

THE BEST MAC PRODUCTS OF THE YEAR, P. 74

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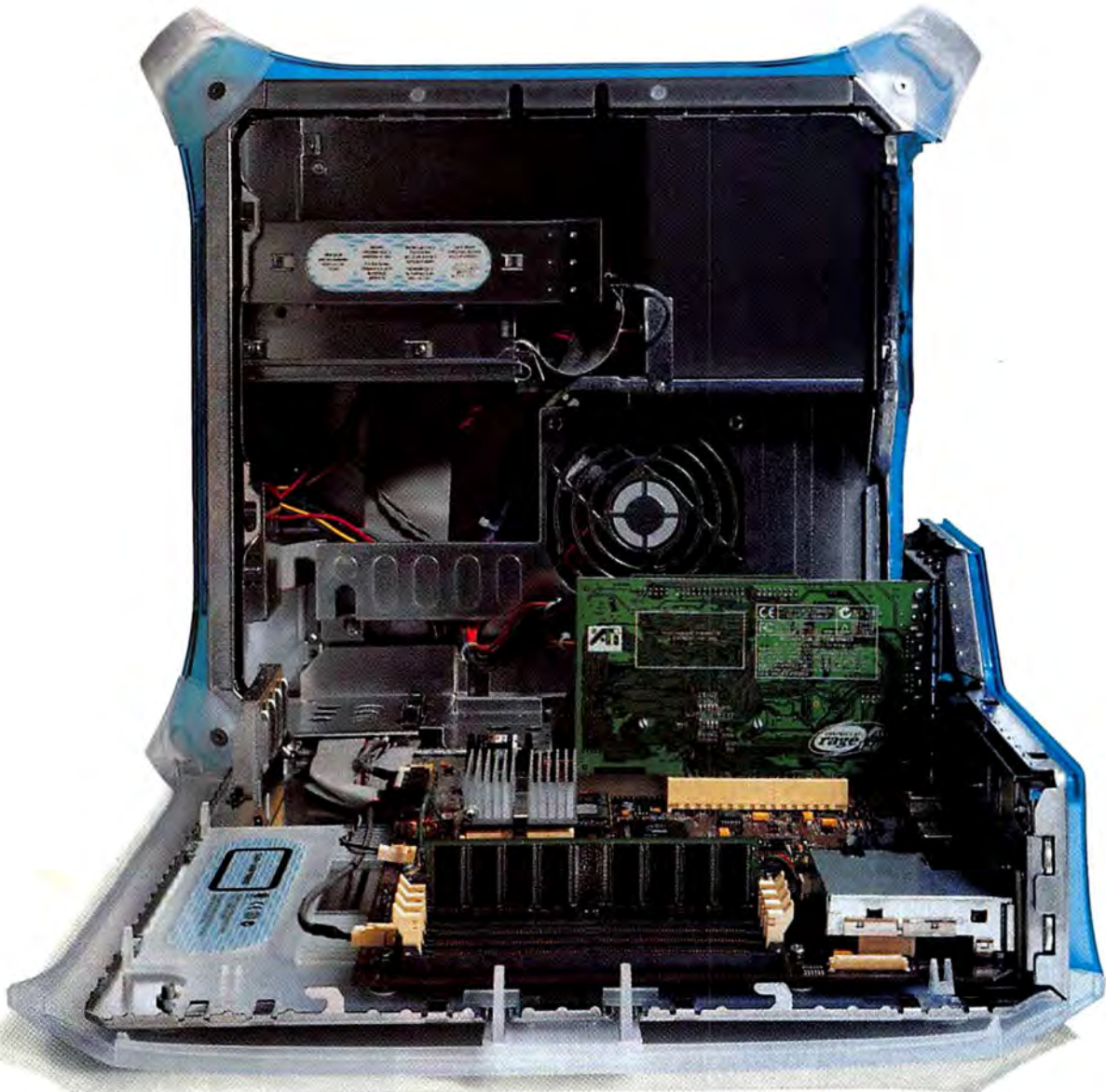



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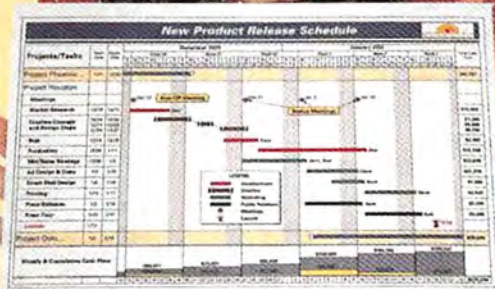
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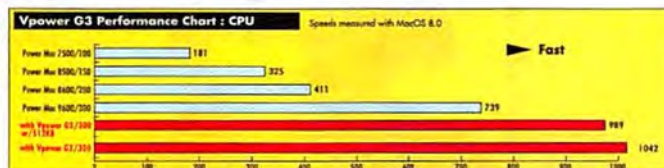
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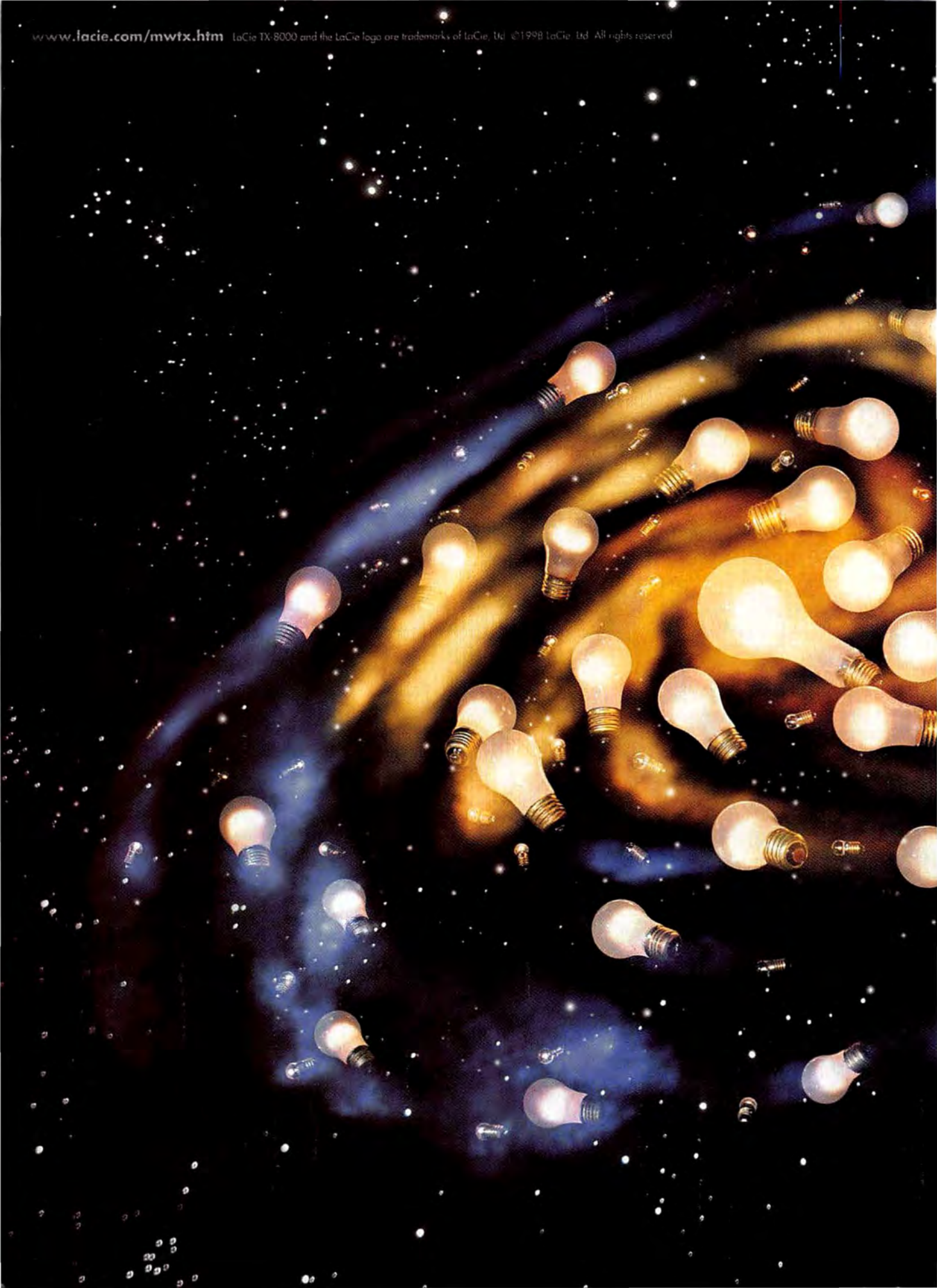
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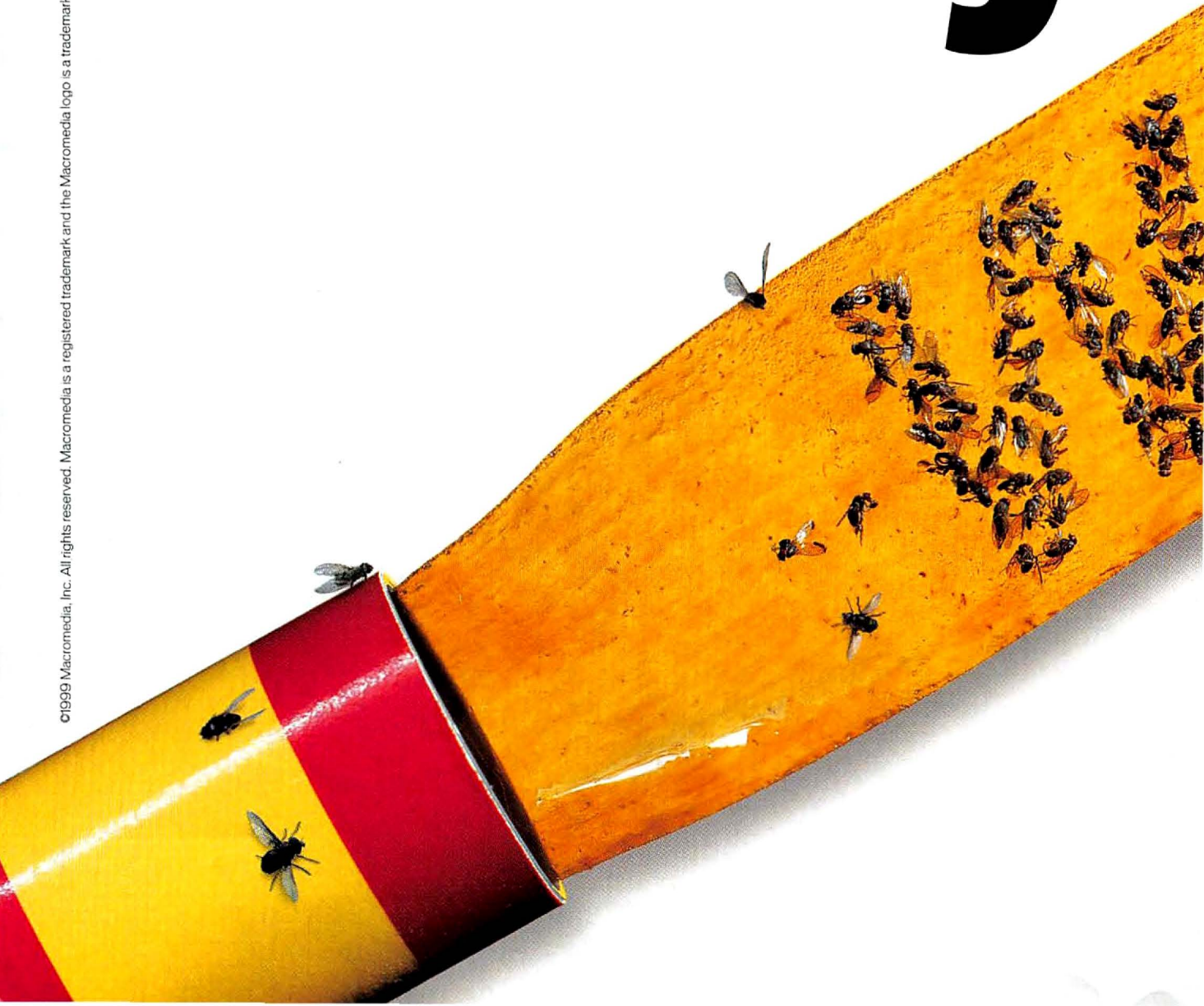
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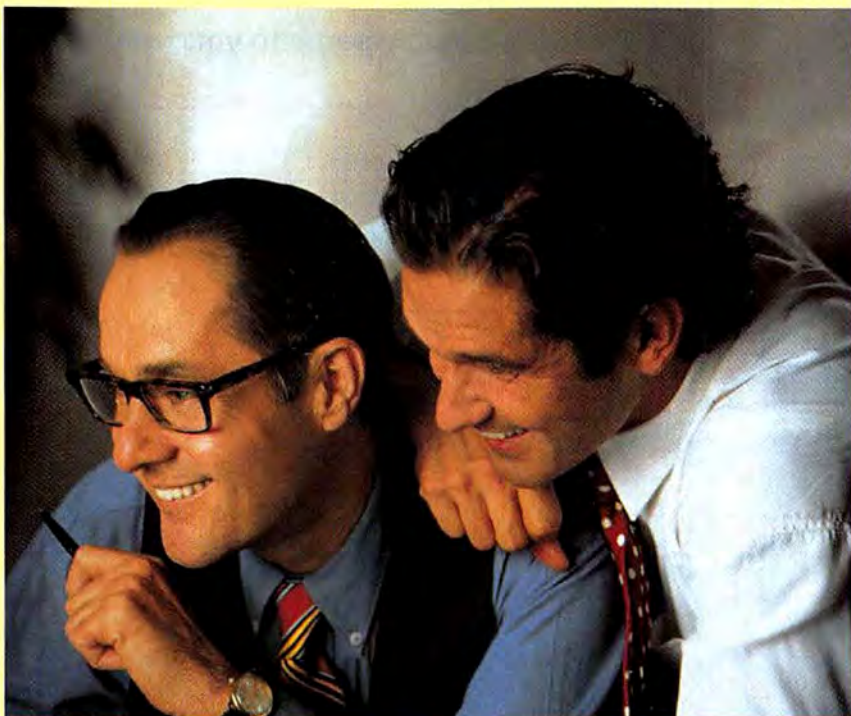
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MARCH 1999

Letters

You Call That Portable?

YOU AND APPLE ARE COMPLETELY out of touch with reality. I don't think the PowerBook G3/300 deserves a five-mouse rating, because the philosophy behind this and similar machines is sheer lunacy (*Reviews*, December 1998). Most of the stuff on these heavy, cumbersome, and short-lived units is never used in transit. Apple should push in the other direction: offer a low-end portable (2 pounds or less with 24-hour battery life) and put on only e-mail, calendar, spreadsheet, and word processing apps. That's what we professionals on the move could use. No more of these \$5K toys you throw out after a year.

PETER K. VOGT
La Jolla, California

ANDREW GORE WRITES, "NOTHING could be sweeter than popping a favorite movie in your PowerBook the next time you have to suffer a cross-country flight in coach class." I hate to be critical, and I really love my PowerBook, but I can't even get the beast open in coach class. It will just fit if I push myself back into my seat, place the computer in my lap, and sit as still and straight as possible. Moments of sheer panic ensue when the guy in front leans back in his seat.

In theory, private movies are a cool idea, but have you actually tried it? If it works for you, I want to switch airlines.

KEN HUDSON
Houston, Texas

We Got Game

I ENJOYED "20 UNFORGETTABLE Games" (December 1998), but I have an important thing to say about *Escape Velocity: Override*. It is an excellent



game, but I would also like to mention the original *Escape Velocity*. Although the galaxy is smaller and has fewer fancy features and strange aliens, I believe that the game is far better and deserves at least some recognition. All of *Override*'s planet graphics were simply pasted into *Override* from *Escape Velocity*, as were many weapon and outfit graphics. Most of *Escape Velocity*'s starship graphics are much more complex than *Override*'s, which look like a small child's drawings.

The most important thing that the author failed to mention was the expandability of both games. Developers can create plug-ins for either one to expand, alter, and enhance game play. *Escape Velocity*, although less advanced, has had two years for developers to expand on the galaxy, and somewhere between 200 and 500 plug-ins have been created. In fact, some developers are creating a new, hybrid game that extends beyond all limitations of *Escape Velocity* and *Override*. Its galaxy is double the

size of *Override*'s. Keep your eyes open for this upcoming game!

LUCA RESCIGNO
Stillwater, Minnesota

THE AUTHOR OF "20 UNFORGETTABLE Games" was extremely generous with his scoring. I thought *Tomb Raider II* had some of the worst game play I've ever experienced. The graphics were its only redeeming quality. I felt similarly about the other games in the feature that I'd heard of. Somebody (namely MacSoft) needs to get on the ball. The Mac gaming situation is improving, but it's sure not there yet. How compatible will OS X be with new/old/any PC games? I hope it will help significantly, since the current situation is pathetic. Being a loyal Mac user, I just want the best for the far superior Macintosh machines—I don't want to have to give them up for Microsoft-dependent crap.

ADAM O'HERN
Knoxville, Tennessee

Forsaken by 8.5

I HAVE BEEN A MACINTOSH LOYALIST since my first 128K Macintosh, in my freshman year at Dartmouth College. In 1992 I bought an Apple LaserWriter Select 310 while in business school. At the time, \$1,200 seemed like a lot for a laser printer, but it was an Apple, and I was loyal, so I bought it.

Fast-forward to 1998. Apple releases OS 8.5, which is supposed to be the be-all, end-all software for Macintosh. Nowhere in the Read Me documentation was there any clue my current printer was not going to be supported. Imagine my surprise when, after installation, I could

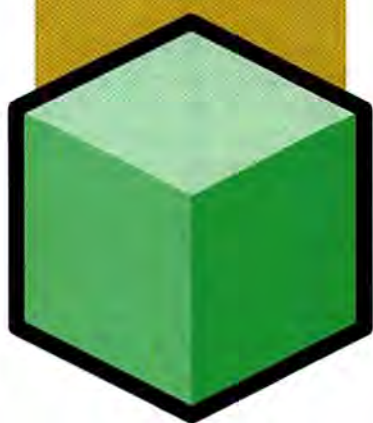
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LETTERS

not print anything. Nada. Not even a SimpleText message or some Stickies.

It looks like anyone who has a LaserWriter Select 310 printer and wants to upgrade to 8.5 is out of luck. I find it interesting that 8.5 installs a printer driver for the Apple ImageWriter, yet doesn't support this newer laser printer. It's especially ironic that Apple decided to save a few dollars by not rewriting a printer driver, while Microsoft did the right thing and updated its LaserWriter Select 310 driver to work with Windows 98. Somehow, Apple's long-standing claim of superior ease of use seems a little disingenuous.

NED WARD

Manhattan Beach, California

The War Rages On

I JUST READ DAVID POGUE'S December column on Macworld Online ("Nuclear Browser Wars," *The Desktop Critic*). While I have a fear and loathing of Microsoft, I too am a fan of Internet Explorer. I play around with a coworker's Wintel machine and Explorer at night, and I have found that the Mac Explorer is better than Explorer in its own native soil! I agree with all of Pogue's comments about Explorer's features, and there are some he didn't mention (such as autofill and the pull-down menu for going to recently accessed URLs). I used to complain about Explorer's slowness, but either 4.01 is faster, as Microsoft claims, or I'm used to the slowness now.

My biggest complaint about Netscape Navigator is that it lacks the user-friendliness Explorer offers. I don't want to have to work hard to use the Internet, and Navigator makes it too difficult.

I respect your honesty in pointing out when a company as (dis)respected as Microsoft actually makes a good product.

REID NIXON

Austin, Texas

I READ "NUCLEAR BROWSER WARS" and have a few things for you to ponder. I use Netscape Communicator 4.5, and I am really happy with it. Microsoft is using incompatibility to make people think pages created for Navigator are buggy. HTML has a lot of tags, and many duplicate each others' functions. When you've created a page with Communicator, the page looks great in Netscape Navigator but horrible in Internet Explorer.

Why? Because IE doesn't accept sloppy HTML. You would be surprised at what Navigator accepts as HTML and makes it look good. IE demands perfect HTML for the page to look good. Why didn't Microsoft make a browser that accepts even bad HTML? Isn't the idea to be able to see a page the way it was meant to be seen? I think it was meant to make Communicator-created pages look bad.

BRIAN HOLBERT

Mobile, Alabama

A Call for Détente

AFTER READING DAVID POGUE'S "Nuclear Browser Wars" and an interview with Steve Jobs in *Fortune*, something became clear to me. The age-old war between Microsoft and Apple is no longer something on which Mac users need to focus. We are in a war of ideals. Sending hate mail to anyone who says anything good about a Microsoft product is not going to show people that the Mac is a far better machine than any Wintel one. On the other hand, we cannot simply go around beating people over the head with PowerBooks and believe that they are suddenly going to convert from PC to Mac.

It is time to truly think differently about the way we spread the Apple word. Let our attitudes, work quality, and G3's do the talking, and stop shouting so loud that nobody wants to listen. I admire Pogue because he realizes that no matter what you run on your Mac, Microsoft or otherwise, it is simply going to be a better experience.

KYLE GEIGER

East Dundee, Illinois

All Hail FileMaker

I JUST A QUICK THANKS TO CONTRIBUTING Editor Henry Bortman for his informative piece on how to develop a valuable postproduction tool using FileMaker's powerful database environment. Our office operations are supported by a custom database designed in FileMaker and distributed via a 10BaseT Mac network. If more people were acquainted with this application and the advantages of implementing it on the Mac, we'd see a major global increase of corporate environments using the Mac.

NEIL OLLIVIERA

Detroit, Michigan

continues

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LETTERS

Apple's Last, Best Hope

I JUST FINISHED READING THE December issue of *Macworld*, noting in particular the Mac-related list of gifts. The mention of painting one's G3 tower to resemble something from *Babylon 5* set off a vague theory. When it comes to computers and science fiction, I've noticed that PC people tend to enjoy the lowest-common-denominator *Star Wars* and *Star Trek* franchises, whereas Mac fans tend to prefer the much more literary *Babylon 5* and *The Prisoner*. We've all seen the T-shirts featuring Bill Gates as a Borg, with the caption "We are Microsoft. Resistance is futile. You will be assimilated." When are we Mac junkies going to see a T-shirt with Steve Jobs as a Vorlon and a caption reading, "If you go to Windows NT, you will die"?

PAUL T. RIDDELL
Dallas, Texas

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CORRECTIONS

Contrary to our review, Graphisoft's *ArchiCAD 6.0* (Reviews, December 1998) works with most laptops. There are also network-based site-license dongle workarounds for iMac use (USB port only).

Better Homes and Gardens Complete Guide to Gardening ("10 Delightful Discs," December 1998) and Growing Good Roses ("Supreme Stocking Stuffers," December 1998) are no longer sold by Multimedia 2000. Both CD-ROMs are now available through CD Micro (541/471-4133, www.cdmicro.com). Growing Good Roses has a list price of \$17.99.

The estimated street price for Kensington's Keyboard-in-a-Box (Reviews, December 1998) is \$49.99.

Pressing ⌘-A selects all the words on a page in a PDF file, not all the words in the document (Secrets, December 1998). **m**

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The Vision Thing

by Andrew Gore

Deconstructing Macworld Expo

WHAT'S IN A NAME, OR A DESIGN, OR A COLOR SCHEME?

FOR ONCE, I'LL CUT TO the chase: I wouldn't normally write about Macworld Expo in this column, but this year's gathering in San Francisco was such a watershed event that I'm compelled to deconstruct it.

At this Expo, something about the Mac changed fundamentally, and I've got to address it. You've probably heard enough about Apple's Lazarus-like return from the dead. Me, too. Apple's recovery in the last year could be compared to that of Lazarus only if after coming back he grabbed a straw hat and cane and belted out "Putting On the Ritz."

Welcome Back, My Friends

If you think about it, Apple's recovery is nothing less than miraculous. Apple is about to close its fifth consecutive profitable quarter, and the fact was tossed out almost in passing by Apple interim CEO Steve Jobs during his Expo keynote. The fact that the company sold more than 800,000 iMacs between the product's August 15 debut and the end of 1998, another keynote announcement from Apple's self-described iCEO, is greeted with similar joy but little surprise. *Of course* the iMac was a big hit.

What a difference a year can make.

When you have a showman as great as Steve Jobs up on stage, you come to expect magic. But this performance was special—it had drama, humor, and lots of excitement. From the guest appearance of the crazed computer HAL 9000 to the introduction of a dizzying array of new products, this was an event to remember. It might very well be the best keynote address anyone from Apple has ever given.

A Mac by Any Other Name

In the center ring of Steve's Incredible Carnival of Cool New Stuff was the Power Mac G3. No, not the old beige-

box Power Mac G3—the new, translucent Power Mac G3 (see "iMac Envy," elsewhere in this issue). If Apple keeps up this trend of never renaming its products when it updates them, things are going to get mighty confusing.

Naming conventions aside, you can't help but have an emotional reaction when you see this machine; the new blue and white translucent case certainly gets your attention. Steve Jobs is clearly determined to ensure that all Macs are placed in plain view, even ones that would normally be hidden under a desk.

But for me, what's great about this new G3 are its price and feature set: \$1,599 for a fully equipped minitower that

tures not available on any other platform, as well as a new Microsoft-operated Web site for the Mac community.

Steve Jobs's audience also got to see a single Power Mac G3 host 50 iMacs—iMacs that simultaneously booted off the G3's hard drive and then displayed digital video served up by that same G3, all thanks to the powerful new Mac OS X server software. (Think what a boon that will be for school computer labs!)

And finally, the absolute showstopper—not one, but five new flavors of iMac: strawberry, blueberry, tangerine, lime, and grape. I'm betting that grape is going to be most in demand.

A Sea Change

Jobs's surprise announcements didn't show off the biggest change in the Macintosh community. That job was done by Macworld Expo's attendees themselves.

Of those 800,000 iMacs Apple sold, some 32 percent were bought by new computer users and some 13 percent were bought by former Wintel users. That's 360,000 new Mac users. The most impressive vibe at Macworld Expo came from this infusion of fresh blood, something the increasingly anemic Mac community desperately needed.

And that means that for the first time in a long time Macworld Expo has also become a place for new users—a place where the inexperienced are embraced by a platform built on the principle that if you don't know how to use a computer, it's the computer that's stupid, not you.

After all these years, the Macintosh has finally, truly become the computer for the rest of us. Imagine that. **m**

If you feel the need to scratch and sniff your new iMac, you might want to calm down before sending mail to visionthing@macworld.com.

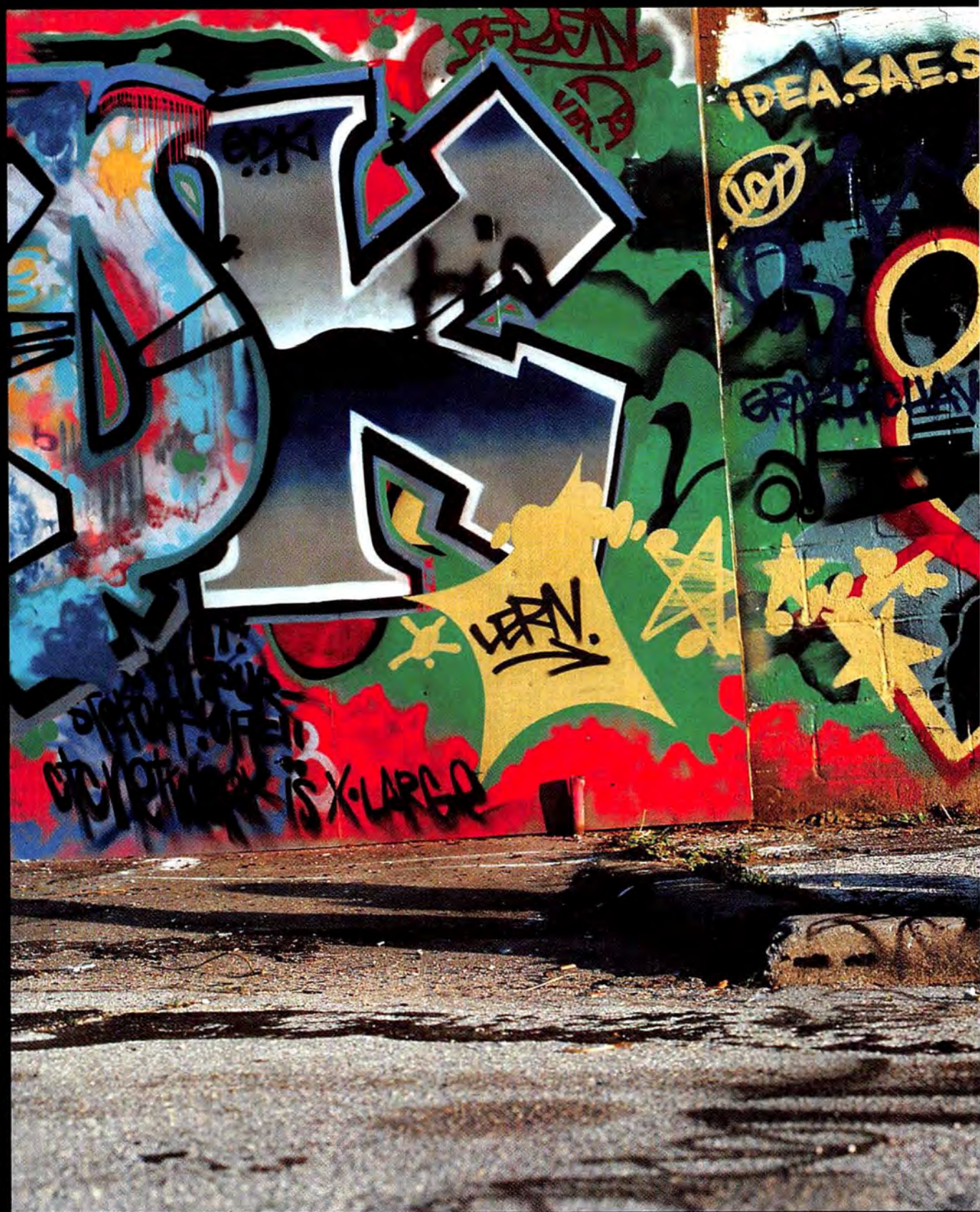


includes a blazingly fast video card with 16MB of VRAM and a powerful new 3-D-acceleration chip set from ATI. Gamers are going to be as delighted by this machine as professionals.

But Wait, There's More

Jobs's address to the masses would have been spectacular even if all we'd gotten were these new G3's. But that was only the beginning. We were also treated to new versions of Microsoft Internet Explorer and Outlook Express, both offering fea-

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Internet Explorer Gets Back to Basics

MICROSOFT RELEASES
VERSION 4.5 OF MAC
WEB BROWSER

by Stephen Beale

With their recent Web browser releases, Netscape and Microsoft have strived to incorporate the latest whizzy Web technologies—such as Cascading Style Sheets and DHTML—sometimes at the expense of greater functionality. Sure, you can watch a GIF file dance across the screen, but what good is it if your browser crashes or slows to a crawl?

Microsoft has taken a different tack with Internet Explorer 4.5 Macintosh Edition, the latest version of its Mac Web browser. You won't find any earth-shattering new capabilities, but the upgrade adds some clever features designed to make Web surfing easier.

Fewer Keystrokes

One of Microsoft's design goals was to reduce the number of mouse-clicks and keystrokes needed to perform common tasks. Like previous versions, Internet Explorer 4.5 features a Search Pane that lets you keep search results separate from the main



browser window. The upgrade adds a similar Page Holder feature that lets you temporarily store a page containing many links.

For example, a popular news site might include links to dozens of news stories on the Web. With Page Holder, you can store that page separately and then follow its links in the main window. You can then quickly return to the Page Holder without

clicking repeatedly on the Back button.

Two new features make it easier to fill out online forms. Form AutoFill lets you store personal information in a preferences file. When you encounter a form on a Web site, you can click a toolbar button to fill in the fields automatically. Form AutoComplete automatically fills in a form entry after you've entered the first few letters.

Internet Explorer 4.5 also includes several features to enhance printing from the Web. A new Print Preview function, similar to the one in Microsoft Office, lets you view a page before printing. You can turn images, backgrounds, and headers and footers on or off, and you can crop pages that include wide tables. The browser can scale the output to fit the paper,

continues on page 30

ONCE AGAIN, MACWORLD'S editors have selected the hottest new products to appear at Macworld Expo in San Francisco.

Adobe After Effects 4.0

Adobe Systems (408/536-6000, www.adobe.com) has revamped its video-postproduction software with sophisticated masking capabilities, real-time effects previews, a powerful particle generator, and other new features.

Amorphium

This \$149 3-D-graphics program from Play's Electric Image division (888/888-7529, www.amorphium.com) lets 3-D newcomers create animated models with little fuss.

Extensis PhotoGraphics

Extensis (503/274-2020, www.extensis.com) has taken the plug-in concept to new levels by offering a vector-based drawing program that runs from within Adobe Photoshop.

G3 Power Macs

The latest G3 systems from Apple Computer (408/996-1010, www.apple.com) sport a faster bus, FireWire and USB connections, and an iMac-inspired industrial design. Better yet, Apple has aggressively priced them, available in 300MHz, 350MHz, or 400MHz configurations.

Game Wizard for iMac

This 3-D-graphics accelerator from Micro Conversions (817/468-9922, www.microconversions.com) breaks the rules of iMac connectivity by using the computer's undocumented Mezzanine port. It's the only way for iMac users to access the game-playing performance of 3Dfx's Voodoo 2 chip.

Kai's Photo Soap 2

MetaCreations (805/566-6200, www.metacreations.com) has overhauled its \$50 image-editing package with a more intuitive interface and useful new features, including the ability to run Adobe Photoshop plug-ins.

LiveStage

This QuickTime scripting tool from Totally Hip Software (604/685-6525, www.totallyhip.com) lets you create interactive movies that include a wide range of media elements.

Microsoft Internet Explorer 4.5

Microsoft's (425/882-8080, www.microsoft.com) free Web browser—and Outlook Express 4.5, the company's free e-mail client—dispenses with fancy bells and whistles in favor of small but important productivity improvements.

Rage 128

This 128-bit graphics chip from ATI Technologies (905/882-2600, www.atitech.com) powers the company's new line of 2-D/3-D-graphics accelerator boards—as well as Apple's new Mac systems (see "ATI Launches Next-Generation Graphics Chip," *News*, February 1999).

Virtual Game Station

This \$49 program from Connectix (650/638-7380, www.connectix.com) performs a miracle: letting you run many Sony PlayStation games on a G3 Mac. It won't run every PlayStation game, and it sometimes drops frames, but it brings dozens of new game titles to the Mac.

systems

Flavorful iMacs Debut

APPLE INTRODUCES

FASTER CONSUMER MAC,

NOW IN FIVE COLORS

by Stephen Beale

Next time you buy an iMac, don't be surprised if the dealer asks what flavor you want. Apple Computer (408/996-1010, www.apple.com) has announced a new version of its consumer Mac that features a 266MHz G3 processor and a 6GB hard drive. But the most noticeable change is on the outside: you can now order your iMac in one of five "flavors": strawberry, blueberry, grape, tangerine, or lime. The new iMac sells for \$1,199, compared with \$1,299 for the original Bondi blue model, which featured a 233MHz G3 and a 4GB hard drive.

The iMac continues to blister the PC sales charts. Apple claims that it sold 800,000 iMacs between August 15—when the computer debuted—and December 31, 1998. The company says that 32 percent of iMac customers are first-time computer buyers, and another 13 percent are Wintel users.

Playing Games As Apple rolls out the new iMac, several vendors have announced products that enhance the machine's game-playing capabilities. Virtual Game Station, a \$49 software emulator from Connectix (650/571-5100, www.connectix.com), lets Mac users play games designed for Sony's popular PlayStation. Micro Conversions (817/468-9922, www.microconversions.com) has unveiled an iMac version of Game Wizard, a

3-D-graphics accelerator based on 3Dfx's Voodoo 2 chip. The board plugs into the original iMac's undocumented Mezzanine port; Apple says that using the port will void the iMac warranty, but Micro Conversions claims that it has tested the board in the iMac with no negative consequences.

Apple also announced that future versions of the Mac OS will include OpenGL, a set of 3-D-graphics routines licensed from Silicon Graphics. Game developers say that OpenGL will permit faster 3-D performance on the Mac, and will also make it easier for them to port games written for the PC.

Mac OS X Clients While targeting the iMac at consumers, Apple is also positioning the machines as clients for its new Mac OS X Server, which debuted at the recent 1999 Macworld Expo in San Francisco. The server, available for \$995 in a software-only version or for \$4,999 when bundled with a G3 Power Mac, incorporates a Mach microkernel, the BSD 4.4 version of Unix, an Apache Web server, WebObjects, and a feature called NetBoot that



Apple's new iMacs come in five flavors.

allows networked Macs to be booted and configured from the server.

In a demonstration at Macworld Expo, Apple interim CEO Steve Jobs booted a diskless iMac connected to a Mac OS X Server. Then he showed 50 iMacs running QuickTime movies from the same server.

graphics

New Plug-ins Add Hostlike Functions

DRAW OR CREATE 3-D
IMAGERY IN PHOTOSHOP

by Stephen Beale

Most Adobe Photoshop plug-ins are relatively simple effects filters or import-export modules that perform a few specialized tasks. But in their never-ending quest to extend Adobe's image-editing software, plug-in developers are trying a new approach: full-fledged graphics applications that run from within Photoshop. Extensis (503/274-2020, www.extensis.com) has introduced a vector drawing plug-in, while Zaxwerks (626/309-9102, www.zaxwerks.com) is offering a new 3-D modeling plug-in. Both sell for \$150.

Vectors in Photoshop Extensis PhotoGraphics 1.0 is essentially a vector drawing program that runs within Photoshop. Drawing tools include line, pen, ellipse, rectangle, polygon, and starburst. Objects, which consist of editable Bézier curves, can include transparent fills. You can also create multiple text blocks on a path with control over baseline shift, kerning, tracking, leading, color, alignment, and vertical and horizontal scaling. The plug-in offers character style sheets and super- and subscript functions.

Once you've created a vector graphic, you can render it in Photoshop as a bit-map with a selected level of antialiasing. However, the graphic remains editable, and you can open it in vector for-

mat even after you've flattened the Photoshop file. The software is scheduled to ship on January 25, 1999.

Extensis is also shipping IntelliHance Pro 4.0, an upgrade to its \$200 image-enhancement plug-in that now lets you view multiple variations of a photo. The new features are designed to challenge Vivid Details' Test Strip, a popular plug-in for color correction.

Deeper Images Zaxwerks' 3D Invigorator lets you create shaded 3-D models from within Photoshop. You load a vector graphic and then apply one of more than 100 shapes

to transform the graphic into a 3-D model. You can modify the model's geometry and add colors, surfaces, and lighting effects. Versions for Adobe Illustrator and Macromedia FreeHand are also available.

Zaxwerks is not the first vendor to offer a 3-D plug-in for Photoshop. The Three-D Filter from Andromeda Software (805/379-4109, www.andromeda.com) lets you map images to cones, spheres, cubes, and other 3-D objects. In November, Andromeda shipped Three-D Luxe, an enhanced \$99 version of the plug-in that offers new surface-modeling features.



A New Aura for Your Mac

YOU'VE GOT A SMART MACINTOSH, SO WHY NOT USE smart computer furniture? The \$5,500 Aura system from Poetic Technologies (888/763-8421, www.poetictech.com) is a self-contained workstation with its own shelving, lighting, and air-circulation system. The unit features electronic controls for cushion firmness and other ergonomic choices. You can store your preferred chair, footrest, and keyboard drawer settings on a personal memory chip; simply plug it in and the Aura adjusts itself. The unit, scheduled to ship in February 1999, takes up 34 square feet of floor space.—MACWORLD STAFF

Mac OS Update Apple (408/996-1010, www.apple.com) has posted a Mac OS 8.5 update that fixes bugs and adds new Sherlock plug-ins. **Mac OS 8.5.1**, available free from www.apple.com/macos/, remedies problems having to do with CD-ROM installation, AppleScript, and data corruption. Apple has also cut PowerBook prices by \$300 to \$600, depending on the model.

Monitor Mayhem Panasonic (201/348-7000, www.panasonic.com) has put the CRT on a diet. The 19-inch **PanaSync SL90** weighs 34.7 pounds and consumes about as much space as a 15-inch monitor. The \$679 display offers a maximum resolution of 1,600 by 1,280 pixels. Miro Displays (650/988-7270, www.mirodisplays.com), which acquired the Radius CRT line in September 1998, has unveiled the 15-inch **Radius S-1** (\$219), the 17-inch **Radius M-1** (\$499), the 19-inch **Radius L-1** (\$699), and the 21-inch **Radius Precision-View XL-1** (\$1,249). The S-1 provides 1,024-by-768-pixel resolution; the others offer resolutions of up to 1,600 by 1,200 pixels. Meanwhile, Optquest (909/869-9216, www.optquest.com) has entered the LCD-monitor fray with the 15.1-inch **L700** (\$979), which offers a maximum resolution of 1,024 by 768 pixels.

3-D DV for AE Tweak and tune digital video with **Boris AE 2.0**, the \$495 After Effects plug-in.

continues

Product WATCH

in from Artel Software (617/451-9900, www.artelsoft.com). The upgrade features 44 filters—21 of them new—including lighting, color, and particle effects.

Numbers into Charts Who wants to look at rows of numbers? **DeltaGraph 4.5**, \$295, from SPSS (312/651-3000, www.spss.com), transforms data from Microsoft Excel 98 and other applications into graphs. The upgrade features 80 chart types, Pantone color matching support, and Mac OS 8.5 compatibility.

Cool New Tools FWB (408/848-2409, www.fwb.com) has upgraded its disk-formatting software. **Hard Disk ToolKit 3.0** is Mac OS 8.5-compatible and supports Apple's HFS+ filing system. New features in the \$199 package include RAID Levels 0 and 1, support for password protection on Zip and Jaz cartridges, and the ability to create high-speed Photoshop scratch disks. The program also sports a new tab-based interface.

Bright Lights Portable projectors are brighter than ever. Epson's (310/782-0770, www.epson.com) \$9,999 **PowerLite 7500C** produces 800 ANSI lumens and weighs about 9 pounds. Mitsubishi's (714/220-2500, www.mitsubishi-display.com) \$11,995 **X200** weighs in at 20 pounds and provides a brightness of 1,200 ANSI lumens. Both projectors feature a native resolution of 1,024 by 768 pixels and use triple-LCD technology.—EDITED BY MICHAEL GOWAN

"INTERNET EXPLORER GETS BACK TO BASICS"

continued from page 27

and can also break a page around images and other objects rather than cutting them off.

Microsoft says it built the browser from the ground up to run on the Mac, and the program supports many Mac OS technologies. For example, the browser recognizes ColorSync profiles embedded in downloaded images, ensuring more-accurate color display. You can access the Sherlock search engine in Mac OS 8.5 directly from the Internet Explorer toolbar.

A New Outlook

Along with Internet Explorer 4.5, Microsoft has released an upgrade of Outlook Express, its free e-mail client. Outlook Express 4.5 now lets you preview e-mail message headers before you download them. A new AutoText Clean Up feature lets you rewrap paragraphs, convert text to upper- or lowercase, and remove or straighten quotation marks.

Outlook Express 4.5 also provides more-extensive AppleScript support than do previous versions. All functions are scriptable, and you can organize scripts into hierarchical menus. You can also link scripts to the program's mail-filtering function.

Along with the new software, Microsoft has launched a Mac-specific Web site called MacTopia (www.microsoft.com/mac/). In addition to information about Microsoft's Mac products, the Web site includes Mac-related news, software downloads, and a chat room.

Hostile Climate

Internet Explorer is the main bone of contention in the Justice Department's antitrust lawsuit against Microsoft,

which has revealed that Microsoft and Apple may not be the happy partners they have claimed to be recently. In widely publicized testimony, Apple software chief Avie Tevanian charged that in 1997 Microsoft threatened to cancel development of Microsoft Office for Macintosh if Apple did not make Internet Explorer the default browser for the Mac. Shortly thereafter, at the 1997 Macworld Expo in Boston, Apple announced its landmark deal with Microsoft, which included the controversial decision to embrace Internet Explorer. However, at the recent 1999 Macworld Expo in San Francisco, Apple and Microsoft reaffirmed that they are working closely together despite disagreements in some areas, such as multimedia. Apple has alleged that Microsoft attempted to kill QuickTime, Apple's popular multimedia system software.

input devices

USB Graphics Tablets Debut

CALCOMP, WACOM
ANNOUNCE LOW-COST
TABLETS FOR IMAC

by Michael Gowan

CalComp (602/948-6540, www.calcomp.com) and Wacom Technology (360/896-9833, www.wacom.com) are hoping the pen proves mightier than the mouse—the iMac mouse, that is. Both companies have released USB versions of their entry-level graphics tablets

with pressure-sensitive pens. Meanwhile, Macsense Connectivity (408/844-0320, www.macsensetech.com) has introduced the iCatch, a \$10 attachment to make the iMac's notoriously unergonomic mouse easier to handle.

Translucent Tablets

CalComp's \$129 USB Creation Station features a pressure-sensitive pen, a cordless



mouse, and a translucent purple 4-by-5-inch tablet. Bundled software includes Totally Hip's Web Painter and MetaCreations' Art Dabbler. The vendor offers a one-year "no questions asked" warranty. An optional tethering accessory for mouse and pen costs \$10. CalComp plans to ship the tablet in early 1999.

Wacom's \$99 USB Pen Partner features a pressure-sensitive pen and 4-by-5-inch translucent Bondi blue tablet. It is bundled with Art Dabbler and is scheduled to ship in the first quarter of 1999.

In addition to working with the iMac, both tablets work with Apple's new USB-equipped G3 desktop Macs. Don't be surprised if the manufacturers release USB versions of their larger tablets, which target the same design pros who form a primary market for desktop Macs.

If you're just looking for a better iMac mouse, consider the iCatch. The device snaps onto the round mouse, making it easier to handle while retaining the distinctive iMac style. Choose from translucent magenta, gold, or blue.



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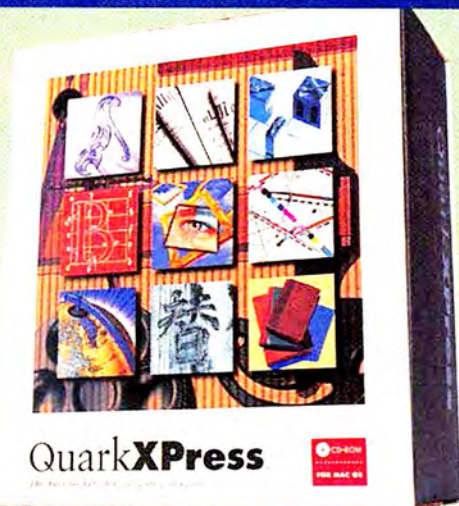
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Steven also relies on QuarkXPress to produce the graphics that are contained within each book. "We can create illustrations and figures using the Bézier illustration tools. We don't have to jump to other programs, so it saves production time."

"I already take version 4.0 for granted because the features have come very naturally. I didn't have to relearn the entire program, but it now has the features that I wanted — like character style sheets to control parts of a sentence. QuarkXPress 4.0 has saved us a tremendous amount of time."

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Reviews

Canvas 6

UNIQUE TRANSPARENCY

FUNCTIONS HIGHLIGHT

INTEGRATED GRAPHICS TOOL

EVERY GRAPHICS POWER USER knows that it takes many tools to get the job done: an illustration program for line drawings; an image editor for painterly, touch-up effects; and a page-layout or HTML authoring package to tie it all together. Deneba Software takes a different approach and offers Canvas as an argument for a single program to serve all the needs of corporate graphics users.

Deneba Canvas 6, the software's first major upgrade in three years, adds many features that will appeal to art and design pros, including powerful transparency functions and improved drafting tools. However, the program is still best suited for intermediate users seeking an all-in-one graphics package.

Transparent Objects

Adobe Illustrator can import raster images, and Adobe Photoshop can treat bitmapped layers as objects, but no program comes close to Canvas's ability to combine vector and bitmapped graphics. In Canvas, a bitmapped image is simply another object, alongside text or vector shapes. If you import a layered Photoshop file, each layer comes into Canvas as a separate paint object.

This object-oriented approach provides the framework for the most excit-



ing new feature in Canvas 6, SpriteLayers. This technology lets you layer vector, bitmapped, and text objects with full control over transparency, masking, and transfer modes. No other program provides this level of transparency control.

Canvas provides several different ways to apply transparency. The simplest is to select an object and adjust its opacity using a slider. If you're working with a vector object, you can change the fill opacity while preserving the stroke.

You can also apply directional, radial, rectangular, or elliptical trans-

parency fades to any object. You can define objects as vector masks and attach them to other objects, with the masking object's color values determining the level of transparency in the underlying object. Build a gradient or paint object with varying degrees of gray, then attach it to another object, and you've got a complicated transparency map that doesn't require extra channels or clipping paths.

The program's most impressive transparency feature is the Channel Mask, which lets you apply opacity vari-

REAL PRODUCTS
REAL RATINGS

Reviews you can trust: Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

OUTSTANDING: ★★★★★

VERY GOOD: ★★★★

GOOD: ★★★

FLAWED: ★★

UNACCEPTABLE: ★

ations using any of the program's brushes. You simply paint the areas you want to make transparent. What's most amazing is that the feature works with bitmapped and vector objects. For example, you can place a photo of a house over a vector drawing of the interior, and then paint transparency onto the photo layer to create a combination photo and illustration cutaway.

Because transparency is implemented as a mask on top of an object, you can edit objects without affecting their masks. You can also apply transparency to groups of objects. However, if you want to edit the individual objects, you must ungroup them, which causes Canvas to remove the transparency channel for that group.

Barfly

Canvas 6 sports some interface improvements, although new users should still expect a bit of a learning curve.

You can now customize the program's tool bar, adding buttons or keyboard shortcuts for any feature. The program lacks scripting facilities, but the customization in version 6 helps streamline repetitive tasks.

Beneath the tool bar is a new Docking Bar that provides one-click access to any of the program's numerous palettes. Drag a palette to the Docking Bar, and its name appears there as a simple tab. This great feature compensates for the program's palette glut. However, rather than listing its palettes in a single menu, Canvas spreads them throughout the menu system, making them difficult to find.

Canvas 6 also offers context-sensitive menus—accessible by control-clicking on an item—and a cool new ink-extraction feature: drag any object to the Ink palette, and the program automatically adds its stroke and fill colors to the swatch.

Like its predecessor, the upgrade employs a different interface depending on what type of document—page layout, illustration, or presentation—you want to produce. For example, if you create a page layout, you get an interface that provides columns, multiple pages, and master pages; opening a new presentation document brings up a slide-making interface. However, all of these interfaces use the same basic tool set.

Unfortunately, some interface troubles remain from the previous version. For example, to modify a vector shape, you must double-click on it to invoke the vec-

tor-editing mode, which can only display a wireframe of the object.

Canvas 6's object-oriented approach also makes it difficult to perform document-wide adjustments. For example, you can't modify shadow, highlight, or mid-tone levels on an entire document—or even simultaneously on multiple bitmapped objects. If you need to lighten or



Cutaway View Canvas 6's Channel Mask feature lets you create sophisticated transparency effects.

saturate an entire image, you have to do it one object at a time. We'd like to see something akin to Photoshop's Adjustment Layers, which make it easy to experiment with different document-wide Levels and Curves adjustments.

The Tools

Canvas 6 implements a new virtual-memory scheme that greatly improves painting performance. Brushes and other painting tools are much peppier and smoother than in previous versions. In version 5, editing a large bitmapped image was unreasonably slow, but the upgrade is adept at handling even large, high-resolution CMYK images.

Version 6 also adds new tools for creating three-point ellipses and arcs, along with a Knife tool for slicing objects. Several new features will appeal to technical illustrators: the CAD-like Fillet and Trim commands for making corners; the ability to enter mathematical equations in measurement fields; and a Transform palette that lets you scale, rotate, or skew an object using numeric values.

Like its competitors, Canvas 6 provides a full set of layer controls, including a new Guides layer for creating snap-to guides in front of or behind other layers. However, the layer implementation could use some work. To move an object between layers, you must use a Send To

Layers menu command. We'd prefer a control in the Layers palette.

And the Rest . . .

Deneba has spruced up other Canvas components as well. The Page Layout facility now supports multiple master pages and less flashy options such as Auto Correct spelling checks. However, despite the program's impressive layout features, most publishing pros will want to stick with a dedicated program, such as QuarkXPress, to ensure complete support from local service bureaus.

Canvas 6 also features a built-in version of Colada, Deneba's Web publishing facility. Through Colada, you can easily create Java-based rollover buttons and animations. However, we found the resulting HTML somewhat flaky, with buttons occasionally appearing in the wrong

places. Most Web designers are better off sticking with a dedicated HTML authoring package.

We found other minor instabilities, including the Brush palette's tendency to show up empty and occasional incompatibilities with certain PostScript Type 1 fonts. However, we experienced no crashes, and Canvas 6's performance improvements impressed us.

Macworld's Buying Advice

If you're a current Canvas user, you should buy this upgrade. The new transparency features and bitmap performance improvements alone are worth the price. Illustrator, Photoshop, and Macromedia FreeHand still serve high-end graphics pros better, but Canvas 6's strong integration of text, painting, and drawing tools makes it a good one-stop graphics application.—BEN LONG

RATING: ★★★★★ **PROS:** Strong transparency features; good combination of vector- and bitmap-editing tools; multiple document-type interfaces make for good integration. **CONS:** Palette-heavy interface; no document-wide image adjustments; Colada Web features a bit buggy. **COMPANY:** Deneba Software (305/596-5644, www.deneba.com). **COMPANY'S ESTIMATED PRICE:** \$350.

Corel Photo-Paint 8

BUGS, SLOW PERFORMANCE MAR PHOTOSHOP RIVAL

ADOBE PHOTOSHOP RULES THE world of 2-D imaging software with an iron fist. But that hasn't kept Corel from launching a direct challenge to Adobe's image-editing powerhouse. Corel Photo-Paint is an interesting contender, offering much of Photoshop's functionality and adding some unique features that will appeal to artists, such as the ability to handle animation files directly. However, the program suffers from instability and slug-

Photo-Paint also offers strong layering functions. As in Photoshop, you can use transfer modes to determine how layers interact with each other, but you also get some modes not available in the Adobe package, such as logical OR, AND, and XOR operators. In addition, you can apply Add and Subtract transfer modes to layers; these are available as part of Photoshop's Calculations function, but not in that program's Layer Options dialog box.

Some of these transfer modes are more useful than others, but all are welcome. For example, the logical operators, which will be familiar to Macromedia Director users, are great for certain types of special effects.

Photo-Paint's Color Mask command improves on Photoshop's similar Color Range function, which allows you to create masks by selecting colors from the image. Unlike the Photoshop tool, Color Mask lets you select multiple colors simultaneously, with a visual display of each selected color range.

The list of downright cool functions in Photo-Paint is long: built-in brush symmetries that let you paint in multiple places with a single stroke, the ability to copy and paste from closed documents (unique to Photo-Paint among Macintosh graphics applications), and an HSB color mode (long missing from Photoshop). Photo-Paint also offers a diversified set of brushes reminiscent of those in MetaCreations Painter.

Some Photo-Paint features are not typically associated with image-editing software, such as the ability to create multiframe animations directly within the program. This is especially useful for Web designers creating animated GIF files.

Even in documentation, Photo-Paint has the edge: The package includes an excellent third-party tome that makes the Photoshop manual seem insubstantial by comparison. You also get a wealth of bundled software, including Xaos Tools' Paint Alchemy and Terrazzo special-effects

plug-ins, Diamondsoft's Font Reserve 1.02 for font management, and Cumulus Desktop 4.0 for media management.

Ready for Prime Time?

In some cases, major additions to Photoshop 5.0, such as the History palette, are not implemented as well in Photo-Paint as they are in the Adobe package. For example, Photo-Paint's Undo List dialog box is modal, in contrast to the preferable nonmodality of Photoshop's History palette. Photo-Paint's Local Undo tool, which lets you selectively restore an image to its previous state, is no match for Photoshop's History brush, which can restore the image to any state in the History palette.

However, Photo-Paint's biggest failings are in performance and reliability. Painting in the program is sluggish regardless of brush size, and a small JPEG file that took less than five seconds to open in Photoshop 5.0 took a whopping minute to open in Photo-Paint (thankfully, file saves were more on par with those in Photoshop). Slow performance also marred RGB-to-gray-scale mode conversion, as well as Photo-Paint's unique ability to preview a file, make a selection, and open only that portion of the image.

On a more disturbing note, Photo-Paint crashed frequently on a Macintosh with plenty of RAM and scratch disk space. Many crashes were not consistently reproducible, making it difficult to create workarounds. This raises serious concerns about the program's usefulness in a professional production environment.

Macworld's Buying Advice

There is much to like about Corel Photo-Paint. It's the first program we've seen in years that could potentially go head-to-head with Photoshop (especially since the street price is almost half that of the Adobe package). However, the bugs and slow performance in this first Macintosh version give us reason to hold out for an update. When that happens, Adobe should take notice.—DAVID BIEDNY




A New Look Photo-Paint features a highly customizable interface.

gish performance, both of which are serious problems for graphics professionals.

First Impressions

When you launch Photo-Paint, you immediately notice how different it looks from Photoshop. A Microsoft Office-style toolbar along the top of the screen provides access to key functions, and a context-sensitive Property Bar lets you choose common settings for the selected tool. One of Photo-Paint's strongest features is the ability to customize the screen layout and menus. You can even load a configuration that rearranges menu items to mimic Photoshop's layout.

In many respects, Photo-Paint surpasses Photoshop's capabilities. For starters, Photo-Paint can handle a greater number of image file formats. These include native MetaCreations Painter files and a variety of vector formats, such as AutoCAD. As you would expect, the latter convert into bitmapped images when imported.

RATING:  **PROS:** Strong image-editing features; good price. **CONS:** Slow performance; buggy. **COMPANY:** Corel (613/728-8200, www.corel.com). **COMPANY'S ESTIMATED PRICE:** \$349 (also available as part of CorelDraw).



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- Microsoft® Windows NT® 4.0
- 3-year limited hardware warranty with 1-year onsite service

Silicon Graphics 320, Modeling Station, \$6,343

- Single Intel® Pentium® II processor 400MHz
- 256MB ECC SDRAM
- 9GB Ultra2 SCSI drive
- 100MB removable storage drive
- 21" (19.8" viewable) monitor with Trinitron™ technology

Silicon Graphics 320, Publishing Station, \$8,283

- Dual Intel® Pentium® II processors 400MHz
- 256MB ECC SDRAM
- 14.4GB Ultra ATA drive
- 100MB removable storage drive, Ultra2 SCSI controller
- Polk® audio stereo speakers
- Silicon Graphics 1600SW™ 17.3" SuperWide™ digital flat panel monitor with ColorLock™ technology*



Base system includes:

- Integrated Visual Computing (IVC) architecture with Cobalt™ graphics chipset
- Single (quad capable) Intel® Pentium® II Xeon™ processor 450MHz with 512K L2 cache
- 128MB ECC SDRAM (expandable to 2GB)
- 9GB Ultra2 SCSI drive (expandable to 54GB of storage)
- 6 available PCI slots on two 64-bit PCI buses
- 1.44MB floppy drive, 32X max. CD-ROM
- Integrated 10/100 Fast Ethernet
- IEEE-1394, parallel, serial, USB, video and audio ports
- Microsoft® Windows NT® 4.0
- 3-year limited hardware warranty with 1-year onsite service

Silicon Graphics 540, Modeling Station, \$9,090

- Single Intel® Pentium® II Xeon™ processor 450MHz with 512K L2 cache
- 256MB ECC SDRAM
- 9GB Ultra2 SCSI drive
- Silicon Graphics 1600SW 17.3" SuperWide digital flat panel monitor

Silicon Graphics 540, A/V Station, \$11,657

- Single Intel® Pentium® II Xeon™ processor 450MHz with 512K L2 cache
- 128MB ECC SDRAM
- Three 9GB Ultra2 SCSI high performance (10,000rpm) drives
- Dual stream M-JPEG compression/decompression engine
- 21" (19.8" viewable) monitor with Trinitron technology



Silicon Graphics 1600SW Flat Panel Monitor, \$2,495**

- 17.3" 1600x1024 TFT SuperWide digital flat panel monitor with ColorLock technology



SiliconGraphics

To get more information, find a local reseller, or to order, call **1 888 SGI-4450** or visit us at **www.sgi.com/go/visual**

*Requires additional software under Windows 4.0. **Pre-installed software, GLA and gamma sensor device for color calibration. For information on the 1999 availability of the Silicon Graphics 540 workstation, please call 1-888-SGI-4450. ***Cost of monitor when purchased with system. Prices quoted are for U.S. only.

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Virus-Protection Software

NORTON ANTIVIRUS 5.0 AND VIREX 5.9 GET BIGGER

THE CONTINUING WAR BETWEEN virus writers and developers of antiviral software hasn't left Macintosh users unscathed. Although we've been spared the continuous onslaught of viral proliferation that plagues the Windows world, the past year has seen several new Mac-specific software miscreants. One defense is Symantec's Norton AntiVirus 5.0.3, a major upgrade to the veteran package once known as Symantec AntiVirus for Mac. Another is Network Associates' Virex 5.9, which is outwardly unchanged from its immediate predecessors and harbors only internal differences. Both products offer a combination of protection from new viruses and the ability to scan your existing files for lurkers.

Similar, Yet Different

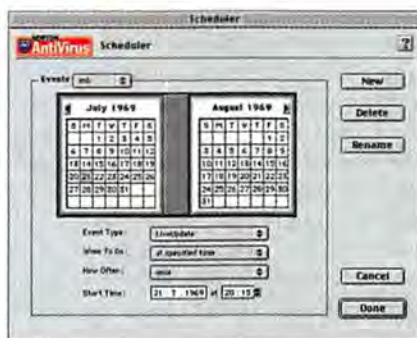
Both Norton AntiVirus (NAV) 5.0 and Virex 5.9 have two major components: an extension that protects your Mac in the background by stopping any viral-infection attempts and an application that lets you configure various functions, install updated virus definitions, and scan the files on your disks.

The new versions of both NAV and Virex purportedly have additional protection capabilities, such as scanning for and protecting against future viruses. It's impossible to test these claims without writing a new virus of our own, but we do know that this feature increases both packages' RAM requirements. Where the protection extensions of old were happy to take up a few hundred kilobytes at most, the current generation has gotten greedy: with virtual memory enabled, NAV uses 644K at start-up, and Virex latches on to 867K. If you turn off virtual memory, NAV grabs 832K of RAM at start-up (Virex's demands are unchanged).

Both programs can scan files stored in several popular compression formats, but their overall scanning speeds differ. When they scan a disk for the first time, they build a database of tracking information so that when they next scan the disk, files that haven't changed aren't rescanned. NAV took about 7 minutes to scan our test disk; Virex scanned the same disk in

just over 6 minutes. NAV was considerably faster when rescanning, taking only 4 seconds; Virex took 20 seconds.

Both Virex and NAV have scheduling features that let you set scans for certain times. NAV lets you schedule multiple events, via a clear user interface (see "Scheduling Your Protection"): you can specify which folders or disks to scan, as well as when and how often to scan.



Scheduling Your Protection Norton AntiVirus 5.0 makes it easy to schedule scans and updates.

Virex's scheduler interface is anemic in comparison; it allows you to specify only a single scanning event and forces you to either scan all local volumes or explicitly specify which folders and disks to scan.

Virex's protection features are unobtrusive; the program alerts you only if it detects a virus. NAV, on the other hand, alerts you whenever it observes suspicious activity. This overzealousness results in frequent interruptions, despite NAV's ability to "learn" about and not report the same infractions repeatedly.

Staying Current

Staying up-to-date in the viral arms race requires diligent checking for updates. Both Symantec and Network Associates post monthly virus-definition updates that allow the packages to learn about new viruses. To stay current, you have to download the updates from the company's Web site and install them.

NAV's new LiveUpdate feature is intended to remove the tedium of checking for, downloading, and installing such updates. After communicating with a server at Symantec that stores the latest

virus definitions, NAV checks to see whether newer definitions are available and then downloads and installs them.

This is an excellent idea in theory, but LiveUpdate is seriously flawed. Although you can use your modem to make a toll call to Symantec's server, most people will use their Internet connection, because it's both cheaper and more convenient. However, once NAV has connected to the server and begins downloading over the Internet, it uses the archaic—and staggeringly inefficient—Xmodem protocol to transfer the update. Also, despite NAV's ability to decompress files, the updates are transmitted uncompressed, further bloating the download time.

In tests with a 33.6-Kbps modem, NAV took 22 minutes to download an update—roughly 6 Kbps. In contrast, downloading Symantec's stand-alone updater via FTP took about half the time, even though the updater was twice the size of the "live" update. LiveUpdate may free you from manually performing multiple update steps, but it will cost you in terms of time and online connect fees.

Macworld's Buying Advice

Virex 5.9 is the less obtrusive of the two antiviral packages, and you're unlikely to know it's doing its protective duty until it detects a problem. However, its user interface needs a feature overhaul, its RAM requirements are hefty, and it lacks an automated update feature. Using Norton AntiVirus 5.0.3, despite its problematic LiveUpdate feature and overprotective behavior, is the best way to protect your Mac from invasion.—STEPHAN SOMOGYI

Norton AntiVirus 5.0.3

RATING: ★★★½ **PROS:** Straightforward interface; fast rescanning. **CONS:** Flawed LiveUpdate feature; invasive default protection settings; large RAM requirement (huge without virtual memory). **COMPANY:** Symantec (541/334-6054, www.symantec.com). **LIST PRICE:** \$89.

Virex 5.9

RATING: ★★★ **PROS:** Faster first-time scanning than NAV; less-intrusive protection. **CONS:** Large RAM footprint; no automated virus-definition update. **COMPANY:** Network Associates (408/988-3832, www.nai.com). **LIST PRICE:** \$69.95.

Buz Multimedia Producer

INEXPENSIVE, FEATURE-PACKED VIDEO-CAPTURE SYSTEM

WHY WOULD A COMPANY that specializes in removable-storage devices come out with a video-capture card? Maybe for the same reason Nabisco makes fat-filled Oreos as well as fat-free SnackWell's: because buying one fuels your need for the other.

Iomega's Buz Multimedia Producer lets you capture and output full-screen video on a Power Mac G3 at up to 30 frames per second (fps). At \$299, it packs a lot of buzz for the buck. But like any other video-editing system, it's a complex beast that needs tweaking to deliver the best results, and its sketchy documentation does little to help.

The Hardware

On the hardware side, the Buz is a PCI card containing both video-capture circuitry and an Ultra SCSI interface that gives your Mac an additional seven SCSI addresses. This dual personality is behind the Buz's need for a genuine (not upgraded) Power Mac G3: earlier Power

supports internal as well as external devices. A 50-pin connector on the top of the card can accommodate an internal device's ribbon connector, and a 50-pin connector on the back handles external devices. You'll probably need an adapter cable for the latter, because the Buz card uses a tiny, high-density connector.

The Buz is also available for Windows 95 and 98, and the capture card is identical on both platforms. Download the Buz drivers from Iomega's Web site if you want to use the card in a Windows computer. You'll have to supply your own video-capture and -editing software, however, and you'll probably have to endure the hours of tweaking and troubleshooting that often accompany video editing under Windows: as I write this, I still haven't quite gotten the card to work properly in my Windows 98 machine. (You'll find an excellent resource for Buz troubleshooting at www.trix.com/buz/.)

The Software

The Buz comes with a generous software bundle that includes Apple's \$29 QuickTime 3 Pro and Adobe's Premiere LE 4.2. (You can upgrade to the full Premiere 5.1 package for \$199.) Iomega says these extras are the reason why the Mac version costs \$100 more than its Windows counterpart, which doesn't include QuickTime 3 Pro and whose video-editing package is far less capable than Premiere LE.

One of the bundled utilities, RecordIt, lets you record sound clips and tracks from audio CDs and then play the tracks in whatever order you like. Using MPEG Layer II compression, RecordIt offers excellent sound quality and yields reasonably small files. You can't play RecordIt tracks on other computers, however, unless they have the RecordIt Decoder system extension. The utility might be more useful if it used the MPEG Layer III (MP3) audio format.

The Experience

Despite its many hardware and software components, the Buz is easy to install. Its CD-ROM contains a lavishly produced installer and interactive guide that uses QuickTime movies to pass along tips on

lighting, camera positioning, and editing. But the interactive guide says next to nothing about digitizing video with the Buz, and the skimpy manual isn't much better. Iomega gently guides beginners into the middle of a freeway—and then abandons them there.

Once you get up to speed, though, you find a remarkably capable video-capture system. The Buz uses Zoran's Motion JPEG compression and digitizing chips to support capture sizes of up to 720 by 480 pixels and rates of up to 30 frames and 60 fields per second. In English: you can use the Buz to capture and output full-screen, full-motion video.

One drawback is that, like DV camcorders and many professional video products, the Buz uses nonsquare pixels. That can lead to complications if your projects contain source material, such as still images or already captured video, that was created elsewhere. The Buz's documentation says nothing about this. (For insights on dealing with nonsquare pixels, see "Set Your Video on FireWire," *Create*, October 1998.)

The quality of Buz video captures is excellent, particularly at the system's lowest compression setting (3:1). But you'll need a fast SCSI hard drive to capture full-screen, full-motion video at low settings. My G3's internal IDE hard drive was able to keep up with 352-by-240-pixel, 30-fps captures but dropped frames at full-screen settings.

The Buz didn't fare as well when printing to video; the contrast was too high for my taste, and you can't adjust it. Still, the Buz's output is adequate for home videos and other noncritical work.

Macworld's Buying Advice

The Buz is a bargain, outperforming cards that cost twice as much and offering unique features such as a second SCSI bus and that terrific breakout box. The Buz may not provide the "broadcast-quality" video its box claims, but it's more than adequate if you're producing video destined for CD-ROMs, the Web, or presentations. —JIM HEID

RATING: ★★★½ **PROS:** Great value; excellent capture quality; convenient breakout box. **CONS:** Mediocre video-output quality; poor documentation. **COMPANY:** Iomega (801/778-1000, www.iomega.com). **LIST PRICE:** \$299.



Macs aren't fully compatible with the PCI 2.1 specification, and the Buz card uses PCI 2.1 features to provide both video capture and SCSI on the same card.

The Buz also includes a convenience missing from many costlier cards: a breakout box that obviates groping behind the Mac to connect audio and video devices. The box's cable connects to the Buz card and to your Macintosh's audio-input and -output jacks. The box itself contains RCA audio-input and -output jacks and S-Video as well as composite-video input and output jacks.

The Buz card's Ultra SCSI interface

Web Proxy Servers

CACHING SOFTWARE SPEEDS UP THE WEB

BANDWIDTH ON THE INTERNET IS a precious commodity, one that individuals as well as groups accessing the Web want to use as efficiently as possible. Two new products help by caching Web objects you've already downloaded. Connectix's Surf Express Deluxe 1.5 and Maxum Development's WebDoubler 1.0 have different audiences—Surf Express is for single users, whereas WebDoubler targets small groups of users—but both do a good job of speeding repeat accesses of Web pages.

Cache the Wave

Surf Express Deluxe comes on a CD-ROM that contains versions for Macs and Windows machines, and installation is quick and easy. When you reboot, the Surf Express extension intercepts Web requests from your browser and tries to satisfy them from the disk cache.

You don't need to configure Surf Express (although you can launch the Surf Express application to monitor the program's performance); you simply launch your Web browser, and Surf Express replaces the browser's existing caching mechanism with one that caches more data and retrieves it more quickly.

You install WebDoubler (from a single floppy) on a Mac you've designated as a proxy server to other users on your network. You then configure the browsers of users whose Web requests you want to cache, so that they use the WebDoubler Mac as their proxy. Although caching is WebDoubler's forte, the program is geared for other tasks as well; its plug-in-module architecture makes it readily extensible. In addition to HTTP-caching plug-ins, WebDoubler includes plug-ins for cache control, content filtering, and user authentication. And you can administer the program from any Web browser, making remote administration simple.

Gnarly Features

Surf Express lets you configure several important performance parameters. For example, you can specify the size of the largest file to cache, expiration times for DNS information, and a list of URLs



Surf Express Statistics Surf Express Deluxe graphs performance gains as you surf, showing you what percentage of your Web requests comes from the cache.

that should always be cached or never be cached—for example, sites that change frequently, such as stock-reporting services. (WebDoubler lacks this fine control, although you can set the program's "aggressiveness" level—how likely it is to cache a page that may change frequently—and it lets you distribute the cache over multiple hard disks for better performance.) Surf Express gives you a graphical display of performance, showing the percentage of your computer's Web requests it's retrieving from the cache (see "Surf Express Statistics"). You can also search the cache for text strings.

Surf Express includes a utility called SuperSonic Search that lets you invoke five popular search engines simultaneously and obtain a single report consolidating the results from all of them. But although SuperSonic Search is fast, it limits you to five predetermined search engines. This would have been a breakthrough a year ago, but Apple's new multi-index search utility, Sherlock, far surpasses SuperSonic Search in features and ease of use.

Whereas Surf Express boosts Internet performance for individual users, WebDoubler does that and also helps you administer a Web-security policy for an entire network; you can establish a database of users and privileges to provide customized caching and access controls. And WebDoubler uses the Platform for Internet Content Selection (PICS) to

block end users from seeing inappropriate material. However, PICS filters access only to sites that have a previously determined rating or that contain a specific keyword, such as *sex* or *xxx*. This scheme isn't nearly as reliable as using a professionally reviewed and updated list of prohibited sites.

During testing, both products did a good job of caching pages and bringing them up quickly on subsequent accesses. The speedup can be truly remarkable if you're running the cache software on a fast CPU—20 to 40 times as fast over a modem as downloading the page from the Web. Accessing noncached pages tended to be slightly but noticeably slower with WebDoubler than with Surf Express, but because the former caches data from multiple users, the likelihood of

a cached hit is higher than with the single-user Surf Express. Moreover, enlarging the size of Surf Express's cache beyond a certain point actually slowed overall throughput, whereas WebDoubler wanted as large a cache as possible.

Macworld's Buying Advice

If you simply want to improve Web-surfing performance for a small group of users, consider buying multiple copies of the capable, inexpensive Surf Express Deluxe. For larger groups, or if you need to add a layer of access controls, get WebDoubler.—MEL BECKMAN

Surf Express Deluxe 1.5

RATING: ★★★★★ **PROS:** Excellent caching performance; graphical performance display; cache search; flexible configuration. **CONS:** No content filtering; performance drags as cache grows.

COMPANY: Connectix (650/571-5100, www.connectix.com). **LIST PRICE:** \$44.95.

WebDoubler 1.0

RATING: ★★★★★ **PROS:** Excellent caching performance; Web administration; individual user profiles; plug-in architecture. **CONS:** Expensive; slows noncached access; PICS-only content filtering. **COMPANY:** Maxum Development (630/830-1113, www.maxum.com). **LIST PRICE:** \$895.

Tax-Preparation Software

WEB SITE TAKES ON MACINTAX DELUXE, KIPLINGER TAXCUT

EVERYTHING SEEMS TO BE FEELING the Web's influence, and this year's crop of tax-preparation software is no exception. Intuit's MacInTax Deluxe '98 and Block Financial's Kiplinger TaxCut 1998 not only sport new Web-influenced features, such as hyperlinks and FAQs, but also link to Web databases of tax information and let you file your return electronically. MacInTax's new navigation features, a streamlined interface, and improved tax guidance make it the clear winner, and TaxCut is a close second.



Tax Advice at Your Fingertips MacInTax Deluxe '98 puts everything within easy reach. The interview is at the top, the tax form at the bottom, and the navigation bar on the left.

This year, you can even bypass CD-ROMs altogether and do your taxes on a Web site. Universal Tax Systems' SecureTax.com is software that you access through your browser to prepare your tax return. Unfortunately, SecureTax.com neglects to take advantage of the Web's potential, and it's also hampered by the limitations of the Web. Worse, it doesn't offer the wealth of tax help that makes MacInTax and TaxCut so invaluable.

Just Answer the Question

No matter which program you choose, you either enter tax information directly into federal or state forms or simply let the software interview you and fill out the forms based on your answers. MacInTax and TaxCut are much better interviewers than SecureTax.com, which doesn't even ask if you're self-employed; you have to

go to the on-screen Schedule C form and fill in the information. And MacInTax and TaxCut start the interview by asking if you want to import information from last year's return. (You can also import information from Intuit's Quicken and other business programs.) SecureTax.com does not offer that option.

Whereas the interviews in MacInTax and TaxCut actually help you make decisions, SecureTax.com's interview simply collects data. For instance, MacInTax and TaxCut each use your answers to determine whether you can claim a particular person as a dependent and get this year's new child tax credit; SecureTax.com simply asks you to list your dependents.

Getting Around

Help with the tax code is what makes tax software more than just a calculator. Both MacInTax and TaxCut repeat the same information in various ways, just in case it didn't sink in the first time. Both also offer tips, IRS instructions, FAQs, and QuickTime movies.

MacInTax distinguishes itself by putting specific tax help exactly where you need it. For instance, the program puts relevant FAQs on almost every page—click on a question, and the answer appears. MacInTax also integrates its videos into the interview, whereas TaxCut lists them in the help window. And MacInTax hyperlinks every tax term on every page to a definition; TaxCut has some hyperlinks, but not nearly as many. Ironically, SecureTax.com has no hyperlinked terms—you have to click on a help link and search for a term.

In last year's versions of both MacInTax and TaxCut, you had to click on a topic and then click through the screens until you found the page you wanted. You can now get to any MacInTax interview page with a single click. (TaxCut still takes you to the beginning of a section, and you have to click until you find the page you want.) And both MacInTax and TaxCut have improved the way they display the

navigation window: in TaxCut you click on a button to bring up the navigation window when you need it, and MacInTax now positions its overview window at the left and shows only half of it, to conserve screen space; when you pass your cursor over the window, it's displayed in its entirety.

You'll find no such niceties in SecureTax.com. Besides making navigation a chore, it's slow, it won't work if you've disabled cookies in your Web browser, and it's prone to displaying erroneous error messages.

Macworld's Buying Advice

Once again, MacInTax Deluxe is the clear choice for tax-preparation software, offering more interface, help, and navigation improvements than Kiplinger TaxCut. MacInTax will also appeal to users who don't live in one of the ten states for which TaxCut has forms.

SecureTax.com, although it's less expensive (you pay only when you print your return or file it electronically), just isn't in the same league as MacInTax and TaxCut. There are no advantages to having your private tax information stored on someone else's Web server—and, in this case, plenty of drawbacks.—JOHN RIZZO

Kiplinger TaxCut 1998

RATING: ★★★ **PROS:** Straightforward interview process; good, plentiful tax advice. **CONS:** State-return forms for only ten states; navigation not as easy as in MacInTax. **COMPANY:** Block Financial (617/491-1800, www.taxcut.com). **LIST PRICE:** \$39.95 (electronic filing free).

MacInTax Deluxe '98

RATING: ★★★★½ **PROS:** Excellent navigational aids; extensive hyperlinks; easy to use. **CONS:** None significant. **COMPANY:** Intuit Software (520/901-3110, www.macintax.com). **LIST PRICE:** \$49.95 (electronic filing free).

SecureTax.com

RATING: ★★½ **PROS:** Inexpensive. **CONS:** Slow; incomplete interview process; weak help function; tax data isn't stored locally. **COMPANY:** Universal Tax Systems (706/232-7757, www.securetax.com). **LIST PRICE:** Free for entering data; \$14.95 for printing or filing electronically.

G3 Upgrades for PowerBooks

CARDS GIVE NEW LIFE TO POWERBOOK 1400 AND 2400

APPL'S POWERBOOK 1400 AND 2400 were popular portables but lack the horsepower of current G3 PowerBooks. So how do you keep up with the latest software without trading in your old PowerBook? Consider a G3 upgrade. Macworld Lab looked at PowerBook upgrades from Vimage and Newer Technology. Vimage offers a PowerBook 1400 upgrade, and Newer offers upgrades for the 1400 and the 2400.

The \$499 Vpower PB 1400 G3/233, from Vimage, features a 233MHz G3 with a 512K backside cache running at 117MHz. Newer's \$799 Nupowr G3 1400 250/125 sports a 250MHz G3 with a 1MB cache running at 125MHz. (Newer also sells a 233MHz card for the 1400, which we did not test.) Newer's \$799 Nupowr G3 2400 240/120 is the lone upgrade available for the PowerBook 2400. However, by the time you read this, that model will likely be replaced by the \$999 Nupowr G3 240/160, which features a 1MB backside cache.

The PowerBook 1400 was designed for easy entry, and both cards for this model offer straightforward installation.

Installing Newer's card in the PowerBook 2400 is much more complicated, requiring the removal of 64 screws. Newer provides a list of dealers that can install the upgrade for \$99. Should you install it yourself—which we do not recommend—Newer requires you to sign a



Newer's Nupowr G3 1400 250/125 (left) and Vimage's Vpower PB 1400 G3/233 (right).

waiver freeing the vendor of any liability.

The Nupowr G3 1400 250/125 outpaced the 233MHz Vimage card, but not by much. Both cards offer significant speed improvements over an unaccelerated PowerBook 1400 (see "G3 Upgrades Boost PowerBook Performance"). Likewise, Newer's 2400 upgrade gave us a dramatic overall speed boost for most operations.

These upgrades can extend the life of your PowerBook, but no upgrade lets you grow beyond the limitations of the base machine. For example, the PowerBook 1400 has a 64MB RAM ceiling and the 2400 tops out at 80MB, limiting their usefulness as replacements for high-end G3 desktops.

Macworld's Buying Advice

Newer's PowerBook 2400 upgrade is a solid performer, but the \$99 you pay for dealer

installation adds to an already high price tag.

The PowerBook 1400 upgrades are the most cost-effective means of getting G3 power in a portable. Both cards offer excellent performance, with the Newer card nosing out the Vimage upgrade. However, the Newer card costs \$300 more. Unless you need the highest speed at any cost, save yourself some money and buy the Vimage card.—JEFFY MILSTEAD

Nupowr G3 1400 250/125

RATING: ★★★★★ **PROS:** Top performer among 1400 cards. **CONS:** Expensive. **COMPANY:** Newer Technology (316/943-0222, www.newertech.com). **LIST PRICE:** \$799.

Nupowr G3 2400 240/120

RATING: ★★★★★ **PROS:** Strong performance boost. **CONS:** Dealer installation required. **COMPANY:** Newer Technology (316/943-0222, www.newertech.com). **LIST PRICE:** \$799.

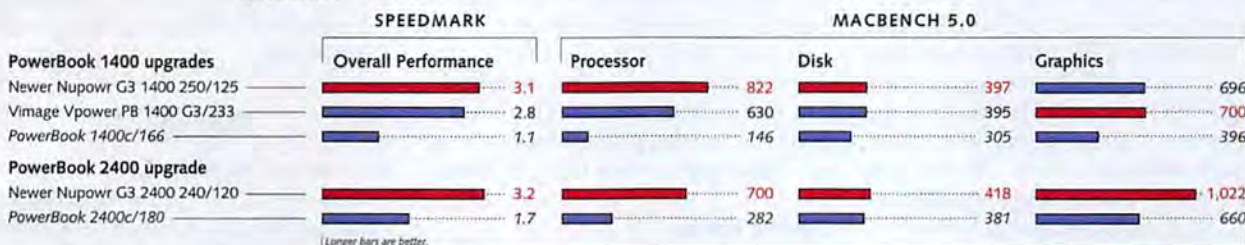
Vpower PB 1400 G3/233

RATING: ★★★★★ **PROS:** Fast; good value. **CONS:** None significant. **COMPANY:** Vimage (877/484-6243, www.vimagestore.com). **LIST PRICE:** \$499.



G3 Upgrades Boost PowerBook Performance

Best results in red. Reference systems in italics. SpeedMark scores are relative to that of a Power Mac 7100/80, which is assigned a score of 1.0. MacBench 5.0 scores are relative to those of a Power Mac G3/300, which is assigned a score of 1,000 for each test.



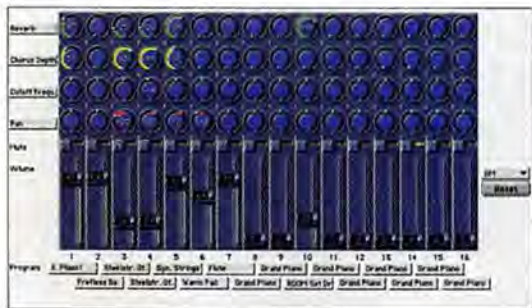
Behind Our Tests

For detailed information on our tests, see www.macworld.com/tests/.—Macworld Lab testing supervised by Gil Loyola

Digital Recording Studios

CUBASE VST, LOGIC AUDIO, AND VISION DSP DO MIDI

FOUR MUSIC-SOFTWARE TITANS—Emagic, Mark of the Unicorn, Opcode Systems, and Steinberg—have spent the last several years jockeying for position in the battle of the MIDI/digital-audio sequencers, and three of them recently released updated versions of their applications. Emagic's Logic Audio Gold 3.6, Opcode's Vision DSP 4.1, and Steinberg's Cubase VST 4.0 are all capable digital recording studios, but Logic Audio is the best choice for those who aren't afraid to delve into the nitty-gritty details of MIDI data.



Go for the Gold The General MIDI mixer is just one of the items you control via Logic Audio's Environment window.

Although the three applications differ in interface, ease of use, and flexibility, they have an awful lot in common. They can all record nearly endless numbers of MIDI tracks as well as a more limited number of high-resolution digital-audio tracks via a Power Macintosh's on-board audio input or through add-on digital-audio hardware. Each program also gives you several ways to enter and edit MIDI data, and each supports Steinberg's VST (Virtual Studio Technology) effects—plug-ins standard. All three also support Steinberg's ASIO (Audio Stream In/Out) standard, which allows users with ASIO-compatible hardware to use VST effects plug-ins. On the downside, all the applications have a floppy-disk-based copy-protection scheme. Worse yet, Logic Audio also requires a hardware dongle that attaches to the ADB bus.

Building the Perfect Beast

Crammed with just about every MIDI feature you can imagine—and quite a few

digital-audio features as well—Logic Audio is undoubtedly the most flexible of the three programs. You can perform some amazing tricks in its Environment window, an object-oriented programming environment that lets you manipulate the minutiae of MIDI. For example, you can string together a series of objects that cause the notes you play on your synthesizer to be transposed up a major third, arpeggiated, and split to other MIDI channels. Logic Audio also possesses the strongest notation component of the bunch, rivaling that of Cubase

VST's more expensive sibling, Cubase VST Score. But this power comes at a price—a very steep learning curve aggravated by a thick, inadequately indexed manual. The tutorial-like PDF file called Guidebook is helpful for users starting out with the program, but switching between Adobe Acrobat and Logic Audio is inconvenient.

And the Playing Is Easy

In contrast with Logic Audio, Cubase VST is nothing if not easy to use. In version 4.0, Steinberg has introduced several interface changes that make it a breeze to edit and control data within the program's main Arrange window. And drag and drop is now well integrated into the program; for example, you can drag audio and MIDI parts on and off the Mac's desktop as well as from some of the program's editor windows to other windows. (Logic Audio's implementation of drag and drop is more limited—you can drag audio from the desktop to the Audio window but not from the window to the desktop.)

Cubase VST not only has the most approachable interface of the three but it's also the easiest application to learn, thanks to Steinberg's comprehensive but unimpeachable Getting Started manual.

Clearer Vision

In my review of Opcode's Studio Vision Pro 4.0 (see *Reviews*, August 1998), I lamented the program's lack of on-board effects. The problem has been rectified in

the follow-up to Studio Vision Pro; the less expensive Vision DSP 4.1 supports VST plug-ins and ships with a fine-sounding collection of effects. Like the other two programs, Vision DSP ships with EQ and supports buses and sends, which let you send a group of audio tracks to a single channel and apply an effect there.

Although Opcode has reserved its Pitch-to-MIDI feature for the high-end Studio Vision Pro, Vision DSP—unlike the other programs—supports the 24-bit audio used with high-end digital-audio hardware. Vision DSP also includes a free copy of Galaxy, Opcode's solid synthesizer librarian program. And Vision still has the most comprehensive and easiest-to-use controller-data-editing feature of any MIDI sequencer on the market.

Macworld's Buying Advice

Cubase VST and Vision DSP are closely matched; when you're comparison shopping, listen carefully to the effects each offers and see how you like working with the programs. The wild card of the bunch is Logic Audio. If you're driven to twiddle with every picayune parameter and won't mind spending weeks struggling with reams of often inadequate documentation, Emagic's immensely powerful digital recording studio could be the most logical choice.—CHRISTOPHER BREEN

Cubase VST 4.0

RATING: ★★★★★ **PROS:** Easy-to-use interface; extensive drag-and-drop support. **CONS:** No 24-bit support; copy protection. **COMPANY:** Steinberg (818/993-4091, www.steinberg.de). **LIST PRICE:** \$399.

Logic Audio Gold 3.6

RATING: ★★★★★ **PROS:** Powerful MIDI processing; strong notation component. **CONS:** Steep learning curve; copy protection. **COMPANY:** Emagic (530/477-1051, www.emagic.de). **LIST PRICE:** \$499.

Vision DSP 4.1

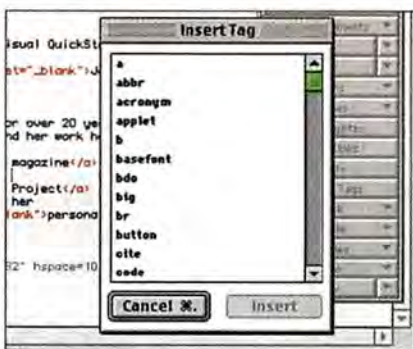
RATING: ★★★★★ **PROS:** Support for 24-bit audio; strong controller-data editing. **CONS:** No drag-and-drop support; copy protection. **COMPANY:** Opcode Systems (650/429-2400, www.opcode.com). **LIST PRICE:** \$495.

BEdit 5.0

STILL THE STANDARD IN HTML EDITORS

ASK WEB-SITE DESIGNERS WHAT programs they use, and you'll get many answers. But the end of the reply is always the same: "Oh, and BEdit." Bare Bones Software's BEdit, which started life as a text editor for programmers, has become the de facto standard for editing HTML code on the Mac.

BEdit 5.0, the latest version of the software, adds a Web Safe Colors palette, two new tagging functions, and a handful of minor improvements to existing features. The enhancements are nice, but none are must-haves. BEdit



Bare Bones HTML BEdit 5.0's new context-sensitive Tag Maker tool displays the valid tags you can add to your page.

remains an important tool for Web developers, but the new release offers less than you might expect from a major version-number upgrade.

Coding Power

Adobe PageMill, GoLive CyberStudio, and other Web authoring programs let you build pages using the same kind of WYSIWYG interface you find in a page-layout program. In BEdit, you build pages by writing HTML code. This may prove daunting for users accustomed to WYSIWYG tools, but direct HTML coding gives you tremendous power over the appearance of pages.

BEdit's new context-sensitive tagging tools, Tag Maker and Edit Tag, are primarily useful for HTML novices. Tag Maker lists the HTML tags and attributes that are valid in the cursor's current position. For example, if you're editing the document's header section, Tag Maker displays the tags you can use

there. The Edit Tag tool opens a window showing all permitted attributes for a selected tag.

The new version also features an HTML-syntax checker that inspects your document for errors, using specifications set in official HTML standards. This function can be frustrating to use, though, because most Web pages do not have 100 percent valid HTML. For example, GoLive CyberStudio adds program-specific tags for internal display purposes. If you then check the page's syntax with BEdit, the syntax checker reports those tags as errors. It also reports common browser-specific tags (such as Netscape's <layer> tag) as errors, along with such attributes as name on the tag. The latter is not standard HTML, but JavaScript image rollovers require it.

The typical page will generate so many errors that you'll be tempted to stop using the syntax checker entirely. Bare Bones should consider adding a parser to account for these common HTML variations. On the positive side, the upgrade fixes a bug in BEdit 4 that caused the syntax checker to claim that JavaScripts contained invalid HTML. However, there's still no syntax checking for JavaScript or style sheets, another much-needed feature.

BEdit 5.0 has a few bugs of its own. When you check the syntax of a buggy HTML file, clicking on one of the messages in the error window should take you to the problem line of code. However, if the page has soft-wrapping turned on, you are sent to a different line altogether. Also, Edit Tag adds certain attributes to HTML tags when they're not requested, and it sometimes doesn't use default attributes correctly. Bare Bones has acknowledged these and other problems and is working on a bug-fix.

Macworld's Buying Advice

If you develop Web pages and you don't have BEdit, get version 5.0. But if you already own BEdit 4.5, there's no compelling reason to upgrade.—DORI SMITH

RATING: ★★★★★ **PROS:** Speedy, powerful HTML editor. **CONS:** Some bugs; a few enhancements don't justify a major version-number change. **COMPANY:** Bare Bones Software (781/687-0700, www.barebones.com). **LIST PRICE:** \$119.

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OrangePC 627

PC ON A CARD, IN A MAC

NEED TO USE WINDOWS software regularly, but not often enough to justify buying a stand-alone PC? If you're not impressed with the performance of software emulators, Orange Micro's OrangePC 627 card might be just what you need. This minimalist-PC-on-a-PCI-card uses your Mac and peripherals to create a Windows 98 alter ego inside your Mac (it can also run Windows 95 and NT 4.0).

The 627 is not a screamer. Although it ran the Business Winstone 98 benchmark more than twice as fast as the Win-

uses large Mac files as virtual hard disks, allowing you to keep multiple configurations or operating systems handy. You can share data between the Mac and Windows environments via the Clipboard or via shared Mac folders that the PC sees as remote volumes. But although the card can use the Mac's built-in Ethernet hardware, it needs its own IP address. And unless you have two monitors, switching back and forth between the Windows and Mac screens can be cumbersome; you can't run Windows in a window, as you can with an emulator.

The OrangePC 627 uses a 200MHz, MMX-capable IDT WinChip that resides in a ZIF socket, so you can upgrade it to a more capable processor. When we installed a 300MHz AMD K6-2 on the OrangePC, performance increased perceptibly. And the card's RAM is on a single 16MB DIMM that you can replace with a larger DIMM. But adding RAM and using a faster processor won't boost video performance appreciably. Unlike Orange Micro's high-end 660 card, which comes with 4MB of dedicated VRAM, the 627 uses part of its main RAM for video memory.

Macworld's Buying Advice

While the OrangePC 627's performance is lackluster compared with that of a "real" PC, the card is significantly less expensive. If you need something that's faster than an emulator, but will settle for less performance than a contemporary PC can offer, the 627 is a good solution.—STEPHAN SOMOGYI

RATING: ★★★ **PROS:** Faster than emulation; reasonable price/performance ratio; RAM and CPU are upgradable. **CONS:** Slower than a typical PC; too slow for many PC games. **COMPANY:** Orange Micro (714/779-2772, www.orangemicro.com). **LIST PRICE:** \$559.



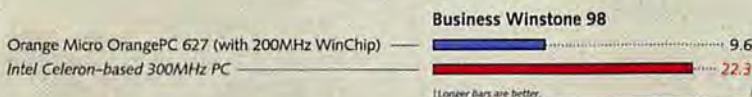
dows-emulator software we tested—Insignia Solutions' SoftWindows 98 5.0.4 and Connectix's Virtual PC 2.1.1 (see *Reviews*, February 1999)—it was less than half as fast as our baseline 300MHz Intel Celeron-based PC (see "No Match for the Real Thing"). That said, the 627 is perfectly adequate for run-of-the-mill productivity tasks such as word processing, although it can be sluggish with state-of-the-art games. And because it's hardware running Windows, the 627 doesn't suffer from the compatibility problems that plague SoftWindows.

As do software emulators, the 627



No Match for the Real Thing

Best result in red. Reference system in italics. Business Winstone 98 scores are absolute numbers.



Behind Our Tests

For more information on the ZD Benchmark Operation's Business Winstone suite, see www.winstone.com. For detailed information on our tests, see www.macworld.com/tests/.—Macworld Lab testing supervised by Jeffy Milstead

GUTS



GLORY



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G3 Upgrade Cards

ACCELERATORS BOOST POWER MACS

BUYING A G3 UPGRADE CARD IS still less expensive than replacing a first-generation Power Macintosh, particularly if you've invested in legacy NuBus hardware that's incompatible with current PCI-based Macs. Two options for upgrading 6100/7100/8100-series Power Macs, Sonnet Technologies' Crescendo G3 266/1MB and Newer Technology's Maxpowr G3 PDS 240/1MB, boost performance dramatically; the only significant

nector prevented us from using our AppleVision 750 monitor with the Crescendo (this isn't a problem with the 6100 version, which doesn't use a caddy).

The Crescendo's CPU speed is tied to the bus speed of the host computer; in a 7100/80, it runs at 260MHz. The Maxpowr runs at 240MHz regardless of the computer it's installed in. But because the Maxpowr's backside cache is 19 percent faster than the Crescendo's, the Maxpowr's graphics score is 7 percent higher (see "Photo Finish"). Overall, the Maxpowr runs neck and neck with the Crescendo.

Macworld's Buying Advice

If you have a Power Mac 6100, you'll find either card a solid performer. For 7100 or 8100 owners who need to use the video card that came with their machine, the Maxpowr offers better placement of the video connector and a sturdier feel than the Crescendo. —JEFFY MILSTEAD



Newer's Maxpowr G3 PDS 240/1MB (top) and Sonnet's Crescendo G3 266/1MB (bottom).

differences between the two cards lie in their architecture and fit-and-finish.

Each accelerator plugs (with some difficulty) into the slot occupied by the stock VRAM or AV display card in the 7100 and 8100; an optional adapter lets you continue using the stock video card. The Maxpowr includes a sturdy metal caddy, whereas the Crescendo's flimsier caddy forces you to bend the video-connector bracket. Unfortunately, the location of this con-

Crescendo G3 266/1MB

RATING: ★★★½ **PROS:** Good performance.

CONS: Difficult to install in 7100 or 8100; monitor connector can be problematic. **COMPANY:** Sonnet Technologies (949/261-2800, www.sonnettech.com). **LIST PRICE:** \$559.

Maxpowr G3 PDS 240/1MB

RATING: ★★★ **PROS:** Faster backside cache; better compatibility with legacy NuBus cards.

CONS: Difficult to install in 7100 or 8100. **COMPANY:** Newer Technology (316/943-0222, www.newertech.com). **LIST PRICE:** \$649.

Macworld
LAB TEST

Photo Finish

Best results in red. Reference system in italics. SpeedMark scores are relative to that of a Power Mac 7100/80, which is assigned a score of 1.0. MacBench 5.0 scores are relative to those of a Power Mac G3/300, which is assigned a score of 1,000 in each test.

	SPEEDMARK		MACBENCH 5.0	
	Overall	Performance	Processor	Graphics
Newer Technology Maxpowr G3 PDS 240/1MB	2.9	2.9	822	782
Sonnet Technologies Crescendo G3 266/1MB	3.0	3.0	862	729
Apple Power Macintosh 7100/80	1.0	1.0	153	415

Longer bars are better.

Behind Our Tests

For detailed information on our tests, see www.macworld.com/tests/. —Macworld Lab testing supervised by Gil Loyola

GUTS



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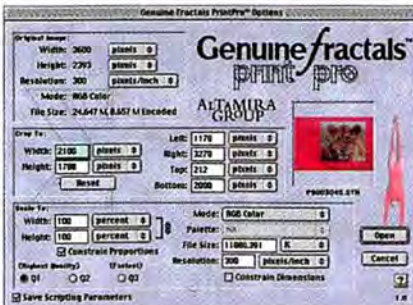
Genuine Fractals Print Pro

FAST, FLEXIBLE IMAGE-COMPRESSION PLUG-IN

JPEG IMAGE COMPRESSION IS fast and efficient, but print-media pros avoid the format because of its tendency to add artifacts to images. So how do you squeeze that eye-popping nature scene down to a manageable size without losing the rich colors and crisp detail? The best solution is Altamira Group's Genuine Fractals Print Pro, an Adobe Photoshop plug-in that uses fractal geometry to compress images with little or no apparent loss of quality. Better yet, it lets you decompress images well past their original dimensions without compromising quality.

An upgrade to Genuine Fractals 1.0, Print Pro adds a lossless-compression option to version 1.0's "near-lossless" technology. Print Pro also addresses Genuine Fractals' major weaknesses with faster performance, better memory management, and support for CMYK and Lab images. (Altamira has also released Genuine Fractals 2.0, a \$159 version that offers all the features of Print Pro except CMYK and Lab support.)

Genuine Fractals Print Pro works best with high-quality digital images captured at 15MB to 25MB. Instead of using version



Room to Grow Genuine Fractals Print Pro lets you crop and scale an image as you decompress it.

1.0's painfully slow export module to compress a file, you use Photoshop's Save As command and select Genuine Fractals' STN compression format from the standard pop-up list. Not only is this more transparent than in the previous version but it's also much faster.

The program's lossless encoding retains all image data while offering a compression ratio of slightly better than 2:1. Near-lossless encoding offers a higher ratio of about 5:1 but sacrifices a small, generally imper-

ceptible amount of image data. To decompress an STN file (or an FIF file from version 1.0), you select it using Photoshop's File Open command. The plug-in then displays a dialog box with an image preview. You can crop or scale the image or choose from three options for balancing decompression speed with image quality.

If you scale the image to its original size, decompression is reasonably fast. If you enlarge the image, however, prepare to wait—and don't forget to stock up on RAM. The new version improves on its predecessor by using virtual memory and disk caching, but you'll still need lots of RAM if you want to convert a 20MB photo into a 100MB poster.

Macworld's Buying Advice Genuine Fractals Print Pro delivers the same image-compression and -enlargement capabilities as its predecessor in a faster, more flexible package. It's ideal for any print-media professional who frequently transmits high-resolution images.—STEPHEN BEALE

RATING: **PROS:** Fast; lossless and lossy image compression; CMYK support. **CONS:** RAM-hungry. **COMPANY:** Altamira Group (818/556-6099, www.altamira-group.com). **LIST PRICE:** \$299.

Cross-Platform Migraine?



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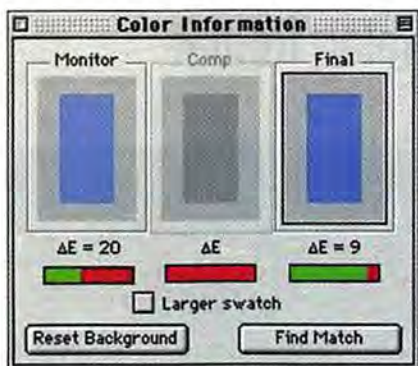
Pantone ColorReady

COLOR MATCHING PLUG-IN

COLOR MANAGEMENT IS A COMPLICATED task, and you shouldn't expect an easy solution to getting predictable color output on your monitor or printer. Yet this is the promise of Pantone ColorReady, a set of plug-ins for matching colors in QuarkXPress, Macromedia FreeHand, and Adobe Illustrator. The \$139 package enables consistent reproduction of spot and process colors, but its clumsy approach may prove daunting.

ColorReady employs standard ColorSync device profiles along with Pantone Named Color Profiles to identify the color-reproduction characteristics of various monitors and printers. The ColorSync profiles handle process colors, and the Pantone profiles manage Pantone spot colors.

The software, consisting of a QuarkXPress, a FreeHand Xtra, and an Illustrator plug-in, appears in each host program as a small tool bar with three icons. First, you click on the Color Palette icon to select the colors you want to match. Next, click on the Setup icon to choose your monitor, a comping device—such as an ink-jet printer—and a final output device. The



Crystal Ball ColorReady's Color Information Palette simulates how colors will look when printed.

third icon opens a Color Information window, which simulates how the color will look on each device. ColorReady assumes you're using a calibrated monitor.

Once you've selected a color, you can modify it or create a new color from scratch. You save the colors in a ColorReady palette and then export them back to the host program. You can save ColorReady palettes in one host program, and then open them in another to ensure that colors print consistently in each.

It sounds easy, but ColorReady requires some extra steps that complicate the process. In QuarkXPress, you must set up

your color-management profiles twice—in the host software and in ColorReady. The program's three windows clutter the display and make for clumsy operation as you jump from one to another.

All the tools are here, but a clear, intuitive approach is not. For example, the icons in the main tool bar don't follow the same sequence as the ColorReady workflow. However, ColorReady makes great use of Apple Guide to walk you through the program.

ColorReady is RAM-hungry. Pantone sets the minimum system requirement at 32MB, but we had to allocate 50MB to the host software to get acceptable performance. We also found a conflict between the FreeHand Xtra and Extensis VectorTools: the Pantone software sometimes failed to load unless we removed the Extensis plug-in.

Macworld's Buying Advice If you can wade through ColorReady's myriad palettes, finer adjustments, and extra steps, it will produce consistent and predictable color. But some users may balk at the program's byzantine design.—ANDREW SHALAT

RATING: ★★★ **PROS:** Affordable approach to color management. **CONS:** Clumsy interface; RAM-hungry. **COMPANY:** Pantone (201/935-5500, www.pantone.com). **LIST PRICE:** \$139.



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Netopia R2121 Dual Analog Router

ALL-IN-ONE INTERNET-ACCESS SERVER

MULTILINE INTERNET-ACCESS servers for network users abound, but most of them require that you supply external communications devices—either modems or ISDN terminal adapters. The Netopia R2121 Dual Analog Router comes with two 56-Kbps modems built in, making it the simplest Internet-connection gizmo yet. You can add a third (external) modem, for a maximum possible throughput of 168 Kbps, or use the third line to accommodate a dial-in telecommuter. Web-based configuration screens let you get the router up and running in minutes, and a built-in Ethernet hub makes this a completely self-contained SOHO access server.

The back of the exotic-looking Netopia router sports two modem ports; two phone ports, for a phone or fax machine; a serial port, for a third, external modem; a console serial port; and an eight-port Ethernet hub. On the front, lights display the state of the modems, hub, and router. Setup consists of connecting the box to your network and a pair of phone lines, applying power, and running the Web-based SmartStart utility.



ARNDT TOEPLITZ

Dynamic Host Control Protocol and Network Address Translation support let you automatically configure the TCP/IP settings for your hosted computers while using a single dynamically assigned IP address from your ISP.

On-demand Internet routing dials up an ISP on the first modem as users access the Internet; when traffic warrants, the router dials up the second or third modem (if one is attached) to increase bandwidth. Alas, you can configure only basic Internet access via the Web interface; for more-complex configurations, you have to use

Telnet and a text-menu interface.

One interesting feature, called SmartPhone, lets you connect analog devices to the Dual Analog Router so they can share analog lines with the modems. If you need to make an analog call with one of these devices, simply picking up the line causes the router to drop one Internet connection so it can accommodate your outgoing call. Other features, such as a full-featured firewall with reverse proxy, call accounting, and prearranged connection schedules, give the router more-advanced capabilities.

The Dual Analog Router performed well during our testing, reaching 168 Kbps with no trouble. The telecommuter feature was hard to get working, however, and the external serial port lacks ISDN support.

Macworld's Buying Advice If you want to get a small office online in a hurry, the Netopia R2121 Dual Analog Router will give you everything you need, in a single, easy-to-configure package.—MEL BECKMAN

RATING: ★★★★★ **PROS:** Web-based administration; built-in Ethernet hub; additional serial port; telecommuter dial-in. **CONS:** No ISDN on third port; complex dial-in configuration. **COMPANY:** Netopia (510/814-5000, www.netopia.com). **LIST PRICE:** \$649.

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Like Niles Software's EndNote 3.0 (see *Reviews*, July 1998), ProCite is a combination reference-database manager and bibliography formatter. ProCite's 45 data fields accommodate any kind of reference work, from journal articles to patent information. You can enter references manually, using templates called *workforms*, or import them from delimited text files or EndNote libraries. Predefined configuration files also let you import tagged reference data from online or CD-ROM-based sources such as MEDLARS and Ovid. Unlike EndNote, ProCite doesn't let you search online reference libraries directly; alas, a companion product that accesses online databases isn't available for the Mac.

ProCite's list view is much more flexible than EndNote's. You can display up to six



Reference List Clicking on any name on the left displays all of that author's references.

fields, and you can sort the database by clicking on any column header. An optional pane on the left lists all the authors, titles, journals, or keywords in your database (see "Reference List"). Another feature lets you assign any subset of records to a group, so you don't have to create a new database for every project.

Like EndNote, ProCite includes a software module that lets you insert citations into a document as you're writing, but only ProCite lets you search for references without leaving your word processor. When you're finished, you can format the in-text citations and generate a bibliography based on one of 300-plus predefined styles. If the predefined styles don't

include the style of the publication you're writing for, you can create a new style.

Unfortunately, ProCite's plug-in is compatible only with Microsoft Word 6 and 98—if you use any other word processor, you have to cut and paste references into the document and rely on your word processor to format them and create the bibliography. And you're out of luck if you have an iMac without an add-on floppy drive: ProCite ships only on floppy disks (although the company

says you can request a CD-ROM version).

Macworld's Buying Advice ProCite and EndNote each sport features the other lacks, but ProCite 4.02's strengths as a database manager make it an excellent choice for anyone who has to work with a large number of references.—FRANKLIN TESSLER

RATING: ★★★★★ **PROS:** Flexible list view; can assign references to groups. **CONS:** Ships only on floppies; works directly only with Microsoft Word. **COMPANY:** Research Information Systems (760/438-5526, www.risinc.com). **LIST PRICE:** \$396.

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Astra 1220U

LOW-COST USB SCANNER YIELDS
HIGH-QUALITY IMAGES

WITH ITS CONVENTIONAL flatbed design and opaque beige exterior, the Umax Astra 1220U might look out of place next to a Bondi-blue iMac. But the colors that really matter are the ones that show up after you've captured an image, and here the USB scanner does a good job—especially considering its \$150 price tag.

The Astra 1220U—also available in a \$180 SCSI version—isn't the cheapest scanner on the market. But with 600-dpi optical resolution and 30-bit color depth, it delivers better image quality than do its bargain-basement rivals, which typically offer 24-bit, 300-dpi image capture. (Umax advertises the 1220U as a 36-bit device, but it actually captures 30 bits and then uses hardware tricks to boost the color depth.)

We used the Astra 1220U to scan a standard test image at 300 dpi, then printed the image with no modification on an ink-jet and dye-sublimation proofer. The scanner did an excellent job of capturing fine detail, and except for slightly saturated reds, colors matched up well with the

original. Line art scanned at 600 dpi also reproduced well.

Umax's VistaScan software, included as both a stand-alone application and an Adobe Photoshop plug-in, puts an easy-to-use interface on the essential image-capture features. The program's Beginner mode comes close to offering a one-button scan operation: you just pick a destination (such as an image file or a text file for OCR), perform a preview scan, and let VistaScan do the rest. You can also send output directly to a printer.

VistaScan's Advanced mode offers full control over resolution, scaling, bit depth, and other scanning parameters. You can apply transfer curves to compensate for color shifts or use a descreening function to remove moiré patterns from halftones. The only complaint we have is that the software makes it a little tricky to save images under user-supplied file names.

The scanner is bundled with Adobe PhotoDeluxe 1.0 for image-editing, Caere's OmniPage LE for text recognition, and Umax's own Presto Page Manager for launching scanning applications.

Macworld's Buying Advice This is a lot of scanner for the money—and there-



SUZANNE HODDY

in lies the rub for many iMac owners. With its high resolution and extra bit depth, the Astra 1220U produces hefty files on a computer that sports just 32MB of RAM in its base model; you may find yourself running out of memory as you play with those great-looking images you've captured. But if you're willing to limit yourself to small images—or boost your iMac's RAM—you'll find this a great scanner for the price.—STEPHEN BEALE

RATING: ★★★★★ **PROS:** Good image quality.
CONS: Not a true 36-bit scanner; may be overkill for iMacs. **COMPANY:** Umax Technologies (510/651-4000, www.umax.com). **LIST PRICE:** \$150.

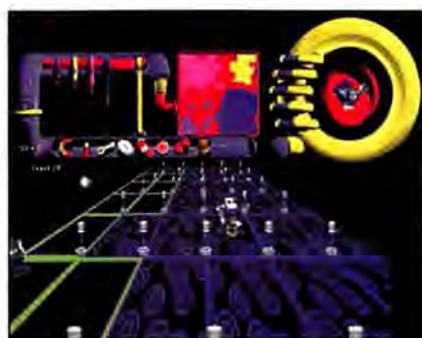
Gridz 1.2

FRENETIC GAME NOW NETWORKABLE

STROLLING THROUGH MACWORLD'S venerable Game Hall of Fame, I noticed that the spot reserved for the 1997 Arcade winner, Green Dragon Creations' Gridz, was now empty. Perplexed, I questioned a passing docent and was informed that the exhibit featuring this highly entertaining real-time strategy game was being updated to reflect Gridz's new networking capabilities. Flashing the vermilion card issued to all Macworld contributing editors, I was ushered into The Vault to peek at the new and improved Gridz.

At first glance, Gridz 1.2 is little changed from the delightful game that won our heart a year ago (see *Reviews*, November 1997). It's still happiest with at least 16MB of RAM, and it's still deceptively simple. You stake out territory on a large grid by planting nodes where the grid lines intersect, and then you dispatch Builder robots to activate those nodes. When four nodes that mark the corners of a rectangle are activated, you claim that area of the grid.

While you're engaged in this digital exercise in manifest destiny, your opponents likewise claim territory. The real fun begins



Gridz Iron Our blue territory is growing quite nicely, thanks to our superior Striker robots.

when you dispatch Striker and Hacker robots. The Strikers' job is to destroy opposing robots; Hackers live to demolish enemy nodes, which you can then claim. The more territory you grab, the more energy you generate, allowing you to build additional robots more quickly. You can capture token rings and redeem them for more-powerful robots at the end of each round.

The single-player-only Gridz 1.0 was a hoot, but its computer opponents were just a bit dim: it didn't take long to figure out that if you bought the most powerful Striker you could afford, you easily out-matched your computer opponents. The new version addresses the problem in two

ways. In single-player games, you can now choose to play against smarter enemies. And, of course, networking brings the greatest challenge of all. Your not-too-bright computer opponents may not realize that the best offense is a good defense, but the weasel in the next cube who refuses to refill the coffemaker after drinking the last cup surely does.

The Gridz CD-ROM ships with a single serial number, but you can get three additional serial numbers free from Green Dragon's Web site. Gridz supports up to eight players and can be played across an AppleTalk network or on the Web via TCP/IP. I found the game very responsive—and a heck of a lot of fun to play—on a four-Mac 10BaseT Ethernet network.

Macworld's Buying Advice Gridz is a wonderful single-player game for those who enjoy adrenaline-driven, real-time strategy games, and it's even more fun against human opponents. Gridz richly deserved its place in the Macworld Game Hall of Fame. It still does.—CHRISTOPHER BREEN

RATING: ★★★★★ **PROS:** Furious game play; networkable. **CONS:** Slightly stiff RAM requirement. **COMPANY:** Green Dragon Creations (601/473-4225, www.greendragon.com). **LIST PRICE:** \$35.

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iMac

THE NEW POWER MAC G3 BREAKS THE



Envy

MOLD IN DESIGN, SPEED, AND FEATURES

W

hile Apple's been getting kudos for fighting the beige-box blues with the iMac, professional users have been staring at their plain Power Mac G3 boxes and wondering when *they'll* be able to use a computer that doesn't just *think* different, but looks it.

Their wait is over.

Decked out in blue and white plastic, Apple's new Power Mac G3 series promises to add some color to the lives of professional Mac users by combining iMac style and affordability with impressive power and leading-edge connections.

These new Power Mac G3's may be minitowers with external monitors, but they're still undeniably related to the iMac. They use the same polycarbonate plastic that makes up the iMac's shell—but in a darker shade of blue. And their daring curves, translucent surfaces, and two-tone color scheme are definitely derived from the iMac school of design.

But the story of these new Macs is hardly one of style over substance. Beneath the striking design is an impressive update to the Macintosh hardware architecture that will deeply affect the way you use your Mac in the next millennium—in a *good* way.

by Allyson Bates

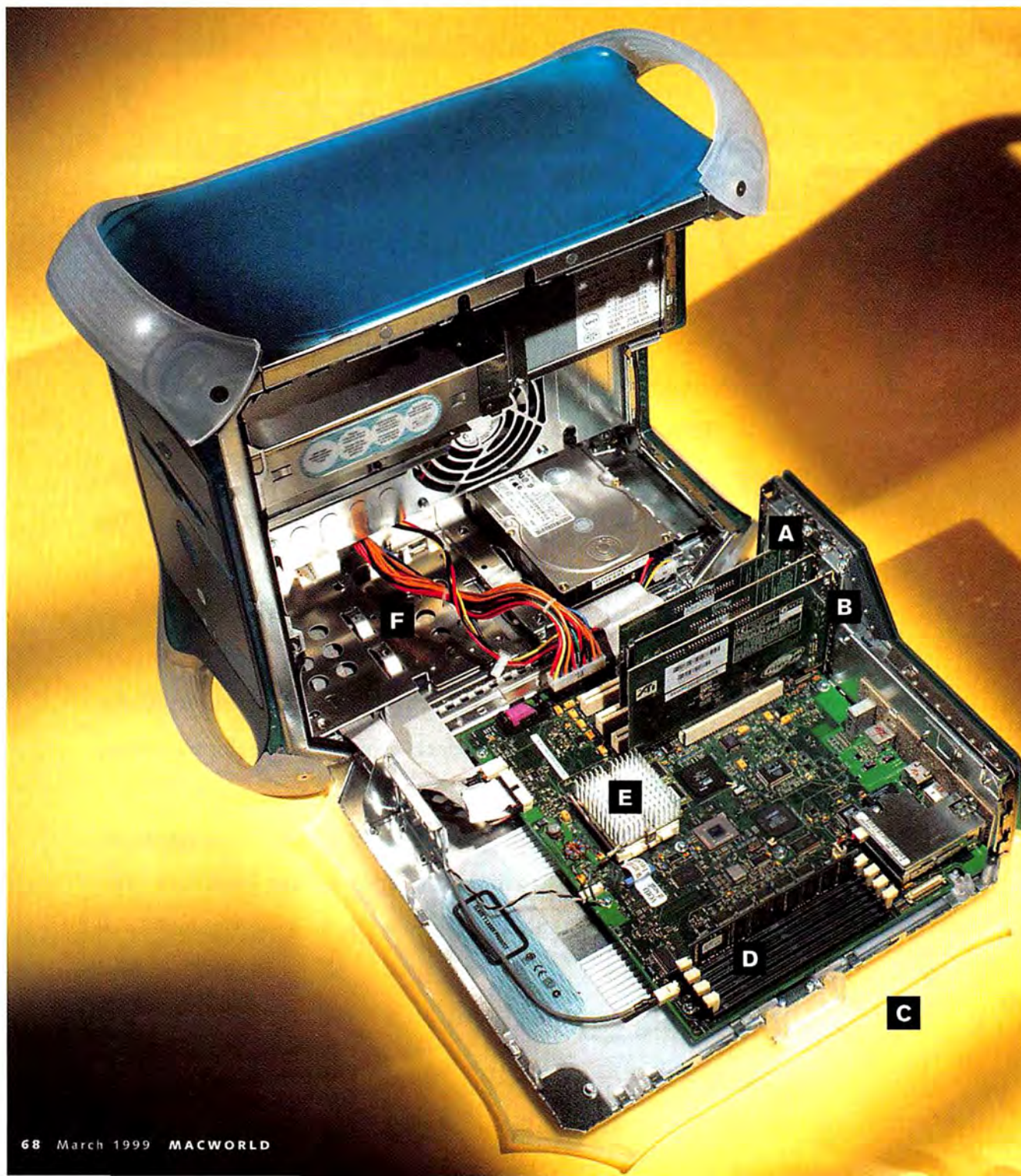
Good-bye, Beige Box

Once you get past the striking blue and white plastics, the most noticeable feature of the new chassis is the addition of four curved handles on the corners, which make this Mac less unwieldy when you need to move it. Its ribbed white sides sport a blue Apple logo with a bold G3 silk-screened onto the metal case, just visible behind it.

Unfortunately, some of Apple's more questionable iMac design elements are also a part of its big brother. For example, while the new Power Mac G3 does not come with a floppy drive (no surprise there), what most configurations are really missing is an Iomega Zip drive, currently available in only one of Apple's standard configurations. And then there's the compact iMac keyboard and ergonomically

dubious round iMac mouse, both of which come standard with these models.

Promising Connections Aside from the flashy colors and a few curved corners, the biggest change on the new Power Mac series is the way you hook up peripherals. Some foreign ports have taken the place of the historic, and quickly becoming archaic, Mac serial (printer and modem) ports: USB and the much-anticipated FireWire.



As with the iMac, the new Power Mac G3 offers two USB ports on a single bus, for peripherals such as keyboards and digital cameras. This replacement for both Mac serial and ADB (Apple Desktop Bus) ports is faster and much more flexible than those old technologies (see "The USB Connection," October 1998).

But unlike the iMac, which doesn't offer any high-speed means of connecting

external devices, these new Macs also include two FireWire ports. FireWire is an impressive new connection technology that makes its debut on these new G3 Macs and will probably appear on all future Power Macs as well. These two new FireWire ports replace—and are much faster than—the SCSI port on the back of your current Mac (see the sidebar, "So Long, SCSI? FireWire Arrives").

The arrival of FireWire spells the end for built-in SCSI on the Mac. If you want to use SCSI hard drives with these new Power Macs, you'll need to buy a PCI SCSI card. (The top-of-the-line Power Mac G3 model comes standard with both a 9GB Ultra II SCSI hard drive and a PCI SCSI card.) For users of SCSI devices who need lots of PCI slots, that's bad news—the migration of SCSI off the motherboard means you'll need to fill a slot if you want to keep using your SCSI devices.

Although these Macs have abandoned serial ports and SCSI, they haven't quite given ADB the boot yet. There's still one ADB port on the back of the new Power Mac G3, meaning you can squeeze a little extra life out of older input devices. So if you hate the new, round mouse, you can keep your old one, at least for now.

Open Sesame In addition to the colorful exterior, the new Power Mac G3 design offers some impressive high-end features. These new G3's are by far the most easily accessed (and upgraded) Macs we've ever seen. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The Mac's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installing PCI cards. And unlike Macs of the past, the new G3's don't have to be turned off before you can open the door and show off what's inside.

Inner Beauty

A computer targeted at professionals and high-end consumers stands or falls based on its performance and price. And what Apple's got in store behind that white side door is clearly a step in the right direction.

Mighty Megahertz Of course, the heart of these new G3's is a G3 processor. Apple offers three different processor speeds in these new models: 300MHz, 350MHz, and a new speed record for Apple, 400MHz.

These new Macs also offer a 100MHz system bus instead of the 66MHz bus of

previous G3 desktop models. According to preliminary tests run by Macworld Lab, the new Power Mac G3/400 offers 32 percent faster CPU performance, 52 percent faster disk speed, and a whopping 95 percent faster graphics speed than the old top of the line, the beige Power Mac G3/300.

More Memory When it comes to RAM expansion, these Macs excel. If you feel the need to max out your RAM, you can—each slot can handle DIMMs up to 256MB, meaning the upper limit for RAM is an astonishing 1GB. Hard-core Adobe Photoshop users, take note.

However, these new RAM slots do make one compromise: compatibility with earlier Macs. The new Power Mac G3's use the same PC100 RAM that the iMac uses. PC100 RAM is usually cheaper, since it's also used on Intel-based PCs—but it's incompatible with previous Mac RAM types.

3-D Power At one time, a fast graphics accelerator was considered an expensive add-on, but an ATI Rage 128 graphics card comes standard on all new G3's. The Rage 128 supports resolutions up to 1,900 by 1,200 pixels and up to 24-bit color. Because the card uses SDRAM, a different type of video RAM than SGRAM, which was found on previous models, these cards are less expensive. The card's Rage 128 chip gives these new systems 3-D power for graphics-intensive games and other 3-D applications.

The card fits into a high-speed PCI slot—it runs at 66MHz, as opposed to the traditional 33MHz bus speed of the Power Mac G3's three other PCI slots.

The Three-Slot Shuffle

Not counting the 66MHz PCI slot, which houses the graphics card, these new G3 Macs offer three general-purpose PCI slots. But several technologies commonly placed on PCI cards are now built in or available as options that don't use up slots. For example, you won't need a Fast Ethernet card because the system comes with 10/100BaseT Ethernet. MPEG-2 decoding—necessary if you want to watch DVD movies on your Mac—is available as an optional daughtercard that plugs into the system's video card, and therefore doesn't require an additional slot. And, of course, the graphics card itself goes into that special fourth slot.

continues on page 72

INSIDE THE NEW G3

A PCI Slots (shown with two cards installed):

All three slots are free, except in the 400MHz configuration, which includes a preinstalled SCSI card.

B PCI 66MHz Slot:

This slot is used by the built-in ATI Rage 128 graphics card.

C Easy Access:

The motherboard is mounted on the side door, which swings open for quick installation of RAM, PCI cards, and the like.

D DIMM Slots:

Four easily accessible RAM slots make it easy to ramp up your memory to 1GB. The switch to PC-standard RAM will make memory upgrades less expensive and more readily available.

E G3 Processor:

The PowerPC chip, running at speeds of 300MHz, 350MHz, or 400MHz, is housed in a ZIF (Zero Insertion Force) socket.

F Expansion Bays:

There is room for three internally accessible devices (including a built-in hard drive) and two externally accessible devices (including a CD-ROM drive, a DVD player, or an iomega Zip drive).

The iMac introduced Mac users to USB, a simple and powerful new way to connect peripherals to your Mac. But USB is only half the story: it's faster than the old Mac serial and ADB ports, but not a suitable replacement for the SCSI port that's been standard on the back of every Mac up till now. Enter FireWire, the new connection technology that makes its debut on the new Power Mac G3's and combines USB's simplicity with blazing-fast speed.

USB is great for connecting keyboards, mice, and joysticks (and perhaps even slow disk drives or printers) to your Mac, but when it comes to sheer speed, USB is no replacement for SCSI. When you need to move lots of data in a hurry—for example, if you want a really fast hard drive—FireWire is the answer. Boasting a combination of speed, ease of use, and configuration flexibility, FireWire is destined to become the high-performance standard for connecting computers, digital camcorders, digital VCRs, DVD-ROM drives, high-speed hard drives, printers, and even High-Definition TV sets.

From Apple with Love

FireWire was invented at Apple and approved as an industry standard in 1995. Most companies that produce FireWire-compliant devices don't need a license from Apple, but no one can use the Apple-trademarked FireWire name without paying a licensing fee to Apple. That's why just about everybody but Apple calls FireWire "1394," the name it was given by the IEEE, an international standards body.

So if Apple came up with the idea (and has the market cornered on the cool moniker), how come PC vendors such as Compaq managed to get FireWire into their PCs before Apple got it into the Mac? Good question.

Actually, Apple got support for FireWire into the Mac OS be-

So Long, SCSI? FireWire Arrives.

by Henry Bortman

fore Microsoft got it into Windows, and has offered a FireWire PCI card since April 1998. FireWire just hasn't become standard on new Macs until now.

So Long, SCSI

FireWire shares many of USB's best features, meaning it'll be a big improvement over SCSI in terms of ease of use. FireWire devices are hot-pluggable, so you can connect and disconnect them even when your Mac is running; there's no need to turn everything off just to add or remove a device, as you must with SCSI.

FireWire's connectors are simple to use: they don't have the clips or thumbscrews typ-

ical of SCSI connectors (see the illustration "Make the Connection"). To add a FireWire device, you just plug in the connector; to remove it, you squeeze the connector slightly and pull it out.

FireWire also doesn't force you to worry about sticking terminators on the end of a chain or setting device IDs. If you've spent much time working with SCSI drives, scanners, and the like, you know what a pain it can be to flip switches, push little

tabs, or rotate thumbwheels to ensure that no two devices have the same ID. FireWire devices have unique device IDs, too, but FireWire automates much of the hassle: when you plug in a new device, a FireWire bus reconfigures *itself*, assigning new IDs as necessary.

Device-a-Palooza You can connect up to 63 devices to a FireWire bus, a big improvement over SCSI, which is limited to 7 devices. While that 63-device limit might seem like an embarrassment of riches to most people, it's not even really the upper limit. If you add a *bridge* to a FireWire bus, it divides the bus into multiple *segments*, each of which can support 63 devices.

FireWire is also more flexible when it comes to how you connect your devices. SCSI requires that you string all the devices together in a chain. With FireWire, you can connect up to 16 devices in a chain—but you don't have to link all your devices in one continuous chain. That's because unlike SCSI, FireWire



MAKE THE CONNECTION

allows *branching*. For example, imagine a FireWire external hard drive with three ports. You use one port to connect the drive to the chain leading back to your Mac, and another to connect more devices down the chain. But you can also connect additional devices to the third port, creating a second branch if you want to spread out your peripherals in several directions simultaneously.

Out on a Limb Not only can a FireWire chain branch out in different directions, but it can also go for long distances. The SCSI on the back of your Mac can barely take you to 6 meters, whereas a FireWire segment can be as much as 72 meters long (if you're using an Ultra 2 SCSI PCI card, this can be extended to 12 meters). But FireWire provides a way out here, too. By adding a *repeater*, which cleans up and amplifies the signals traveling on the wires, you can extend FireWire's reach even further without having to worry about degradation.

Blazing Performance

FireWire's ease of use makes connecting peripherals easier, but its greatest strength is its speed. To transfer uncompressed, full-frame full-speed video requires around 210 Mbps. USB can't transfer more than 12 Mbps, which isn't even in the ballpark. The SCSI port on the back of previous Macs could manage 40 Mbps at best. The FireWire port built into the new Power Mac G3's, on the other hand, can transfer data at

up to 400 Mbps. (SCSI can reach faster speeds—up to 640 Mbps—via a SCSI PCI card.)

FireWire even has room to grow. Soon there will be an upgraded version of FireWire hardware that will be able to handle up to 800 Mbps, and future versions might support transfer rates that exceed 1.5 Gbps. With bandwidth like that, a video-editing system could receive multiple live video feeds simultaneously and never drop a frame.

Guaranteed Delivery Not only is FireWire speedy, but it also has the ability to *guarantee* speed to applications that need it, something that SCSI can't do. When your Mac wants to read a file from a SCSI hard drive, for example, it has to compete with all the other data being exchanged on your SCSI chain. If several devices are all trying to transfer data simultaneously, the exchange between your Mac and the hard drive will slow down. That's not great for any task, such as handling digital

video or burning CDs, that requires a guaranteed real-time data delivery rate.

But FireWire supports a system called *isochronous transfer*, which can provide that guarantee. In an isochronous transfer, two devices on a FireWire bus stake a claim to a guaranteed amount of bandwidth—and they get ownership of that bandwidth for the duration of the data transfer, regardless of what other devices may be using the bus. So when you're capturing video, burning a CD or DVD disc, or performing some other task that requires a steady stream of data, you don't have to worry about other devices' interrupting your data stream and causing dropped frames or failed disc burns.

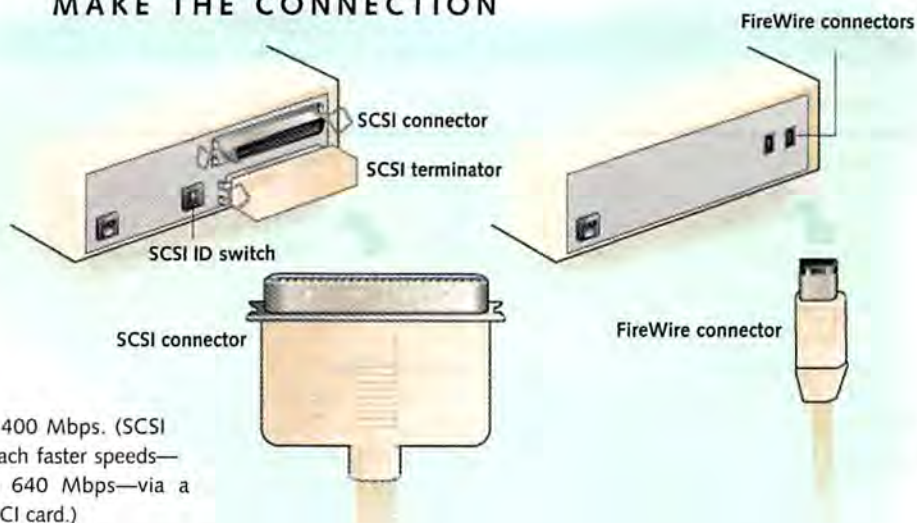
Versatile Performer One of FireWire's most interesting features is that it supports more than one computer on the same bus segment. Thus you could use it to let several computers share a peripheral device, such as a scanner or a printer. You could even use it as an alternative to Ethernet for file transfers between computers. (Apple, however, says it has no plans to provide software to enable either device sharing or Mac-to-Mac file transfers. For any of that to happen on the Mac, other companies will have to step into the breach and write that software themselves.)

The flexibility doesn't stop there. FireWire even supports device-to-device transfers that don't involve a computer at all. That makes it possible to copy digital-video data from a digital camcorder directly to a digital VCR, or directly to a hard drive, without the need for computer control. This is all assuming that vendors build such capability into their devices, of course.

The Wait Begins

FireWire products are beginning to make their mark in the digital-video domain. FireWire-enabled digital-video camcorders are available from Sony, JVC, Panasonic, Canon, and Sharp; Sony, JVC, and Panasonic also offer FireWire-savvy digital VCRs.

As the Mac community starts buying new Power Mac G3's, it's clear that the number of available FireWire products will continue to grow. At press time, however, all the companies we contacted were playing their cards close to the vest. Although many companies announced last summer that they'd be producing USB products for the iMac, those products are only slowly starting to arrive. FireWire-savvy MIDI devices, printers, CD changers and CD-R recorders, and hard drives are on the way, but just how quickly they'll begin to reach users' desktops is still anyone's guess.



SCSI VERSUS FIREWIRE

	SCSI	FireWire
Number of devices supported	7 ^A	63 ^B
Requires termination	yes	no
Hot-pluggable	no	yes
Sets device IDs automatically	no	yes
Allows branching connections	no	yes
Physical connector type	nasty	nice
Computer required for data transfer	yes	no
Standard transfer rate	40 Mbps ^C	400 Mbps
Maximum transfer rate	1.2 Gbps ^D	>1.5 Gbps ^D

^A In addition to the computer. ^B Can be increased by using a bridge. ^C Standard Mac external SCSI. ^D Future implementation.

APPLE'S BASE CONFIGURATIONS AT A GLANCE

Model	Price	Cache	RAM	Hard Drive	CD/DVD Drive	Zip Drive
Power Mac G3/300MHz	\$1,599	512K	64MB	6GB Ultra Atapi	24x CD-ROM	no*
Power Mac G3/350MHz	\$1,999	1MB	64MB	6GB Ultra Atapi	32x DVD player	no*
Power Mac G3/350MHz	\$2,499	1MB	128MB	12GB Ultra Atapi	24x CD-ROM	yes
Power Mac G3/400MHz	\$2,999	1MB	128MB	9GB Ultra II SCSI	24x CD-ROM	no*

* Available as an option.

continued from page 69

The bottom line: This arrangement of slots and built-in capabilities should satisfy all but the most demanding users—those looking to load up their Macs with multiple video and sound cards, for example. For those users, PCI expansion chassis remain the only option.

Thankfully, when it comes to expansion, these systems are loaded. The new G3's offer three internal 3½-inch bays for installing additional drives and two more externally accessible 5¼-inch bays for storage devices such as a 24x CD-ROM drive, or the optional DVD-ROM and Zip drives. But keep in mind that since there's no built-in SCSI bus on these models, you'll need to add a PCI card if you want to add internal SCSI devices.

A New View

No new Power Mac would be complete without a matching display, and Apple hasn't disappointed here. Apple's flat-panel display and new line of CRT monitors shine in the same translucent plastic as the new computers they've been matched with. Apple's new 17- and 21-inch Studio Display monitors stand on a sturdy tripod that doubles as a space to stow away the pint-size iMac keyboard when you're not using your computer.

The price of these new monitors is also appealing. The 17- and 21-inch monitors (the latter with ColorSync) cost \$499 and \$1,499, respectively. The 17-inch display promises up to 1,600 by 1,200 resolution, with a 60Hz refresh rate. The 21-inch display features a Sony Trinitron

tube, internal calibration (phosphor-decay), a four-port USB hub, and a short-cut display module that launches all screen functions.

Apple's current flat-panel Apple Studio Display monitor has also gotten a minor makeover, picking up the style of the new G3's by adding a ribbed white plastic casing. It's also gotten a bit more affordable: the new display costs \$1,099, \$200 less than the original Studio Display.

Very VGA These new monitors get their signals via the new VGA video connector on the back of the new Power Mac G3's. That means these desktop Macs can use PC monitors and video cables without needing a Mac-to-VGA adapter. (Of course, if you want to use an old Mac monitor with these new models, you'll need a VGA-to-Mac adapter instead.)

THE G3'S NEW PORTS

- Two 400-Mbps FireWire ports
- ADB port
- 10/100BaseT Ethernet
- Two USB ports
- RJ-11 jack for optional 56K modem
- VGA video out



The Last Word

The design of these new G3's is a variation on a popular and successful theme—the iMac. Like the iMac, these new Macs are daring, eye-catching, and even a bit shocking. Their almost whimsical look is a far cry from what we've been conditioned to think of as a professional-looking machine. Apple has taken the minitower, a utilitarian computer meant to be hidden under a desk, and dared its users to show theirs off.

But aesthetics aside, the real news about the new Power Macintosh G3 series is what's inside that blue plastic case. These Power Macs change the rules of Macintosh computing in subtle but significant ways. With improved internal architectures, fast processors, easily accessible interiors, and remarkable prices, the new Power Mac G3's are impressive products. They're much faster than what's currently on your desk and more affordable than you'd ever imagine. Don't let the flashy exterior fool you. **m**

Senior Associate Editor ALLYSON BATES reports on systems and cross-platform issues for *Macworld*.



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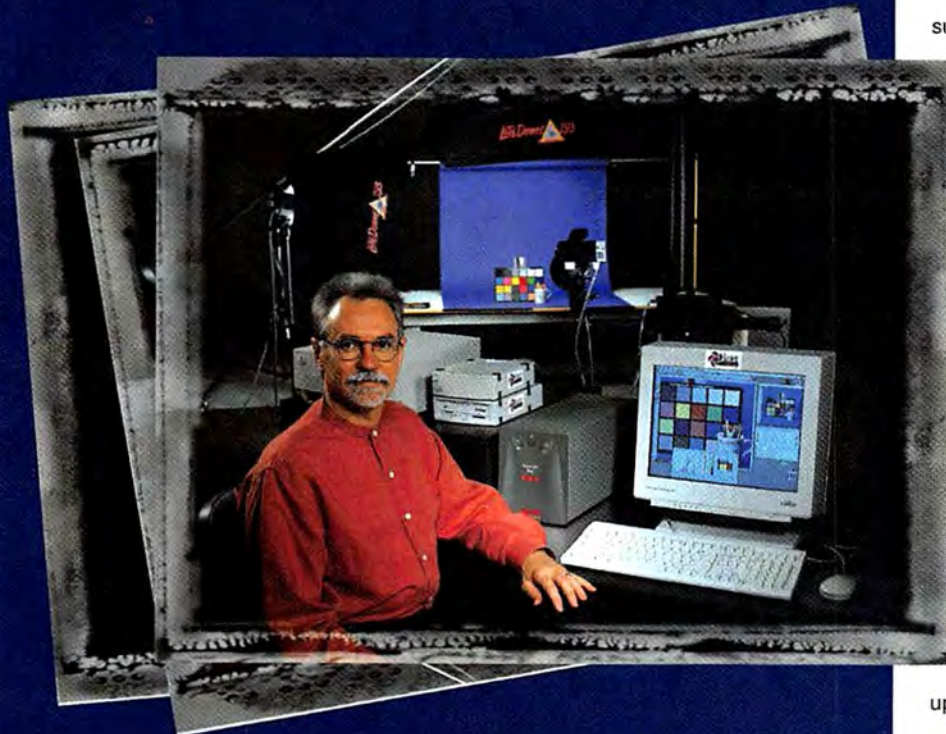
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EDITORS'

CHOICE

AWARDS



hat a year! If 1997 was a year of incredible lows, 1998 gave the Mac community equally breathtaking highs. From the revitalization of the PowerBook to the stunning debut of the iMac, 1998 was the year that Apple, the Macintosh, and the Mac OS came back with a vengeance. But it wasn't just Apple's doings that made 1998 a banner year for the Macintosh. The year brought innovative new applications, impressive updates to old favorites, and some truly amazing technology advancements conceived far from Cupertino. Once a year, we at *Macworld* recognize the products we feel are the best of the best, with our Editors' Choice Awards. If you had any doubt that 1998 was a great year for the Macintosh, you'll need no more evidence than these 31 award winners.



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GENERAL MAC

Utility

WINNER: Casady and Greene's **Conflict Catcher 8** (\$80; 831/484-9228, www.casadyg.com) is the essential troubleshooting tool for Macintosh users. The latest version of the popular extension-management utility offers improved testing for software conflicts, support for Mac OS 8's contextual menus, more file descriptions, and the ability to be controlled by Apple's Location Manager. Most impressive of all is Conflict Catcher's clean-install system-merge function, which lets you easily move old system files you still want into a newly installed System Folder.

RUNNERS-UP: Dantz Development's personal backup program, **Retrospect Express 4.0** (\$50; 925/253-3000, www.dantz.com), finally brings the power of Retrospect to individual Mac users. Express offers most of Retrospect 4.1's popular features (including incremental backups and CD-R support), at an impressive price. **Action Files 1.1**, from Power On Software (\$50; 612/317-0344, www.actionutilities.com), adds enhanced features to the standard Open and Save dialog boxes to make it easier to access and modify files.

Internet Client Software

WINNER: In just a year, Microsoft **Outlook Express 4.01** (free; 425/882-8080, www.microsoft.com) has become the star of the Mac Internet e-mail scene. Its features—including support for HTML mail, powerful mail filtering, a friendly interface, and (if you use Office 98) a built-in contextual spelling checker—can't be beat, and neither can its price.

RUNNERS-UP: There's no end to the number of shareware Internet clients, and one of the best is Stairways Software's **Anarchie Pro 3.0** (\$35; www.stairways.com), a powerful FTP client that has a Finder-like interface. Microsoft **Internet Explorer 4.01** (free; 425/882-8080, www.microsoft.com) is the most friendly and feature-rich

Web browser available for the Macintosh, and the version 4.01 update fixed many nagging problems that existed in version 4.0.

Cross-Platform Product

WINNER: When it comes to making Macs and Windows-based PCs play nice, Thursby Software Systems' **Dave 2.1** (\$149; 817/478-5070, www.thursby.com) is the answer. Once you install Dave on your Macs, they can share files and printers with PCs without a hitch. Windows users on your network can see your Macs and AppleTalk-based printers via the standard Network Neighborhood interface, and Mac users can mount Windows file servers via the Chooser.

RUNNERS-UP: Media4 Productions' **MacDrive 98 2.1** (\$80; 515/225-7409, www.media4.com) helps Windows speak the Mac's own language fluently. In addition to making Mac file servers and printers available to Windows users, MacDrive automatically converts Mac files' creator and file types to Windows equivalents and lets PCs use Mac-formatted floppies. Mac-to-PC file exchange is easy with DataViz's **MacOpener 4.0** (\$75; 203/268-0030, www.dataviz.com), which lets PCs use Mac-formatted floppies, CD-ROMs, removable-media drives, and hard drives.

Game

WINNER: Just when we were starting to get tired of the first-person-shooter genre, along comes a game that changes

everything. Epic Megagames and Digital Extreme's **Unreal** (\$50; distributed by MacSoft, 612/509-7600, www.wizworks.com/macsoft/) offers breathtaking graphics and challenging enemies. You'll use more brain than brawn and enjoy this game's richness of atmosphere, exploration, and plot. Not very many games merit the cost of buying a 3-D-acceleration card and additional RAM.

This one does.

RUNNERS-UP: Blizzard Entertainment's **Diablo** (\$30; 310/793-0600, www.blizzard.com) takes all the best elements of role-playing games and puts them into a real-time, addictive adventure that features outstanding graphics and unparalleled network play. Impressive 3-D graphics and outstanding game play make Eidos Interactive and Core Design's **Tomb Raider II** (\$50; distributed by Aspyr Media, 512/708-8100, www.aspyr.com) one of our favorite action/adventure games (Lara Croft's nauseating level of fame notwithstanding).

Consumer Hardware Product

WINNER: With Epson America's **Stylus Color 740** (\$279; 310/782-0770, www.epson.com), you can create photo-realistic prints without breaking the bank. This low-cost alternative to color-laser printers offers high-quality output, built-in serial and USB ports, and easy-to-use software. The software driver also includes three color-management options: Color-Sync, PhotoEnhance3, and user-defined custom settings.

RUNNERS-UP: Realism is a must when players are immersed in their favorite game. Micro Conversions' **Game Wizard** (\$349; 817/468-9922, www.microconversions.com), based on the Voodoo 2 chip set, is the fastest 3-D accelerator available for the Mac and offers beautiful rendering to boot. Good quality and an affordable price are only two of the perks of Umax Technologies' **Astra 1220U** (\$149; 510/651-4000, www.umax.com). This low-cost scanner is the first to offer Mac USB support, making it the best option for iMac owners.

Education/Children's Software

WINNER: Brøderbund's **Kid Pix Studio Deluxe** (\$30; 415/382-4400, www.brøderbund.com) continues to set



the standard for children's software. This painting program features all the basic tools you'd expect, plus a variety of wacky brush effects, lots of colorful backgrounds, and a gallery of fun stamps and clip art. It doesn't stop there—you can even produce multimedia presentations, such as a puppet show featuring a cast of characters and silly sounds. Kid Pix is pure fun—for kids of any age.

RUNNERS-UP: You can take a fun-filled road trip through the Mexican countryside and the Spanish language in Knowledge Adventure's **Spanish for the Real World** (\$30; 310/793-0600, www.knowledgeadventure.com), the challenging puzzle game that makes learning Spanish fun. And if you've ever wanted to

learn how sound, light, and electricity work, just take a tour of Edmark's **Zap!** (\$30; 425/556-8400; www.edmark.com), which offers fun labs that are full of challenging games and puzzles.

Reference Software

WINNER: Anything you've ever wanted to know can probably be found in the **Encyclopædia Britannica CD: 1998 Standard Edition** (\$85; 800/747-8503, www.eb.com). Unlike other multimedia encyclopedias, this CD-ROM eschews QuickTime movies and heavy use of multimedia elements to delve more deeply into topics. The result is an authoritative powerhouse. A single CD-ROM holds 72,000 articles (including 5,000 not in the printed

set), 4,000 photos and graphics, 1,200 maps, and 15,000 links to related Web sites.

RUNNERS-UP: Advanced as well as budding astronomers will find Maris Multimedia's **Redshift 3** (\$50; distributed by Piranha Interactive, 602/491-0500, www.redshift3.com) a potent guide to the night skies, which are accurately mapped here for every moment between January 1, 4713 B.C., and A.D. December 31, 9999. Every page of every single issue of *National Geographic* magazine published between 1888 and 1997 is contained in **The Complete National Geographic** (\$180; distributed by Mindscape, 415/895-2000, www.mindscape.com). National Geographic Interactive created this definitive 31-disc CD-ROM set.

B U S I N E S S

Business Productivity Software

WINNER: Microsoft **Word 98** (\$390; 425/882-8080, www.microsoft.com) is smooth, stable, and full of pleasant surprises. Our favorite? As you type, subtle colored underlines flag spelling and grammatical errors; control-click on a flagged word to view a pop-up menu of correction suggestions. In short, Microsoft has done an excellent job of packing vast power into a comprehensive, modern (and Mac-like) interface. After several years in the wilderness, Microsoft Word reigns supreme again.

RUNNERS-UP: It's all the little things in Microsoft **Excel 98** (\$399; 425/882-8080, www.microsoft.com) that are likely to please most people. For many, the multilevel Undo command will be worth the price of the upgrade all by itself. Overall, this version of the venerable spreadsheet program has a solid, polished feel. Adrenaline Software's **Charts Pro** (\$400; 418/658-9909, www.adrenaline.ca) is an intuitive, uncluttered application that is able to transform even the most-mundane sales figures into dazzling presentations.



Data-Management Product

WINNER: Blurring the line between shareware and commercial software, Chronos's **Consultant 2.53** (\$60; 801/957-1774, www.chronosnet.com) is sold only via the Internet. But its features are purely professional, including integrated calendar, address-book, to-do-list, and note-taking environments (not to mention connectivity with Palm handheld organizers). Consultant is probably the best all-purpose personal information manager that's available on the Macintosh today.

RUNNERS-UP: Support for importing from ODBC databases is yet another of the countless features that make **FileMaker Pro 4.1** (\$199;

408/987-7000, www.filemaker.com) a powerful, easy-to-use database application. Simple, lightweight, and kind to batteries, 3Com's **Palm III** (\$369; 801/431-1536, www.palm.com) is the handheld organizer of choice for Mac users, despite 3Com's inexplicable delay in releasing the long-awaited update to its MacPac software.

Server Software

WINNER: The powerful and innovative **WebTen 2.1** (\$495; 805/963-6983, www.tenon.com), Tenon Intersystems' adaptation of the popular Apache Web server, offers the fastest way yet to serve a Web site from your Mac. With its Unix-based Mach kernel, WebTen trounces the competition—and holds its own against Windows NT, helping dispel rumors that the Mac isn't a viable Web-serving platform. This industrial-strength server software combines compatibility with scripts designed for Unix servers and support for the wide variety of WebStar plug-ins.

RUNNERS-UP: Apple Computer's **AppleShare IP 6.0** (\$999; 408/996-1010, www.apple.com) reinvents the face of file serving, boasting faster performance, better compatibility with Windows clients, and a revamped mail engine. The most popular Web server for the Mac isn't the fastest, but

StarNine Technologies' **WebStar 3.0** (\$499; 510/649-4949, www.starnine.com) earns points for ease of use, polish, and respectable performance.

Storage Product

WINNER: APS Technologies takes home the gold this year with the **CD-RW Pro 4x2x6** (\$499; 816/483-1600, www.apstech.com) CD recorder. Given their multitude of uses, CD recorders have truly come of age. In addition to writing to CD-R media, the CD-RW Pro also works with the less-compatible—but rewritable—CD-RW media. And it's all housed in a well-designed case that includes built-in active termination.

RUNNERS-UP: LaCie's **DVD-RAM** (\$799; 503/844-4500, www.lacie.com) drive is both a DVD-ROM drive and a high-capacity backup device. There are competing rewritable DVD formats, but the DVD-RAM drive beat them all out of the gate. Atto Technology's **FibreBridge** (\$3,295; 716/691-1999, www.attotech.com) links SCSI devices to the high-speed Fibre Channel architecture. The FibreBridge offers as

much as 64MB of buffer memory as well as remote-management features.

Display

WINNER: We were blown away by the image quality, features, and price of Mitsubishi Electronics America's **Diamond Pro 900u** (\$799; 714/220-2500, www.mitsubishi-display.com). With dual USB and video inputs, the 900u is the perfect monitor for a dual-computer setup. You can transfer your monitor (and all USB peripherals, if you've got a USB card or a new USB-capable Mac) from one computer to the other just by pressing a single button on the front of the 900u. But the key to this monitor is its screen: Mitsubishi's new 19-inch, DiamondTron NF (Natural Flat) tube offers impressive image quality and reduced glare.

RUNNERS-UP: It's never been easier to impress when you're on the go. Epson America's **PowerLite 5500C** (\$7,499; 310/782-0770, www.epson.com) weighs less than ten pounds, sets up easily, and offers best-of-class image quality. Apple Computer's **Studio Display**

(\$1,299; 408/996-1010, www.apple.com) is a great 15-inch LCD monitor at an affordable price, and its stylish design is sure to turn heads.

Science/Engineering Software

WINNER: SAS Institute's **StatView 5.0** (\$695; 919/677-8000, www.statview.com) is a powerful and easy-to-manage statistics application perfect for even non-statisticians. Sporting well-designed templates and documentation, StatView allows you to create authoritative, high-impact charts quickly. And it imports and exports Microsoft Excel and Word files flawlessly—a must for most businesspeople.

RUNNERS-UP: National Instruments' **LabView 5.0** (\$995; 512/794-0100, www.natinst.com) reigns supreme in the areas of data acquisition and instrument control. LabView 5.0 adds wizards for data acquisition and voltage conversion. A powerful modeling tool for designers and architects, Ashlar's **Vellum Solids 98** (\$2,995; 408/615-6840, www.ashlar.com) is blessedly easy to navigate, with strong import capabilities and great online support.

World Class Awards

TECHNOLOGY OF THE YEAR

Much maligned and often ignored, especially by Apple, **AppleScript** finally came into its own in 1998. For years, AppleScript has been a unique tool that allows Mac users to automate repetitive tasks and make their applications work together. Its power and ease of use were one of the Mac's unsung advantages over Windows during Apple's darkest days. It's not an overstatement to say that without AppleScript, many publishing-industry Mac users would've moved to Windows long ago.

For years, Apple promised that a PowerPC-native version of AppleScript was right around the corner. Subsequently, rumor had it that AppleScript was dead, with no further updates being planned. But in 1998, Apple finally realized that AppleScript was a diamond in the rough.

In Mac OS 8.5, AppleScript steps to the fore, running in native PowerPC code that causes scripts to run as much as ten times as fast as they did in the past. Much more of the Mac OS is scriptable than ever before. AppleScript has been built into the Finder as Folder Actions, a system that allows AppleScripts to be set to run automatically whenever a folder is opened or its contents are altered. And Mac OS 8.5's new HTML-based help system employs AppleScript as its means of interacting with the rest of the Mac OS. Kudos to Apple for finally recognizing what many Macintosh users have known all along—that AppleScript is, in numerous ways, the lifeblood of the Mac OS.

IMPACT AWARD

The best thing about the **iMac** (\$1,299; 408/996-1010, www.apple.com) is not that it has made a lot of noise but that it has created a lot of silence—particularly from all those naysayers who spent most of last year trying to perform last rites over Apple's not-quite-dead carcass. If there is a single reason for Apple's amazing turnaround, it is Jonathan Ive's transparent Bondi-blue baby.

Never before have we seen a single product cause such a furor. The iMac has driven peripheral developers into a frenzy to get USB products (particularly transparent turquoise-and-white ones) out the door as fast as possible.

There's no debating that the iMac is the product that had the most impact on the Mac world—and probably the entire computer industry—in 1998. But it's also probably one of the most influential products in the history of the personal computer. In the end, the iMac's beautiful design and two-plug simplicity may spell the end of computers in beige boxes with a spaghetti factory of cables hanging off their backs. For that, every present and future computer user should be grateful.



PUBLISHING AND DESIGN

Painting/Image-Editing Software

WINNER: Adobe **Photoshop 5.0.2** (\$649; 408/536-6000, www.adobe.com) is an outstanding upgrade to what has long been the strongest image-editing program for the Mac. The new History palette permits nearly unlimited undos, and the Text tool is now much more flexible than in previous versions. Photoshop's new color-management features aroused controversy, but despite this, the program still makes it easier than ever to ensure consistent colors in your artwork.

RUNNERS-UP: With MetaCreations **Painter 5.5 Web Edition** (\$449; 805/566-6200, www.metacreations.com), the leading natural-media painting tool now has several enhancements for Web graphics, including the ability to create JavaScript rollovers. Corel **Photo-Paint 8 for Power Macintosh** (\$495; 613/728-8200, www.corel.com) has quite a few rough edges but offers an impressive set of image-editing features, including some you won't find in Adobe Photoshop.

Drawing Software

WINNER: The competition was stiff, but Adobe **Illustrator 8.0** (\$375; 408/536-6000, www.adobe.com) gets the nod for its slew of new features and its streamlined interface. Among the most noteworthy additions: live blends, blends on a path, natural-media brush effects, and enhanced distortion controls. If that's not enough, Adobe Photoshop users will rejoice at the ease with which Illustrator interacts with the image-editing package. The software that brought professional illustration capabilities to the Mac has retaken its throne.

RUNNERS-UP: Macromedia **Free-Hand 8.0.1** (\$399; 415/252-2000, www.macromedia.com) holds its own, with its superior text, autotracing, and search-and-replace functions. It's also the best drawing program for creating Web animations. Corel **Draw 8 for Power Macintosh** (\$695; 613/728-8200, www.corel.com) is an impressive

upgrade, offering well-designed tools for transparency, interactive enveloping, and 3-D effects.

Digital Camera

WINNER: For those looking for the best in overall performance and quality, Olympus America's **D-620L** (\$1,199; 516/844-5000, www.olympus.com) is hard to beat. Olympus's latest point-and-shoot camera features a high-resolution CCD capable of capturing up to 1.4 million pixels per image, a continuous 3× optical zoom lens, a six-mode flash system, 8MB of memory, and improved speed and power management. For the optimal shots, the D-620L includes manual spot-metering compensation, white-balance override, and the ability to accept a variety of lenses.

RUNNERS-UP: Eastman Kodak's **DC260** (\$899; 716/724-4000, www.kodak.com) can capture up to 1.6 million pixels per image—a first for digital cameras in its class. It also features a continuous 3× optical zoom and USB connectivity. Improving on Nikon's popular CoolPix 900, the **CoolPix 900s** (\$799; 516/547-4315, www.nikonusa.com) adds more memory (from 4MB to 8MB), a hot shoe for an external flash, and a bevy of refined features.

Scanner

WINNER: A perfect fit for prepress houses, Umax Technologies' **PowerLook 3000** (\$3,095; 510/651-4000, www.umax.com) is a true workhorse. The Power-

Look features a two-lens system that extends the scanner's effective range of optical resolution, allowing it to be used for scanning 35mm transparencies as well as normal reflective materials. A stationary pick-up element and moving scan bed also contribute to its ability to deliver accurate 3,048-dpi scans with excellent image quality.

RUNNERS-UP: Versatility is the strong suit of the **Dimage Scan Multi** (\$2,499; 201/825-4000, www.minoltausa.com), from Minolta. This film scanner touts compatibility with a variety of formats, from 16mm to Kodak's Advanced Photo System and even all the way up to 6 by 9 centimeters. With its advanced LinoColor software, Heidelberg CPS's **LinoColor Saphir Ultra 2** (\$3,695; 516/753-4770, www.linocolor.com) features professional capabilities found in the LinoColor high-end drum-scanner line but delivers them at a desktop price.

Professional/Workgroup Printer

WINNER: Affordable proofing sums up the credentials of Epson America's **Stylus Pro 5000** (\$9,995; 310/782-0770, www.epson.com). For under \$10,000, graphics professionals can enjoy in-house proofing that rivals Matchprint quality. It can simulate SWOP, Du Pont Waterproof, DIC, Chromalin EuroSTD, and any of five custom environments. The bundled RS-5000 Fiery Server has 10/100BaseT, SCSI-2, IEEE 1284 parallel, and serial connectivity for networking.

RUNNERS-UP: The Hewlett-Packard **Color LaserJet 4500DN** (\$3,799; 650/857-1501, www.hp.com) offers outstanding output quality and can print duplex color in formats up to legal size. The Xanté **Accel-A-Writer 3G** (\$5,995; 334/342-4840, www.xante.com) offers mirror printing, enhanced line screening, densitometer calibration, and negative-imaging enhancements.

Graphics Utility

WINNERS: **Test Strip 2.02** (\$149; 805/646-0217, www.vividetails.com), from Vivid Details, offers sophisticated color-correction functions in an easy-to-use Adobe Photoshop plug-in. The program presents variations of your image with different color settings; just pick the

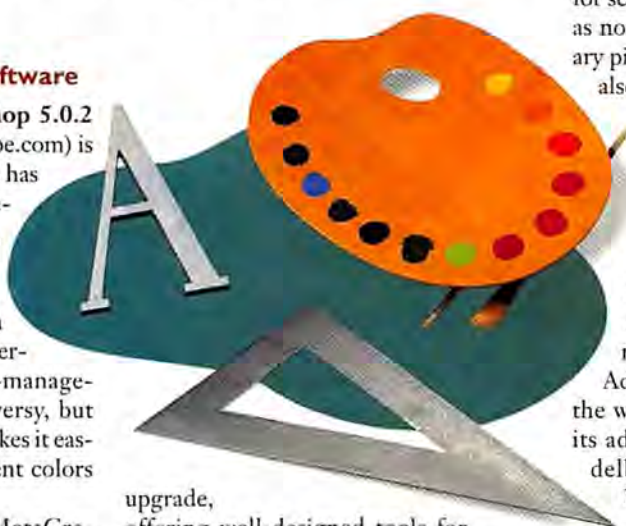


image you want, and the program applies the appropriate color changes. Version 2.02 offers a thumbnail-viewing mode and an Editable Task List that lets you easily review and modify your changes. Extensis **PhotoTools 3.0** (\$150; 503/274-2020, www.extensis.com) bulks up with new Web-graphics features and remains a strong productivity tool for Adobe Photoshop users.

RUNNER-UP: Ultimatte **Knock-Out** (\$395; 818/993-8007, www.ultimatte.com) lets you create sophisticated masking effects with a minimum of hassle.

Publishing Utility

WINNER: Altamira Group's **Genuine Fractals Print Pro** (\$159; 818/556-6099, www.altamira-group.com) lets you squeeze large Adobe Photoshop images into much smaller Fractal Image Format

files. When you decompress the files, you can make them much bigger than the originals, with minimal loss of image quality. The new Print Pro version works with CMYK files—in addition to RGB—and provides a lossless-compression option.

RUNNER-UP: Extensis **PreFlight Pro 2.1** (\$400; 503/274-2020, www.extensis.com) inspects your documents for likely output problems and helps you fix them. Extensis **QX-Tools 4.0** (\$150; 503/274-2020, www.extensis.com) provides a host of useful productivity enhancements for QuarkXPress 4.X.

Input Device

WINNER: Wacom's **Intuos** (\$510; 360/896-9833, www.wacom.com) is an enhanced tablet/pen combo that features a highly sensitive tip and 1,024 pressure levels. The system also includes three

new input devices: the Lens Cursor, which features a rotating crosshair lens; the Airbrush, which includes a finger wheel for controlling ink flow; and the 4D Mouse, which offers a thumbwheel control for zooming in on images or navigating 3-D spaces.

RUNNER-UP: AnimaX International ASA's **Anir Ergonomic Mouse Pro** (\$70; 818/713-9933, www.animax.no) is an ergonomic pointing device that looks like a pilot's control stick. The mouse encourages a natural vertical hand position, with the cursor being controlled by your thumb in a natural resting position. CalComp's **Creation Station Pro** (\$289-\$599; 714/821-2000, www.calcomp.com) features a pressure-sensitive stylus along with a cordless, batteryless, five-button mouse—the first one designed to work with a digital tablet.

World Class Awards

SOFTWARE PRODUCT OF THE YEAR

After the public-relations disaster that was Word 6.0, Microsoft needed a minor miracle to redeem Microsoft Office in the eyes of Mac users. But that's just what happened—Microsoft made up for its past sins with an updated Office that matched the Windows version of Office on almost every front and even surpassed it in several places.

Microsoft Office 98 (\$450; 425/882-8080, www.microsoft.com)—consisting of Word, Excel, PowerPoint, and Outlook Express—takes Microsoft's bevy of powerful business features and adds true Mac elegance. Support for Macintosh Drag and Drop, PlainTalk text-to-speech, and QuickTime are all solid, and there's nary a Windows screen shot to be found in the manual.

Throughout this productivity suite, there are wonderful innovations: you can install Office simply by dragging a folder from the CD-ROM to your hard disk. And once you're up and running, the applications launch significantly faster than did their predecessors. Internet-savvy features abound—you can save documents as Web pages or attach a document to a message in your favorite e-mail program. Word can even read Web pages, either from your local hard disk or via the Internet. All three core Office programs let you create links that open live Web pages or files on your hard disk. And Outlook Express has rapidly become one of the most feature-rich and easy-to-use e-mail clients around.

All of this, and more, makes Office 98 a powerful, intelligent, friendly package. In short, for the first time in a long time, Microsoft seems to actually understand what the elegance of the Macintosh is all about.

HARDWARE PRODUCT OF THE YEAR

With the release of the sleek new PowerBook G3 series, Apple has proved that it's back at the top of its game when it comes to creating notebook computers. Led by the high-speed **PowerBook G3/300** (\$3,999; 408/996-1010, www.apple.com), these incredible computers combine a sleek, subtly curved industrial design with power unlike any the laptop world has ever seen.

Although the PowerBook G3 can turn heads on airplanes and in coffeehouses, with its black coloring and its large, white Apple logo, there's much more to this notebook than style. It's actually a full-featured computer that's every bit as powerful as its desktop counterparts. Standard features include a 300MHz G3 PowerPC processor with a 1MB backside cache, 64MB of RAM, an 8GB hard drive, and a 20x CD-ROM drive—with a DVD-ROM drive as an optional extra. Its 14.1-inch, active-matrix LCD screen is beautiful to behold. Its dual bays can hold either storage peripherals or fast-charging lithium batteries. And a 56-Kbps modem is standard, as are Ethernet and infrared capabilities.

Given such impressive features, great performance, and fabulous industrial design, this portable is so impressive that it threatens the very existence of desktop systems. Why buy a deskbound model when you can take this powerful, stylish Macintosh along, wherever you may roam?



DYNAMIC MEDIA

Web Authoring Software

WINNER: GoLive CyberStudio 3 Professional Edition (\$549; 650/463-1580, www.golive.com), with its easy-to-use interface and its powerful collection of HTML authoring features, is simply the best visual HTML editing tool available on any platform. Version 3 adds excellent support for Dynamic HTML and Cascading Style Sheets and offers a dramatically improved site-management view.

RUNNERS-UP: Macromedia Dreamweaver 1.2 (\$299; 415/252-2000, www.macromedia.com) can't be surpassed when it comes to the sheer number of HTML features it supports. Its corresponding Windows version also makes the program a good choice for cross-platform Web design teams. After many years of hype, NetObjects Fusion 3.0 (\$200; 650/482-3200, www.netobjects.com) finally emerges as a powerful, flexible tool for business users who need to design and update their Web sites in a flash.

Web-Graphics Software

WINNER: Powerful, easy-to-use vector-drawing tools and extremely small output files combine to make Macromedia Flash 3.0 (\$299; 415/252-2000, www.macromedia.com) a great application for creating dynamic graphics on the World Wide Web. New transparency and morphing features give a boost to what was already a one-of-its-kind tool that all cutting-edge Web designers ought to have in their design arsenal.

RUNNERS-UP: Macromedia Fireworks 1.0 (\$299; 415/252-2000, www.macromedia.com) gives Web designers a powerful way of creating, animating, and optimizing the GIF and JPEG images they place in their Web pages. A flexible, easy-to-use tool that will please business users and high-end designers alike, Adobe ImageStyle 1.0 (\$129; 408/536-6000, www.adobe.com) can create attractive buttons, headers, and JavaScript-based rollover effects in nothing flat.

3-D-Graphics Software

WINNER: The blazing-fast renderer in Maxon Computer's Cinema 4D XL 1.0 (\$1,995; distributed by 3D Gear, 805/484-5804, www.cinema4dusa.com) can ray-trace high-polygon-count scenes faster than any other Mac 3-D software on the market. Couple that with its full complement of professional-quality 3-D-modeling tools; its advanced animation tools, including impressive inverse-kinematics support; and its ability to export a huge variety of file formats, and Cinema 4D XL has all the right ingredients to become the leading 3-D software for the Macintosh.

RUNNERS-UP: Although it lacks an integrated modeler, ElectricImage 2.8 (\$2,995-\$7,495; 626/577-1627, www.electricimage.com), from Electric Image, is still the state of the art when it comes to 3-D on the Mac. It's also one of the best rendering and animation tools available for any platform. MetaCreations' cleverly designed 3-D-terrain generator, Bryce 3D (\$199; 805/566-6200, www.metacreations.com), lets you create and animate spectacular digital scenery, complete with clouds, water, mountains, and even rainbows.

Digital-Video Software

WINNER: Retouching individual frames of a movie is a tedious fact of life in the film industry. Puffin Designs' Commotion 1.6 (\$2,495; 415/331-4560,

www.puffindesigns.com) brings relief to postproduction pros by letting them use a Mac—rather than an expensive workstation—to do professional-level cleanup and matte generation. Complementing more-full-featured compositing programs, such as Adobe After Effects, Commotion combines paint, rotoscoping, and motion-tracking tools with the ability to preview results in real time.

RUNNERS-UP:

Standing out from the crowd of After Effects plug-in packages is MetaCreations' Final Effects Complete

(\$1,195; now owned by ICE, 781/768-2300, www.iced.com), a collection of more than 60 filters, including particle generators, video-distortion tools, and 3-D-perspective effects. Terran Interactive's Media Cleaner Pro 3.0 (\$359; 408/356-7373, www.terran.com) is a must for video and audio production, compressing media files for fast, high-quality playback from a CD-ROM or over a modem.

Audio/MIDI Software

WINNER: A mature, solid digital-audio/MIDI sequencer, Mark of the Unicorn's Digital Performer 2.4 (\$795; 617/576-2760, www.motu.com) is the single most complete audio/MIDI studio available right out of the box. With lots of bundled effects plug-ins, seamless import of samples, and a smooth interface sporting such goodies as the Quick-Scribe notation window, it's a potent combination of elegance and power for Mac musicians.

RUNNERS-UP: U&I Software's MetaSynth 2.0 (\$249; distributed by Arboretum, 650/738-4750, www.uisoftware.com), is an innovative and outrageous tool that converts graphic images into sound, using an image's brightness and color information to generate musical notes. MacSourcery's BarbaBatch 2.4 (\$395; 760/747-5995, www.macsourcery.com) is the ultimate Mac sound-file conversion utility, able to batch-process and produce good-sounding files based on your customized parameters. **m**

Senior Editor/Features JASON SNELL managed this year's awards.

ON THE TRAIL OF MAC OS 8.5

by David Pogue

Uncover Your Mac's

Hidden Potential

with These Tips, Tricks,

and Shortcuts

It doesn't take much detective work to spot the newest Mac operating system's flashiest features. It's no secret that OS 8.5 is zippier; offers a customizable look, feel, and sound; and has a file- and Internet-searching program named Sherlock. (For complete coverage of these basics, visit Macworld Online at www.macworld.com.)

But if you poke around enough, you'll also find the fingerprints of Apple engineers on many subtler components of the new OS. Hidden beneath the surface, new shortcuts, tricks, and undocumented features make Mac OS 8.5 even faster and more convenient. Here, for your sleuthing pleasure, are a few clues to help you get the most from the new system. There was so much to say about Sherlock that we dedicated an article solely to it: see "Sherlock Power Searching," *Secrets*, elsewhere in this issue.



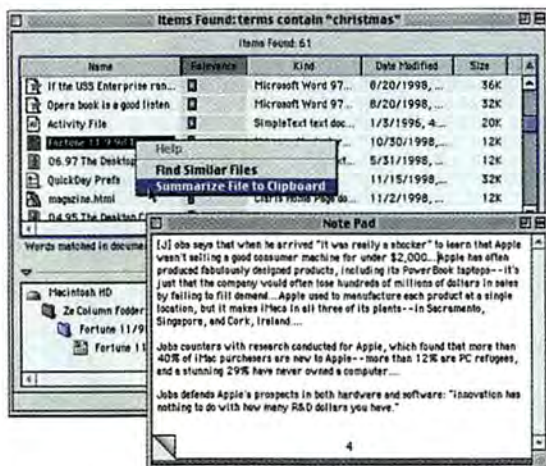
A Is for Application Menu

Kinsey Millhone and Hercule Poirot got reputations for being brilliant detectives—but then, they never had to help Mac novices over the phone. For example, asking a novice to identify the active program by analyzing the tiny Application-menu icon in the upper-right corner of the screen makes solving murders look like child's play.

Mac OS 8.5 goes a long way toward making the new Application menu easier to use, since it now identifies the active program by name. But there's more to this clever menu than that.

Name Games You can customize the new Application menu to fit almost any whim. If you prefer the old, icon-only Application menu, click on the divider on your menu bar (between the clock and the name of the active program) to make the name disappear.

The Quick Switch Don't want to use the mouse to switch active programs by choosing from the Application menu? Press ⌘-tab to cycle alphabetically through all your open programs. If you press ⌘-tab-shift , you'll cycle backward.



A Mac of Few Words If the DataViz MacLinkPlus translators are installed, Mac OS 8.5 can summarize all sorts of your lengthy documents with a single control-click.

Palette Appeal If you're switching among applications a lot, you may prefer to view all your open programs' icons at once, where they'll be available in a single click. In that case, click on the Application menu and drag it down to the desktop to turn it into a floating palette.

There's a lot you can do to make this

palette yours. Press option and click on the zoom box in the palette's upper-right corner to make your palette show small icons. Want to orient the palette horizontally? Press option and shift, then click on the zoom box. Search the Mac OS Help file for the word *Switcher* to find clickable AppleScripts that customize the palette in more ways.

You can drag and drop icons from the Finder onto the Application palette to launch them, or option-click on a program tile to go to that program and hide the one you were just in.

A Menu with Many Faces If the OS's built-in Application-menu-modification tricks don't do it for you, download PolyMorph Software's free control panel Prestissimo (available from www.macworld.com/more/). It lets you efficiently rearrange the Application palette's buttons, change the size and shape of the palette,

ESSENTIAL TROUBLESHOOTING TIPS by Ted Landau

The thought of upgrading to Mac OS 8.5 probably fills you with excitement and trepidation. You may be eager to try out 8.5's touted new features, but odds are that you've also heard about the OS's reported problems—from applications that won't launch to system crashes at start-up.

Although Mac OS 8.5 certainly has had its share of trouble, the good news is that most of its problems are easily fixed. How? The best remedy is to update your software (see the table, "Get Up-to-Date"). This should eradicate more than 90 percent of the bugs and conflicts. The following advice should smooth most of the remaining potholes on the road to Mac OS 8.5 success.

TIP 1: PREVENT DATA LOSS

We may as well start where your fears probably do: reports that Mac OS 8.5 can cause a hard drive to fail. Perhaps you've heard the horror stories—a blinking question mark that appears at start-up and that there's no getting past. Often the only way to bring a Mac with this affliction back to life is to reformat the hard disk.

At press time, Apple reported that the primary cause of this rare problem is probably a defect in previous versions of Drive Setup (included with the Mac OS). Therefore, make sure to get Mac OS 8.5.1 from the Apple Web site (<http://til.info.apple.com/swupdates.nsf/search>) before you upgrade. It comes with a new version of Drive Setup—1.6.2. For maximum safety, back up your

data (see "Be Safe, Not Sorry," February 1999) and reformat your hard disk before updating the OS by following these steps. Even if you're unwilling to reformat your hard disk, these steps alone should help keep you out of trouble.

1. Before you install OS 8.5.1, launch the latest version of Drive Setup (1.6.2 at press time) and select Update Driver from Drive Setup's Functions menu. Quit Drive Setup.
2. Launch the Mac OS 8.5 installer. When you get to the Install Software window, click on the Options button. Uncheck Update Apple Hard Disk Drivers. (This is very important.)
3. Proceed with installing Mac OS 8.5.1.

If you're using another formatting utility, such as FWB's \$130 Hard Disk ToolKit (612/253-8300, www.fwb.com), make sure to get the latest version of the driver prior to installing Mac OS 8.5.1. Then follow steps 2 and 3.

TIP 2: AVOID THE APPLE MENU LOGJAM

Overall, Mac OS 8.5 is speedier than its predecessors, but sometimes it can bog down. For example, your Mac may slow to a snail's pace when you select any menu after switching from one open application to another.

The slowdown is caused by a bug in the OS that relates to the Apple Menu Options control panel. You will encounter it only if you've enabled Apple Menu Options and have an alias to a large folder or volume in your Apple menu (either at the root level or in the System Folder's Favorites folder).

and much more. (Allegro was Mac OS 8.5's code name—and in music, *prestissimo* is faster than *allegro*. Get it?)

Speed Secrets

What makes Mac OS 8.5 fast is that it's been tuned to really take advantage of the PowerPC chip. This means that you can use it only if you have a PowerPC Macintosh, but it also means that it feels *much* faster than Mac OS 8.1, especially when you're copying over a network. The intrepid Mac user does not have to stop there, however.

Stealthy Scrolling

Scroll bars may be the *obvious* way to get around a window or page, but they're not the *only* way: in any Finder window, simply press ⌘ and drag (inside the window) to slide your view up, down, or even diagonally.

Instant Open Mac OS 8's spring-loaded folders open automati-

cally when you drag an icon on top. You adjust the speed of this auto-opening with the Edit menu's Preferences command.

Unfortunately, if you set the auto-opening delay too short, your cursor is likely to open windows accidentally. Yet if you set the delay too long, the feature takes forever to kick in. The Mac OS 8.5 solution? Leave the Preferences setting at *long*. Then, when you drag onto a folder, press the spacebar. The folder will spring open instantly.

Secret Passage Mac OS 8.5's new Open and Save dialog boxes have many advantages: they're movable and resizable; they offer Finder-style triangle buttons to help you navigate folders; and they show Disk, Recent, and Favorites pop-up menus. Here's the secret: you can drag a folder or disk icon directly from the desktop into an open dialog box. The directory changes instantly to show the contents of that folder or disk.

Summary Please, Watson

During OS 8.5's development, an exciting secret spread among the Internet's Apple watchers: press control and click on a text file in the Finder, so the rumor went, and there, in the contextual menu, you'll see a command called Summarize to Clipboard. Using this feature, you can reduce a wordy 15-page document to a couple of concise paragraphs (see the screen shot, "A Mac of Few Words").

Unfortunately, when you try this, you'll discover that the Summarize command is mysteriously missing, unless you've clicked on a *plain* text file (for example, one created in SimpleText). Elementary, my dear Watson: you need DataViz's MacLinkPlus translators.

Alas, MacLinkPlus no longer comes with the Mac OS. (Apple decided that the DataViz licensing fees were an unnecessary expense.) Still, you can install MacLinkPlus from a previous version of the Mac OS, get it bundled with some Mac OS 8.5 reference books, or buy DataViz's (203/268-0030, www.dataviz.com) \$100 MacLinkPlus 10.0. You'll be able to summarize only the types of files your version



To solve the problem, delete the alias or—if that doesn't do the trick—disable the Apple Menu Options control panel. If you decide to abandon the Apple Menu Options but don't want to give up those features, try a shareware alternative, such as Fabien Octave's \$10 BeHierarchic or Kerry Clendinning's \$15 Menu-Choice. You can find both of them at www.macworld.com/more/.

TIP 3: PRY OPEN CONTROL PANELS

When you try to open Mac OS 8.5's new Internet or File Exchange control panels, you may be greeted with a message that says: "To use the Internet control panel, you must first install Internet Config Extension version 2.0 or later." Mac OS 8.5 places the correct version of the extension in your System Folder, so why is the message claiming that it's gone?

The reason is that when you install Web browsers—and many other Internet programs—they often overwrite the version you need with an older version. If this happens, you'll get the error message. The solution? Launch the Mac OS 8.5 installer, and choose to custom-install the Internet control panel. In the process, you'll reinstall the 2.0.2 version of Internet Config Extension.

TIP 4: FIX ADOBE TYPE MANAGER

One widely used program that has *not* been updated to work with Mac OS 8.5 (as of this writing) is Adobe Type Manager (ATM). As a result, the program can cause a variety of troublesome symptoms—including system crashes and Type 23 errors—that wouldn't

necessarily lead you to suspect ATM as the cause. While you're waiting for the bug-fix update, Adobe recommends the following kludge (which fixes *most* of the reported problems):

1. Change ATM's Preserve: Character Shapes to Preserve: Line Spacing.
2. Turn on ATM's Smooth Font Edges on Screen option, but do not check the Disable Smoothing at Screen Font Point Sizes check box.

Many users have also found that unchecking the Translate Documents Automatically option in Mac OS 8.5's File Exchange control panel eliminated Type 23 errors associated with ATM.

TIP 5: CALM QUARKXPRESS QUIRKS

QuarkXPress users will suffer some oddities when they upgrade to Mac OS 8.5—including display problems such as check boxes missing from dialog boxes. There's an unconventional but effective solution to this problem: install Greg Landweber and Arlo Rose's \$25 shareware program Kaleidoscope 2.1. We're not sure *why* it works, but it does.

Having Kaleidoscope installed also serves as a workaround to a problem Palm PDA users have experienced, namely Pilot Desktop application crashes. At press time, 3Com (www.3com.com) released a beta version of MacPac 2.0, which should fix this bug.

Contributing Editor TED LANDAU offers troubleshooting advice for every new Mac OS release, on his MacFixIt Web site (www.macfixit.com).

of MacLinkPlus supports. This means you'll need a newer version for files made in Microsoft Word 98, for instance.

Once you're up and running, you can control-click on the Clipboard window repeatedly to boil down summaries to a single sentence. That undocumented trick could come in handy when you're on the receiving end of documents written by, say, long-winded relatives, members of Congress, or lawyers.

A Foreign Affair

The Mac has always been an international player—but never so much as in Mac OS 8.5. For the first time, you can view Japanese, Korean, Chinese, Arabic, Hebrew, and Indian Web pages in their non-Roman alphabets without having to buy any language kits.

To make this possible, the new OS comes with a multimegabyte package of special fonts, but they're not part of the standard installation. To get these, run the Mac OS 8.5 installer, click on Add/Remove, and install Multilingual Internet Access. When it's over, you'll be able to view those foreign-language Web pages.

Another hidden international touch: the new euro currency symbol (€) has been added to built-in fonts, such as Charcoal. Press option-shift-2 to produce it in your documents. Remember,

however, that other people won't see your euro symbols on their computers unless they, too, have Mac OS 8.5.

The X-Tips

Following the tracks of OS 8.5's makers can lead into some dark and narrow software corridors. Here, for the bold and the bored, are features even the programmers' bosses probably don't know about.

Memory Lapse Ever notice that the more memory a Mac has, the longer it takes to start up? The reason is that the Mac tests all its memory each time you turn it on. One undocumented Mac OS 8.5 feature, however, lets you bypass these tests altogether.

While pressing ⌘-option, open the Memory control panel. You'll see a secret panel bearing an On/Off switch for Start-up Memory Tests. In theory, turning off these diagnostic tests makes your Mac start up faster. However, do so at your own risk—some Mac-clone owners have reported crashes.

Printer Inspector

Before printing that 150-page QuarkXPress document, use the File menu's Get Info command (⌘-I) on a laser printer's desktop icon to see whether the printer is busy, how it's configured, and which fonts it has. Also, you can now drop PICT and PostScript files directly onto the printer desktop

icon to print them—without opening a separate application.

Help Tactics The new Mac OS Help mechanism is actually a mini-Web browser that reads HTML help files. That means you can't print anything from the help text—unless you get sneaky.

Launch your favorite Web browser, choose Open from the File menu, and open the Help folder (in your System Folder). Inside the Mac OS Help folder is an index file called Mac OS Help. From here you can access all the help files with your browser and print the text just as you would any Web page.

A Hidden Message As with any truly interesting software, Mac OS 8.5 even contains a clandestine credits display. Press control-option-⌘. The first command in your Apple menu will change to say "About the Mac OS 8.5 Team." Choose it and you'll be treated to a lengthy display of credits and floating icons from this OS's creators.

The Last Word

Holmes and Watson would never have guessed that even software could harbor such secrets, surprises, and strange sights. Mac OS 8.5 has it all. This operating system's hidden talents can make your Mac show off, do more, and hurry up. It's all there—if you know where to look. **m**

DAVID POGUE (www.davidpogue.com) coauthored *Macworld Mac Secrets*, fifth edition, which contains several pounds of Mac OS 8.5 info.

GET UP-TO-DATE



Even after you upgrade Mac OS 8.5 to version 8.5.1 (<http://til.info.apple.com/swupdates.nsf/search>), not every program will work glitch-free with the new operating system. Some need upgrading, such as these major products. (For a more complete list, visit www.macintouch.com/m85_links.html.) At press time, all updates were free to registered owners of the previous version.

Company	Program	Mac OS 8.5.1 Compatibility	Web Address
3Com	MacPac 1 for PalmPilot and Palm III	Requires MacPac 2.0	palm.3com.com/macintosh/index.html
Connectix	Virtual PC	Requires version 2.1	www.connectix.com/html/
Kensington	Kensington MouseWorks	Requires version 5.05	www.kensington.com/support/mwsmac1.html
LaCie	Silverlining	Requires Silverlining 5.8.3 or Silverlining Lite 2.2.1	www.lacie.com/scripts/support/SilverCompatibility.cfm
MicroMat Computer Systems	TechTool Pro	Requires version 2.1.1	www.micromat.com/micromat/downloads.html
Microsoft	Microsoft Office 98	Requires Mac OS 8.5 Compatibility Update	www.microsoft.com/macosoffice/85update.htm
Netopia	Timbuktu Pro	Requires version 4.8	www.netopia.com/software/tb2/mac/latest_version.html
Netscape	Netscape Communicator	Requires version 4.5	www.netscape.com/download/
Symantec	Norton AntiVirus	Requires version 5.03	www.symantec.com/techsupp/files/navm/norton_antivirus_for_macintosh.html
	Norton Utilities 4.0	Requires version 4.01	www.symantec.com/techsupp/files/num/norton_utilities_version_4x_for_macintosh.html



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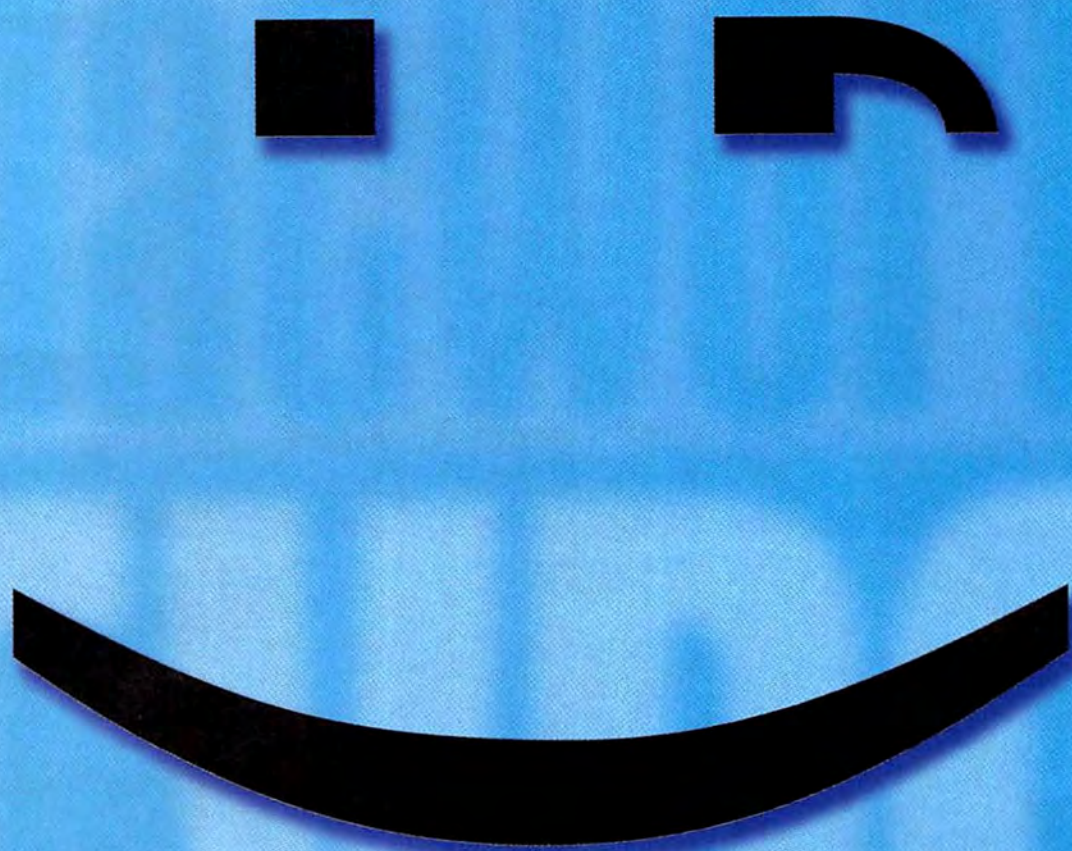
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Secrets

Sherlock Power Searching

MAKE OS 8.5'S SEARCHING TOOL EVEN MORE POWERFUL

by Ted Landau

One of the most impressive new features in Mac OS 8.5 is Sherlock. This replacement for Apple's Find File function does much more than just find files. It also lets you search for a word or group of words within documents (see "Take Your Search Offline"). But what is most compelling about Sherlock is the way it works with the Internet: it lets you do searches on multiple sites simultaneously, right from the desktop. All you have to do, once you're online, is select Sherlock's Search Internet tab, enter a search term, and click on the Search button. In a matter of seconds, Sherlock posts results gathered from multiple sites such as AltaVista, Excite, and Apple's Tech Info Library. Click on any item, and Sherlock displays a small portion of the selected Web page's contents. Double-click on an item, and Sherlock opens your Web browser to that page.

Searching the Internet by using Sherlock could hardly be simpler. But there's room for improvement. Here's how to customize Sherlock to make it even more powerful.

Cast a Wider Net

Consider the list of sites in Sherlock's Search Sites window as nothing more than a starting point. Just about any Web site that has a search engine, such as Yahoo, can be added to the list. All you

need is a plug-in file for the Web site.

There are a lot of plug-ins out there for the taking. Apple offers a dozen or so free plug-ins (find them at www.apple.com/sherlock/plugins.html), including one for Apple's own Web site. You can obtain an even wider range of plug-ins from sites such as the Sherlock Internet Search Archives (www.apple-donuts.com/sherlocksearch/index.html) and the Sherlock Collection (<http://moriarty.mit.edu/Sherlock/All.html>). If you can't find a plug-in for a particular site on any of these lists, check the site itself. It may have its own plug-in posted. It's also a

good idea to get the updated version of Sherlock in Mac OS 8.5.1 or later. It comes with many more plug-ins than the original version.

If even this doesn't satisfy your craving for plug-ins, you can create your own. You'll be in familiar territory if you already know something about HTML; the language for writing plug-ins uses many of the same conventions. An Apple Web page (www.apple.com/sherlock/plugindev.html) can help you get started. Alternatively, you might want to follow Gord Lacy's step-

continues



by-step tutorial (www.appledonuts.com/sherlocksearch/howto.html).

To use a new plug-in, simply download it and drag it to your System Folder icon. The next time you use Sherlock, the new site will appear in the list (see "Sherlock's Homes"). As soon as you check a site's check box, it's ready to be searched. (Your Macintosh will put it into the Internet Search Sites folder, inside your System Folder.)

Make Sherlock More Revealing

As your list of plug-ins starts to grow, you'll probably become increasingly frustrated with Sherlock's fixed window size. As it ships, Sherlock allows you to view a maximum of six plug-ins at a time. To end this irritation, install the free Moriarty patch (<http://members.aol.com/appleink98/moriarty.htm>), which gives Sherlock an expandable window. After installing the patch, you can view as many plug-ins as can fit on your screen.

Moriarty may be unwilling to patch the new version of Sherlock included with Mac OS 8.5.1. If so, an alternative that works fine with this version of the operating system is an extension known as SherlockWindowSize (www.ncal.verio



Sherlock's Homes Sherlock plug-in files show up as new Web sites to search. If you run the free Moriarty program, you can even resize the window to see all your sites at once.

.com/~lsr/programs/index.html). It automatically sizes the Sherlock Search Internet window pane, based on the number of search engine plug-ins that you have installed.

Not satisfied that you get a maximum of ten items in the Items Found window when you do a search? No sweat—you

can also expand the hit number you get from almost any site to the maximum the site supports. An Apple Tech Info Library file explains how (<http://til.info.apple.com/techinfo.nsf/artnum/n58163>).

Cast a Narrower Net

Most likely, you won't want all of your plug-ins enabled all the time. For example, there's no point in searching Apple's Tech Info Library to find the lowest price on a car. It's possible that each time you do a search, you'll have to turn on and off the check boxes of different plug-ins. To save time, you can create separate search sets for different occasions so that with one click of the

mouse, you switch sets (although you still may have to enable some check boxes). There are several ways to do this:

1. If you have Conflict Catcher 8, choose the Listed by Folder view. Locate the Internet Search Sites folder. You can now create separate sets with plug-ins of your choice.

The Case of the Thwarted Search

OCCASIONALLY, WHEN YOU USE SHERLOCK to search the Internet, you'll run into problems. For instance, search results may never appear or you'll get an error message. In the worst case, you'll get a freeze or a crash. When trouble strikes, work your way through this checklist.

1. The Find Preferences file (in the Preferences folder of the System Folder) may be corrupted. Go ahead and trash it. A fresh copy will be created the next time you start your Macintosh.

2. If you've added plug-ins, Sherlock may need more memory. To increase memory, select Get Info for the Sherlock application (it's in the Apple Menu Items folder of the System Folder), select Memory from the pop-up menu, and increase the Preferred Memory size.

3. You may need an updated plug-in. To check, select Update Search Sites from Sherlock's Find menu. Sherlock will search for updated versions of plug-ins and then replace old ones with the new ones it finds. (Some plug-ins will automatically update

themselves when you try to use them, if a new version is available.)

4. You may have a corrupted plug-in. To check, disable all but one of your plug-ins. See if the problem disappears. If so, repeat this procedure with a different plug-in each time. When the problem resurfaces, you've identified the culprit. Replace the plug-in with a fresh copy. If that fails and no updated version is available, notify the author of the plug-in about the apparent bug.

5. If you double-click on a URL in Sherlock and nothing happens (no browser launches or you get an error message), it's probably because the Mac is preconfigured to use Microsoft Internet Explorer as the default browser but you don't have Explorer installed. If you're using another browser, such as Netscape Navigator, open the Internet control panel and select the Web tab. From the Default Web Browser pop-up menu, select the desired browser.

6. If you connect to the Web from behind a firewall, especially one that needs

user authentication, you may have problems using Sherlock. First, make sure you have defined a Web Proxy server, using the Internet control panel. To define a server, select Advanced User Mode from the control panel's Edit menu. Click on the Advanced tab, and then select the Firewalls icon. Here you will be able to enter the needed Web Proxy server data (obtain the specifications from your network administrator). If Sherlock still doesn't work after you've followed these steps, it may be the fault of a bug in Sherlock 2.0. To fix it, get version 2.0.2 of Sherlock, which comes with Mac OS 8.5.1.

You may have a problem that you don't even know about. If you renamed the original Sherlock file or moved it out of the Apple Menu Items folder and later installed Mac OS 8.5.1, the operating system's Installer probably didn't find Sherlock. That means the new version of Sherlock may not have been installed. To make sure you got the latest version, check Sherlock's Get Info window to see if it says version 2.0.2.

If the Internet Search Sites folder is missing from the list, go to the Folders portion of the Preferences panel and click on Add. Set the Starting Folder to the System Folder. Click on the Folder button, and select Internet Search Sites.

2. Instead, you can create search sets with some AppleScripts from Apple (www.apple.com/applescript/sherlock_sets/). You use the scripts in conjunction with OSAMenu, a program included in the AppleScript Extras folder on the Mac OS 8.5 CD.

3. Finally, you can employ a third-party Sherlock set manager. The freeware No Shoot! Sherlock is a popular choice (<http://members.macconnect.com/~mercyme/purplee.shtml>).

More Sherlock Secrets

Dig a bit deeper, and you'll find some buried treasure among Sherlock's features. For example, suppose you want to save a list of all the URLs in the Items Found window. No problem. Click in the Items Found window, select all (⌘-A), and then copy (⌘-C). The URLs for all of the items in the list will be copied to the Clipboard, ready for pasting wherever you wish.

You can also save URLs by dragging items from Sherlock's Items Found window to the Desktop. This creates *Internet location files* (basically clippings containing the URLs), on which you can double-click to get to the Web sites (see "Desktop Bookmark").

Is there some text in a document that you would like to use as search criteria? If so, simply highlight the text and control-click on it to bring up a contextual menu. Select the item called Search Internet from the menu, and Sherlock will initiate a search using the highlighted text as the search criteria.

You can also use the same search criteria repeatedly by letting Sherlock save the criteria. So, suppose you want to regularly check the Internet for all pages that men-

Take Your Search Offline

NOT ONLY CAN SHERLOCK FERRET out information on the Internet but it can also do some of its most powerful searching right where it sits—on your hard disk. This reinvigorated Find File program lets you search for words inside your documents (using its Find By Content feature). For instance, you can find all occurrences of the phrase *in the future* in any document. Here's how to make sure these searches are as fast as they can be.

Create an Index Doing a search for words inside documents is amazingly fast if you've allowed your Mac to compile its own card catalog (an invisible file in your System Folder called *TheFindByContentIndex*) of every word in every document. You do that by clicking on Index Volumes (in the Find By Content area), then your hard disk's name, and then the Create Index (or Update Index) button.

Index in Absentia Unfortunately, the indexing process can take hours. Fortunately, you can use the Schedule button to make the dirty work of indexing (and reindexing, to keep the index file current) take place when you're not around—for example, overnight. (In the Find By Content window, click on the Index Volumes button, and then click on the Schedule button.)

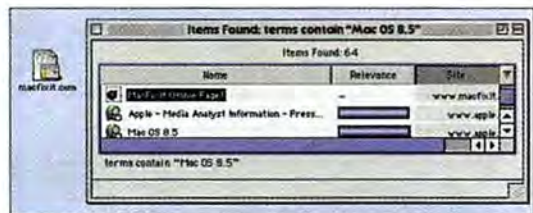
Time It Right If you would rather not leave your Mac on all night to do indexing, you can try another technique: use the Preferences command's system-responsiveness slider to give you the right

balance between working on your Mac and creating an index. If you move the slider to the left, Sherlock runs in the background, letting you continue to work on the Mac. This means indexing will proceed slowly, however. If indexing speed is of the essence, move the slider all the way to the right (but don't expect to work on the Mac during indexing).

Don't Overdo You can speed the indexing process in yet another way, using the Don't Index Items With This Label check box (in Sherlock's Preferences window). Before indexing, use the Finder's Preferences command to define a special label. For example, you could create a label called Don't Index. Then go on a folder-labeling spree. Apply the Don't Index label to your System Folder, the folders that contain your applications, and all other folders that contain no documents or e-mail. Then, return to the Sherlock program, check the Don't Index Items check box, and specify the Don't Index label (see "Keys to Speed"). You'll be astounded at how much faster the indexing goes.—DAVID POGUE



Keys to Speed To speed up indexing, exclude from the index any folders you don't need to search. Also, move the responsiveness slider all the way to the right.



Desktop Bookmark To get to a favorite Internet site quickly, just double-click on its *Internet location file*, a file you create by dragging an item from Sherlock to the desktop.

tion both Mac OS 8.5 and the iMac. Once you set up and perform the initial search, select Save Search Criteria from Sherlock's File menu. This creates a Saved Internet Search File, on which you can double-click to open Sherlock and initiate the search.

One last trick is an easy way to switch between each of Sherlock's three window panes. Rather than click on Sherlock's tabs, it's more convenient to use keyboard shortcuts. Press

⌘-F to go to the Find File pane, ⌘-G to go to the Search by Content pane, and ⌘-H to go to the Search Internet pane.

Case Closed

With Sherlock's Search Internet feature, you are no longer limited to searching your local disks from your desktop. You can now search the entire World Wide Web. **m**

Contributing Editor TED LANDAU has Sherlock plug-ins available for his own MacFixIt Web site (www.macfixit.com/extras/sherlock_plugins.shtml).

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Tips, Tricks, and Shortcuts

by Lon Poole

More applications are adopting the tasty Navigation Services dialog boxes introduced with Mac OS 8.5 for Open, Save, and other file-related commands.

Seth D. Kromholz of Ithaca, New York, discovered that you can drag any folder or disk icon from the Finder—even a folder proxy icon from the title bar of a folder window—into an application's Navigation Services dialog box, and the dialog box immediately shows the contents of that folder or disk. Some applications' Navigation Services boxes also recognize dragged aliases of folders or disks, while those of other applications ignore aliases. The only way to tell if aliases work is by trial and error.

In addition, you can add any item in a Navigation Services dialog box to your Favorites list by dragging the desired item to the Favorites button (the one with the bookmarked icon that looks like a folder with a ribbon on it) at the top of the dialog box.

Setting Page-Setup Defaults

Q When we print from any of the 11 Macs on our network to any of our 3 Hewlett-Packard LaserJet printers, the LaserWriter 8.1 Page Setup always defaults to the A4 paper size instead of U.S. letter. This happens in ClarisWorks 5, Claris Emailer, FileMaker Pro 4, and other applications, and it's very inconvenient to have to set the paper size for every new document. Is there any way to change the default paper size?

LEONARDO PETERSEN
Valencia, Carabobo, Venezuela

A Call up the LaserWriter 8 Page Setup dialog box from within any application (including the Finder), typically by choosing Page Setup from the application's File menu. Change the settings as desired, and then option-click the OK button. An alert then asks whether you want to save the current Page Setup settings as the default settings. (The alert may not appear with your old version of LaserWriter 8, but the current settings still become the default settings.)



This procedure sets specific LaserWriter 8 Page Setup defaults for the program you were using, and also sets the general defaults for any programs that don't have specific defaults set. (Simply repeat the above procedure within a program to set its specific defaults.)

Forcing an iMac to Restart

Q I use an iMac in school and a Performa 6360 at home. Whenever my Performa freezes, I just press ⌘-control-power-on key, and my com-

puter restarts. But with the iMac, I have to use a paper clip to restart the computer. My friends and I suspect that it's because the keyboard is a USB device, so when the computer freezes the keyboard has no access to the USB drivers. Is there any way to restart an iMac without wasting a paper clip?

KOZO OTA
Westmount, Quebec, Canada

A Unlike the ADB keyboards used on other Macs, the iMac's USB keyboard is not wired to the computer's reset circuitry and can't restart a frozen or crashed iMac. If the iMac is not frozen or crashed, pressing ⌘-control-power-on restarts it in the same way as pressing the power-on key and clicking the Restart button in the dialog box that appears (a technique that works on any Mac). If your iMac is crashed or frozen, you can restart it by pushing its reset button, located near the USB ports on the side of the iMac and marked with a small triangle. On early iMacs, the button is inside a small hole. This means that you must use a straightened paper clip to push the button. If the reset button doesn't restart the iMac, unplug the iMac for at least 30 seconds and then plug it in again and start up normally.

You can avoid killing paper clips by adopting the solution devised by David L. Stanley of Brookings, Oregon. He took a colored plastic pushpin (Bondi blue, of course) and clipped the pin to about 3/16 inch. Onto this stub he impaled a 1/4-inch piece of double-sticky foam tape. Thus assembled, the device fits into the iMac *continues*

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QUICK TIPS

Testing Web-Page Designs

THE WEB SHARING FEATURE IN MAC OS 8.X is fine in a networked office or for someone with a full-time Internet connection, but David Wolf of Portland, Oregon, says it seemed useless to him because like many people he has a dial-up Internet connection, and his Mac gets a different Internet address every time he connects. "What are you going to do," Wolf writes, "call up your friends and tell them your Internet address of the day?" But then he discovered Web Sharing to be a useful tool for Web design.

Web Sharing creates a Web server on your Mac, and you can use this server to test your Web design without uploading Web-page files to your ISP's server—a better way to test pages than by specifying a local file URL that begins with file://.

It also more closely resembles the real world. Wolf observes that Netscape Navigator reloads images from local files every time it displays them, which takes longer than displaying the images from memory, as happens when Navigator loads them from a Web server. Wolf says he especially notices the difference when working with rollovers (an image that changes when a mouse pointer rolls over it), noting that testing rollovers using a local file URL either yields jerky results or simply doesn't work.

To test your Web pages, connect to the Internet and start Web Sharing. In the Web Sharing control panel, click the first Select button to specify the folder that contains your Web-page files, and then click the second Select button to specify the home page (see "Mighty Real"). Next click the Start button to start the Web server (shown here as Stop, its state after being clicked). Your Web address appears at the top of the control panel; you can copy it by choosing Copy My Address from the Edit menu. You can also use the Control Strip to start and stop Web Sharing.

Point your Web browser to the address specified at the top of the Web

Sharing control panel or Web Sharing Control Strip module. You can now view your pages served over the Internet from files on your own hard drive. This will eliminate the need to send newly updated versions of your files to the ISP server constantly, because you will have worked out the kinks in advance.

As an alternative to using Web Sharing through your dial-up Internet account, you can create your own intranet and give your computer a static IP address for Web Sharing. In the TCP/IP control panel, make a new configuration named Local Network and change the Configure option to Manually. Enter an IP address



Mighty Real The Web Sharing control panel enables a more realistic dry run of your Web designs by creating a local server.

of 192.168.1.1 and a Subnet mask of 255.255.255.0—these addresses are from the range approved for local TCP/IP networks (intranets) and will not conflict with addresses on the Internet. Close the control panel, saving the changes, and start up Web Sharing. Now direct your Web browser to <http://192.168.1.1>, the static address you gave your computer on your intranet. The next time you want to connect to the Internet, don't forget to switch TCP/IP configurations. You can do this with the TCP/IP control panel, the Location Manager Control Strip module, or the shareware Control Strip module TCP CC by Tim Kelley (www.madison-web.com/tkelly/).

reset hole, with the sticky tape holding it in place. The tape holds the pin in place and cushions it so it makes contact with the reset button only when pressed. If you dislike the do-it-yourself method, you can spend about \$10 for a similar premade gadget called the iButton from Joseph C.

Lee Company (www.imacbutton.com).

Keep in mind that whenever you force any Mac to restart by pressing \mathcal{C} -control-power-on or pushing a reset button, you should use Disk First Aid or another disk-repair utility to verify the start-up disk and repair it as needed.

Although tedious, this precaution does keep problems from snowballing.

Ruling Word 98

TIP Don't waste your screen real estate by leaving the ruler revealed in a Microsoft Word 98 document window. Leave the ruler hidden; when you need it, simply move the pointer to the light gray area beneath the title bar, and presto! All hail the ruler!

CHRIS PAULU
Boston, Massachusetts

More Application Switcher Tricks

TIP Here are some more handy pointers for using Mac OS 8.5's Application Switcher. Russell Hearn of Wethersfield, Connecticut, notes that you can hide the current application's windows while switching to another open application by option-clicking the open app's button in the Application Switcher. Emilio Cruz of Santo Domingo, Dominican Republic, found that you can move the Application Switcher by ⌘-dragging any part of it; this maneuver is particularly useful if the title bar and window frame are hidden. David Roemer of Toledo, Ohio, discovered that you can open a document by dragging it to the button of any compatible application in the Application Switcher. For example, he uses this technique to open pictures with Adobe Photoshop without going through the Easy Open dialog box.

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Mac OS 8.5 Bible* (IDG Books Worldwide, 1997).

All shareware and freeware mentioned in *Quick Tips* is available from the Macworld Online software library (www.macdownload.com).

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create

GRAPHICS

Paint with Vectors in Illustrator 8

Create Custom Art Brushes for Cool Effects

by Deke McClelland

The PostScript stroke is a draftsman's dream: always smooth, forever precise, never varying in width. It's everything you want in a schematic-design tool. But for creating expressive artwork, the uniform weight of a PostScript stroke is downright inhuman. Like a key on an old-fashioned synthesizer, it produces an inert tone immune to artistic interpretation.

As Adobe invented the fixed-width stroke, it's only fitting that Adobe Illustrator 8 provides a way to escape it. The program's new Brushes palette lets you create strokes that change in response to variables such as stylus pressure and path direction. But by far the most interesting type of new brush in Illustrator 8 is the Art Brush, which lets you stretch a collection of shapes along the length of a path. The result is a new class of graphics that you can bend and distort by manipulating a central spine.

The Art Brush's underlying concept dates back to MetaCreations' Expression (see *Reviews*, March 1997), which serves as

And the benefits of Art Brushes don't end there. Like Expression, Illustrator 8 lets you take any graphic or piece of clip art and turn it into a brush. This means that you can distort an image or adjust its size and shape via the image's central spine. Text can also be a brush, going beyond the usual text on a path to where letterforms fold and splay as they round a curve (see "Make Flexible Type").

Once you define a brush, you can paint with it using the paintbrush tool or apply it to a path you've drawn with the pen or pencil tools. Then, rather than rendering the brushstroke into its myriad shapes—as Illustrator 7 did with path patterns—Illustrator 8 converts PostScript info to screen QuickDraw and presents only the spine for editing. Simply reshape the spine, as you would any path, to

change the angle and sway of the brushstroke. You can also scale the brushstroke's width or flip the brushstroke along its spine to reverse its direction.

The creation of more-intuitive tools to make vector drawing more responsive to the natural habits of artists and designers is a welcome development. And although Adobe can't take credit for inventing the vector brushstroke, the simple structure of Illustrator 8's Brushes palette makes the feature very accessible. Brushes represent vector drawing as it ought to be—applicable and fun. **m**

Contributing Editor DEKE MCCLELLAND has been creating artwork on the Macintosh since his service-bureau days in 1985. His books include *Real World Illustrator 8* (Peachpit Press, 1999).

continues

See "Paint with Graphics" on Macworld Online, at www.macworld.com/more/, for ideas on using different graphics as a brush.



the vector equivalent of Painter, MetaCreations' natural-media painting program. The idea is that by taking a graphic that looks like a dollop of paint and fixing it to a path, you create what appears to be a traditional brushstroke (see "Create Traditional Brushstrokes"). But because you're working with vectors, you can edit the brushstroke after you paint it.

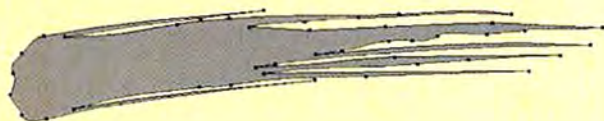


Create Traditional Brushstrokes

PAINTERLY BRUSHSTROKES ARE HARDLY WHAT YOU EXPECT to create in a vector-based drawing program. But while I wouldn't go so far as to recommend Illustrator 8 for creating a full-blown painting, it's ideally suited to the occasional swash or two. This is because paint in Illustrator is forever

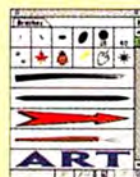
wet; after you apply a brushstroke, you can modify its angle and direction, change its color, and even swap it out for a different brush's stroke. The following steps show how to make a brush in Illustrator 8, apply it to a path, and adjust the brushstrokes to achieve a desired effect.

1 Start by drawing your brush outline. It should look like a natural paintbrush stroke, heavier on one end where the brush first contacts the surface and feathered on the end where it's whisked away. Making a believable brush outline takes a bit of practice, but the key is to be sloppy—nature is random, so you should be too. Scribbling with the pencil tool usually delivers the best results. When you're done, fill the brush outline with 50 percent black—this makes it easier to color later.

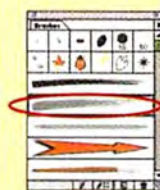


2 Select the path, and drag and drop it onto the Brushes palette. In the New Brush dialog box, select the New Art Brush option and click on OK. In the Art Brush Options dialog box, select Hue Shift from the Colorization Method pop-up menu. This colors the brush according to the standard stroke color specified in the Toolbox. Click on OK to add the brush to the Brushes palette.

TIP If you want your new brush to be available inside all new illustrations, copy the brush outline, open the Adobe Illustrator Startup file found in the Plug-Ins folder, and paste. Then drag the outline into the Brushes palette as directed in step 2. Finally, press **⌘-S** to save the Adobe Illustrator Startup file.



3 Using the pen or pencil tool, draw paths you want to paint with your new brush. Then select the paths and click on the brush in the Brushes palette. Alternatively, you can paint directly with the active brush, using Illustrator's paintbrush tool. Because you selected Hue Shift in the previous step, the brush automatically subscribes to the stroke color (the fill color should be set to None).



4 To edit the appearance of the brushed paths, click on the Options Of Selected Object icon along the bottom of the Brushes palette, second from left. In the Stroke Options dialog box, you can change the width of the brushstrokes by entering a new Width percentage value (the example here shows 200 percent). You can also flip the brushstroke on the path.



5 As with tile patterns, gradients, and other automated effects, the intensive use of brushes can render an illustration too complex to print. To simplify your illustration, select the brushed paths and choose Expand from the Object menu. Illustrator converts the brushstrokes to filled outlines.



Make Flexible Type

IN A DRAWING PROGRAM, TEXT BECOMES A GRAPHIC. When you apply text as a brush in Illustrator 8, the letters are editable as shapes but not as ASCII characters. This means that you should know exactly how your text should

read before you create the brush. While it's not impossible to correct the spelling of a word, it's not exactly convenient either. But in return, you'll get unique effects that you can't achieve any other way.

1 I wanted to create a radically wavy logo featuring the words *Circus Arts*. If I created the type along a curve, the type would look fine along the soft curves but would separate and gap around bigger curves. Distorting the letters would fill those gaps, and the only way to distort type on a curve in Illustrator 8 is to make it a brush.

2 After entering *Circus Arts* with the type tool, I cloned the type to have an editable version as a backup. Then I converted the words to a path outline by selecting the type and choosing Create Outlines from the Type menu. Then I filled the outline with 50 percent black so that I could color it more easily on the fly.

3 So long as Illustrator forces users to work with text as a graphic, I thought I might as well take full advantage of it. I added a drop shadow and filled the type with circles of lighter gray, using the Intersect option in the Pathfinder palette. The result is a logo that would be impossible to attach to a curve using anything but a brush.

4 After dragging and dropping the type into the Brushes palette (see step 2 of "Create Traditional Brushstrokes"), I assigned the brush to my wavy path. Then I changed the stroke to red to color the logo.

TIP To change the text, edit the backup text and option-drag it onto the old brush in the Brushes palette. In the dialog box that appears, click on Apply To Strokes to update all paths painted with the brush.

5 Illustrator painted my circles the same shade of red as the text, but luckily I could change this without making a new brush. I clicked on the Options Of Selected Object icon in the Brushes palette, and in the Stroke Options dialog box selected Tints And Shades from the Colorization pop-up menu. This told Illustrator to lighten and darken the color according to the gray values, bringing my circles to life.



CIRCUS ARTS

CIRCUS ARTS

CIRCUS ARTS



CIRCUS ARTS

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Push the Boundaries of QuickTime VR

Invigorate QTVR Object Movies with Animation

by Mike Wooldridge

QuickTime VR object movies are liberally sprinkled throughout the Web, and you've probably seen your fair share of Web sites that let you interactively rotate objects on screen. It's a neat effect the first few times you experience it, but after awhile you know what to expect—been there, spun that.

But some of the best QTVR object movies on the Web and CD-ROM don't limit you to twirling objects in space—you can also open, close, dismantle, and peek inside objects. The trick to making such movies is integrating animation into them, as well as including changes in perspective. If you're trying, for example, to teach a potential customer about a company product, this added animation makes your object movie more informative—not only can people examine the packaging of a product but they can also open the product or watch it in action.

Object-Movie Basics

A QTVR object movie, like a conventional movie, is a collection of image frames. By allowing users to flip through different perspectives of an object on screen, object movies give users the digital equivalent of examining the object in their hands. The simplest object movies comprise 360 degrees' worth of perspectives shot around the object's circumference. This type of object movie—sometimes called a *single-row* movie because of its linear arrangement—lets you spin the object back and forth on a single axis, like a globe.

More-complex object movies also include perspectives shot from above and below the object. These *multirow* movies give users a second axis to play with, letting them tilt the object as well as spin it sideways.

But an object movie doesn't have to be simply a collection of perspectives of a

static object—it can also incorporate animation. An animated single-row object movie of a toaster, for instance, might eject the toast when you click and drag.

Adding animation to multirow object movies is more complicated because of their two-dimensional nature. Dragging along one axis with the cursor causes the toaster to pop its toast, but what happens when you drag along the other? You have to consider not only what the object will do when manipulated in each direction but also how the two directions of movement will synchronize with one another.

Most animated two-dimensional movies limit the object animation to one axis, while letting you rotate the object along the other. In my example (see "Go Beyond Simple Spinning Objects"), clicking and dragging the cursor down (along the vertical axis) causes an ice-cream carton to tip over and spill its contents, while dragging left and right (along the horizontal axis) spins the carton in place.

Juggling Axes

Building an animated object movie is similar to doing claymation: you create the movie incrementally, shooting one step of the animation at a time. However, at any point during animation in a two-dimensional object movie, the user may start dragging along the other axis. Therefore, each step in the animation requires shooting not just a single frame but an entire row of frames to account for movement in the other direction.

By getting creative with the two dimensions available to you in object movies, you can transform QuickTime VR into a more fun and engaging experience for your audience. **m**

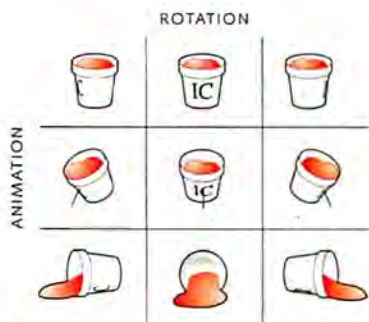
MIKE WOOLDRIDGE is a freelance new-media designer whose "Refrigerator!" QTVR project won an award in Apple Computer's 1998 QuickTime VR contest.

continues



Go Beyond Simple Spinning Objects

Elevate your QuickTime VR object movies to the next level by combining animation along with rotation. Whether you want potential customers to experience your company's product more thoroughly in a virtual environment or you're just trying to entertain, adding animation will lend depth, surprise, and humor to your object movies. Here's how to create one of these über object movies.



1 Plan the Movie

We naturally think of movies as a linear sequence of frames viewed, in forward or reverse, along a single axis. But *object movies* can play along two axes. Think of the frames in an object movie as being arranged in a grid. Sketch out the grid beforehand to visualize both how to organize the overall project and how to shoot the individual frames. Here, a simple three-by-three grid shows the project's basic organization; animation happens on the vertical axis, and changes in perspective (rotation) occur on the horizontal axis. This grid is just a starting point—you'll decide later how many frames will actually make up the rows and columns of your movie.

2 Choose a Capture Device

Try to use a camcorder or digital camera when making object movies; it will be much easier to get good registration (or alignment) between frames and thus avoid jittery effects in the final product. If you shoot on film, the imprecision inherent in the digitizing process will prevent the scene in each picture from aligning perfectly and you'll have to realign the digitized frames during postproduction.

Camcorders and digital cameras have another edge over film cameras:

they let you view your work immediately after shooting, so you can see if the lighting, alignment, and centering of the object are up to snuff. For this ice-cream project, I used an Epson PhotoPC 700 that was connected to my Power Computing PowerTower Pro 225. I could control the camera remotely; I never had to touch it and risk shifting the alignment between it and the object platform.



3 Set Up the Scene

Next, decide how to present your object to the camera. Several companies, such as Kaidan (www.kaidan.com) and Peace River Studios (www.peaceriverstudios.com), make high-end object rigs designed for QuickTime VR shoots. For budget-minded hobbyists who want to capture a single axis of rotation, a record turntable or lazy Susan (used here) does just fine.

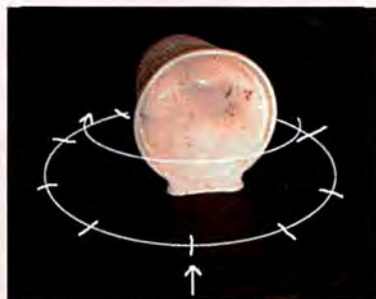
To make an object appear to be floating in space, use a uniformly colored background that sets off the object: put light-colored objects against a black background and vice versa. I put a coat of black spray paint on my lazy Susan and draped a black sheet behind to contrast with the light-colored ice-cream carton.



4 Start Shooting Frames

First, decide how many shots to take for each row and column in your grid. Consider the trade-off between motion smoothness and the file size of the final object movie. I sacrificed some smoothness for fewer frames, to keep the file size smaller and more manageable for the Web. For the horizontal axis (changes in perspective), I shot the frames in increments of 30 degrees, for a total of 12 frames per row. (If you're shooting a high-end object movie destined for CD-ROM, you might shoot a frame every 10 degrees.) For the vertical axis (animation), I used only three steps to go from the standing carton to the carton on its side, and three more for the ice cream to melt out. The result is a relatively small QuickTime VR file (less than 400K).

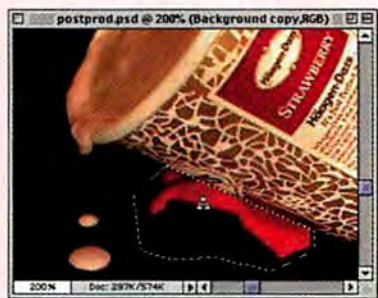
Shoot the frames one row of the grid at a time. I shot 360 degrees' worth of perspectives for each step of the animation. Twelve shots with the upright ice-cream carton turning make up the first row of frames.



5 Shoot More Frames

After you've shot one row of your object movie, move the object to the next step in the animation and shoot another 360 degrees' worth of frames. Repeat this process for each step of your animation. Here, I shot 12 frames for each of the six steps, for a total of 72 frames.

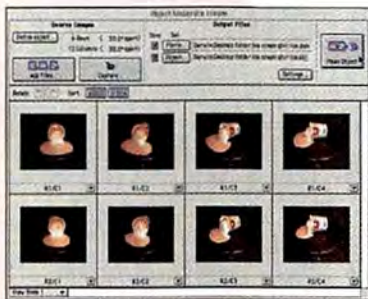
To make sure the frames are synchronized in the final object movie, rotate the object in equal increments for each row and keep the object perfectly still as you rotate it. I marked off 30-degree segments around the edge of the lazy Susan to make sure the rotation increments were precise; to keep the ice-cream carton steady through the rotations, I anchored it to the lazy Susan with modeling clay.



6 Clean Up the Frames

Most object movies require some postproduction work in an image-editing application to clean up artifacts. In high-end work, where an object movie may contain several hundred frames, postproduction can take more time than the actual shoot.

For the ice-cream movie, I brought each frame into Adobe Photoshop, masked the carton, and used the Curves dialog box to get rid of wrinkles in the backdrop cloth and reflections on the lazy Susan. I also erased the modeling clay I used to anchor the carton.



7 Build the Movie

To create the final object movie, simply drag all the frames into an authoring environment such as Apple's QuickTime VR Authoring Studio (\$395; 408/996-1010, www.apple.com), shown here, or Roundabout Logic's Widgetizer (\$149; 407/327-4500, www.roundaboutlogic.com) and set the playback parameters.

One of the key settings defines whether the rows or columns wrap. In this project, the rows wrap (to let you spin the object repeatedly on the horizontal axis, like a globe) but the columns do not. The authoring applications also let you select from a variety of compression schemes to keep the final file size to a minimum. I used Sorenson Video compression at its low setting and set the frames to 320 by 240 pixels; the final file size of the ice-cream project was 325K.

8 Take It for a Spin

It's a wrap! The completed object movie is made up of 72 frames. Clicking and dragging down on the object causes the ice-cream carton to fall over and spill its contents; clicking and dragging to the side spins the object in place. To test-drive the ice-cream object movie for yourself, go to www.macworld.com/more/ (you'll need QuickTime 3 to view it).



Bookmarks

Apple's QuickTime VR Site

The birthplace of QTVR—read up on background info, and get resources and links straight from the company that invented the technology.
www.apple.com/quicktime/qtvr/

"Refrigerator!"

Explore the contents of Mike Wooldridge's refrigerator via more than 20 QTVR panoramas and animated object movies.
www.mediacosm.com/refrigerator/

Carol Rossi

Experience some amusing QTVR animations, including one of the site's creator.
www.sumthinsumthin.com

John Greenleigh Studios

Take computers, roller skates, and a Volkswagen Beetle for a spin via QTVR object movies created by a design firm whose prominent clients include Apple.
www.greenleigh.com/qtvr.html

eVox Productions

Play around with more cars via object movies created by a design firm with high-profile clients such as Toyota.
www.evov.com

The Jason Project

Tour sunken ships and rain forests via this educational project that uses QuickTime VR, including animated object movies.
www.eds.com/community_affairs/jason/



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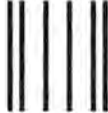
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Sync Different

Add a MIDI Twist to Your Live Recordings

by Christopher Breen

As MIDI musicians know, with the help of a synthesizer, sequencer, and Macintosh, you can easily build a song from the ground up—create a drum track, loop it, add other instrument tracks, toss in vocals and non-MIDI instruments, mix, and master, and before you know it, hello royalty checks and backstage cheese trays. What may not be so apparent is that MIDI can be just as useful in the postproduction process of live recordings.

For example, replacing basic drum tracks on a live recording is the kind of chore that only the bravest audio engineers attempt. After all, unless the drum-

mer is fueled by machine oil rather than beer, tempos are likely to drift, making it difficult to overdub a completely new drum track. However, using MIDI, it's possible to replace these original acoustic drum tracks with synthetic drums while maintaining the tune's live feel.

In the steps that follow, I talk about using Opcode's Studio Vision Pro to replace drum tracks, but you can use any professional sequencer, such as Mark of the Unicorn's Performer, Steinberg's Cubase VST, or Emagic's Logic.

Getting Connected

To turn drum tracks on your tape into MIDI notes, you must route the audio

signal to the proper destination. Additionally, the tape deck and sequencer must be in sync. Here's how to make all the right hookups.

The sequencer depends on time code to sync with the tape deck, so if you don't already have time code on the tape, stripe your tape with SMPTE. To send the SMPTE track to the sequencer, patch the tape deck to your MIDI interface's SMPTE input port via the mixing board.

Now send the taped drum tracks to the drum module by patching the kick-drum track from the mixing board into the first trigger input on the drum module and the snare-drum track into the second

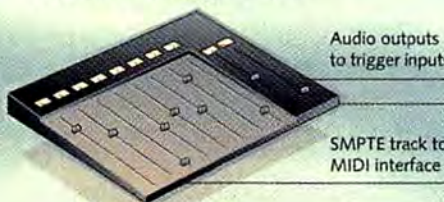
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The Right Connections

Multitrack Tape Deck



Audio Mixing Board



Drum Module



Totally Wired
Sound moves from your multitrack tape deck, through the mixing board, to the drum module and MIDI interface, and finally to your Mac.



Mac

Serial connection from MIDI interface to Mac. Along this connection travels SMPTE and MIDI information.



MIDI Interface

MIDI In/Out from drum module to MIDI In/Out 1 of MIDI interface

trigger input. (At press time, Alesis [310/255-3400, www.alesis.com] was the only company that offered drum modules with trigger inputs.) Be sure to assign a different MIDI note value for the two triggers—for example, have trigger 1 output MIDI note number 36 (C1, the note name associated with a General MIDI kick drum) and trigger 2 output MIDI note

number 38 (D1, the note name associated with a General MIDI snare drum).

Play the tape to adjust input levels on the drum module. If the MIDI drums trigger too readily or fail to trigger on quiet notes, adjust the input sensitivity on the drum module and the output on the mixing board. It's better to err on the side of triggering extra notes—you can

fix those later by filtering out notes below a certain velocity (see Step 2).

Alternative Projects

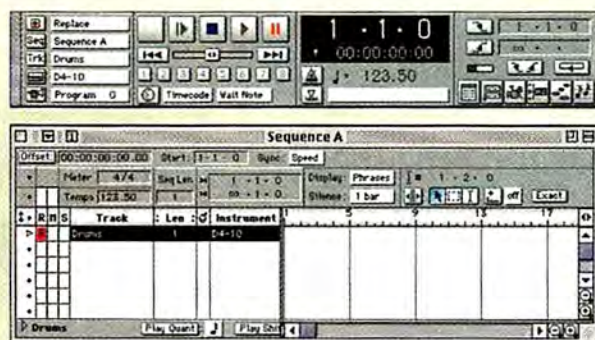
Granted, overdubbing MIDI drum tracks onto a live recording isn't the kind of project you're going to tackle every day, but many of the techniques in this article can be used in other projects where

The Sequence of Events

Step 1: Set Up Your Sequencer

ONCE YOU SET UP YOUR MIDI SYSTEM (SEE THE SIDEBAR "The Right Connections"), the next step is to configure a sequencer, such as Studio Vision Pro, so that it records MIDI from the correct source and syncs to the time-code track.

In Studio Vision Pro (which I'll refer to as Vision), choose Enable Input Devices from the Setups menu and select the drum module as an input device. This ensures that Vision records MIDI information generated by the drum module. Select MIDI Timecode as your sync source, and choose the Wait For Note option so that Vision starts recording when it detects the first MIDI event. Record-enable a track in the sequencer—this will be your MIDI drum track—and select the drum module as the instrument source. Press Vision's record button, and start the tape a few seconds before the beginning of the tune to give the tape deck and sequencer time to sync up. Play the tune all the way through, and stop the tape at the end. The MIDI kick- and snare-drum parts should now appear in the track.

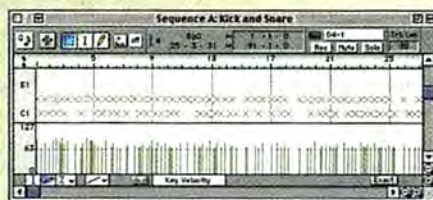
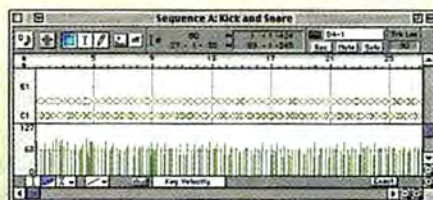


Ready to Roll With Timecode set as the sync source and the drum machine chosen as the input source, Vision is ready to record.

Step 2: Filter False Triggers

DRUM TRIGGERS ARE NOT AS ACCURATE AS THE HUMAN ear and usually only approximate a drummer's performance. In this step you'll use a filter to remove the most obvious extra notes.

When triggers misfire, they sometimes play repeated notes. These notes are often quieter than the ones you want to keep. To clean out most of the unwanted notes, use a filter to remove those that fall below a certain velocity. For example, if most of your snare hits have a velocity of 90 and over, create a filter that selects only the notes with a velocity of 80 or less and then delete those notes. Now play back your track and delete any stray double-hits that escaped the filter. Insert any notes that weren't recorded.



Too Many Notes Because drum triggers don't track precisely, you tend to get extra notes (top). By applying a velocity filter, you can weed out many false triggers, resulting in a cleaner drum part (above).

a tune is based on a freely played performance. Here are a couple of other ways to use MIDI for postproduction work.

- The reclocking technique employed in Step 3 can easily be applied to a freely played piano solo in which you wish to add—and quantize—more instruments.

- Skip the click track altogether if you have a steady, rhythmic track—such

as a MIDI bass-guitar part or the left-hand portion of a piano part. Just copy that track, strip out those notes that don't outline the beat, and apply the Reclock command to that track. **m**

Before beginning his illustrious writing career, Contributing Editor CHRISTOPHER BREEN was a professional musician for 15 years.

WHAT YOU NEED

- Multitrack tape deck
- Mixing board
- Drum module with trigger inputs
- MIDI interface with SMPTE generator/reader
- Professional MIDI sequencer

Step 3: Turn the Beat Around

IF YOUR ONLY GOAL WERE TO REPLACE THE KICK and snare on your live track, you'd be nearly done. All that would remain would be to tinker with the velocities and timing of the MIDI drums and record these MIDI tracks back to tape. But why stop now when you have the opportunity to make your upcoming MIDI overdubs easier by following one more procedure?

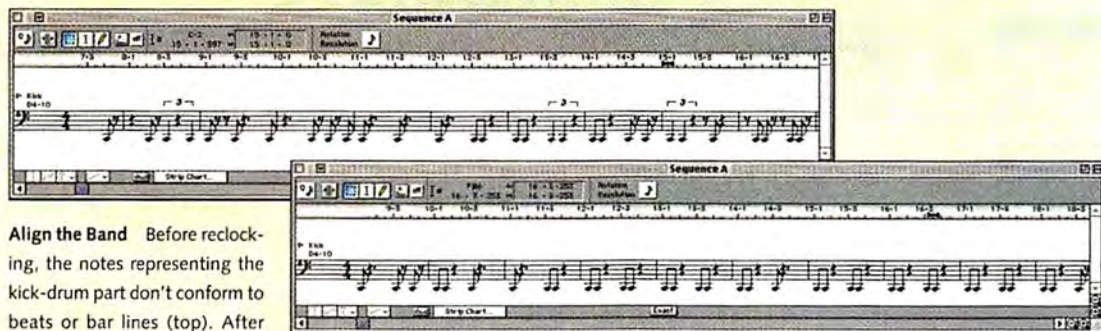
If you glance at the kick and snare parts, you'll notice that they don't line up with the sequence's bar lines and beats. This means that you won't be able to *quantize* (align notes to a rhythmic grid) additional MIDI parts with beats and bar lines, much less quantize the kick and snare parts you've just recorded. Therefore, you must impose order on these bars and beats by moving the sequence's bar lines to match what the kick and snare are playing. You'll do that by creating a click track and using Vision's Reclock command to create a new tempo map based on that click track (see "Align the Band"). If necessary, then move the drum parts so that they begin at the right time. Here's how.

Rewind the tape to the beginning of the song, record-enable a new MIDI track, and select a MIDI

controller—a MIDI keyboard, for example—to record notes into that track. Choose that controller as your input source. Press Vision's Record button; start the tape; and on the controller, play a single note—middle C, for example—on each quarter note. Continue tapping out quarter notes until the tune ends. A steady stream of quarter notes should appear in the track you just recorded. Now listen to the tape with your quarter-note accompaniment. If there are gross timing errors, fix them.

The track you just recorded is the outline for your new tempo map—it establishes where the beats and bar lines go. To create the tempo map, select the notes in this track and choose Vision's Reclock command. The sequencer now creates bar lines and beats around the notes you played.

Reclocking sometimes causes the sequence to shift in time—throwing it out of sync with the tape. If the sequence is horribly out of sync, use the sequencer's offset command to shift the sequence forward or backward in time. If it's just a little off, consider using your sequencer's Play Shift function to incrementally move the snare- and kick-drum beats forward or backward.



Align the Band Before reclocking, the notes representing the kick-drum part don't conform to beats or bar lines (top). After reclocking, the kick-drum notes line up nicely (bottom).

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Macworld

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Furiously-Fast Processor

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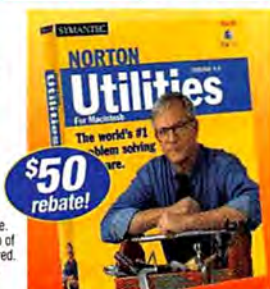
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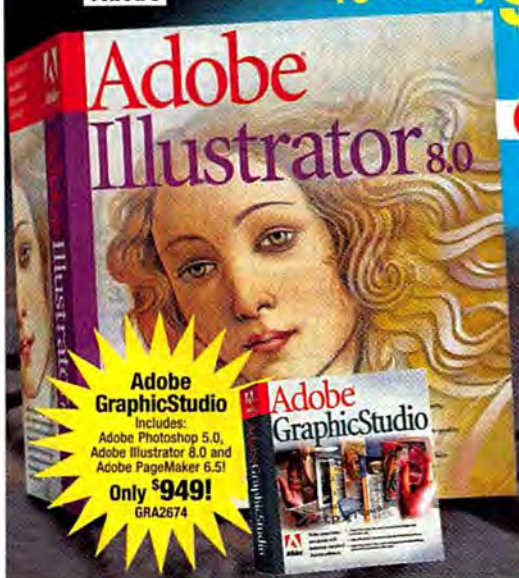
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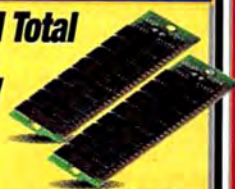
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#41011	128MB SDRAM DIMM	\$285 ⁹⁹
#41012	256MB SDRAM DIMM	\$619 ⁹⁹

Apple Powerbook G3 Wallstreet

#41023	16MB SODIMM Module	\$39 ⁹⁹
#41025	32MB SODIMM Module	\$75 ⁹⁹
#41027	64MB SODIMM Module	\$145 ⁹⁹
#41028	128MB SODIMM Module	\$285 ⁹⁹

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#72646	16MB DIMM (60ns)	\$39 ⁹⁹
#72647	32MB DIMM (60ns)	\$75 ⁹⁹
#72648	64MB DIMM (60ns)	\$185 ⁹⁹

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#13936	16MB DIMM (60ns)	\$55 ⁹⁹
#13937	32MB DIMM (60ns)	\$89 ⁹⁹
#13938	64MB DIMM (60ns)	\$169 ⁹⁹

For Power Mac 6500 Series

#93961	16MB DIMM (60ns)	\$49 ⁹⁹
#93963	32MB DIMM (60ns)	\$89 ⁹⁹
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#24579	64MB SDRAM DIMM	\$155 ⁹⁹
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#30270	256MB SDRAM DIMM	\$719 ⁹⁹

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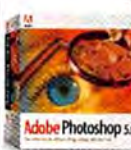


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APS Q 3000	Quantum Fireball ST, 3118MB, 5400 rpm	219 ⁹⁵	229 ⁹⁵	289 ⁹⁵
APS Q 4000	Quantum Fireball ST, 4136MB, 5400 rpm	269 ⁹⁵	279 ⁹⁵	339 ⁹⁵
APS ST 4000	Seagate Medalist Pro, 4520MB, 7200 rpm	229 ⁹⁵	239 ⁹⁵	299 ⁹⁵
APS I 4500	IBM Ultrastar, 4357MB, 7200 rpm	259 ⁹⁵	269 ⁹⁵	329 ⁹⁵
APS Q 6400	Quantum Fireball ST, 6236MB, 5400 rpm	359 ⁹⁵	369 ⁹⁵	429 ⁹⁵
APS ST 6000	Seagate Medalist Pro, 6580MB, 7200 rpm	369 ⁹⁵	379 ⁹⁵	439 ⁹⁵
APS Q 8000	Quantum Fireball SE, 8191MB, 5400 rpm	429 ⁹⁵	439 ⁹⁵	499 ⁹⁵
APS I 9000	IBM Ultrastar 9ES, 8715MB, 7200 rpm	439 ⁹⁵	509 ⁹⁵	569 ⁹⁵
APS ST 9000	Seagate Medalist Pro, 9140MB, 7200 rpm	399 ⁹⁵	409 ⁹⁵	469 ⁹⁵
APS I 18000	IBM Ultrastar, 17501MB, 7200 rpm	799 ⁹⁵	809 ⁹⁵	869 ⁹⁵
APS Q 18000	Quantum Atlas II, 17356MB, 7200 rpm	849 ⁹⁵	859 ⁹⁵	919 ⁹⁵

APS HIGH-PERFORMANCE ULTRA2 WIDE SCSI HARD DRIVES

Model	Description	Int.	Pro
APS Q 4500 U2W	Quantum Viking II, 4240MB, 7200 rpm	1299 ⁹⁵	1369 ⁹⁵
APS Q 9000 U2W	Quantum Viking II, 8682MB, 7200 rpm	519 ⁹⁵	589 ⁹⁵
APS ST 9000 U2W	Seagate Barracuda, 8683MB, 7200 rpm	509 ⁹⁵	579 ⁹⁵
APS ST 9100 U2W	Seagate Cheetah, 8681MB, 10,000 rpm	729 ⁹⁵	799 ⁹⁵
APS ST 18100 U2W	Seagate Cheetah, 18201MB, 10,000 rpm	1,179 ⁹⁵	1,249 ⁹⁵

APS HIGH-PERFORMANCE ULTRA WIDE SCSI HARD DRIVES

Model	Description	EL	Int.	Pro
APS ST 4000 W	Seagate Medalist Pro, 4520MB, 7200 rpm	1249 ⁹⁵	1259 ⁹⁵	1339 ⁹⁵
APS I 4500 W	IBM Ultrastar 9ES, 4357MB, 7200 rpm	279 ⁹⁵	289 ⁹⁵	369 ⁹⁵
APS Q 4500 W	Quantum Viking II, 4345MB, 7200 rpm	289 ⁹⁵	299 ⁹⁵	379 ⁹⁵
APS ST 6000 W	Seagate Medalist Pro, 6520MB, 7200 rpm	379 ⁹⁵	389 ⁹⁵	469 ⁹⁵
APS I 9000 W	IBM Ultrastar 9ES, 8715MB, 7200 rpm	509 ⁹⁵	519 ⁹⁵	599 ⁹⁵
APS Q 9000 W	Quantum Viking II, 9000MB, 7200 rpm	509 ⁹⁵	519 ⁹⁵	599 ⁹⁵
APS ST 9000 W	Seagate Barracuda, 8683MB, 7200 rpm	489 ⁹⁵	499 ⁹⁵	579 ⁹⁵
APS I 9100 W	IBM Ultrastar 92X, 8705MB, 10,000 rpm	579 ⁹⁵	589 ⁹⁵	669 ⁹⁵
APS I 18000 W	IBM Ultrastar 18XP, 17501MB, 7200 rpm	819 ⁹⁵	829 ⁹⁵	909 ⁹⁵
APS Q 18000 W	Quantum Atlas II, 18201MB, 7200 rpm	829 ⁹⁵	839 ⁹⁵	919 ⁹⁵
APS ST 18000 W	Seagate Barracuda, 18000MB, 7200 rpm	799 ⁹⁵	809 ⁹⁵	889 ⁹⁵

APS ATA HARD DRIVES


Model	Description	Internal
APS 2000 ATA	5400 rpm	119 ⁹⁵
APS 3000 ATA	5400 rpm	139 ⁹⁵
APS 6000 ATA	5400 rpm	179 ⁹⁵
APS 10000 ATA	5400 rpm	229 ⁹⁵
APS 12000 ATA	5400 rpm	279 ⁹⁵



How to protect and

APS CD 36


- CD-ROM takes another leap in speed
- 36X max. speed for multimedia, photo and reference CDs
- Reads all CD formats, including CD-RW discs

 The CD 36 takes you to the next level. Based on a 36X mechanism, this drive can transfer data up to 5.4MB/s, as fast as many hard drives. This CD reader understands all of your discs, too, including custom CD-R and CD-RW discs. Available in our economical Slimline enclosure. Whether you are looking to give your business an edge or just want to enjoy uninterrupted multimedia titles, the APS CD 36 delivers.

As low as **\$139.95**
External Configuration

APS CD-R 4x12


- Excellent price/performance
- Top value for multimedia producers, music, design and prepress pros

 The APS CD-R 4x12 is one of our best recordable CD values. With 12X read and 4X write capabilities, you can burn multimedia and audio CDs at 1X, 2X or 4X speeds in any standard recording format. Includes all the CD recording software you need.

As low as **\$379.95**
External Configuration

APS CD-R 4x8

- Excellent value for burning CDs for personal or small business uses
- Includes PC/Mac recording software

 The APS CD-R 4x8 gives you excellent price/performance for CD production at home. Powered tray-loading eliminates inconvenient caddies.

As low as **\$269.95**
External Configuration

APS CD-ROM/R/RW DRIVES & CD CHANGERS		
Model	Description	External
APS CD36	36X CD-ROM in Slimline Case	139 ⁹⁵
APS 5-CD Changer	Nakamichi 5 Disc/16X CD-ROM, Pro Enclosure	259 ⁹⁵
APS CD-R 4x8P	4X record/8X read CD-R in SR 2000 or APS Pro Enclosure	269 ⁹⁵
APS CD-R 8x20	8X record/20X read CD-R in Pro Enclosure	599 ⁹⁵
APS CD-R 4x12	4X record/12X read CD-R in Pro Enclosure	379 ⁹⁵
APS CD-RW	2X record/2X rewrite/6X read CD-RW in Pro Enclosure	319 ⁹⁵
APS CD-RW	4X record/4X rewrite/16X read CD-RW in Pro Enclosure	439 ⁹⁵


"Although I have purchased drives from other vendors, I have yet to find the levels of service and support both before and after the sale as I have experienced while working with APS. I have even had help on restoring lost data. I choose APS because I know that if I need a product fast, well made, and a company to stand behind it, there is no one else to call."

John P. Grace
Abbott Laboratories Research



APS CD-R 8x20


- Super-speedy CD burner for creative professionals
- 8X record/20X read mechanism
- Includes full-featured CD recording software for Mac and PC

 Hit the afterburner! The CD-R 8x20 is our fastest CD recorder ever. The blazing 8x20 mechanism cranks out your CDs in record time, so you spend less time burning and more time creating. If your payday depends on producing CDs, punch in with the APS CD-R 8x20.

As low as **\$599.95**
External Configuration

APS CD-RW 4x4x16


- 167% faster reads and 100% faster rewrites than CD-RW Pro 4x2x6
- The ultimate rewritable CD drive for professional environments

 APS proudly introduces our fastest rewritable CD drive ever. The 4x4x16 is fast enough to handle all CD functions, including 16X reads for power users. This tray-loading drive offers a huge 2MB buffer to prevent underruns and failed recordings. The 4x4x16 is Flash ROM-upgradeable for future formats and operating systems. Plus, you get full-featured, professional-level recording software for both Mac and PC. No matter if you develop demanding multimedia or software, produce music or graphic designs, the CD-RW 4x4x16 is the only CD drive you need.

As low as **\$439.95**
External Configuration

APS CD-RW 2x2x6

- Record, read, and edit any kind of data on CD-RW media
- Also records on inexpensive, play-anywhere CD-R discs

 Whether you're producing a multimedia title or just want to send your mother a QuickTime movie of your honeymoon, this versatile drive is the inexpensive solution for writing and reusing CD-RW discs. The APS CD-RW 2x2x6 also writes to cost-effective CD-R discs. It can even play your gaming CD-ROMs and music CDs. This drive provides 2X recording, 2X rewriting, and 6X playback. The APS CD-RW drive includes all the Mac and PC recording software you need to master your CDs. Ships in the APS Pro enclosure.

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External Configuration



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Distribute your projects faster

APS HyperDAT®

- Up to 8GB (compressed) of storage on one 120m DDS-2/DAT tape
- Excellent desktop/workstation backup

As low as **\$549.95**

Internal Configuration



Backup Special APS DLT 40

\$1,999.95

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APS HyperDAT® III

- 12GB native backup for high-end workstations, entry-level networks
- New, more reliable DDS-3 technology

The APS HyperDAT III provides a cost-effective solution to the backup storage needs of data-intensive systems. Using DDS-3 technology, the APS HyperDAT III delivers a narrower track width than DDS-2 for a much higher density and more data storage. The increased density combines with Sony's precise tape control system to deliver a sustained data transfer rate of 1MB per second.

As low as **\$979.95**

Internal Configuration

APS HyperDAT® Pro

- Backup and restore speeds as high as 50MB per minute
- Up to 8GB of storage per 120m DAT/DDS-2 tape cartridge

Backup in less time! The APS HyperDAT Pro is perfect for high-end desktop backups. With standard 120m DDS-2 tapes the APS HyperDAT Pro can backup up to 8GB of data (assuming 2:1 hardware compression). The HyperDAT Pro can also use economical 60m and 90m tapes. Comes with backup software and includes a two-year warranty.

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Internal Configuration



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APS HyperQIC®

- Up to 8GB per TR-4 tape with new NS8 hardware compression
- The worldwide standard in desktop backup is now better than ever

Our HyperQIC drive uses Travan-4 tape cartridges to deliver up to 4GB on a single tape without compression! (8GB with 2:1 data compression.) The APS HyperQIC is read/write compatible with QIC3095 and QIC3080 cartridges. This drive can also read QIC80, QIC3010, and QIC3020 tape cartridges. The APS HyperQIC includes backup software and a two-year limited warranty.

(While the APS HyperQIC will accept all of the media listed, compatibility issues with the software used to record those tapes may make it impossible for you to read those tapes with your current backup software.)

As low as **\$299.95**

Internal Configuration

APS HyperQIC® II

- Brand-new Travan-5/NS20 technology – safeguard up to 20GB per cartridge
- Hardware data compression for faster, more efficient backups

Next-generation Travan-5 cartridges give you up to 20GB compressed (10GB native) capacity. That's two and a half times more storage than previous Travan media. And new Travan NS technology adds hardware compression for more efficient data compression and faster transfers. If you need reliable, fast backup for a desktop or workstation, move up to the APS HyperQIC II. Includes backup software for Macintosh (Retrospect or NovaBack) or Windows (NovaBack and Cheyenne).

As low as **\$499.95**

Internal Configuration

APS HyperDAT® IV

- Longer tape, higher density vault DDS-4 into corporate network backup
- 20GB native capacity, 2-3MB/s transfers

If you trust your desktop and workstation backup to DDS, but it doesn't meet your server or workgroup needs, it's time to take a second look. New DDS-4 technology has increased capacity by 67% over DDS-3 and shrunk your backup time in half. DDS-4 uses longer tapes with thinner tracks and improved durability. But the HyperDAT IV can read and write to your DDS-3 and even DDS-2 tapes, so migration is easy.

As low as **\$1299.95**

Internal Configuration

APS TAPE BACKUP SYSTEMS			
Model	Description	Internal	External
APS HyperQIC®	Travan-4/NS8/QIC	299 ⁹⁵	349 ⁹⁵
APS HyperQIC® I	Travan-5/NS20/QIC	499 ⁹⁵	549 ⁹⁵
APS HyperDAT®	DDS-2/DAT (4-8GB)	549 ⁹⁵	599 ⁹⁵
APS HyperDAT® Pro	Quad-speed DDS-2/DAT (4-8GB)	699 ⁹⁵	749 ⁹⁵
APS HyperDAT® III	DDS-3/DAT (12-24GB)	979 ⁹⁵	1,029 ⁹⁵
APS HyperDAT® IV	DDS-4/DAT (20-40GB)	1,299 ⁹⁵	1,349 ⁹⁵
APS Mini Library	4mm DDS-2 Autoloader (32-64GB)	N/A	2,399 ⁹⁵
APS DLT40	DLT 4000 (20-40GB)	N/A	1,999 ⁹⁵
APS DLT70	DLT 7000 (35-70GB)	N/A	4,999 ⁹⁵
APS AIT	8mm W/O (25-50GB)	N/A	2,199 ⁹⁵
APS AIT Autoloader	8mm, 200GB on 4 tapes	N/A	4,899 ⁹⁵



Drives on these pages are covered by the APS 30-Day Money-Back Guarantee.






Finally, professional

APS Jaz II

- A staggering two gigabytes of removable storage
- Perfect for digital video professionals and service bureaus

 Introducing the next big thing: the APS Jaz II. Based on revolutionary Jaz technology, this drive offers a whopping two gigabytes of removable storage. And the new Jaz II is even faster, coming closer still to hard drive access and read/write speeds. This drive will also read and write to your current 1GB Jaz disks, so you don't have to worry about wasted investment. For digital video, multimedia and publishing businesses, the APS Jaz II is perfect for carrying huge files and quickly accessing client data. It's time to move up to the APS Jaz II. Includes one disk.




As low as **\$399.95**

External Configuration

LaCie EKO Jaz II

- 2GB Jaz drive in intelligent EKO case
- Built-in power supply eliminates extra equipment
- Internal fan keeps drive and disks cool



 The LaCie EKO Jaz II takes the original and makes it better. It's even more portable than lomega's own, since you don't need to lug around a power supply. And it includes an internal fan, unlike the original, that keeps the drive and its disk cool even at full speed. The LaCie EKO Jaz II also accepts Jaz 1GB disks. So if you want the portable

powerhouse that's better than the original, order the LaCie Jaz II.


As low as **\$299.95**

EKO Enclosure

APS 640 MO

- Read/write compatible with 640, 230 and 128 MO
- New Direct OverWrite technology cuts rewrite time in half with LIMDOW MO disks



 Stunning formatted capacity of up to 606MB on 3.5" 640 MO media. Store large graphics and database files and transport large amounts of data when traveling. Sustained reads of up to 2.19MB per second and sustained writes of up to 6.28MB per second, plus LIMDOW technology eliminates the erase cycle of rewriting. Available externally in the APS Pro enclosure with DATerm and our patented IC'E technology. Backed by one-year limited warranty.

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External Configuration

Sony CPJ-D500 Portable Projector

- Lightweight projector for heavyweight presentations
- 8.3lbs. and sets up in seconds

The CPJ-D500 helps you hit your audience right between the eyes, but takes it easy on your back. Fully VGA-compatible, the CPJ-D500 gives you 24-bit color output at 640 x 480 resolution from a bright, long-lasting 80-watt metal halide bulb. Includes an RCA video input jack, microphone input jacks and stereo headphone output jack to drive external speakers. Accepts PC, Macintosh, NTSC and PAL input. Includes RGB and power cables, presentation software and carrying case.



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Sony Multiscan CPD-L150 15" LCD Display

- Reclaim your desk space - only 6.5" deep
- Sharp 1024 x 768 at 85Hz reduces eyestrain
- Perfect for cramped studios and content creation cubicles

Sometimes, it's good to be shallow. The CPD-L150 takes up so little valuable desk space. But it packs a sharp, vivid picture into its convenient LCD display. Digital FlexRes technology gives you a crisp full-screen image no matter what resolution you choose. The high refresh rates reduce eye problems associated with computer work, including eyestrain, blurred vision and headaches. On-screen display and lock-out features let you set and keep the perfect settings for you. So reclaim your desk space with the Sony Multiscan CPD-L150. Just try not to use the extra space for another in-box.

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There is no better way to store, work with and protect your files and data than with the APS Hardware RAID System. With your choice of RAID levels, you can choose from maximum speed (striping), maximum data availability (mirroring) or a combination of both. This advanced RAID system offers powerful features like fault detection, background reconstruction, five hot-swappable hard drives, and an Ultra Wide SCSI interface. If you work in CAD/CAM, 3D modeling, animation, multimedia, non-linear digital video editing or high-end design and imaging for print, there is no substitute for the sheer power of the APS Hardware RAID.

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- SCSI cables sold separately.
- APS warranty is a pass-through of the manufacturer's warranty which will be serviced by APS for one year. APS warrants APS branded enclosures, brackets and power supplies for a period of one year from the date of purchase and will, at its discretion, replace or repair products found to be defective according to the specific terms of the warranty accompanying the product.
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- Actual data compression and raw capacity vary greatly depending on the type of data recorded, other system parameters and environment.
- Prices and specifications are subject to change without notice.
- You must install system software appropriate to your machine before using our hard drives.
- Not responsible for typographical errors.
- Your APS Drive unit may contain one or more components that were in prior use, but which have been inspected and repaired or rebuilt as necessary. These components, if any are covered by the same warranty provisions, exclusions and limitations to the same extent, and on the same terms as otherwise "new" components.
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- 1/4" 680K pixel CCD for excellent DV picture quality
- 15X optical/180X precision digital zoom lens for field work
- iLINK/IEEE 1394 interface for totally digital transfers – no loss of quality

The DCR-TRV9 gives you professional quality and features at a budget-conscious price. This DV camcorder gives you smooth, colorful video that you can watch on your TV, add to your Web site or use in your presentation. The IEEE 1394 interface means there is no conversion from digital to analog formats, preserving the image and sound quality. The LP mode lets you record 90 minutes of digital video on one 60-minute DV cassette. You can even capture 16-bit stereo audio for a complete multimedia experience. So explore the world of digital video for business and pleasure with the DCR-TRV9.

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- Convenient digital cameras capture photos and video
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You don't have to spend thousands of dollars to get visual content for business or personal use. The MVC-FD81/91 Digital Mavica Cameras grab digital photos and video quickly. And these smart cameras store their contents on standard floppies that you can use to transfer your images to your Mac or PC. The FD81 offers a 3X zoom lens. The FD91 really gets in there at 14X. You also get professional features like 3-mode auto exposure, manual exposure, flash and self-timer. These cameras use a 1/3" progressive CCD to capture 850K pixel images. And you can record up to 15 seconds of presentation-quality MPEG video or 60 seconds for a video e-mail. So why not add some multimedia to your business and your life? Pick up a MVC-FD81/91 Digital Mavica Camera today.



MVC-FD81

MVC-FD 81 \$779.95

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HARD DRIVES

Quantum

Quantum Stratus drives carry a 3 Year Warranty
Quantum Atlas & Viking drives carry a 5 Year Warranty

Description	Model	Access	RPM	Bare	Ext
Ultra SCSI-3					
2.1GB Stratus SE	QM32160SES	10ms	5400	'209	'279
3.2GB Stratus SE	QM33240SES	10ms	5400	'239	'309
6.4GB Stratus SE	QM36480SES	10ms	5400	'359	'429
8.4GB Stratus SE	QM38420SES	10ms	5400	'479	'549
9.1GB Atlas III	QM309100TDS	7.8ms	7200	'489	'559
18.2GB Atlas III	QM318200TDS	7.8ms	7200	'849	'919
UltraWide SCSI-3					
4.5GB Viking II	QM304550PSXW	7.5ms	7200	'279	'369
9.1GB Viking II	QM309100PSXW	7.5ms	7200	'439	'529
9.1GB Atlas III	QM309100TDLW	7.8ms	7200	'489	'589
18.2GB Atlas III	QM318200TDLW	7.8ms	7200	'849	'949

IDE Drives

3.2GB Fireball EX	QM303200EXA	9.5ms	5400	----	'129
5.1GB Fireball EX	QM305100EXA	10ms	5400	----	'149
6.4GB Fireball EX	QM306400EXA	9.5ms	5400	----	'169
10.2GB Fireball EL	QM310200ELA	9.5ms	5400	----	'239
12.7GB Fireball EX	QM312700EXA	10ms	5400	----	'279

Seagate

Barracuda & Cheetah drives carry a 5 Year Warranty
Medalist drives carry a 3 Year Warranty

Ultra SCSI-3	Model	Access	RPM	Bare	Ext
4.5GB Medalist Pro	ST34520N	9.5ms	7200	'259	'329
6.5GB Medalist Pro	ST36530N	9.5ms	7200	'339	'409
4.5GB Medalist Pro	ST39140N	9.5ms	7200	'439	'509
9.1GB Barracuda 9LP	ST39173N	7.1ms	7200	'459	'529
18.2GB Barracuda 18	ST118273N	7.1ms	7200	'879	'949
UltraWide SCSI-3					
9.1GB Barracuda 9LP	ST39173W	7.1ms	7200	'459	'549
9.1GB Cheetah 9LP	ST39102LW	12.2ms	10000	'719	'819
18.2GB Barracuda 18	ST118273W	7.1ms	7200	'879	'969
18.2GB Cheetah 18	ST118202LW	12.2ms	10000	'1249	'1349

IBM

IBM drives carry a 5 Year Warranty

UltraWide SCSI-3	Model	Access	RPM	Bare	Ext
9.1GB UltraStar 9ES	00K3990	7.5ms	7200	'459	'549
9.1GB UltraStar 9ZX	59H6590	6.5ms	1000	'479	'569
18.2GB UltraStar 18XP	59H6591	6.5ms	7200	'829	'919

THE CLUBMAC PACKAGE
ClubMac drives are preformatted and thoroughly tested. ClubMac external drives include a 30-Day Money Back Guarantee, Charismatic Anubis Formatting Utility software, user's guide, 25/50-pin SCSI cable and power cord (wide drives include 68/68 pin SCSI cable). Bare drives include mounting screws only.

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Need a bracket and formatting software for your hard drive? ClubMac Internal Hard Drive Kit's include Charismatic's Anubis Hard Drive Utility (with Power Control), a bracket and screws - ask your customer service representative which one you need.

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20-40GB DLT Drive w/ Retrospect 4.1.....\$2699
35-70GB DLT Drive w/ Retrospect 4.1.....\$4999

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Includes Tools on CD

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Zip USB 100MB External.....\$149
Zip 250MB Drive External.....\$199⁹⁵

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ZIP 250MB	1040 1097	\$24 ⁹⁵	\$17 ⁹⁵	\$16 ⁹⁵	CALL
Format	Part#	Size	Qty 1-2	Qty 3-5	Qty 6+
JAZ 1GB	1040 1015	1.0 GB	\$99 ⁹⁵	\$89 ⁹⁵	\$84 ⁹⁵
JAZ 2GB	1040 1074	2.0 GB	\$124 ⁹⁵	\$99 ⁹⁵	CALL

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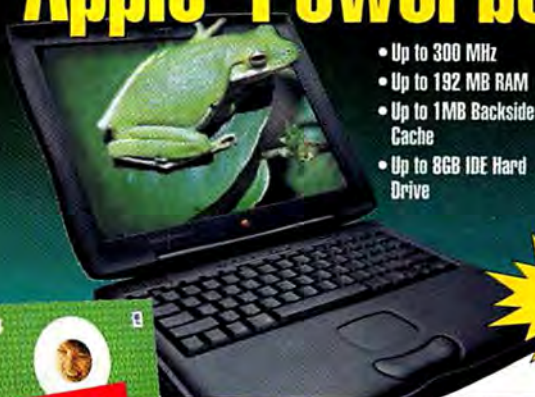
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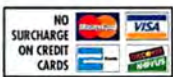
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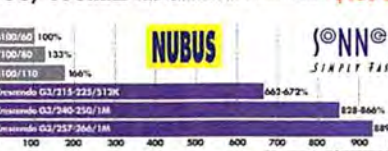
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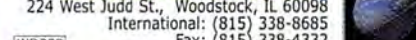
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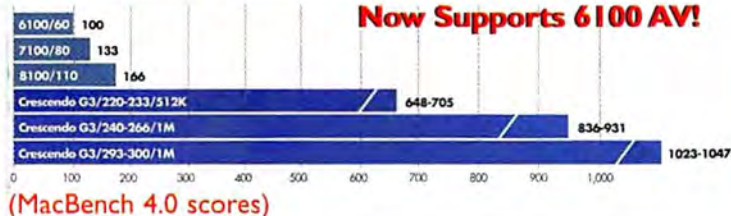
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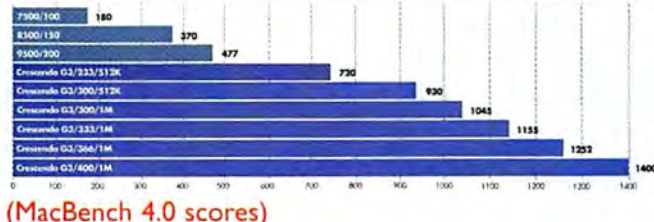
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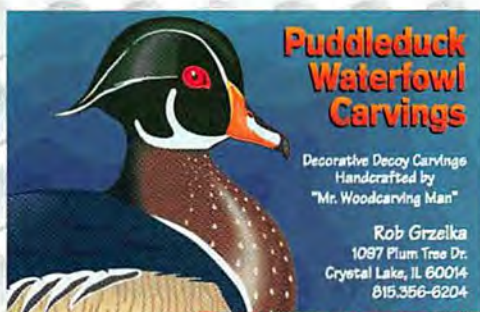
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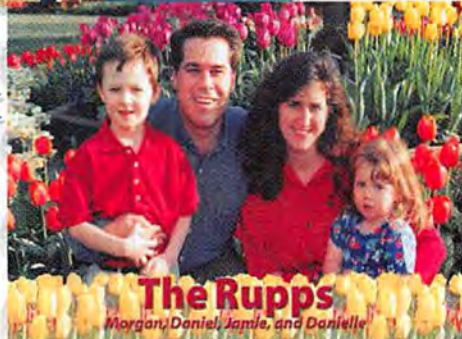


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The Desktop Critic

by David Pogue

CompUSA: Apple's Not-So-Superstore

IF THIS IS THE BEST NATIONAL MAC CHAIN, I'D HATE TO SEE THE WORST

I'M HERE TO BUY MY VERY first computer," I tell the young guy in the red CompUSA shirt. "Something really easy to use, for the Internet and word processing." Without a word and without ever making eye contact, Mr. \$6-an-hour turns. He strides right past six iMacs in the Apple "store within a store" and stops beside a boring Wintel box.

"Here you go," he says, "\$899. Monitor's extra."

I play even dumber. "Is this one of those, um, iMac thingies?"

He scoffs. "Oh, you don't want one of those. You can't put floppy disks in 'em. Besides, there's no software for Macs. This shelf right here—that's all we got for Macs. The 30 shelves over there are all for Windows."

So I pluck a package from a Windows-software shelf. "What about this?" I point to a bright yellow sticker on the box that says: "For Mac OS and Windows 95."

My guy grabs the box and puts it back on the shelf. "No, that's for Windows."

Pathetic, yes; unusual, no. For two months, I've been dropping in on CompUSA stores in five states, posing as a computer dummy to see how Apple's hand-picked national retailer represents our favorite computer. On Long Island, New York, the salesman answered my question about the iMac by saying, "I don't know anything about 'em—nobody here does." In Connecticut, I was told emphatically that there's no way to run Windows programs on the Mac. And in Philadelphia, one sales kid claimed that the iMac doesn't have "a level cache" (!).

Unfortunately, the problem of uninformed, Mac-bashing CompUSA staff is a nationwide phenomenon. Visit the CompUSA Watch Web page (www.macsonly.com/acu.html), for example. The depressing table there indicates just how lousy the Mac-oriented staff, setup,

hardware, and software offerings are at each of the 225 CompUSA stores.

So who cares? After all, there are 3,500 other places to buy Macs: independent Mac dealers, savvy smaller chains such as Fry's and MicroCenter, and mail-order joints.

But CompUSA, as the only *national* authorized computer chain, is by far the most visible Mac retailer. Before Apple cut other chains out of the action, what most Americans saw of Macs was sad indeed: disconnected, crashed, and mouseless Macs on dusty shelves. In exchange for exclusivity, CompUSA promised to give Apple a decent presentation.



Apple has certainly done its part to take advantage of the arrangement. An eye-catching self-running demo plays on the screens of most display Macs. In many stores, Apple reps hang out to answer questions on weekends. During the holidays, Apple cut a \$30 check to each clerk for each iMac sold. And for big store events, such as the rollout of the iMac or Mac OS 8.5, Apple has harnessed the enthusiasm of local user-group members—a grass-roots, win-win marketing masterstroke.

So why are the young clerks at CompUSA so comically—make that tragically—ill-informed? CompUSA says that it's simply impossible to hire

enough knowledgeable staff, especially Mac people. "Getting staff is a problem across the board," says Suzanne Shelton, the company's PR director. "We need specialized talent; finding it can be a challenge."

OK, so pay more, or solicit help from user groups, or hold training seminars; whatever the excuse, CompUSA simply isn't holding up its end of the sweet Apple deal. In steering potential buyers *away* from Macs, store clerks make a mockery of CompUSA president Jim Halpin's 1997 promise to make his stores "the Apple headquarters for America."

In light of all this, it's doubly amazing that CompUSA's Mac sales are screaming. Maybe that's because the Apple display areas are attractive and the Macs irresistible, even when they're unmanned. Or maybe it's the local Mac fans who sneak in to "volunteer," spending each Saturday answering questions, moving Mac/Windows software boxes into the Mac area, fixing icons that customers have renamed "ZVSFZZZZ," and so on. And here and there, in the occasional CompUSA outlet, there's even a Mac-savvy worker. (Exactly one CompUSA guy—in Beachwood, Ohio—won my little game of Help the Dummy. He immediately led me to an iMac and then made it speak, run Windows programs in Virtual PC, and play a movie. I almost bought one despite myself.)

Perhaps in frustration over the CompUSA situation, Apple recently authorized a second chain to sell iMacs: Best Buy. Well, *that'll* certainly help. Now we're counting on those young, underpaid, poorly trained employees to know Macs and Windows—and VCRs, cameras, and toaster ovens.

Come to think of it, maybe CompUSA isn't so bad after all. **m**

DAVID POGUE (www.davidpogue.com) is the author of *The iMac for Dummies* (IDG Books Worldwide, 1998).

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