SERIOUS FUN
Breakthrough Technologies Transform Macs into Awesome Game Machines

PLUS
Burn Your Own CDs
8 New Drives Make It Easy

Two for One HP’s Color Copier/Printer Combo

Superfast Graphics
PCI Cards Make Photoshop Fly
You are on Your Power Mac.
You are in Microsoft® Word 6.0.1.
Your mind is racing.
Your fingers are racing
To keep up with your thoughts.

You begin a new sentence with a lowercase letter.
This mistake is corrected automatically.

Knowing there are 100 levels of undo.
And 100 levels of redo.
Just in case.
in here mistakes are forgiven
Until you have finished.
You click AutoFormat.
And the block of words
Can become
A letter.
A proposal.
A story.
Automatically.
You write. Because you can.

You begin a new Sentence with
An abbreviation
You created.
It becomes
An entire phrase.
Automatically.

In
Print preview
You change
Margins
Typefaces
Words.

YOU WRITE
YOU REVISE

Microsoft
WHERE DO YOU WANT TO GO TODAY?
in here

you

work

miracles
In here

You assemble your thoughts

Effortlessly.

You drag

AN

Words tables

Charts graphics

From one program

And drop them

AN

IDEA

From one program

BEGIN

You turn

Your Word document

Into another

FactOry

Instantly.

IDEA

You run

Microsoft Excel calculations

In your Word document.

BEGIN

You turn

Your Word document

Into a PowerPoint® presentation.

TO

You see everything

Come together.

FORM

Seamlessly.

This is you. Working.
NEW ON THE MENU

Fastest Mac Ever Power Computing's PowerWave 604/150. / Next-Generation PDAs Newton and Magic Link go cellular. / Windows 95 Comes to the Mac Orange Micro makes it happen. / Copland Betas for everyone? / ZMac Utility of the Month 3D Morphing Power Cube. / Plus Macintosh price index. / 30

REVIEWS & QUICK CLICKS

HP CopyJet M Innovative, affordable color-printer/copier combo serves up inkjet printouts and color copies. / 39

Infini-D 3.0 Easy-to-use 3-D package offers a good introduction to 3-D art and animation — and it's affordable. / 42

SyQuest EZ135 Drive Inexpensive removable-cartridge drive is fast but otherwise limited. / 44

Digital Chisel 2.0 and HyperStudio 3.0 These two teacher-targeted authoring tools go to the head of the class. / 50

La Cie VIP Scan and UMAX BizCard Reader These OCR-based business-card readers miss the mark. / 54

ClarisImpact 2.0 Presenting your data in a more accessible graphics form is easy with this all-in-one presentation tool. / 57

MapLinx for Macintosh This affordable geographic data-analysis tool maps out the territory. / 60

Speed Doubler Pumping up your Power Mac. / 65

AddDepth 2 3-D drawing for Everyman. / 67

At Ease for Workgroups 3.0 and At Ease 3.0 Sharing your Mac safely — and economically. / 68

The Black Box 2.0 Nifty Photoshop plug-in crafts spiffy World Wide Web pages. / 69

InfoGenie Free-form personal data manager is fast and flexible. / 71

Color Compass Create color libraries and save them as palettes for your favorite apps, to get universally consistent color. / 73
GAME PLAN

Is it the thrill of victory or the agony of defeat that keeps gamers coming back for more?

PLAY THE GAME, and you'll discover what gamers have known for years: When it comes to pushing the technological envelope, games win hands down, incorporating such marvels as QuickDraw 3D, MPEG, QuickTime VR, and speech recognition.

By Christopher Breen / 78

FEATURES

Feel the Burn

CREATING YOUR OWN CD-ROM may be your fantasy, but it could easily be a reality with one of these eight dual-speed CD-ROM recorders.

By Gregory Wasson / 86

Fast on the Draw

YOUR POWER MAC may be fast, but is it wicked fast at redrawing those Photoshop images? If not, you may be interested in the new crop of PCI accelerated-graohics cards. We review seven to see who's quick on the draw.

By Henry Bortman / 96

Quick Labs

PROBLEM: WE JUST CAN'T KEEP UP with all the great products introduced each month. Solution: Quick Labs, a monthly bulletin of lab results on the latest printers, monitors, and storage systems.

/ 106

DTP & GRAPHICS / 108

Graphics How-To

Kid Pix and the grown-up artist. / 110

Expert Tips

Cures for font frustration. / 111

NETWORKING / 113

Mac to PC The top ten cross-platform nuisances. / 115

HANDS ON / 119

Net Traveler Delving deep into the dark heart of politics. / 119

Help Folder Bob and Chris answer all your questions. / 121

PERSONAL MAC / 127

Family Ties Dig up your roots via genealogy software or online research. / 127

The Two Dads Some globe-trotting geography training tools for the cartographically challenged. / 132

The Game Room Travel through time, but forget Johnny Mnemonic. / 134

The 1995 Product Index

NO MORE SHUFFLING through back issues. No more midnight calls to friends. It's our annual roundup, with every product we reviewed and rated in 1995. / 136
Does it matter what kind of memory you put in your Macintosh?

Well, it matters to your Macintosh. That’s why you should choose Kingston memory. Nobody knows the intricacies of the Mac better than Kingston. And nobody is more fanatical about quality. The proof: We test every memory module we make. (Some memory manufacturers test about 5% of their products.) In fact, we test each one at least eleven times. And we test it in exactly the same model of Macintosh in which it will be used. So the chance of anything going amiss is remote, to say the least. Of course, if you need any help with the installation process, just give us a call—our technical support is free.

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CIRCLE 80 ON READER SERVICE CARD
THE ENVELOPE, PLEASE....
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.

SITE-SEEING ON THE WEB
Hop aboard the March issue of MacUser for an insider's tour of the Web. MacUser's own Web masters list the top 100 Web sites and recommend the best ones in different categories, such as technology, shopping, environment, reference, humor, and more. You get tips on managing bookmarks and a glimpse of the technology behind the sites. Attention all cyber-space travelers, don't miss this issue!

THE POWER OF PLUGINS
Could you be more plugged in than you are? This March, MacUser editors review and mouse-rate the essential Photoshop and Illustrator plug-ins for image-editing and illustration. They will also outline key usages of plug-ins, why you need them, and which ones are best for certain needs. If you're a graphics designer or pre-press professional, this report will definitely enhance your image.

HOW TO REACH US
MACUSER WANTS to hear from you. Send correspondence to MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404; 415-378-5600. Send e-mail to letters@macuser.com (Internet) or 72511,422 (CIS). We can't look up stories from past issues, recommend products, or diagnose problems. Call Apple toll-free at 800-538-9696, ext. 500, for information on user groups. By submitting a tip to MacUser, directly or via ZD Net/Mac, you agree that Ziff-Davis Publishing Company, L.P., and its affiliates and licensees can reproduce, publish, display, and distribute your tip worldwide in all print and electronic media and in all other forms, manner, and media now known or hereinafter devised.

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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 Breneman
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
guysspam@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 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

WRITE TO LETTERS

c/a MacUser
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Foster City, CA 94404
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LETTERS

MacUser 89

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 "SYSTEM 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 occupied 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!
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 PC Card slots for increased functionality. So, instead of installing an internal fax/modem, now you just slip in one of our new PowerPort™ PC Cards. But, at Global Village, we haven't just changed our shape. PowerPort PC Cards provide unmatched power and ease of use. Our exclusive PC Card Enhancement software features plug-and-play setup, on-line help, and convenient access to communication applications. Plus, our intuitive GlobalFax™ software makes faxing hassle-free. And with 28.8 Kbps performance, you'll get more done in less time.

Global Village modems are used in more PowerBooks than any other brand. It's because no products make communicating easier. The PowerPort PC Card line is no exception. In fact, our dual-function PowerPort Platinum™ Pro can be used simultaneously as a cellular-ready modem and Ethernet adapter. So you can use the modem while connected to your network.

For the inside scoop, just call us at 1-800-736-4821, ext. 3459. Or visit our Web site at http://www.globalvillage.com/pccards.html. We've got a brand-new shape, but it's pure Global Village.

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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 "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-30-percent performance boost the L2 cache normally provides would allow a 7200/75 to handily outpace 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

StuffIt Deluxe 3.5 fields anything thrown your way.

There are scores of files on the Internet and most are compressed in a whole roster of different file formats from the PC, Unix, and Macintosh leagues. Fortunately, StuffIt Deluxe, MacWeek's four diamond all-star, can expand just about everything in one quick motion (even those out of left field). StuffIt Deluxe can also switch-hit and translate files into most of those formats. Don't let opposing file formats throw you a curve. If you play on the Internet, go with the ace, StuffIt Deluxe. Get on the ball and hustle down to your local software franchise or call (408) 761-6200.
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

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 6.0.
The computer pointing device that's an extension of your identity. As easy to install as a mouse. More accurate than a trackball. The product of years of neural network research, and the end of repetitive motion risk. Point, drag, tap.

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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 that 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.

MacUser / JANUARY 1996
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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 going out on a limb by predicting yet another comeback for Apple in 1996.

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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 fly 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, 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 be a real threat to 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.
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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 aids 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 measure. By now, members of the crowd can no longer contain themselves, and they shout “Exooooooonnnnnnnnnnn!” 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 backtrack, 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. 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 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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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 9500/120, 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 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
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 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 5-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. Last 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, continues to surround discussion of Power’s future multiprocessing systems. But stay tuned to this station. 512-258-1350. / Henry Bortman

The Software Parade

Power has upped the ante on software bundles with its new systems too. Like other Power clones, PowerWave systems 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
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.

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.

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

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 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 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

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 ($599), and Sony has released the second-generation Magic Link PIC-2000 ($599), 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/. / John Rizzo
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Lincoln Millstein, The Boston Globe, June 16, 1995

"For after-hours fun, we recommend America Online."
Reprinted from MACUSER, June 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 microkernel and the new file system.

By doing this, Apple will help ensure that when it distributes a more general developer 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.

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 whether 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 Bartman

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 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 11x17 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, upgradeable to 76 MB, and HP's JetDirect card, for connecting to Ethernet/LocalTalk networks. 800-752-0900. / Pamela Pfiffner
Return of the PIMs
Get organized for the new year.

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 — Fitch 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 & Date­
Book 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-synchronization 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 includes an Apple Guide-based quick-start guide. $170; upgrade, $50. 800-441-7243 or 503-334-6054. / Jason Snell

INPUT DEVICES / The Gyroscopic Mouse

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

Gyration 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 Corel's OmniPage LE OCR software. An automatic document feeder ($559) and a transparency adapter ($759) are available as options. 800-752-0900. / Pamela Pfaffner

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. IWI Publishing. 800-432-1332. / James Bradbury
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

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. $30. 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.

Zone Warrior. In this space-combat game, you are piloting a fighter space-ship on a mission to defend your space station from an alien attack. $50. Casady & Greene. 408-484-9228; c&g@casadyg.com.

Spelling Coach Pro 4.1. This updated spelling checker is now compatible with Microsoft Word 6, WordPerfect 3.1, and WriteNow 4.0 as well as with online-service applications. Meant to replace all the application-specific dictionaries on your hard disk, Spelling Coach Pro uses a 95,000-word dictionary (with definitions for 86,000 words) as well as supplementary legal, technical, and medical dictionaries. $50; upgrade, $25. Deneba Software. 305-596-5644.
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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,
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.
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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 polygon-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 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 modeller 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.

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).


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

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

Reader Service: Circle #402.
This color output was printed on the Apple Color StyleWriter 2400.

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This color output was printed on the Apple Color StyleWriter 2400 with StyleScript.
REVIEWS REMOVABLE-STORAGE SYSTEMS

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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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 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.

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 plugins 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.
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WHERE DO YOU WANT TO GO TODAY?™
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 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 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 course-ware. 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 sophisticated 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...
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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CIRCLE 125 ON READER SERVICE CARD
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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 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 database. In its default view, it contains 15 standard fields (prefixed 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 deault 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 polish up the results, you can save space. You can also choose to export the native formats of popular Mac personal information managers) or leave it in the scanner’s own contact manager. The program's ability to store the scanned data is impressive.

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

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

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 programing 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 gobbledegook, 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-1 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
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 Norr

La Cie VIP Scan

Price: $219 (direct).


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.
"Yes, this is Dr. Oak. Ahhh, sorry to leave a message like this, but, ahhh . . . I did everything I could to save her. If only I'd gotten there sooner. Please call me right away."

As fast as you can type "call Dr. Oak," new QuickPad from Now Software shows you critical information. Just as fast, QuickPad lets you update your personal calendar, add to your to-do list, capture voice mail messages, and share information with your team. It's just one of the many ways new Now Up-to-Date & Contact Version 3.5 lets you manage your life on the fly.

Call 1-800-544-2599 for your free 30-day trial of the #1 best-selling scheduler and contact manager for the Macintosh.

Now Software. Making every second count.
Clarislmpact 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. Clarislmpact 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
Clarislmpact 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 Clarislmpact, you select DataDraw from the File menu. Clarislmpact will ask you to select the exported file, choose a design style, and match the Clarislmpact 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 Clarislmpact graphic and choose Update Graphics from the DataDraw menu option. You can also set up Clarislmpact to check for modified source files each time you open a Clarislmpact 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 Clarislmpact graphic, the additional information won't always be in the same font or color as the original information.

Clarislmpact 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, Clarislmpact has flowchart-symbol sets for transportation and telecommunications networks, decision trees, brainstorming, root-cause analysis, total-quality management, and
Presenting The Next Upgrade
To Microsoft Word

Introducing Nisus* Writer 4.1, the upgrade to Word that’s truly an upgrade. Because unlike the latest version of Word, Nisus Writer 4.1 gives you all the features and power you need without gobbling up a lot of RAM or disk space.

What Nisus Writer squeezes out of a little bit of memory is nothing short of remarkable. For starters, you get all the text, formatting, document and graphics features you’d expect from the most powerful word processors. But with Nisus Writer 4.1, that’s just the beginning.

Take Nisus Writer’s advanced editing features for instance, like noncontiguous selection, unlimited undos, auto-indexing, and the ability to search for items even in unopened documents. Or Nisus Writer’s foreign language capabilities, letting you type in at least twenty different languages. Plus, Nisus Writer can speak back the words you type in as many as five languages!

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Web site: http://www.nisus-soft.com/~nisus

OR FOR 24 HOUR IMMEDIATE FAX RESPONSE CALL 619-481-4366.
e-mail: info@nisus-soft.com
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).
Cons: DataDraw's Update Graphics function needs improvement.
Company: Claris, Santa Clara, CA; 800-544-8554 or 408-727-8227.
Reader Service: Circle #408.
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.

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 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

<table>
<thead>
<tr>
<th>Memory Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 MB</td>
<td>System 7.0</td>
</tr>
<tr>
<td>8 MB</td>
<td>Adobe Illustrator</td>
</tr>
<tr>
<td>8 MB</td>
<td>QuarkXPress 3.3</td>
</tr>
<tr>
<td>22 MB</td>
<td>Software Memory</td>
</tr>
<tr>
<td>8 MB</td>
<td>Data, Buffers, etc.</td>
</tr>
<tr>
<td>30 MB</td>
<td>Total</td>
</tr>
</tbody>
</table>

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 wristband so you don’t accidentally zap your memory during installation.

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

Do they test every module? Microtech does.

What's the warranty? All Microtech memory is covered by a lifetime warranty and a 30-day money back satisfaction guarantee. If anything ever goes wrong, give us a call right away. If we determine the memory has failed (or even suspect module is designed for a your problems could be memory related), we'll cross-ship new modules for next day delivery. No hassles.

Free Memory Survival Guide. Includes a chart on how to determine your memory needs, configuration guide and other helpful information.


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CIRCLE 119 ON READER SERVICE CARD
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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**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 applications. 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**

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1. Beware of dragging files. If you've been "backing up" by dragging files, you'll have an unpleasant discovery when it's time to restore. Even if you've kept up to date with all your files (sure, sure), what you'll still be missing is every preference, configuration, and font – all the stuff that reflects the way you work.

2. Recovery tools don't recover everything. At best, it's a partial recovery. At worst, you have a fire.

3. Other backup software leaves you exposed. You're forced to individually restore each incremental backup. The dentist's more fun than that. Only Retrospect has SnapShot™ technology that tracks the most recent state of your hard drive. So complete restoration is accomplished in just one step, in only minutes.

4. Don't play the odds, you'll lose. Half of you are going to lose a file, a document, or everything this year. Think about it: one single file could be worth more than Retrospect's entire price tag.

5. The world's foremost restoration artists. Don't leave yourself wide open to disaster. Buy the software with the awards, the raves, and support for almost every SCSI tape drive ever made. And every Retrospect benefit is multiplied many times over with Retrospect Remote® – our backup answer for network users. Call us at 800-95-BACKUP for our Top Ten Backup Tips. Do it before it's too late.

EasyScript™ creates a customized backup strategy that includes backup frequency, scheduling, and media rotation.
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

This year you may need a bigger stocking.

Putting an apple in a Christmas stocking is an old tradition, but it's not one that tends to generate a lot of excitement.

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CIRCLE 13 ON READER SERVICE CARD

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.

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


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**CIRCLE 159 ON READER SERVICE CARD**
InfoGenie / Fast, flexible data manager

IF YOU’VE BEEN SEARCHING for a fast program that can store your entire address book, your huge collection of lawyer jokes, and all the information you’ve culled from the Net, your magic lamp has just arrived. With Casady & Greene’s InfoGenie — a simple free-form data-management program flexible enough to store virtually any kind of information — you can get your data in order faster than a speeding magic carpet.

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 functions 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.
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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 Bieden


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CIRCLE 42 ON READER SERVICE CARD
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 IICl 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 chum 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 redrafs 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 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 manic 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 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 fiddling 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 BAAAACK! / 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.


*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.


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.

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.

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.

JANUARY 1996 / MacUser 85
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

CD-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
CD-ROM RECORDERS

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 slivery 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 vendor customer-support policies.

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 theSony 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 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 tiddledywink that'll cost about $10 to replace. A hardware cache is an irreversible process that requires long, uninterrupted writes.

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 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).

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.

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List is alphabetical within groups of equal mouse ratings.
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 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 file naming convention of 8 + 3 characters, that may force Mac and Windows 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. Multisessions are 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.

- **Disc-at-Once (Disc-at-once)**: A single, all-or-nothing recording. Once you've created a single-session disc, you can never add more data.

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 Astar'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 DisKover 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 DisKover 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
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.

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 filename 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.

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.

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.

Tips:
- 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.
- Turn off AppleTalk and all network connections. CD-R units demand your Mac's full attention.
- 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.
- 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.
- Use the blank media recommended by the drive manufacturer.
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 an 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 DisKovery 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-GB 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.)

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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Performance Raised To The Power Of 9.
The Optima DisKover 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.
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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-grap bics 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-grap bics card installed.

Why would owners of these Macs choose to shell out extra money for an accelerated-grap bics 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-grap bics 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-grap bics 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).
ACCELERATED-GRAPHICS CARDS

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 equal speeds 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. While many of the PCI cards we tested achieved 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
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 — indeed, 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 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 EAsysolor 1600/16, 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 superior 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 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
YOUR MAC BETTER HAUL.

Finally, a cost-effective multimedia accelerator for your PCI-based Power Macintosh. Diamonds Javelin Video 3000 Series delivers powerful graphics and video acceleration to your PCI Power Mac. With blazing fast performance for scrolling your QuarkXpress® documents, Adobe Photoshop™ files as well as QuickTime™ scaling and dithering acceleration for digital video playback, you'll perform like never before.

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Resolution | Colors (with 2 MB) | Colors (with 4 MB)
---|---|---
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
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 (617-674-0099) 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 $599 and an 8-MB model that will list for $1,499.

More Choices. Miro (415-855-0940) will offer three microCHROMA accelerated-graphics cards. The microCHROMA 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 2x2 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 4x4 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 super-fast 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 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.

### Table: Comparing Graphics Cards

<table>
<thead>
<tr>
<th>Model</th>
<th>ATI Xclaim GA</th>
<th>Diamond Javelin Video 3400XL</th>
<th>EA Research Eyecolor 1600/16</th>
<th>IMS TwinTurbo-128M</th>
<th>Radius PrecisionColor 8/1600</th>
<th>Radius ThunderColor 30/1600</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List price</strong></td>
<td>$649</td>
<td>$569</td>
<td>$649 (direct)</td>
<td>$699</td>
<td>$599</td>
<td>$1,499</td>
</tr>
<tr>
<td><strong>Estimated street price</strong></td>
<td>$460</td>
<td>$515</td>
<td>NA</td>
<td>$625</td>
<td>$500</td>
<td>$1,175</td>
</tr>
<tr>
<td><strong>Max. resolution (in pixels)</strong></td>
<td>1,600 x 1,200</td>
<td>1,600 x 1,200</td>
<td>1,600 x 1,200</td>
<td>1,600 x 1,200</td>
<td>1,600 x 1,200</td>
<td>1,920 x 1,280</td>
</tr>
<tr>
<td><strong>Bit depth at max. resolution</strong></td>
<td>16 bits</td>
<td>16 bits</td>
<td>8 bits</td>
<td>16 bits</td>
<td>16 bits</td>
<td>24 bits</td>
</tr>
<tr>
<td><strong>Max. resolution at 24 bits</strong></td>
<td>1,152 x 870</td>
<td>1,152 x 870</td>
<td>1,152 x 870</td>
<td>1,152 x 870</td>
<td>1,152 x 870</td>
<td>1,920 x 1,280</td>
</tr>
<tr>
<td><strong>Tech support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Toll-free</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Online</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fax-back</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Warranty</strong></td>
<td>5 years</td>
<td>5 years</td>
<td>lifetime</td>
<td>3 years</td>
<td>lifetime</td>
<td>lifetime</td>
</tr>
<tr>
<td><strong>Company</strong></td>
<td>ATI Technologies</td>
<td>Diamond Multimedia Systems</td>
<td>EA Research Microsystems</td>
<td>IMS (Integrated Micro Solutions)</td>
<td>Radius Systems</td>
<td>Radius Systems</td>
</tr>
<tr>
<td></td>
<td>Toronto, ON</td>
<td>San Jose, CA</td>
<td>San Ramon, CA</td>
<td>San Jose, CA</td>
<td>Sunnysidey, CA</td>
<td>Sunnysidey, CA</td>
</tr>
<tr>
<td></td>
<td>905-882-2600</td>
<td>800-681-6566</td>
<td>800-681-6566</td>
<td>800-227-2795</td>
<td>800-227-2795</td>
<td>800-227-2795</td>
</tr>
<tr>
<td></td>
<td>(fax)</td>
<td>408-325-7000</td>
<td>(fax)</td>
<td>(fax)</td>
<td>(fax)</td>
<td>(fax)</td>
</tr>
</tbody>
</table>

Note: The Color Engine 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.

---

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 as 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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MGA Millennium for PCI Power Mac

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Macintosh 2.0 was performed on Power Mac 9500/24MB of RAM with a 4MB Millennium for PCI Power Mac, 4100 All-24MB/IA and 4MB EDO on board graphics chip at 1024 x 768 in 16.1M colors with Adobe Photoshop 3.0 for Power Mac

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Macintosh 2.0 was performed on Power Mac 9500/24MB of RAM with a 4MB Millennium for PCI Power Mac, 4100 All-24MB/IA and 4MB EDO on board graphics chip at 1024 x 768 in 16.1M colors with Adobe Photoshop 3.0 for Power Mac

CIRCLE 11 ON READER SERVICE CARD
Appearances 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 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.
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-IDL connector. 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

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 liyama Vision Master 17 and Vision Master Pro 17 and the Panasonic PanaSync 1791 EI. All three use thermometer-style bars to help you fine-tune your settings, which are automatically saved in the monitor's memory.

The liyama 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

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# Five New Hard Drives

<table>
<thead>
<tr>
<th>Name</th>
<th>Street Price</th>
<th>Estimated Price</th>
<th>Capacity</th>
<th>Price Per Megabyte</th>
<th>Warranty</th>
<th>Case</th>
<th>Software/Manuals</th>
<th>Support</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS ST 4200</td>
<td>$1,099*</td>
<td>$2,090.6 MB</td>
<td>5 years</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td>Great storage value in a well-designed, durable case.</td>
</tr>
<tr>
<td>MicroNet DataDock HD 2070</td>
<td>$735</td>
<td>$1,404.7 MB</td>
<td>3 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>Flexible removable design. Bulky dock lacks switchable termination.</td>
</tr>
<tr>
<td>APS Q 2210</td>
<td>$799*</td>
<td>$1,405.8 MB</td>
<td>5 years</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td>Time-tested SR 2000 case, with good active termination.</td>
</tr>
<tr>
<td>Dynatek HDA 4.0</td>
<td>$1,300</td>
<td>$2,419.3 MB</td>
<td>3 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>Disk was unformatted. Software disables setting of write cache.</td>
</tr>
<tr>
<td>FWB hammer·PE 800</td>
<td>$559</td>
<td>$808.4 MB</td>
<td>2 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>Compact drive comes with external active-termination block.</td>
</tr>
</tbody>
</table>

*Direct price.

---

# Six New Monitors

<table>
<thead>
<tr>
<th>Name</th>
<th>Street Price</th>
<th>Screen Size</th>
<th>Maximum Resolution</th>
<th>Warranty</th>
<th>Manuals</th>
<th>Support</th>
<th>Controls</th>
<th>Comments</th>
<th>Image-Quality Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>liyama Vision Master 17</td>
<td>$749</td>
<td>17 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>3 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Same as Pro model, but slightly dimmer shadow-mask tube.</td>
<td>1.00</td>
</tr>
<tr>
<td>liyama Vision Master Pro 17</td>
<td>$849</td>
<td>17 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>3 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bright aperture-grille tube. Great on-screen controls.</td>
<td>3.50</td>
</tr>
<tr>
<td>Panasonic PanaSync 1791EI</td>
<td>$949</td>
<td>17 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>3 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Pricey, but on-screen controls are great.</td>
<td>1.75</td>
</tr>
<tr>
<td>Sampo AlphaScan 15mx</td>
<td>$396</td>
<td>15 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>2 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Great image quality at an attractive price.</td>
<td>3.50</td>
</tr>
<tr>
<td>Corion ArtMedia TC1664</td>
<td>$449</td>
<td>15 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>1 year</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Affordable monitor. Good for home use.</td>
<td>2.00</td>
</tr>
<tr>
<td>Smile CA1706</td>
<td>$695</td>
<td>17 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>1 year</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Easy-to-use LCD control panel.</td>
<td>3.50</td>
</tr>
</tbody>
</table>
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 fx 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 fx 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.

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 Pflüger

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’s earlier products a favorite of QuarkXPress users. But after the introduction of such all-in-one packages as Extensis’ QX-Tools, ALAP is counterintuitive: They offer two volumes of 15 XTensions each at bargain-basement prices.

XPertTools Volume I and Volume II, priced at $129 each or $239 for the set, both roll in aspects of ALAP’s earlier products. Volume I, for example, contains XPert Scalelt, 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 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; XPert Rules, for measuring items accurately; XPert TextStyler, for applying text styles with a marquee; 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

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 font and 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
Child's Play
Combine Kid Pix and Painter to create a richly textured image.

GROWN-UPS MAY SNEER at Broderbund'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 Le Van, of Le Van/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.

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, plaid, 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. Le Van 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 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).
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 X1ension 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 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.
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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 server, 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

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 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

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
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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 STF (Stuffit) format for Mac users. Be prepared with a cross-platform decompression utility. ZipIt, shareware available on ZD Net/Mac, 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 FirstClass 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 PowerMacs, 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...
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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.uwssa.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://pftm.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 pine-apples 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. MacUser’s address on the World Wide Web is http://www.macuser.ziff.com/~macuser/. You can reach me at traveler@macuser.com.
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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 nagging 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.
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 trash-mood, why not dump the Microsoft Flight Simulator application as well and get rid of the junk on my Mac - for instance, via America Online.

SIX.

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 jumpers. 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 hip, 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."

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 that from?

CHRIS: What is your drive's SCSI ID?

BOB: 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 jumpers. 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 hip, 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."

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 Thele
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 Pre-reminders file — you'll be instructed to close any open applications — and drag the proper sound file to your Reminders folder.

Your message will play at startup. Trash any obsolete sounds.

James F. Young, Jr.
via the Internet
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Call to order your copy of MacInTax or MacInTax Deluxe ... and see for yourself why MacInTax is America's #1-selling tax software!
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 doggish 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 blissfully devouring a butterlike substance, only to blink upon discovering that the quasi-dairy product is, in reality, reconstituted fish emulsion?

Honesty 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 LeVitus is the director of evangelism for Power Computing. Christopher Breen is a Mac consultant who writes for a variety of Mac publications.

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**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.
Until now, the on-ramps to the Internet have been under construction.

Introducing the Apple Internet Connection Kit.

Getting hooked up to the Internet can be a messy process. That is unless you've got exactly the right tools. Presenting the Apple® Internet Connection Kit. It's everything you need to get on and get around the Internet quickly, easily and with a minimum of frustration. Here's what you receive: Netscape Navigator®, Claris Emailer™ Lite, Progressive Networks RealAudio, NewsWatcher, Fetch, the Apple Internet Dialer, Quicktime® VR Player and more. Plus, if you come across anything you don't understand, Apple Guide on-line help is there to assist you right away.

Just think, 30 minutes after opening the box, you could be participating in discussion groups, E-mailing Aunt Helga in Denmark, visiting the Louvre, the Library of Congress or maybe even the local chicken joint. (Seems like everybody's got a Web site nowadays.) Visit your Apple reseller, or order direct by calling 1-800-950-5382 ext. 784. And when you do get on the Net, check out our Web site at http://www.apple.com. Apple. The power to be your best.

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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 a pack of 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-granduncle 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 ($35). 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 adoption date and burial. It won’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 Magreeable 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 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 re-link 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 Lookup

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. ComputServe, 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 and 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-granduncle 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. 

PERSONAL MAC
You don't get up to change the channel anymore. So why are you still paying bills the inconvenient way? Now you can pay them electronically - with CheckFree®!

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CIRCLE 65 ON READER SERVICE CARD
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 geoners. 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 over-stated. 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 Brotherbund'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 portentous 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 chiwemwe.

JIM: Zikomo.

RIK: You're welcome.
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CIRCLE 151 ON READER SERVICE CARD
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 Russel Garrett (as Johnny, 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 "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, kick or punch the 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.
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THE ADDICTION BEGINS IN NOVEMBER ON PC AND MAC
1995 Product Index

We rated more than 750 products this year, including Apple CPUs, the first Mac clone, and lots more. This handy index is your guide to all the products MacUser tested and reviewed during 1995. / COMPILED BY SHELLY BRISBIN AND JASON SNELL

Authoring Tools
Authorware 3 §§§§ ....................................... AUG p. 46
ARCserve for Macintosh 1.5 §§§ § ......................... AUG p. 48
Authorware 3 §§§§ ....................................... Nov p. 71
Backup Software
ARCServe for Macintosh 1.5 §§§ § ......................... AUG p. 48
Bernoulli Drives — see Storage Systems
Business Graphics
Claris Impact 1.0 §§§§ ..................................... MAR p. 98
Business Utilities
Desktop Labels §§§§ ....................................... NOV p. 71
Marketing Plan Pro 1.01 §§§§ § ........................ SEP p. 61
Microsoft Project 4.0 §§§§ ................................ OCT p. 52
Org Plus 2.0 §§§ ........................................ OCT p. 83
CAD Software
ArchCAD 4.5 §§§§ ....................................... FEB p. 46
Blueprint 5 §§§§ ........................................ APR p. 61
MacDraft 4.0 §§§§ ........................................ FEB p. 53
MicroStation V5 for Power Macintosh §§§§§§§ .......... OCT p. 52
PowerCADD 1.0 §§§ ........................................ MAY p. 50
PowerCADD 2.0 §§§ ........................................ OCT p. 66
TurboCAD for Macintosh 1.0 §§§§ § ....................... AUG p. 53
Cameras — see Digital Photography
CD-ROM Drives
AppleCD 600e Quad-Speed §§§§ § ........................ SEP p. 86
APS T 3601 §§§§ § ......................................... SEP p. 86
Chinon CDA-535 §§ § ........................................ SEP p. 86
DGR 3501 §§§................................................ SEP p. 86
Dynatek CDS 654 §§§§ § ................................ SEP p. 86
FWB hammerCD 6X Reader §§§................................ SEP p. 86
Liberty 115 CD 4X §§§§ § ................................ SEP p. 86
MacProducts Magic 3501 §§§ § ........................ SEP p. 86
MacProducts Magic 3601 §§§§ § ........................ SEP p. 86
MacZone Performance Quad Speed §§§§ ........................................ SEP p. 86

Charting & Data-Visualization Software (see also Business Graphics, Presentations: Presentation & Multimedia Software, and Spreadsheets & Numerical Analysis)
CA-Cricket Graph III 1.5 §§§§ ................................ AUG p. 54
Cheshire 1.1 §§§............................................. AUG p. 92
DeltaGraph Pro 3.5 §§§§ § ................................ AUG p. 98
FastTrack Schedule 3.0 §§§§ ................................ JUL p. 48

Children’s Software (see also Education and Entertainment)
Creative Tools
The Amazing Writing Machine §§§§§ .................... JUL p. 115
Art Explorer §§§............................................ APR p. 69
eBig Top's Cartoon Toolbox Starring Felix the Cat §§§§§................................ OCT p. 106, DEC p. 164
Flying Colors §§§............................................ APR p. 69
Imagination Express §§§................................ OCT p. 106
Imagination Express Destination: Rain Forest §§§ § ........................ OCT p. 106
Just for Fun
Arc of Doom §§§............................................ OCT p. 106, OCT p. 147
Cosmic Osmo and the Worlds §§§................................ OCT p. 147
Beyond the Mackerel §§§................................ OCT p. 147
Fatty Bear's Birthday Surprise §§§................................ OCT p. 168

CD-ROM Drives
Apple Mac LC 475 §§§§ § ................................ FEB p. 82

Available on CD-ROM; may also be available on floppy disks.
Management) Database Management Studio Cameras Consumer Cameras Digital Photography

Apple Mac LC 550 §§§.§§.... FEB p. 82
Apple Mac LC 575 §§§.§§.... FEB p. 82
Apple Mac LC 630 §§§.§§.... FEB p. 82
Apple Mac LC III §§§.§§.... FEB p. 82
Apple Mac Quadra 605 §§§.§§.... FEB p. 82
Apple Mac Quadra 630 §§§.§§.... FEB p. 82
Apple Mac Quadra 950 §§§.§§.... FEB p. 82
Apple Performa 475/476 §§§.§§.... FEB p. 82
Apple Performa §§§.§§.... FEB p. 82
Apple Performa 770 series §§§.§§.... FEB p. 82
Apple Performa 630 series §§§.§§.... FEB p. 82
Apple Performa 5215CD §§§.§§.... FEB p. 49
Apple Performa 6100 series §§§.§§.... FEB p. 55
Apple Power Mac 6100/60 §§§.§§.... FEB p. 82
Apple Power Mac 7100/66 §§§.§§.... FEB p. 82
Apple Power Mac 7100/66AV §§§.§§.... FEB p. 82
Apple Power Mac 7200/90 §§§.§§.... DEC p. 55
Apple Power Mac 8100/80 §§§.§§.... FEB p. 82
Apple Power Mac 8100/80AV §§§.§§.... FEB p. 82
Apple Power Mac 8500/120 §§§.§§.... DEC p. 55
Power Computing Power 100 §§§.§§.... AUG p. 37

Portable Macs
Apple Mac PowerBook 150 §§§.§§.... FEB p. 82
Apple Mac PowerBook 520 §§§.§§.... FEB p. 82
Apple Mac PowerBook 520c §§§.§§.... DEC p. 55
Apple Mac PowerBook 540c §§§.§§.... DEC p. 55
Apple Mac PowerBook Duo 280 §§§.§§.... DEC p. 55
Apple Mac PowerBook Duo 280c §§§.§§.... DEC p. 55

Database Management (see also Document Management)
FileMaker Pro Server 2.0v §§§.§§.... MAR p. 42
Helix Express 3.0 §§§.§§.... APR p. 64
Phyla 1.0.2 §§§.§§.... JUN p. 54

Desktop Publishing — see Fonts & Typography and Page Layout

Dictionaries — see Reference Sources

Digital Photography

Consumer Cameras
Apple PhotoFlash 2.0 §§§.§§.... MAY p. 51
Apple QuickTake 150 §§§.§§.... NOV p. 82
Casio QV-10 §§§.§§.... NOV p. 82
Kodak Digital Science DC 40
Camera §§§.§§.... NOV p. 82
Logitech FotoMan Plus Mac §§§.§§.... NOV p. 82

Field Cameras
Kodak Professional DCS 420
Digital Camera §§§.§§.... NOV p. 82
Kodak Professional DCS 460
Digital Camera §§§.§§.... NOV p. 82
Kodak Professional EOS-DCS 5
Digital Camera §§§.§§.... NOV p. 82
Nikon E2s Digital Camera §§§.§§.... NOV p. 82
Studio Cameras
Diconed Digital Camera Back §§§.§§.... NOV p. 82
Kamimage GA Camera System §§§.§§.... NOV p. 82
Kodak Professional DCS 465
Digital Camera §§§.§§.... NOV p. 82
Leaf Catchlight §§§.§§.... NOV p. 82
Leaf DBC §§§.§§.... NOV p. 82
Leaf Lumina §§§.§§.... NOV p. 82

Phase One PhotoPhase §§§.§§.... NOV p. 82
Sony DFC-5000 (Catseye) §§§.§§.... NOV p. 82

Display Systems — see Monitors, Presentations, Projection Hardware, and Video Cards & Adapters

Document Management
AppleSearch 1.5 §§§.§§.... JUN p. 46
Marco Polo 3.0 §§§.§§.... MAY p. 53

Drawing Software (see also Children's Software: Creative Tools and Painting & Image Editing)
ClarisDraw 1.0 §§§.§§.... MAR p. 48
Fractal Design Poser 1.0 §§§.§§.... NOV p. 50
KPT Vector Effects 1.0 §§§.§§.... NOV p. 65
Macromedia FreeHand 5.0 §§§.§§.... MAY p. 35
SmartSketch 1.0 §§§.§§.... NOV p. 54

Drawing/Digitizing Tablets
CalComp DrawingBoard II §§§.§§.... JUL p. 44
Hitachi Multi Pad §§§.§§.... JUL p. 44
Kurta PenMouse §§§.§§.... JUL p. 44
Kurta XGT 6° x 8° §§§.§§.... JUL p. 44
Summographics Summa Expression §§§.§§.... DEC p. 82
Wacom ArtPad §§§.§§.... JUL p. 44
Wacom ArtPad II §§§.§§.... DEC p. 82
Wacom ArtZ II §§§.§§.... DEC p. 82

Education (see also Children's Software, Entertainment, and Reference Sources)

Art
AO Passion for Art §§§.§§.... DEC p. 87

Foreign Language
Bilingual Live §§§.§§.... OCT p. 146
¿Dónde está Carmen Sandiego? §§§.§§.... OCT p. 146
Language Now §§§.§§.... OCT p. 146
Le fils d'Astérix §§§.§§.... OCT p. 146
Learn to Speak ...: série §§§.§§.... OCT p. 146
Rosetta Stone §§§.§§.... OCT p. 146
Transmarch Headventure §§§.§§.... OCT p. 146

Geography, History, and Culture
Amnesty Interactive §§§.§§.... OCT p. 106
Apollo XIII: A Week to Remember §§§.§§.... OCT p. 106
Cartoon History of the Universe §§§.§§.... APR p. 72
Leonardo the Inventor §§§.§§.... OCT p. 106
Material World §§§.§§.... SEP p. 62
Microsoft Ancient Lands §§§.§§.... OCT p. 108
The Myth of the Ten Lost Tribes §§§.§§.... OCT p. 108
Wille: Passage to Egypt §§§.§§.... OCT p. 108
Passage to Vietnam §§§.§§.... OCT p. 106, NOV p. 67
Wyatt Earp's Old West §§§.§§.... OCT p. 106

Human Biology
D.A.D.M: The Inside Story §§§.§§.... OCT p. 106
ErgoKnowledge §§§.§§.... JUN p. 61

Music
Coda Vivace Personal Accompanist §§§.§§.... FEB p. 65
Practica Musica 3.1 §§§.§§.... MAY p. 61

Nature and Animals
Fly Fishing: Great Rivers §§§.§§.... OCT p. 106
How Animals Move §§§.§§.... OCT p. 106
Microsoft Dangerous Creatures §§§.§§.... OCT p. 106

OceanLife Volume 4: The Great Barrier Reef §§§.§§.... OCT p. 106
Wild Africa §§§.§§.... OCT p. 106

Sports
ESPN Golf: Lower Your Score §§§.§§.... OCT p. 106
ESPN Winning Hoops §§§.§§.... OCT p. 106

Writing Tools
PLANMaker 1.1 §§§.§§.... FEB p. 65

Electronic Mail
Claris Emailer §§§.§§.... DEC p. 68
FreeMail 4.0 §§§.§§.... DEC p. 93
QuickMail 3.0 §§§.§§.... JAN p. 48
Snap Mail 2.0 §§§.§§.... DEC p. 90

Electronic Publishing
Adobe Acrobat 2.0 §§§.§§.... APR p. 63
WordPerfect Envoy §§§.§§.... MAR p. 54

Entertainment (see also Children's Software, Education, Input Devices, and Reference Sources)

Diversions
Aquazone 2.0 §§§.§§.... MAR p. 63
El-Fish 1.0 §§§.§§.... MAR p. 63
Pee Show §§§.§§.... NOV p. 140
Star Trek: The Next Generation Interactive Technical Manual §§§.§§.... APR p. 73, OCT p. 106

Games
ClockWorx §§§.§§.... NOV p. 142
Club Dead §§§.§§.... OCT p. 106
The Daedalus Encounter §§§.§§.... OCT p. 106
Dark Forces §§§.§§.... OCT p. 106, DEC p. 168
Glider Pro §§§.§§.... AUG p. 124
Ishido §§§.§§.... NOV p. 142, DEC p. 168
Jewels of the Oracle §§§.§§.... OCT p. 106
Jigsaw Deluxe §§§.§§.... AUG p. 124
Jigsaw IV §§§.§§.... DEC p. 168
Journeyman Project Turbo §§§.§§.... OCT p. 106
Links Pro Macintosh §§§.§§.... DEC p. 168
Lode Runner: The Legend Returns §§§.§§.... MAY p. 61
Loony Labyrinth §§§.§§.... AUG p. 124, DEC p. 168
Marathon §§§.§§.... JUL p. 116, DEC p. 168
PGA Tour Golf §§§.§§.... OCT p. 106
Rebel Assault 1.0 §§§.§§.... OCT p. 106
Sensory Overload §§§.§§.... JUL p. 116
SimCity 2000 §§§.§§.... DEC p. 168
SimTower §§§.§§.... SEP p. 133
Theme Park §§§.§§.... SEP p. 133
Triazelle §§§.§§.... NOV p. 142

Trivia Pursuit Interactive Multimedia Game §§§.§§.... OCT p. 106
Troubled Souls §§§.§§.... FEB p. 68, DEC p. 168
Who Killed ...? Series §§§.§§.... OCT p. 106
Wolfenstein 3D §§§.§§.... JUL p. 116
WolfPack §§§.§§.... SEP p. 133
World of Xeen §§§.§§.... OCT p. 106
Multimedia Presentations
Living Album §§§.§§.... SEP p. 133
The Multimedia Cartoon Studio §§§.§§.... OCT p. 106
Music
Antonin Dvorak: Symphony #9 "From the New World" §§§.§§.... OCT p. 106
### MacUser 1995 Product Index

**Accounting**
- Accouting Bansai MFX-1 §§... OCT p. 75
- Type Tamer §§§... JUL p. 57
- Financial Management Fax Machines
- FontChameleon Starter Kit 1.5 §§§... DEC p. 89
- Software, Drawing/Digitizing Tablets, Pointing
- Image Editing - see Foreign Language Translation
- Personal Finance
- QuickBooks §§§... APR p. 62
- MacMoney §§t... JUL p. 57
- Simply Accounting §§§... APR p. 92

**Fax Machines**
- Bansai MFX-1 §§... OCT p. 75
- Input Devices
- Keyboards - see Children's Software
- Legal Resources
- Kids' Software - see Presentations, Projection Hardware
- Magneto-Optical Drives - see Storage Systems
- Mapping Software
- Modems
- Archtek SmartLink 2834A §§... JUN p. 84
- AT&T/Paradyne Compassphere 38.4/1.2 Mbps §§... JUN p. 84
- Best SmartLine 2834FX §... JUN p. 84
- Boca V.34 BocaModem §§... JUN p. 84
- Cardio 28.8 Fax/Data Modem §§... JUN p. 84
- E-Tech Bullet 100 §§... JUN p. 84
- Global Village Teleport Platinum V.34 §§... JUN p. 84
- Hayes Optima 288 V.34/FAX for Mac §§... JUN p. 84
- Logicode QuickLink 2814XVMI §§§... JUN p. 84
- Motorola V.3400 §§... JUN p. 84
- Multi-Tech MultiModem MT2834BA-MAC §§... JUN p. 84
- Multi-Tech Multi Modem MT28342DX §§... JUN p. 84
- Practical Peripherals MacClass
- 288MT V.34 §§§... JUN p. 84
- Supra SupraFAXModem 288 (Mac) §§§... JUN p. 84
- U.S. Robotics Courier V.Everything with V.34 §§§§... JUN p. 84
- U.S. Robotics MacFax Sportster (V.34) §§§§... JUN p. 84
- Zoom V.34x Model 460 (Mac) §§§... JUN p. 84

**Gaming Devices**
- Advanced Gravis Mac GamePad §§§... OCT p. 148
- CH Products JetStick §§§... OCT p. 148
- Photonics GameNet §§§... OCT p. 148

**Keyboards**
- Comfort Keyboard System §§§... JUN p. 57
- MicroSpeed Keyboard Deluxe Max §§... JAN p. 67

**Voice Input**
- PowerSecretary 2.0 Power Edition §§§... SEP p. 42

**Internet Servers**
- see Connectivity

**MIDI**
- see Music & Sound: MIDI Interfaces

**Modems**
- Archtek SmartLink 2834A §§§... JUN p. 84
- AT&T/Paradyne Compassphere 38.4/1.2 Mbps §§§... JUN p. 84
- Best SmartLine 2834FX §§§... JUN p. 84
- Boca V.34 BocaModem §§§... JUN p. 84
- Cardio 28.8 Fax/Data Modem §§§... JUN p. 84
- E-Tech Bullet 100 §§§... JUN p. 84
- Global Village Teleport Platinum V.34 §§§... JUN p. 84
- Hayes Optima 288 V.34/FAX for Mac §§§... JUN p. 84
- Logicode QuickLink 2814XVMI §§§... JUN p. 84
- Motorola V.3400 §§§... JUN p. 84
- Multi-Tech MultiModem MT2834BA-MAC §§§... JUN p. 84
- Multi-Tech Multi Modem MT28342DX §§§... JUN p. 84
- Practical Peripherals MacClass
- 288MT V.34 §§§... JUN p. 84
- Supra SupraFAXModem 288 (Mac) §§§... JUN p. 84
- U.S. Robotics Courier V.Everything with V.34 §§§... JUN p. 84
- U.S. Robotics MacFax Sportster (V.34) §§§... JUN p. 84
- Zoom V.34x Model 460 (Mac) §§§... JUN p. 84

**Monitors**
- ADI MicroScan SEP §§§... MAY p. 74
- Amdek AV/817E §§§... MAY p. 74
- Apple AppleVision 1710W §§§... DEC p. 116
- Apple Multiple Scan 17 §§§... MAY p. 74
- ArtMedia TG1882 §§§... DEC p. 126
- CTX 1785GM §§§... MAR p. 74
- CTX 2085 §§§... OCT p. 112
- Focus Lapis Color 177 §§§... MAR p. 74
- Genova TC1017 §§§... AUG p. 96
- Goldstar 1527 §§§... NOV p. 106
- Goldstar 1725 §§§... MAR p. 74
- Goldstar 1727 §§§... SEP p. 79
- IBM 17P §§§... OCT p. 112
- IBM 175/S §§§... DEC p. 116
- Iiyama VisionMaster 17 §§§... MAR p. 74
- Ikegasus CF-17A §§§... MAR p. 74
- LG Electronics Goldstar 2010 §§§... DEC p. 126
- Mag MXP17F §§§... MAY p. 74
- Mirror ProView 17 §§§... MAY p. 74
- Mitsubishi Diamond Pro 17TX §§§... AUG p. 90
- Mitsubishi Diamond Scan 175 §§§... MAY p. 74
- Mitsubishi Diamond Scan 20H §§§... OCT p. 112
- Nanao FlexScan FZ-15 §§§... SEP p. 96
- Nanao FlexScan FZ-17 §§§... AUG p. 96
- Nanao FlexScan FZ-21 §§§... SEP p. 96
- Nanao FlexScan T2-17 §§§... MAY p. 74
- Nanao FlexScan T2-17S §§§... AUG p. 96
- NEC MultiSync 17X §§§... OCT p. 112
- NEC MultiSync XV17 §§§... JUL p. 90
- Nokia 447W §§§... DEC p. 116
- Nokia Multigraph 4X7X §§§... MAY p. 74
- Nokia Multigraph 4G9X §§§... AUG p. 96
- Optique 2082DC §§§... JUL p. 90
- Optique 4000T §§§... JUL p. 90
- Optique 4500DC §§§... JUL p. 90
- Orchestra French Horn II §§§... AUG p. 96
- Orchestra Tubo §§§... MAY p. 74
- Panasonic PanaMedia 17 §§§... DEC p. 116
- Panasonic PanaSyncPro C-1792P §§§... MAY p. 74
- Phillips 178 §§§... DEC p. 116
- Phillips Brilliance 15A §§§... MAY p. 74
- Phillips Brilliance 1720 §§§... MAR p. 74
- Phillips Magnavox MagnaScan/20 §§§... JUL p. 90
- PowerMax 15T §§§... NOV p. 106
- PowerMax PM/17TE §§§... DEC p. 126
- Princeton Ultra 15 §§§... OCT p. 112
- Princeton Ultra 17 §§§... SEP p. 96
- Portrait Display Labs Pivot 1700 §§§... DEC p. 126
- Radius PrecisionColor Display 17 §§§... MAY p. 74
- Radius PrecisionView 17 §§§... SEP p. 96
- Radius PrecisionView 21 §§§... SEP p. 96
- Radius SuperMatch 17” §§§... MAY p. 74
- RasterOps SuperScan Mc 21 §§§... NOV p. 106
- Relays VividView Low Radiation
- TF-1560L §§... MAR p. 74
- Sampo AlphaScan 17g §§§... MAY p. 74
- Sampo AlphaScan 17g ($) §§... OCT p. 112
- Samsung SyncMaster 17GU §§§... MAR p. 74
- Samsung SyncMaster 17GL §§§... MAY p. 74
- Samsung SyncMaster 17GLS §§§... OCT p. 112
- Sceptre CC-617GL §§§... MAY p. 74
- SDIS ErgoView 170 §§§... MAY p. 74
- Sony Multiscan 175 §§§... MAY p. 74
- Tatung CM17MKS §§§... MAY p. 74
- ViewSonic 17 §§§... MAY p. 74
- ViewSonic 17GA §§§... DEC p. 116
- ViewSonic 17GS §§§... SEP p. 96
- ViewSonic 17PS §§§... DEC p. 126

*Available on CD-ROM; may also be available on floppy disks.*
Thermal-Wax Printers
- Fargo Primera
- Seiko Professional ColorPoint 2 PSF
- Model 14
- Tektronix Phaser 340

Programming Tools
- Metrowerks CodeWarrior Gold Edition CW4
- Symantec C++ 8.0 for Power Macintosh

Reference Sources (see also Education)
- American Heritage Talking Dictionary
- House Call 1.0
- Human Anatomy
- Merriam-Webster's Collegiate Dictionary
- Microsoft Cinemania 95
- Microsoft Encarta 95
- Microsoft Wine Guide
- National Geographic Picture Atlas of the World
- National Geographic: The World
- Sports Illustrated Multimedia Almanac

Remote Access Servers
- Apple ARA MultiPort Server
- Apple ARA Personal Server
- APT Dial Server
- DaynaDaymaLINK for ARA
- Global Village OneWorld Combo
- Global Village OneWorld Remote Access Server

Scanners
- Fujitsu ScanPartner Jr.
- Visioneer PaperPort 2.0
- Flattened

Hard Drives (1 GB - 2 GB)
- Apple 1080 MB External
- Aileen 750 MB External
- APS 1.0 GB
- APS 2.5 GB
- APS 5.1 GB
- APS Q 1080
- APS Q 1 GB
- APS Q 2 GB
- ClubMac Fireball 1080MB
- CORE COREdisc Slim
- Cutting Edge CFP 1060
- Cutting Edge CFP 2105
- Dynatek HDA 1.0Q
- Dynatek HDA 2.0Q
- FWB Hammer PE 1000
- FWB Hammer PE 1000PM
- FWB Pockethammer 2100
- FWB Pockethammer 2000FM
- La Cie 100MB Joule HH Module
- La Cie 1080MB Q-Drive
- La Cie 1000MB Joule Base
- La Cie 1080MB Portable
- La Cie 1080MB HD 2160
- Liberty 50 Series 1GB
- Liberty 50 Series 2GB
- Lovitt Lighting 2100
- MacConnection MDS Express 2GB
- MacConnection MDS Vortex 1GB
- MacProducts Magic 2GB IBM
- MacProducts Magic 2GB Seagate
- MacWarehouse PowerUser Pro 1.0
- MacWarehouse PowerUser Pro 2.0
- Marlow MDS Express 2QGB
- MAST Masssystems
- MASTerver Drive 1630
- MAST Masssystems
- MASTerver Drive 2010
- MASTerver Drive 2050
- MaxConcept LPBC1000
- MaxConcept LPBC2000
- MaxConcept RLPBC3000
- MegaDrive Mercury 2.1
- MicroNet Advantage 2000
- MicroNet SS-2070
- Micropolis MicroDisk 2GB AV
- Micropolis MicroDisk 2GB LT
- Microtec P1400
- Microtec P2000
- Mirror BM 2100
- Mirror Seagate 1075
- MountainGate Incremental 2GB
- MountainGate Incremental 2GB
- Optima Diskoyer 2100
- Optima MiniDisk 1000
- Other World Fireball 1080S
- PDO 1GB
- PDO 2GB
- Spin Atlas 2GB
- Spin Fireball 1080
- Spin Seagate 2.1GB
- Spin Spirit 1GB
- Spin Spirit 2GB

*Available on CD-ROM; may also be available on floppy disks.

140 MacUser / January 1996
MacUser and MacWEEK chart the flight plan for Mac products at Gulfstream

Together, MacUser and MacWEEK make the buying of Mac products fly at Gulfstream Aerospace. Michael Rippey, systems engineer manager, equips his 100 engineers with Mac products, in collaboration with Glenn Toth, Macintosh systems administrator. In fact, outside the company, both men are also active officers in a local Mac users group.

Yet each is partial to his own primary source of information about the Mac market. For Mike, it's the timeliness of MacWEEK. For Glenn, it's MacUser's lab reviews because he specifies many products in a multiplatform environment.

Different magazines for different perspectives. Together, they are read by more serious buyers than any other source. Which is why, together, they are today's most effective total system for the selection of Mac products.

Mike: "MacWEEK is there every week for me. It keeps me informed as to what's available. It's so timely, it's there as soon as things happen."

Glenn: "I've been a MacUser subscriber from day one. Why? The in-depth evaluations, especially the comparative product reviews."

To reach the Mac market, you have to cover all of the market.

For advertising information, call (415) 378-5600.
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You can find MacUser's 1995 Product Index in the MacUser and ZD Net/Mac areas on CompuServe and eWorld. See How to Reach Us for instructions on accessing ZD Net/Mac.

Available on CD-ROM; may also be available on floppy disks.
For many of you, mail order is your primary means of purchasing Macintosh products and services. That's why MacUser has put together the following special section.

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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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- QMS PS810 Turbo **$599**
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- Apple LaserWriter 4/600 **$939**
- Xante Accel-a-Writer 812 **$3495**
- GCC WriteMove II portable **$199**
- OEM Apple LaserWriter **$499**
- Seiko S-2400AP plot matrix **$79**
- STAR SJ-144MC 360 dpi **$249**

JANUARY 1996 / MacUser 145
### Displays

#### Twenty One Inch Displays

- **Radius PrecisionColor Display 21**
  - Retail: $1499*
  - Supports 1600x1200 pixel resolution
  - Flat screen
  - Razor sharp .28 dot pitch
  - Ideal solution for professionals requiring maximum screen area, color accuracy, and sharpness.
  - With qualifying video card, accelerator, or computer purchase

- **SuperMac PressView 21**
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- **Radius 21 Inch Grayscale Display**
  - Retail: $799

- **RasterOps 21 Inch Grayscale Display**
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- **Radius PrecisionColor Display 20v**
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  - Best Screen Uniformity!
  - Multiple resolutions 1280x1024 to 640x480
  - MAC/PC compatible
  - Works with most any Macintosh built-in video
  - "Best Overall Screen Uniformity" - MacUser

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  - Retail: $999*
  - 1152x870 to 1024x768
  - Flat screen
  - Shadow Mask Tube
  - Built-in video support
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- **Radius 20 Inch Grayscale Display**
  - Retail: $699

- **Radius IntelliColor Display 20**
  - Limited Quantities!
  - Top rated 20" Trinitron, Best Money Can Buy
  - MacUser, MacWorld, MacWeek Editor's Choice
  - 1600x1200 to 640x400

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#### Seventeen Inch Displays

- **SuperMac/E-Machines T16II**
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  - High Grade Studio Trinitron Series
  - 25mm multi-resolution
  - Editors Choice
  - 1024x768 to 640x480 resolutions

- **SuperMac 17T**
  - Retail: $799*

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  - With qualifying video card, accelerator, or computer purchase

### Pivot Displays

- **Radius Color Pivot LE**
  - We have cards for SE/30, LC, IIsi, Nubus, and Quadras
  - Precision Color Pivot
  - Grayscale Pivot
  - Radius Full Page Display

- **SuperMac Spectrum 8 Series III**
  - Retail: $199

### Apple Video Cards

- **Apple 8+24**
  - Retail: $299

### Video Cards

#### 21" Resolutions

- **24 Bit**
  - PCI Cards: $CALL
  - Radius PrecisionColor 24X: $599
  - All Thunder IV's: $699
  - All Thunder II's: $CALL
  - Radius PrecisionColor Pro 24X: $CALL

- **8 Bit**
  - Radius PrecisionColor 8XJ: $399
  - SuperMac DoubleColor LX: $399
  - SuperMac Spectrum 8/24 P00: $399

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  - SuperMac Spectrum 24 Series V: $599
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  - Radius PrecisionColor Pro 24XK: $599
  - SuperMac Futura MX: $499

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  - Radius PrecisionColor 8XJ: $399
  - SuperMac Spectrum 8 Series III: $199

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  - Radius PrecisionColor 24XP: $199
  - Radius PrecisionColor Pro 24XP: $CALL

- **8 Bit**
  - Radius PrecisionColor 8XJ: $399

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- **68040 Blow Out!**
  - Retail: $299**

- **Daystar Products**
  - $CALL

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  - $399**

- **Radius Rocket 40MHz w/FPU**
  - $499**

- **Stage Two Rocket 40MHz w/FPU**
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  - $899

- **SCSI II Booster (up to 4x faster)**
  - PhotoBooster for Rocket
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- **RocketShare**
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*With purchase of any Rocket peripheral*
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- Unlock the power within your mind!
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Painte4

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Macintosh Quadra 800

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<thead>
<tr>
<th>Macintosh Quadra 800 System</th>
<th>1993</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadra 800 (CPU only)</td>
<td>$4499</td>
<td>$6000</td>
</tr>
<tr>
<td>Quantum 210MB drive</td>
<td>$299</td>
<td>$100</td>
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<tr>
<td>4MB SIMMS</td>
<td>$199</td>
<td>$79</td>
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<tr>
<td>Radius 20&quot; monitor</td>
<td>$2999</td>
<td>$850</td>
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<tr>
<td>Radius 24-bit video card</td>
<td>$2699</td>
<td>$750</td>
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<tr>
<td>SyQuest 88 drive</td>
<td>$599</td>
<td>$150</td>
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<tr>
<td>Toshiba 2x CD-ROM</td>
<td>$599</td>
<td>$145</td>
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<td>650MB Ricoh Optical</td>
<td>$1999</td>
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<tr>
<td>Microtek Scanner II</td>
<td>$1199</td>
<td>$260</td>
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<tr>
<td>Sony 2GB tape drive</td>
<td>$1299</td>
<td>$450</td>
</tr>
<tr>
<td>Total</td>
<td>$15,390</td>
<td>$3,925</td>
</tr>
</tbody>
</table>

Power Macintosh 9500/132

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- Quantum 4GB $1079
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SyQuest Drives

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200MB

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88MB $45
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Input Devices

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>Connectix QuickCam</td>
<td>$97</td>
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<tr>
<td>Wacom ArtPad 4&quot; x 5&quot;</td>
<td>$149</td>
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<tr>
<td>Wacom Art Pro II 6&quot; x 8&quot;</td>
<td>$299</td>
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<td>Leaf Luminara Digital Camera</td>
<td>$459</td>
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Storage

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<tr>
<td>Iomega Zip Drive</td>
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SCANNERS

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<tr>
<th>Product</th>
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<tr>
<td>Polaroid Syntiscan® 36 Slide Scanner</td>
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<tr>
<td>UMAX PowerLook® w/ transparency</td>
<td>$1999</td>
</tr>
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<td>UMAX UC1280</td>
<td>$639</td>
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</table>

Polaroid Syntiscan® 36 Slide Scanner

Scans at 2400 dpi enhanced and 600 dpi optical resolution.

MONITORS

<table>
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<tr>
<th>Product</th>
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<tr>
<td>NEC MultiSync XV14</td>
<td>$335</td>
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<td>$335</td>
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<td>NEC MultiSync X17&quot;XP17&quot;</td>
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<td>$299</td>
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GRAPHICS CARDS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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<tbody>
<tr>
<td>Radius PrecisionColor 8/1000</td>
<td>$459</td>
</tr>
<tr>
<td>Radius Thunder 30/1152</td>
<td>$769</td>
</tr>
<tr>
<td>Radius Thunder 30/1600</td>
<td>$1149</td>
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<tr>
<td>Radius ThunderColor 30/1152</td>
<td>$1499</td>
</tr>
<tr>
<td>Radius ThunderColor 30/1600</td>
<td>$1899</td>
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</table>

Hewlett-Packard

4c Scanner

The ScantJet 4c scanner offers 30-bit color and 10-bit grayscale internal scanning at 2400 dpi enhanced and 600 dpi optical resolution.

Graphic Express 17 Color Display

Delivers up to 1024 x 768 resolution.

<table>
<thead>
<tr>
<th>Model</th>
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<tr>
<td>Radius PrecisionView 21</td>
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<td>Radius MultiView 21</td>
<td>$1748</td>
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<td>Radius PressView 21SR</td>
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2 Slicer 9GB MMEMWH....4298
4gb RAID = 7.0ms ....2026
2 Barracuda 21GB MMEMWH....2026
34gb RAID = 7.0ms ....1725
2 Barracuda 17GB MMEMWH....1725
44gb RAID = 7.5ms ....1384
2 Capella 233GB MMEMWH....1384
44gb RAID = 4.5ms ....2298
2 UltraSTorm XP 22GB MMEMWH....2298
2 Fireball 1GB MMEMWH....2 Fireball 1GB MMEMWH....
2 FreshPower 1GB MMEMWH....2 FreshPower 1GB MMEMWH....

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Remus RAID ....... .... ...190
Fidg PIQ Toolkit ....... .... ...140

NuBus/PCI SCSI II Cards

Atto Silicon Express IV ....887
Atto PCI SG9 ....... .... ...345
Atto PCI Dual ....... .... ...779
Jackhammer NuBus ....... .... ...459
Jackhammer PCI ....... .... ...359
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PowerMac 8100/133MHz ....79
PowerMac 7CD/64MHz ....69
PowerMac 800/68MHz ....59
### Video

<table>
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<th>Video Model</th>
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<tr>
<td>PowerLook Pro Bundle</td>
<td>$1895</td>
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<tr>
<td>Vista T630</td>
<td>$379</td>
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<td>Vista S630</td>
<td>$319</td>
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<td>Vista 5800</td>
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<tr>
<td>UC1260</td>
<td>$689</td>
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<td>UC1260 1200 x 600</td>
<td>$689</td>
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<tr>
<td>Apple SyQuest 270MB Drive</td>
<td>$399*</td>
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<tr>
<td>Magic SyQuest 270MB Drive</td>
<td>$299*</td>
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<tr>
<td>Magic SyQuest 200MB Drive</td>
<td>$299*</td>
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<td>$69</td>
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<tr>
<td>230mb Optical cart</td>
<td>$29</td>
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</table>

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- USB 30/1152 | $769 |
- Thunder 30/1152 | $769 |
- PowerCard 601 for Quadra | $671 |
- Power Card 601 for PowerBook | Call 950 |
- PowerLook Pro II | Call |
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- GCC Elite XL608 | $2199 |
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Thunder 30/1152

$769

Agfa Arcus II

$1925

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<table>
<thead>
<tr>
<th>Memory</th>
</tr>
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<tbody>
<tr>
<td>4GB RAID</td>
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</table>

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<tr>
<th>Power 120</th>
<th>8MB of RAM</th>
<th>365MB Hard Drive</th>
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<td>Monitor not included.</td>
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<th>CD AutoCache™</th>
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<td>It's a recommended purchase for anyone seeking top CD-ROM performance...</td>
<td>Stores 100MB on one 3.5&quot; cartridge Includes one Cartridge</td>
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<td>Keep your CD-ROM drive running at its optimal performance level. CD AutoCache™ monitors your CD-ROM drive to its maximum potential, adjusting total cache and page sizes on the fly.</td>
<td>128MB capacity • SCSI Interfaces • Avg. Seek Time: 13.5 ms • Cartridge included</td>
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<thead>
<tr>
<th>POWERBUNDLE!</th>
<th>IPOMEGA® Zip® Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Anubis Professional &amp; CD Auto Cache for just</td>
<td>Grab a hefty removable storage for only</td>
</tr>
<tr>
<td>#68000</td>
<td>$599.99 #73475</td>
</tr>
</tbody>
</table>
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More Values!

The New 3.5" MCD 540 MB Diskette

<table>
<thead>
<tr>
<th>Interface</th>
<th>SCSI2</th>
</tr>
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<tbody>
<tr>
<td>Seek Time</td>
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<tr>
<td>Track to Track</td>
<td>2 msec</td>
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<tr>
<td>Average</td>
<td>10 msec</td>
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<tr>
<td>Cache size</td>
<td>512k bytes</td>
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<tr>
<td>Interface Transfer Rate</td>
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<tr>
<td>Burst</td>
<td>10 MB/sec</td>
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<tr>
<td>Sustained</td>
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<tr>
<td>Maximum</td>
<td>5.3 MB/sec</td>
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<tr>
<td>Minimum</td>
<td>2.5 MB/sec</td>
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<tr>
<td>Disk Data Transfer Rate</td>
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</tr>
<tr>
<td>Maximum</td>
<td>8.8 MB/sec</td>
</tr>
<tr>
<td>Minimum</td>
<td>4.1 MB/sec</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<th>Capacity</th>
<th>Internal</th>
<th>SR2000</th>
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<tr>
<td>APS Q 540</td>
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<td>APS Q 840</td>
<td>811MB</td>
<td>$249.95</td>
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<tr>
<td>APS Q 1080</td>
<td>1042MB</td>
<td>$279.95</td>
<td>$379.95</td>
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<tr>
<td>APS MS 1.0</td>
<td>Micropolis 4110</td>
<td>$549.95</td>
<td>$649.95</td>
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<tr>
<td>APS MS 2.0</td>
<td>Micropolis 5221</td>
<td>$799.95</td>
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<tr>
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<td>$999.95</td>
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<tr>
<td>APS Q 2210</td>
<td>3100MB</td>
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<td>$799.95</td>
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<tr>
<td>APS ST 4200</td>
<td>Seagate ST 52000</td>
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<td>APS ST 4044</td>
<td>Seagate ST 52000</td>
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<td>$1199.95</td>
</tr>
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<td>APS ST 4044VAL</td>
<td>Seagate ST 52000</td>
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<tr>
<td>APS Q 4.0</td>
<td>Quantum 44MB</td>
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<td>$1399.95</td>
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<tr>
<td>APS MS 9.0</td>
<td>Quantum 44MB</td>
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<td>*$2399.95</td>
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<td>APS MS 9.0VAL</td>
<td>Quantum 44MB</td>
<td>$2299.95</td>
<td>*$2499.95</td>
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<tr>
<td>APS ST 9.0</td>
<td>Quantum 44MB</td>
<td>$2299.95</td>
<td>*$2499.95</td>
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APSA DISK ARRAYS

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<tr>
<th>Model</th>
<th>Capacity</th>
<th>RAID Level</th>
<th>Price</th>
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<tr>
<td>ARR AID WS5/7200</td>
<td>4GB</td>
<td>0 (Striped)</td>
<td>$1299.95</td>
</tr>
<tr>
<td>ARR AID WS8/7200</td>
<td>8GB</td>
<td>0 (Striped)</td>
<td>$1499.95</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<th>Capacity</th>
<th>Drive Type</th>
<th>Internal</th>
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<tr>
<td>APS Q 1.0</td>
<td>1037MB</td>
<td>Fast ATA2</td>
<td>$499.95</td>
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<tr>
<td>APS J 1.2</td>
<td>1215MB</td>
<td>SCSI</td>
<td>$699.95</td>
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</table>

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Product Index

ADVERTISER

Display Systems & Video
Portrait Display Labs 800-858-7744 .................................................. 16

Educatin
Edmark Corp. 800-691-2985 ................................................................. 133
MacAcademy 800-827-1914 ............................................................... 12

Entertainment
Apple Software, Claris 800-950-5382 ext. 784 ...................................... 126
Fox Interactive 800-625-7171 ............................................................. 135
GT Interactive ......................................................................................... 125

Financial Management
Aatrix Software 800-426-0854 .............................................................. 52
CheckFree Technologies Corporation 800-564-9132 .... 129
Intuit 800-781-6999 ext. 810 381 ............................................................ 47
Intuit 800-964-1040 ........................................................................... 123

General Hardware & Accessories
3M 800-3M-HELP-S ........................................................................... 55,57,59,61
Global Village 800-736-4821 ext. 3459 .................................................. 14
Kingston Technology 800-259-8965 ................................................... 7
Lind Electronic Design 800-897-8993 .................................................. 26
Momentum 800-263-0055 ................................................................. 26
Orange Micro 714-779-2772 .............................................................. 46,116
Power Computing 800-405-7693 ..................................................... Cover 5-8
Touché/Touch Pad 800-223-6433 ...................................................... 17

Graphics & Design
Dereka Software Inc. 800-7-DE NEBA ............................................... 20-21
Engineered Software 910-299-4843 .................................................. 65

Input Devices
3M 800-3M-HELP-S ........................................................................... 55,57,59,61
Visioneer 800-787-7007 ext. 701 ...................................................... 24

Mail Order
Bottom Line Distribution 800-990-5691 ........................................... 156-157
CDG/Computer Design & Graphic Sys. 800-741-6227 ................. 68,144
ClubeMac 800-258-2622 ................................................................. 166-167
Computer Discount Warehouse 800-291-4CDW ............................. 173-175
CIA Systems 800-375-9000 ............................................................. 145-147
DGR Technologies 800-990-5691 .................................................. 156-157
DirectWare 800-490-9273 ................................................................. 148-149
D'ville Connection, The 800-654-4058 .............................................. 143
Home Computer Catalog 800-454-3586 ....................................... 130-131
Image Solutions 800-352-3420 ....................................................... 150-151
LLB Company, Inc. 800-848-8967 ..................................................... 28-29
LLB Company, Inc. 800-848-8967 ..................................................... 164-165
Mac Bargains 800-407-7404 ............................................................. 158-159
MACXtra 800-553-4230 ................................................................. 181
MacConnection 800-800-4444 .......................................................... 168-169
MacMall 800-222-2808 ................................................................. 160-161
MacProducts USA 800-990-5691 ..................................................... 156-157
MacWarehouse 800-255-6227 .......................................................... 170-171
MacZone 800-436-9000 ................................................................. 152-153
MegaHaus 800-786-1191 ............................................................... 180
ProDirect 800-524-9952 ................................................................. 179
Syx Express 800-876-3467 .............................................................. 154-155
Third Wave 800-990-5691 .............................................................. 156-157

Networking & Connectivity
DataViz, Inc. 800-797-1466 ................................................................. 117
Farallon Computing 800-995-7761 ext. 1 .......................................... 114
GDT Softworks 800-330-9633 ......................................................... 41

ADVERTISER

O rglJzational Tools
Mainstay 805-498-9400 ................................................................. 27
Microsoft Corporation 800-531-6748 ............................................. 2-3
Now Software 800-439-2818 .......................................................... 18
Now Software 800-544-2599 .......................................................... 56
Route 66 408-446-0650 ................................................................. 67

Output Devices
Epson America 800-241-5372 ext. 3200 ........................................... 10-11
GCC Technologies 800-422-7777 ...................................................... 45
Proxima Corporation 800-447-7692 .................................................. 103
Tektronix 883-6100 ext. 1238 ............................................................ 53

Performance Enhancers
3M 800-3M-HELP-S ........................................................................... 55,57,59,61
ATI Technologies 905-882-2600 ....................................................... 35
Connectix 800-950-5880 ext. 101 ..................................................... 69,71,73
DayStar Digital 800-962-2077 .......................................................... 38
Diamond Multimedia 800-4MULTIMEDIA ................................... 101
Matrox Electronics 800-660-1873 ..................................................... 105
Number Nine Visual Technologies 800-GET-NINE ...................... 93
Silicon Hills Technologies 800-787-4765 ........................................ 144

Programming & Systems
Apple Software, Claris 800-950-5382 ext. 785 .................................... 51
Power Computing 800-405-7693 ..................................................... Cover 5-8

Scanners
Caere Corporation 800-535-SCAN ..................................................... 19
Microtek Labs, Inc. 800-654-4160 ..................................................... 70
UMAX Technologies 800-232-8629 ..................................................... 64

Spreadsheets & Numerical Analysis
Abacus Concepts 800-666-STAT ..................................................... 63
Microsoft Corporation 800-531-6748 ............................................. 48-49

Storage Systems
APS Technologies 800-235-3707 ...................................................... 162-163
FNB, Inc. 415-474-8053 ................................................................. 9
La Cie Limited 800-999-1325 ......................................................... 74-77
MegaHaus 800-786-1191 ............................................................... 180
MicroNet Technology, Inc. 800-880-DISK ...................................... 112
Microtech International Inc. 800-570-9540 ...................................... 62
Olympus Image Systems 800-347-4027 ............................................. 120
Toray 800-TORAY-PD ................................................................. 95

Telecommunications
America Online .................................................................................. 32 A/B
MegaHertz 800-LINKING Ext. 4315 .................................................. 118

Utilities
Aladdin Systems 408-761-6200 ......................................................... 15
Dantz Development 800-95-BACKUP ............................................ 66
GDT Softworks 800-897-9905 .......................................................... 43
Now Software 800-237-2078 .......................................................... 6
WestCode Software Inc. 800-448-4250 ............................................. 37

Word Processing
Microsoft Corporation 800-531-6748 ............................................. Cover 2-4, 1
Nisus Software 800-617-9493 .......................................................... 58

General
Indigo America 800-444-1314 .......................................................... 22
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174 MacUser / January 1996

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<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEC MultiSync XE 645</td>
<td>$457.69</td>
</tr>
<tr>
<td>SupraExpress 288</td>
<td>$279.99</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>RS#</th>
<th>ADVERTISER</th>
<th>PHONE NUMBER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>3M</td>
<td>800-3M-Help</td>
<td>55, 57, 59, 61</td>
</tr>
<tr>
<td>49</td>
<td>Alias Software</td>
<td>800-425-0094</td>
<td>52</td>
</tr>
<tr>
<td>168</td>
<td>Abacus Concepts</td>
<td>800-666-STAT</td>
<td>53</td>
</tr>
<tr>
<td>31</td>
<td>Aclad Systems</td>
<td>408-761-6200</td>
<td>75</td>
</tr>
<tr>
<td>169</td>
<td>America Online</td>
<td>32-2/6</td>
<td></td>
</tr>
<tr>
<td>146</td>
<td>Apple Software, Claris</td>
<td>800-950-5382 ext. 785</td>
<td>75</td>
</tr>
<tr>
<td>126</td>
<td>Apple Software, Claris</td>
<td>800-950-5382 ext. 784</td>
<td>75</td>
</tr>
<tr>
<td>146</td>
<td>AOS Technologies</td>
<td>800-235-3707</td>
<td>162-163</td>
</tr>
<tr>
<td>43</td>
<td>ATI Technologies</td>
<td>800-882-2500</td>
<td>35</td>
</tr>
<tr>
<td>13</td>
<td>Benetech: Distribution Systems</td>
<td>614-533-SCAN</td>
<td>9</td>
</tr>
<tr>
<td>144</td>
<td>CGD/Computer Design &amp; Graphic Sys</td>
<td>800-741-6227</td>
<td>68</td>
</tr>
<tr>
<td>40</td>
<td>CheckFree Technologies Corporation</td>
<td>800-564-9132 ext. 71</td>
<td>129</td>
</tr>
<tr>
<td>120</td>
<td>ClubMac</td>
<td>800-256-2822</td>
<td>166-167</td>
</tr>
<tr>
<td>136</td>
<td>Computer Discount Warehouse</td>
<td>800-259-8965</td>
<td>173-175</td>
</tr>
<tr>
<td>62</td>
<td>Connecticut</td>
<td>800-950-5880 ext. 105</td>
<td>69</td>
</tr>
<tr>
<td>63</td>
<td>Connecticut</td>
<td>800-950-5880 ext. 101</td>
<td>71</td>
</tr>
<tr>
<td>64</td>
<td>Connecticut</td>
<td>800-950-5880 ext. 101</td>
<td>72</td>
</tr>
<tr>
<td>50</td>
<td>CR System Systems</td>
<td>800-375-9000</td>
<td>145-147</td>
</tr>
<tr>
<td>59</td>
<td>Dartz Development</td>
<td>800-95-8648</td>
<td>66</td>
</tr>
<tr>
<td>17</td>
<td>DayStar Digital</td>
<td>800-962-2077</td>
<td>38</td>
</tr>
<tr>
<td>36</td>
<td>Debitas Software Inc.</td>
<td>800-7-DEBECA</td>
<td>20-21</td>
</tr>
<tr>
<td>165</td>
<td>Digital Technologies</td>
<td>800-990-5291</td>
<td>15-16</td>
</tr>
<tr>
<td>95</td>
<td>Diamond Multimedia</td>
<td>800-4MULTIMED</td>
<td>101</td>
</tr>
<tr>
<td>67</td>
<td>Directives</td>
<td>800-4073</td>
<td>140</td>
</tr>
<tr>
<td>123</td>
<td>Ellipse Connection The</td>
<td>800-654-4058</td>
<td>143</td>
</tr>
<tr>
<td>151</td>
<td>Engineered Systems</td>
<td>800-919-4444</td>
<td>110</td>
</tr>
<tr>
<td>71</td>
<td>Edmark Corp</td>
<td>800-691-2085</td>
<td>133</td>
</tr>
<tr>
<td>130</td>
<td>Enviro-Farmica</td>
<td>800-241-5373 ext. 3200</td>
<td>11-11</td>
</tr>
<tr>
<td>134</td>
<td>Farallon Computing</td>
<td>800-995-7761 ext. 1</td>
<td>114</td>
</tr>
<tr>
<td>132</td>
<td>Fox Interactive</td>
<td>614-533-SCAN</td>
<td>9</td>
</tr>
<tr>
<td>143</td>
<td>IWB, Inc</td>
<td>800-122-7777</td>
<td>45</td>
</tr>
<tr>
<td>73</td>
<td>G2 Technologies</td>
<td>800-116-6933</td>
<td>43</td>
</tr>
<tr>
<td>138</td>
<td>Global Village</td>
<td>800-736-4621 ext. 3459</td>
<td>14</td>
</tr>
<tr>
<td>75</td>
<td>Home Computer Catalog</td>
<td>800-454-3686</td>
<td>130-131</td>
</tr>
<tr>
<td>52</td>
<td>Image Solutions</td>
<td>800-352-3420</td>
<td>150-151</td>
</tr>
<tr>
<td>54</td>
<td>Indigo America</td>
<td>800-444-1114</td>
<td>74-77</td>
</tr>
<tr>
<td>59</td>
<td>Intuit</td>
<td>800-781-6690 ext. 810381</td>
<td>47</td>
</tr>
<tr>
<td>129</td>
<td>Intuit</td>
<td>800-954-1040</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>Kinetics Technology</td>
<td>800-999-1325</td>
<td>74-77</td>
</tr>
<tr>
<td>80</td>
<td>La Ce Limited</td>
<td>800-897-8939</td>
<td>26</td>
</tr>
<tr>
<td>74</td>
<td>Lind Electronic Design</td>
<td>800-999-1325</td>
<td>74-77</td>
</tr>
<tr>
<td>73</td>
<td>Litho Printing Services</td>
<td>800-999-1325</td>
<td>74-77</td>
</tr>
<tr>
<td>23</td>
<td>LIL Company, Inc.</td>
<td>800-848-8967</td>
<td>164-165</td>
</tr>
<tr>
<td>108</td>
<td>Mac Bargains</td>
<td>800-407-7404</td>
<td>159-159</td>
</tr>
<tr>
<td>53</td>
<td>Mac OS X, RokTM</td>
<td>800-797-1403</td>
<td>159</td>
</tr>
<tr>
<td>84</td>
<td>MacAcademy</td>
<td>800-327-1914</td>
<td>42</td>
</tr>
<tr>
<td>18</td>
<td>MacConnection</td>
<td>800-222-2808</td>
<td>160-161</td>
</tr>
<tr>
<td>10</td>
<td>MacMail</td>
<td>800-404-4444</td>
<td>160-161</td>
</tr>
<tr>
<td>22</td>
<td>MacPaint</td>
<td>800-990-5691</td>
<td>155-157</td>
</tr>
<tr>
<td>20</td>
<td>MacWarehouse</td>
<td>800-136-6211</td>
<td>155-157</td>
</tr>
<tr>
<td>160</td>
<td>MacZone</td>
<td>800-436-8000</td>
<td>152-153</td>
</tr>
<tr>
<td>24</td>
<td>Mainstay</td>
<td>800-484-9400</td>
<td>27</td>
</tr>
<tr>
<td>16</td>
<td>Matrix Electronics</td>
<td>800-174-1097</td>
<td>72</td>
</tr>
<tr>
<td>22</td>
<td>MegaHaus</td>
<td>800-786-1191</td>
<td>180</td>
</tr>
<tr>
<td>119</td>
<td>Megahertz</td>
<td>800-LINKING ext. 4315</td>
<td>118</td>
</tr>
<tr>
<td>159</td>
<td>Microsoft Technology, Inc.</td>
<td>800-800-6592</td>
<td>62</td>
</tr>
<tr>
<td>119</td>
<td>Microsoft Corporation</td>
<td>800-531-6748</td>
<td>2-3</td>
</tr>
<tr>
<td>150</td>
<td>Microsoft Corporation</td>
<td>800-531-6748</td>
<td>49-49</td>
</tr>
<tr>
<td>22</td>
<td>Microtech International</td>
<td>800-797-9420</td>
<td>62</td>
</tr>
<tr>
<td>22</td>
<td>Microtek Labs, Inc.</td>
<td>800-654-4160</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Momentum</td>
<td>800-263-0035</td>
<td>58</td>
</tr>
<tr>
<td>89</td>
<td>Nisus Software</td>
<td>800-617-9493</td>
<td>58</td>
</tr>
<tr>
<td>89</td>
<td>Now Software</td>
<td>800-257-2078</td>
<td>6</td>
</tr>
<tr>
<td>88</td>
<td>Now Software</td>
<td>800-439-2313</td>
<td>6</td>
</tr>
<tr>
<td>88</td>
<td>Now Software</td>
<td>800-544-7399</td>
<td>56</td>
</tr>
<tr>
<td>92</td>
<td>Number Nine Visual Technologies</td>
<td>800-871-9999</td>
<td>93</td>
</tr>
<tr>
<td>67</td>
<td>Olypmpus Image Systems</td>
<td>800-277-7272</td>
<td>46</td>
</tr>
<tr>
<td>133</td>
<td>Orange Micro</td>
<td>800-277-7272</td>
<td>46</td>
</tr>
<tr>
<td>133</td>
<td>Orange Micro</td>
<td>800-277-7272</td>
<td>46</td>
</tr>
<tr>
<td>77</td>
<td>ProDiscover</td>
<td>800-524-9552</td>
<td>179</td>
</tr>
<tr>
<td>129</td>
<td>Proxima Corporation</td>
<td>800-447-7692</td>
<td>103</td>
</tr>
<tr>
<td>26</td>
<td>RouteMaster</td>
<td>800-866-1060</td>
<td>16</td>
</tr>
<tr>
<td>27</td>
<td>Silicon Hills Technologies</td>
<td>800-787-7465</td>
<td>144</td>
</tr>
<tr>
<td>38</td>
<td>Spyx Express</td>
<td>800-876-3467</td>
<td>154-155</td>
</tr>
<tr>
<td>39</td>
<td>Telmarch</td>
<td>800-990-5691</td>
<td>156-157</td>
</tr>
<tr>
<td>125</td>
<td>Third Wave</td>
<td>800-454-1435</td>
<td>64</td>
</tr>
<tr>
<td>20</td>
<td>Toro</td>
<td>800-797-7070 ext. 701</td>
<td>24</td>
</tr>
<tr>
<td>140</td>
<td>UMAX Technologies</td>
<td>800-222-8232</td>
<td>64</td>
</tr>
<tr>
<td>150</td>
<td>Visioneer</td>
<td>800-448-4220</td>
<td>37</td>
</tr>
</tbody>
</table>

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   - 07 Computer Sales/Marketing
   - 08 Computer Diaper/Network

3. Indicate which type of software products you or others in your department plan to purchase in the next 12 months?
   - 01 Word Processing
   - 02 Database Managers
   - 03 Communications
   - 04 Presentation Graphics
   - 05 Utilities

4. Indicate which type of hardware products you or others in your department plan to purchase in the next 12 months?
   - 01 Apple Macintosh
   - 02 PowerBook
   - 03 PowerPC
   - 04 Memory/Display
   - 05 Storage
   - 06 Add-in Boards
   - 07 Networking
   - 08 Modems
   - 12 Other

5. Over the next 12 months, how much will your organization spend on computer products or services? (check one)
   - 01 under $1,000
   - 02 $1,000 - $4,999
   - 03 $5,000 - $99,999
   - 04 $100,000 - $499,999
   - 05 $500,000 - $999,999
   - 06 $1,000,000 - $4,999,999
   - 07 $5,000,000 - $9,999,999
   - 08 $10,000,000 - $49,999,999
   - 09 $50,000,000 - $99,999,999
   - 10 $100,000,000 - $499,999,999

6. What do you plan to use the computer(s) for? (check all that apply)
   - 01 Word Processing
   - 02 Database Management
   - 03 Communications
   - 04 Presentation Graphics
   - 05 Utilities
   - 06 Accounting
   - 07 Internet Access
   - 08 Spreadsheets
   - 09 On-Line Services
   - 10 Project Managers

7. Where do you plan to make your purchase?
   - 01 MacUser Dealer
   - 02 VAR
   - 03 VAR, VAR
   - 04 Local Retailer

8. Over the next 12 months, how much will your organization spend on computer products or services? (check one)
   - 01 under $5 million
   - 02 $5 million - $49,999
   - 03 $50,000 - $999,999
   - 04 $100,000 - $499,999

9. Please send me a one-year subscription to MacUser for $19.97 (U.S. price); all other countries add $16.00 for additional postage.

10. Additional comments or requests:

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- CHECK OFF your answers to the research questions below.
- CIRCLE the numbers on the card that correspond to the product ads or articles you'd like more information about.
- FAX your request to (609) 829-0692 or mail this card and we'll pay the postage!

1. For how many microcomputers do you buy products? (check one)
   □ 1  □ 2 □ 3-5  □ 6-10  □ 11-20  □ 21-50  □ 51+  

2. Your primary job function is: (check one)
   □ Administrative  □ Engineering/R&D  □ General Management
   □ MIS/DP, Communications  □ Marketing/Sales  □ Professional Services
   □ Relationship Management  □ Sales/Field Operations  □ Support/Technical Services
   □ User  □ Other

3. Indicate which type of hardware products you or others in your department plan to purchase in the next 12 months?
   □ Cameras/Video  □ Fax Machines  □ File Servers
   □ Modems  □ Printers/File Servers  □ PC Servers
   □ Scanners  □ Telecommunications  □ Workstations
   □ Other

4. Indicate which type of software products you or others in your department plan to purchase in the next 12 months?
   □ Accounting  □ Enterprise Applications
   □ Internet Access  □ Office Productivity
   □ Spreadsheet  □ Social/Media
   □ User Management  □ Word Processing  □ Workgroup Collaboration
   □ Other

5. If so, what function do you serve in the buying process? (check all that apply)
   □ Delivers Determined Need  □ Selects System Configuration
   □ Selects System Software  □ Selects System Hardware
   □ Acquisition

6. Where do you plan to make your purchase?
   □ Apple Macintosh  □ IBM Personal Systems
   □ IBM Mainframes  □ Local Retailer
   □ Mail Order/Catalog  □graveyard

7. Over the next 12 months, how much will your organization spend on computer products or services? (check one)
   □ under $10,000  □ $10,000-$49,999  □ $50,000-$99,999
   □ $100,000-$499,999  □ $500,000-$999,999  □ $1,000,000-

8. Would you like to receive a one-year subscription to MacUser for $19.97 (U.S. price)?
   □ Yes  □ No  □ Other

9. Please enter your name, title, company name, address, city, state, and zip code.

10. Please mail this card to:
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    Riverton, NJ 08076-9405

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  - 9 ms Seek 5400 RPM 512KB Buffer
  - 5 Year Warranty

- **2.4 GB Hawk**
  - $785
  - 9 ms Seek 5400 RPM 512K Buffer
  - 5 Year Warranty

- **2.5 GB Barracuda 2**
  - $835
  - 8 ms Seek 7200 RPM 1024K Buffer
  - 5 Year Warranty

- **4.3 GB Barracuda 4**
  - $1255
  - 8 ms Seek 5400 RPM 1024K Buffer
  - 5 Year Warranty

- **2.5 GB Fast & Wide Barracuda**
  - $925
  - 8 ms Seek 7200 RPM 128K Buffer
  - 5 Year Warranty

- **4.3 GB Fast & Wide Barracuda**
  - $1330
  - 8 ms Seek 7200 RPM 128K Buffer
  - 5 Year Warranty

- **9.0 GB Elite**
  - $2025
  - 11 ms Seek 5400 RPM 512K Buffer
  - 5 Year Warranty

- **9.0 GB Fast & Wide Elite**
  - $2099
  - 11 ms Seek 5400 RPM 512K Buffer
  - 5 Year Warranty

---

**Quantum**

- **540 MB**
  - $285
  - 9 ms Seek 4500 RPM 512KB Buffer
  - 5 Year Warranty

- **Quantum 535 MB**
  - $195
  - 9 ms Seek 5400 RPM 512KB Buffer
  - 5 Year Warranty

- **Conner 1.2 GB**
  - $285
  - 9 ms Seek 5400 RPM 512KB Buffer
  - 5 Year Warranty

- **Fujitsu 2.1 GB**
  - $749
  - 9 ms Seek 7200 RPM 512KB Buffer
  - 5 Year Warranty

- **Quantum Grand Prix 4.0**
  - $985
  - 8.5ms Seek 7200 RPM 512KB Buffer
  - 5 Year Warranty

---

**FUJITSU**

- **530 MB**
  - $175
  - 5 Year Warranty

- **1.2 GB**
  - $285
  - 5 Year Warranty

- **2.1 GB**
  - $755
  - 5 Year Warranty

- **4.2 GB**
  - $1495
  - 5 Year Warranty

---

**IBM**

- **540 MB**
  - $185
  - 9 ms Seek 5400 RPM 128K Buffer
  - 5 Year Warranty

- **9.0 GB**
  - $2099
  - 11 ms Seek 5400 RPM 1024K Buffer
  - 5 Year Warranty

---

**MICROPOLES AV**

- **PowerStor™**
  - $75
  - 2 Year Warranty

- **Minicube™**
  - $65
  - 2 Year Warranty

- **Full Height Cables**
  - $139
  - 2 Year Warranty

- **Multi Bay Cabinets**
  - $999
  - 2 Year Warranty

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**Digital Tape Backup**

- **HEWLETT PACKARD**
  - **2.0 GB**
    - $835
    - 5 Year Warranty
  - **5.5 GB**
    - $2099
    - 5 Year Warranty

- **Conner 1.2 GB**
  - $285
  - 9 ms Seek 5400 RPM 512KB Buffer
  - 5 Year Warranty

---

**SCSI HARD DRIVE CABINETS**

- **PowerStor™**
  - $75
  - 2 Year Warranty

- **Minicube™**
  - $65
  - 2 Year Warranty

- **Full Height Cables**
  - $139
  - 2 Year Warranty

- **Multi Bay Cabinets**
  - $999
  - 2 Year Warranty

---

**Tape backup drives include 1 piece of media**

---

**Cheyenne backup software also available-$9.95 for details**

---

**NEVER A SURCHARGE!**

---

**January 1996 / MacUser 179**
# Fujitsu Drives

**FUJITSU OFFERS THE BEST VALUE ON THE MARKET!**

- **Low price guarantee on all Fujitsu drives!**

## Specifications

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>RPM</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
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<tr>
<td>530MB</td>
<td>12ms</td>
<td>5400</td>
<td>(2.5&quot; for Powerbook)</td>
<td>M2706S</td>
<td>$399</td>
<td>n/a</td>
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<tr>
<td>1080MB</td>
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<td>5400</td>
<td>256K</td>
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<td>$335</td>
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<tr>
<td>2176MB</td>
<td>9.5ms</td>
<td>7200</td>
<td>512K</td>
<td>M2915S</td>
<td>$645</td>
<td>$705</td>
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<tr>
<td>4350MB</td>
<td>8.9ms</td>
<td>7200</td>
<td>512K</td>
<td>M2934S</td>
<td>$949</td>
<td>$1009</td>
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## Prices

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<th>Capacity</th>
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<th>RPM</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
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<tr>
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<td>14ms</td>
<td>4500</td>
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<td>3yr</td>
<td>TB850S</td>
<td>$222</td>
<td>$282</td>
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<tr>
<td>1080MB</td>
<td>12ms</td>
<td>5400</td>
<td>128K</td>
<td>3yr</td>
<td>FB1080S</td>
<td>$280</td>
<td>$340</td>
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<tr>
<td>2150MB</td>
<td>8ms</td>
<td>7200</td>
<td>1024K</td>
<td>5yr</td>
<td>XP2150</td>
<td>$735</td>
<td>$795</td>
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<tr>
<td>2216MB</td>
<td>8.5ms</td>
<td>5400</td>
<td>312K</td>
<td>5yr</td>
<td>VP32210</td>
<td>$635</td>
<td>$695</td>
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<td>4300MB</td>
<td>8.6ms</td>
<td>7200</td>
<td>312K</td>
<td>5yr</td>
<td>XP34301</td>
<td>$979</td>
<td>$1039</td>
</tr>
</tbody>
</table>

## Optical Drives

**320MB Fujitsu**

- **Low price guarantee on all Fujitsu drives!**

### Capacity Speed RPM Buffer Warranty Model Internal External
- 530MB 12ms 5400 128K 3yr 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

## SyQuest Drives

**SyQuest drives**

- **Low price guarantee on all Syquest drives!**
- **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!**

### Capacity Speed RPM Buffer Warranty Model Internal External
- 850MB 14ms 4500 256K 3yr TB850S $222 $282
- 1080MB 12ms 5400 128K 3yr FB1080S $280 $340
- 2150MB 8ms 7200 1024K 5yr XP2150 $735 $795
- 2216MB 8.5ms 5400 312K 5yr VP32210 $635 $695
- 4300MB 8.6ms 7200 312K 5yr XP34301 $979 $1039

## Quantum Drives

**Quantum**

- **Best buy!**

### Capacity Speed RPM Buffer Warranty Model Internal External
- 850MB 14ms 4500 256K 3yr TB850S $222 $282
- 1080MB 12ms 5400 128K 3yr FB1080S $280 $340
- 2150MB 8ms 7200 1024K 5yr XP2150 $735 $795
- 2216MB 8.5ms 5400 312K 5yr VP32210 $635 $695
- 4300MB 8.6ms 7200 312K 5yr XP34301 $979 $1039

## Price Includes 1 Disk!
About This Macintosh

$99 (suggested) to take your 8100/100 to 126MHz!!

- 20-40% acceleration in all CPU tasks
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HARDWARE: BORDS/COMPONENTS/CHIPS/SOFTWARE: MULTI-MEDIA

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January 1996 / MacUser 183
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### NEW POWER MACS

<table>
<thead>
<tr>
<th>Model</th>
<th>Memory</th>
<th>Hard Drive</th>
<th>Price</th>
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<tr>
<td>Power Mac 9500 2000</td>
<td>16/2GB/CD</td>
<td>4,899</td>
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### PERFORMAS

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### PERIPHERALS

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<tr>
<td>Apple Monitor 14</td>
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<td>429</td>
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<tr>
<td>Apple Monitor 20</td>
<td>1,849</td>
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### POWER BOOKS AVAILABLE!

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<tr>
<td>Power Book 5300 8/500</td>
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<tr>
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<td>2,499</td>
</tr>
<tr>
<td>Power Book 5300 8/700</td>
<td>3,999</td>
</tr>
</tbody>
</table>

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---

**Memory**

<table>
<thead>
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**ST410800N 9Gb**

**ST15150N 4Gb**

**ST15230N 4Gb**

**ST3.2430N 2Gb**

**PowerCache Memory**

**ST32550W(wide) 2Gb**

**ST15150W(wide) 4Gb**

**ST32550N 2Gb**

**ST15230N 4Gb**

**ST31230N 1Gb**

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2. Unlimited TCP Connections
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<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>PM15T</td>
<td>25 mm dot pitch, Resolutions up to 1280x1024.</td>
<td>$489</td>
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<tr>
<td>PM17T</td>
<td>25 mm dot pitch, Resolutions up to 1280x1024.</td>
<td>$839</td>
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<td>PM17TE+</td>
<td>25 mm dot pitch, Resolutions up to 1600x1280.</td>
<td>$999</td>
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<tr>
<td>PM20T</td>
<td>31 mm dot pitch, Resolutions up to 1600x1280.</td>
<td>$1849</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Mac System</th>
<th>Price</th>
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<tr>
<td>Performa 6214CD 8/Gig/CD</td>
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<td>Performa 6220CD 8/Gig/CD</td>
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<td>Radius 81/110 16/730/CD</td>
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<td>PowerMac 750/100 16 Ram/CD</td>
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<td>Powerbook 190CS 8/500</td>
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### PowerMax External Drives

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<td>PowerMax One Gigabyte</td>
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<td>$499</td>
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<td>PowerMax Four Gigabyte</td>
<td>$1299</td>
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</table>

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### Customizable Mac Systems

<table>
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<tr>
<td>PowerBook 500CS</td>
<td>$4198</td>
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**BEST BUY**

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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 doorstop, 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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