blank-screen "feature" is the main reason we recommend IMS' TwinTurbo-128M over the EAsycolor 1600/16, even though the TwinTurbo-128M doesn't support a 1,920-x-1,280-pixel resolution. The two cards, based on the same graphics-acceleration chip from IMS, are otherwise nearly identical. EA Research says that it will correct this problem in a future software release.

With the ThunderColor 30/1600, Radius takes a more elegant approach to making a wide range of resolutions available. Radius' Dynamic Desktop control panel lets you select the type of monitor you have attached and limits you to selecting only from the resolutions that monitor can support. If you change your mind about the setting, you can reset your choice by holding down the T key while restarting your Mac.

We observed another problem with the TwinTurbo-128M and EAsycolor 1600/16 cards. At 800-x-600-pixel resolution, the displays took on a decidedly green cast, which got worse as we moved from 24-bit to 8-bit color. Many older Mac monitors do not have ports designed specifically to accept the synchronization signals generated by graphics cards. Instead, these monitors use the signal line that accepts information about the amount of green in an image to also accept the sync signals from the card. This technique for transferring sync signals is called sync-on-green.

The IMS TwinTurbo-128M and the EAsycolor 1600/16 can send sync signals both on a separate signal line and on the green line. If the card and the Mac monitor interact correctly, the monitor accepts the separate sync signal and filters out the sync signal on the green line. Unfortunately, this didn't happen at the 800-x-600-pixel resolution. Because of a circuitry mismatch between the monitor and these cards, the monitor was unable to filter the sync signal out of the green line, resulting in too much green in the image.

EA Research claims that it can do nothing about this problem;

users must purchase a special adapter to fix it. And admittedly, 800 x 600 pixels — a resolution common in the PC world — is not likely to be chosen by Mac users. The other cards that support sync-on-green, however, did not exhibit this problem at the 800-x-600-pixel resolution. IMS solves the problem by having you move a jumper on its card when you choose 800 x 600 pixels for a monitor that does not support sync-on-green.

### A Card for Every Mac

There's no question that the Mac graphics-card market has been transformed. The new crop of PCI accelerated-graphics cards perform on par with or slightly better than the best of the NuBus cards, but the cost of the cards has plummeted. You can get superfast cards for around \$500 to \$600 each. Just six months ago, you would have paid three to four times that to get the same speed.

But despite reduced prices, not everything in the accelerated-graphics-card arena is coming up roses. Diamond's Javelin Video 3400XL was dog slow in our Word-scroll test — an indication of software problems we hope will be ironed out in future versions. Using EA Research's EAsycolor 1600/16 was confounding at times, and the Radius Thunder 30/1600 and ThunderColor 30/1600 — although offering many benefits other vendors have yet to match — are still priced too far above the competition. Those caveats aside, here are our recommendations, based on the type of Mac you own and the type of work you do.

**Power Mac 9500/132.** Since this Mac doesn't have any built-in graphics-display capability, you need to buy something to provide it. For heavy-duty Photoshop use, we recommend the Radius ThunderColor 30/1600, thanks to its support for 24-bit color at a resolution of 1,600 x 1,200 pixels and its Photoshop-filter acceleration. (Plus, the ThunderColor 30/1600 supports 24-bit color at a resolution of 1,920 x 1,280 pixels — a standard that monitors will begin to support in the near future. Thus, the ThunderColor 30/1600 is a card you can grow with.) For those who want overall high speed but not necessarily Photoshop-filter acceleration or support for



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## A CLOSER LOOK / comparing basic features and vendor support

**Every graphics card is a little bit different.** Some graphics cards, such as the Radius ThunderColor 30/1600, offer everything from Photoshop acceleration to super resolution. Others, such as the ATI Xclaim GA, are designed for users who want extra speed despite a tight budget. Here are the basic characteristics that distinguish the cards, including information on the type of support the vendors offer.

Note that several cards come in models that are less expensive and that support lower resolutions and bit depths than the fully configured models. These cards are perfect for folks who use 15- or 17-inch monitors. Some cards also support resolutions as high as 1,920 x 1,280 pixels — but unfortunately, today's mainstream monitors can't yet display this many pixels.

	ATI Xclaim GA	Diamond Javelin Video 3400XL	EA Research EA5color 1600/16	✓ IMS TwinTurbo- 128M	Radius PrecisionColor 8/1600	Radius Thunder 30/1600*	✓ Radius ThunderColor 30/1600
List price	\$649	\$569	\$649 (direct)	\$699	\$599	\$1,499	\$2,499
Estimated street price	\$460	\$515	NA	\$625	\$500	\$1,175	\$2,000
Amount of VRAM	4 MB†	4 MB†	4 MB	4 MB	4 MB†	6 MB	6 MB
Max. resolution (in pixels)	1,600 x 1,200	1,600 x 1,200	1,920 x 1,280	1,600 x 1,200	1,600 x 1,200	1,920 x 1,280‡	1,920 x 1,280‡
Bit depth at max. resolution	16 bits	16 bits	8 bits	16 bits	16 bits	24 bits	24 bits
Max. resolution at 24 bits	1,152 x 870	1,152 x 870	1,152 x 870	1,152 x 870	1,152 x 870	1,920 x 1,280	1,920 x 1,280
Tech support							
Toll-free			●		●	●	●
Online	●	●	●	●	●	●	●
Fax-back	●	●	●	●	●	●	●
Warranty	5 years	5 years	lifetime	3 years	lifetime	lifetime	lifetime
Company	ATI Technologies Toronto, ON Canada 905-882-2600 905-882-2620 (fax)	Diamond Multimedia Systems San Jose, CA 800-468-5846 408-325-7000 408-325-7070 (fax)	EA Research San Ramon, CA 800-681-6566 510-867-0967 510-867-0684 (fax)	IMS (Integrated Micro Solutions) San Jose, CA 408-369-8282 408-369-0128 (fax)	Radius Sunnyvale, CA 800-227-2795 408-541-6100 800-966-7360 (fax)	Radius Sunnyvale, CA 800-227-2795 408-541-6100 800-966-7360 (fax)	Radius Sunnyvale, CA 800-227-2795 408-541-6100 800-966-7360 (fax)

✓ MacUser BEST BUY

\*The ColorEngine upgrade card is available for \$1,199 list.

†You can get a 2-MB version that can be upgraded to 4 MB. The 2-MB version is less expensive and supports a lower maximum resolution.

‡You can get a less expensive version that supports a maximum resolution of 1,152 x 870 pixels at 24 bits.

24-bit color at extremely high resolutions, the IMS TwinTurbo-128M is a good bargain. Later, you can always add a Photoshop-specific accelerator, such as the Adaptive Solutions PowerShop.

**Power Mac 9500/120.** This Mac ships with a 2-MB ATI Xclaim GA. We don't recommend replacing this card with another, unless you really need the Photoshop-filter acceleration or the superior resolution provided by the Radius ThunderColor 30/1600 or 30/1152. Even then, you might be better off simply upgrading the Xclaim GA's VRAM to 4 MB in order to get acceptably high resolutions and then purchasing a separate Photoshop accelerator.

**Power Mac 8500/120.** This Mac comes with 2 MB of VRAM built in, and it offers good speed. If all you need is higher resolution, consider a 2-MB VRAM upgrade, for about \$200. With it, your Power Mac 8500 will support a maximum resolution of 1,152 x 870 pixels at 24 bits. For those who need speed, the IMS TwinTurbo-128M offers good speed at a good price. For Photoshop acceleration, once again we recommend a Radius ThunderColor card.

**Power Mac 7500 and 7200.** The amount of VRAM these systems ship with is enough to see what you're doing, but it may cramp your style. If you're using a Power Mac 7200 and your main objective is to see more of an Excel spreadsheet, your least expensive

option is to upgrade to 2 MB of VRAM, for about \$100. Your Mac will then support a resolution of 1,280 x 1,024 pixels (at 8-bit color). Owners of Power Mac 7500s and 7200s who are looking for a bit more speed and even higher resolution (1,600 x 1,200 pixels at 8-bit color) but are on a tight budget would do well with the 2-MB version of the ATI Xclaim GA (\$499 list). For a bit more, however, the IMS TwinTurbo-128M will give your system an even greater speed boost. For Photoshop users, we once again recommend the Radius ThunderColor 30/1600. Note that the speed boost this card's DSPs give to Photoshop filters is every bit as good with these Macs as it is with the Power Mac 9500/132 — and every bit as expensive.

The race is on. And you can expect the lead to shift during the coming year, especially as vendors add more and more features to their cards (see the "Coming Soon" sidebar). No single factor will guarantee success, nor will the distinction between Mac old-timer and PC newcomer matter for long. When the dust settles, it will be the companies that strike the best balance of price; speed; features; and, yes, Macintosh savvy that will come out the winners. ☐

Henry Bortman is MacUser's technical director. Senior project leader Jeffy Milstead managed the testing for this report.



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MacBench 2.0 test performed on Power Mac 8500 24MB of RAM with a 4MB Millennium for PCI Power Mac, 4MB ATI XClaim GA and 4MB 8500 on board graphics chip at 1024 x 768 in 16.7 M colors with Adobe Photoshop 3.0 for Power Mac

CIRCLE 11 ON READER SERVICE CARD



# QUICK LABS

## • Printer Image Consultation • Hard-Drive Case Study • Monitor Panel Discussion

**A**ppearances aren't *always* deceiving, at least in the case of Mac peripherals. Sometimes you can tell a great deal about a product and how easily it'll fit into your work environment simply from a superficial look.

A glance at an output sample from this month's workgroup laser printer, for example, tells you a lot about its impressive 1,200-dpi resolution. And a peek at its front panel tells a bit about its ease of setup.

Hard drives too: Even those often inscrutable desktop boxes betray something of themselves in their outward appearance. This month's 2-GB removable drive, for example, appeals to a considerably different audience than the

spartan-but-small 800-MB model we tested.

Monitors, of course, are all about outward show, but even when they're unplugged, their appearances can offer hints: The control panels on this month's offerings range from three unlabeled buttons (for navigating through on-screen menus), to LCD panels, to bristling arrays of switches. Each may entice or repel, depending on your tastes and needs.

Of course, once you've been pulled in by an attractive face, you should always take a long, hard second look. That's what MacUser Labs is for. So read on for *our* observations.



Impressive output at 1,200 dpi is the chief asset of the Lexmark Optra Lx+, the lone printer we tested this month. This workgroup printer delivered solid blacks, clean and accurate line art, and excellent detail.

The Optra Lx+ uses Lexmark's proprietary PostScript Level 2 emulation and ships standard with 4 MB of memory, expandable to 64 MB. It's designed to live happily in a mixed Mac/PC environment, having built-in serial and parallel connectors and automatic emulation switching, but you can tell that the printer was designed primarily with PCs in mind: Its manuals contain almost no references to the

### A NEW WORKGROUP PRINTER

Mac, unless you purchase separate Mac-specific hardware — a Mac Ethernet adapter (\$369 list), which we strongly recommend, or an AppleTalk connector (\$299 list).

Despite its lack of Mac documentation, configuring the Optra Lx+ is simple, thanks to its easy-to-read LCD front panel. The 500-sheet paper tray holds only letter-sized paper; the printer can handle legal-sized sheets, but you have to feed them manually. Optional feeders, including those for duplex printing, are available at additional cost.

Network administrators get help — albeit limited — from Lexmark's MarkVision

software, which lets you remotely change the printer's front-panel settings and get reports on jobs in progress.

To test speed and output quality, we timed the printer producing a variety of documents and weighted the results to reflect everyday usage. You can compare the result to those of workgroup printers we've reviewed in past Quick Labs, but you can't compare it to results for personal printers. We print longer, more complicated documents on workgroup printers, in order to better reflect real-life conditions.

REVIEWER / ROMAN LOYOLA TESTING / JIM GALBRAITH

+ / OUTSTANDING ● / ACCEPTABLE - / POOR		ESTIMATED STREET PRICE	RESOLUTION	WARRANTY	TEXT QUALITY	GRAPHICS QUALITY	PAPER HANDLING	SUPPORT	COMMENTS	PAGES PER MINUTE
+++	Lexmark Optra Lx+	\$2,300	1,200 dpi	1 year	+	+	●	●	Outstanding output quality, simple controls compensate for poor Mac documentation.	<div><div></div><div>02</div><div>FASTER</div></div>





## FIVE NEW HARD DRIVES

Five hard drives, four with capacities higher than 2 GB and the fifth an 800-MB model no bigger than a pound of butter: This month's drives reflect a trend toward innovative case design and plummeting cost per megabyte.

On the nifty-case side, the 800-MB FWB hammer-PE 800 offers a compact, no-frills design that won't crowd your desktop (and in a pinch could serve as a portable). More

portable, however, is the MicroNet DataDock HD 2070 (pictured), a 2-GB drive with carrying handle that slides into MicroNet's Docking Station base (\$799). The base, which accommodates two DataDocks, furnishes a power supply and a SCSI-ID selector. Surprisingly for such an advanced system, the DataDock HD 2070 was the only drive we tested that doesn't ship with active termination.

On the plummeting-storage-cost front, the 4-GB APS ST 4200 offers a great value, at just 27 cents per megabyte; Dynatek's HDA 4.0, this month's fastest drive, offers a similar deal.

We tested drive speed by using MacBench 2.0's Disk Mix test. The scores are relative to that of a 250-MB Quantum IDE drive in a Quadra 630, which has a score of 10.

REVIEWER / JIM SHATZ-AKIN TESTING / KRISTINA DE NIKE

+ / OUTSTANDING ● / ACCEPTABLE - / POOR			ESTIMATED STREET PRICE	FORMATTED CAPACITY	PRICE PER MEGABYTE	WARRANTY	CASE	SOFTWARE/MANUALS	SUPPORT	COMMENTS	MacBench 2.0 Disk Mix Score
★★★★	APS ST 4200		\$1,099*	4,090.6 MB	\$.27	5 years	+	●	+	Great storage value in a well-designed, durable case.	8.5
★★★★	MicroNet DataDock HD 2070		\$735†	2,044.7 MB	\$ .36	3 years	●	●	●	Flexible removable design. Bulky dock lacks switchable termination.	7.5
★★★★	APS Q 2210		\$799*	2,045.8 MB	\$ .39	5 years	+	●	+	Time-tested SR 2000 case, with good active termination.	7.5
★★★★	Dynatek HDA 4.0		\$1,300	4,149.3 MB	\$ .31	3 years	●	●	+	Disk was unformatted. Software disables setting of write cache.	7.5
★★★★	FWB hammer-PE 800		\$559	808.4 MB	\$ .69	2 years	●	●	●	Compact drive comes with external active-termination block.	6.5

\*Direct price.

†Excludes price of required DataDock base unit (\$799).

LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.



## SIX NEW MONITORS

This month's crop of monitors is a showcase for the variety of available control-panel designs. Push-button controls, on-screen dialog boxes, and even an LCD panel grace the faces of the six monitors we tested.

The Smile CA1706 (pictured) has an LCD panel built into the front. It also lets you save three sets of monitor settings as "channels," which may come in handy if the lighting in your work environment often changes.

The Sampo AlphaScan 15mx and the Corion ArtMedia TC1664 have front-panel push-

buttons for adjusting settings. The Sampo monitor has a somewhat confusing set of four control buttons that govern multiple functions, which you toggle through by using a fifth button. The Corion monitor has a simpler array of nine single-function buttons.

Easier to use are the on-screen controls of the Iiyama Vision Master 17 and Vision Master Pro 17 and the Panasonic PanaSync 1791Ei. All three use thermometer-style bars to help you fine-tune your settings, which are automatically saved in the monitor's memory.

The Iiyama monitors each use three buttons to navigate through a series of 17 on-screen controls. The Panasonic model has the best control set we saw this month, with 14 settings and helpful numeric indicators for precise adjustment.

The image-quality scores reflect the results of our tests for various image-quality characteristics. Maintaining focus and sharpness is more difficult on larger monitors. A score of 1.0 is considered acceptable.

REVIEWER / ROMAN LOYOLA TESTING / MARTIN WONG

+ / OUTSTANDING ● / ACCEPTABLE - / POOR			ESTIMATED STREET PRICE	SCREEN SIZE	MAXIMUM RESOLUTION	WARRANTY	MANUALS	SUPPORT	CONTROLS	COMMENTS	IMAGE-QUALITY SCORE
★★★★	Iiyama Vision Master 17		\$749	17 in.	1,280 x 1,024 pixels	3 years	●	+	●	Same as Pro model, but slightly dimmer shadow-mask tube.	1.2
★★★★	Iiyama Vision Master Pro 17		\$849	17 in.	1,280 x 1,024 pixels	3 years	●	+	●	Bright aperture-grille tube. Great on-screen controls.	1.2
★★★★	Panasonic PanaSync 1791Ei		\$949	17 in.	1,280 x 1,024 pixels	3 years	●	+	+	Pricey, but on-screen controls are great.	1.2
★★★★	Sampo AlphaScan 15mx		\$389	15 in.	1,280 x 1,024 pixels	2 years	-	-	●	Great image quality at an attractive price.	1.1
★★★★	Corion ArtMedia TC1664		\$449	15 in.	1,280 x 1,024 pixels	1 year	●	●	●	Affordable monitor. Good for home use.	1.1
★★★★	Smile CA1706		\$695	17 in.	1,280 x 1,024 pixels	1 year	●	-	+	Easy-to-use LCD control panel.	1.0

LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.

**GET INFO** / APS Technologies 816-483-6100 Corion Industrial 408-980-8988 Dynatek Automation 416-636-3000 FWB 415-833-4616 Iiyama North America 215-957-6543 Lexmark 606-232-2000 MicroNet Technology 714-453-6100 Panasonic 201-348-7000 Sampo Technology 404-449-6220 Smile International 714-546-0336



# DTP & GRAPHICS

ILLUSTRATION /

## Illustrator 6.0 Gets Image Savvy

### Adobe beefs up plug-in standard.

ONCE UPON A TIME, Adobe Illustrator imported color graphics only in EPS format. Times change, and so has Illustrator. With version 6.0, users can now import a host of bitmap formats, including Photoshop 3.0 and TIFF files, and run Photoshop-compatible filters on placed images. Adobe adds illustration muscle as well, with path patterns, customizable tools, and a control palette à la PageMaker.

Now that Illustrator accepts PICT, TIFF, GIF, Photoshop, EPS, and other image formats, you can alter images with filters such as Kai's Power Tools. Adobe has updated its plug-in format to make different kinds of plug-ins or filters work seamlessly within Illustrator. Adobe will use this standard for all future versions of Illustrator, Photoshop, and PageMaker, making it possible for users to access these special tools from within any of these applications.

Switching among applications is easier now that Illustrator lets you use Macintosh Drag and Drop with Photoshop 3.0.4. Also, PageMaker users can double-click on Illustrator EPS files and the application will launch Illustrator or switch to it for editing.

Illustrator users will find new options in the Tools palette. The new API supports plug-in tools, so modal filters such as the Twirl and Spiral tools operate directly within the pasteboard rather than through a clumsy dialog box. Other additions include the Path Patterns feature, which takes a pattern and flows it along a path, much



like flowing type on a path but with graphics instead. Also new is the Control palette, which can numerically position objects.

The price remains \$595, but the package includes Adobe Dimensions 2.0; Photoshop-compatible filters, including 12 from the Gallery Effects collections; 300 Type 1 fonts and copious quantities of clip art, sample files, and path patterns. Upgrade to CD-ROM version, \$99; upgrade to floppy version, \$129. 800-521-1976 or 415-961-4400. / Sean J. Safreed

PLUG-INS /

## Revamped KPT 3.0 Ready for Real Time

### HSC Software changes name to MetaTools.

BRINGING NEW EFFECTS to Photoshop digirati, Kai's Power Tools 3.0 delivers new filters for previewing effects in real time, an improved texture-making plug-in, and a revamped interface. As always, KPT's filters

let you create incredible effects.

KPT Lens f/x puts some of the real-time effects power of KPT Convolver into a new interface that lets users apply Smudge, Noise, Find Edges, and Gaussian Blur filters through a lens that users can move over images. Users can change the filter parameters as they drag the lens, making Lens f/x an easy-to-use tool for experimentation.

The revamped KPT Texture Explorer provides new options for generating textures, and with the KPT Interform filter, users can create a combination of textures from Texture Explorer or a morph between selected textures for use in any

QuickTime-compatible program.

In what promises to become this year's most conspicuous filter, the Spheroid Designer is a new addition to the effects package that can create a variety of 3-D spheres that have bump, transparency, and lighting attributes that are much more complex than what can be achieved with the current version's Glass Lens filters.

The package also sports a new interface option with a neutral-gray background, rather than the previous version's pictorial one, and up to 36 levels of undo/redo. Previews are four times as large as in the previous version, and users can preview full-screen versions of filtered images. These innovations should mean that less time is spent jumping back and forth between the various filters and Photoshop.

The version 3.0 upgrade is available from MetaTools. Upgrade from version 2.1, \$79 (free for those who purchased Kai's Power Tools after August 18, 1995). 805-566-6200. / sjs





## MONITORS /

# Sony MultiscanTC Matches Colors

MAKING A PLAY for the high-end graphics market, Sony has introduced a 20-inch color-calibrated monitor designed for achieving accurate color. The MultiscanTC Trinitron Color Graphic Display — also called the 2000 TC — includes the tools necessary for maintaining consistent color.

Priced at \$3,950, the 2000 TC comes with an RGB sensor for measuring on-screen color and Sonnetech's Colorific software, which matches the display to the output device and supports Apple's ColorSync 2.0 color-management software. Using the calibration device, you measure the tube's color and brightness; the software then uses the color data to automatically calibrate the display. The 2000 TC also constantly monitors and stabilizes its phosphor levels/beams to compensate for phosphor aging. The display system comes with four color-temperature presets — 3,000 K, 500 K, 6,500 K, and 9,300 K — that are further adjustable in 100-K increments. Brightness, contrast, beam-convergence, and other controls are accessible on the front panel.

The maximum recommended resolution for the 2000 TC is only 1,152 x 870 pixels — perhaps due to its relatively coarse .30-mm dot pitch — but that's also the top resolution Apple offers in Macs with built-in video. 800-352-7669 or 408-432-0190. / Pamela Pfiffner



## FINE PRINT

### Type with Depth

ADDING DEPTH TO TEXT usually means leaving the confines of your page-layout or image-editing program. With Xaos Tools' TypeCaster for Adobe Photoshop and Strata's 3D XT for QuarkXPress, you can add bumpy, beveled 3-D type to your designs — or at least add the illusion of 3-D, with ShadowCaster, developed by ALAP (a lowly apprentice production). \* **TypeCaster** yields 3-D type right in Photoshop, using any Type 1 font; ten fonts are included in the package. You can choose from 200 bundled textures and bump maps to dress up your



type. To add highlighting around the edges, there are customizable bevels with controls for straight, convex, and concave edges. Completing the image is as easy as adding a light source (or up to ten) and clicking on Render. TypeCaster can also be used in Adobe Premiere or After Effects to generate animated 3-D type effects. \$199. 415-487-7000. \* **3D XT** brings the power of Strata's StrataType 3d into QuarkXPress in the form of a Quark XTension. Users can extrude any installed font or a PICT or EPS file into a 3-D logo with controls for depth and beveling. Applying textures is a matter of selecting preinstalled textures that mimic stone, wood, or metal. All of the textures are editable, and users can control attributes such as color or gloss. The rendering engine also supports bump mapping, for lumpy surfaces, and reflectivity mapping, for creating chrome or metallic surfaces. 3D XT is available only through XChange, for \$99. 800-788-7557 or 303-229-0656. \* To achieve the look of text floating in space, you can add a soft drop shadow to text in QuarkXPress by using **ShadowCaster**. The shadows are TIFF files placed in the layout with controls for the shadow's resolution, blur, offset, and the like. \$99. Sold through XChange. / SJS

## An Extensive Set of XTensions

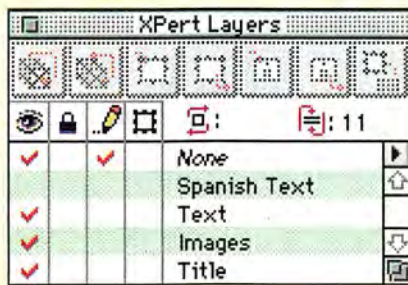
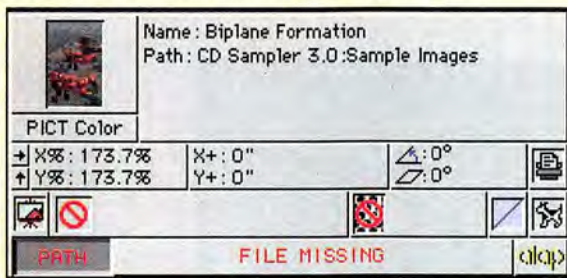
IN THE CROWDED WORLD of XTensions for QuarkXPress, one company's products consistently rise to the top of the heap. Small productivity enhancers such as Facelt, Scalelt, and the aptly named Kitchen Sink made ALAP (a lowly apprentice production) a favorite of QuarkXPress users. But after the introduction of such all-in-one packages as Extensis' QX-Tools, ALAP is countering with XPert Tools, two volumes of 15 XTensions each at bargain-basement prices.

XPert Tools Volume I and Volume II, priced at \$129 each or \$239 for the set, both roll in aspects of ALAP's earlier products. Volume 1, for example, contains XPert Scale, an improved version of Scalelt that lets you resize entire groups of objects in one action. Facelt pops up in Volume II as XPert CharacterStyles, for applying style sheets down to the character level. Both sets also feature XPert Loader, for managing XTensions.

Other highlights of Volume I: XPert Layers, for assigning and reordering layers quickly; XPert ImageInfo, for viewing information about graphics such as file type and embedded fonts; XPert Print, for printing only parts of a page to a printer or as an EPS file; XPert Quit, for automatically closing inactive documents; and XPert Color, for changing the color of items globally and converting spot colors

to process colors or vice versa.

Other highlights of Volume II include XPert Pilot and XPert Command Pad (both also in Kitchen Sink), for navigating through documents quickly and for creating custom tool palettes and dialog boxes, respectively; XPert Rulers, for measuring items accurately; XPert TextStyler, for applying text styles with a marquee tool; and XPert ItemMarks, for placing calibration bars and crop and registration marks anywhere in a document. Sold through XChange, a distributor of Quark XTensions. 800-788-7557 or 303-229-0656. / PP





GRAPHICS HOW-TO / BY JANET ASHFORD

# Child's Play

Combine Kid Pix and Painter to create a richly textured image.

**GROWN-UPS MAY SNEER** at Brøderbund's Kid Pix, a paint program for children, as a serious artistic tool, but it contains a rich collection of patterned fills and whimsical stamp shapes. Illustrator Susan LeVan, of LeVan/Barbee studio in Boston, likes to start an illustration in this unlikely program because she finds that the shapes and fills add serendipitous quirks to the final product. For "Three Brothers," she made a rough sketch in Kid Pix 2 and then painted over it in Fractal Design Painter 3.1, adding layers of texture and color to make the finished piece as richly textured as the mixed-media collages she created before beginning to use a computer.



Janet Ashford is the coauthor, with John Odam, of *Start with a Scan: A Guide to Transforming Scanned Photos, Drawings and Objects into High-Quality Art* (forthcoming from Peachpit Press).



**1. Starting with stamps.** LeVan started her "Three Brothers" illustration by sketching the center figure in Kid Pix. She drew in the rudimentary lines of the head and torso and used a variety of patterns — tweeds, plaids, checkerboards — to fill in the closed spaces. To create the foundation of the textures, she added more strokes of color and clusters of small images, using a variety of stamps: purple frogs, red flowers, and gray stars. LeVan finds that such stamps, some of which remain visible in the final image, add a delightful randomness.



**2. Refining the texture.** LeVan reopened the brother image in Painter 3.1 and painted it with a variety of brushes and textures. Using a pressure-sensitive stylus, she enhanced the natural-media look of the image. For example, to add texture to the cheek, LeVan painted in blue with the Square Chalk brush and a paper texture named Diagonal 1 from the More Paper Texture library. By varying pressure on the stylus, she was able to change the thickness of the parallel lines. The other brothers in the image are modified copies of the first one LeVan made.



**3. Creating translucent strokes.** The hat on the right brother's head in the final image was drawn with lines that look like translucent water stains. LeVan drew black lines over the chair with the Simple Water watercolor brush. To make the lines translucent, she set the Wet Fringe slider in the Advanced Controls palette to 90%. This created the

translucent black lines shown in the first example (a). She then reversed the image (Effects: Tonal Control: Negative). Because the water strokes are still "wet," they appear as dark lines. With the image reversed, she dried the water brush strokes (Canvas: Dry) (b). Finally, she reversed the image again to make the strokes milky white (c).



EXPERT TIPS / BY BOB SCHAFFEL AND CHUCK WEGER



# Font Fatigue

**Thought font problems were a thing of the past? Wrong. Even after ten years of desktop publishing, fonts still cause headaches.**

**NEXT TO THE HOLY GRAIL** of color management, font management is high on the wish list of most graphic-arts professionals. Fonts are all too often a production problem, even after ten years of desktop

typography and publishing. And there's no sign of relief in sight.

First, some basics: On your Mac today, there are four types of font-related files — bitmap (screen) fonts, PostScript (printer) fonts, TrueType (annoying) fonts, and font suitcases composed of any number of bitmap and/or TrueType fonts. OK, we lied: There can be AFM (Adobe Font Metrics) files too. To complicate things, multiple-master and QuickDraw GX fonts are derivatives of PostScript and TrueType fonts.

Although some businesspeople might be satisfied with Ralph's Must-Have Collection of 2,499 TrueType Fonts, those of us who use imagesetters have standardized on PostScript fonts. And there's the rub. PostScript fonts are schizophrenic by nature, because they consist of both a printer font and a screen font. Without the screen font, we won't see the font name in the menu. Without the printer font, Adobe Type Manager (ATM) won't display different sizes of the font properly and the PostScript code won't be downloaded to the output device.

If we were designers and you were running a print shop, we would need to send you *both* sets of files — the screen *and* the printer fonts — to guarantee that the job would print correctly. But that's illegal, at least with most font licenses today. We could send you the screen font, because that's where kerning pairs are kept, but it's not OK to send the printer font. People still do it, just as people still run red lights. But if you get caught, don't say we didn't warn you.

OK, so you — the printer — own the entire Adobe font library. *Now* we don't need to send you the printer font, right? Maybe. Suppose we sent you a screen font from another font vendor that happened to have the same name as your Adobe printer font. (How many versions of Garamond do you suppose are out there?) You'd be using our Garamond screen font with your Adobe printer font, and chances are that the font metrics wouldn't be the same. You'd wind up with strange-looking text, and we designers wouldn't pay the bill!

How can you prevent this? As is the case in many preflight situations, eternal vigilance is the price of PostScript. First, do a Get Info on the screen font we sent. It might have information there that identifies the font manufacturer and version number. But what if it doesn't have that information? What if we'd put the screen font into a suitcase file, for example?

For QuarkXPress users, there's Quark PS Utilities, a collection that contains a very handy XTension called PostScript Font Usage. It actually queries the output device to make sure the fonts used in the document are resident where they need to be.

If you're not connected to an output device or you're running another program, you'll have to dig deeper. Use one of the many font-listing utilities (such as Lupin

Software's In That Case or Gregg Swann's great FONDetective, both shareware, available online) to determine the PostScript font name associated with the screen font. It tells us, for example, that screen font "AGaramond Plain" needs PostScript font "AGaramond-Regular." Now you can use ResEdit or another resource-editing tool to open the PostScript font file you *think* is the right one. Open the POST resource whose ID is 501, and search for the string

`/FontName/AGaramond-Regular` def to verify that this is indeed the right PostScript font file.

Sound complicated? Unfortunately, it is. But there's no other guaranteed way to make sure that a certain PostScript font goes with a certain screen font — well, you could just print your file and watch the imagesetter substitute Courier.

Another font weirdness: If fonts sometimes fail to display correctly on-screen — even though both the screen font and the printer font are installed — try bumping up the font cache in ATM (Adobe suggests 50K per font!). If you can't afford that much RAM, use a font-management utility to turn some of your fonts off.

And by the way, you need to use a font-management utility. Symantec's Suitcase and ALSoft's MasterJuggler are currently the only two in town. Both these programs have problems (Suitcase, the more popular one, hasn't been updated since forever), but they're absolutely essential if you have more than a couple of dozen fonts. ☞

*Bob Schaffel is emerging-technologies consultant for R. R. Donnelley & Sons. Chuck Weger is a consultant and conference chair for CONCEPTS 96.*



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# NETWORKING

NETWORK ACCELERATION /

## Software Gets Nets Running Faster



SPEED'S THE THING for prepress and other publishing professionals who routinely move large files across a network. RUN (800-478-6929 or 201-529-4600), whose RunShare file-transfer software and hardware already beats the Finder at multi-megabyte file transfers through efficient bandwidth use, is providing even more speed increases, in version 2.0 of this software. Expected by the time you read this,

the new software will also be supported in upgrades to existing hardware products and future PCI-based cards.

RunShare 2.0 (2 users, \$399; 5 users, \$749; 25 users, \$2,499) adds printing acceleration and Fast Ethernet optimization to the file-transfer acceleration provided in version 1.0, and it improves acceleration for some file-oriented tasks as well. According to RUN, the new software speeds printing to AppleShare-based print servers by 200 to 400 percent. RUN also claims a 300-percent speed improvement over the Finder, on average, for Open and Save operations from within QuarkXPress (in addition to, as in version 1.0, from within Adobe Photoshop, Adobe Illustrator, and Macromind FreeHand). The company says speed improvements in file transfers are similar to those with RunShare 1.0 on Ethernet networks — 300 to 400 percent faster than without RunShare — and even better on Fast

Ethernet networks — about 500 percent faster than without RunShare.

To support the software upgrade, RUN is upgrading the RunShare EAB (Ethernet Accelerator Board) and the RunShare GSA (Graphics Server Accelerator) NuBus Ethernet cards, each of which has a processor that relieves the Mac of certain file-transfer tasks. Each card includes a network driver tuned to work with RunShare 2.0, and the software itself is embedded in the GSA hardware. The GSA (\$1,499; \$1,999 with 5-user license) speeds Mac servers, whereas the \$1,099 EAB is designed for Macintosh workstations.

RUN's first PCI-based card, due in early 1996, will be a 10/100 Fast Ethernet card. The new package will include a five-pack of RunShare software and a network driver tuned to work with RunShare. Unlike the GSA and EAB, the card itself will not contain acceleration hardware. / John Rizzo

NETWORK MANAGEMENT /

## Keeping Tabs on the LAN

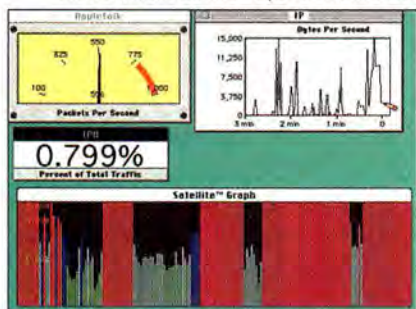
DO YOU THINK OF NETWORKS as quiet and colorless entities? New tools from the AG Group (800-466-2447 or 510-937-7900) and MR Mac Software (800-566-7622 or 619-453-2845) won't dazzle multimedia fans but do promise network monitoring with a clearly audiovisual approach.

The AG Group's NetMeter uses network-traffic and -protocol data gathered by the firm's Satellite application to create graphs, QuickTime movies, and audible representations of LAN activity. The 11 NetMeter

modules, which can be used in combination, provide several output types: text, strip chart, vu meter, traffic light, QuickTime movie, music, and speech. Managers can set NetMeter to alert them when network utilization exceeds a certain level and to provide visual or aural indicators for each protocol running on the LAN. For example, you might

create one meter that sounds a musical note when overall network utilization exceeds 10 percent and another to say "Surf's up!" when HTTP (HyperText Transfer Protocol) packets — indicating users surfing the World Wide Web — account for a particularly high percentage of the total. NetMeter sells for \$395 with the required Satellite application; current owners of Satellite can buy NetMeter separately for \$149.

Devices rather than traffic are the purview of Network Scout (\$295), from MR Mac Software. Network Scout tracks which devices are on the network and alerts you if selected Macs, printers, or other nodes on an



PHOTOGRAPHY / LON CLARK

## NET BYTES

### Remote Possibilities

SMALL AND FAR-FLUNG offices are getting more attention from router vendors, who are offering affordable products with a small number of ports. **Xylogics** (800-225-3317 or 617-272-8140) has released the \$1,995 **Remote Annex 2000**, a four-port remote-access server and router that supports AppleTalk, TCP/IP, and IPX LAN protocols, plus dial-in via ARA, PPP, and SLIP. Too bad there's no Mac management interface. ☹ Space saving is the goal of **Focus Enhancements** (800-538-8865 or 617-938-8088), with its **EtherLAN Hub 16 V** (\$439), a 16-port, unmanaged 10BASE-T hub that's oriented vertically rather than horizontally. ☹ For the pager-oriented: Version 1.5 of **PageNow**, from **Mark/Space Softworks** (800-799-1718 or 510-843-6485), can send messages to alphanumeric pagers from QuickMail, Eudora (an Internet-mail reader), CompuServe mail, Now Up-to-Date, and several voice-messaging and fax systems. PageNow is available in Personal, Workgroup, and Enterprise packages, ranging in price from \$119 to \$1,295. / SB




AppleTalk or TCP/IP network go down. Network Scout can also inform you if software servers, such as FileMaker Pro databases or group-scheduling applications, crash — even if the host machine is still running. The program offers notification by e-mail, pager (a full version of PageNow from Mark/Space Communications is included with Network Scout), voice, or an on-screen display or alert. / Shelly Brisbin



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MAC TO PC / BY JOHN RIZZO



# Them Cross-Platform Blues

The top ten irritants that plague Mac users in a Mac-and-Windows environment.

**HEY, I'M NO WHINER.** I've been happy to use my Macs in hostile PC territory since the days when PC floppy disks *were* floppy. Cross-platform computing has come a long way since then, and helpful new products

are announced almost weekly. But some problems with cross-platform software do not seem to go away, and new ones crop up all the time. Here are the top ten annoyances that bedevil users of cross-platform software, from least to most irritating.

**10. Cross-platform viruses.** It used to be that Macs had their own viruses and PCs had theirs and that was that. No more. A few months ago, Mac users discovered that Word for Windows 6 documents were infecting their Macs with the Word macro virus. Microsoft had created such good cross-platform templates that hackers had no trouble creating a virus that could jump the OS boundary. Fortunately, this virus isn't dangerous. It merely forces you to save a file as a template when you try to do a Save As and produces a dialog box containing nothing but a number 1. Microsoft's fix (called mw1222.sea), which deletes the macro virus, is available on the Web at <http://www.microsoft.com/msoffice/prank.htm> or from Microsoft (206-635-7200).

**9. Slower Mac versions.** The Word macro virus is another excuse to chuck Word in favor of the smaller and speedier WordPerfect or the ClarisWorks word processor. Although the Windows version of Word runs OK, the Mac version moves like a giant northwestern slug. And Word isn't the only application with a faster PC version — Lotus Notes is another offender.

Given that Power Macs are faster than

Pentium machines, it is odd that Wintel machines still zoom past Macs when running certain applications. I don't subscribe to the theory that Microsoft is plotting to make the Mac look bad — after all, Excel for Mac works just fine. But whatever the reason for their plodding pace, these programs make the Mac look like a slow platform, which it isn't. The only solution is to steer clear of them, so if you can, try before you buy.

**8. Nonsupport of OpenDoc.** This isn't a problem now, but it will be soon, when you'll want to swap OpenDoc parts with Windows users, only to discover that a key application doesn't support it. With its ability to handle more data and objects, OpenDoc is superior to Windows' Object Linking and Embedding (OLE) technology. Nevertheless, developers are already choosing sides in the coming OLE-versus-OpenDoc power struggle. Look for a protracted war, with you and me as the losers.

**7. Mac-ignorant Internet sites.** Ever download information only to find that you can't open the file because it's in a PC file-compression format? PC users also suffer discrimination, at sites that provide files in SIT (StuffIt) format for Mac users.

Be prepared with a cross-platform decompression utility. ZiPlt, shareware available on ZD Net/Mac, on eWorld and CompuServe, can "zip" and "unzip" files. Another unzipper is the commercial StuffIt Deluxe, from Aladdin Systems. Aladdin has also



made a breakthrough for Windows users: a freeware StuffIt Expander for Windows, which supports MacBinary as well as ZIP and other PC and UNIX formats (available from <ftp://aladdinsys.com>).

**6. Partially cross-platform software.** Some network software requires Mac users to access Mac servers and Windows users to access PC servers. MIS folks must then carefully control which applications and files are on which server, leading to a segregated network in which the Mac segment is likely to be neglected. Worse yet, plenty of other network applications, including Microsoft Mail and Novell GroupWise, can't support Mac servers at all.

The developers of these applications should take their cue from the best network software, which lets Mac as well as Windows users access either Mac or Windows servers. Good examples of true cross-platform network software include SoftArc's First-Class e-mail package and Day-Timer Technology's Day-Timer Organizer, a Windows PIM that's recently been ported to the Mac.

**5. The features gap.** Mac software upgrades often come 60 to 90 days after the Windows versions and sometimes even later. This type of delay creates problems for Mac users of products such as Netscape Navigator, who can't access the advanced features Web-page builders use in creating Internet sites. With other programs, such as Novell InForms, the Mac version stays



inferior to the Windows version. Macintosh users don't expect equality in a Windows-dominated world, but what about fairness?

**4. Lack of support for Mac OS features.** I'm not talking about publish-and-subscribe or Balloon Help, but useful, innovative features such as thumbnails, Apple Guide, and AppleScript. Fortunately,

we should be seeing more vendors of cross-platform products implementing drag-and-drop in their Mac versions now that that feature is part of Windows 95.

**3. Lack of support for Windows standards.** Although lack of Mac OS features bugs users, lack of PC standards in Mac software drives MIS people crazy. Apple

has antagonized this group for many years, by doing things like pushing DAL when the world was moving to ODBC. Superior cross-platform software can fill in the gaps in the Mac OS, however. TechGnosis, for instance, includes an ODBC 2.0 driver in its Sequel-Link 3.0 client/server middleware product.

**2. Windows users telling you to switch.** You know the standard arguments: Macs are more expensive; Windows machines are just like Macs; there's no good software available for the Mac.

These are pretty easy to demolish. First, just point to ads for \$1,600, 75-MHz Power Macs, which are just as cheap as PCs. And no, Windows machines (still) aren't just like Macs, especially when it comes to setting anything up. Finally, there's plenty of software for the Mac. In fact, if you look at some Windows-only software, such as Corel's obtuse Ventura Publisher, you'll realize you're not missing anything. Then you'll get the argument that all the good software is being developed for Windows first. Although this is often true, there are still examples of Mac-first innovation, such as Apple's Cyberdog and the PageMill and SiteMill Internet tools, recently acquired by Adobe from Ceneca Communications.

**1. Windows-software look-alikes.** If you've run across a program with buttons and menus that don't work the way you expect them to, you may be dealing with Windows-specific interface features that have been ported to the Mac. This may not be the most serious cross-platform problem, but it's the one that bugs me the most. Interfaces don't need to be exactly the same on Macs and Windows machines but should allow for OS-specific customs. Claris does a good interface job with cross-platform software that works the way you expect on each platform; other companies (even very successful ones with very popular products) don't.

But then, I expect Microsoft's Mac applications to adopt Windows interface conventions. I even expect actual Windows code in my Windows-derived Mac apps. After all, it is Microsoft's job to Windowize the world. For the other cross-platform-software companies, there's no excuse. ☐

Contributing editor John Rizzo is the author of several books, including *How Macs Work*.

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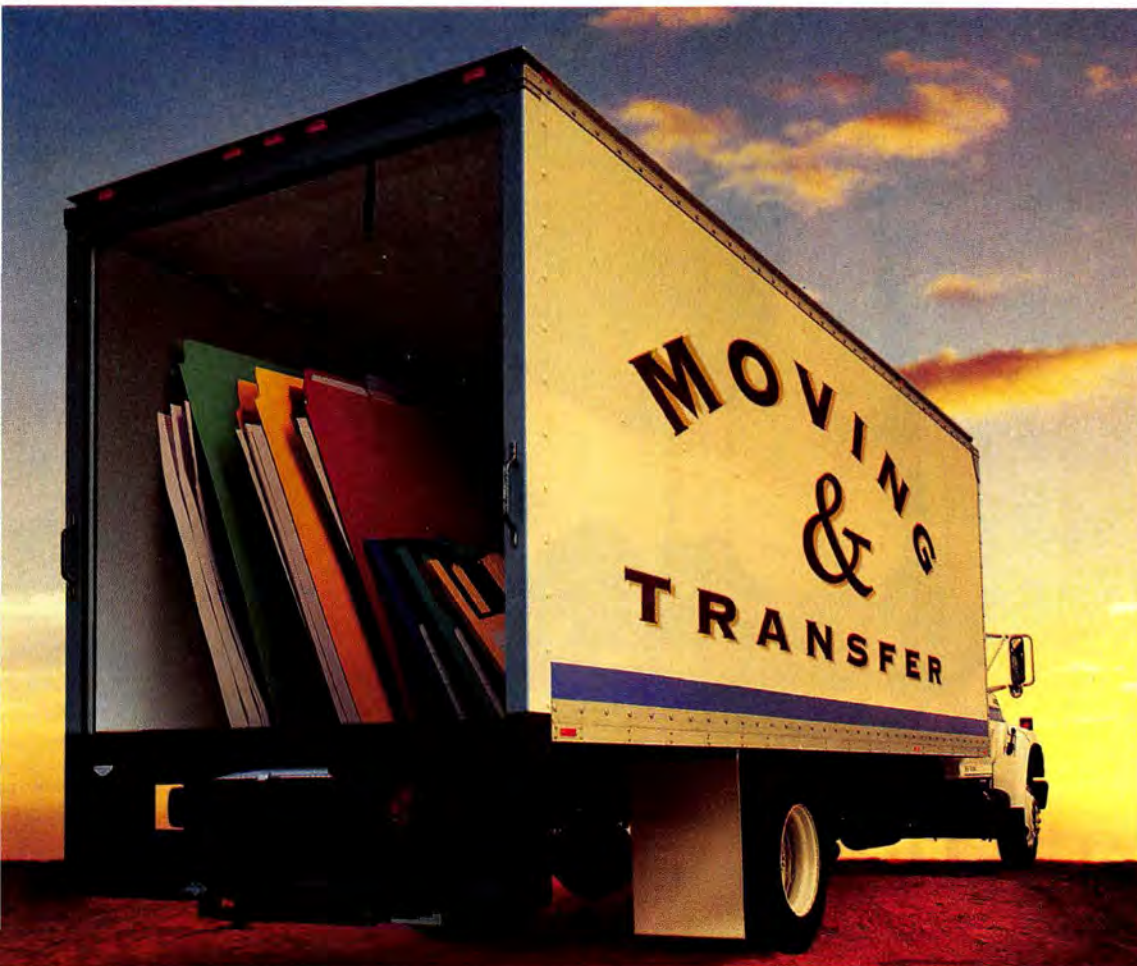


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CIRCLE 131 ON READER SERVICE CARD



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NET TRAVELER / BY MICHAEL SWAINE



# Vote with Your Browser

Finding your government online, Newt-watching, and political fun and games.

**YOU ARE HACKING** through the Internet underbrush, looking for government services you were told had gone online. It's not easy. It's a jungle out there. Starting at the Jefferson Project — which bills itself as

the most complete archive of political resources in existence today — at <http://www.stardot.com/jefferson/>, you then sift through its government and political links as though you were sailing down the coast of a continent, guessing at secrets hidden in every port. Jefferson leads you to an archive of current federal legislation at Thomas (<http://thomas.loc.gov/>), where you can also find everything your representative has added to the Congressional record (whew!), everything imaginable about the federal budget (gopher://sunny.stat-usa.gov/11/BudgetFY96), and Al Gore's personal cartoon collection at [http://www.whitehouse.gov/White\\_House/EOP/OVP/html/Cartoon.html](http://www.whitehouse.gov/White_House/EOP/OVP/html/Cartoon.html).

Jefferson is a great place to explore, but if you're seeking a particular government entity or bit of info, make tracks for Yahoo at <http://www.yahoo.com/Government/>. Yahoo shows you the UN's home page at <http://www.un.org/>, and it's Yahoo that leads you to IRS tax forms in PDF format at <http://www.ustreas.gov/treasury/bureaus/irs/irs.html> and Cornell's database of Supreme Court decisions at <http://www.law.cornell.edu/supct/>. But there's more to government than the feds.

**It's All Local.** Pushing deeper into this jungle, you pause briefly at Oregon Online (<http://www.or.gov/>) and the Oregon State Archives Public Information Server at <http://159.121.28.251/>, where a huge collection of state and county records includes everything from aerial photography to zoning,

birth records to death notices.

The Texas and California state sites (you can find both at <http://www.yahoo.com/Government/States/>) are also very rich. You forge ahead into California government. You finally reach the stylish home page that belongs to the city of Palo Alto at <http://www.city.palo-alto.ca.us/>. You come to a placeholder for a system that

lets you check the status of your building permit electronically. But it's not implemented yet! In passing, you notice that Palo Alto's site lets you search a database of city employees by name or by face. That could be handy.

**Party on the Web.** Now that you're out here, you find yourself drawn, by an urge you prefer not to examine, to press on into the dark heart of party politics. The menu-bar clock ticks with a tropical languor as your screen redraws the gaudy graphics of the GOPAC site (<http://www.gopac.com/>) or the baby blue of the Democratic Party home page (<http://www.webcom.com/~digitals/>). Meanwhile, United We Stand's eagle wings spread at <http://www.uwsa.org/>.

As you are drawn deeper into the interior, the trail grows thin. Greens spring up at <http://www.rahul.net:80/greens/>, Libertarians run wild at <http://www.lp.org/lp/>.

**Humor Break.** Rounding a bend, you suddenly come upon an incongruously cheery

site. It belongs to the Capitol Steps, that band of Congressional ex-staffers turned songwriters. At <http://pfm.het.brown.edu/people/mende/steps/index.html>, the band delivers political satire in RealAudio format. Other political-humor sites pop up — DeMOCKracy, a clever comic strip at <http://www.clark.net/pub/theme/democracy/>, and also the inimitable Newt Watch, which watches the inimitable Newt at

<http://www.cais.com/newtwatch/>. By the time you get to what purports to be the Bob Dole for President site at <http://www.dole96.org:80/dole/>, with its background art of Dole pineapples and slogan "The ripe man for the job," you

begin to suspect that not all of these sites are necessarily to be taken at face value. Dirty tricks have come to the Net.

## Tip of the Month

Online-search engines such as the Oregon-legislature engine at <http://159.121.28.251/minutes.html> can help you find information by keyword. One hint: When you see references to wildcard matching, you can use an asterisk (\*) as a wildcard in search strings. For example, you can type *travel\** to find all documents containing *travel*, *traveler*, *traveling*, or *travelogue*.

## Don't Know .gov from GOP?

MacUser maintains a list of frequently asked questions (FAQs) about the Internet, MacUser itself, and this column specifically. Send mail to [faq@macuser.com](mailto:faq@macuser.com). MacUser's address on the World Wide Web is <http://www.macuser.ziff.com/~macuser/>. You can reach me at [traveler@macuser.com](mailto:traveler@macuser.com). ☐





A black and white photograph of an elderly nun with glasses, wearing a traditional black and white habit. She is holding a small, light-colored electronic device, the Deltis CD-R2 recorder, with both hands. The background is a large, colorful stained glass window with intricate designs, including a central circular medallion featuring a dove. The overall tone is one of traditional wisdom and reliability.

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CIRCLE 69 ON READER SERVICE CARD



BY CHRISTOPHER BREEN AND BOB LEVITUS



# Help Folder

Forgotten freeware remembered, hope for a dying Mac, and what to do when your software is piggish with ports.

**CHRIS:** Before beginning this month's festivities, there's something we need to clarify. Back in the September Help Folder (page 127), we recommended that reader Larry Kordon use FWB's CD-ROM ToolKit to reliably mount CD-ROMs even if he didn't turn on his CD-ROM drive until after he'd turned on his Mac. We stand by that recommendation, but what we left out was a freeware product — LoadADrive — that can do the same trick. It doesn't work for as many makes and models of CD-ROM drives as CD-ROM ToolKit, but if you want to save your nickels and dimes, give it a try (LoadADrive is available from ZD Net/Mac and other fine online services and Internet ftp sites).

Several readers asked why we didn't recommend the freeware utility SCSIProbe for mounting a CD-ROM you put into a tardy drive. The simple answer is that SCSIProbe and like utilities, such as FWB's HDT Prober, won't work. SCSIProbe looks for software drivers on peripherals it finds on the SCSI chain. CD-ROM drives don't have these drivers, so the CD-ROMs won't mount.

## Chimes of Doom

**Q.** About two months ago, my Mac started to act up. At random, instead of playing the familiar chord when I turned it on, it would

give me each note separately and then the Mac would freeze up.

Pressing the Command-Control-power-key combination let me restart successfully, and things were OK for a while. But then, without warning, the funny notes came back. Rebuilding the desktop didn't help. How serious is my problem?

**E. E. Balay**  
Lethbridge, AB, Canada

**BOB:** There's a clue about how serious your trouble is in the nicknames for that strange music: "the chimes of doom" and "the arpeggio of death." Some of your Mac's hardware may be dead or dying.

If you're lucky, occasionally, and I mean *very* occasionally, you can make niggling problems such as this go away by zapping your PRAM. To do it, start your computer while holding down the Command, Option, P, and R keys. Wait for your machine to stutter and restart a couple of times, and then release the keys.

I doubt zapping will work, but it doesn't take long, so it's worth a try. I suspect that what you're actually experiencing is some sort of intermittent failure of one of the Mac's components.

**CHRIS:** Bob's probably right, unless you're the kind of person who routinely messes with the innards of your Mac. Chimes can also sound if a SIMM you installed isn't pushed all the way into its slot. Improperly seated accelerators can evoke this gentle music too. These failures generally occur at startup.

If you fall into this category, before you rush your Mac to the repair shop, open it and give each RAM SIMM a little shove to make sure it's really in. If you continue to experience problems, try taking half the RAM out and restarting. Through a process of elimination, you can isolate a bad SIMM.



## Stuck in Port

**Q.** When I connect to America Online, I get a message saying that the requested serial port is busy or in use and asking if I would like to reset the port. What can I do to avoid this message?

**Russ Ekins**  
via America Online

**CHRIS:** Jeez, don't you hate that one? I used to get it all the time, because my fax software refused to give up the modem port. You're probably seeing that dialog box for a similar reason.

The easiest way to rid yourself of this annoying dialog box forever is to make an adjustment within the America Online software (you need version 2.5 or later). Select Set Preferences from the Members menu, and then simply make sure Ask to Reset Serial Port is unchecked in the System Preferences category.

eWorld and CompuServe's Information Manager sport similar options.

**BOB:** Chris' idea should solve your immediate problem, but for those occasions when your communications software isn't able to reset the serial port, which can happen when your Mac crashes, the shareware program CommCloser can free up the port. It's also handy for freeing up ports when you use communications software — such as ZTerm or MicroPhone — that doesn't have a built-in port-resetting feature.

## WRITE TO HELP FOLDER/TIPS

c/o MacUser  
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Don't want to wait for an answer? Post your question on ZD Net/Mac, MacUser's online service, or send e-mail to [helpfolder@macuser.com](mailto:helpfolder@macuser.com) or [tips@macuser.com](mailto:tips@macuser.com). We pay \$25 to \$100 for any undocumented tips we publish.



## Trashing Locked Items

**Q.** Is there any way to unlock a multitude of items in one shot? I'd like to quickly get rid of the junk on my Mac — for instance, four subfolders in Flight Simulator that each contain 30 or 40 locked items.

**Scott Kend**  
via America Online

**BOB:** Just drag them to the Trash, and hold down the Option key when you empty the Trash. Any locked items will be painlessly deleted from your hard disk, with no manual unlocking required.

**CHRIS:** And Scott, since you're in the trashing mood, why not dump the Microsoft Flight Simulator application as well and get a *real* flight sim, such as Parsoft's A-10 Attack! or Graphic Simulations' F/A-18 Hornet 2.0. Oh, and don't forget to check your six.

## Jumpering for Joy

**Q.** It really annoys me that every internal hard drive I buy has its SCSI ID set to 6. Having a pretty full and picky SCSI chain, I need to be able to change the preset ID number, barring use of a large hammer.

**Michael J. Bell**  
via America Online

**CHRIS:** What you are about to read is my expression of astonishment: *ID 6!*

**BOB:** Where in the universe are you getting these drives? If you were dealing with a reputable company, each drive's ID would

be set to 0 right out of the box.

**CHRIS:** That's how your drive should arrive, for good reason. You see, 0 is the default ID for the internal hard drive that comes with a new Macintosh. Most drive vendors assume that if you're buying an internal drive, you intend to replace the one already in your Mac. To avoid ID conflicts with other devices in the SCSI chain, the ID on the new drive is set to 0.

**BOB:** The only reasonable exception would be a drive with the SCSI ID set to 1. A company such as APS will change the ID to 1 if you tell it you plan to use the drive in the second internal-drive slot of a Mac that has two drive slots.

**CHRIS:** You gotta love those guys.

**BOB:** And I do. But what about Michael's question?

**CHRIS:** Oh, right. You can change SCSI IDs by using *jumper*s. Because I used up my one good jumper joke in last May's Help Folder (check it out on page 118; it was a real humdinger around the office), I'll get to the point: A jumper is a metal-and-plastic collar that's smaller than a Fruit Loop . . .

**BOB:** . . . and more rectangular . . .

**CHRIS:** . . . that fits around a couple of metal terminals (if you want to be completely hep, you will refer to these terminals as pins). Placing the jumper on a pair of pins completes a circuit that sends a message to the computer along the lines of "I'm set to SCSI-ID 2."

You will spy a group of these pins arranged in pairs on the component side of the internal drive — the side with all the chips and circuits. To change the ID, simply arrange the jumpers according to the instructions that probably came with your drive. If the jumpers and instructions are missing, try calling the vendor to get them.

Do not proceed until you possess jumpers that fit and know which pins to work with. Some drives are just studded with pins, and jumpering the wrong ones is bad medicine.

For do-it-yourselfers, here are the accepted jumper arrangements:

ID 0: No jumpers.

ID 1: Jumper the first pair of pins.

ID 2: Second pair.

ID 3: First and second pair.

ID 4: Third pair.

ID 5: First and third pair.

ID 6: Second and third pair.

**BOB:** Two warnings, though: Ground yourself before handling your internal hard drive, and don't put jumpers on all three pairs of pins — doing so sets the SCSI ID to 7, which is reserved for the Mac.

## Read-Only Indeed

**Q.** Is there any way to lock text files created with word-processing programs, so they can't be edited?

**Mark Ty Unno**  
via the Internet

## TIPS / Startup Items

### STOPPING STARTUP ITEMS

Here's a simple way to control whether or not your startup items load: Create a new folder, and name it A. Next, make an alias of that folder and place it in the Startup Items folder. Finally, delete the original folder.

When you restart your Mac, you'll get a dialog box saying that the alias' original item could not be found. The Mac will now let you choose whether to continue or stop loading the startup items.

**Alex Rampell**  
via America Online

### CUSTOMIZED STARTUP

If you want to control which application, folder, or file in your Startup Items folder ends up as the active item after startup, instead of putting the actual item in the folder, place an alias of it there and name it so it's the last item to load — putting a tilde in front of the name does the trick. If you want the Finder to wind up as the active application, place an alias of your startup disk in the Startup Items folder and rename it so it's the last to load.

If, in addition to making the Finder the active application, you want your Mac to open specific folders at every startup — for example, the

Control Panels and Apple Menu Items folders — don't bother with the startup-disk alias. Rather, using the same alphabetizing scheme, place aliases of those folders in the Startup Items folder.

**Kris Thole**  
via America Online

### STARTUP REMINDERS

Want a painless way to create voice reminders that play when your Mac starts up? Here's how: Make aliases of the System file and the Startup Items folder; place them on your desktop; and rename them Pre-reminders and Reminders, respectively. Make an alias of the Sound control panel, rename it Reminder Record, and put it into the Apple Menu Items folder. To record a reminder, select Reminder Record from the Apple menu and record a message, such as "Meeting at 12:30 Tuesday." Give it an appropriate name, and close Reminder Record. Open the Prereminders file — you'll be instructed to close any open applications — and drag the proper sound file to your Reminders folder.

Now your message will play at startup. Trash any obsolete sounds.

**James F. Young, Jr.**  
via the Internet



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**CHRIS:** If you mean locking them so there's absolutely no way on earth to let someone grab the text and with it do the voodoo that you do so well — not exactly.

There are several steps you can take to protect a document, but if it's widely circulated and someone is clever enough, there's always a way to copy it and alter the text (for example, take screen shots of the document and run the resulting graphics through an OCR program).

Assuming your readers are not so dastardly as to try this, here are a few suggestions. The simplest way is to lock the document in its Get Info window while you're in the Finder. But you've already thought of that, haven't you?

For an added level of security, you can create password-protected read-only documents in Word 6. Files so designated can be read by one and all, but you must have a password in order to save changes. Unfortunately, getting around this is as easy as cutting the text from the document and pasting it into a new, protection-free document.

Alternatively, you can create a document in TeachText or SimpleText and, using a utility such as FileType, FileBuddy, or Snitch (shareware available from online services; see end of article), change the file type to ttro. The icon will switch to a cute newspaper icon, and the document will become uneditable — at least until someone changes the type back to TEXT.

You can make the same type of modification to files you create with the eminently fab shareware program DOCMaker. All you do is change the creator of a DOCMaker document to any four characters you like. Then the file cannot be edited.

**BOB:** My favorite way to produce uneditable documents I'm going to distribute widely is to use Adobe Acrobat software. I used it to create demo versions of my *WebMaster Macintosh* book (AP Professional, 1995) that nobody is able to insert a cursor into to make changes. It's at least as secure as anything Chris mentioned, and it has some nice bonuses — for instance, it can be viewed on platforms other than just the Mac. The only negative is the \$150 estimated street price.

### Parked Benchmarks

**Q.** I put my Power Mac 8100/100AV with a monitor attached to the AV port to the test. In order to see how speedy it was, I ran Norton Utilities' System Info check (see figure 1) and compared the results with the benchmarks for the Power Mac 8100/100. The only test for which my Mac wasn't equal or better was the one for video, which was miserably worse. Am I stuck with this dog-gish speed for ever?

**Bruce Bilyard**  
Woodbury, CT

**CHRIS:** Doesn't this situation strike you as being remarkably similar to those old commercials in which a happy couple is seen

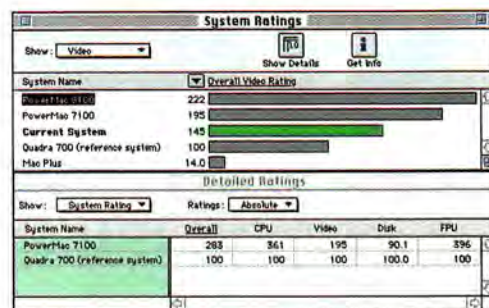


figure 1 / **Testing all Macs** — you can compare your Mac's speed with that of other Macs by using System Info, part of Norton Utilities.

blissfully devouring a butterlike substance, only to blanch upon discovering that the quasi-dairy product is, in reality, reconstituted fish emulsion?

Honestly now, what did you think of your Power Mac's speed before you ran the benchmark? Come on, admit it, pretty perky, wasn't it?

Ah, but woe is you. Run a simple benchmark that indicates your video isn't up to snuff, and suddenly your lightning-fast cheetah is an old, smelly dog.

Tsk, I say. And again, tsk.

But I didn't drag your letter out *just* to chide you (although as the owner of a stable of considerably slower Macs, I admit my motives were less than 100-percent pure). No, if you want to see better numbers in the benchmark, a simple solution is at hand: Plug your monitor into the Mac's main video port.

Here's why: The AV card employs a 32-bit-wide data path, and the Mac's internal video circuitry has a 64-bit-wide data path. You can probably infer which is faster. The trade-off is that using the internal video causes your digitizing speed to head south in a hurry.

**BOB:** Right. If you're going to digitize video, you're much better off connecting the monitor to the AV card. If you're not digitizing video, plug the monitor into the internal port. But I wouldn't bother switching back and forth unless you see a noticeable difference in speed. ☹

*Bob LeVitus is the director of evangelism for Power Computing. Christopher Breen is a Mac consultant who writes for a variety of Mac publications.*

You can find the shareware and freeware programs referenced in this article in the MacUser and ZD Net/Mac areas on CompuServe and eWorld. See How to Reach Us for instructions on accessing ZD Net/Mac.

## TIPS / Childproofing

### LOCKING FOLDERS

Have you ever wished you could lock a folder so that children or novice users couldn't change or delete it? Here's a simple way to protect yourself: First, turn on file sharing (via the Sharing Setup control panel). Now click on the folder you want to protect and choose Sharing from the File menu. Check the option labeled "Can't be moved, renamed or deleted." Even if you don't share the folder, it will be protected from little hands.

**Mike Basham**  
via CompuServe

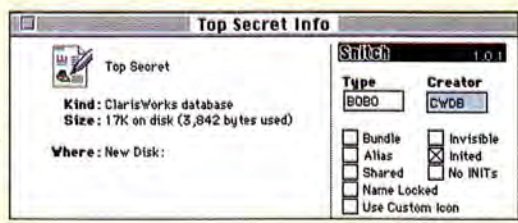
### THE OLD SWITCHEROO

To lock not only children but also snooping teens and adults out of a private file, try switching its type and creator codes by using a utility

such as ResEdit or, better yet, by using Mitch Jones' shareware program Snitch.

For example, switch the codes for a ClarisWorks database from type CWDB and creator BOBO to type BOBO and creator CWDB. Anyone attempting to open this file will be greeted with an Application Not Found dialog box. When you want to access the file, simply switch the two codes back again.

**Daniel Felice**  
Macedonia, OH





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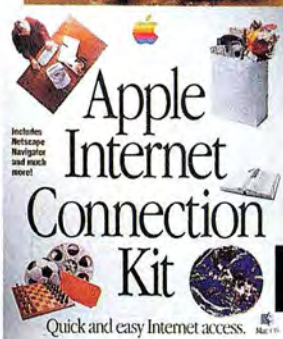
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## Family Ties



Whether you're researching ancestors, seeking long-lost cousins, or trying to create a readable family tree, your Mac can show you the way.

BY CAROLYN BICKFORD

**THE MOLDERING FAMILY BIBLE** my father's cousin keeps is packed with information — but not enough of it for my taste. It has birthdays and death dates going back to the first Bickford to set foot on American soil, but its keepers didn't bother to track wives' names or daughters' marriages or to explain why my great-grand-uncle is labeled a "swashbuckler." On my mother's side, the information is less processed: a pile of old photographs; a birth certificate handwritten in old German script that I'm unable to read; and

the stories she tells me of her birthplace, Silesia, a pocket of Europe that belongs to a different country every other generation or so. As for my husband's family, my mother-in-law kindly offered to send the pertinent information in GEDCOM format (a standard for genealogical data on the Mac and the PC). Seeking to consolidate all this information and fill in the blanks, I embarked on a tour of Mac genealogy software and the online forums frequented by other swashbuckler seekers.



### Personal Ancestral File: Not Just for Mormons

To start with, I looked at the bargain-priced but limited program my mother-in-law uses: **Personal Ancestral File 2.1** (ⓂⓂⓂ). She bought it for \$36 from the Church of Latter Day Saints (800-537-5950), but the church has since stopped selling this version, pending the release of a newer version in January. It has fields for all the basic information (dates and places of birth, baptism, marriage, death, and burial) and for Latter Day Saints rites, such as date of sealing, but you can't redefine any of the fields for dates that are important to you, such as adoption date — you're stuck putting such information into the notes field. **Personal Ancestral File** lets you create records for people whose

connection to your family is uncertain (you know they're related to you, but you're not sure how), but linking them in a specific way later on is tedious. The program's graphic capabilities are also limited; you can create basic descendant charts (family trees), but you can't link scanned pictures or hard-copy records to people's electronic records. On the other hand, the program comes with a generous manual, even though it does focus on Latter Day Saints rituals more than my mother-in-law would wish.

### Family Events: The Documentary Approach

For about the same price, my mother-in-law could have bought the also basic **Family Events** (ⓂⓂⓂ; \$35), from (M)agreeable Software (612-559-1108). Offering a method as unusual as the spelling of its company name, **Family Events** has you record information directly from event-related documents such as birth certificates and marriage licenses; it then creates records for family members and determines their relationships based on the event information you entered. Individual record

windows have fields for a person's birth, death, father, mother, spouse, and children, and all of the windows have a scrollable field for notes. But **Family Events** provides for no events beyond the basics: You have records set up for birth, marriage, and death and generic record fields for all other events. As with **Personal Ancestral File**, you can't link scanned pictures or records to the events. And the pedigree and descendant charts, although functional, aren't particularly nice-looking. Finally, the slim manual comes in electronic format only; it's well organized for reading online, but you'll probably want to print it out eventually.

### MacRoots II: Written for Researchers

Serious researchers might lean more toward the awkward but scholarly **MacRoots II** (ⓂⓂⓂ; \$89), from Itasca Softworks (218-785-2745). It's the only program that insists that you rate the quality of your source information. And as you'll find out in your research, documents *will* disagree. All of my mother's U.S. documents, for instance, misspell her middle name, simply because an immigration official wrote it down wrong.

It's too bad **MacRoots II** has such a primitive interface. It offers several windows (one showing an individual's history, one showing a nuclear family, and one showing three generations), and actions operate inconsistently within them; double-clicking prompts a "remove this person?" message in one instance and opens an additional field in another. The data fields offered for individuals are flexible but incompletely so; beyond birth date and place, you can define fields for events such as Bar Mitzvahs and ordinations but not adoptions. Since you have to use a scroll bar to move between generations in the lineage window, it's far too easy to overshoot a generation. And since notes are tied to individuals, you sometimes have to relink or reenter sources.

Still, **MacRoots II**, unlike **Personal Ancestral File** and **Family Events**, *does* let you link pictures on your computer to individuals. It also creates charts, has fields for family members' addresses, and offers a slim but well-organized manual with a good index.





## Reunion: The Rolls Royce of Roots Research

Despairing of finding a genealogy program with an intuitive interface, I was pleasantly surprised by **Reunion** (★★★★), from Leister Productions (717-697-1378). At \$129, it's a splurge, but it's both easy to use and capable and it produces great charts.

Its interface features well-designed displays, easy navigation, and clear choices of action. The main window shows you three generations at once: grandparents, parents, and children, with up to eight fields for events in parents' lives such as the parents' birth dates and education. To navigate between generations, you either select the Overview menu

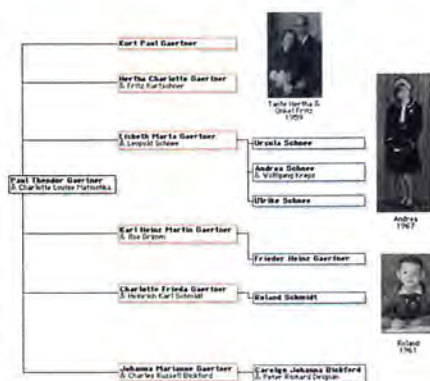
option or just double-

click on the grandparents or children. Adding subsequent or previous marriages (or unmarried

partners) is as easy as selecting Add Spouse from the menu bar. You can then look at a parent's other partners, by bringing up a pop-up list of

their names from a heart icon above each parent's name. The fields are modifiable, so you can change, say, the christening date to the immigration date or religion to political affiliation. You can even use color codes to identify a child as, for instance, a twin, a child of unmarried parents, or adopted. And it's easy to create records for mystery relatives and then link them into the family tree once you've uncovered their relationship.

Reunion includes plenty of niceties in the areas of notes, addresses, and pictures. It has three modifiable fields for notes for each person, so you can keep track of your sources separately from anecdotes. Like MacRoots II and Personal Ancestral File, it lets you keep addresses, which you can export to a contact manager, for family members. Reunion lets you link pictures to family members and also lets you look at the linked pictures



separately — which you might want to do if you're scanning documents and linking them to the program.

Reunion also creates the most beautiful charts of any of the programs, thanks to the included SuperChart program. You can create descendant and pedigree charts for any member of your family. You can also create a wide variety of reports, from a Person report (which shows everything you've noted for one member of your family) to an Ahnentafel report (which lists family members by generation).

My favorite feature, however, was Reunion's ability to provide the correct names for various blood relationships, which comes in handy when you're trying to puzzle out whether cousin George is your second cousin or your first cousin once removed. The other programs can create descendant charts from which you can extrapolate your relationships, but if a program can do it for me, so much the better.

My few complaints about Reunion applied to most of the other programs as well. They all required me to work around facts that don't fit the traditional European-American family profile. For instance, if I wanted to add a gay uncle's partner to the family tree in Reunion, he'd have to be identified as female. And if you're doing genealogical research with Reunion rather than with MacRoots II, you have to remember to rate your sources in the notes field. But

working around minor problems such as this was much more fun with Reunion than with the other programs.

## Gene: Lean but Keen Shareware

If you're just getting started with genealogy and you're not sure you want to spend \$149 on Reunion, you can start out with **Gene** (★★★★), a \$15 shareware program available online (you can download it from ZD Net/Mac; for instructions on accessing this service, see How to Reach Us). It gives you an easy way to catalog your family and create good-looking family charts. The fields it provides for an individual are pretty basic: name, sex, birthday, birthplace, mother, father, and notes. However, Gene automatically creates cards for parents, and when you open their cards, it shows all the children you've already put into the program. It also has an address book and the ability to link an individual to a picture. And once you're ready to buy a commercial program, you can export its information in GEDCOM format.

In fact, all of these programs let you export and import their information among versions and across programs in GEDCOM format, with varying degrees of success. Expect to do some tweaking if you try this.

## Online Lineage Lookups

My mother-in-law says her family tree would be much sparser if it weren't for her online research. Through the genealogy forum on America Online, she found a fellow amateur genealogist in England who is helping her piece together the European branch of her family. CompuServe, Prodigy, and eWorld also have genealogy forums, in which you can ask genealogists about their research methods and resources and maybe even find others who can assist you in filling out the missing branches of your family tree.

If you're like me, you'll also head for the World Wide Web. The Genealogy Home Page (<http://ftp.cac.psu.edu/~saw/genealogy.html>) has links to dozens of other genealogy-related pages and to

Internet newsgroups such as [soc.genealogy.misc](http://soc.genealogy.misc) and [soc.genealogy.methods](http://soc.genealogy.methods). It also has links to research resources such as the National Archives Information server, which gives you information on how to order records

— for instance, documentation of your great-great-grandfather's military service in the Civil War or immigrant and passenger arrival lists. The Yahoo Genealogical Page (<http://www.yahoo.com/yahoo/Science/Genealogy>) has many of the same links as on the Genealogy Home Page as well as some more-obscure ones, such as the link to the Ontario Cemetery Finding Aid (<http://www.islandnet.com/ocfa/>).

## Asking the Right Questions

Since researching my mother's family would have required looking through Czech, German, and Polish records, it was easier to ask her about her family directly — with the help of **The Life History Disk** (★★★★), from Starcom Microsystems (801-225-1480). It's a series of questions — in a choice of Word, WordPerfect, MacWrite, or text format — that elicit information about generations up to four back as well as opinions about relatives. The questions are divided up into chapters, and some of them may not be relevant — for instance, asking my mother about junior high school when at that age she was living through World War II on the Eastern Front. But at \$20 or so, the Life History Disk costs the same as — or less than — a similar book, and having the questions in digital format makes them easy to modify.

## Mysteries of the Ages

If my ancestors had owned a Mac instead of a family Bible, maybe I'd now know why my great-grand-uncle was labeled a swashbuckler. But then maybe not, considering that I marked down one of my cousins as a "professional slacker" in her occupation field. I'll leave that for the next generation to figure out. ☼







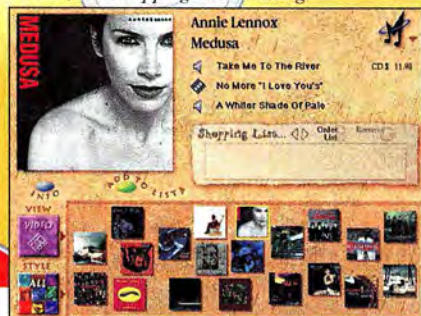


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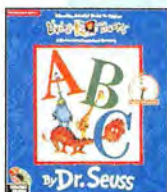
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# The Two Dads

BY RIK MYSLEWSKI AND JIM SHATZ-AKIN



RIK: Gentle Reader, prepare for either mild embarrassment or a sweet burst of pride.

JIM: It's pop-quiz time.

RIK: We're not aiming for humiliation — we just want to prove the crying need for this month's batch of geography-education titles.

JIM: So, without consulting any references, we want you to draw a quick map. Of Bosnia.

RIK: That's Bosnia-Herzegovina, for you geonerd. And while you're at it, add Croatia and Serbia.

JIM: You've seen this map a hundred times in your newspaper, so it should be easy, right?

RIK: Wrong. We Americans are a cartographically challenged bunch — for example, less than 20 percent of the highly educated and singularly gifted *MacUser* editorial staff could even approximate a map of the Balkans.

JIM: To be fair, that's a heck of a lot better than the public at large. One study showed that only 20 percent of Americans could even find the U.S. of A. on a globe.

RIK: Depressing.

JIM: But curable. If you've got a Mac and a CD-ROM drive, we can steer you toward some of the best geography-training tools since Mercator flattened his first globe.

RIK: But first, turn the page and flip The Game Room upside-down to see the Balkans' prewar borders, courtesy of a map from **World Discovery Deluxe** ▲, a rich collection of map-based games from Great Wave Software.

JIM: Games might be a bit overstated. Tests is closer to the truth.

RIK: If game equals test plus fun, I'd definitely call the activities in

World Discovery Deluxe games. Plus it has great viewing options, including shaded-relief and day-and-night satellite views.

JIM: But some tests — uh, games — are hard. Can you identify the national anthem of Albania?

RIK: Well, not the first time. But at least World Discovery Deluxe's national anthems are full-scale CD-quality orchestrations, not just cheesy synthesized versions like those in Brøderbund's **PC Globe Maps'n'Facts**.

JIM: PC Globe Maps'n'Facts is cheesy through and through — from the simplistic commentary to the clumsy navigation tools.

RIK: Nice maps, though.

JIM: Hey, you're a hard-core cartophile. For us average citizens who simply use maps as tools, I recommend **3D Atlas** ▼, from Creative Wonders. It has solid educational content, a great global interface, and way-cool 3-D movies of flybys through various terrains.

RIK: I will agree that 3D Atlas is the slickest of the lot. The porten-



tous music on the sound track is a bit distracting, though, and the flybys are more entertaining than enlightening.

JIM: But you have to admit that 3D Atlas has an incredible wealth of information.

RIK: Well, OK — it's undoubtedly the only application on the planet that can graph a country-by-country scatterplot of central-government expenditures as a percentage of gross domestic product versus the percentage of married couples using condoms.

JIM: So it's a bit free-form. If you're looking for a more structured approach to geography education, try **Interactive Geography** and **Continent Explorer II**. They're from Pierian Spring Software, the folks who publish the Digital Chisel multimedia-creation software. Both titles are thorough, well thought out, and academically sound — if a bit stuffy.

RIK: Since the folks at Pierian Spring used Digital Chisel to create their titles, it's easy to create new lessons and add them to the curriculum. World Discovery Deluxe lets you create your own games as well, but both Pierian Spring titles have much more thorough game-creation...

JIM: ...or test-creation...

RIK: ...tools.

JIM: My quarrel with Interactive Geography and Continent Explorer II is not with their content — it's impeccable — but with their amateurish look-and-feel.

RIK: Well, if it's beauty you seek, I recommend the Small Blue Planet CD-ROM series — **The Cities Below** ▼ and **The Real Picture World Atlas** — from Now What Software. These guys do a marvelous job of combining maps and satellite images with an intuitive navigation interface and well-written information.

JIM: Their stuff is fun too. In the History and Language section of The Real Picture World Atlas, for example, you can click on different countries to hear various phrases spoken in each country's major languages. Very useful the next time your kid is in Malawi and wants to say "I love you" in Chewa.

RIK: Oh, you mean *ndikukufuna chibwenzi*.

JIM: *Zikomo*.

RIK: You're welcome. ☺



## The Cities Below and The Real Picture World Atlas

Ages: 10 – adult.

Price: Cities CD-ROM, \$49.95; Atlas CD-ROM, \$49.95 (list).

An easy-to-use interface graces a rich collection of satellite images, well-written text, and innovative exploration tools.

Company: Now What Software, San Francisco, CA; 800-322-1954 or 415-885-1689.

Reader Service: Circle #417.

## Interactive Geography and Continent Explorer II

Ages: 7 – 16.

Price: Explorer CD-ROM, \$99.95; Geography CD-ROM, \$159.95; Explorer floppy, \$99.95; Geography floppy, \$159.95 (list).

In tandem, these two teach basic geography in an academically sound and easily extensible — if somewhat dry — format.

Company: Pierian Spring Software, Portland, OR; 800-472-8578 or 503-222-2044.

Reader Service: Circle #418.

## PC Globe Maps'n'Facts

Ages: 12 – adult.

Price: CD-ROM, \$35 (estimated street).

This clearly drawn — if unimaginative — set of maps is marred by a clumsy, nonintuitive interface and simplistic commentary.

Company: Brøderbund, Novato, CA; 800-521-6263 or 415-382-4400.

Reader Service: Circle #419.

## 3D Atlas

Ages: 9 – adult.

Price: CD-ROM, \$49.95 (list).

Polished, thorough, entertaining, and inventive, this interactive atlas contains a wealth of information.

Company: Creative Wonders, San Mateo, CA; 800-245-4525 or 415-571-7171.

Reader Service: Circle #420.

## World Discovery Deluxe

Ages: 8 – adult.

Price: CD-ROM, \$40 (estimated street).

This rich and attractive set of geography games strikes the perfect balance between exploratory fun and fact-filled education.

Company: Great Wave Software, Scotts Valley, CA; 800-423-1144 or 408-438-1990.

Reader Service: Circle #421.





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# The Game Room

BY BOB LEVITUS

**JUMPING THROUGH TIME** is our jumping-off point for this month's column. First, we have a much awaited sequel with a time-travel theme — The Journeyman Project 2: Buried in Time. Then Dust, perhaps the best interactive movie to date, takes us back to the Old West. Finally, we go back to the future with Johnny Mnemonic, an interactive movie that its nonstar (Keanu Reeves, who stars in the motion picture but not in this version) might characterize as "totally bogus, dude."

## The Journeyman Project 2: Buried in Time

*Worlds of Wonder*

THE JOURNEYMAN PROJECT 2: Buried in Time (JP2 hereafter) is a totally engrossing photo-realistic adventure game with seamlessly integrated live-action video. Its challenging plot and puzzles provide dozens of hours of play.

You play Agent 5, falsely accused of altering history. To find proof of your innocence, you must travel through time to seven worlds — worlds that include historically accurate re-creations of Richard the Lionhearted's medieval castle, da Vinci's studio, a Mayan catacomb,



and more. During your journey, you'll confront a handful of devilishly difficult puzzles.

JP2 is both beautiful and well designed. It features over 30,000 exquisitely rendered images, a great stereo sound track, and eerie sound effects. Thoughtful interface touches include a walk-through mode, in which you receive guidance as you play; a Try Again button for when you die; and the ability to save a game at any time.

Game players with itchy trigger fingers may get impatient watching the hour or so of video clips that introduce JP2, but I loved comedic touches such as the fake commercials on INN (Interactive News Network). Overall, I found JP2 a joy to play — and play, and play . . .

## Dust: A Tale of the Wired West

*Cowboys and Interactivity*

DUST IS THAT RARE phenomenon, an interactive story that really works. It takes place in the fictional town of Diamondback, New Mexico, circa 1882. You play a stranger in town who has no money, no gun, and no clue. During five days, you explore 20 buildings, converse with over 30 interactive characters, solve

puzzles, battle gunfighters, gamble, help a schoolteacher on a quest, and discover many secrets about Diamondback's inhabitants.

Dust is the first title to use CyberFlix's way-cool Dream Factory technology. Dream Factory characters go about their activities whether or not you talk to them; the ones you *do* talk to remember previous conversations and adjust their future behavior accordingly — so be polite and talk to everyone. You control the action by using the arrow keys (your feet) and the mouse (your hands), except when beautifully rendered cinematic scenes pop up to move the story along.

As with a good novel, I couldn't put Dust down. In fact, I plan to play some more as soon as I finish this column.



## Johnny Mnemonic

*A Big-Budget Bust*

IT'S OBVIOUS THAT SONY spent big bucks on Johnny Mnemonic. It contains over 120 minutes of full-screen video, and its cast includes former M.A.N.T.I.S. star Christopher Russell Gartin (as Johnnie, the Keanu Reeves role in the film) and Isaac "Shaft" Hayes. Unfortunately, all that money didn't buy much fun.

Basically, Johnny Mnemonic feels like a cheesy movie with a few game elements unsuccessfully tacked on. It's presented entirely in full-motion video, so most of the scenes are dimly lit and hard to look at. When the picture switches to letter-box format (black bars above and below the picture), you have a

# Cheat Sheet

BY ROMAN LOYOLA

## The Journeyman Project 2: Buried in Time

JP2 can bury you in time if you get stuck on its puzzles. Here are a few solutions to help you out.

- **Getting to the Farnstein Lab** can be tricky. At first you don't actually enter it — you're floating in outer space outside the Lab. Simply go back to your kitchen at home, order the Cheese Girl on Shopnet, and then use the Cheese Girl to propel you through space toward the Lab.

- **Using your head** — both literally and figuratively — is the key to getting through the spear trap. When you first enter the Underworld, pick up the skull of the skeleton on the ground. You can then shove the skull into the mouth of one of the serpents that control the trap's entrance. Be sure also to pick up the other skulls near the trap's entrance and at the end of the trap's hallway; you'll use them the same way.

"window of opportunity" to look around or use an item — but often, you press keys and nothing happens or stuff happens even though you haven't pressed a key. Similarly, when you enter Fight mode to kick or punch opponents, you keep wondering if your last keystroke actually did anything.

After far too many hours of Johnny Mnemonic, I'd gladly download it from my brain.

Bob LeVitus is a MacUser contributing editor and Power Computing's director of evangelism.



### GAME POINT

The Journeyman Project 2: Buried in Time is everything an adventure game should be. If you liked the first one (or if you're a Myst fan), you'll love it. Dust is a nifty new kind of interactive story that lets you savor it like a good book — I recommend it highly too. As for Johnny Mnemonic, the two CD-ROMs would be more useful as drink coasters.

### The Journeyman Project 2: Buried in Time

Price: \$65 (estimated street).  
Company: Sanctuary Woods, San Mateo, CA; 800-943-3664 or 415-286-6000.  
Reader Service: Circle #421.

### Dust

Price: \$49.95 (list).  
Company: CyberFlix, Knoxville, TN; 800-483-8632 or 615-546-1157.  
Reader Service: Circle #422.

### Johnny Mnemonic

Price: \$69.95 (list).  
Company: Sony Computer Entertainment, Foster City, CA; 415-655-8000.  
Reader Service: Circle #423.







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oAvailable on CD-ROM; may also be available on floppy disks.



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A leader in printer technology, QMS pioneered the consumer laser printer market. It has become one of the largest manufacturers of computer peripherals in the world by specializing in one category—printers. If quality is important, consider the only company producing their third generation desktop color laser printer—QMS.

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Hewlett-Packard 660c	<b>\$529</b>
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### QMS ColorScript 230

11x17- only **\$2399**

- 11 x 17 full bleed
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With a savings of up to a dollar per page compared to inkjet printers, the QMS ColorScript printer can pay for itself in less than 1600 prints! The ColorScript 210/230 has won the prestigious Editor's Choice Award from MacWorld magazine, due to its "impressive overall print quality". As a matter of fact "the ColorScript 210/230 has it all." (PC Computing)

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### QMS 860 Hammerhead

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- Fast 25 MHz RISC processor
- 600 dpi upgradeable to 1200 dpi
- PostScript Level 1, 2 and HP/PCL-5
- External SCSI port

The QMS 860 is a full-bleed tabloid laser printer that can be upgraded to 1200 dpi. It's durable 8ppm Canon engine sports a RISC processor for rapid image processing and printing.

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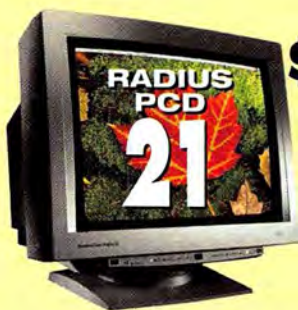




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- PostScript Level 2
- 8ppm heavy-duty Canon engine



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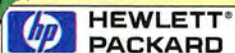
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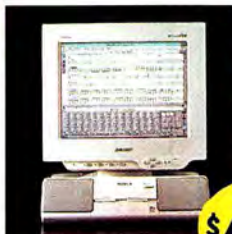


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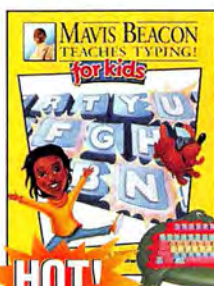


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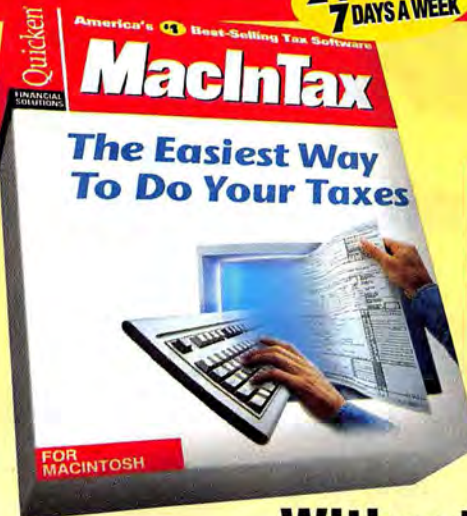
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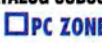
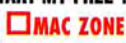
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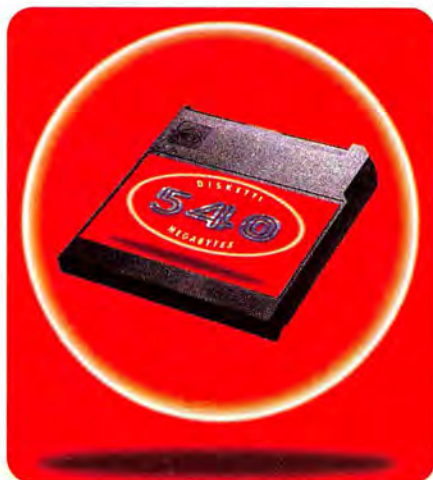


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APS Q 1080 <sup>3</sup> Quantum 1080 Fireball	1042MB	279 <sup>95</sup>	379 <sup>95</sup>
APS MS 1.0 <sup>5</sup> Micropolis 4210	1001MB	549 <sup>95</sup>	649 <sup>95</sup>
APS MS 2.0 <sup>5</sup> Micropolis 4221	1955MB	799 <sup>95</sup>	899 <sup>95</sup>
APS ST 2.0 <sup>5</sup> Seagate ST 32550N Barracuda	2047MB	899 <sup>95</sup>	999 <sup>95</sup>
APS Q 2.0 <sup>5</sup> Quantum Atlas XP32150	2050MB	799 <sup>95</sup>	899 <sup>95</sup>
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APS MS 9.0 <sup>5</sup> Micropolis 1991	8669MB	2199 <sup>95</sup>	*2399 <sup>95</sup>
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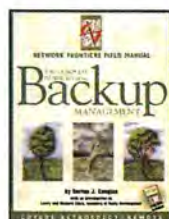
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512K VIDEO RAM	38

#### FPU, MATH CO-PROCESSORS

CENTRIS FPU 25MHZ	\$299
CLASSIC MATH COPROCESSOR 16MHZ	59
FPU 33MHZ DUO/P600	59
FPU COLOR CLASSIC 16MHZ	49
LC MATH COPROCESSOR 16MHZ	49
LC575 33MHZ MATH COPROCESSOR	350
LCIII 25MHZ MATH COPROCESSOR	49

#### PB BATTERIES

REPLACEMENT BATTERY 140-180C	\$59
SLIMPK EXT BATT PB100-180C	145
AUTOMOBILE PB ADAPTER	59
BATTERY PB140-180	59
MINI A/C ADAPTER FOR DUO	50
MINI A/C ADAPTER FOR POWERBOOK	50
PB 100 EXTERNAL BATTERY CHARGE	115
PB BATTERY CHARGER/CONDITIONER	55
PB100 BATTERY	49
VST Charger 500	159
VST Charger 500 AC Bundle	229
VST Charger 500 DC Bundle	229
VST Auto Adapter 500	89
ThinPack Complete	115
ThinPack PLUS	229

## NEW DIMMS!

4MB 70NS 64BIT	\$181
8MB 70NS 64BIT	312
16MB 70NS 64BIT	552
32MB 70NS 64BIT	1109
64MB 70NS 64BIT	2239

## DRIVES

### RUMI DRIVES

RUMI 1.4 GIG RXT	1019
RUMI 730MB EXT/INT	375/310
RUMI 230MB MO DRIVE R/W 128MB	679
RUMI 230MB MO DRIVE W/S CART	832

### CD-ROM DRIVES

RUMI CD-ROM DRIVE - MS	\$172
RUMI CD4X DRIVE W/FWB	
CLARIS WORKS, GROlier '95	\$295

### OMEGA ZIP DRIVES

ZIP DRIVE	\$199
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### SYQUEST DRIVES

RUMI 88MB/105MB W/CART	\$375/369
RUMI 200MB/270MB W/ CART	523/499

### NEW!

SYQUEST EZ135 W/CART ..... \$235

### APPLE EXTERNAL HARD DRIVES

540MB	\$365	850MB	\$419
1080MB	509	2GIG	1049



270MB SyQuest  
w/Cartridge  
\$499



## MODEMS

### Global Village

Teleport GoldII™	\$112
Teleport Platinum 28.8 V.34	239
PowerPort Duo 2XX Mercury 19.2	329
PowerPort 1XX Platinum 28.8 V.34	339
PowerPort 5XX Mercury for 500	342

### SUPRA

SUPRA 14.4 S/R FAX	\$205
SUPRA 28.8 PB FAX/MODEM	319
SUPRA 28.8 V.34 S/R Fax Modem	229
SUPRA V.32BIS PB FAX	165
SUPRAEXPRESS 144 PLUS	99
SUPRAEXPRESS 288 Ext. V.34	179

### US ROBOTICS

Mac/Fax Sportster® True V.34	\$212
Sportster 14,400 Mac/Fax	119



TELEPORT  
PLATINUM  
\$239

## SCANNERS/PRINTERS

EPSON 1000C Color Scanner	\$799
VISIONEER PaperPort for Mac	365
NIKON CoolScan External	1379
NIKON Super CoolScan	1985
AGFA StudioScan IISI	935
POLAROID SPRINTSCAN	1555

### UMAX

POWERLOOK PRO+	\$1999
VISTA S-8 PRO+	814
VISTA S-8 LE+	714
VISTA S-6 PRO+	698
VISTA S-6 LE+	598

### APPLE

Color Laserwriter 12/600	\$6465
Laserwriter 4/600	895
Personal Laserwriter 320	809

### HEWLETT PACKARD

HP LaserJet 4ML	\$1052
HP LaserJet 4 Plus	1514
HP LaserJet 4V/4MV	2040/2968
HP LaserJet 4Si	3135

### EPSON

STYLUS COLOR PRINTER	\$582
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POLAROID  
PRINTSCAN  
\$1555



## ACCELERATORS

### DAYSTAR

PowerPro 601 80MHz w/RAM Cache	\$1455
PowerPro 601 100MHz w/Cache	1259
Turbo 040 40MHz w/Cache	715
Turbo 040 33MHz w/Cache No FPU	609
Turbo 601 65MHz for Ili/Ili (w/adpt)/Ili/Ili/P600	859
Turbo 601 100MHz for Ili/Ili (w/adpt)/Ili/Ili/P600	1239
Turbo 601 100MHz Ili w/Adpt	1239
Turbo 601 100MHz Ilix, Ili, P600	1239
PowerCard 601	649

### DIIMO

50MHZ 64K LCIII/450/LCIII/P4/II/II/II	\$375
50MHZ 64K W/FPU	479
128K CACHE IICI	115
128K CACHE IISI W/ADPTR	155
128K CACHE IISI/FPU/ADPTR	209
128K CACHE Q700/900	115
256K CACHE+ 80MHZ UPGRADE	155/245
512K CACHE+ 80MHZ UPGRADE	249/339
80/84 MHZ CLK UPRG 6/7100	115
50MHZ 128K Q7/900	779
128K SLOTLESS CACHE LC475	175
128K SLTLS CACHE Q660A/7/9/950	219
ADAPTERS	89

50MHZ 128K  
Q 700/900  
\$779



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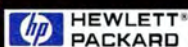
## New From LLB:

Apple Printer Ribbons, Ink & Toner Cartridges



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Series Printers!



UR0196

## MEDIA



The Original SyQuest Cartridge

SONY Magneto Optical Disks	
5.25" MO 1.3GB 1024k b/s	\$85
5.25" MO 1.2GB 512k b/s	85
5.25" MO 650MB 1024k b/s	69
5.25" MO 594MB 512k b/s	69
3.5" MO 230MB	35
3.5" MO 230MB/Mac Formatted	37
3.5" MO 128MB	26
3.5" MO 128MB Mac Formatted	29
SONY CD-Recordable	
74 Min 4x 650MB-10 Pack	\$94.99
74 Min 4x 650MB	9.99
ZIP CARTRIDGE 100MB	
Verbatim DataLife 4mm/8mm Data Cartridges	\$19.50
8mm, DL 112 Meters 2.5/5.0GB	\$7
4mm, DL 60 Meters DDS-MRS 1.3GB	7.50
4mm, DL 90 Meters DDS-MRS 2.0GB	9.50
QIC Data Cartridges (For 5.25" Form Factor)	
DC6150, 620 Ft. 550 oe, 150MB	\$12
DC6250, 1020 Ft. 550 oe, 250MB	16
16DC6525, 1020 Ft. 550 oe, 525MB	21



	1-4	5-9	10+
44MB 5.25"	\$42	\$41	\$40
88MB 5.25"	\$48	\$47	\$46
200MB 5.25"	\$76		\$75
270MB 3.5"	\$59	\$58	\$57
105MB 3.5"	\$55	\$55	\$54

SYQUEST  
270MB  
\$57

ANTI-GLARE FILTER  
VisionGuard

\$35

## CD-ROM OVER 2,000 TITLES!

Blown Away	\$40	Dr. Schueler's Medical Adviser Pro 4.0	46
Myst	49	Encarta 95	89
Voyeur/StoneKeep	48	Creative Fuel	49
Descent	40	PhotoDisc Signature Series	249
Gadget	47	VR Workshop/Distant Suns	39
Eco East Africa	36	Corel Photo CD's	CALL
Safety Monkey	24	Adventures With Edison/Wild Cards	29
Math Blaster In Search of Spot/Millie's Math House	38	Corel Gallery 2	69
Lion King: Animated Storybook	36	X-Men Cartoon Maker	28
Aladdin Activity Center	29	Kids Time Dlx/Mario's Game Gallery/Solitaire Dlx	27
Anno's Learning Games	33	Dungeon Master II	40
Earthcare Interactive	27	Frankenstein	50
Mutantoid Math & Word Challenge	32	Fly Fishing: of The West/Sign Language for Everyone	30
Four Footed Friends	18	Electronic Arts Top Ten Pak II	35
ReElect JFK	33	CD Caddy 5 Pack	34
Mayo Clinic: Health Encyclopedia	79	Street Atlas	69

Thrust Master  
Mark I Flight  
Control  
System

Mac .. \$95

DOOM II  
\$49

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256K Power Mac Cache Memory.

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50MHz 68040 accelerator with 128K Cache.

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## CLUBMAC REMOVABLE STORAGE

### ClubMac 5.25" 200MB Removable



**\$379**

Read, Write and **FORMAT**  
Compatible with 200MB,  
88MB, and 44MB Cartridges.



**FREE**  
CARTRIDGE

While Supplies Last!

### ClubMac 3.5" 105MB Removable

- Fast 14.5ms average seek time
- 3,600 RPM rotational speed
- Data transfer rate up to 4MB/sec (Sync)
- 105 Cartridge is compatible with 270 SyQuest Drive
- IN STOCK NOW!



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TERMINATION

C109 1222



C109 1005

C109 1005

**3.5" ClubMac 105MB**

includes FREE Formatted 105MB Cartridge

**\$189**

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TERMINATION

C109 1224

**3.5" ClubMac 270MB**

**\$189**

**\$375**

C109 1222 **5.25" ClubMac 200MB** **\$379**

C109 1221 **5.25" ClubMac 88MB** **\$199**

All SyQuest drives include SCSI Director formatting software, necessary cables for "plug-and-play" and documentation. All SyQuest drives include a 30-Day Money Back Guarantee and TWO Year Warranty.

### GENUINE SYQUEST CARTRIDGES

Part Number	Media	Qty 1	Qty 10	Qty 20
S198 1010	44MB	\$42.00	\$41.00	\$40.00
S198 1011	88MB	\$47.00	\$46.00	\$45.00
S198 1012	200MB	\$75.00	\$73.00	\$71.00
S198 1013	105MB	\$35.00	\$34.50	\$34.00
S198 1014	270MB	\$60.00	\$59.00	\$56.00

**5 YEAR**  
Warranty  
ON  
CARTRIDGES



## CLUBMAC HARD DRIVE STORAGE



**730MB**

Internal Lightning  
C109 1154

**\$295**

Internal Fireball  
C109 1202

**1.0GB**

# Quantum

	Part No.	Internal	Part No.	External
540MB Fireball 12ms	C109 1200	\$185	C109 1201	\$245
730MB Lightning 11ms	C109 1154	\$189	C109 1102	\$249
850MB TrailBlazer 11ms	C109 1206	\$219	C109 1207	\$279
1080MB Fireball 12ms	C109 1202	\$279	C109 1203	\$339
2200MB Capella 8.5ms	C109 1213	\$659	C109 1212	\$719
4300MB Grand Prix 8.6ms	C109 1159	\$999	C109 1108	\$1059

### Incredibly Low Price



**7200 RPM**  
**4.3GB**

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TERMINATION



October 1995

Internal Grand Prix  
C109 1159

**\$999**

### 2.5" DAYTONA DRIVES



**\$299**

514MB Int.

Capacity	Access	Internal	External
341MB	17ms	\$249	\$369
514MB	17ms	\$299	\$419

## CLUBMAC CD-ROM DRIVES

### ClubMac 2X CD-ROM C109 9550

- 300KB/sec data transfer rate
- 350ms average access time
- Flip Top Lid
- LED light, headphone jack
- Volume control
- Light weight
- CharisMac's CD AutoCache driver software
- ONE Year Warranty



**\$88.88**



ClubMac  
NEW RECORDS!



### ClubMac Classic 2X CD-ROM C109 9543

- Dual Speed CD-ROM Reader
- 300KB/sec data transfer rate
- 320ms average access time
- 64K data buffer
- LED light
- Headphone jack & RCA Jacks
- Kodak PhotoCD (multi-session) compliant
- Includes CharisMac's CD AutoCache driver software
- 350,000 hours MTBF
- ONE Year Warranty



**\$129**



Mac OS  
COMPATIBLE

### ClubMac 4X CD-ROM C109 9546

- 600KB/sec data transfer rate
- 190ms average access time
- Caddy-less design
- LED light, headphone jack and RCA jacks
- CharisMac's CD AutoCache driver software
- ONE Year Warranty



**\$199**



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## DAT AND OPTICAL STORAGE DEVICES

### ClubMac DAT Backup Drives

C109 5039

**\$749**

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**DDS-1 Format**

**DDS-2 Transfer Rate**

**2.0GB**

**4-8GB**

**\$899**

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DAT TAPE

TWO Year Warranty

C109 5000

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### Verbatim



DAT MEDIA	
VO10 1018 Verbatim 90M Cartridge	\$11
VO10 1043 Verbatim 120M Cartridge	\$24
OPTICAL MEDIA	
VO10 1021 Verbatim 1.3GB Optical Cartridge	\$69
VO10 1012 Verbatim 230MB Optical Cartridge	\$29
VO10 1013 Verbatim 230MB Formatted Optical	\$32
VO10 1009 Verbatim 128MB Optical Cartridge	\$22
CD-R MEDIA	
VO10 1022 CD Recordable Disc 74 min	\$10

### ClubMac 5.25" OLYMPUS 1.3GB

- 5.25" Olympus Optical Mechanism
- 29ms ave. seek time
- 3,500 RPM rotational speed
- Cartridge Included

**1.3GB**

**\$1399**

SHIPPING WITH  
**ACTIVE**  
TERMINATION



C109 5022

Mac OS  
COMPATIBLE

### CLUBMAC 3.5" OLYMPUS 230MB

- 3.5" Olympus Optical Mechanism
- 26ms ave. seek time
- 4,500 RPM rotational speed
- Cartridge Included

**230MB**

**\$475**

SHIPPING WITH  
**ACTIVE**  
TERMINATION



C109 5020

Mac OS  
COMPATIBLE



## ACCELERATOR CARDS

**DAYSTAR** Turbo 601 100MHz  
Allows you to run your current software up to twice as fast, and lets you run your PowerPC applications at full speed.

0040 1048	100 MHz Turbo 601 Mac Ili.	\$1139
0040 1050	100 MHz Turbo 601 Mac Ili.	\$1139
0040 1052	100 MHz Turbo 601 IliX/vi/Perfoma 600.	\$1139
0040 1043	100 MHz PowerPro 601	\$1199
0040 1039	66 MHz Turbo 601 Mac Ili.	\$839
0040 1049	66 MHz Turbo 601 Mac Ili.	\$839
0040 1051	66 MHz Turbo 601 IliX/vi/Perfoma 600.	\$839
0040 1040	66 MHz PowerCard 601	\$635
0040 1018	Turbo 040	\$699

## DIGITAL VIDEO EDITING

**radius**

R013 1018	VideoVision Studio 2.5.1 (0500)	\$3,819
R013 1020	VideoVision Studio 2.5.1 Upgrade (0505)	\$1,829
R013 1026	SpigotPower AV (DV1630)	\$789

## TRUEVISION\*

T040 1001	Targa 2000 for the Macintosh	\$4195*
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\* \$100 MFR Rebate offer ends 12/31/1995

## MONITORS

**NEC**

21" MultiSync XE21  
• 21" diagonal flat square technology  
• Mac Res: 640 x 480 NI / 1024 x 768 NI  
• 19.8/Viewable image size  
• AccuColor, Digital controls

N026 1015	15 XV15 Monitor	\$449
N026 1006	15 XE15 Monitor	\$549
N026 1005	15 XP15 Monitor	\$599
N026 1022	17 XV17 Monitor	\$739
N026 1009	17 XP17 Monitor	\$1,049
N026 1010	21 XE21 Monitor	\$1,779
N026 1011	21 XP21 Monitor free ColorProof System	\$2,159

**radius**

R016 1034	PressView 21SR Display System	\$3,149
R016 1032	PrecisionView™ 21	\$2,299
R016 1009	IntelliColor Display/20e	\$2,099
R016 1031	PressView 17SR Display System	\$1,999
R016 1030	PrecisionView 17	\$979

## SONY

S106 1012	20" Multiscan Trinitron 20se 1152 x 870	\$1,989
S106 1007	17" Multiscan Trinitron 17sf 1024 x 768	\$899
S106 1015	14" Trinitron CPD-1425 832 x 624	\$325

**Portrait**  
DESIGN UNIT

P026 1003	Portrait/Pivot 1700 Monitor	\$1,049
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## VIDEO CARDS

**radius**

ThunderColor 30 PCI cards  
80-bit color with built-in photoShop acceleration. Real-time CMYK-to-RGB display. On the fly resolution and bit-depth switching.

**\$1499**

## PCI POWERMAC COMPATIBLE VIDEO CARDS

R013 1069	PrecisionColor 8/1600 1600 x 1200 (0529)	\$479
R013 1071	Thunder 30/1600 1600 x 1200 (0528)	\$1,189
R013 1070	Thunder 30/1152 1152 x 870 (0538)	\$799
R013 1072	ThunderColor 30/1152 1152 x 870 (0531)	\$1,569
R013 1073	ThunderColor 30/1600 1600 x 1200 (0530)	\$1,999

## NUBUS COMPATIBLE VIDEO CARDS

R013 1059	Thunder IV GX*1600 1600 x 1200 (0513)	\$2,699*
R013 1060	Thunder IV GX*1360 1360 x 1024 (0446)	\$2,149*
R013 1061	Thunder IV GX*1152 1152 x 870 (0485)	\$1,759*
R013 1062	Thunder/24 GT 1152 x 870 (0491)	\$1,189*

\* \$200 MFR Rebate offer ends 12/31/1995

## AI TECHNOLOGIES INC.

A143 1010	XclaimGA 2MB PCI video card	\$349
A143 1009	XclaimGA 4MB PCI video card	\$459

## INTEGRATED MICRO SOLUTIONS

I143 1001	Twin Turbo 128M	\$579
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## MICROTEK

M150 1021	ScanMaker IIR LE Omnipage Direct, Color Ili.	\$559
M150 1004	ScanMaker IIR Photoshop 3.0, Omnipage Direct, Color Ili.	\$725
M150 1006	ScanMaker IIR Photoshop 3.0 (Full Version)	\$1999
M150 1012	ScanMaker IIS Omnipage Direct, Color Ili.	\$459
M150 1001	ScanMaker IISX Photoshop 3.0, Omnipage Direct, Color Ili.	\$649
M150 1014	ScanMaker II Omnipage Direct, Color Ili.	\$379
M150 1022	ScanMaker 351 Photoshop 3.0 (Full Version)	\$675

## STORAGE

**iomega.**

1044 1010	Zip drive with 1 cartridge	\$199.99
1040 1006	Zip Cartridge (100MB)	\$19.99
1040 1011	Zip Cartridge (3 pack)	\$49.95

**SyQuest**

S198 2001	EZ135 135MB Removable	\$234.95
S198 2010	EZ135 Cartridge (135MB)	\$19.99

## CD-ROM READERS

**NEC**

N024 1070	MultiSpin 4Xc 7 Disc Changer	\$339
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## NETWORKING

**ASANTÉ**

A120 1054	Ethernet Card for Nubus 10BT	\$49
A120 1003	10BaseT Hub w/8 RJ45, 1 AUI, 1 BNC ports	\$149
A120 1001	10BaseT Hub w/12 RJ45, 1 AUI, 1 BNC ports	\$339
A120 1010	10BaseT FriendlyNet Media Adapter	\$39.95
A120 1011	Thin FriendlyNet Media Adapter	\$54.95
A120 1009	10BaseT/Thin FriendlyNet Media Adapter	\$79.95

## MODEMS

**GLOBAL VILLAGE COMMUNICATION**

**\$229**

TelePort Platinum 28.8 kbps V.34  
The TelePort Platinum fax/modem from GlobalVillage Communications makes it easy to achieve the highest possible performance for Data and Fax Communication.

**TelePort Modems**

G050 1008	Bronze II 2400 data, 9600S/4800R Fax	\$89
G050 1016	Platinum 28.8 data, 14.4 S/R Fax	\$229

**PowerPort Modems**

G050 1017	Platinum PB 1xx 28.8 data, 14.4 S/R Fax	\$325
G050 1002	Mercury PB 5xx 19.2 data, 14.4 S/R Fax	\$325
G050 1001	Mercury PB DUOs 19.2 data, 14.4 S/R Fax	\$325
G050 1019	PCMCIA 28,800 Fax/Data & 10BT Ethernet	\$499

**BOCA**

B030 1012	Modem V.34 28,800BPS Fax/Data	\$169
B030 1013	Modem V.32bis 14,400BPS Fax/Data	\$115

**FastMac 28.8 V.34**

B030 1001	V.34 28.8 Fax/Data	\$139
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**Supra Corporation**

S140 1018	SupraExpress 28.8 Plus	\$175
S140 1006	SupraExpress 14.4 Plus	\$99
S140 1007	SupraFAXModem 28.8 MC	\$219
S140 1008	SupraFAXModem 28.8 PB	\$239
S140 1004	SupraFAXModem 14.4 PB	\$159

## INPUT DEVICES

**ADESSO**

Truform Keyboard  
Save yourself pain and aggravation with the new, ergonomic keyboard from Adesso. With a natural typing position, the 105 key Truform keyboard will prevent carpal tunnel syndrome.

A035 1011	TruForm Keyboard	\$89.95
A035 1012	TruForm Keyboard Deluxe w/Pointer	\$109.95

**WACOM**

W010 1026	ArtPad II 4" x 5" with Erasable Pen	\$139
W010 1028	ArtZ II 6" x 8" with Erasable Pen	\$298
W010 1029	ArtZ II 12" x 12" with Erasable Pen	\$425
W010 1030	ArtZ II 12" x 18" with Erasable Pen	\$695

## radius Radius 81/110

Introducing a Mac™/OS compatible system from the only company qualified to do it right. The Radius 81/110™ is the result of nearly a decades worth of experience making high-performance peripherals for the Macintosh® platform. It offers 100% compatibility with all Power Macintosh™ software. It gives you the performance of a 110 MHz PowerPC® 601+ processor. And it comes with the quality and reliability of Radius. For Mac/OS compatible systems, there is only one alternative. The Radius 81/110.

**NEW PRODUCT**

**Compatible Affordable Reliable**

**\$1999\***

R012 1002 81/110, 16MB RAM, 730MB, CD-ROM, 32k cache, and 256K level 2 cache \$1999\*  
R012 1003 81/110, 16MB RAM, 2GB, CD-ROM, 32k cache, and 256K level 2 cache \$2499\*  
CPU Only, Monitor and Keyboard sold separately \*Price after \$200 MFR Rebate. Offer good through 12/31/95

MacOS

## PRINTERS

**EPSON**

E047 1018	Stylus Color II inkjet printer	\$449
E047 1019	Stylus Color Pro inkjet printer	\$799

**GCC TECHNOLOGIES**

G037 1013	Elite XL616, 16ppm, 600 dpi, 8MB, LocalTalk™	\$2699
G037 1011	Elite XL608, 8ppm, 600 dpi, 8MB, LocalTalk™	\$2399
G037 1030	Elite XL808, 8ppm, 800 dpi, 12MB, LocalTalk™	\$2999
G037 1012	Elite XL1208, 8ppm, 1200 dpi, 24MB, LocalTalk™	\$4299

**hp HEWLETT PACKARD**

H047 1039	DeskWriter 600 Inkjet Printer	\$299
H047 1033	DeskWriter 660C Inkjet Printer	\$399
H047 1041	DeskJet 850C Inkjet Printer	\$545
H047 1042	DeskJet 1600CM/PS PostScript Printer	\$1985
H047 1030	LaserJet 5MP Printer	\$1045

**NEC**

N027 1001	Silentwriter Model 640	\$549*
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\* \$150 MFR Rebate offer ends 1/15/1996

## AGFA Arcus II

**\$1925**

A055 1001	Arcus II	\$1925
A055 1011	StudioScan Ili.	\$939
A055 1004	StudioScan	\$589

**Nikon**

N045 1005	Super Coolscan LS1000 Color Slide Scanner	\$1999
N045 1002	Coolscan LS-10 Color Slide Scanner internal	\$1199
N045 1001	Coolscan LS10E Color Slide Scanner external	\$1249
N045 1003	ScanTouch AX-1200	\$1169

**UMAX**

U010 1037	Vista-S8 LE Photoshop 3.0 LE, OCR, Color Pro Photos	\$679
U010 1038	Vista-S8 Pro Photoshop 3.0, Kai's Power Tools SE, OCR	\$789
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Laura Mosier, District Sales Representative  
Mystic Center, 10 President's Landing  
Medford, MA 02155; (617) 393-3692

## Northeast (CT, MA, ME, NH, upstate NY, RI, VT, Canada, except Alberta and British Columbia)

Sharon Kiernan, District Sales Representative  
Mystic Center, 10 President's Landing  
Medford, MA 02155; (617) 393-3060

James Meyer, Account Executive (415) 378-5640

## Midwest (AR, IA, IL, IN, KS, KY, LA, MI, MN, MO, MS, ND, NE, NM, OH, OK, SD, TN, TX, WI)

Tom Hernandez, District Sales Manager  
150 North Wacker Drive, Suite 2500  
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Dan Hudson, Account Executive (415) 378-5622  
Jenny Kalthoff, Sales Assistant (312) 214-7348

## Northwest CA (San Mateo and north, AK, HI, ID, MT, OR, WA, WY, Canada; Alberta, British Columbia)

Ellen Skugstad, District Sales Manager  
950 Tower Lane, 18th Floor  
Foster City, CA 94404; (415) 378-5657  
Brigid Dombrowski, Account Executive (415) 378-5658  
Heather McKee, Sales Assistant (415) 378-5626

## Bay Area CA (South Bay, NY)

Chris Marrow, District Sales Representative  
950 Tower Lane, 18th Floor  
Foster City, CA 94404; (415) 378-5651  
Casie Davis, Account Executive (415) 378-5630  
Heather McKee, Sales Assistant (415) 378-5626

## Southwest CA (So Cal, AZ, CO, UT)

Dale Hansman, District Sales Manager  
11766 Wilshire Blvd., Suite 1550  
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Maureen O'Sullivan, Account Executive (415) 378-5605  
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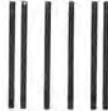
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**1. For how many microcomputers do you buy products?**  
(check one)

01 ☐ 1-4      02 ☐ 5-49      03 ☐ 50+

**2. Your primary job function is: (check one)**

01 ☐ Administrative/General Management      03 ☐ Engineering/R&D  
02 ☐ MIS/DP, Communications Systems, Programming      04 ☐ Finance/Accounting  
05 ☐ Marketing/Sales      06 ☐ Computer Dealer/VAR

**3. Indicate which type of hardware products you or others in your department plan to purchase in the next 12 months?**

**HARDWARE**  
01 ☐ Apple Macintosh      07 ☐ Printers/Plotters  
02 ☐ PowerBook      08 ☐ Monitors/Displays  
03 ☐ Macintosh Clones      09 ☐ Storage  
04 ☐ Windows/Intel      10 ☐ Add in Boards  
05 ☐ Modems      11 ☐ Networking  
06 ☐ Scanners      12 ☐ CD-ROM

**4. Indicate which type of software products you or others in your department plan to purchase in the next 12 months?**

**SOFTWARE**  
01 ☐ Accounting      04 ☐ Internet Access  
02 ☐ Spreadsheet      05 ☐ On Line Services  
03 ☐ Windows/Intel      06 ☐ Project Managers

07 ☐ Word Processors  
08 ☐ Database Managers  
09 ☐ Presentation Graphics

**5. If so, what function do you serve in the buying process?**  
(check all that apply)

01 ☐ Initiation/Determine Need  
02 ☐ Selection of Brand and Model  
03 ☐ Selection of Source  
04 ☐ Authorization  
05 ☐ Other

**6. Where do you plan to make your purchase?**

01 ☐ Mail Order/Catalog      04 ☐ Superstore  
02 ☐ Direct From Vendor      05 ☐ VAR, VAD  
03 ☐ Local Retailer

**7. Over the next 12 months, how much will your organization spend on computer products or services? (check one)**

01 ☐ over \$5 million      05 ☐ \$50,000 - \$99,999  
02 ☐ \$1 - \$5 million      06 ☐ \$10,000 - \$49,999  
03 ☐ \$500,000 - \$999,999      07 ☐ under \$10,000  
04 ☐ \$100,000 - \$499,999

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Quantum DLT SCSI

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8.5 ms Seek 7200 RPM 512K Buffer 5 Year Warranty		

## SCSI HARD DRIVE CABINETS

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- Selling quality drives at incredibly low prices Since 1987.
- 30 Day money back guarantee.
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- DynaMO external \$479 1 free disk

### 1.3 Gig NEC

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- 2 Year warranty! 1MB data buffer.
- External only \$1129 1 free disk

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- Read and write 2.3Gig or 4.6Gig disks
- 512K data Buffer, 1 year warranty.
- External only \$1499 1 free disk

### FUJITSU 1Gig

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External \$335  
(5% less than Quantum, 14% faster read, 4% faster write)

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- Low price guarantee on all Fujitsu drives!

Capacity	Speed	RPM	Buffer	Wty	Model	Internal	External
530MB	12ms	5400	(2.5" for Powerbook)		M2706S	\$399	n/a
1080MB	9.5ms	5400	256K	3yr	M1606S	\$275	\$335
2176MB	9.5ms	7200	512K	5yr	M2915S	\$645	\$705
4350MB	8.9ms	7200	512K	5yr	M2934S	\$949	\$1009

## Quantum

#1 HARD DRIVE FOR MAC!



Capacity	Speed	RPM	Buffer	Wty	Model	Internal	External
850MB	14ms	4500	128K	3yr	TB850S	\$222	\$282
1080MB	12ms	5400	128K	3yr	FB1080S	\$280	\$340
2150MB	8ms	7200	1024K	5yr	XP32150	\$735	\$795
2216MB	8.5ms	5400	512K	5yr	VP32210	\$635	\$695
4300MB	8.6ms	7200	512K	5yr	XP34301	\$979	\$1039

MegaHaus is your #1 source for Quantum drives.

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- Same day shipping on most orders!



## SyQuest

Genuine SyQuest cartridges Qty 4-9 / 10+ or with drive.  
44MB \$42 \$40  
88MB \$47 \$45  
105MB \$53 \$50  
200MB \$76 \$71  
270MB \$59 \$56

Capacity	Speed	Compatible	Model	Buffer	Internal	External
88MB	20ms	44, 88MB	SQ5110C	32K	\$285	\$339
135MB	13.5ms	135MB	EZ135S	128K	n/a	\$235
200MB	18ms	44, 88, 200MB	SQ5200C	64K	\$419	\$469
270MB	13.5ms	105, 270MB	SQ3270S	128K	\$409	\$439

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- 1 FREE cartridge with each drive!
- 2 year warranty on drive and case!
- 5 year warranty on all cartridges!
- Same day shipping on most orders!

**OUR PRICE INCLUDES 1 DISK!**

Brand	Capacity	Seek	RPM	Buffer	Wty	Model	Internal	External
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Conner	1080MB	9ms	5400	256K	5yr	CFP1080S	\$292	\$352
NEC	1083MB	11ms	4090	256K	3yr	NEC3827	\$259	\$319
NEC	1620MB	11ms	4500	256K	3yr	NEC3847	\$379	\$439
Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221	\$729	\$789
Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221AV	\$779	\$839
Conner	2147MB	9ms	5400	512K	5yr	CFP2105S	\$689	\$749
Seagate	2147MB	9ms	5411	512K	5yr	ST32430N	\$739	\$799
Seagate	2147MB	8ms	7200	512K	5yr	ST32550N	\$849	\$909
Seagate	4290MB	9ms	5400	512K	5yr	ST15230N	\$969	\$1029
Seagate	4290MB	8ms	7200	1024K	5yr	ST15150N	\$1199	\$1259
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243	\$989	\$1049
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243AV	\$1069	\$1129
Conner	4294MB	9.5ms	7200	512K	5yr	CFP4207S	\$1049	\$1109
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991	\$1999	\$2099
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991AV	\$2109	\$2209
Seagate	9090MB	11ms	5400	1024K	5yr	ST410800N	\$2129	\$2229

**BEST BUY!**

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Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221WAV	\$879	\$979
Quantum	2140MB	8ms	7200	512K	5yr	XP32151W	\$899	\$999
Seagate	2147MB	8ms	7200	512K	5yr	ST32550W	\$939	\$1039
Fujitsu	2176MB	9.5ms	7200	512K	5yr	M2915W	\$699	\$799
Quantum	2210MB	8.5ms	5400	512K	5yr	VP32210W	\$779	\$879
Seagate	4290MB	8ms	7200	1024K	5yr	ST15150W	\$1259	\$1359
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243W	\$1089	\$1189
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243WAV	\$1169	\$1269
Fujitsu	4350MB	8.9ms	7200	512K	5yr	M2934W	\$1019	\$1119
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991W	\$2129	\$2279



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January 1996 MacUser



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50MHz 64K W/FPU	365
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POWERPORT PLATINUM CARD 28.8	383
POWERPORT PLATINUM CARD PRO	518
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US ROBOTICS 28.8 V34	209
US ROBOTICS 14.4 EXT	117
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RUMI CD4X DRIVE W/FWB/CLARIS WORKS	230
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# MacUser MARKETPLACE

## MARKETPLACE

The cost-effective buying arena that provides sellers of Macintosh compatible products 3 advertising options: Premier, Classified and Business Card to meet their specific advertising goals, reaching 452,443 Macintosh Business Buyers. All sections are set up by product category and offer reader service.

## PREMIER

The four-color showcase that spotlights leading-edge products and services.

## CLASSIFIED

Flexible-format display advertising that offers diverse sizes plus two and three color options. Section meets dynamic advertising needs for all Macintosh products and services.

## BUSINESS CARD

A forum for innovative, unique, low-cost and hard-to-find Macintosh hardware, software, and miscellaneous products and services.

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	Premier	Classified
Security		
Utilities		202
Adult		207
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<b>MISCELLANEOUS</b>		
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### ACCOUNT REPRESENTATIVES

<b>Courtney Dowling</b> 212-503-5153 Eastcoast	<b>Christopher Yates</b> 212-503-3802 Northwest
<b>Bill Masterson</b> 212-503-5941 Midwest	<b>Gina D'Andrea</b> 212-503-5863 Southwest

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CIRCLE 171 ON READER SERVICE CARD



# WILSON<sup>3d</sup>

# STRATA CLIP™ 3d

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## CLIP 3d

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CIRCLE 172 ON READER SERVICE CARD

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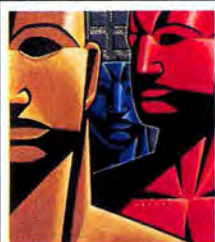


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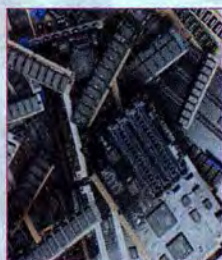
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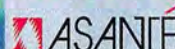
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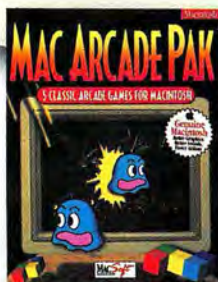
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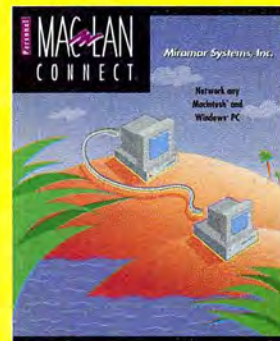
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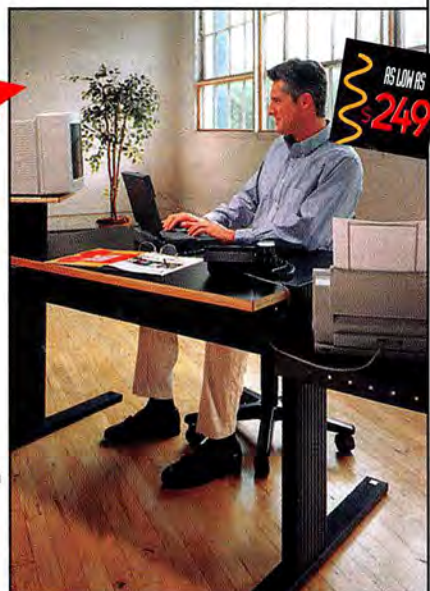
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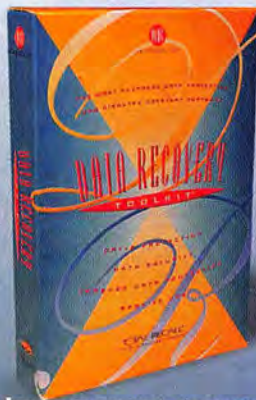
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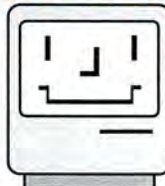
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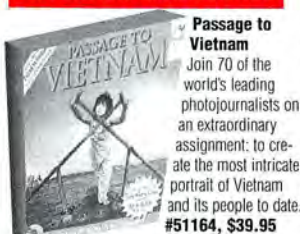
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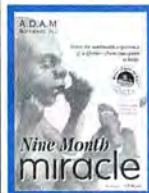
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## Looking for a Miracle

# SHEESH. FIRST THING I HEAR IS THAT IBM offered about \$60 a share for Apple and that Spindler and the board said no. Then

I'm told that during the Windows 95 rollout, the demand for Power Macs soared but Apple couldn't deliver enough machines. Bad forecasting, it seems. Now, most recently, I hear that parts of Apple may have to be sold off to keep things afloat. Parts? I didn't know there were any "parts" to sell. Unless they mean the Newton PIE division, and who would want that?

Well, none of this sounds good, and the long delays for the Copland operating system aren't going to help as more and more people flock to Bill Gates' vision of a Windows 95 universe. More-cynical observers might see a sinking ship and the death throes of Apple, but I don't. I do worry, though, that Apple has strayed from the path that made it the only pioneer personal-computer company to survive this long. Let's face the facts: There's less *personal* computing happening at Apple than at just about any other microprocessor-based company today.

In 1977 and 1978, when Apple pioneered home and personal computing along with a few other hopefuls such as IMSAI, Processor Technology, North Star, and Altair, it was selling to Everyman. Back in those days, everyone's computer ads showed a happy family or a smart, only-slightly-dweeby guy with an Apple II using it to gain some sort of edge.

During this period, there was an interesting buzz about personal computers and how individual people were using them. People could do with their own computers whatever they wanted — especially if they knew how to program them. They could play games or write letters. They could organize their finances or control model trains. It was up to them.

The companies that sold machines to these daring individuals were every bit as wacky as their customers. Remember Altair, with its 8800 and front-panel switches? This pure-hobbyist machine, which was sold through a chain of stores called Computer Kits, was going to be the "mainframe of the 1980s," according to Altair.

Another "mainframe of the 1980s" wannabe was Processor Technology's SOL-20, a machine more interesting than the Apple II but lacking any color capability. Color gave the Apple II a big edge, because it was what individuals — not businesses — wanted.

Throughout these early years, a slew of companies came and went. North Star, Morrow, Ohio Scientific, Digital Group, Sphere, Jupiter, Cromemco, Godbout, and others are only memories now. All the while, Apple kept growing. By comparison to the other players, it seemed solid as a rock.

Then came the IBM PC, and almost overnight everything changed. In the earliest years of the personal-computer revolution, everyone assumed that IBM was the enemy. Personal computing was aimed at destroying IBM and its mainframe hegemony. But when IBM arrived on the scene with its own personal computer, the attitude changed. And it kept changing as spreadsheets seemed to be driving personal computing more than anything else. Once the Lotus 1-2-3 spreadsheet program was introduced, the IBM PC became the de facto leader. Personal computers were now machines that

businesses could use. Individuality didn't count for much. It was the beginning of the era of the clone.

Things looked grim for Apple. It was way behind the curve on business computing. Newer models of the Apple II were lame upgrades. The Apple III — Apple's first attempt at a business machine — was a joke. The storm clouds were looming. Then Steve Jobs, the Apple visionary, took a new

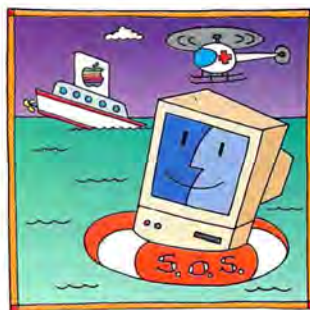
tack. Seeing the cool Xerox Star machine, he realized that the GUI was the way of the future. Soon the Lisa was born.

But although innovative, the Lisa was a betrayal of Apple's origins: personal computing. At \$10,000, the Lisa was too expensive to be a personal computer. Not

until the Macintosh would the company get back on track with its personal vision. Users could at least afford the thing, even if it didn't do much. The promise of personal computing was kept alive.

But for how long? Again today we see Apple moving away from inexpensive computing toward high-priced workstations in an attempt to keep up with the big guys. The Power Macs are nifty, but they're not for everyone.

Years ago Timex-Sinclair developed a dinky little computer that sold for \$99. People bought tons of them. Another door-stop, true, but also cheap computing for the masses. Somewhere along the way, we've lost the ability to feed the public cool little computers at low prices. Much of this loss is because Apple lost its edge, drive, and desire to make "personal" computers. Why not develop a box that costs less than \$500 but lets people access the World Wide Web? I bet Apple could sell as many of those as Timex-Sinclair did of its doohickey. ☞





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# POWERWAVE FROM POWER COMPUTING



MacWEEK - APRIL '95



MacUser - AUG '95



Macworld - AUG '95



PC Magazine - AUG '95



Infoworld - JUNE '95

## EDITOR'S RAVE ABOUT POWER COMPUTING...

"Considering the purchase of a PowerMac?  
...We strongly recommend that you take a  
serious look at what Power Computing  
has to offer."

*MacUser- Aug 95*

"They might as well have come from  
Apple- the performance and compatibility  
are that good."

*Macworld- Aug 95*

"Power Computing's systems match their  
PowerMac counterparts for speed and  
compatibility and are every bit as good as  
a dyed-in-the-wool Macintosh."

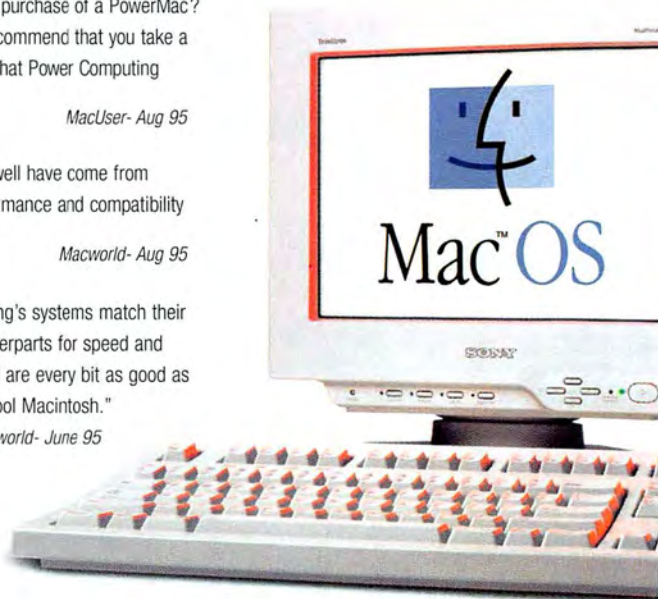
*Infoworld- June 95*

"...an excellent Mac alternative,  
whether or not you are pinching your pennies."

*PC Magazine- Aug 95*

"With an experienced staff recruited from Dell, APS, and Apple, Power Computing  
has designed a robust support system... The support is excellent."

*Macworld- Aug 95*





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