

DIGITAL CAMERA & SCANNER SUPERGUIDE, P. 76

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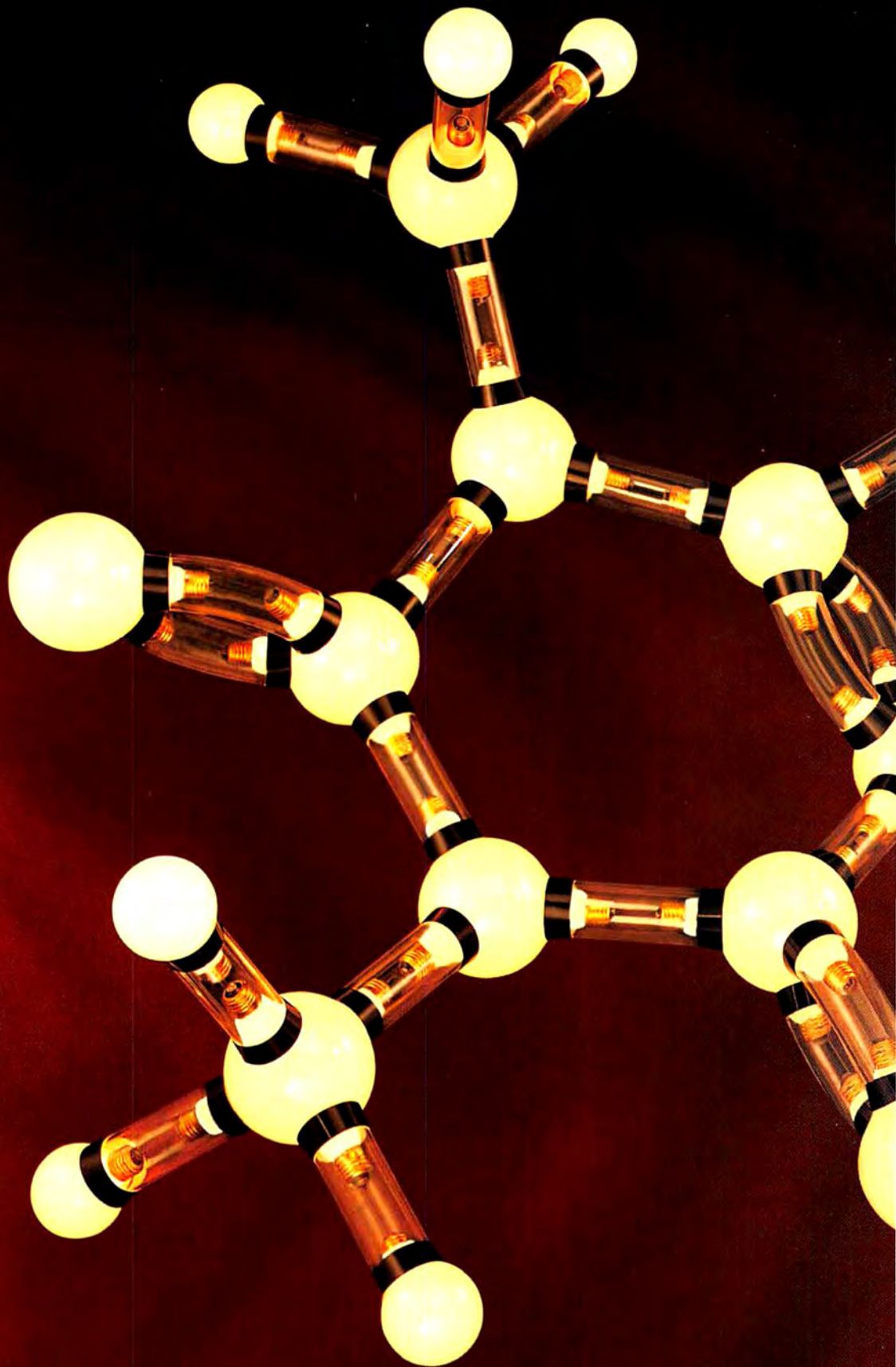


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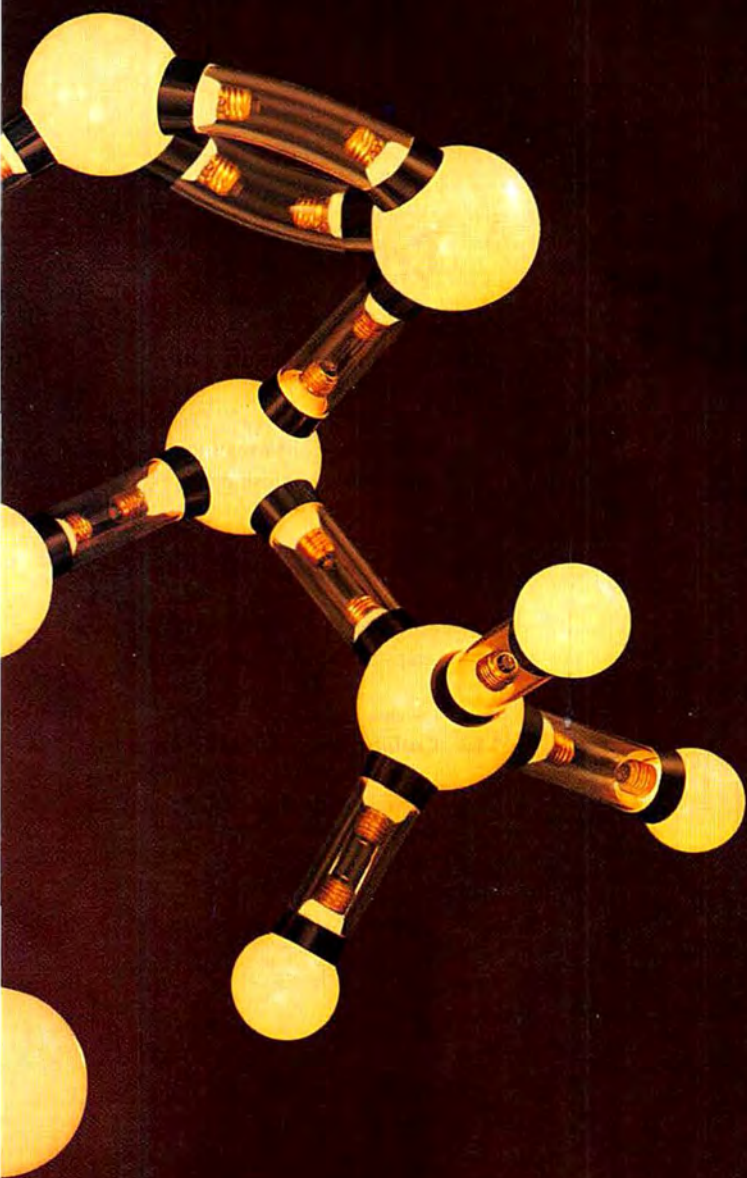




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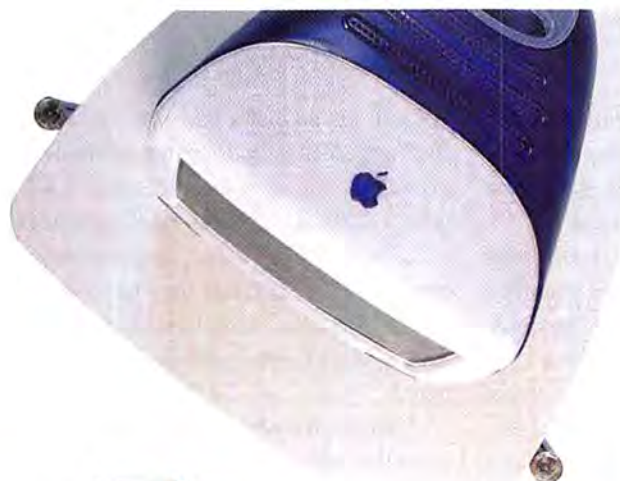
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# Field Guide

**NORTH AMERICAN DESIGNER**



## (*Graphicus nocturnis*)

### Description:

5' to 6'4"; (100-300 lbs). Large eyed, nocturnal, clothes hip; thin skinned frequent chin scratching.

### Habitat:

Art Openings, Dive Bars, Design Retrospectives, Awards Dinners, Art Supply Stores.

### Comments:

Appears in muted tones, paradoxically attracted to colors. Highly unadaptable to design changes.

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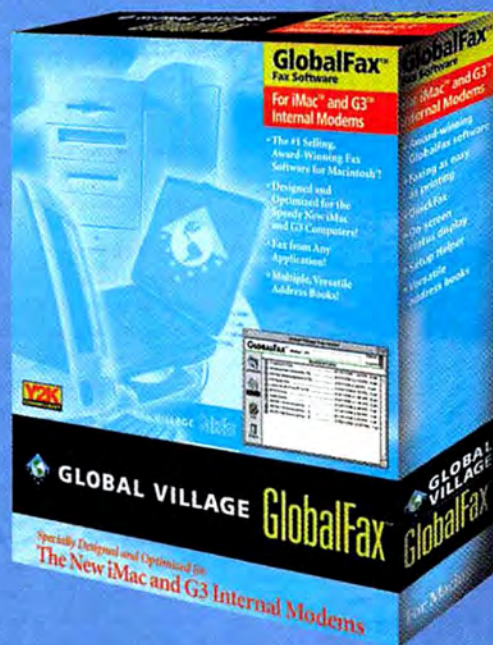
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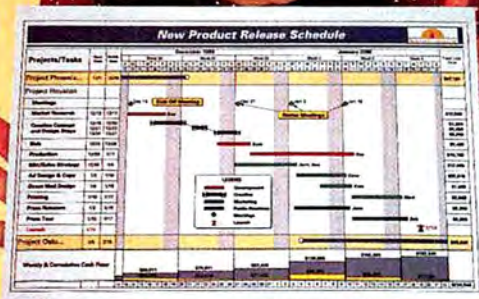
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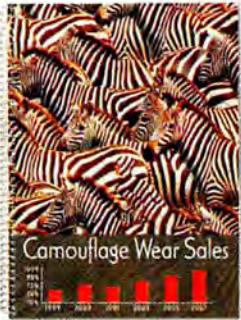
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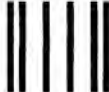
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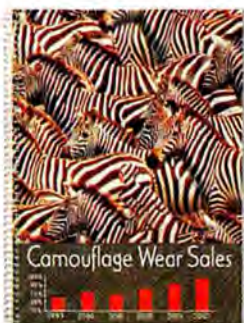
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# Letters

## Going All the Way

THE *MACWORLD* WEB MERCHANT'S Companion" (June 1999) didn't go quite far enough in discussing e-commerce site development. Sure, you can set up the best site on the Web using Tom Negrino's suggestions, but if you don't market it, few people will ever see it.

While the Internet offers a way to level the playing field for our niche food business, getting eyeballs to view our Web site has been our single biggest challenge. Banner ads, print ads, public relations, and other devices are essential—and often expensive—components in addition to the creation and maintenance of the site.

ELLIE MACDOUGALL  
Wells, Maine

## Left-Out LaserWriters

SINCE I JUST BOUGHT AN iMAC, I was very interested to see your recent article on USB products ("USB from A to Z," June 1999).

I ran down the list of USB-to-serial adapters, hoping I could find one that would allow me to use my Apple Personal LaserWriter LS. However, I found that none of the products listed in the roundup support serial LaserWriters like mine. Do you know of any products on the market (or in development) that do?

ELIZA GALLO  
New York, New York

*You are not alone in wanting to save your LaserWriter, and at least one adapter manufacturer has heard your plea. Keyspan (510/222-0131, [www.keyspan.com](http://www.keyspan.com)) says it plans to ship a new USB-to-serial adapter that supports LaserWriters by the time you read this.—Ed.*



## Sanity for Service Bureaus

THANKS FOR BRINGING MUCH needed service-bureau submission guidelines to the forefront for all designers ("Don't Sabotage Your Professional Print Job," *Create*, June 1999). The top ten were dead-on but only put a dent in the diatribes of everyday prepress troubleshooting. I was so relieved to find it isn't just my department that encounters these problems. I can now prove they are not anomalies that we randomly make up as an excuse for not getting a job out on time.

I passed along the information to our clients and our front office in hopes that it will ease our troubled workplace. We feel like an unlimited source of free software training, often allowing our clients to use us in fixing their files just as they flee to another vendor. I keep dreaming of a total cure, but thanks for treating some of the symptoms.

CALLIE HOUSEHOLDER  
Atlanta, Georgia

I READ STEPHEN BEALE'S ARTICLE "Don't Sabotage Your Professional Print Job" with great enthusiasm. I found it to be pretty much on the money. However, I would like to mention a problem we come across too often on the job: stylized fonts. For example, a job will come in where the bold or italic box for a font is selected in QuarkXPress. These fonts may print fine on a laser printer, but if the actual printer fonts are missing, the italic or bold will print in roman on high-end output devices, instead of the way the client intended.

AARON KRON  
Woodside, New York

## GoMac, Go!

IT WAS NICE TO SEE ACTION GoMac 2.0 get some worthwhile press (*Reviews*, June 1999). I've been a GoMac devotee since version 1.0. And while it was hard to make the leap from \$15 shareware, when Proteron owned it, to a \$40 application under Power On Software, I've found the improvements are well worth the cost.

Christopher Breen's review left out a couple of GoMac's more endearing features and conveniences. To manage items in the Start menu, just click on the Start button while holding down the option key, and the window pops open. Also, you can add control-strip modules to the Clock Tray at the right side of the task bar. Simply click anywhere on the task bar and hold down the mouse button, and you get a pop-up menu that includes Add Module and Remove Module commands. So in addition to launching and managing applications easily, you can handle features such as

*continues*



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## LETTERS

resolution or sound—even Internet connections—on the fly.

STEVE GREENBLATT  
Brooklyn, New York

### Palm's Poor PIM

**F**RANKLIN TESSLER WAS WAY TOO kind in giving a 3½-mouse rating to MacPac 2, the new Mac desktop software for Palm handhelds (*Reviews*, June 1999). As he points out, MacPac 2 sends notes attached to calendar items into limbo, and simply ignores some repeating calendar items.

That violates the fundamental idea that has made the Palm devices so successful—having one body of information available whenever and wherever you want to access it, on a variety of platforms. Now we're back to the days where we have to say "except on a Mac." After having had the Mac fully connected to the Palm, we're back to playing second fiddle to PCs, or maybe we're playing first violin with only three strings.

Palm designers have been so smart until now. What happened?

JEFF BYERS  
San Francisco, California

*Mac users are divided on whether these shortcomings constitute a fatal flaw. Despite its problems, I find that MacPac 2 offers much more functionality than its poky predecessor; but it still falls short of my favorite PIM, the defunct Now Up-to-Date and Now Contact bundle.—Franklin Tessler*

**I**HAVE BEEN USING MACPAC 2 WITH a PalmPilot and found a good work-around for the main problem described in the review of this product (not being able to attach notes to tasks or events on the desktop that will appear on the Palm). All you need to do is this: first, create the task or event. Then create a note and name it Handheld Note. Drag and drop the note onto the task or event. The note will be shown as an attached item on the desktop and will also appear as an attached note on the Palm.

VICTOR LESSER  
New York, New York

*3Com/Palm Computing, maker of MacPac 2, admits this solution might work but doesn't recommend it, as it may lead to trouble down the road.—Franklin Tessler*

### Opening a Can of Worms?

**I** COULDN'T HELP BUT EXPERIENCE déjà vu when I read about Apple's decision to open part of the OS X Server source code ("Apple Goes Open Source with Mac Server," *News*, June 1999). I thought Apple would come to its senses and give up or at least revamp its strategy. But now that I see it in *Macworld*, I know this cannot be.

Remember Mozilla, Netscape's open-source spin-off that never really amounted to anything? Apple is following exactly the same approach, and I hope for its sake that it doesn't end up in the same place.

Open source seems to be all the rage these days with software manufacturers. As Apple's product manager for Mac OS X Server said in the article, "It's as if we had hired a huge bunch of programmers for free." Haven't we seen the results of this type of corporate greediness and laziness before? Apple, there's no such thing as a free lunch.

JEFFREY PAUL  
via the Internet

### Supporting Sherlock

**I** ENJOYED ANDREW GORE'S COLUMN "Where's Sherlock?" (*The Vision Thing*, June 1999). When I first saw ads for Sherlock, I thought it was just more Web-related hype and brushed it off.

Then I installed OS 8.5 and started to take a closer look. I was very impressed. It greatly simplifies Web searches, and indexing my drives by content and searching for files based on keyword content is really fantastic. It has saved me so much time.

Sherlock is one of those how-did-I-ever-live-without-it tools. I completely agree that Apple should aggressively support and market Sherlock. If only the Web sites that maintain the search databases would get rid of stale URLs, the efficiency and effectiveness of Web searching would *really* improve!

Apple, don't flush a good thing!

SAM GASSER  
Los Angeles, California

**A**NDREW GORE CORRECTLY asserts that Sherlock is "the most easy-to-use search technology on any platform." Not only that, but it renders virtually instant, on-target results every

*continues*



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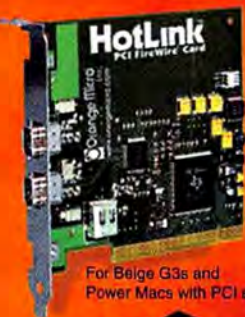
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## LETTERS

time. I love asking my PC-challenged friends to find their own name. Invariably the final choice is an Internet site that mentions them, since none of them has registered with any search engines. To their amazement, newfound respect, and envy, I have located multiple sites in mere seconds in every case. Sherlock is continued proof that Macs rule!

DAN AUGSBURGER

Berrien Springs, Michigan

## Don't Hold Back Now

I AM SICK OF THE NAMBY-PAMBY whiners out there in Macdom who cannot grasp the necessity of change, focus, radical ideas, and direction in Apple. I've been reading letters in *Macworld* criticizing Apple for the new G3 and the iMac, and I have heard enough. Thankfully, Steve Jobs has the chutzpah to take the Mac in radical new directions—forcing needed change in what was a comatose, under-achieving platform. You complained when Apple was in the red for years, offering no inspiring technologies and no real OS direction—and now you complain because that's all history. Number one-selling computers, flexible and efficient new technologies, radical designs, and even a bit of humor. Oh, yeah—this is bad!

The Mac is back in fact and in spirit. It's time to embrace the radical changes and get on board with the brightest future Apple has seen in years.

There—I feel better now.

RON TAVALLIN

Palatine, Illinois

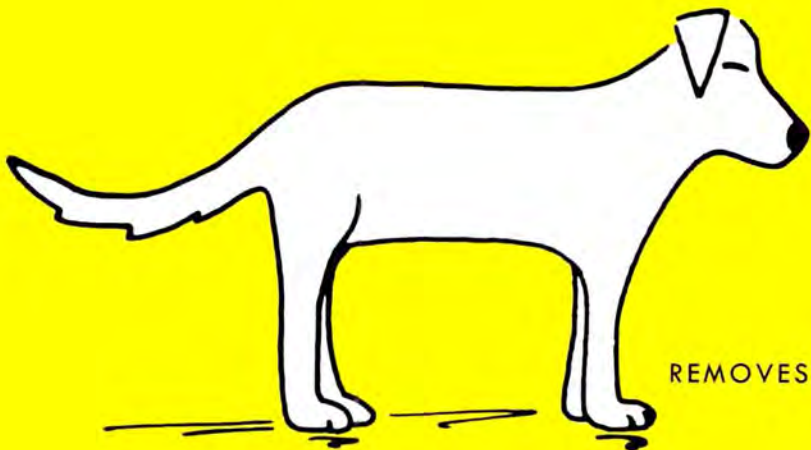
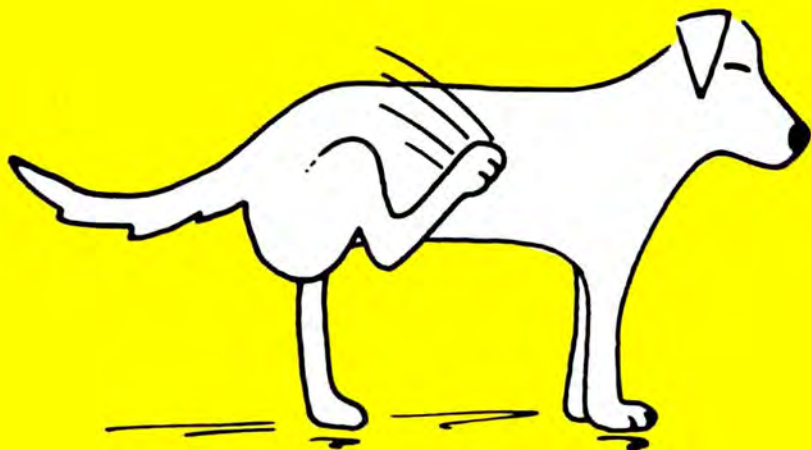
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## CORRECTIONS

The viewable area for Eizo Nanao Technologies' FlexScan T960 is 19.6 inches ("Think Big," June 1999).

Contrary to our assertion, Macromedia's *Fireworks 2.0.2* does have tweening capabilities (Reviews, July 1999). **m**





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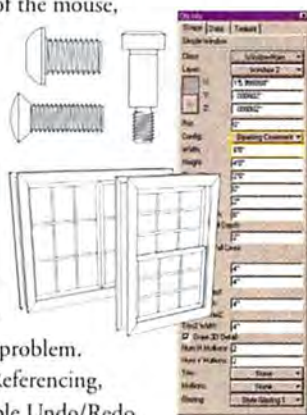
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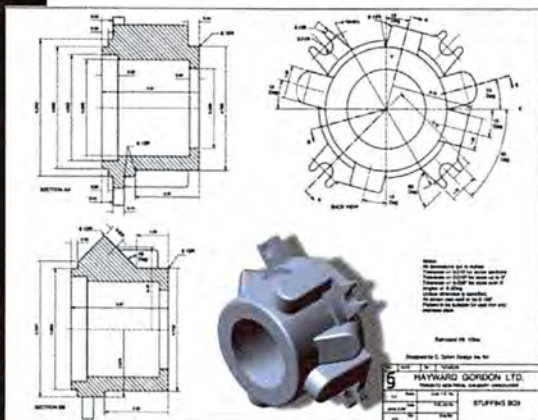
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# The Vision Thing

by Andrew Gore

## Music for the Masses

WHY MP3 AND THE MAC WILL REVOLUTIONIZE THE MUSIC WORLD

CONVERGENCE IS THE bogeyman of media megacorporations. In the music industry, where so much is made by so many for doing so little, the idea that artists can now eliminate the middleman and deliver their content directly to their admirers is a frightening thing indeed.

These music publishers should be afraid—very afraid. Because MP3 has finally arrived on the Mac. And once this emerging standard for encoding and distributing high-quality audio combines with Mac users' creative zeal, the resulting tidal wave will be big enough to swallow media moguls whole.

### Special Delivery

In the last couple of months I've finally had the opportunity to tinker with MP3, an extension of the MPEG multimedia file format now famous for housing extremely good-sounding music in fairly small sound files. And while audiophiles are practically frothing at the mouth over claims that MP3 sound quality is as good as that of compact discs, one thing that can't be challenged is that MP3 files are much smaller, about one-tenth the size of the equivalent data on an audio CD. MP3 files can be downloaded over the Internet, or you can create your own from your personal CD collection by using MP3-encoding software. Best of all, you can download your own custom mixes to pager-size portable MP3 players, in addition to playing them on your Mac.

Diamond Multimedia recently announced the \$269 USB-based Rio PMP 500, the latest version of the leading MP3-player hardware. The new Rio works with any Mac with a USB port, can store two hours of music on its built-in RAM, and has a slot that can use removable SmartMedia cards to add another hour of music to the mix (see *News*, elsewhere in this issue).

Because MP3 players like the Rio store music in RAM, they're the tops in terms of stability. There are no moving parts, so there's nothing to bounce, jog, or otherwise disrupt the playback of your favorite tunes.

The only thing holding back MP3 on the Mac has been software. Around the *Macworld* offices, we've been testing the first two commercial Mac MP3-encoding programs: Xing Technology's \$30 AudioCatalyst (already in version 2.0) and Casady & Greene's \$49 SoundJam MP, which should be available by the time you read this.

With MP3 encoders like these, copying an audio CD to your hard drive is about as easy as sticking it in your

### Revolution 10

Copying your favorite CDs to your hard drive is great. But the real power of MP3 will be in the sounds you tune in over the Internet.

Ever wonder why a CD can cost upwards of \$18 when the cost of materials is about a buck? Distribution. Marketing. Advertising. Corporate profits. By the time everyone's done getting their share of that price tag, the artist is left with only a modest percentage of the take.

With MP3, suddenly the infrastructure disappears from the equation. Musicians can charge a couple of dollars for an entire CD's worth of music, keep most of the proceeds (considerably more than they'd see from the sale of a CD), and you, the consumer, save a bunch and get your music in easily managed files. Ever try to mix a custom MiniDisc or audiotape? Let's just say the interfaces were designed by the same folks who invented VCRs. With MP3, you get to use your Mac as your audio dashboard. You can even use plug-in "skins" to completely customize your MP3 player's interface. How cool is that?

Now that MP3 is finally on the Mac, the revolution it embodies will only accelerate.

The Mac is already the platform of choice for many musicians. And with MP3, those musicians will be able to encode their works for distribution over the Internet with ease.

Just add a few digital groupies who will breathlessly follow a musician's files around the Web, and the record companies won't have any enticements left to offer the aspiring rock virtuoso. **m**

*Editor in Chief Andrew Gore is a co-author of My iMac (IDG Books Worldwide, 1999). E-mail questions and comments to Andy at [visionthing@macworld.com](mailto:visionthing@macworld.com).*



CD-ROM drive. In both SoundJam and the shareware MacAmp, you can create custom song sequences (or *playlists*) by clicking on and dragging tracks from the CDs you've recorded and from MP3 tracks you've downloaded from the Net.

Then there's the issue of sound quality. I'm here to tell you that at higher sampling rates—say, 144kHz—I simply can't tell the difference between songs recorded in MP3 and those on a conventional audio CD. I'm sure there is a difference—I just can't hear it. And truth be told, I'm not that concerned about what I can't hear.



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**STAY LONG ENOUGH  
AND WE'LL SHOW YOU  
HOW TO BUILD ONE.**

CNET: Hardware

Desktop computer  
reviews and features

How to buy your first PC

1: Know what you need

Under the hood:  
What makes a PC fast?

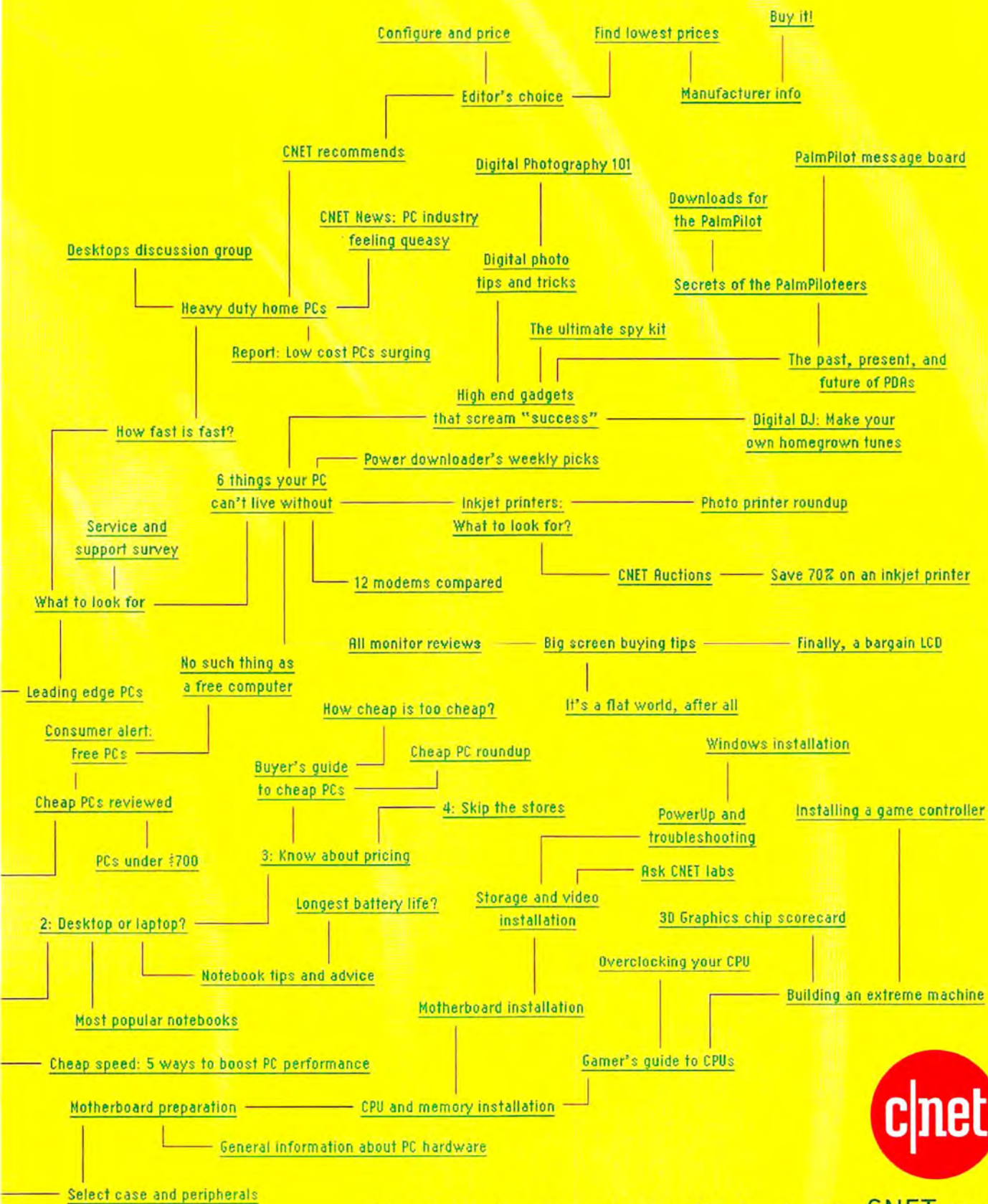
Build your own  
computer

Hardware: Do it yourself

Before you begin

Select CPU and  
motherboard

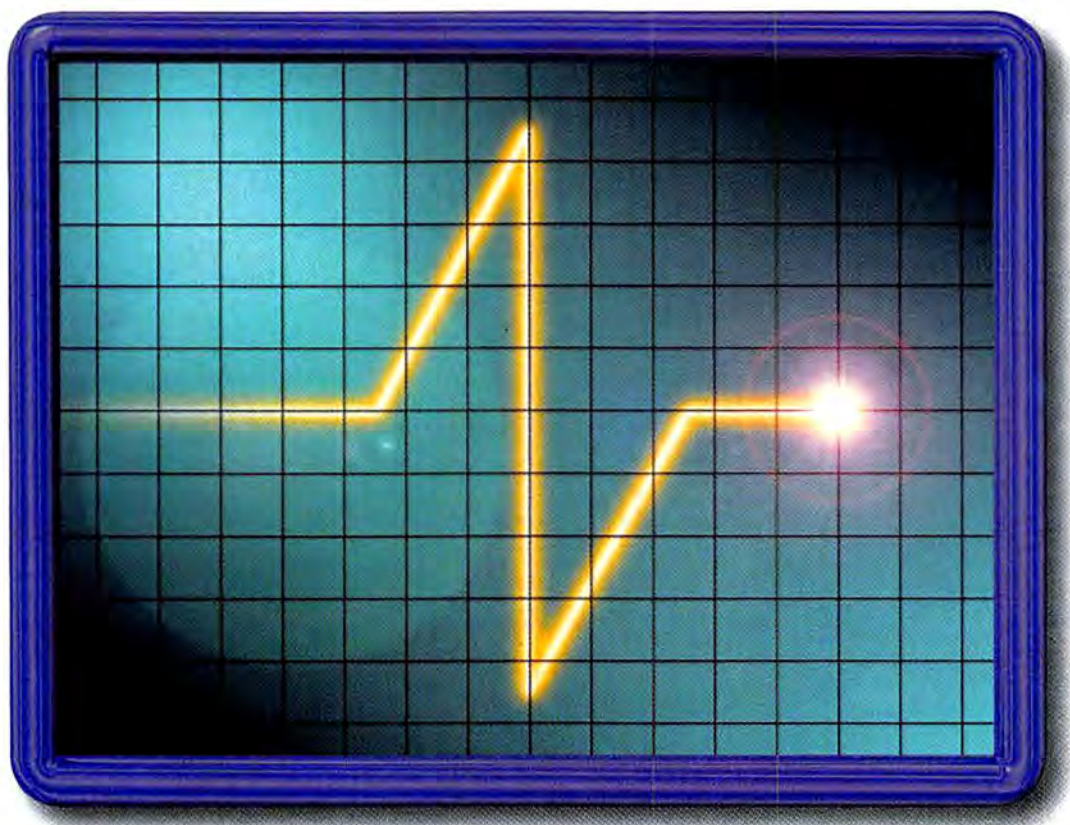




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There's only one utility in the world that does more for your  
Macintosh than TechTool Pro 2...



## Introducing TechTool Pro 2.5

MicroMat's disk repair and Macintosh troubleshooting utility just became a whole lot better. Loaded with new features like Trash Cache™, which allows you to resurrect files you've accidentally deleted. Or our new Automated Diagnostic feature that checks your drives at the time intervals you specify, so you're always sure your drives are in top shape. TechTool Pro 2.5 even now supports new technologies like FireWire drives, USB floppy drives, System 8.6, all of the latest Macs and much more. But the real power of TechTool Pro 2.5 isn't in the features

you can see, it's in the features you can't see. Like a multitude of new drive repair routines that can save data that other utilities would simply abandon. An improved recovery system that will find lost files in the darkest caverns of a damaged drive. You'll also find improved performance on key features like disk optimization. But maybe the feature you'll find most interesting about this version is the price: FREE\*. If you own any version of TechTool Pro 2, just go to our web site and grab the updater. You'll be glad you did.

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\*Version 2.5 is available at no charge to registered TechTool Pro 2 users as an updater application directly from the MicroMat web site. If you do not wish to download the updater or would prefer a new CD, they can be purchased for \$25 plus tax, shipping and handling by calling the phone number above. Please have your serial number ready when calling. Prices subject to change without notice. ©1999 MicroMat Inc. All rights reserved. TechTool is a registered trademark of MicroMat Inc. Fix Different is a trademark of MicroMat Inc. Macintosh is a trademark of Apple Computer, Inc. Choose 67 at [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



## graphics

# Web Sites Take On Application Roles

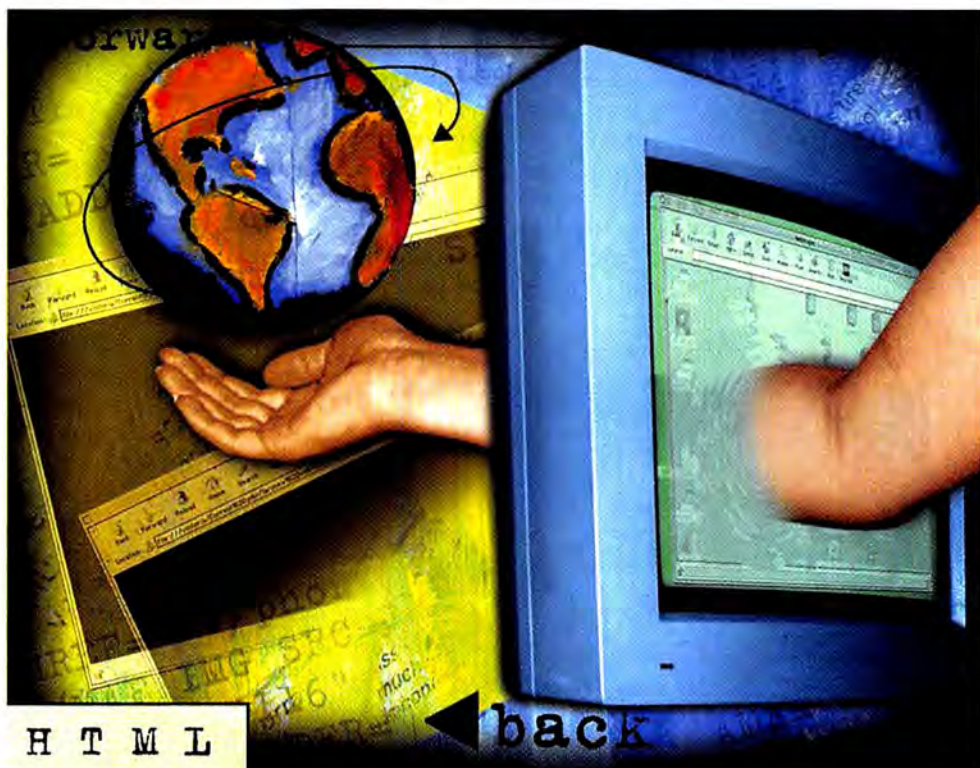
CREATE AND MODIFY  
GRAPHICS THROUGH  
YOUR WEB BROWSER

by Stephen Beale

**T**he next time you need to touch up a photo or convert an image file, you may have an extra software tool at your disposal: your Web browser. A handful of developers, including Extensis (800/796-9798, [www.extensis.com](http://www.extensis.com)) and a new company called Avivo (415/242-0400, [www.atomz.com](http://www.atomz.com)), have introduced Web sites that let you perform graphics operations that would otherwise be handled by stand-alone software. As Internet bandwidth increases and developers look for new sources of revenue, such Web-based graphics apps could become commonplace.

Web sites that duplicate commercial software's features are nothing new. For example, Netstudio.com offers tools for creating simple Web graphics. However, these sites are largely geared toward casual users. The new Web application sites target graphics professionals.

**Creative Pros** Extensis, best known as a developer of graphics plug-ins, has launched a Web site called Creativepro.com that offers discussion forums, service directories,



links to industry news sources, and information about software products from Extensis and other companies. Nothing unusual—but Extensis has ambitious plans to offer a variety of graphics services via the site, including PDF-to-HTML file conversions, digital photo enhancement, and portfolio hosting. Extensis plans to offer its first Web-based application—a PDF preflighting tool based on its Pre-

flight Pro software—shortly after Creativepro.com goes public in July. Extensis won't charge for basic PDF preflighting but eventually will offer a more fully featured version of the service for a fee.

**Atomic Power** Avivo, a new company founded by ex-Macromedia employees, has launched a Web site—[www.atomz.com](http://www.atomz.com)—that will offer free software applications for Web developers. The first app,

Atomz Search, lets you quickly produce search engines for your Web site. Using tools on Atomz.com, you can create customized results pages that conform to your site's design.

The free service is limited to Web sites with fewer than 500 pages, and you must include a "Powered by Atomz.com" logo on the search page. The company offers a premium service, beginning at \$30

*continues*



per month, for larger Web sites or those that don't want to display the logo. The premium service also provides automatic reindexing of your site; with the free service, you must periodically hit a reindex button accessed through Atomz.com.

Avivo plans to offer other server applications, including workflow management and dynamic generation of data and graphics.

**Extra! Extra!** Targeting the newspaper business, B-Linked (800/254-6533, [www.b-linked.com](http://www.b-linked.com)) and iPrint ([www.iprint.com](http://www.iprint.com)) have teamed up to offer the Virtual Ad Design Studio (VADS), a service that allows advertisers to create and customize print ads using a Web browser. An advertiser can take an ad created for one newspaper, modify the copy, fonts, graphics, and other elements, and then redistribute the ad to other publications.

**Other Vendors** Although they have not announced plans for Web-based applications, most of the leading graphics vendors have substantially stepped up their Web presence.

In May, Macromedia announced Shockwave.com, a new business venture that will manage an entertainment-oriented Web site of the same name (see "Macromedia Bets the Store on Flash 4," *News*, August 1999). MetaCreations offers direct links to online interest groups through menu commands in its software packages. For example, the BryceTalk command in Bryce 4 accesses an online forum for Bryce users. And Adobe, as part of an ongoing restructuring, says it will beef up the electronic-commerce features on its Web site, making it easier for customers to buy the company's software.

## multimedia

# MP3 Audio Tunes Up on the Mac

NEW SOFTWARE LETS YOU CREATE MP3 TITLES

by Macworld Staff

**M**P3, the audio format that has gained a huge following on the Web, is tuning up to occupy center stage on the Macintosh. Apple's QuickTime 4 software, which shipped in June, lets you add MP3 audio to QuickTime movies, and Macromedia's recently announced Flash 4 software puts MP3 in Flash animations. Now Casady & Greene (800/359-4920, [www.casadyg.com](http://www.casadyg.com)) has taken MP3 a step further by offering a \$49 program that lets you encode MP3 audio in addition to playing it back.

Sound Jam MP, scheduled to ship by the time you read this, will include a customizable player with controls similar to those found in AppleCD Audio Player. An application programming interface for the player will allow developers to create different looks, including players with large buttons or irregular shapes. Casady & Greene also plans to offer a collection of MP3 songs. A version of the software will be bundled with Diamond Multimedia's forthcoming Rio PMP 500 digital-audio player, the first MP3 player to offer Mac support.

MP3 has become a popular music format for the Web, thanks to its compact file sizes and near-CD-quality audio. You can store as

many as 2,300 MP3 titles on an 8GB hard drive. MP3 has raised concerns in the recording industry because it makes it easy to pirate copyrighted music. However, some musicians have embraced the format because they can offer samples of their recordings directly to potential fans, bypassing the music industry's conventional distribution channels.

Along with Sound Jam MP, Casady & Greene has released upgrades to Conflict Catcher and Spell Catcher, as well as two new products, iLiner and Speed Startup. iLiner is a \$49 outlining tool that lets you take notes while viewing QuickTime content; it also provides access to the automatic document-summarization features in Apple's Sherlock software. Speed Startup, a \$19.95 utility available exclusively through the Casady & Greene Web site, speeds system boot-ups, especially on PowerBooks or Macintosh systems with large amounts of RAM.

## graphics

# Photoshop Upgrade Gets Web Savvy

IMAGEREADY ROLLED INTO PHOTOSHOP 5.5

by Stephen Beale

**W**hen Adobe Systems (800/685-3612, [www.adobe.com](http://www.adobe.com)) released Photoshop 5.0 last year, many users thought the company had made a big mistake. Rather than add enhanced Web-graphics capabilities to its image-editing powerhouse, Adobe chose to



## Wacom Tablets Get USB Interface

USERS OF IMACS AND BLUE POWER MAC G3 SYSTEMS can now enjoy the benefits of pressure-sensitive graphics tablets. Wacom (800/922-6613, [www.wacom.com](http://www.wacom.com)) has announced USB versions of its Intuos pens and tablets (see *Reviews*, January 1999). Five models are available: 4 by 5 inches, \$200; 6 by 8 inches, \$384; 9 by 12 inches, \$510; 12 by 12 inches, \$510; and 12 by 18 inches, \$820. All tablets ship with one pen; the 9-by-12 and 12-by-18 models also include the Intuos 4D Mouse.—MACWORLD STAFF



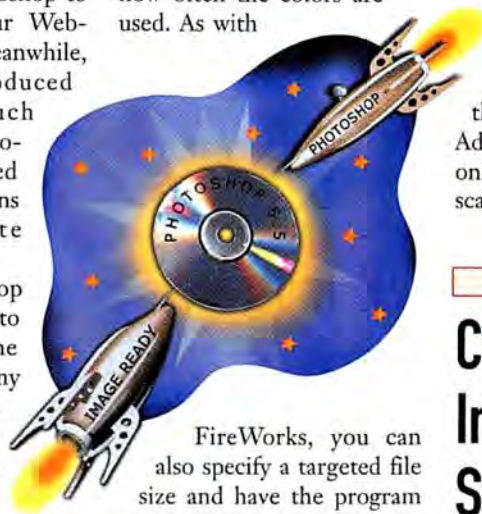
place those features into a new program called ImageReady. The problem—aside from weaknesses in ImageReady itself—was that you still had to use Photoshop to begin many of your Web-graphics projects. Meanwhile, Macromedia introduced FireWorks, a much more successful program that integrated most of the functions needed to create images for the Web.

With Photoshop 5.5, Adobe appears to have recognized the error of its ways. Many of the Web-graphics features previously found in ImageReady have been incorporated into Photoshop. Other functions, such as animation, image slicing, and JavaScript rollovers, are available in a new version of ImageReady that is bundled with—and tightly integrated with—the image-editing package. Instead of using separate programs to create Web animations and other graphics, you can now do it all in Photoshop. Adobe will no longer offer ImageReady as a separate program.

**Web Features** Photoshop's new Web savvy is apparent in many areas. For example, in addition to displaying an out-of-gamut warning when you specify an unprintable color, Photoshop 5.5 can display a warning when you specify a color outside the 216-color Web-safe palette. If you're working on a transparent GIF image, Photoshop can now display the transparency.

The color-reduction and optimization features previously available in ImageReady have been rolled into the big program: a new Save For Web dialog box lets you experiment with different color palettes and visually compare

up to four versions of an image. You can lock colors, so they are not affected by palette-reduction operations, and sort the palette based on how often the colors are used. As with



FireWorks, you can also specify a targeted file size and have the program apply whatever compression is needed to achieve it. A gamma preview lets you see images as they appear in Windows or the Mac OS (images look darker in Windows).

If you want to slice or animate the image, you can launch ImageReady 2.0 from within Photoshop.

**Going to Print** The upgrade includes other enhancements, most notably new masking functions that duplicate many features found in Extensis MaskPro, Chroma-Graphics MagicMask, and Ultimate Knockout. A new Background Eraser makes it easier to remove backgrounds, and you can create complex masks by drawing inner and outer boundaries along an object's edge.

New Actions in Photoshop 5.5 automate the creation of Web photo galleries, complete with thumbnails and HTML links to full-size photos. You can also produce photo packs that include multiple sizes of a single image.

Adobe plans to ship the \$610 package by the time you read this. Upgrades from Photoshop 5.0 or ImageReady 1.0 will cost \$129;

upgrades from earlier Photoshop versions will cost \$199. Adobe also plans to offer a retail version of Photoshop 5.0 LE for midrange users.

The software, which lacks CMYK, color-management, and channels functions, will sell for less than \$200. Previously, Adobe offered Photoshop LE only as bundled software for scanners or digital cameras.

## graphics

# Canvas Update Introduces SpriteEffects

UPGRADE APPLIES IMAGE  
FILTERS TO VECTORS

by Stephen Beale

**D**eneba Canvas 6, introduced in 1998, implemented a new technology called SpriteLayers that lets you create sophisticated masking and transparency effects using bitmapped images and vector graphics. Now, less than a year later, Deneba Software (305/596-5644, [www.deneba.com](http://www.deneba.com)) is preparing to ship Canvas 7, an upgrade to the integrated graphics software that adds another new technology, called SpriteEffects.

**Vector Filters** Canvas combines image-editing and vector-graphics capabilities, and the new SpriteEffects function thus borrows from both Adobe Photoshop and Macromedia FreeHand. As with Photoshop's Adjustment layers, you can apply filters such as Blur and Sharpen to a layer that affects any underlying graphic. But SpriteEffects also work much like FreeHand lenses: you can use

*continues*

**More Pixels** Now that digital cameras have broken the megapixel barrier, manufacturers are racing to offer two-megapixel models (see "Digital Cameras Develop," elsewhere in this issue). The \$699 **RDC-5000**, from Ricoh (800/742-6410, [www.ricohcpg.com](http://www.ricohcpg.com)), captures images at up to 2.3 million, or 1,792 by 1,200, pixels. The camera includes 2.3X optical zoom and a USB connection for easy download to iMacs and blue G3s. The \$699 **PhotoPC 800**, from Epson (800/463-7766, [www.epson.com](http://www.epson.com)), features a 2.14-megapixel sensor, for a maximum resolution of 1,600 by 1,200 pixels. For the consumer crowd, Epson's \$349 **PhotoPC 650** captures 1.09 million, or 1,252 by 864, pixels. Both Epson cameras can download images through USB or serial ports.

**Astral Scans** Expanding its Astra line, Umax (800/562-0311, [www.umax.com](http://www.umax.com)) has released two new flatbed scanners for home-office Mac users. The \$129 **Astra 2000U** and \$169 **Astra 2100U** both offer 36-bit color and 600-by-1,200-dpi resolution, with USB ports for connection to iMacs or blue G3s. The Astra 2100U features three programmable push buttons to automate scanning, direct copying to a connected printer, or other operations. Umax also announced it will bundle SCSI cards with its PowerLook and Mirage series scanners to allow connection to blue G3 systems, which lack a built-in SCSI port.

*continues*



**Project Your iMac** Let your iMac's inner beauty shine on the wall or through another monitor. The \$99 **iPresenter**, from Power R (800/729-6970, [www.powerr.com](http://www.powerr.com)), is a video adapter that lets iMacs drive a multimedia projector, external monitor, or television. The adapter connects to the monitor cable inside the iMac.

**Illustrator 8 Update** Adobe (800/833-6687, [www.adobe.com](http://www.adobe.com)) released **Illustrator 8.0.1**, a free update to the popular drawing software. The patch fixes several bugs, including one that causes crashes under Mac OS 8.5.X. Download the update at [www.adobe.com/prodindex/illustrator/update801.html](http://www.adobe.com/prodindex/illustrator/update801.html).

**PDF for OS X** Stone Design (505/345-4800, [www.stone.com](http://www.stone.com)) has announced **PStill**, a PostScript-to-PDF file-conversion program that runs under Mac OS X Server software. The \$129 package, scheduled to ship by the time you read this, converts PostScript and EPS files to Adobe's Portable Document Format.

**FileMaker Fix** FileMaker (800/325-2747, [www.filemaker.com](http://www.filemaker.com)) has released a free FileMaker Pro update that fixes bugs and adds a new data-validation feature. The latter allows you to set up data fields that validate whether entries are numeric, date, or time values. You can download the **FileMaker Pro 4.1v2** updater from [www.filemaker.com/support/41v2release.html](http://www.filemaker.com/support/41v2release.html).—EDITED BY MICHAEL GOWAN

Bézier drawing tools to modify the size and shape of the SpriteEffect—the area affected by the filter—and you can detach a SpriteEffect from one object and apply it to others.

SpriteEffects have another property unique to Canvas: they let you apply Photoshop filters—including third-party plug-ins—to vector graphics, as long as the filters support Photoshop's Actions palette. When you apply the filter, the lens displays a rendered version of the vector graphic at a resolution you define. However, you can still edit the drawing in its vector form, and you can detach the lens and apply it to other vector objects.

**Other Goodies** Along with the SpriteEffects technology, Deneba has spruced up the Canvas interface. The program's many palettes are consolidated in a single menu, and Canvas now includes a Photoshop-style Navigator window that makes it easy to move around a document in magnified views. You can also modify vector objects while viewing their stroke and fill characteristics; previous versions let you edit objects only in a wireframe mode.

The program's Web capabilities have been spruced up as well. You can create GIF animations, experiment with color-reduced palettes, and

preview up to four versions of each image to see which settings offer the best trade-off between file size and image quality. Deneba has junked Colada, the Java-based Web export component of Canvas 6, and now provides direct export of Dynamic HTML. Deneba expects to ship the \$375 package this September.

### multimedia

## VR Toolbox Prevails in QTVR Suit

ROUNABOUT LOGIC

PULLS COMPETING TITLES

by Macworld Staff

**V**R Toolbox (877/878-6657, [www.vrtoolbox.com](http://www.vrtoolbox.com)) has won a legal battle with Roundabout Logic over the rights to QuickTime VR (QTVR) authoring programs sold by the former as VR PanoWorx and VR ObjectWorx. Under the terms of a recent settlement, Roundabout Logic, which offered the same software under the respective names Nodester and Widgetizer,

will no longer offer either of those programs. VR Toolbox will assume technical-support responsibilities for Nodester and Widgetizer and also plans to offer upgrades to its own versions.

Nodester, used to create QTVR panoramas, and Widgetizer, used to make QTVR object movies, were originally written by Econ Technologies, a Florida programming shop, and published by Panimation and later Roundabout Logic. In 1998, Econ sold the rights to both programs to a new company called VR Toolbox. Roundabout Logic sued, claiming that it had exclusive rights to the software; VR Toolbox and Econ countered that Econ was free to sell the rights to another publisher. VR Toolbox is a subsidiary of Emery Manufacturing and Equipment, a manufacturer of QTVR object rigs. In addition to VR PanoWorx and VR ObjectWorx, VR Toolbox offers VR SceneWorx for creating multinode QTVR movies, and The VR Worx, a bundle of all three programs.

Roundabout Logic has issued a statement acknowledging VR Toolbox's ownership of the software. The company failed to return calls seeking additional comment.



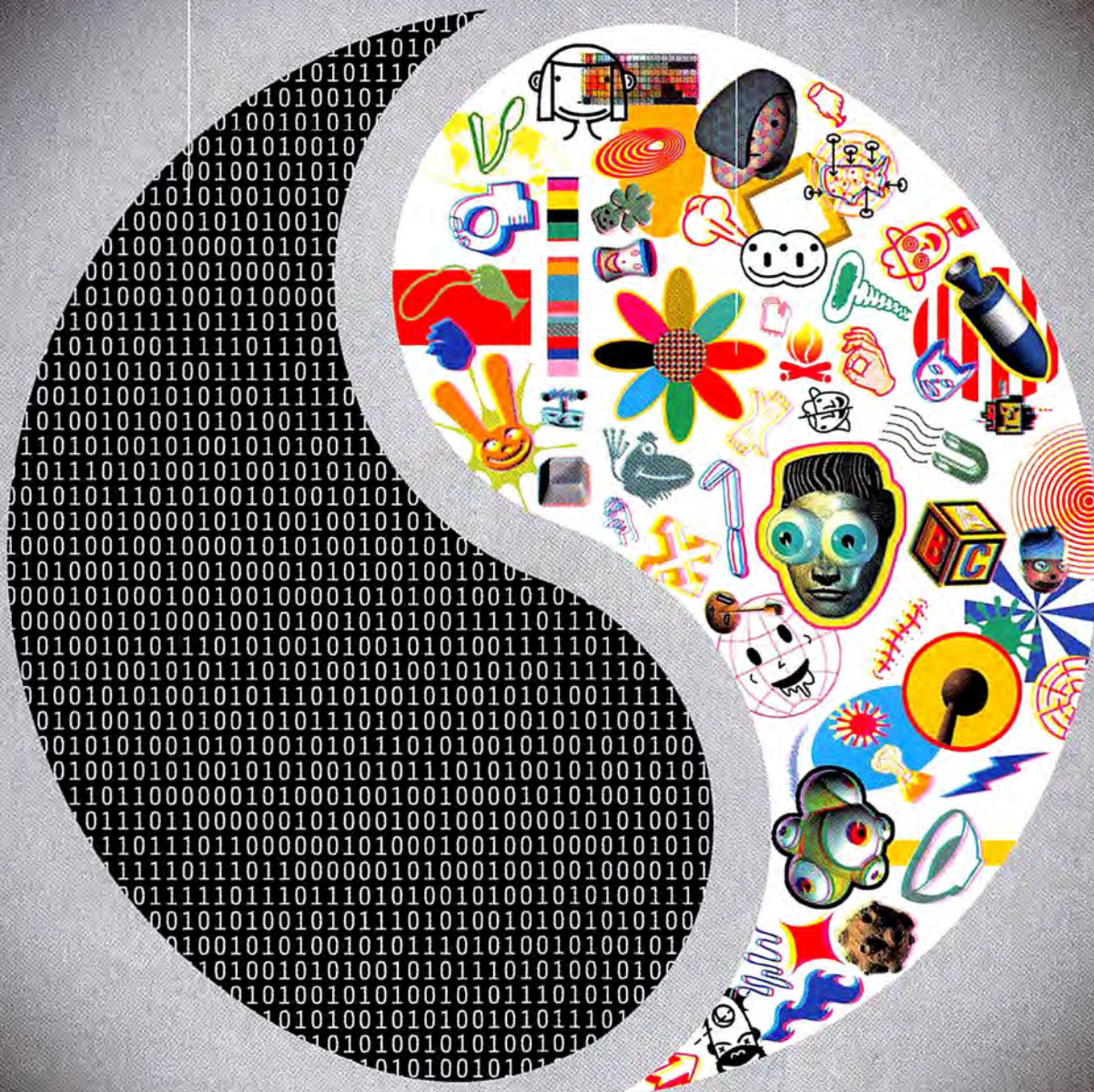
## Epson Joins MFP Fray with Stylus Scan

A SCANT TWO MONTHS AFTER CANON INTRODUCED THE first Mac-based multifunction peripheral, Epson America (800/289-3776, [www.epson.com](http://www.epson.com)) is getting into the act. Epson's new Stylus Scan series incorporates a scanner and ink-jet printer—comparable to the Stylus Color 740—in one unit. Three models are available. The \$349 Stylus Scan 2000 features a sheetfed scanner; the \$499 Stylus Scan 2500 and \$699 Stylus Scan 2500 Plus include a flatbed scanner equivalent to the company's Perfection 636 model. The Plus unit also sports an automatic document feeder. All three have USB ports but no serial connections.—MACWORLD STAFF



WEB GEEK

ARTISTE



## Adobe GoLive



There are two sides to every Web designer. The artistic design side and the esoteric HTML side. Now you're the master of both with Adobe® GoLive™. GoLive lets you create stunning Web designs without having to write one line of HTML. Just start designing and let GoLive do the coding. No matter how outrageous your ideas, GoLive ensures they look exquisite and work seamlessly when posted. GoLive even gives you instant interactivity with JavaScript™ features to bring your ideas to life. Best of all, it's available for both Mac® and Windows® platforms. So prepare to master a whole new side of your personality. To download a free trial version, go to [www.adobe.com/golive99](http://www.adobe.com/golive99)



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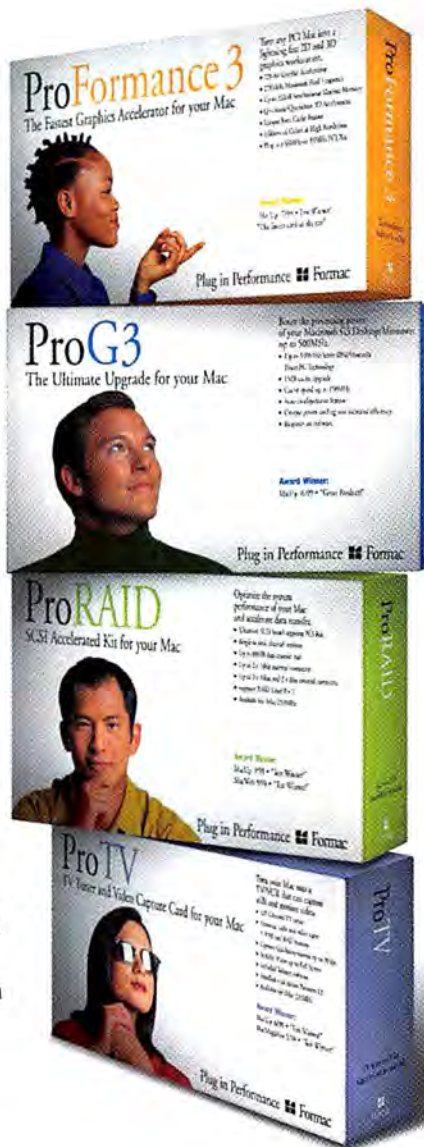


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Turn your Mac into a full function TV/VCR that can capture still frames and full motion video.



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# Reviews

## PowerBook G3s

NEW SLIM POWERBOOKS

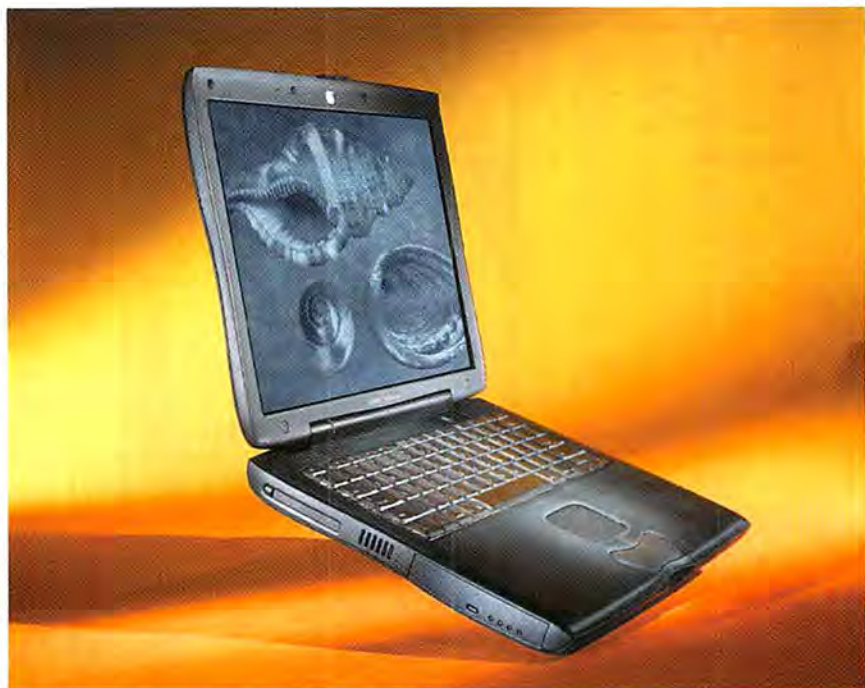
OFFER MORE AND LESS

**A**S MOST PORTABLE USERS WILL tell you, the three most important considerations in a notebook computer are size, size, and size. Luckily for Mac road warriors, Apple's latest PowerBook line offers major improvements in all three. Apple's PowerBook G3 notebooks have distinguished themselves as performance leaders among laptop computers. But users have paid a heavy price for that power—literally—as they lugged the bulky 8-pound portables through airports and hotel lobbies. No more. With the latest Mac laptops, Apple has engineered out some two pounds of bulk while adding more features, boosting speed, and extending battery life.

### Passing the Weight Test

From the moment you pick up one of the “bronze” PowerBooks (the nickname comes from the translucent bronze keyboard), you can tell that Apple has given—and taken away. The design generally resembles that of the previous PowerBook models, with a sleek black chassis; smooth, rounded corners; and a pair of expansion bays for storage devices and batteries. But it's just 1.7 inches thick—about a third of an inch thinner than its predecessor—and weighs in at 5.9 pounds with CD-ROM drive and battery.

Thanks to its crash diet, the new PowerBook is light and easy to handle,



ARNOLD TOEBO

but it still has a solid and resilient feel. However, with the slimmer expansion bay, storage devices and batteries designed for Apple's previous PowerBooks won't fit in the new one. Aside from VST Technologies' Zip and SuperDisk drives, there are few products available at press time that work with the new bay.

Macworld Lab tested standard configurations of both new PowerBook models. One model features a 400MHz G3 CPU, and the other a 333MHz chip. Both models include 64MB of RAM, an ATI Rage LT Pro graphics controller

with 8MB of video memory, a 14.1-inch active-matrix display, a 10/100BaseT Ethernet connection, and a 56-Kbps modem. The 400MHz model also features a 1MB L2 cache, a 6GB hard drive, and a DVD-ROM drive. The 333MHz model sports a 512K L2 cache, a 4GB hard drive, and a 24x CD-ROM drive.

At press time, you couldn't order the 333MHz model with a DVD drive. Apple says it will offer DVD as a build-to-order option for the 333MHz model, but you won't be able to upgrade to DVD after you've purchased the machine.

**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: ★



As you can see in the benchmark, "Bronze PowerBooks," the 400MHz PowerBook G3 far outpaced the 300MHz reference system in processor performance and also earned the top scores in our Disk and Graphics tests. The 333MHz model was less impressive, lagging slightly behind the reference system in processor performance, slightly ahead in graphics performance, and about even in disk performance. The likely culprit for the low Processor score is the model's smaller L2 cache. But keep these numbers in perspective: this is still a wicked-fast laptop.

### A Longer Life?

Thanks to the lower power consumption of the latest G3 chips, along with new power-management features in Mac OS 8.6, Apple claims that you can run these laptops up to five hours on a single battery, or ten hours when using two batteries. To achieve such long battery life, you need to step down the CPU speed, using the Energy Saver control panel. When testing at full speed, we found that the 400MHz model lasted for three hours running a standard suite of business-application tasks; the 333MHz version kept its charge about a half hour longer. When we ran this same suite on the previous-generation 300MHz PowerBook G3, also at full speed, we got three hours of battery life under Mac OS 8.6 and 2 hours, 50 minutes under Mac OS 8.5.1.

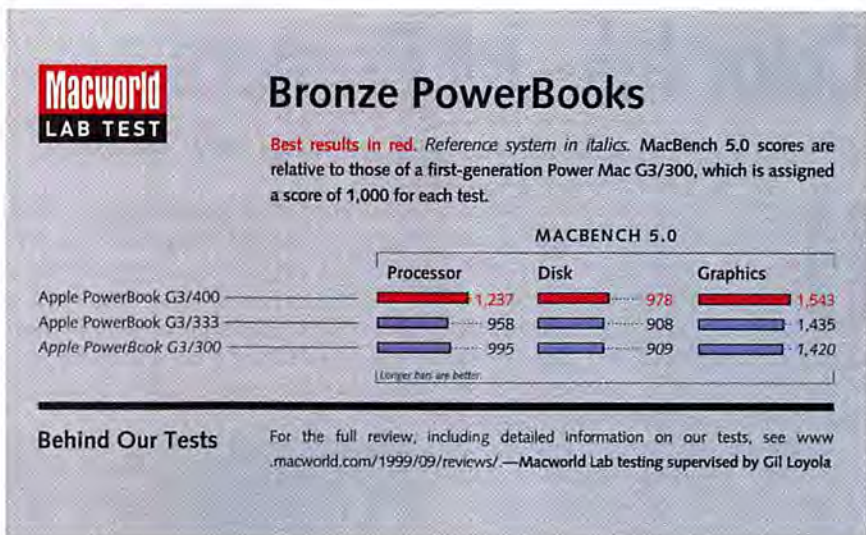
Apple says that you can watch a DVD feature movie (namely, *Austin Powers*) twice on a single battery's power. Again, this claim is based on running the CPU at a slower speed. At full speed, we ran out of power with about 30 minutes left to the end of the second showing. Fortunately, running at the slower CPU speed has no effect on DVD performance.

Our conclusion? While the bronze PowerBooks offer a modest improvement in battery life, the 400MHz unit also offers considerably greater speed, making the aggregate a good step forward in battery life versus CPU performance.

### Other Goodies

Portable users cannot live by battery life alone. And here, the new PowerBooks offer some nice improvements.

These are the first PowerBooks to include built-in USB ports (two) and FireWire connectivity, although the latter is available only through Newer Technology's FireWire2Go PC Card. And



unlike Apple's desktop models, which have done away with older hardware interfaces, the new PowerBooks still include a SCSI port as well as a 4-Mbps IrDA port. However, the ADB port is gone and you get only one PC Card slot instead of the traditional two. The new PowerBooks also return a feature missing from the previous generation of Apple laptops: the ability to drive the internal display and an external monitor simultaneously. Earlier G3 models required a separate graphics adapter to do this.

Along with these major additions, the new models offer a host of small-but-useful improvements. It is now easier to remove the keyboard if you want to access internal components. Before, you had to remove any devices in the expansion bays; now you simply release two latches and remove a keyboard-locking screw. Apple also improved the design of the expansion-bay latches, making it more difficult to accidentally eject a drive or battery.

The keyboard's translucence, while adding a nice design flair, occasionally tricked us into thinking the caps lock key was engaged. And if you use PC-emulation software, you may lament the loss of dedicated Delete, Insert, Print Scrn, Scroll Lock, and Pause/Break keys, previously available through the PowerBook's function keys. Also missing are dedicated controls for ejecting PC Cards and controlling mute, volume, and contrast, although the latter three controls are available through function keys.

The biggest problem we encountered in our testing related to the PowerBooks' USB implementation. The USB drivers that shipped with the laptops don't seem to

recognize the PowerBook Sleep function, so putting the machines to sleep with an attached, unpowered USB device (such as a keyboard or mouse) caused a variety of minor problems, including the occasional system crash. We expect that Apple and peripheral developers will provide updated drivers that address this problem.

### Macworld's Buying Advice

Despite the \$1,000 price difference, we recommend the 400MHz PowerBook G3 over the 333MHz model due to the G3/400's built-in DVD-ROM drive and impressive performance numbers. However, the slower model still delivers plenty of laptop power for a mere \$2,499. Either PowerBook will satisfy those hankering for a light load but unwilling to give up features—or the Mac OS—to achieve it.—ANDREW GORE

### PowerBook G3/333

**RATING:** ★★★★★/5 **PROS:** Respectable battery life; good value. **CONS:** Must order DVD at time of purchase; possible stability problems related to USB. **COMPANY:** Apple Computer (800/795-1000, [www.powerbook.apple.com](http://www.powerbook.apple.com)). **COMPANY'S ESTIMATED PRICE:** \$2,499.

### PowerBook G3/400

**RATING:** ★★★★★ **PROS:** Fast; DVD built-in. **CONS:** May have some stability problems related to USB. **COMPANY:** Apple Computer (800/795-1000, [www.powerbook.apple.com](http://www.powerbook.apple.com)). **COMPANY'S ESTIMATED PRICE:** \$3,499.



# Color Ink-Jet Printers

HP AND CANON CHALLENGE EPSON WITH NEW MODELS

UNTIL RECENTLY, EPSON AMERICA had the Mac ink-jet-printer market pretty much to itself as rivals focused their efforts on PC users. But now that Apple is back on its feet, Epson finally has some serious competition, in the form of new printers from Hewlett-Packard (HP) and Canon.

Macworld Lab tested Canon's \$320 BJC-6000, Hewlett-Packard's \$300 DeskJet 882C and \$400 DeskJet 895C, and Epson's \$299 Stylus Photo 750 and \$499 Stylus Photo 1200. The DeskJet 895C is a faster, network-ready version of the four-color DeskJet 882C; both target general business applications. The BJC-6000, which lets you choose from four- or six-color output, is another general-purpose printer. The Epson printers, sporting six-color printing capabilities, target photo output. Epson also offers two general-purpose Mac printers, the Stylus Color 740 (★★★★; *Reviews*, January 1999) and Stylus Color 900 (★★★★; *Reviews*, June 1999).

The results? If you have an older, pre-USB Macintosh, Epson is still your only option, because it's the only manufacturer that continues to offer a serial port. But if your Mac is USB enabled, all these printers offer top-notch output for reasonable prices.

## Output Quality

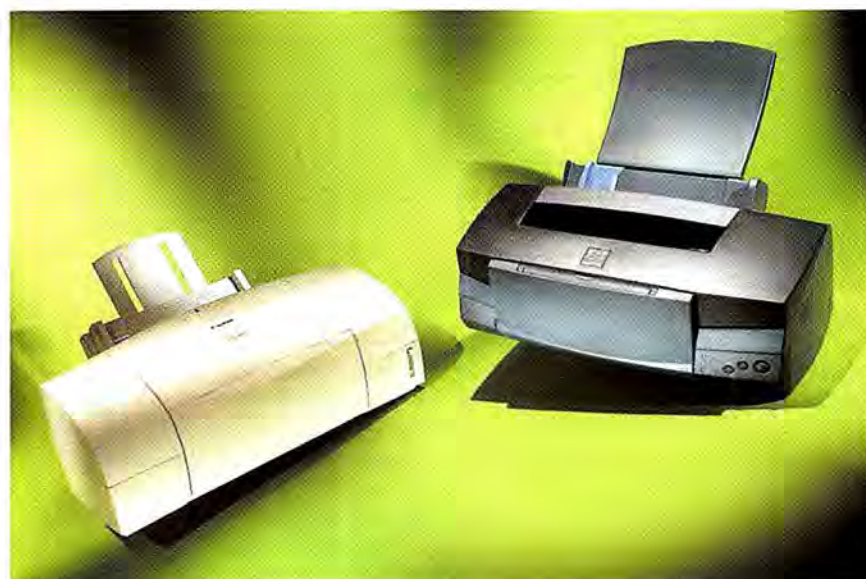
To test image quality, Macworld Lab produced a set of output samples from each printer and submitted them to a jury for evaluation. The samples included text, photos, and line art. Jurors compared each sample with the original print.

The HP printers feature four-color output, while the other models offer six-color output. Nevertheless, all five printers scored high for photo quality. The HP printers especially impressed us—their output quality on glossy paper rivaled the six-color photos of the other tested models. However, we noticed some striping when printing photos on plain paper.

Although the Canon BJC-6000 uses an optional six-color cartridge for photos, our jury thought its default photo output was slightly dark. In our first pass with the Epson printers, magenta was too

strong and yellow too weak, but we were able to correct this using Apple's ColorSync 2.6.1 and Epson's device profiles.

When printing black text from a Microsoft Word document on plain bond paper, the HP and Canon printers produced excellent results, although the HP



The Canon BJC-6000 (left) and the Epson Stylus Photo 750

models printed bold text a little heavily. The Epson printers generated thin spider lines in bold text, but when printing on photo ink-jet paper, they exhibited excellent output quality.

One often overlooked issue with ink-jet printers is the durability of the prints. Epson claims that photos produced on its ink-jet printers will last two to three years in normal sunlight. HP claims that the carbon pigment in its black ink allows documents to last substantially longer than that in sunlight.

## Print Speed

Print speed can be deceptive, because most manufacturers quote the speed you get at the printer's lowest resolution, not at the higher resolutions required for the best-looking output. In Macworld Lab's print tests, we timed output from two programs—Microsoft Word and Adobe Photoshop—at each printer's maximum resolution and at lower resolutions of

300 dpi (HP) or 360 dpi (Epson and Canon). (The HP models print black ink at up to 600 dpi, but HP doesn't quote the maximum color resolution. The Epson and Canon models print black and color at 720 by 1,440 dpi.)

As we expected, the higher-quality pages took dramatically longer to print—in some cases, ten times longer—than the low-resolution versions. But the performance champ was clearly the HP 895C. In our high-resolution Photoshop test, it produced an image in 7 minutes, com-

pared with about 10 minutes for the other printers. When printing the Word document at low resolution, the HP 895C cranked out 6.6 pages per minute (ppm) versus 4.9 ppm for the Canon, 4.3 ppm for the HP 882C, 1.8 ppm for the Epson Stylus Photo 750, and 1.2 ppm for the Stylus Photo 1200. The latter speed translates into a 6-minute wait for 10 pages.

## Paper Handling

All five printers can handle a variety of paper sizes, from 4-by-6-inch cards up to banner-length paper. The Epson Stylus Photo 1200, the large-format version of the Stylus Photo 750, can print full-bleed on tabloid stocks. All of the models can print on 110-pound paper stock, but the BJC-6000 can handle up to 143-pound stocks. As with all ink-jet printers, you get the best output quality, especially for photographs, when printing on glossy photo paper.

The HP printers feature a front-loading paper path, reducing the amount



of desk space they take up. HP's design also protects the input tray, making the printer more child resistant than the models from Canon and Epson.

### Consumables

Among the printers reviewed here, Canon's BJC-6000 has the most flexible ink system. The box includes a black print head with a black-ink tank, and a color print head with tanks for cyan, magenta, and yellow inks. Each print head lasts 5,000 to 6,000 pages; the tanks themselves last 500 to 840 pages. You can replace individual tanks as they run out—a great feature, because sometimes you'll run out of one color long before the others are depleted. For six-color printing, you need to buy a \$42.95 photo print head with tanks for black, light cyan, and light magenta inks. You install this next to the three-color print head, replacing the black-ink cartridge.

The BJC-6000 also features a useful low-ink warning that shows up in your Mac's Print Progress dialog box.

The Epson Stylus Photo printers feature two ink cartridges, one for black and one for the other five colors. A software utility informs you if ink levels are low, but you get less warning than the Canon printer provides.

Although some HP printers offer a six-color printing option, the 895C and 882C are limited to four colors: one cartridge for black and one for cyan, yellow, and

magenta. Neither printer, nor the included software, features a low-ink warning.

### Connectivity

Epson's printers are the clear winners here, because each provides a serial connection for older Macs, in addition to a parallel port for PCs and USB for iMacs and blue G3s. You can also print directly from Epson's PhotoPC 750Z digital camera.

The Canon and HP printers limit their Mac connectivity to USB. Worse, Canon's USB connection kit is available only as a \$70 option; the printer itself costs \$250. All three companies offer Ethernet options for their printers, except HP's DeskJet 882C.

### Software

Epson's longtime commitment to the Mac community shows in its software. Of the printers reviewed here, only Epson's models include bundled software for the Mac. The Stylus Photo 750 includes Polaroid Photomax Pro for image editing, ArcSoft Photoprinter 2.0 for creating photo layouts, and ArcSoft Photobase 2.0 for keeping image databases. The Stylus Photo 1200 includes Adobe Photoshop 5.0 LE, Vivid Details' Test Strip 2.0, and a trial version of Altamira's Genuine Fractals 2.0.

Epson's printer driver isn't too shabby, either, offering extensive color-management and image-adjustment features. However, it would be nice if the software included a Return To Default button.

Canon's printer driver offers simple adjustments in its basic operating mode but includes an advanced option that lets you tweak individual colors. And it sports that elusive Return To Default button we wish other manufacturers would offer. Canon's software also permits two- and four-up printing.

HP's driver is also simple: just choose your paper and desired output quality, and you're set for great output. HP's software also puts a printer icon on the desktop, permitting drag-and-drop printing. However, some features HP offers on the Windows side, such as its cartridge-alignment utility and Web-Smart printing software, are not available for the Macintosh.

### Macworld's Buying Advice

All of the printers reviewed here offer excellent output quality, so the decision boils down to what you want to do with them. For home users, the low price and child-resistant design of HP's DeskJet 882C make it a good choice. For small businesses, the versatility and large ink supply of Canon's BJC-6000 make for a winning combination, although HP's DeskJet 895C, along with Epson's Stylus Color 740 and Stylus Color 900, are also worth considering. Budget-minded photographers and graphics professionals should consider the Epson Stylus Photo 1200 for its tabloid prints and color-adjustment capabilities.—KEVIN MITCHELL

## Battling Ink-Jet Printers

Company	Product	Mouse Rating	Company's Estimated Price	Contact	Pros	Cons
Canon USA	BJC-6000	★★★★	\$320*	800/652-2606 www.ccsi.canon.com	Excellent output quality; flexible ink system.	No serial port; USB available only in separate kit; photo ink cartridge costs extra.
Epson America	Stylus Photo 750	★★★★	\$299	800/463-7766 www.epson.com	Excellent photo quality; serial and USB interfaces; good software.	Mediocre text quality on plain paper.
	Stylus Photo 1200	★★★★	\$499	800/463-7766 www.epson.com	Excellent photo quality; serial and USB interfaces; good software; can print tabloid size.	Mediocre text quality on plain paper.
Hewlett-Packard	DeskJet 882C	★★★★	\$300	800/752-0900 www.hp.com	Excellent output quality; quiet.	No serial port; no low-ink indicator.
	DeskJet 895C	★★★★	\$400	800/752-0900 www.hp.com	Excellent output quality; quiet; fast.	No serial port; no low-ink indicator.

\* Includes the optional \$70 USB connection kit.



# USB CD-RW Drives

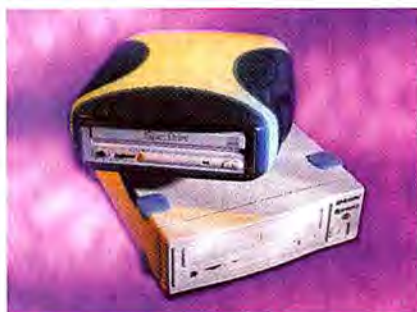
NEW OFFERINGS FROM LACIE, QPS, AND SONY PLAY WELL WITH USB

**W**HEN YOU THINK ABOUT IT, it's amazing that CD-rewritable (CD-RW) drives work at all with USB. Although the bus offers a respectable throughput of 12 Mbps, various devices share that bandwidth. A printer may not care if another device is using the bus and causing a delay, but CD-RW drives must burn all the information at a steady rate; if they run out of information before completing the session, the disk becomes useless.

To see if CD-RW drives could function in the world of USB, Macworld Lab tested QPS's Que, Sony's Spressa USB CRX100E/X, and LaCie's 226 CDRW-USB. We found that all three drives delivered consistently, differing primarily in price, speed, and backup ability.

All three drives can record on CD-R (write-once) media and CD-RW (rewritable) media and can read from both CD-R and CD-RW. Using the standard notation—CD-R recording speed, followed by CD-RW recording speed, then reading speed—the QPS is rated at 4x2x8x, the Sony at 4x2x6x, and the LaCie at 2x2x6x.

The Sony and QPS drives burned 600MB onto a CD-R in 18 minutes, while the LaCie took 37 minutes. (By comparison, the fastest SCSI recorders can burn the same data in 9 minutes.) All three recorders burned the same data onto a CD-RW in 37 minutes. To increase the odds of a successful recording, the QPS stores information in a 2MB buffer; the Sony and LaCie use a 1MB buffer, standard for SCSI recorders. In our tests,



QPS's Que (top) and Sony's Spressa

buffer size didn't affect performance.

Copying a 600MB CD to the iMac's hard disk took 14 minutes (the fastest you can transfer data over USB) for the Sony, 15 minutes for the LaCie, and 18 minutes for the QPS. Read speed isn't as critical as write speed, however, since most people will use the iMac's faster (24x) internal CD-ROM drive.

## The Software Edge

The QPS and LaCie drives ship with Adaptec's Toast 3.8 for recording, while the Sony comes with the significantly less intuitive Discribe 2.4.1 from CharisMac. You can't simply drop data on Discribe and record, as you can with Toast; you must first decide whether this is a new recording or one you've already saved, specify a format (HFS, ISO, or audio), choose your files, confirm your selection, and then *finally* begin recording.

On the other hand, Dantz Development's Retrospect backup software supports only the Sony Spressa. Dantz says the next version of Retrospect (due later

this year) should support the LaCie, while support for the QPS is pending based on further testing.

Apple recommends that iMac users update their firmware to version 1.2 to ensure proper operation of USB devices. Conveniently, both the QPS and LaCie drives provide this update on CD; Sony plans to include the update with recorders that ship in August.

## Outward Appearances

You can tell from a distance what the QPS drive is up to—the large LED on the front is green when the drive is attached and ready to go, orange when the drive is reading, and red when it's writing. The LaCie's small LED simply turns red to signal recording, while the Sony Spressa is even less informative—whether the drive is reading or writing, the light is always amber and always blinking. All three drives have audio-out and headphone jacks with volume controls, but those features work only on PCs—not on Macs.

## Macworld's Buying Advice

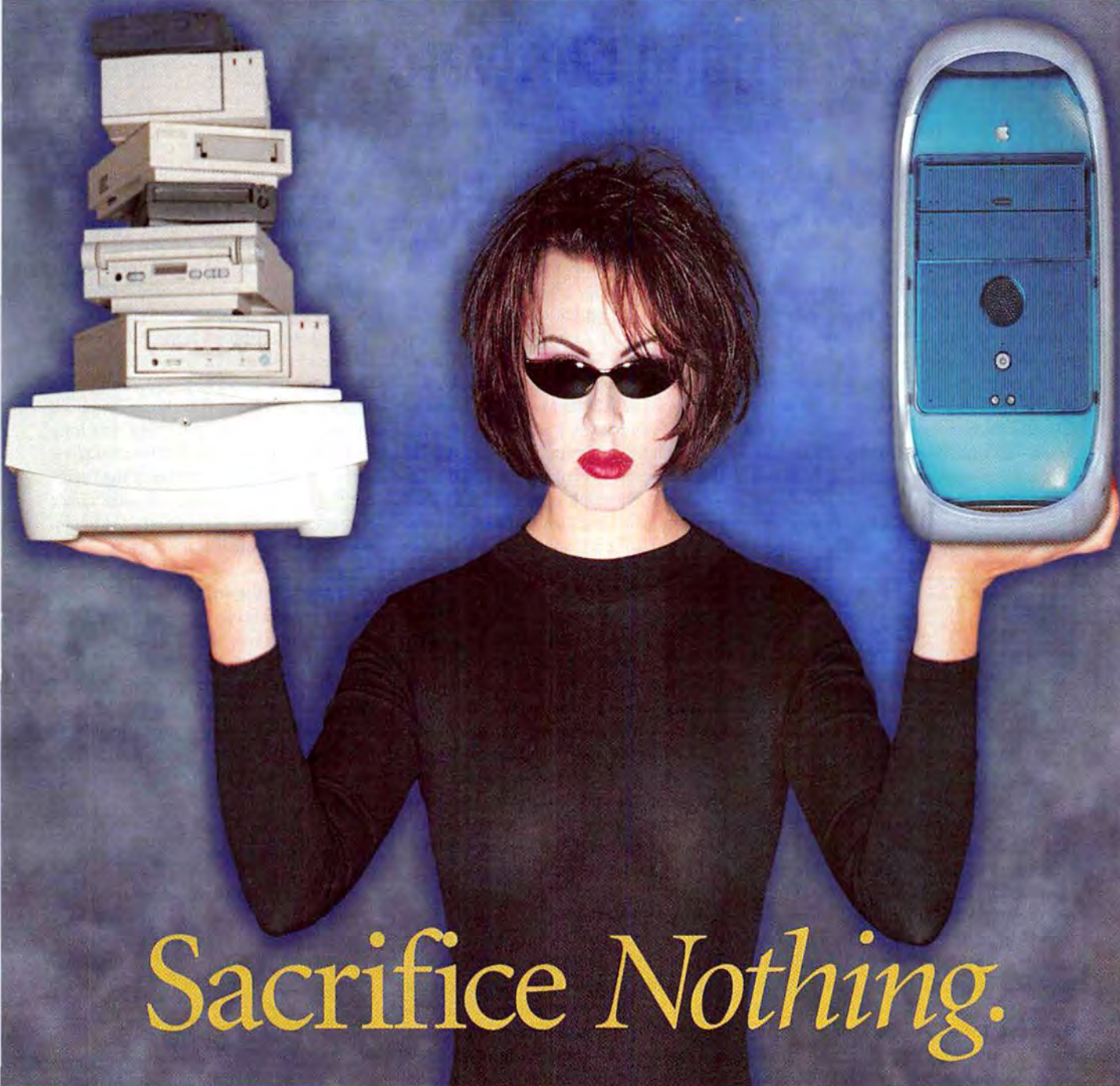
If you can live without backup for the moment, choose the QPS Que; it's the least expensive of the three and by far the most colorful. If backup is a priority, go with the Sony Spressa CRX100E/X (the only drive Retrospect supports at press time) and get a copy of Toast 4.0 for more-intuitive recording. Both drives are a better deal than the LaCie 226 CDRW-USB—it's almost as expensive as the Sony drive, yet its writable speed is only half that of the other two.—KEVIN MITCHELL

## CD-RW Drives Compared

Company	Product	Mouse Rating	List Price	Contact	Write/Rewrite/Read Speed	Buffer	Pros	Cons
LaCie	226 CDRW-USB	★★★	\$379	503/844-4500 www.lacie.com	2x2x6x	1MB	Updatable firmware.	Slower at recording; no Retrospect support.
QPS	Que	★★★★	\$299	800/559-4777 www.qps-inc.com	4x2x8x	2MB	Lowest price; largest buffer; color-coordinated.	No Retrospect support.
Sony	Spressa USB CRX100E/X	★★★★½	\$399	800/352-7669 www.sony.com	4x2x6x	1MB	Retrospect support.	Nonintuitive software.



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# Audio CD-Writing Software

PROFESSIONAL CD-MASTERING APPLICATIONS MIND YOUR P'S AND Q'S

**C**REATING CUSTOM AUDIO CD-ROMs is no longer an exotic pastime practiced by those blessed with more money than sense. CD-ROM writers, or *burners*, are now widely available and affordable enough for us common folk, and they come with software so simple that a reasonably bright chimpanzee could burn a CD.

As easy and economical as this process may be, the software that ships with today's CD-ROM burners—usually Adaptec's Toast—isn't full-featured enough to produce truly professional audio CDs. If you

audio cards, which output sound at higher bit rates than Apple's 16-bit Sound Manager. WaveBurner offers similar support for Emagic's Audiowerk cards, but the version we tested doesn't yet support Digidesign cards. Likewise, MasterList CD won't recognize the Emagic cards. Jam is content to route sound through any card that has a Sound Manager driver.

Another consideration is the kind of work you do. MasterList CD is intended for professional users who prepare reference CDs for duplication. Unlike the other applications, it lets you set up to 100 reference points within a CD track list; you can compare the volume among several tracks by calling up different locations in the playlist.

Complete though MasterList CD may be, its interface is anything but friendly. There are very few graphical elements here—mostly number fields and dialog boxes. Also, unlike Jam and WaveBurner, MasterList CD doesn't support drag

method: choose a crossfade type; set the duration of the crossfade in a numeric box; and determine whether it occurs presplice, centered, or postsplice. As with Toast, you can adjust the RAM cache, preventing underrun errors, and test each track individually before committing to the burn.

One annoyance I hope Adaptec will address in a future version is Jam's inability to impose track markers, something both MasterList CD and WaveBurner support. In other words, you can't take one long audio file—the side of an LP, for example—and then place a track marker at the beginning of each cut. Instead, you must create regions in the file using another program and then bring the file into Jam.

## Macworld's Buying Advice

Audio-mastering engineers who own Digidesign audio cards should ignore MasterList CD 2.1's rough interface and stick with the best tool for their trade. Jam 2.5 is also perfectly capable, but WaveBurner 1.0 costs \$100 less and is more flexible. In this case, I'll take my Toast with WaveBurner instead of Jam.—CHRISTOPHER BREEN



**Doing the Wave** With its waveform interface, Emagic's WaveBurner 1.0 makes it easy to create crossfades.

want to create discs without audible gaps between tracks, tracks that crossfade into each other, or an audio master CD for a CD-mastering house, you need Adaptec's Jam 2.5, Digidesign's MasterList CD 2.1, or Emagic's WaveBurner 1.0. The one you select depends on your hardware, the intended purpose of your CD, and your tolerance for an unintuitive interface.

## Hold the Toast, Please

Unlike Toast, which produces both data and audio CDs, the three applications we reviewed create only audio CDs that conform to the Red Book standard. All three let you work with the minutiae of Red Book audio—the P and Q subcodes that control such aspects of audio CDs as copy protection and index numbering. The apps also let you create crossfades between tracks and tweak the volume of individual tracks.

Although none of the three requires special audio cards (you no longer need an add-on audio board to use MasterList CD), hardware is still a consideration. MasterList CD, for example, lets you monitor your tracks through Digidesign's

and drop; you must add tracks via a dialog box rather than simply dragging sound files into a track list. And, regrettably, MasterList CD is copy protected.

## Riding the Wave

WaveBurner's interface is a different story. This program looks very much like an audio editor, complete with waveforms and graphic handles that you drag to adjust the length and shape of crossfades. You can also increase or decrease the gap between tracks by dragging; simply click on the track and drag it left or right. Like Jam, WaveBurner has a preview feature that plays all the transitions from track to track sequentially—helpful when you want to review the pacing of your CD. And WaveBurner lets you record audio directly into the program; the other two applications require that you first record audio into a separate program.

## Sticky Jam

Jam's interface is much like Toast's. To create a track list, you drag and drop files into Jam's main window. From there you can create crossfades using the MasterList

## Jam 2.5

**RATING:** ★★★½ **PROS:** Drag-and-drop support; individual track testing. **CONS:** Can't impose track markers. **COMPANY:** Adaptec (800/442-7274, <http://cdr.adaptec.com>). **LIST PRICE:** \$299.

## MasterList CD 2.1

**RATING:** ★★★½ **PROS:** Autolocate function; support for Digidesign hardware. **CONS:** No drag-and-drop support; unintuitive interface; expensive; copy protected. **COMPANY:** Digidesign (800/333-2137, [www.digidesign.com](http://www.digidesign.com)). **LIST PRICE:** \$495.

## WaveBurner 1.0

**RATING:** ★★★ **PROS:** Intuitive waveform editing; direct recording into program. **CONS:** No autolocate function. **COMPANY:** Emagic (530/477-1051, [www.emagic.de](http://www.emagic.de)). **LIST PRICE:** \$199.





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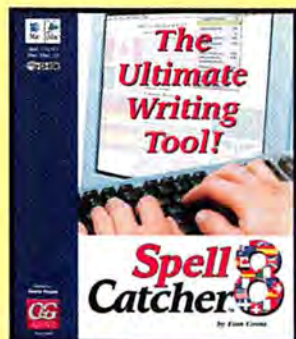
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# Peak 2.0

BUGS MAR OTHERWISE POWERFUL AUDIO EDITOR



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42 September 1999 MACWORLD

**A**UDIO EDITORS ARE THE Photoshop of the sound world, letting you "retouch" sound files to remove flubbed words, to rearrange the verses of a song, to create special effects, and to convert one sound format into another. The long-awaited update to the popular audio editor Peak, from Berkeley Integrated Audio Software (BIAS), has the potential to take Mac digital audio editing to new heights. But although Peak 2.03 sports a variety of interface enhancements and new features, bugs mar its power.



**Take a Peak** Peak 2.03 lets you open a QuickTime movie to edit its soundtrack.

Peak's editing features are complete and well designed. You can zoom in to make edits at the single-sample level and set markers to navigate a large document quickly. Peak 2.03 adds tape-style scrubbing—the ability to play a sound forward and backward slowly.

Like all audio editors, Peak displays a waveform window that graphically depicts the sound you're manipulating. On-screen volume meters dance as a sound plays, while a counter ticks off elapsed time. The program also offers unlimited undo's and lets you undo one operation without affecting others.

Peak 2.0's audio-processing features are also dramatically improved. With its DSP (digital signal processing) menu, you can change the sample rate, create fades, remove clicks, change a sound's pitch while retaining its duration, and much more. Unfortunately, Peak lacks high-quality bit-depth reduction.

Third-party plug-ins expand Peak's processing repertoire. The new version

adds support for TDM-format plug-ins, the mainstays of professionals who use high-end Digidesign audio hardware. For the rest of us, Peak supports Adobe Premiere-format plug-ins (see the accompanying review). You can create envelopes that gradually apply a Premiere plug-in, or apply a plug-in in real time—that is, get the effect without actually modifying the sound file.

Many of Peak's other new features will appeal to audio and video professionals. For example, you can open QuickTime movies and modify their soundtracks, and a new batch processor lets you automate format-conversion and DSP chores without scripting. Peak's playlist feature lets you define regions that play back sequentially. And if you have Adaptec's Toast, you can burn audio CDs directly from Peak, using the playlist to define each track.

Finally, musicians with sampling keyboards and modules can use Peak to edit samples and transfer them among instruments. The handy new Loop Surfer command makes it easy to locate the ideal loop points for samples.

Peak's keyboard- and tool-bar-customizing features are terrific, but the tool-bar icons are too small and cryptic. It's also worth noting that Peak uses a copy-protection scheme: to install the program on an iMac or a blue-and-white Power Mac G3, you must contact BIAS for a text key.

Peak's documentation is thorough, but the manual's index is abysmal. Worst of all, Peak crashes now and then.

### Macworld's Buying Advice

Peak 2.03 is an exceptionally powerful, versatile program. It could be more reliable, but BIAS has a solid track record of delivering free bug-fixes, so there's hope that Peak will stabilize over time. If you need Peak's power now, don't hesitate to buy—just be sure to save often.—JIM HEID

**RATING:** ★★★ **PROS:** Versatile; innovative plug-in support. **CONS:** Copy-protected; buggy; no high-quality bit-depth reduction. **COMPANY:** Berkeley Integrated Audio Software (800/775-2427, [www.bias-inc.com](http://www.bias-inc.com)). **LIST PRICE:** \$499.



## Peak Plug-Ins

FILTERS ADD PIZZAZZ TO PEAK

**L**OOKING TO EXPAND YOUR collection of audio-processing tools? A plug-in library might be just the ticket. Two recent entries, Waves' Native Power Pack II and Arboretum Systems' Hyperprism Plug-in Pack, work in any program that supports Premiere-format plug-ins—including BIAS's Peak.

Native Power Pack comprises just four plug-ins, but each is exquisite. Renaissance Compressor boosts volume during quiet parts and lowers it during loud parts. Renaissance Equalizer lets you boost or lower certain frequencies with a streamlined interface. MaxxBass creates harmonics that fool the ear into hearing more bass than is actually present, while DeEsser attenuates *s* sounds. Unfortunately for iMac users, the plug-ins require an ADB hardware key.

Hyperprism Plug-in Pack is a grab bag of more than two dozen plug-ins—everything from workaday tools such as reverbs, compressors, and equalizers to wacky wonders guaranteed to make your dog cock its head. The workaday tools do a fine job—the HyperVerb reverb is notably impressive—but Native Power Pack's compressors and equalizers make my ears happier.

### Macworld's Buying Advice

Native Power Pack II is best suited to well-heeled audio engineers who need classic sweetening and top sound quality. Hyperprism Plug-in Pack is ideal for musicians who need solid basic effects—but who also crave the stuff that makes dogs howl.—JIM HEID

### Hyperprism Plug-in Pack

**RATING:** ★★★★★ **PROS:** Superb sound quality; easy interface. **CONS:** No printed documentation. **COMPANY:** Arboretum Systems (800/700-7390, [www.arboretum.com](http://www.arboretum.com)). **LIST PRICE:** \$349.

### Native Power Pack II

**RATING:** ★★★★★ **PROS:** Superb sound quality; easy interface. **CONS:** Hardware copy protection; expensive. **COMPANY:** Waves (800/264-0109, [www.waves.com](http://www.waves.com)). **LIST PRICE:** \$500.

# Conquer Disk Damage



Introducing DiskWarrior,<sup>™</sup>  
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DiskWarrior is a revolutionary new utility that combats disk damage. It quickly rebuilds, recovers and optimizes your HFS and HFS Plus disk directories, eliminating all directory errors and recovering lost files. Other utilities attempt to repair disks by patching the damage. Patching can result in more damage and permanent loss of files.

### 100% Recovery Assurance

Only DiskWarrior builds a new optimized directory using data recovered from the damaged directory. You have 100% assurance that DiskWarrior will always restore your disks and recover your files when directory damage is your enemy.\* You'll also have 100% confidence that you're getting the desired results. DiskWarrior's exclusive Preview ability lets you preview the restoration. You can examine your damaged disk in the Finder as it will appear after the directory is restored but before any changes are made to your disk.

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# Commotion 2.0

BRUSHES BOOST INDISPENSABLE VIDEO-PAINTING TOOL

**F**EELING SOMEWHAT INSPIRED BY the summer's effects-laden movies? You'll be happy to know that you can create your own special-effects extravaganza on your Mac with the same tools the professionals use. One of those tools is Commotion 2.0, the latest upgrade to Puffin Designs' excellent rotoscoping and painting program. Building on its predecessor's facilities for creating mattes, painting on moving images, and touching up videos, this version includes new effects brushes, support for Adobe After Effects filters, and a new text filter.

## FX Painting

As in earlier versions, Commotion 2.0's strength lies in its ability to work with movies in real time. The program loads QuickTime movies into RAM, so you can preview short video clips (or long clips, if you have enough memory) at their full size and frame rate. Because most single shots in a movie tend to be short—and effects sequences are even

shorter—a few seconds of video are usually all you need for the kinds of effects you create in Commotion.

Commotion's powerful spline tools let you create mattes by outlining shapes using an Adobe Illustrator-like pen tool; you can then animate these rotosplines

twists to version 2.0's rotospline features are that you can now simply grab the pen tool and start drawing—you no longer have to go to the Rotosplines palette first—and you're allowed up to 100 undo's per document.

Version 2 retains its predecessors'

assortment of brush and clone tools for painting. It also adds some new FX Brushes—really just small paint-on texture files—for creating everything from subtle highlights and halos to big, gaudy brushstrokes. The program offers a wealth of brush parameters, including spacing, opacity, and feather; each has a range of values, depending on the brush's speed, pressure, tilt, and bearing (you'll need a drawing tablet for the last three). You can create your own brushes, but Commotion ships with such a huge assortment of prebuilt brushes that you may never need to create your own.

In addition to flexibility, the brushes



**The Brush-Off** Commotion 2.0's new FX Brushes give you a wealth of parameters and controls for creating and modifying brushes.

over time and combine them with the program's motion-tracking features to create animated mattes. The only new

feature is a new text filter that lets you

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offer impressive speed and performance. Even complicated brushes paint smoothly, and the program has no trouble keeping up with the speed of your brushstrokes. The addition of FX Brushes to Commotion 2.0 should appeal to effects creators who have been relying on MetaCreations' Painter for natural-media video painting. Although Commotion lacks Painter's full suite of extraordinary paint tools, it offers a much better interface for painting on moving video.

#### FX Filters

Commotion 2.0 not only supports After Effects plug-ins but also adds a timeline interface that lets you animate plug-in parameters just as you would in After Effects. The timeline lists the filter's properties in a column and lets you define multiple, separate keyframes for each property. To set a keyframe, you simply drag the current time marker to a new location on the timeline and change the value of the property you want to animate. Although the timeline lacks velocity and function curves, its simple linear and ease-in, ease-out interpolations between frames offer all the control you'll need for most effects.

New users should note that filters in Commotion are destructive. Applying

the effects alters the movie's frames; you can't go back and tweak a filter's settings without reverting to the last saved version and reapplying the filter.

If you've used an earlier version of Commotion, you'll notice that the current version replaces many of the basic filters with equivalent (but faster) filters from ICE. In addition to offering improved performance, the new filters support hardware acceleration using BlueICE hardware.

One of the new filters, Motion Text, lets you create and animate type. Unfortunately, its controls aren't as interactive as they could be. To add a title to a movie, for example, you select the Motion Text filter and enter your text in a somewhat clunky modal dialog box. In addition, you can have only one font and type size per title.

From the Motion Text dialog box, you set parameters and see the results in a tiny preview window. In addition to the usual size, color, and position parameters, Commotion lets you specify horizontal and vertical scaling, feathering, drop shadows, and curve (as defined by two points of a spline). Instead of using interactive controls to specify position or spline points, however, you control these parameters numerically. A simple inter-

face that lets you click within the preview window to define position and curve would be a nice addition.

The ability to animate text within Commotion rather than After Effects is very handy and saves time you would otherwise spend switching between the two programs. Because it's so much faster to animate text in After Effects, however, you'll probably want to use the Motion Text plug-in for only the simplest jobs.

#### Macworld's Buying Advice

Commotion 2.0 isn't a huge upgrade over the last version, but its animatable filters, Motion Text filter, and FX Brushes are handy and well implemented. They're also a promising sign that Puffin is aiming to expand the program's range beyond simple rotoscoping. Whatever the future holds, Commotion 2.0 is an indispensable tool for motion-effects professionals.—BEN LONG

**RATING:**  **PROS:** Rotoscopes and RAM playback for creating mattes; supports After Effects filters. **CONS:** Motion Text interface could be more interactive. **COMPANY:** Puffin Designs (800/401-0009, [www.puffindesigns.com](http://www.puffindesigns.com)). **LIST PRICE:** \$2,495.



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# Power Macintosh G3/450

MODEST SPEED BOOST FOR APPLE'S HIGH-END SYSTEM

**A**PPLE'S LATEST POWER MAC G3 configuration has the same trendy design—and the same basic hardware components—as its predecessors. But underneath that blue-and-white exterior sits a new 450MHz G3 CPU, offering a modest performance boost at the same price as that of previous high-end models (see *Reviews*, April 1999).



Macworld Lab tested a configuration with a 1MB backside cache, 64MB of RAM, an ATI Rage 128 graphics accelerator with 16MB of video memory, a 9GB Ultra2 Wide SCSI hard drive, and a 32x CD-ROM drive (this is similar to Apple's Better configuration, except for the RAM allotment). As with previous blue G3 models, the system ships with a 10/100BaseT Ethernet connection but no modem, although you can add an

internal 56-Kbps modem for \$100. You also get two USB ports and two FireWire ports, which will come in handy now that more FireWire peripherals are available. The system includes four PCI slots, but with the graphics accelerator and Ultra2 Wide SCSI card installed, only two slots are available.

New G3 systems ship with Mac OS 8.6, but our chosen reference system, a Power Mac G3/400, ran Mac OS 8.5.1. To isolate any OS-related performance differences, we tested the new G3 under both versions. The results were generally predictable (see "Faster by a Nose"). However, the new system running Mac OS 8.6 scored slightly lower than its counterpart running OS 8.5.1 on the Graphics test, which appears to be a consequence of the new version of QuickDraw in Mac OS 8.6.

## Macworld's Buying Advice

Apple's Power Macintosh G3/450 retains an under-\$3,000 price tag while offering a modest performance boost. If you frequently perform such hardware-intensive tasks as digital-video creation, 3-D rendering, or high-resolution photo retouching, give it a close look.—STEPHEN BEALE

**RATING:** **PROS:** Fast; good price; easy to add expansion hardware. **CONS:** Unergonomic mouse; no serial port; limited PCI slots. **COMPANY:** Apple Computer (800/795-1000, [www.apple.com](http://www.apple.com)). **LIST PRICE:** \$2,859.

**Macworld**  
LAB TEST

## Faster by a Nose

Best results in red. Reference products in italics. MacBench 5.0 scores are relative to those of a first-generation Power Mac G3/300, which is assigned a score of 1,000 in each test.

	MACBENCH 5.0		
	Processor	Disk	Graphics
Apple Power Macintosh G3/450*	1,484	1,306	2,875
Apple Power Macintosh G3/450**	1,472	1,330	3,092
Apple Power Macintosh G3/400**	1,323	1,277	3,151

Longer bars are better.

\* Running Mac OS 8.6. \*\* Running Mac OS 8.5.1.

## Behind Our Tests

For detailed information on our tests, see the full review online, at [www.macworld.com/1999/09/reviews/](http://www.macworld.com/1999/09/reviews/).—Macworld Lab testing supervised by Kristina De Nike

# GUTS



# GLORY



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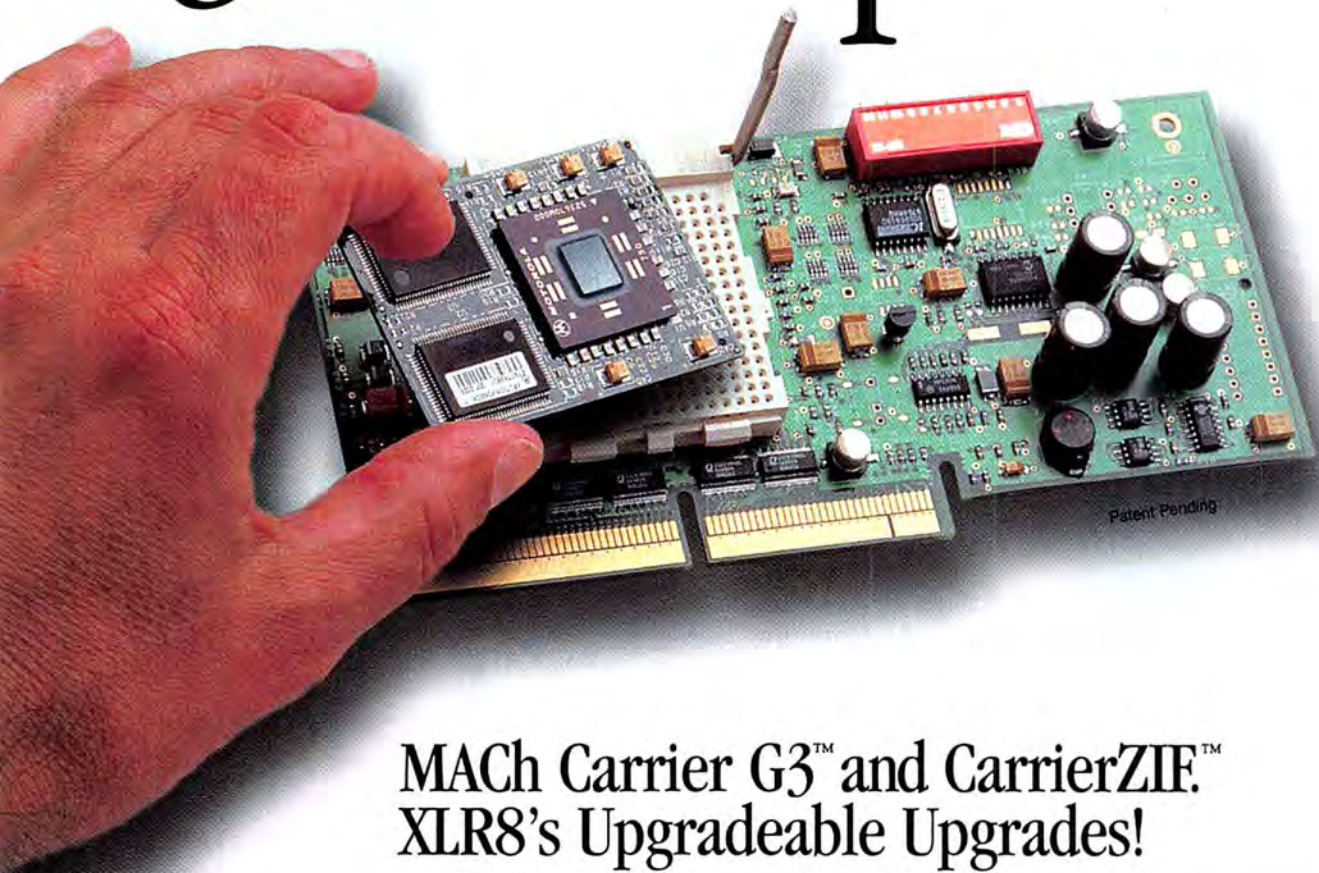
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# MonacoEZcolor

EASY COLOR-MANAGEMENT SOFTWARE

ONE OF THE BIGGEST OBSTACLES to the widespread use of Apple's ColorSync color-management software has been the expense and difficulty of building output profiles. Typically, you need costly profiling software, as well as a measurement device, such as a colorimeter or spectrophotometer, that can set you back thousands of dollars. Monaco Systems' \$299



**EZ Interface** MonacoEZcolor guides you through the process of creating device profiles.

MonacoEZcolor offers an innovative and inexpensive approach to color management by using a profiled scanner to measure printer output. Monaco Systems isn't the first company to try this technique, but it's the first to make it work.

## Triple Threat

MonacoEZcolor creates profiles for monitors, scanners, and printers. To create a monitor profile, you follow a series of visual cues, similar to those in Apple's Default Calibrator utility. For more-demanding users, the company offers a \$199 hardware device that provides much more reliable monitor calibration. To create a scanner profile, you scan a standard reflective IT8 target, included in the package. If you want to profile a scanner used for transparencies, you can buy a 35mm transparency target for \$80 or a 4-by-5-inch target for \$160.

These functions are useful, but it's the printer-profiling capability that sets the program apart. To create a printer profile, you simply print a target and then scan it on a profiled scanner. EZcolor does the rest of the work for you, building a ColorSync-compatible printer profile.

EZcolor actually lives up to its name.

The application has a wizard-style interface that steps you through the process of creating profiles. The on-screen instructions are clear, concise, and complete, including warnings about unseen gotchas, such as automatic exposure correction on scanners and hidden printer color-management features. Unlike most profiling tools, MonacoEZcolor doesn't require any specialized knowledge.

The big question, of course, is "Does it work?" The answer is a qualified yes. EZcolor has two main limitations. First, it can generate only RGB profiles for printers. This makes it well suited to most ink-jet printers but not to printers that expect CMYK data. You could feed RGB to a CMYK PostScript printer and have the PostScript RIP perform the conversion, but this doesn't always work. If you're dealing with a CMYK workflow, EZcolor isn't for you.

Second, the quality of EZcolor profiles depends on your scanner. If your scanner doesn't allow you to turn off automatic corrections, you're stuck, because profiling requires that the scanner use consistent settings every time. If your scanner doesn't have enough dynamic range to capture your printer's black comfortably, the resulting profile will probably block up your shadows. Finally, scanners are designed to scan photos, and the software assumes you're using some kind of photo paper. If you're scanning from something else, the results will be less reliable.

We obtained good results for ink-jet printers using relatively inexpensive flatbeds, but don't even think about profiling a dye-sublimation printer using this technology.

## Macworld's Buying Advice

MonacoEZcolor is ideally suited to profiling ink-jet printers, including the current generation of six-color photo printers. If the lack of good profiles has prevented you from trying some of the new third-party inks and papers, EZcolor offers a great solution at a reasonable price, and you don't have to be a rocket scientist to make it work.—BRUCE FRASER

**RATING** **PROS:** Easy to use; relatively inexpensive. **CONS:** Creates only RGB profiles; results depend on scanner quality. **COMPANY:** Monaco Systems (978/749-9944, [www.monacosys.com](http://www.monacosys.com)). **COMPANY'S ESTIMATED PRICE:** \$299.

# GUTS



# GLORY



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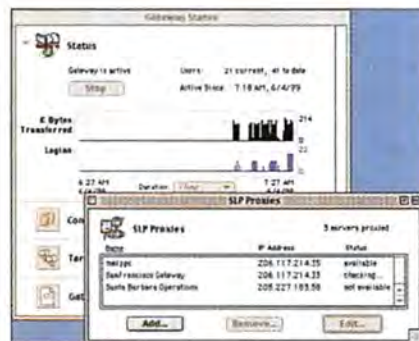
# AppleTalk to IP Migration Suite

PRODUCT BUNDLE SMOOTHS THE PATH TO TCP/IP

**A**PPLETALK HAS BEEN THE mainstay of Macintosh networking for a decade, but it's time to stick a fork in it: it's done. Anyone building a Macintosh office network today bases it entirely on TCP/IP for Internet-wide accessibility, improved performance, and compatibility with third-party networking products. Alas, migrating an *existing* AppleTalk net-

work to TCP/IP can be a painful process. Open Door Networks' AppleTalk to IP Migration Suite eases your pain by giving you tools to make the AppleTalk-to-TCP/IP transition gradually.

work to TCP/IP can be a painful process. Open Door Networks' AppleTalk to IP Migration Suite eases your pain by giving you tools to make the AppleTalk-to-TCP/IP transition gradually.



**Location, Location, Location** AppleTalk to IP Migration Suite's ShareWay IP Pro component makes non-TCP/IP AFP servers visible across the Internet.

work to TCP/IP can be a painful process. Open Door Networks' AppleTalk to IP Migration Suite eases your pain by giving you tools to make the AppleTalk-to-TCP/IP transition gradually.

The Migration Suite bundles four Open Door products—ShareWay IP Professional Edition 2.0, DoorStop 1.0.1, LogDoor 2.2, and AFP Engage 2.0.1—with a Web-based tutorial that explains migration strategies. The package also gives you templates that help you organize and plan your move, along with helpful tutorials on IP printing and TCP/IP security. Following the three-step plan outlined in the migration tutorial, you first establish concurrent AppleTalk and TCP/IP routing throughout your network. You then use ShareWay IP Pro to make existing AppleTalk Filing Protocol (AFP) servers visible on the TCP/IP network, and finally minimize or eliminate AFP altogether by replacing existing AFP server software with IP-capable software.

ShareWay IP Pro is the central component of the suite, giving AFP servers TCP/IP access by mapping individual servers to a single IP address. The program supports the Service Location Pro-

ocol (SLP), a TCP/IP standard for providing Chooser-like access to servers across a wide-area network. Remote users can get to any AFP server made accessible by ShareWay IP Pro using a Web browser or the supplied AFP Engage client rather than the Chooser.

Security is a concern any time you connect a network to the Internet. The Migration Suite's security component is DoorStop, a TCP/IP filtering package that controls access to servers from the Internet by IP address and protocol. Unlike traditional firewalls, DoorStop doesn't offer centralized protection—you need to run a copy on each server. And you must configure each DoorStop installation separately, multiplying security-administration chores and increasing the possibility of leaving security holes.

LogDoor, the final component of the Migration Suite, provides log analysis and reporting for events recorded by ShareWay IP Pro, DoorStop, and Open Door's AFP Logger (not included in the suite), as well as for other Web servers' logs. LogDoor can display real-time traffic graphs or output batch reports periodically to HTML or text files.

Individually, each tool in the suite handles its assigned task well, and the excellent Web-based tutorials clearly explain how to pull off a successful migration. However, the tools themselves are not integrated—you have to do a lot of reading before putting the suite to work.

—MEL BECKMAN

**Macworld's Buying Advice**  
If you're still running a multizone AppleTalk network, you need to make the move to TCP/IP. AppleTalk to IP Migration Suite simplifies the process by letting you gradually shift services from AppleTalk to IP and gives you a great education in the process. Migrating an AppleTalk network to IP will never be fun, but with this suite it can be painless.

**RATING:** ★★★½ **PROS:** TCP/IP gateway for multiple AppleTalk AFP servers; SLP proxy; real-time traffic graphing. **CONS:** Weak component integration; no centralized security. **COMPANY:** Open Door Networks (800/480-3667, [www.opendoor.com](http://www.opendoor.com)). **LIST PRICE:** \$599.

## GUTS



## GLORY



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# Palm VII

WIRELESS, ONE-PIECE INTERNET ACCESS

**A**DD A WIRELESS MODEM TO the wildly popular Palm IIIx (see *Reviews*, June 1999), and you've got the Palm VII. When you lift this 2MB, 6-ounce gadget's flexible antenna, the device instantly turns on; you're ready to go online wirelessly from wherever you happen to be. This kind of convenience can be heaven-sent when you're mobile—but it comes at a price.

Sending and receiving standard Internet e-mail (minus attachments) is easy and convenient, even when you're trapped in a taxi. Unfortunately, although you can *cc* outgoing messages to your Mac's e-mail account, incoming messages are forever confined to the Palm VII, which has its own @palm.net address.

Because of bandwidth and HTML issues, you can't freely surf the Web with the Palm VII; instead, you load miniature search engines onto the device from your Mac. Each of these Palm query applications, or PQAs, can grab data from a particular Web site in about 10 seconds. The 22 starter PQAs include those for Etrade (for stock prices), USA Today, the Wall Street



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Journal, Moviefone, and Weather.com; you'll find dozens more at [www.palm.net](http://www.palm.net). Such instantaneous Web data can be a lifesaver on the road: the People Search PQA is a national phone book, MapQuest gives you turn-by-turn driving directions, and the Go PQA translates five languages. And with Palm Computing's free PQABuilder program for the Mac, you can even write your own PQAs using standard HTML.

Overshadowing all the good news, however, is the service price: \$10 per month for 50K of data sent and received (about one e-mail and two Web searches a day), or \$25 for three times as much. (Above your limit, you pay about 10 cents per screenful.) Worried about your K count greatly curbs the exhilarating sense of freedom you'd other-

wise get. Spending safeguards are everywhere—for example, the e-mail program retrieves only the first 500 characters of each message, and you download the remainder at your option—but they also serve as reminders that Big Byte Brother is always watching.

**Macworld's Buying Advice** On one hand, the Palm VII is a version 1.0 device. The e-mail program needs more features, each pair of AAA batteries lasts only about three weeks, the BellSouth coverage could stand widening (it now covers the 260 most populous U.S. cities), and the whole affair cries out for an unlimited pricing plan. On the other hand, anyone who travels will find the device a life-changer. (When a recent flight was canceled, I used the Travelocity PQA to find a replacement flight on a rival airline—one that the desk agent had overlooked.) The bottom line: the Palm VII is the first one-piece, wireless palmtop, and it works.—DAVID POGUE

**RATING:** ★★★½ **PROS:** Valuable to mobile types; elegant software. **CONS:** Can't transfer e-mail off the device; no coverage in rural areas; pay-per-K system is a downer. **COMPANY:** 3Com/Palm Computing (800/881-7256, [www.palm.com](http://www.palm.com)). **LIST PRICE:** \$599 plus monthly fee.



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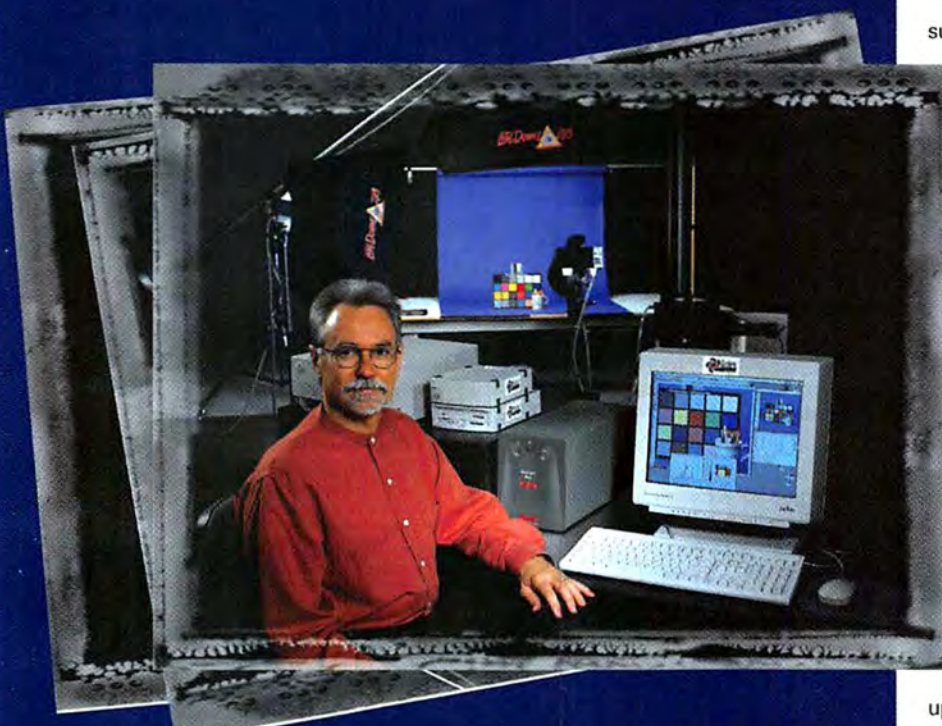
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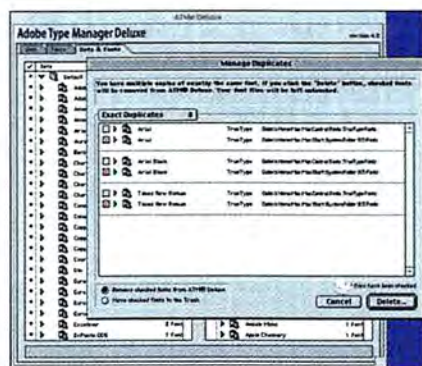
# Adobe Type Manager 4.5

SMALL ENHANCEMENTS ADD UP IN UPDATED FONT MANAGER

SOMETIMES A PRODUCT IS SO seamless that you take it for granted and don't bother with updates. In the case of Adobe Type Manager (ATM), that would be a mistake. While not exactly a quantum leap over version 4.0, ATM 4.5 adds a host of small and medium-size features that make it even more indispensable for the typographically inclined.

For many, the biggest selling point will be ATM's new compatibility with Mac OS 8.5 and 8.6. The previous version usually worked with Mac OS 8.5, but not always; users reported a variety of incompatibilities, including many that led to system freezes with some programs. In our testing, the new version didn't cause such system hang-ups, although some problems may remain for specific programs.

But what we like most about ATM 4.5 are the improved font-management functions. For example, when ATM finds a damaged font, it highlights that suitcase icon to make it easier to find. And you can now copy all the fonts in a set to a new location—perfect for desktop publishers who need to give their service bureaus



**Zap Font Duplicates** Adobe Type Manager 4.5 finds duplicate fonts and, if you like, removes them from ATM's font list or your hard drive.

copies of fonts for output.

Other handy features include the ability to search for fonts by name and have ATM find and delete duplicate fonts. The new version also offers better compatibility with Adobe Acrobat 4.0, which can now use ATM's font list when printing. In addition, ATM now includes the updated Adobe Type Reunion 2.5. Less useful is ATM 4.5's

ability to create temporary font sets; it seems just as easy to create a set and then deactivate or delete it if you don't need it any longer.

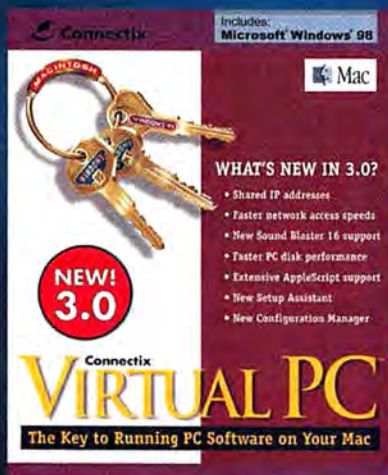
There's still room for improvement; for example, ATM 4.5's font cache uses three times as much RAM as version 4.0's did for the same set of fonts on our test system (1MB versus 384K), and the 15 included fonts are ho-hum designs you're not likely to use. In addition, Adobe Type Reunion won't work with QuarkXPress 4.0X's palettes, although it works fine with the Font menu; the company says a fix is in the works.

**Macworld's Buying Advice** Adobe Type Manager 4.5 is a must-have upgrade for current ATM users; publishing-oriented users simply depend on fonts too much not to take advantage of the program's improved stability and management abilities. With the new version, you'll once again be able to take ATM for granted.—GALEN GRUMAN

**RATING:** **PROS:** Better font management; improved interface; compatible with Mac OS 8.5 and 8.6. **CONS:** Uses more memory; Adobe Type Reunion has some incompatibility problems. **COMPANY:** Adobe Systems (800/833-6687, www.adobe.com). **LIST PRICE:** \$99.95.

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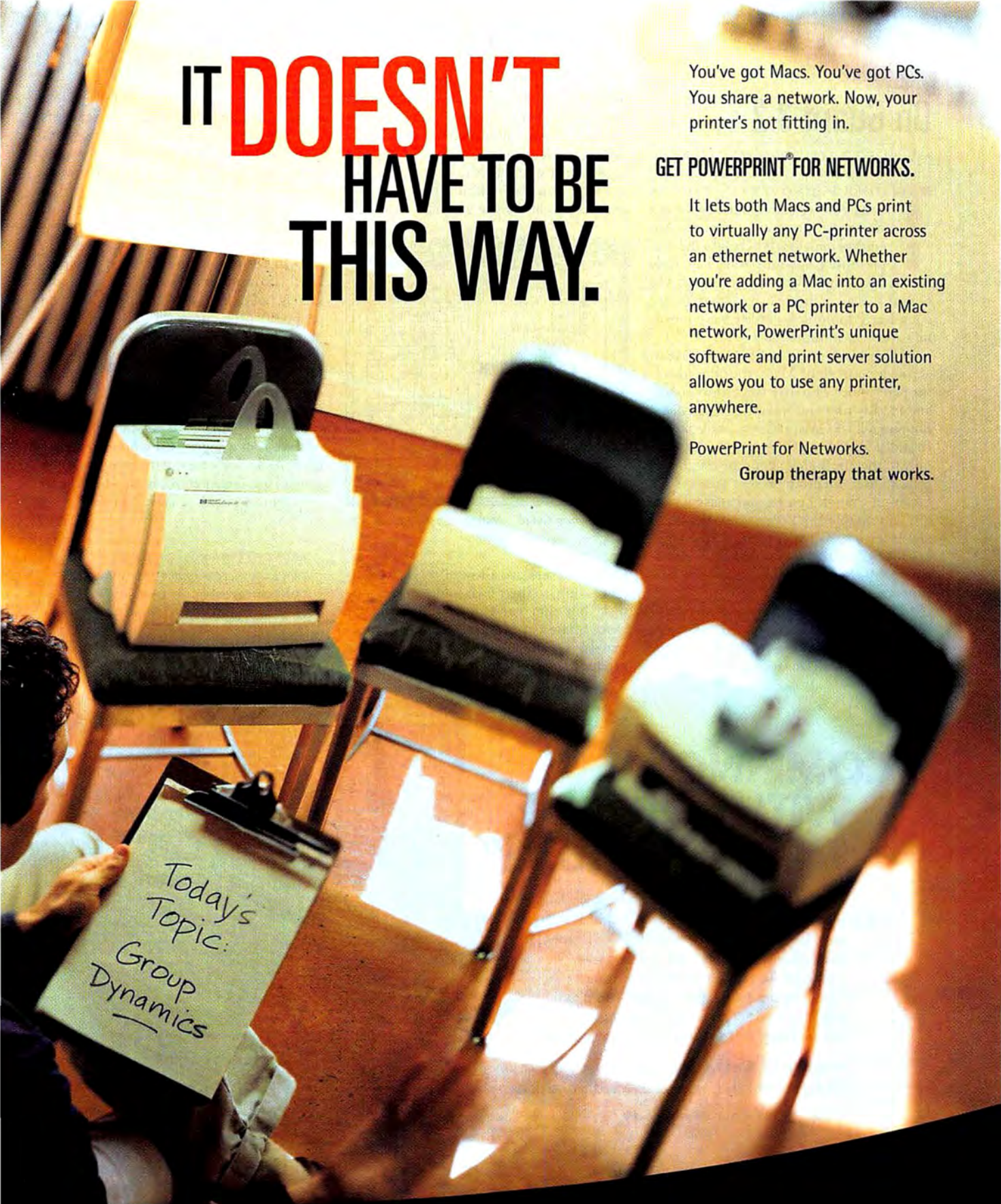
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## On Guard 3.2

ALL-PURPOSE SECURITY APPLICATION

**T**HOSE WHO OVERSEE MACS IN a shared-user environment, such as a classroom or office, often need to control individuals' access to the data on those computers. One way to do that is by using Power On Software's On Guard 3.2, a comprehensive—though not completely foolproof—utility for controlling access to information.

With On Guard installed on a Mac or across a network of Macs, the administrator determines who may view, move, open, and modify files and folders on hard disks, floppies, CD-ROMs, and removable media. In addition, you can force users to save files only to specific folders; limit the number of copies a user can print; prevent access to the Chooser, System Folder, and control panels; and disable the Force Quit command and Interrupt switch. You can also configure the program to lock volumes so they're inaccessible when someone boots the Mac from another disk.

Because On Guard has so many security options, administrators who can't resist tweaking every setting to the *n*th degree could spend a fair amount of time config-

uring the program for each user—after all, it lets you tinker with access configurations for every file on a Mac's hard drive. Thankfully, On Guard offers some help in this regard. For example, the program is preconfigured with the kind of options that are likely to be used in a typical classroom



**Stay on Your Guard** With On Guard 3.2, you can gang new users into groups.

setting—users are allowed to save documents only to their own folder or a floppy disk, but they can't move, duplicate, or make aliases of files or open any control panels. On Guard also lets you create groups of users: just configure the program

once for a group and then add individual users to that group. For example, students who supervise a computer lab's network could be granted greater access than the first-grade reading group. As welcome as this flexibility is, it would be nice if On Guard included templates for other typical setups and a wizard for creating more-complex configurations.

On Guard is intended for use in supervised situations and, as such, it's not completely bulletproof—I was able to skirt the program's protections without a great deal of difficulty. You may need to chaperon students and workers bent on defeating On Guard's guardianship.

**Macworld's Buying Advice** Although not secure enough for government work, On Guard is capable of handling the security needs of a supervised school computer lab or hackerless office. If the computers you control are unprotected, it may be time to put them on guard.—CHRISTOPHER BREEN

**RATING:** ★★★ **PROS:** Comprehensive protection options; preconfigured for classroom use. **CONS:** Configuration can be involved; not completely secure. **COMPANY:** Power On Software (800/344-9160, [www.poweronsw.com](http://www.poweronsw.com)). **LIST PRICE:** Single-user pack, \$50; ten-user pack, \$250.

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# MacTuner 2.0

GATEWAY TO STREAMING BROADCASTS

**D**ID YOU KNOW THAT YOUR MAC is the ultimate world radio and TV receiver? Simply install one of RealNetworks' RealPlayer programs, and you can tune in to any of the more than 1,500 radio and TV stations that stream live broadcasts into cyberspace. You can also listen to air-traffic control towers, police scanners, and weather forecasts. But how do you find these riches? You could use a Web search engine or RealNetworks' RealGuide site ([www.realguide.real.com](http://www.realguide.real.com)), but there's a much easier way. Trexar Technologies' MacTuner 2.0.5 is a searchable database of live streaming stations; you find a station using MacTuner's search features, and RealPlayer handles the playback. It has some rough edges, but MacTuner is a wonderful way to tune in the world.

MacTuner gives you two ways to locate stations. The Map Browser, which displays clickable maps of the continents, is a fun way to browse. Its maps are far too small, however; you need a surgeon's touch to home in on Rhode Island and Delaware, not to mention most European countries. And Canada's nearly 100 stations are lumped into one

group rather than organized by province.

When you want to search for a station with more precision, use MacTuner's Search Engine window to search by state or country, format (jazz, blues, talk, and so on), media type (audio or video), or station call letters. But MacTuner won't find call



**Cool Tunes from Iceland** MacTuner 2.0.5's Map Browser lets you locate streaming stations by clicking on a map display.

letters typed in lowercase characters, and it ignores the return key, making you grope for the mouse to click the Search button. And it would be nice to be able to search by city name—something that a competing

Windows product, Nothing Else Matters' Vtuner ([www.vtuner.com](http://www.vtuner.com)), permits.

With stations frequently upgrading or changing their servers, you may find that MacTuner's station links don't always work. Trexar updates MacTuner's station database every few weeks or so, and the program can automatically download the latest updates. MacTuner also has a Favorites screen where you can store up to 15 of your favorite streams for quick recall.

**Macworld's Buying Advice** A session with MacTuner 2.0.5 is further evidence of just how small the Internet has made the globe. I've watched news from Iranian television, beheld steamy Brazilian soap operas, heard weather forecasts from New Zealand, and marveled at the United States' cultural influence while listening to Elvis from South Africa and Charlie Parker from Kazakhstan. MacTuner needs a bit of polish here and there, but it's still a great gateway to that glorious global cacophony known as broadcasting.—JIM HEID

**RATING:** ★★★ **PROS:** Fun; inexpensive; large station database. **CONS:** Maps are too small; limited search engine. **COMPANY:** Trexar Technologies (770/442-8045, [www.mactuner.com](http://www.mactuner.com)). **LIST PRICE:** \$22.95.

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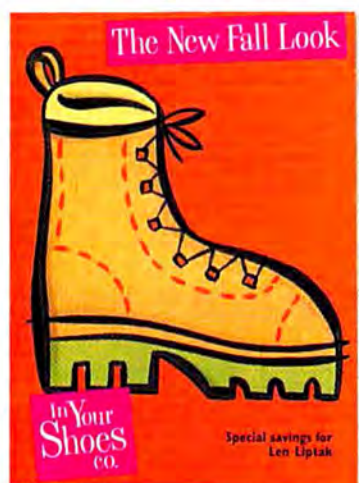
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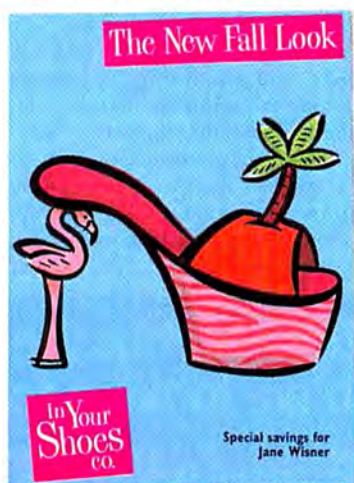
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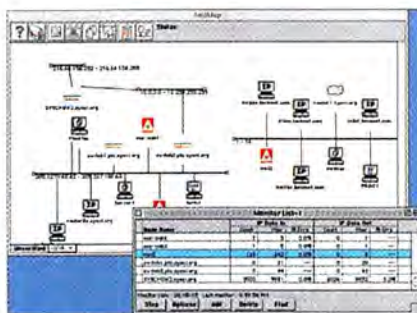
# LANsurveyor 5.0

NETWORK MONITOR STILL LIGHTWEIGHT

**W**ITH ALL THINGS NETWORKED migrating to TCP/IP, LAN administrators want IP-capable tools. Neon Software's LANsurveyor 5.0 obliges with new IP discovery capabilities and beefed-up Mac-centric features, but it lacks IP-management capabilities that many administrators consider essential; expect to buy adjunct tools, such as Neon's CyberGauge and Dartmouth College's InterMapper, to flesh out your networking tool kit.

LANsurveyor 5.0 consists of a main network-management application that you run on a centrally located Mac and a remote Responder application that runs on each Mac in your network (20 Responders are included). The management application scans the network, locating computers, printers, routers, and other network devices and plotting them on a map. You can then customize the map, assigning icons and arranging objects to suit your needs.

In its Discovery mode, LANsurveyor can now find IP-only devices as well as AppleTalk devices. Macs running the Responder application report system infor-



**Go with the Flow** LANsurveyor 5.0 monitors traffic flow and alerts you to congested areas.

mation; once your network is mapped, LANsurveyor monitors it for problems and notifies you by alert, alarm, e-mail, or page.

Managers will welcome the program's new ability to send folders and messages to remote Macs and to configure the Responder application remotely. The new version also adds convenience features, such as the ability to launch CyberGauge and Netopia's Timbuktu to further manage selected map objects, and monitoring improvements, including the ability to alert on a device's traffic volume rather than error rate.

Despite these enhancements, LANsurveyor still falls short as an IP-management tool. Its traffic monitor, for example, still checks only for packets moved in a moni-

toring interval rather than percent utilization or data rate in bits per second. The program still supports only one SNMP community name, and it still won't let you build subsidiary maps to manage large LANs. By taking the liberty of completely reorganizing its map whenever a new discovery process is run, LANsurveyor will frustrate users trying to maintain a custom map layout. And for all its newfound IP discovery abilities, it doesn't detect or monitor the IP services served by discovered devices.

**Macworld's Buying Advice** LANsurveyor's new features are welcome improvements, but the program fails to provide all the tools you need to manage a network. Worse, many of its shortcomings—such as quirky data-rate measurements—get in the way of good network-administration practice. If you need LANsurveyor's Mac-oriented management features, you may find a place for it in your tool kit, but plan to use something else for TCP/IP administration.—MEL BECKMAN

**RATING:** ★★½ **PROS:** IP discovery; can control Macs remotely. **CONS:** No subsidiary maps; can't detect or monitor IP services; arbitrary map reorganization. **COMPANY:** Neon Software (925/283-9771, [www.neon.com](http://www.neon.com)). **LIST PRICE:** Five zones, \$259; unlimited zones, \$495.

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New York: Trend-setting, nationally recognized design firm seeking individual to lead talented team. Ideal candidate needs 5 or more years experience creating retail or commerce oriented websites, as well as skills in Photoshop, HTML, Flash, and Dreamweaver. Must have good conceptual design skills and ability to work on multiple projects.

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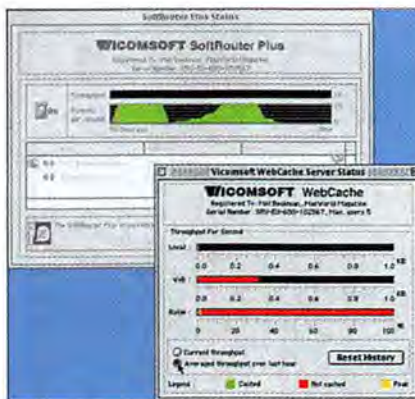


# SoftRouter Plus 6.0

ROUTING SOFTWARE ADDS WEB CACHING

**W**HEN HORDES OF USERS ON a network are surfing the Internet, the result is redundant traffic and wasted bandwidth—particularly when users are accessing the same group of Web sites. Vicomsoft's SoftRouter Plus 6.0.1 solves this problem by storing a copy of repeatedly accessed sites on a local server's hard disk for faster performance. At the same time, SoftRouter Plus features world-class TCP/IP routing and network-administration services equivalent to those in expensive hardware routers.

Besides offering all the functions of a typical hardware-based router—including the ability to internetwork Ethernet, Token Ring, dial-up, and wide-area networks—SoftRouter Plus has a graphical interface and a setup wizard that will have even nontechnical users up and running quickly. And the package includes a slew of helpful network-administration aids: Routing Information Protocol support for automatically configuring route tables, RADIUS (Remote Authentication Dial-In User Service), network address translation, Dynamic Host Configuration Protocol (DHCP), a dynamic DNS server that



**Show Me the Cache** SoftRouter Plus 6.0.1 displays both current traffic statistics and Web cache performance, letting you keep an eye on your Internet bandwidth.

synchronizes names with DHCP-assigned addresses, host access rights, and TCP/IP multihoming. And with the appropriate Mac hardware, you can even set up multiple serial PPP dial-in ports for remote users.

But the big improvement in version 6.0.1 is a bundled caching Web server, which makes copies of Web pages that users access most frequently and then retrieves them from the cache to satisfy repeat requests. Caching is transparent—you don't need to reconfigure users' browsers to

access a proxy server—and you can archive selected Web sites for access even when your Internet connection is down.

In tests over an ISDN Internet connection with five remote users, SoftRouter Plus demonstrated T1-like performance when accessing cached sites. For even better performance, you can run the caching server software on a separate machine, or even redirect HTTP requests to another vendor's caching server.

**Macworld's Buying Advice** SoftRouter Plus 6.0.1's Web cache does wonders for Internet performance when multiple users chase the same online content, and the program's many other administration aids make it perfect for cross-platform networks. If you can't afford a \$2,000 hardware router but have a spare Mac, SoftRouter Plus can be a budget saver, too; its low per-user pricing makes it affordable for virtually any workgroup.—MEL BECKMAN

**RATING:** ★★★★★ **PROS:** Web caching; network address translation and DHCP; DNS/DHCP integration; multiple PPP dial-in ports; RADIUS support; virtual Web serving. **CONS:** None. **COMPANY:** Vicomsoft (800/818-4266, [www.vicomsoft.com](http://www.vicomsoft.com)). **LIST PRICE:** Five users, \$190; ten users, \$280; unlimited users, \$430.

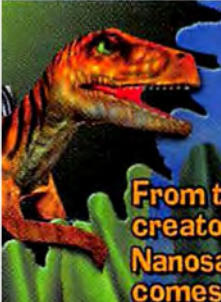
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# The Game Room

## Chasing Cheap Thrills

A BARGAIN HUNTER'S GUIDE TO MAC SHAREWARE GAMES

by Christopher Breen

**M**y life is nearly perfect. Heck—what could be better than getting paid to play computer games? I'll admit there is one *wee* insect in the unguent, however: Because I do spend an inordinate amount of time dinking around with computer games, I suffer from a common gamer's malady—I don't get out much. And when I say I don't get out much I specifically mean that I go to the movies about as often as Steve Jobs and his vegan buddies trip down to Billy Bob's Barbecue Bungalow for a slab o' ribs and a side of scrapple.

Which might explain why, when I finally succumbed to *The Force* and stood in a seemingly endless movie line, I bumbled "*How much!?*" when the ticket seller requested that I fork over eight-point-seven-five simoleons.

"Eight seventy-five," she patiently repeated while giving me a look I recognized as the same one I issue when friends of mine gripe about the cost of computer games. Roughly translated, that look means: "This is high-quality entertainment, buster, and if you want to partake you'll pony up and shut your yap."

And so I did, but not without revisiting my friends' complaints. It dawned on me that forty to fifty bucks *is* a lot of money, and although I maintain that there are several games worth the price, there *are* less expensive ways to gain a fair dollop of Macintosh gaming goodness. If you're interested in learning how, read on.

### Working with a Net

The best place to look for games that won't drain your bank account is the

Internet. A remarkable variety of high-quality games is available for the price of a download and, perhaps, a shareware fee of \$20 or less. Don't let the fact that these games are shareware dissuade you from investigating further. Although you're unlikely to find a shareware shoot-'em-up to rival *Unreal* or a pay-to-play flight sim as rich and complex as *Falcon 4.0*, the shareware world does offer commercial-quality arcade, board,

schlock. Welch's *Maelstrom*, an update to the arcade game *Asteroids*, is a classic, as are the Centipede-like *Apeiron*, and *Swoop*, a game that harkens back to *Space Invaders* and *Galaxian*. Ambrosia's recent games are just as delightful. *Mars Rising* is a wonderful scrolling shoot-'em-up, *Barrack* is a noble update to the old arcade game *Qix*, and *Slithereens* is the best *Pac-Man* variation I've seen. Oh, and then there's *Harry the Handsome Executive*, a game I'm absolutely goofy about. *Harry* is mostly a puzzle game that requires a degree of hand-eye coordination. Your job is to destroy the alien invaders who have overrun Harry's office. The hitch is that you're confined to scooting around the game in a six-wheeled office chair and office supplies are your only weapons. (Prices for all of Ambrosia's games are about \$15 to \$25.)

Freeverse ([www.freeverse.com](http://www.freeverse.com)) is another fine shareware game publisher, especially if you're into card games. This company produces such noteworthy games as *Hearts Deluxe*, *Spades Deluxe*, *Classic Gin Rummy*, and *Burning Monkey Solitaire*—a version of the solitaire game *Klondike* that inexplicably takes place in a theater full of simians. You'll definitely want to pay the shareware fees for *Hearts Deluxe* and *Spades Deluxe*. Unless you pay, your opponents are about as bright as a troughful of swamp water, which hardly leads to challenging game play. However, by the time you read this you should be able to eschew computer opponents altogether by playing *Cribbage* and *Spades* over the Web via Freeverse's server. Also worth a

*continues*



and adventure games for the price of a few movie tickets. Here's a rundown of some of the best.

I'll start my list of great shareware game publishers with the cream of the crop, Ambrosia Software ([www.ambrosiasw.com](http://www.ambrosiasw.com)). Shareware or no, Ambrosia games are outstanding—Andrew Welch and the rest of the crew are seemingly incapable of turning out



download are Freeverse's board games: Enigma, a code-breaking game; Cross-Cards, a poker-Scrabble combination; Reversi: The Eclipse, an Othello clone; and X-Words Deluxe, a Scrabble twin. Prices for all of Freeverse's games range between \$15 and \$20. By the way, if you're one of the few souls left among us who lacks an Internet connection, dry your tears. Both Ambrosia and Freeverse offer unregistered versions of their games on CD-ROM for \$10.

While you're cruising the Net, don't miss Fantasoftware's Web site ([www.fantasoft.com](http://www.fantasoft.com)). This is the realm of Realmz, a popular Dungeons and Dragons-style role-playing game. You know the type: you gather a group of oh-so-romantic beings—sorcerers, elves, and so forth—and traipse around the countryside performing deeds of derring-do while giving the boot to ill-tempered, often orthodontically impaired bad guys. Frankly, this style of gaming is as appealing to me as removing plaque from my cat's teeth, but those who like this sort of thing swear that Realmz is The Goods. If you're as willing to believe them as I, you can get your copy of Realmz and the City of Bywater scenario for \$20 (additional scenarios are \$13 each). I much prefer

**Your Hearts Desire** Thanks to Freeverse's Hearts Deluxe, you can play hearts anytime—no human opponents required.



**What's Puzzling You?** Those who fondly remember MasterMind, the "match the colors and patterns" puzzle game from the 1970s, will love Freeverse's Enigma.

Fantasoft's arcade and puzzle games. Fans of the old Donkey Kong arcade standard will enjoy the \$20 Monkey Shines, and those who fondly remember Glenn Andreas's Blobbo—a puzzle game that requires you to gather the goods and avoid falling objects—will feel right at home with Fantasoftware's \$20 Bugs Bannis.

And finally, no roundup of Net-based, inexpensive gaming goodies can fail to mention MacMame ([www.macmame.org](http://www.macmame.org)), a free emulation program that allows your Mac to perform convincing imitations of early 1980s arcade machines. With MacMame you can play such classic games as Asteroids, Defender, Frogger, Battlezone, DigDug, and dozens more.

Note, however, that the developers of this emulation system ask that before you download any games (games come separately, you see), you ensure that you own copies of the original cartridge versions of the games. Apparently there's a hazy legal issue about running these old warhorses without having paid for the license. If you own

the old games, you've paid for the license and therefore everything should be hunky-dory. If you don't own the games, then technically you're stealing someone's work, even though that work has been out of print since *The Dukes of Hazard* played in prime time.

### The Bottom Line about the Bottom Line

In good conscience, I should issue this warning: now that you know there are games this good at prices this reasonable, it won't be long before your Macintosh's hard drive is crowded with games and your ability to chip in with the ersatz Eberts around the office



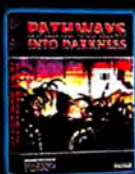
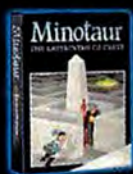
**Food of the Gods** Ambrosia's Mars Rising is a terrific—and not terribly expensive—scrolling shoot-'em-up.

watercooler will be vastly diminished. But in the end you'll thank me. Sure, like me, you won't get out to the movies until the next installment of *Star Wars* comes out, but when it does, you'll have saved enough dough for the \$12.75 admission and the small \$25 tub of popcorn. **m**

Contributing Editor CHRISTOPHER BREEN wouldn't hold it against you if you left the house long enough to purchase his new, coauthored book, *My iMac* (IDG Books Worldwide, 1999).



# SIX GAMES ONE SACK \$20 BUCKS!!



Get six of the greatest Mac action games ever for only \$19.95 with Bungie Software's MAC ACTION SACK. A must have for every Mac gamer's collection, the MAC ACTION SACK features the ground-breaking games Minotaur, Pathways Into Darkness, Abuse, and the legendary Marathon trilogy.



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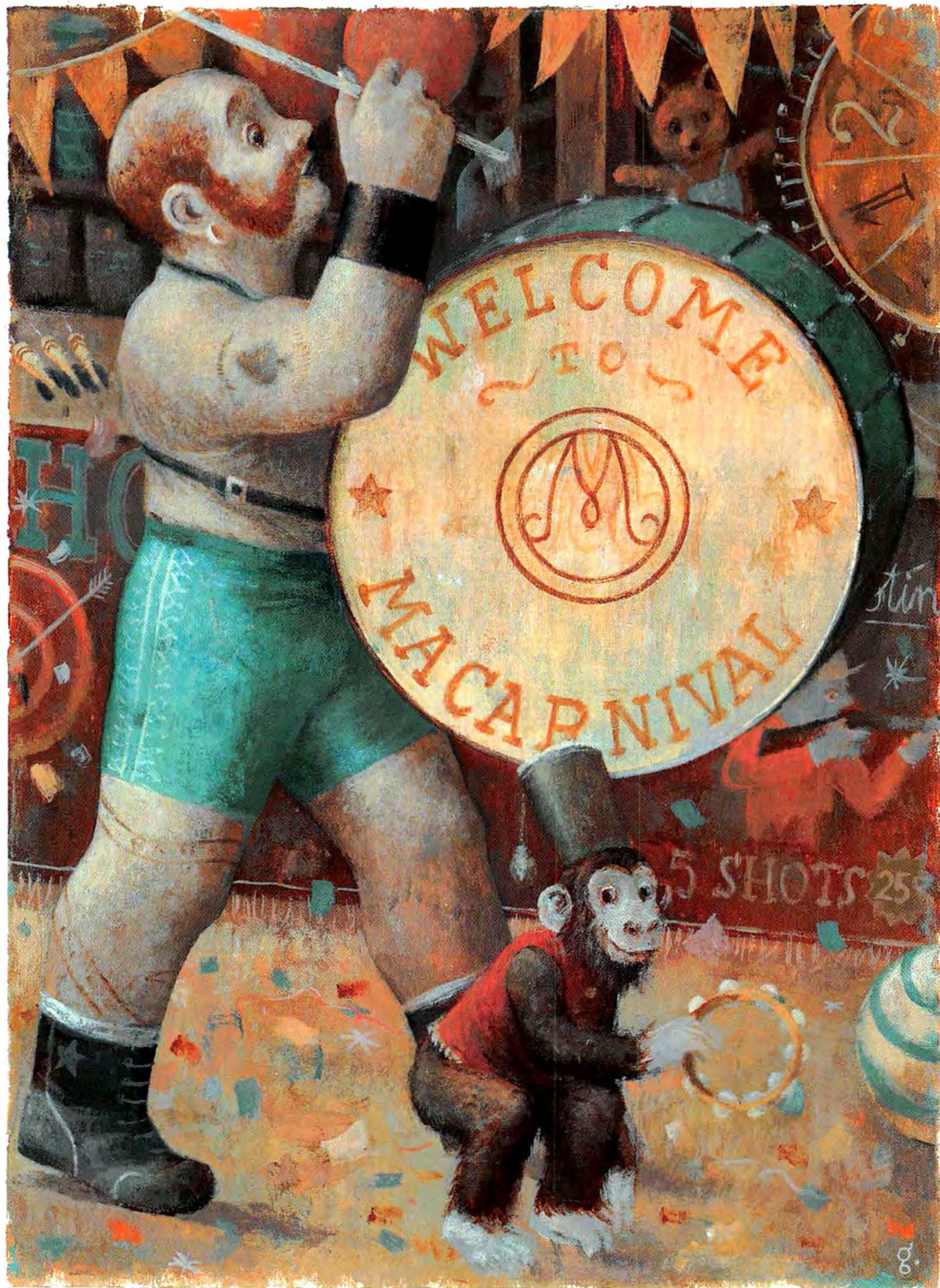
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urry! Hurry! Hurry! Come right this way! Welcome to our Carnival of Computing! Folks, for less than a sawbuck, you can behold these Macintosh marvels!

Why, haven't you heard?! The Mac is back, and fun is where it's at! We've traveled the world over from Cupertino to Kathmandu, gathering together the most captivating Mac gewgaws and doodads you're likely to find in one place. That's right, folks. This is the place where you'll find the coolest gadgets and add-ons for your Macintosh computer. And we've got it all—right here, I say, right here—from the mind-bending translucent backup drives to the mysterious talking mouse pad to our very own World Wide Web of wonder.

Come along with me on our tour. Straight ahead is the Mac Merry-Go-Round, just one of the great rides at this summer's carnival. But this ain't no ordinary merry-go-round. No sir, this special attraction is pure family fun, guaranteed to please any self-respecting Macintosh user. Over this way you'll see the Macworld Fun House, home to fun and games and frolic—after all, my friends, what else is


# The Fun is Back!

**STEP RIGHT UP TO SEE OUR COLLECTION OF THE COOLEST AND QUIRKIEST MAC STUFF AROUND**

summer for? And just beyond, the most fearsome and entertaining portion of our program—the Freak Show.

Fear not, my friends! For this Freak Show has no bearded lady or human pincushion. But you're sure to be amazed by the quirky computer paraphernalia within the Freak Show's walls.

Now that you've got an idea where everything is, let's take a closer look. I guarantee it'll be fun! Would I lie to you, my friends?

by Christopher Breen 



# UP AND DOWN ON THE MAC MERRY-GO-ROUND



**L**ook what we have here—our main attraction: the Mac Merry-Go-Round. Ah, it looks like we're just in time, the ride's about to start. Presented for your amusement is a cornucopia of useful and fun Macintosh miscellany, sure to please even the most cynical Macintosh maven. Don't push! There's a seat for everyone.

## Skinny Speakers That Sing

The world of multimedia speakers has suddenly gone flat, as evidenced by the latest release from Sonigistix, the Monsoon MM-700 multimedia speaker system. Like its more expensive sibling, the \$229 Monsoon MM-1000 system (see *Reviews*, April 1999), the MM-700 system includes two skinny satellite speakers and a 5.25-inch subwoofer shaped like an ice cream cone. You control the volume of the speakers—even quickly muting them—with a small hockey puck-shaped control box.

Although the MM-700 system is slightly less powerful than the MM-1000, the MM-700 speakers deliver the same transparent, balanced sound as the more expensive Monsoon speakers. Gamers shouldn't expect brain-crushing volume from these speakers. At a moderate level they sound glorious, but when cranked they start to sound distorted before even rattling your windows or loosening your plaster.

SONIGISTIX; 510/372-0366, WWW.SONIGISTIX.COM. LIST PRICE: \$179.



## Where's the Hub, Bub?

Computers are now so common that many people have a few scattered throughout the house. So link all these machines together and play network games—oh, and maybe share files while you're at it.

Presenting Farallon's HomeLine Starter Kit, which lets you network two or more Macs, two PCs, or a Mac and a PC by simply adding a HomeLine PCI card to each computer, installing the proper drivers and software, and plugging each HomeLine card into the nearest phone jack. Yes, it's hard to believe, but HomeLine actually sends data through your home phone's internal wiring, with no need for Ethernet cables and hubs, and yes, you can continue to use that line for phone, data, and fax calls.

FARALLON; 510/346-8001, WWW.FARALLON.COM. COMPANY'S ESTIMATED PRICE: \$139.

## Roll Your Own

Any child who wants to take control of his or her Mac and create games, interactive stories, and simulations should take a gander at Stagecast Creator. Intended largely for use in schools, Stagecast Creator is a simple programming environ-

ment that allows kids to create their own characters and assign actions to them. For example, your child could design a simple board game, a pachinko simulation, an electronic book with illustrations—even a game of three-card monte.

Parents need not worry that Stagecast is a complete time waster. As the program's Teacher's Guide plainly reveals, hidden beneath the fun are some of the basic principles of programming. That's right, your child is bound to learn a thing or two along the way. The on-screen tutorial gives a nice overview of Stagecast's programming environment and is anything but dry. The CD-ROM includes several games and simulations—some captivating enough for grown-ups!

STAGECAST SOFTWARE; 650/354-0735, WWW.STAGECAST.COM.

LIST PRICE: \$60.

## Get the Picture?

If you have an iMac or new Power Macintosh G3 and are interested in putting video on your computer, you're in luck. Thanks to XLR8 and your computer's USB port, you can now capture and edit video for just under \$100. The means to this miracle is the InterView, a small doohickey that sports a USB connector on one end and an S-Video and composite-video connector on the other. The small, black box in between does most of the work. To capture audio, you'll need to connect the audio output of your source to the audio-input port on your Mac.

Using the InterView you can capture full-frame video at 320 by 240 pixels and still frames at 640 by 480 pixels and save the results as a QuickTime movie. Unlike other inexpensive video-capture devices, the InterView comes with a decent software bundle—Strata VideoShop 4.5—and produces smooth results.

XLR8 BY INTEREX; 316/636-5544, WWW.XLR8.COM. LIST PRICE: \$99.



## The Incredible Roaming iMac

PowerBook owner: no longer need be the only mobile Mac users. With the GrabPac—and a muscular physique—you can now take your iMac and its accompanying peripherals on the



road. This black, green, or gray item is sure to remind you of the backpacks parents use to lug their small children around. Slip the GrabPac cover over the top of the iMac; slide the keyboard into its harness; tuck the mouse, cables, and any extra items you care to take with you into one of the two side pockets; wrap the GrabPac's padded handle around the iMac's handle; and you're ready to travel.

Although you may work up a sweat fitting your iMac into the carrying case, you won't need to completely unpack it once you reach your destination. Just unclip the front screen cover, fold out the two mouse pads that cover the keyboard, unleash the keyboard from its harness, plug in your cables, and fire up the iMac.

GRABPAC; 602/968-4752, WWW.GRABPAC.COM. LIST PRICE: \$60.



### Blissed Out

If you attended any rock concerts in the sixties and early seventies that featured swirling light shows, you probably don't remember doing so. Bliss Paint 2.0, from Imaja, may help jog what's left of your memory. Billed as an interactive color synthesizer, Bliss Paint allows you to create whirling, colorful animations that can evolve and morph over time. In addition to providing a bit of sixties nostalgia, these animations can resemble kaleidoscopes, animated Escher compositions, and even the strobing "Whoa, dude!" scene from *2001: A Space Odyssey*—you know the one.

You create these animations with Scribblers—shape generators and processing effects—and use Distributors to determine where the Scribblers paint. As with a musical synthesizer, you can "play" your animations and arrange them in sequences. These animations can be fired from your Mac keyboard, via MIDI, or through sound input.

IMAJA; 800/294-6252, WWW.IMAJA.COM. LIST PRICE: \$150.

### Picture This

Picture Playground, a commercial Web site put together by Eastman Kodak, is a bit like an online version of Adobe's PhotoDeluxe—a place where you can add common filters to digital photographs that you've uploaded or found on the Web. For example, you can turn pictures into cartoons; create sepia-tone, "antiqued" versions of your photos; saturate colors; reduce color pictures to black and white; or add an oil-paint filter to your image.

Another area of the site allows you to create postcards that you can then e-mail to friends. As with many greeting-card sites, these postcards speak to common themes and Hallmark holidays such as birthdays and Mother's Day. Unlike with other greeting-card sites, however, you can use images that you've uploaded, in addition to stock photography. In order to take advantage of many of Picture Playground's services, you must become a member. Membership, however, is free.

PICTURE PLAYGROUND; HTTP://ALTS1.KODAK.COM/US/EN/CORP/FURTHER/.

### How Do You Do That?

Can you whistle? Do you know how to tune a guitar? Having trouble shucking an oyster? If these or other common skills escape you, you have a friendly know-it-all on the Internet at Learn2.com. This fairly comprehensive site provides instructions in tasks both vital and inconsequential. In addition to providing step-by-step instruction for whistling—both the puckered-lip and two-finger methods—guitar tuning, and oyster shucking, Learn2 tells you how to use chopsticks, blow bubble-gum bubbles, juggle, fix a running toilet, perform a breast self-exam, and flush a car's radiator.

The site is nicely designed and features a fast and thorough search engine—you can also browse by categories such as Arts & Crafts, Food & Drink, and Technology. Steps are clearly delineated, and illustrations are often provided. Learn2 includes a list of top ten "2tutorials" as well as a link that allows you to mail the lessons to friends.

LEARN2.COM; WWW.LEARN2.COM.

### Share Files Cheap

When Apple yanked the SCSI port from the iMac and the blue-and-white G3s, it also removed one of the best ways to back up your Macintosh files. But have no fear—Aiwa has delivered a USB tape drive to safely salt your files away. The TD-UM8000 is a USB-based Travan tape drive capable of storing up to 8GB of compressed data (4GB uncompressed) on a single 8GB Travan cartridge. The preproduction unit we looked at backed up a 266MHz iMac at around 33.5MB per minute—not terribly speedy but perfectly serviceable for an overnight backup.

The drive comes with Dantz's Retrospect and a USB cable. Cartridges cost just over \$30 each. The TD-UM8000 sports an attractive Bondi-blue bezel and a very attractive price—just \$250. Such a deal! AIWA; 800/920-2673, WWW.AIWA.COM/CSD/. LIST PRICE: \$250.



### Rules of the Game

Of course your Mac should be your primary source of entertainment, but just suppose that one stormy evening the power goes out and all you're left with is a candle, two matches, three friends, and a deck of cards. What will you play with now? Well, if you'd taken the time to visit John McLeod's Card Games site and memorized each page there, you'd know the rules to just about every card game on earth. The list of games is exhaustive—why, the number of poker variations alone is remarkable.

Although solitaire games are well represented at Card Games, they aren't the only games fully explained. The site also carries sections for multiplayer games, commercial games (such as Mille Bornes) that require a special deck of cards, and invented games (such as card games site visitors have invented). John also provides links to places where you can play cards against opponents on the Internet.

CARD GAMES; WWW.PAGAT.COM.







# MORE FUN THAN A BARREL OF MONKEYS

**T**hat's it! The Merry-Go-Round ride is over. But fret not—it's time to move to the Fun House, home to wild and crazy Mac items. Interested in musical tools? Looking for something to spruce up that iMac? Step inside while I rustle up a couple of corn dogs.

## Overstuffed iMac

Gone are the days of Raggedy Ann dolls—the cyberplaymates of the future are one-of-a-kind custom-made iMac pillows. And unlike their translucent plastic counterparts, these 6-by-9-by-7-inch cotton clones cost only \$12 and are made to order.

These fuzzy computer pals are available in all five flavors—plus Bondi blue—and can be personalized with your name for an additional \$3. Sorry, mouse and keyboard not included. **BUNSTER CREATIONS; WWW.BUNSTERCREATIONS.COM. DIRECT PRICE: \$12 PLUS SHIPPING AND HANDLING.**

## iMac Appetizers

If you were to go by commercials alone, you might think that once you own an iMac you have everything you need. Nonsense. The fun really begins with the accessories.

Enter Belkin Components' iMac Starter Kit. This kit contains a quartet of useful iMac-hued accessories: the black and "ice," ultracomfy ErgoPad mouse pad; a likewise gel-filled, black and ice ErgoPad keyboard rest; a 10-CD-capacity, Bondi-blue jewel case; and a blue and ice SurgeMaster surge protector complete with protection for telephone lines. Granted, the surge protector and CD rack, while attractive, are something you could get elsewhere.

**BELKIN COMPONENTS, 800/223-5546, WWW.BELKIN.COM. LIST PRICE: \$60.**

## Oh, the Joy

Mac gamers, take note: Kernel Productions' JoyPort, a diminutive black box not much larger than an audiocassette, is packed with potential. This gizmo allows your ADB-equipped Macintosh to use many Sega Genesis, Nintendo 64, Sony PlayStation, and PC game controllers. You just turn off the Mac; connect the JoyPort to a free ADB port (sorry, iMac owners); restart the Mac; install the JoyPort software; restart again; slip a compatible joystick, game pad, or other controller into one of the JoyPort's ports; configure the controller for the game in the JoyPort control panel; and have big fun!

Although the JoyPort is nearly infinitely configurable, certain steering-wheel controllers don't function properly with old Mac car-racing games. The device works admirably with most arcade games and game pads, however, and is a natural

for those with Connectix's Virtual Game Station and a PlayStation controller. Kernel has promised a USB version soon.

**KERNEL PRODUCTIONS; 302/456-3026, WWW.KERNEL.COM. LIST PRICE: \$50.**

## Let's Get Tanked

There's definitely something fishy about Aquazone Deluxe, the virtual aquarium from Mindscape Entertainment. Unlike the scaly screen savers of old that boasted indestructible schools of fish, Aquazone's denizens are quite mortal. As with a real aquarium, if you don't feed your fish, keep the tank clean and warm, maintain a proper chemical balance, and deal with your little gilled buddies' ichthyological illnesses, the residents of your tank die. Keeping the fish healthy is vital, because four of

the six species come in limited numbers. If you fail to breed more of these fish and the original five of each species die out, you must buy more.

In addition to the fish, Aquazone Deluxe ships with five aquatic plant varieties, many decorative accessories, and 12 pre-conditioned tanks. You can also create your own tanks.

**MINDSCAPE; 415/895-2000, WWW.AQUAZONE.COM. LIST PRICE: \$30.**

## Play That Funky Music

Being a mobile DJ is tougher than you think. Sure, just about anyone can develop snappy stage patter or find an appropriately loud, sequined jacket, but the real difficulty is lugging around all the equipment and CDs necessary to get the job done. Fidelity Media just made that job a little easier with its MegaSeg. This music system allows you to download hundreds of CD tracks to your Mac, create and save playlists, edit custom segue and intro times for each track, and seamlessly crossfade between tracks. And just imagine the musical setup you'll create with your MegaSeg software and your handy iMac GrabPac.

Fidelity Media claims that you can store more than 500 songs on a 6GB hard drive. This miracle is possible thanks to MegaSeg's use of IMA 4:1 compression—a standard that, while reducing the size of each file, strips the tracks of some dynamics and adds noise. Audio purists, take note.

**FIDELITY MEDIA; 877/634-2734, WWW.MEGASEG.COM. LIST PRICE: \$249.**





### Getting a Little Sketchy

There's a darned good reason why art historians have never run across a mouse among the tools in Winslow Homer's paint box: it's a lousy substitute for a brush or a pencil. If you'd like your children to have a more accurate and ergonomic artistic input device, consider the Pablo, from KBGear Interactive. This 8-by-6-inch graphics tablet ships with a wired pen large enough to be gripped by small hands,



a clear plastic overlay that enhances tracing, and a CD-ROM complete with MetaCreations' Art Dabbler and Power Goo SE. The pen sports a single yellow button that you can set to perform a single-click, double-click, click-lock, control-click, or any keystroke.

Currently the Pablo ships only in an ADB version, but a USB version is due in August. In the meantime, the maker of the Pablo suggests using Griffin

Technology's (615/255-0990, [www.griffintech.com](http://www.griffintech.com)) \$49 iMate USB-to-ADB adapter for ADB-less iMacs.

**KBGEAR INTERACTIVE; 800/926-3066, [WWW.KIDBOARD.COM](http://WWW.KIDBOARD.COM). LIST PRICE: \$99.**

### The Magic Kingdom

Let's face it, kids love just about anything that bears the Disney logo—movies, theme parks, decorative lunch boxes. If you want to make your little ones happy, point your browser to the Disney Channel, the online, interactive arm of the Land That Walt Built. This site is packed with Shockwave games that feature the traditional Disney crew as well as some of the more recent additions, including *Aladdin's* Genie.

Please note that although this site is full of fun, it's also crassly commercial—it's as jam-packed with Disney advertising as it is with entertainment.

**DISNEY CHANNEL; [HTTP://DISNEY.GO.COM/DISNEYCHANNEL](http://DISNEY.GO.COM/DISNEYCHANNEL).**

### A Better Mouse Trap

While Apple's current designs are certainly bold, some may wonder if our friends in Cupertino have sacrificed function for the sake of form. Take the Apple mouse, for example. Cute as a button it may be, but its shape is problematic for some users—if you don't have the hands of a child, the mouse doesn't leave a lot of room to rest your hand, and its roundness makes it difficult to determine which way is up.

You could buy a new mouse, of course, or you could simply add a new cover to the old one—the UniTrap from Contour Design, for example. This device fits over the round mouse and includes buttons in all five iMac flavors. To install, just



remove your mouse's colored side pieces, slip the mouse into the bottom shell of the UniTrap, and clip on the cover. The resulting mouse is a bit bulky but quite comfortable.

**CONTOUR DESIGN; 800/462-6678, [WWW.CONTOURDESIGN.COM](http://WWW.CONTOURDESIGN.COM). COMPANY'S ESTIMATED PRICE: \$15.**

### Sassy Synth

Ask any Mac musician about the quality of QuickTime Musical Instruments (QMI) and you'll receive a response so colorful in its negativity that we couldn't possibly print it. We can suggest an alternative—Alesis's QS6.1 synthesizer. This 64-voice, 61-key keyboard includes 16MB of memory (expandable to 32MB via PC Cards), four control sliders, a responsive keyboard, a serial port in the back for direct connections to serial port-bearing Macs, and a CD-ROM that contains Emagic's MicroLogic AV sequencer and a few other useful digital-audio and MIDI applications. The QS6.1 also contains a General MIDI bank of sounds that's far superior to anything found in QuickTime.

If you're interested in such a dedicated synthesizer but have a newer Mac that lacks serial ports, investigate those USB-to-serial converters that support MIDI—not all do. Check with Macintosh MIDI newsgroups to learn about MIDI configurations that work best for these modern Macs.

**ALESIS; 800/525-3747, [WWW.ALESIS.COM](http://WWW.ALESIS.COM). LIST PRICE: \$1,099.**



### Your Personal Top Ten

If you'd rather not wait for your coworker, Bob the Joke Guy, to lob another poorly transcribed Letterman Top Ten list into your e-mail in-box, go to the source—CBS's Late Show Top Ten site. Here you'll find Dave's latest Top Ten and more.

Perhaps you think you're good enough to compete with Dave's well-paid but harried writing staff. Maybe so. You can test your comedy mettle by entering the Top Ten Contest. Just offer your suggestion on topics such as Bob Barker's Top Ten Pet Peeves or Top Ten Least Popular Stores at the Mall; fill in your name, hometown, and e-mail address; and you could win a Late Night T-shirt. **CBS LATE SHOW TOP TEN; [HTTP://MARKETING.CBS.COM/LATESHOW/TOPTEN](http://MARKETING.CBS.COM/LATESHOW/TOPTEN).**

### Your Ticket to the Stars

You've slogged home after a long day at work, and following a quick, microwaved homage to mac and cheese, you're ready for a little video-based mind numbing. You flip to the newspaper's television listings and are confronted with numerous filmic possibilities on TCM, AMC, TNT, and TBS. Which to watch? Sure, you could simply channel surf, but why bother when you can Web surf to the Internet Movie Database? This site, hosted by Amazon.com, provides information on more than 180,000 movie titles. You can search by movie title as well as by actor—a great resource for those times when you can't quite recall all 238 films of Eugene Pallette's career.

**INTERNET MOVIE DATABASE; [HTTP://WWW.IMDB.COM](http://WWW.IMDB.COM).**





# FREAKS AND GEEKS

**M**y friends, finish your corn dogs and prepare to be amazed by the products that reside inside our tabernacle of terror, the Freak Show. You may find the denizens of the Freak Show a little strange, but I guarantee they'll add a little spunk to your Mac if you just give 'em a chance.

Ready for the quirky stuff, the weird outer-space, glow-in-the-dark, fortune-telling, freaky Mac stuff? Step inside!

## We Are Not Alone

What's the likelihood that somewhere, among the billions and billions of stars in our universe, there exists another sentient civilization eager to converse with us Earthbound schmoees? That's a question some folks at SETI (The Search for Extraterrestrial Intelligence) would like to find an answer to. And you can help them obtain that answer. Here's how.

Download a copy of SETI@home. This application/screen saver downloads a chunk of data picked up by an audio observatory, analyzes that data to determine if otherworlders are attempting to send a response to the radio signals we broadcast into space, and sends the results of that analysis back to the SETI@home people. What better way to employ your Mac during its otherwise unoccupied moments?

SETI@HOME PROJECT; [HTTP://SETIATHOME.SSL.BERKELEY.EDU](http://SETIATHOME.SSL.BERKELEY.EDU).

## Palm Dessert

3Com's ubiquitous Palm is a handy enough device that users have been willing to put up with Graffiti, the Palm's write-it-our-way-or-else handwriting interface. But let's face it, using Graffiti is hardly the most convenient way to enter information into your pocket pal. If only the Palm—like the Newton MessagePad 2000 before it—came with a keyboard.

Now it does, thanks to LandWare's GoType, a diminutive plug-and-play QWERTY keyboard designed for all the Palms except the Palm V and Palm VII (LandWare will release a Palm V-compatible keyboard shortly). Just drop your Palm into the GoType's integrated cradle and start typing. While not tiny enough to fit in your back pocket, the GoType measures only 10 by 4 inches and is just ¾ inch deep. Without an attached Palm, the GoType weighs just 11 ounces.

LANDWARE; 201/261-7944, [WWW.LANDWARE.COM](http://WWW.LANDWARE.COM). LIST PRICE: \$80.

## Unwired for Sound

You're deeply entrenched in an online Quake III fragfest, it's 3:10 A.M., and you—a considerate individual—are wearing headphones. In a dash to the bathroom between bouts, you forget to remove the headphones, and when your forward progress exceeds the length of the headphones' cable, you dislocate your neck and nearly rip off your ears. Do yourself and your ears a favor and give a listen to Loral Group's Un-Wired Model 6000IR wireless headphones.

As the name implies, these ultracomfortable headphones carry no attached cable. Instead, they receive audio signals from an infrared transmitter that you place in a convenient location within 25 feet of your intended area of use. Connect the included audio cable from your Mac's audio-output port to the transmitter's input ports, pop a couple of AAA batteries into the headphones, switch on the transmitter and headphones, and you're ready to rock remotely at a frequency response of 35Hz to 18,000Hz.

LARAL GROUP; 516/293-6900, [WWW.UN-WIRED.COM](http://WWW.UN-WIRED.COM). LIST PRICE: \$50.

## Doctor Wheelgood

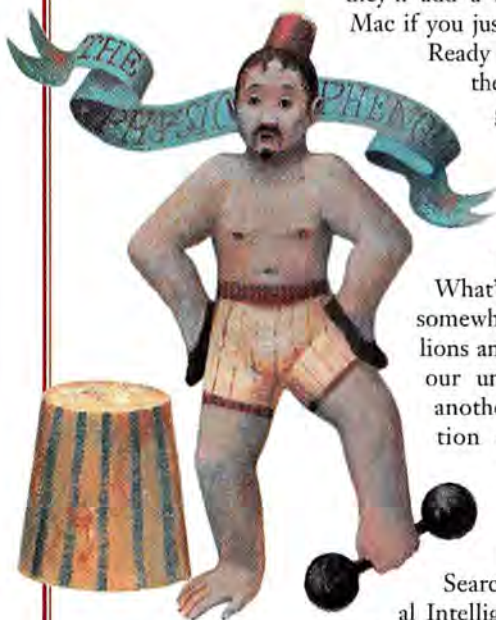
Presenting the humble compact disc—useful for holding catchy tunes, the standard when it comes to installing software, and nearly indestructible. But occasionally one of these shiny, silver wonders becomes so scratched or abraded that areas of the disc cannot be read. Digital Innovations comes to the rescue with its GameDoctor, a device that looks like a cross between a can opener and a grocery-store label gun and that removes shallow scratches and abrasions from CDs.

To use the GameDoctor, simply fold down the device's lower jaw, strap a CD onto the wheel, spray the disc with the included Resurfacing Solution (filtered water), flip the jaw into place, and start cranking the Doctor's handle. As you crank, the wheel slowly rotates, polishing the disc. After polishing you simply dry and buff the disc with the included towel and felt square; with any luck, the disc will then function perfectly.

DIGITAL INNOVATIONS; 888/762-7858, [WWW.DIGITALINNOVATIONS.COM](http://WWW.DIGITALINNOVATIONS.COM). LIST PRICE: \$35.

## Are You an Ogre?

Described as a perfect place for some serious entertainment, Queendom.com offers the kind of tests and surveys often found in magazines that cater primarily to women. Care to test your IQ, check your personality, determine whether you suffer from depression, discover your degree of assertiveness, or compare your sex life to those of your fellow beings? Queendom.com





offers tests that cover all these areas, as well as advice columns and articles pertaining to women's health issues.

In general, the results of the tests are clear and nonjudgmental; regardless of how you answer, you won't have to read that you're an overbearing ogre who would be doing the world an enormous favor by taking up permanent residence in a remote mountain cave.

QUEENDOM.COM; WWW.QUEENDOM.COM/TESTS.HTML.

### Squeaky Mouse Pad

If you're tired of pushing your mouse around on the back cover of a vintage, 1984 issue of *InCider*, ComputerGear has more than plenty of decorative mouse pads for you. Presenting the Winning Shot and Wolf *audio* mouse pads—that's right, not only do these rubber-and-nylon pads sport the pictures of a putting green and a wolf baying at the moon, respectively, but when you press a particular spot on the pads, they erupt with sound (a cheering crowd for the Winning Shot pad and, as you might expect, a howling wolf for the other).

The novelty of these pads wears off after the first playing or two, so if you'd like something kicky but quieter, consider ComputerGear's *South Park* mouse pads, which feature a big-boned Eric Theodore Cartman and the ever enthusiastic Kyle Broslofski.

COMPUTERGEAR; 800/373-6353, WWW.COMPUTERGEAR.COM. LIST PRICE: AUDIO MOUSE PADS, \$17; SOUTH PARK MOUSE PADS, \$15.

### Freaky News

There's a lot of news in the world—far more than your local radio station, television channel, or newspaper could ever hope to cover. Oh sure, you'll learn about the latest hurricane or scandal, but where are you going to read such gripping items as "Cops Seek Thief Who Digs Elders' Undies" or "Prep Student Attacked for Listening to Queen"? Log on to Jim Romenesko's *Obscure Store and Reading Room*.

Mr. Romenesko handpicks the more offbeat stories of our world and provides links to their source on this Web site. That source may be as lightweight as the *National Enquirer* or *Hollywood Reporter* or as earnest as the AP Newswire or CNN. You'll also find links to transcripts of newsmaker broadcasts such as *Larry King Live* and *Meet the Press*.

OBSCURE STORE AND READING ROOM; WWW.OBSCURESTORE.COM.

### Shocking Movies

Are you a frustrated filmmaker whose cinematic ideas can be realized in a single exchange of dialogue between two characters? Then the Digital Film Festival is for you. At *dfilm.com* you can create, view, and distribute your very own ShockWave movies. Here's how.

Simply click on the MovieMaker Game link, determine if you want your film to star one or two characters, select the characters you wish to use, choose a sky and background pattern, write the first (and last, as it happens) line of dialogue for each character, select a soundtrack, enter the title

of your movie and your name, and click on the Preview Movie link to see your film in the flesh. From the Preview screen, you can e-mail a link to your creation to anyone. And while you're at the site, you can watch clips of more-extensive films created specifically for the Internet.

DIGITAL FILM FESTIVAL; WWW.DFILM.COM.

### You Light Up My Life

When the iMac was first put on display, Apple used a cunning optical illusion to enhance the iMac's already cool appearance—the iMac mouse was placed on a lighted table, thus helping illuminate the mouse's innards. This illusion was so convincing that many people believed the round mouse actually contained a light source. It doesn't, but with a little help from iGlow, it can.

The concept is very simple. Send iGlow your round mouse, and for \$17.95 plus \$3.00 shipping, the company will implant a blue or red LED (light-emitting diode) into your translucent pointing device. If you have \$24.95 (and \$4.00 shipping) to spare, you can also have the company place up to three blue or red LEDs in a translucent trackball of your choosing. In addition, iGlow will sell you an already modified mouse—a MacAlly iMouse or Kensington USB Mouse in a Box—for \$49.95 plus \$3.00 shipping.

IGLOW; 408/262-8135, WWW.IGLOW.ORG. LIST PRICE: \$21.

### Alarming Development

PowerBooks are mighty convenient, but the very features that make them so convenient—their small size and easy portability—also leave them susceptible to theft. Other than chaining your PowerBook bag to your body, there is a measure you can take to make your PowerBook more secure: the Targus Defcon 1, a small alarm that attaches to your PowerBook or PowerBook bag.

The Defcon 1, an alarm about the size of a cellular telephone, offers two types of protection. You can attach it to the security slot on your PowerBook, run Defcon 1's cable through the hole in the adapter, and lock the cable. If someone attempts to cut the cable, a screeching alarm sounds. The device also carries a motion alarm. If the Defcon 1 detects more than a few seconds of motion, it yells its head off. Note: The device is not sturdy enough to protect against prying thieves with sledgehammers. TARGUS; 714/523-5429, WWW.TARGUS.COM. COMPANY'S ESTIMATED PRICE: \$50. [m](#)

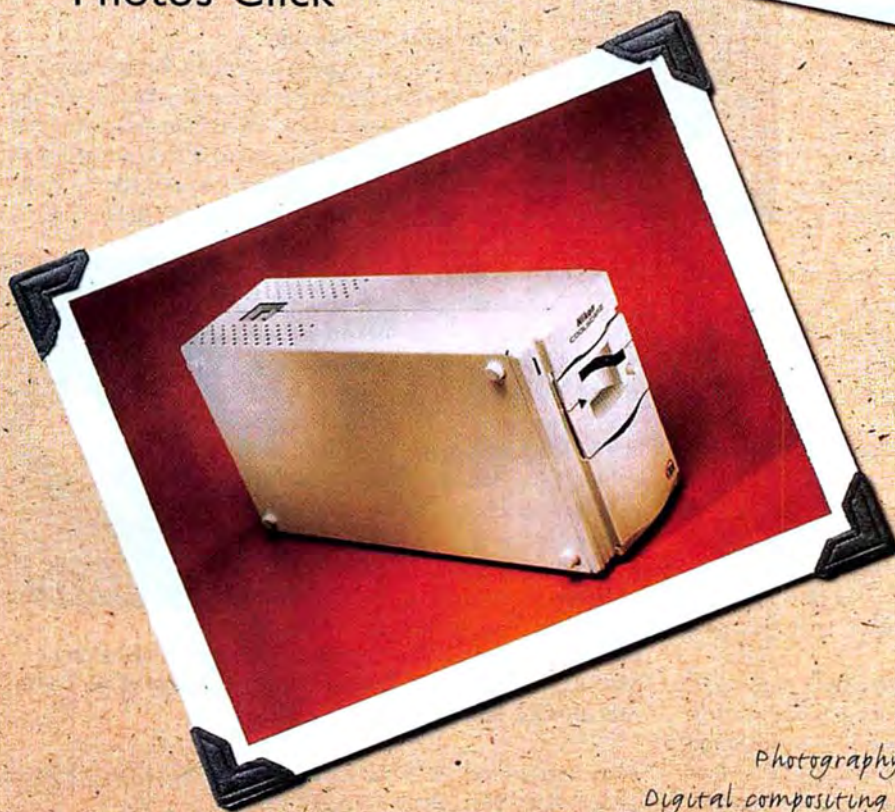
Before you leave the Freak Show, be sure to wave to Macworld's contributing game and iMac freak, CHRISTOPHER BREEN.





# Picture Perfect

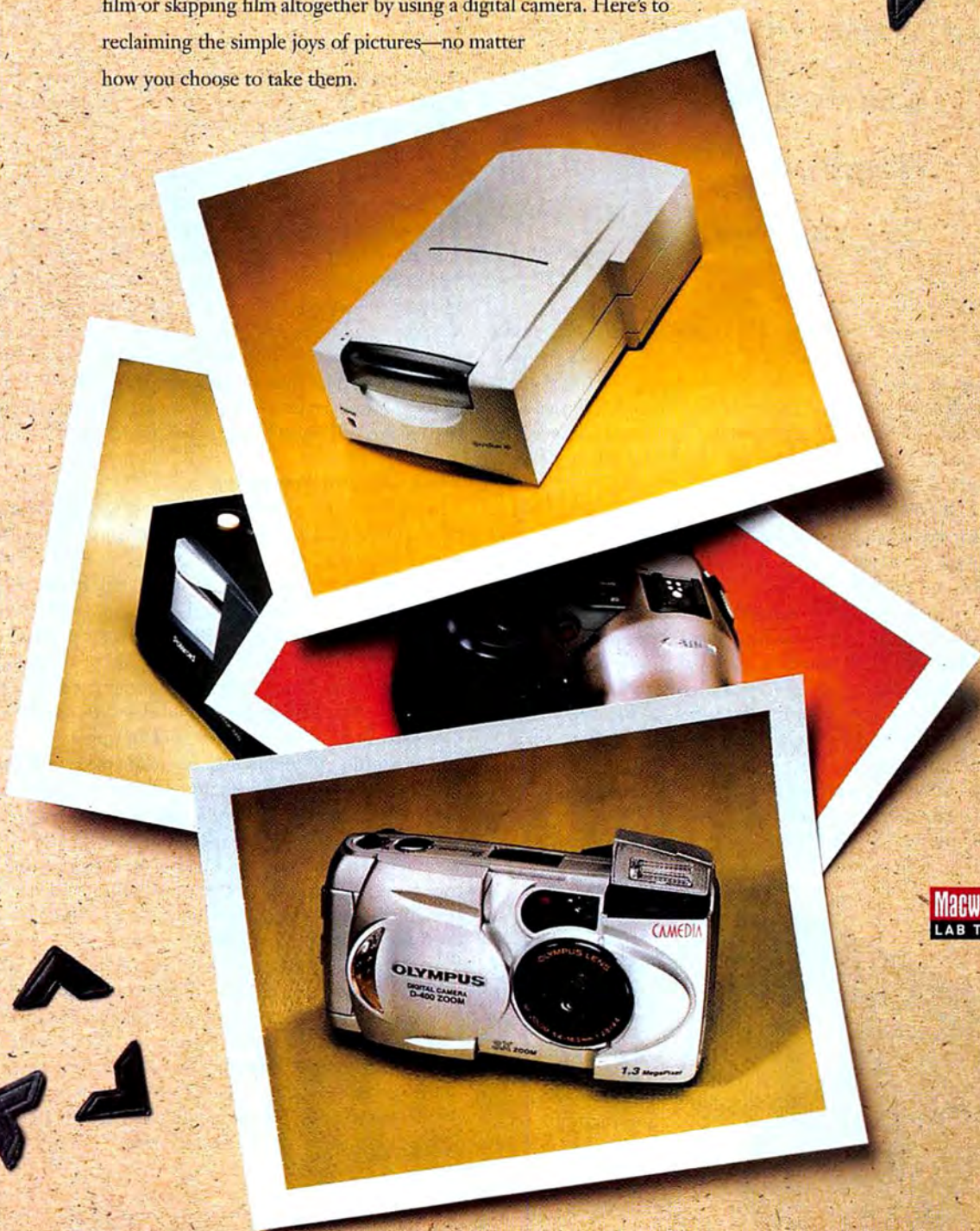
Macworld Lab  
Looks at  
Digital Cameras  
and Scanners  
That Will  
Make Your  
Photos Click



*Photography by Kevin Candland  
Digital compositing by Stephen Sugg*



Sometimes a picture is worth a thousand words—all of the four-letter variety. After all, snapping the perfect shot is only the first step. If you want to post it on the Web or print it on a birthday card or in a magazine, you've got to get it into your Mac. You could shoot your pictures, take your film in, get it developed, make prints, and then scan each and every one. Or you could try a less stress-filled route: scanning your film or skipping film altogether by using a digital camera. Here's to reclaiming the simple joys of pictures—no matter how you choose to take them.



Macworld  
LAB TEST



# Digital Cameras Develop

## These 14 Megapixel Cameras Will Help You Get the Picture

Everywhere you look, ads for software and computers celebrate the benefits of doubling: "Double the processing power!" "Twice the capacity!" "100 percent faster download times!" Yet somehow, once you're sitting at your desk, these leaps don't translate into equivalent increases in personal efficiency: you don't work twice as fast, nor is your work twice as good as it was before.

This isn't the case with digital cameras. When a digital camera captures twice as many pixels, you see the results. You really do get twice as much information, two times as much detail, and double the clarity. There's nothing theoretical about it—the results are right there in the photograph.

When we looked at digital cameras last year (see "Focus On," October 1998), the first of the \$1,000-and-under cameras had just broken the so-called megapixel barrier, capturing 1 million pixels or more per shot. This year, the number of pixels keeps climbing. One camera in our roundup, Nikon's \$999 Coolpix 950, packs more than 2 million pixels into each picture. Although earlier cameras have claimed to capture 1,600 by 1,200 pixels, they did so with the help of digital inter-

polation (adding pixels they hadn't really captured). The Coolpix 950 is the real thing, the first two-megapixel camera that costs less than a new iMac.

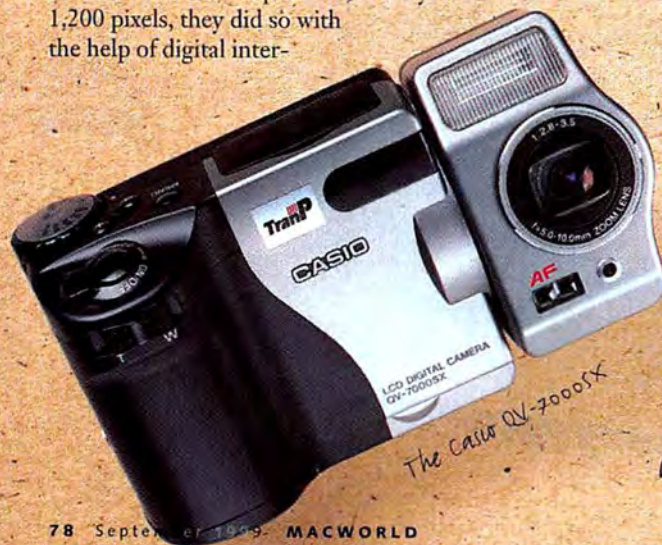
This is a bigger deal than you might think. Nikon's 2.11 million-pixel CCD (charge-coupled device) contains as many light-sensitive electrodes as do the image sensors in some professional-level cameras. For example, Kodak's popular DCS 520 captures several thousand pixels *fewer* than the \$999 Nikon, yet it costs \$14,995. Admittedly, the DCS 520 and its ilk offer features the simple Coolpix 950 lacks, but it's safe to say the Coolpix 950 breaks new ground. It's as if, despite their differences, the Coolpix 950 and professional-level DCS 520 used the same kind of film. Instead of supporting wildly divergent technologies, these cameras boast similar basic components packaged differently. This is good news for buyers on a budget.

### Weighing and Measuring

The Coolpix 950 isn't the only new camera on the market. In all, we looked at 14 megapixel cameras from 11 companies and priced between \$400 and \$1,200 (see the table, "14 Megapixel Cameras Compared," for details). The cameras ranged in weight from the stripped-down, 12-ounce Olympus D-340R (\$399) to the relatively gargantuan, 29-ounce Canon PowerShot Pro70 (\$1,199). Alas, none of these babies are small enough to fit in a shirt pocket; however, you can tuck all except the PowerShot Pro70 and the slightly smaller \$999 Olympus D-620L into a fanny pack or purse.

In addition to evaluating size and expense, we graded the cameras based on image quality, resolution, innovation, and ease of use. After all, if you're buying a camera for professional work, it's important that it capture crisply focused details and accurate color transitions. You also need a responsive camera that powers up and shoots pictures with few delays (see the benchmark, "Snap to It"). At home, the last thing you want to do is wage war with yet another machine, so convenience is king. Straightforward controls, flexible image transfer, and spiffy image quality even in low-light conditions are paramount.

This bushel is not without its bad apples, but although you may want to avoid a few, the group as a whole appears to be heading in the right direction. Two cameras in particular stood out from the crowd. The \$699 D-400 Zoom, from Olympus, is a first-rate camera for home use. Meanwhile, Nikon's Coolpix 950 is perfect for professionals.



by Deke McClelland



## Resolution and Interpolation

Five years have passed since Apple released the \$749 QuickTake 100, the first camera under \$1,000 to capture 640 by 480 pixels in 24-bit color. Thankfully, the state of the art has improved dramatically since then. The least-equipped camera in our roundup, the Olympus D-340R, costs about half as much and captures four times as many pixels as the old QuickTake. The higher concentration of pixels means you can print an image at larger sizes without revealing noise, compression artifacts, and other digital defects.

But today's megapixel cameras don't just capture *more* pixels—they capture *better* ones. Even the \$699 Kodak DC240—which produced the worst pictures of any camera we looked at—manages to capture sharply defined edges, though the colors of those edges are often inaccurate (see the sidebar, “The Proof Is in the Pictures”).

**Sizing Your Snapshots** Of the 14 cameras we looked at, 7 are solid megapixel devices. Their photosensitive CCDs, the digital equivalent of film, capture 1,280 by 960 pixels for a rough total of 1.2 million pixels per image. (The CCD actually captures *more* pixels than this, but some are masked out and don't make it to the picture.) What does this mean in practical terms? At 256 pixels per inch, roughly equivalent to the commercial standard for offset printing, you'll be able to print the pictures you take with these cameras as big as 5.0 by 3.75 inches. Go any larger than that and blocky pixels become visible.

Three cameras—the \$599 Fuji MX-600 Zoom, the Olympus D-620L, and the \$599 Toshiba PDR-M3—add a few pixels vertically, nudging the print size to 5.0 by 4.0 inches. Minolta's \$899 Dimâge EX Zoom 1500 snaps 5.25-by-3.9-inch photos.

The three remaining cameras provide more-substantive enlargements. Canon's PowerShot Pro70 and Kodak's \$999 DC265 capture 1,536 by 1,024 pixels, equivalent to a 6-by-4-inch print. The Nikon Coolpix 950's 1,600 by 1,200 pixels translate to a 6.25-by-4.7-inch photograph—that's 50 percent more picture than you can get from the 1,280-by-960-pixel crowd.

**Inventing Pixels** Sometimes it's not so easy to figure out how many pixels a camera can capture. Agfa's \$799 ePhoto CL50, Epson's \$799 PhotoPC 750Z, and Sanyo's \$899 VPC-Z400 all claim to support resolutions as high as 1,600 by 1,200 pixels, but these cameras are in fact limited to 1,280 by 960 pixels. They all use interpolation to achieve their inflated resolutions. None of the interpolated images held up to the authentic pixels the Nikon Coolpix 950's higher-resolution CCD captured.

## Innovations and Blunders

Three years ago, Casio proved its digital camera could go where no film

camera had gone before by including a color LCD screen. The LCD showed you the exact image projected onto the CCD inside, giving you a more accurate preview than an optical viewfinder would.

This trend continues with advances in LCD, flash, and focus. For example, in addition to providing ultrasmooth LCD image previews, the Agfa, Epson, and Sanyo models allow you to pop the top of the LCD so that sunlight can shine in and back-light the screen. Not only does this conserve power—the LCD is the camera's biggest power draw—but it also brightens the LCD screen when you're shooting outdoors in direct light, conditions under which a synthetically lit LCD is too dim to be visible.

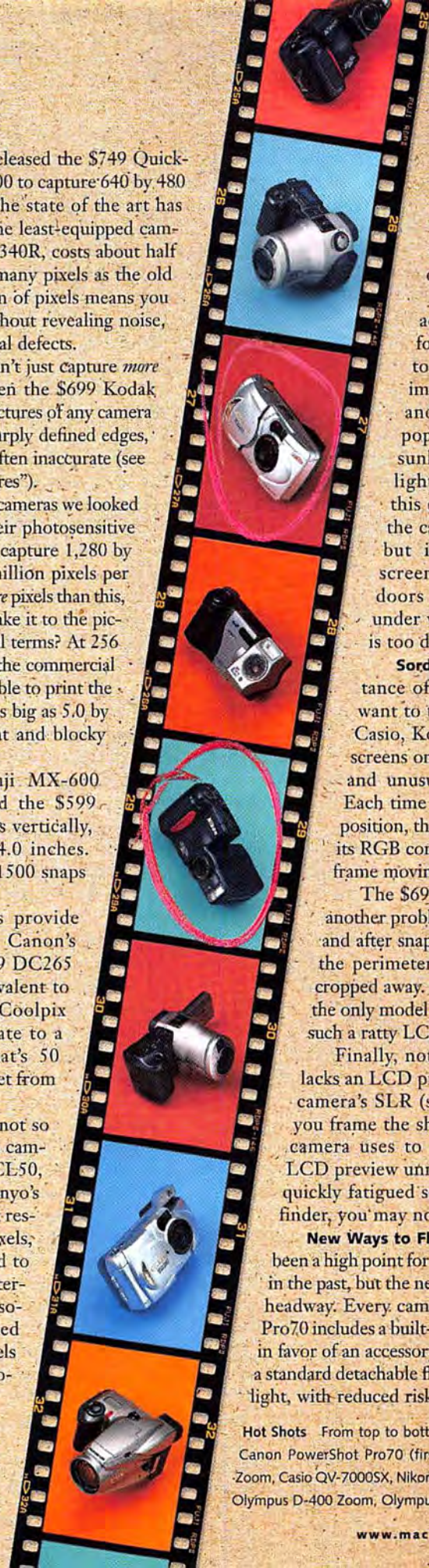
**Sordid LCD Tales** Given the importance of a good LCD preview, you'll want to think twice before buying the Casio, Kodak, or Minolta models. The screens on these cameras are both grainy and unusually sensitive to movement. Each time you shift the camera to a new position, the subject blurs or separates into its RGB components, making it difficult to frame moving and still targets alike.

The \$699 Casio QV-7000SX exhibited another problem—the framing shown before and after snapping a picture didn't match, so the perimeter of the shot appeared to get cropped away. Given the fact that the Casio is the only model that lacks an optical viewfinder, such a ratty LCD is unforgivable.

Finally, note that the Olympus D-620L lacks an LCD preview altogether. Because the camera's SLR (single-lens reflex) design lets you frame the shot through the same lens the camera uses to shoot, Olympus deemed an LCD preview unnecessary. If your eye becomes quickly fatigued squinting through a tiny viewfinder, you may not agree.

**New Ways to Flash** Strobe flashes have hardly been a high point for digital point-and-shoot cameras in the past, but the new models are making important headway. Every camera but the Canon PowerShot Pro70 includes a built-in flash. Canon forgoes the flash in favor of an accessory shoe that allows you to slip on a standard detachable flash unit. This means less-severe light, with reduced risk of red-eye and other snapshot

**Hot Shots** From top to bottom, with Editors' Choice picks circled: Canon PowerShot Pro70 (first complete photo), Olympus D-400 Zoom, Casio QV-7000SX, Nikon Coolpix 950, Canon PowerShot Pro70, Olympus D-400 Zoom, Olympus D-620L.





PICTURE  
PERFECT:  
Cameras

spoilers. You can even select from predefined aperture settings to accommodate different brands of flashes.

Three other cameras—the Kodak DC265, Nikon Coolpix 950, and Olympus D-620L—offer a hot-sync port to trigger an external strobe, which means you can shoot under more-balanced light in a studio setting. In each case, you must purchase the hot-sync cable separately from the manufacturer.

Sometimes you may not want to use a flash at all. For example, low-light shots often look better with no flash than with the harsh lighting of a consumer strobe. In this situation, one camera outperformed the others. When shooting neon at night in Las Vegas, the Olympus D-400 Zoom did the best job of capturing colorful, sharply focused images without the help of a flash or tripod.

**Forays in Focus** LCD and flash aren't the only areas of innovation in digital photography. If you're looking for a camera that can take extreme close-ups, the Olympus D-400 Zoom is good and the Casio QV-7000SX and Olympus D-340R are even better, focusing as close as a finger's length from an object. The best of the bunch is the Nikon Coolpix 950, which can focus from just 0.8 inch away—close enough to capture the individual dots on a computer screen.

The Nikon also boasts the most-sensitive autofocus-ing, with more than 4,000 steps of focus, sufficient to distinguish each millimeter of depth from the next. We spent a lot of time fighting with the autofocus of the Canon Power-

Shot Pro70 and the Olympus D-620L. The Canon camera permits you to take close and long shots alike in its "macro mode," but it frequently gave warnings and failed in low-light environments. The Olympus absolutely refuses to shoot a picture if the autofocus can't lock on the subject, which happens as often as not.

#### Design and Usability

Whether you are shooting a product out in the field or capturing your kid's birth-

day party, you need a camera that's ready to take pictures whenever you are. This means a reliable power supply, quick and easy zoom controls, and lots of expandable storage. Take away any one of these, and you risk having the perfect shot slip off into fleeting memory.

**Never-Ending Need for Power** Unlike film cameras, digital cameras can't work without electricity. Mercifully, eight of the cameras ship with rechargeable batteries, which means you'll not only spend less on disposable cells but you'll also be able to shoot longer on a single charge.

The Epson PhotoPC 750Z, Kodak DC240 and DC265, Minolta Dimâge EX Zoom 1500, and Olympus D-620L ship with four AA NiMH cells and a charger. The Canon, Fuji, and Toshiba models rely on custom batteries. The Fuji and Toshiba cameras let you charge the battery by simply plugging the camera into a wall socket. But the AA cells represent the more flexible solution—if the rechargeable batteries run out of juice, you can toss in a set of disposable ones.

**Telephoto Troubles** All but the Olympus D-340R offer a telephoto lens. The Casio zooms by 200 percent, the Canon by 250 percent, and the others by 300 percent. All zooms are motor-driven, but some are more responsive than others. The Casio and Kodak cameras suffer from "leaping" zooms; the slightest touch of the zoom control has a dramatic effect on the focal length, making fine framing adjustments difficult.

**Storing Your Shots** All 14 cameras provide expandable memory in the form of a SmartMedia card or the more durable CompactFlash card. More memory means you can take more pictures at high-quality settings before you have to return to your computer and transfer the images to disk.

Kodak's DC265 bests the others by shipping with a 16MB CompactFlash card. Epson's PhotoPC 750Z comes in second with an 8MB CompactFlash card and 4MB of flash RAM on board. Canon's PowerShot Pro70 includes an 8MB CompactFlash card and permits you to plug in an optional second card at the same time—helpful if you want to shoot lots of pictures without swapping media.

Most of the other cameras include 8MB of removable memory. The exceptions are the Fuji MX-600 Zoom, Olympus D-340R, Sanyo VPC-Z400, and Toshiba PDR-M3, each of which bundles a 4MB SmartMedia card. The \$399 Olympus D-340R is inexpensive enough to justify the reduced memory, but the others are just plain skimpy. The Sanyo VPC-Z400 is particularly miserly; despite costing \$100 more than its twin from Agfa or Epson, it lets you shoot fewer pictures at a time.

**Giving Serial the Slip** These memory cards are also important for a different reason—the new Macs' lack of a serial port. However, the cards—and the adapters that let you use them with your Mac—are not hassle-free.

The FlashPath adapter lets you transfer pictures from a SmartMedia card using a standard floppy-disk drive. Unfortunately, it's incompatible with Imation's SuperDisk drive, which rules it out for many iMac and new-Power Mac G3 owners.

If your Mac has USB ports, you can purchase a \$99 memory drive. We tested SanDisk's ImageMate (888/216-2489, [www.sandisk.com](http://www.sandisk.com)), which reads and writes CompactFlash cards, and Hagiwara Sys-Com's FlashGate (800/358-7267, [www.hscus.com](http://www.hscus.com)), which does the same for SmartMedia. Both worked fine with every machine on which we tested them.

For PowerBook owners, the best and least-expensive solu-



tion is a PC Card adapter. You can purchase a CompactFlash adapter from SanDisk and several other vendors for \$19. Canon includes a free PC Card adapter with its PowerShot Pro70. A SmartMedia adapter from Olympus, Fuji, or Toshiba costs \$79. None of these require any special drivers or other software.

One last device, Iomega's \$249 Klik drive (800/697-8833, [www.iomega.com](http://www.iomega.com)), lets you copy images from a CompactFlash or SmartMedia card to a 40MB Klik disk. The 6-inch-long drive is smaller than many cameras, making it easier to haul around than a PowerBook. A Klik disk costs about \$10—compared with about \$150 for a 40MB CompactFlash card—so you can store more pictures at a fraction of the price. The

problem is that in order to get the images from the Klik to your hard disk, *you need a PC*. Iomega plans to release a Mac-compatible USB docking station later this year.

### Macworld's Buying Advice

It really makes our job easier when one camera thoroughly trounces its competition. It's not that the other cameras are bad—the Kodak DC265 and Olympus D-620L in particular take great pictures—it's just that the Nikon Coolpix 950 is truly exceptional. It captures as many pixels as cameras costing 15 times as much; it can focus on absolutely anything; and it's a whiz at metering light, even in high-contrast settings. The

## 14 Megapixel Cameras Compared

Company	Product	Mouse Rating	Company's Estimated Price	Contact	CCD Resolution <sup>A</sup>	Maximum Image Size <sup>B</sup>	Default Memory	Built-in Flash	Rechargeable Batteries with Charger	MACINTOSH CONNECTIVITY			REMOVABLE-MEDIA FORMAT	
										Serial	PC Card/FlashPath	USB	SmartMedia 3.3V	CompactFlash
Agfa	ePhoto CL50	★★★½	\$799 <sup>C</sup>	888/281-2302 <a href="http://www.agfahome.com">www.agfahome.com</a>	1.31	1,280 × 960	8MB	●	○	●	○	○	●	○
Canon	PowerShot Pro70	★★½	\$1,199	800/652-2666 <a href="http://www.powershot.com">www.powershot.com</a>	1.68	1,536 × 1,024	8MB	○	● <sup>D</sup>	●	● <sup>E</sup>	○	○	●
Casio	QV-7000SX	★★	\$699 <sup>C</sup>	800/836-8580 <a href="http://www.casio.com">www.casio.com</a>	1.32	1,280 × 960	8MB	●	○	●	○	○	○	●
Epson	PhotoPC 750Z	★★★★	\$799	800/463-7766 <a href="http://www.epson.com">www.epson.com</a>	1.30	1,280 × 960	12MB <sup>F</sup>	●	● <sup>G</sup>	●	○	○	○	●
Fuji	MX-600 Zoom	★★★	\$599	800/800-3854 <a href="http://www.fujifilm.com">www.fujifilm.com</a>	1.50	1,280 × 1,024	4MB	●	● <sup>D</sup>	●	○	○	● <sup>H</sup>	○
Kodak	DC240	★★½	\$699	800/235-6325 <a href="http://www.kodak.com">www.kodak.com</a>	1.31	1,280 × 960	8MB	●	● <sup>G</sup>	●	○	●	○	●
	DC265	★★★★	\$999	800/235-6325 <a href="http://www.kodak.com">www.kodak.com</a>	1.60	1,536 × 1,024	16MB	●	● <sup>G</sup>	●	○	●	○	●
Minolta	DimAge EX Zoom 1500	★★	\$899	201/825-4000 <a href="http://www.minoltausa.com">www.minoltausa.com</a>	1.50	1,344 × 1,008	8MB	●	● <sup>G</sup>	●	○	○	○	●
<b>EDITORS' CHOICE</b>														
Nikon	Coolpix 950	★★★★½	\$999 <sup>C</sup>	800/526-4566 <a href="http://www.nikonusa.com">www.nikonusa.com</a>	2.11	1,600 × 1,200	8MB	●	○	●	○	○	○	●
Olympus	D-340R	★★★	\$399	800/347-4027 <a href="http://www.olympus.com">www.olympus.com</a>	1.31	1,280 × 960	4MB	●	○	●	○	○	●	○
	<b>EDITORS' CHOICE</b>													
	D-400 Zoom	★★★★	\$699	800/347-4027 <a href="http://www.olympus.com">www.olympus.com</a>	1.31	1,280 × 960	8MB	●	○	●	● <sup>I</sup>	○	●	○
Olympus	D-620L	★★★½	\$999	800/347-4027 <a href="http://www.olympus.com">www.olympus.com</a>	1.41	1,280 × 1,024	8MB	●	● <sup>G</sup>	●	○	○	●	○
Sanyo	VPC-Z400	★★★	\$899 <sup>C</sup>	818/998-7322 <a href="http://www.sanyodigital.com">www.sanyodigital.com</a>	1.31	1,280 × 960	4MB	●	○	●	○	○	●	○
Toshiba	PDR-M3	★★★	\$599	949/461-4970 <a href="http://www.toshiba.com">www.toshiba.com</a>	1.50	1,280 × 1,024	4MB	●	● <sup>D</sup>	●	○	○	● <sup>H</sup>	○

● = yes; ○ = no. <sup>A</sup> In millions of pixels. <sup>B</sup> In pixels, excluding interpolation. <sup>C</sup> List price. <sup>D</sup> Custom cell charges inside camera. <sup>E</sup> PC Card. <sup>F</sup> Includes both expandable and on-board memory. <sup>G</sup> Standard NiMH AA cells. <sup>H</sup> Also supports SmartMedia 5V. <sup>I</sup> FlashPath.

For an expanded version of this table, see Macworld Online, at [www.macworld.com/1999/09/features/](http://www.macworld.com/1999/09/features/).



PICTURE  
PERFECT:  
Cameras



*Agfa ePhoto CL50*



*Canon Powershot Pro70*



*Casio QV-7000SX*



*Epson PhotoPC 750Z*



*Fuji MX-600 Zoom*



*Kodak DC240*



*Kodak DC265*



*Minolta Dimâge EX Zoom 1500*



# The Proof Is in the Pictures

**T**he most important measure of any digital camera is the quality of its photographs. Unfortunately, this also happens to be the hardest criterion to judge.

If you shoot a scene with a group of cameras and compare the images uncorrected, all you'll discover is the camera that works best with one particular computer setup. Whether that camera will work equally well with *your* system is anyone's guess.

Because none of these cameras automatically embeds color profiles, there's no way for a piece of software to "develop" the photograph automatically so it looks its best from one system to the next. I did the next-best

thing: After shooting five photographs of a still life with each camera at its highest-quality setting, I selected the best image from each and developed it manually inside Photoshop. I limited myself to gamma adjustments—applied equally to all channels—and uniform applications of Unsharp Mask. The results, shown here, better represent what a reasonably informed Mac user can expect to achieve.

Even under controlled conditions, the images developed quite differently. Several cameras read the grape iMac mouse as blue instead of violet. Also worth noting, the mouse pad should be emerald green, not teal. The background contains the

grays and browns shown in the Kodak DC265 photograph, not the yellow of the DC240 photo or the reds the Fuji MX-600 Zoom and Toshiba PDR-M3 invented.

More worrisome than these color shifts—which are to varying extents correctable—are occasional omissions of detail. The Kodak DC240 was the worst offender, erasing the border between the cup and the neighboring daffodil petals. The image from the Canon PowerShot Pro70 is rife with flat hot spots. The Casio and Minolta images suffer from too much contrast; each sacrifices definition in the shadows behind the cup and the light areas inside the flowers.

The Agfa, Epson, and

Sanyo models all performed very well, with the Olympus D-340R just a bit soft. The Olympus D-400 Zoom deserves special commendation for outstanding attention to crisp detail and tactile modeling, as does the Olympus D-620L, although its colors are slightly jaundiced.

The Kodak DC265 is the champion of color accuracy, nailing the distinction between the warm white of the daffodils and the cool white of the cup. But the clear overall winner is the Nikon Coolpix 950. If you enlarged each of these images to poster size, you'd see an attention to authentic form and detail in the Nikon photograph that the others can't match.



*Nikon Coolpix 950*



*Olympus D-340R*



*Olympus D-400 Zoom*



*Olympus D-620L*



*Sanyo VPC-Z400*



*Toshiba PDR-M3*



PICTURE  
PERFECT:  
Cameras



Coolpix 950 is so good, in fact, that it will easily stand up against many of the competing two-megapixel cameras scheduled for release later this year.

If convenience and ease of use are paramount, several cameras fit the bill. We really appreciated the solar-aided LCD, wealth of memory, and rechargeable batteries the Epson PhotoPC 750Z provided. It's also the only device to include a power lock, so you can't accidentally turn it on. The similar Agfa ePhoto CL50 lacks rechargeable batteries, but its menu and zoom controls were easier to work with.

But if you had to pick one camera to take on a social occasion, it would be the one that would get the right shot without any fuss: the Olympus D-400 Zoom. Its compact design, smooth LCD display, low light requirements, and first-rate image quality give it an edge. Plus it ships with a FlashPath adapter, making it the only camera other than the Canon and Kodak models to provide a way to download pictures to your computer without resorting to the serial connection.

After all, the days of tethering digital cameras to a Mac are over. Now you can shoot your picture, remove the film card, and stick the card in your computer. At last, the camera works just like any another removable-media drive—one that sees and records the world. **m**

Contributing Editor DEKE McCLELLAND is the author of *Real World Digital Photography* (Peachpit Press, 1999).

## EDITORS' CHOICE

### Best Professional Camera

★★★★½ Nikon Coolpix 950 Professional-level resolution, light metering, and focus options put this camera head and shoulders above the rest. **Company:** Nikon (800/526-4566, [www.nikonusa.com](http://www.nikonusa.com)). **List price:** \$999.

### Best Personal Camera

★★★★ Olympus D-400 Zoom Of all the cameras tested, this one was the most likely to get a good shot with the least amount of fuss. **Company:** Olympus (800/347-4027, [www.olympus.com](http://www.olympus.com)). **Company's estimated price:** \$699.

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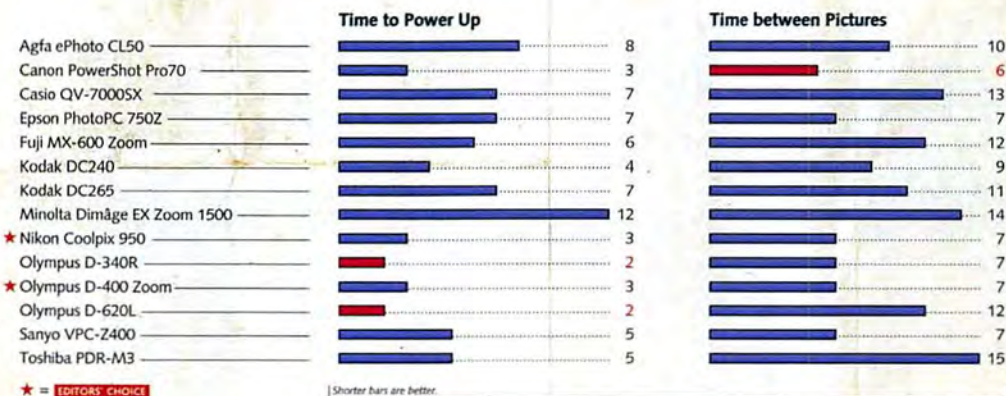
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## Snap to It

Digital cameras may be filmless, but they're not all fast in the field. For instance, Toshiba's PDR-M3 makes you wait more than twice as long between taking pictures as Canon's PowerShot Pro70. Both our Editors' Choice picks offer less frustration per frame.

Best results in red. All times in seconds.



### Behind Our Tests

Times were recorded at each camera's highest resolution with the flash on. Power-up time indicates the period between turning the camera on and when it's ready to take a picture. Time between pictures indicates the period between pressing a camera's shutter button and when the camera is ready to take another shot.—Macworld Lab testing supervised by Gil Loyola



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# Slide Scanners

# Show Off

## Take Your Film

## Digital in a Flash with These 7 Scanners

**T**he process of capturing images is, in large part, a matter of throwing visual information away. You start with the scene you see with your eyes, which contains all the light, shade, and color of the real world. Next you reduce it to what film can see—details fall from the highlights, and shadows thicken. If you then make prints, you throw away still more because a negative contains much more subtlety of tone and color than you can reproduce in any single print.

What happens when you make *digital* edits on a 24-bit image? You throw away more information. This may sound scary, but it's a normal and necessary part of image

reproduction. The trick is to throw away only what you don't need and to not throw anything away until you must. Consequently, when they need the best, most graphics and prepress pros scan *film* rather than prints because film contains much more visual information.

Although flatbed scanners have become much more capable at scanning slides and color negative film (see "Scan In," October 1998), you'll generally get better results from a dedicated film scanner. Why? Film scanners capture a wider range of light and shadow, or *dynamic range*, than flatbed scanners do. If you're scanning 35mm film, you also benefit from the much higher resolutions available with film scanners, since your original piece of film is so small.

We looked at seven film scanners, ranging in price from less than \$1,000 to around \$17,000. (See the table, "7 Slide Scanners Compared," for details on each model.) Four are strictly 35mm scanners, three handle medium-format film as well as 35mm, and two of the latter handle formats as large as 4 by 5 inches. Each of these scanners hooks up to a Mac with a SCSI connector, so if you have a new blue Power Mac G3 you'll need to get a SCSI card (see "Generation Gap," August 1999). To test the scanners, we scanned the same difficult image with each and asked a panel of experts to evaluate the results. We also gave each scanner's software a workout to see which package is truly worth your time.

### Checking Specs

A scanner's most basic abilities are determined by its hardware. The two most important numbers to check out on a spec sheet are dynamic range (often represented by a *Dmax* value) and resolution, in that order.

**Dynamic Range** The scanners in our roundup claim dynamic ranges from 3.0 to 4.1. This means that each unit can capture a wide enough range of light and shadow to do color negatives justice.

The scanners we looked at from Imacon, the \$11,995 FlexTight Photo and the \$16,995 FlexTight Precision II, boast a massive dynamic range of 4.1, the highest we've seen in a desktop scanner. This means they're capable of handling virtually any quality of film you can throw at them.

by Bruce Fraser





Most of the others—Minolta's \$1,095 Dimage Scan Speed, Nikon's \$1,899 Super Coolscan 2000, and Polaroid's \$9,995 SprintScan 45 Pro and \$2,495 SprintScan 4000—cluster in the 3.4-to-3.6 range. The exception is Nikon's \$999 Coolscan III. Its dynamic range of 3.0, although satisfactory for many purposes, is inadequate for scanning higher-contrast slides. In theory, there should be a significant difference between a dynamic range of 3.4 and 3.6, but in practice we found that the scanners in the 3.4-to-3.6 range offered similar performance.

**Resolution** When scanning 35mm film, these scanners offer resolutions from 2,700 to 5,760 dpi. (To put this in perspective, most midrange flatbed scanners scan at around 1,000 or 2,000 dpi.) Even the lowest resolution in this group is enough to reproduce a 35mm original at tabloid size with magazine quality.

At the high end of the scale, the Imacon FlexTight Precision II offers an impressive optical resolution of 5,760 dpi for 35mm film. It drops to 1,800 dpi for 4-by-5 film, but this is still quite high quality. Polaroid's new SprintScan 4000 scans at 4,000 dpi. The Imacon FlexTight Photo scans both 35mm and medium-format film at 3,200 dpi.

The Polaroid SprintScan 45 Pro has an optical resolution of 2,000 by 4,000 dpi. The other scanners' resolutions are represented by only one number because as the scanning head in those units moves along the image, it captures the same number of pixels in a row as it does rows of pixels. The SprintScan 45 Pro is different. Its resolution is represented by two numbers because it interpolates (adds some pixels digitally instead of capturing them). We found that it produced rather soft scans from 35mm as a result. The Minolta Dimage Scan Speed has a rather strange resolution of 2,829 dpi. In practice, we found that this resolution offered little or no advantage over the 2,700 dpi of the Nikon Coolscan III and Super Coolscan 2000 scanners.

**Extra Innovations** Three of the scanners offer a few extra hardware innovations. Both the Imacon units feature very clever magnetic film holders that bend around a drum in the scanner so that the film plane is always exactly at the point of

focus. The holders won't damage your film and are very easy to load and unload. In addition, the Imacon scanners have a feature called Adaptive Light, which slows the scan so that more light gets pumped through the film for very dense originals. Each also has a built-in light box.

Nikon's Coolscan III and Super Coolscan 2000 feature a surface-defect-removal technology called Digital ICE, which effectively removes dust and all but the deepest scratches from scans. This isn't just a clever software routine—Digital ICE scans the film with invisible wavelengths that actually allow it to see through surface defects to the underlying image, using special hardware in the scanner to do so.

### Seeing Is Believing

The best way to judge a scanner is by the image it produces, so we tested this group with an image designed to be a scanner operator's worst nightmare. Our image contained strong saturated colors and delicate pastels. There were also flesh tones, food, metal, and complex near neutrals.

We produced scans with each scanner's intelligent-agent software. In addition, we created scans by hand to approximate the experience a fairly seasoned user might have. We then gave the scans to a jury of color experts who evaluated color fidelity, shadow detail, neutral reproduction, and sharpness. For details about the quality of these scans, check out the sidebar, "See for Yourself."

**Hassle-Free Quality** In particular, we obtained good—if not outstanding—results with Nikon's Super Coolscan 2000 and with Imacon's FlexTight Photo and FlexTight Precision II. We also achieved these results without much hassle. These three scanners all had robust support for Apple's color-management software, ColorSync, and this added up to significant time savings. By using the color profiles that came with the scanners, we were able to get consistent color. We configured each of these scanners to scan into Adobe RGB (Photoshop 5.0's preferred color space) and then converted the scan to our proofer profile in Photoshop, with no manual color adjustments.

**Color Confusion** This was not the case with the other scanners in our group. Like most Mac users who would be in the market for a scanner such as the ones we tested, we used Photoshop 5.0.2 (800/833-6687, [www.adobe.com](http://www.adobe.com)) as our main imaging application, and we quickly found that the majority of scanner drivers aren't yet up to speed on Photoshop's new color architecture. (For a

**Film Stars** From top to bottom, with Editors' Choice pick circled: the Minolta Dimage Scan Speed, Imacon FlexTight Photo, Nikon Super Coolscan 2000, Minolta Dimage Scan Speed, Polaroid SprintScan 4000, Imacon FlexTight Photo, and Nikon Super Coolscan 2000.





*Drum scan (reference)*



*Imacon FlexTight Photo*



*Imacon FlexTight Precision II*



*Minolta Dimage Scan Speed*



*Nikon Coolscan III*



*Nikon Super Coolscan 2000*



# See for Yourself

**T**he ultimate test of any scanner is the image it produces. Unfortunately, this is a difficult thing to judge, because everyone sees images a little differently, particularly when that image is as complex as the one we used for our testing.

Simply scanning with default settings rarely produces satisfactory results. You have to make compromises (and manual adjustments), so the biases and skills of the scanner operator always become part of the equation. This is typical of how things work in the real world—images often go through at least two rounds of scanning and proofing before sign-off. Some scanners do a lot better job with less work, however, and in our roundup they were the scanners that fully support ColorSync.

To get an idea of the scanners' capabilities, we asked a panel of experts to evaluate several scans from each one, including the images you see here. No

scanner could reasonably be expected to reproduce this photo perfectly, but the Minolta Dimage Scan Speed missed on several counts, with oversaturated colors; blocked-up shadows; and a strong red color cast that is visible in the woman's face, the orange, the yellow peppers, and the shadows on the table.

Polaroid's SprintScan 4000 had a greenish cast, as you can see in the flesh tones. The SprintScan 45 Pro had a magenta cast that was particularly evident in the blue tablecloth, which it turned purplish. The SprintScan 45 Pro also lacked sharpness. Both of the Polaroid scanners rendered the red of the table as more of an orange-red. Nikon's Coolscan III oversaturated the image somewhat, as you can see in the tablecloth, the orange, and the peppers, but its main limitation was that it simply lacked the dynamic range to get all the detail in the shadows.

Our most expensive scanners, the

Imacon FlexTight Photo and FlexTight Precision II, both did very well, with very good skin tones and no trace of oversaturation. The vendor-supplied profile tended to block up the shadows slightly, however, as you can see from the dark shadows beneath the peppers. Both scanners have the dynamic range and software features that would allow you to correct this easily.

The Nikon Super Coolscan 2000 displayed some oversaturation but rendered all the hues in the image accurately, with good shadow detail. After another round of scanning and proofing, either of the two Imacon scanners—with their greater dynamic range and full-featured software—would likely produce significantly better results than the Nikon could ever achieve. But given the difference in price, we pick the Nikon as the best all-around value for the money and the best buy for all but the dedicated pro.



*Polaroid SprintScan 45 Pro*



*Polaroid SprintScan 4000*



full discussion of this problem, see "Avoid Photoshop's Color Calamities," *Create*, elsewhere in this issue.) As a result, we were forced to use a tedious, but fairly effective, method to get accurate color. For details, look at "Work-around 2" in the aforementioned article.

Using this strategy, we were able to obtain good results from the Nikon Coolscan III and the Polaroid SprintScan 45 Pro and borderline results from Polaroid's new SprintScan 4000. Only one scanner, the Minolta Dimage Scan Speed, failed to produce a scan that the jury rated acceptable for color fidelity and reproduction of neutrals.

**First Impressions** In the end, none of our scanners received a perfect score from the jury, but it's important to bear in mind that these were all *first* scans. Clients bring different biases to the table and rarely sign off on the first scan they see. We're confident that a second round of scanning that took the jurors' preferences into account could have produced excellent results from any of our top three scanners.

## Using the Darn Things

Although hardware determines a scanner's basic capabilities, the scanner itself is only as useful as the software that drives it. If the scanner software doesn't allow you to preview the image accurately and correct it using the 10-, 12-, or 14-bit-per-channel data it captures internally, you're wasting the benefit of the extra bits.

**All You Could Want** The only truly full-featured scanning software in the bunch is Imacon's ColorFlex 1.8, which drives both the FlexTight Photo and the FlexTight Precision II. ColorFlex functions as a stand-alone application but offers the option of automatically opening the scanned images in any image editor you choose, so it combines the flexibility of scanning directly to disk with the convenience of a Photoshop plug-in.

The software also allows you to specify ColorSync profiles for input, output, and display. And it's the only scanning package of the bunch to let you embed the output profile in

## 7 Slide Scanners Compared

Company	Product	Mouse Rating	List Price	Contact	Film Formats	ColorSync-Compatible	Batch Abilities	Optical Resolution <sup>a</sup>	Dmax <sup>a</sup>	Bit Depth	Comments
Imacon	FlexTight Photo	★★★★	\$11,995	888/462-2668 www.imacon-usa.com	35mm, medium format	●	● <sup>c</sup>	3,200	4.1	14	A no-compromise scanner, especially for the serious (and bank-rolled) medium-format shooter.
	FlexTight Precision II	★★★★	\$16,995	888/462-2668 www.imacon-usa.com	35mm, medium format, 4 × 5; reflective up to size A4	●	● <sup>c</sup>	5,760	4.1	14	Awesome resolution and dynamic range with a price tag to match. A state-of-the-art scanner.
Minolta	Dimage Scan Speed	★★	\$1,095	201/825-4000 www.minoltausa.com	35mm, Advanced Photo System	○	○	2,829	3.6	12	Decent hardware crippled by primitive software.
Nikon	Coolscan III	★★★	\$999	800/526-4566 www.nikonusa.com	35mm, Advanced Photo System	●	● <sup>d</sup>	2,700	3.0	10	Low dynamic range makes scanning slides problematic. Digital ICE technology is a big bonus.
	<b>EDITORS' CHOICE</b> Super Coolscan 2000	★★★★	\$1,899	800/526-4566 www.nikonusa.com	35mm, Advanced Photo System	●	● <sup>d</sup>	2,700	3.6	12	Despite software shortcomings, a very capable scanner. Digital ICE is a big bonus.
Polaroid	SprintScan 45 Pro Multi-Format Film Scanner	★★½	\$9,995	800/432-5355 www.polaroid.com	35mm, medium format, 4 × 5	○	●	2,000 × 4,000 <sup>e</sup>	3.4	12	Decent hardware marred by subpar software that is unacceptable at this price range. Scans appeared rather soft.
	SprintScan 4000 Film Scanner	★★½	\$2,495	800/432-5355 www.polaroid.com	35mm, Advanced Photo System	○	●	4,000	3.4	12	Hardware shows potential, but the software needs a massive overhaul.

● = yes; ○ = no. <sup>a</sup> In dots per inch. <sup>b</sup> Optical density of the densest piece of film the scanner can read, according to the scanner's manufacturer.

<sup>c</sup> Unmounted film only. Number of scans limited by size of holder. <sup>d</sup> For negative strips; multiple slides require optional batch adapter.

<sup>e</sup> Scanner captures image information asymmetrically. It compensates for this with digital interpolation.



the image, which makes the scanner much easier to use in a workflow that includes color management. It offers decent-size monitor previews and a full complement of tools to get the best scan possible. It also lets you scan in raw 48-bit RGB if you prefer to make all your corrections in Photoshop.

**Adequate Offerings** The Nikon Scan 2.0 software is more of a mixed bag. It doesn't embed ColorSync profiles, but it does at least allow you to specify output and display profiles—Photoshop will report that the image has no profile, but you can simply open the image with no conversion, thereby saving time. Unfortunately, the mechanism for doing this is quite confusing and *seems* to work only with the Super Coolscan 2000, not with the Coolscan III.

Nikon Scan also doesn't provide any way to use a custom profile for the scanner, which is limiting both because individual scanners vary and because a single profile won't necessarily handle all film stocks equally. You have to use the profile supplied by Nikon, but it works fairly well.

On the other hand, the Super Coolscan 2000 lets you scan raw high-bit data (the Coolscan III's hardware is limited to only 10-bit data) and also lets you average multiple scans to cut down shadow noise. This latter feature greatly improves the effective dynamic range but results in very slow scans, particularly since the software averages not only the final scan but also the prescan.

**Poorer Options** The other software packages fare much worse. Minolta's scanning software, Dimage Scan Speed 1.0, is very basic indeed and even lacks some Mac keyboard shortcuts. We can really recommend the Dimage Scan Speed only for Web work, where color fidelity is generally a happy accident if it happens at all.

Polaroid's new PolaColor Insight feels like a work in progress. It is certainly simpler and tidier than Polaroid's previous scanner software, but it also lacks some of the earlier software's features.

PolaColor Insight ships with several generic display profiles as well as input profiles for different film stocks. These are, in fact, ColorSync profiles, but instead of actually using ColorSync in the standard way, the software installs these profiles in its own special folder where they're visible only to the scanner software. This means, for example, that if you have a custom profile for your monitor, you can use it only by copying it to this special folder. Moreover, PolaColor Insight has no facility for scanning to a Photoshop working space or for scanning to CMYK. It's annoying to find that the software uses ColorSync profiles while simultaneously sabotaging any attempt to employ a ColorSync workflow.

More troubling is the fact that we got very different results using the automatic settings on the two Polaroid scanners. Using PolaColor Insight's autopilot settings worked pretty well on the SprintScan 45 Pro (which also comes with the more consumer-focused PhotoPerfect Master software, from Binuscan) and quite poorly on the new SprintScan 4000—so poorly, in fact, that although the SprintScan 4000's hardware is quite impressive, we cannot recommend the model until Polaroid improves its software. Reportedly, Polaroid plans to address these shortcomings, but at press time no release date for the next version of the software was available.



### Macworld's Buying Advice

All things considered, the Nikon Super Coolscan 2000 will give you the best scans for your money. Its implementation of ColorSync is rather strange but works well once you've figured it out. In addition, the Digital ICE technology will save you hours of work getting rid of dust spots and scratches.

Depending on your needs and the size of your wallet, however, two other scanners are well worth considering. If you want to make a serious investment in a scanner that will likely represent the state of the art for several years to come, the Imacon FlexTight Precision II is a beautiful—albeit expensive—piece of work. It offers the highest resolution and dynamic range we've seen in a desktop scanner, and it has full-featured software. If you don't need the larger film capability or more than 3,200-dpi resolution on 35mm film, the FlexTight Photo delivers 90 percent of the performance at about two-thirds the price.

The current generation of film-scanning hardware is the best yet, with relatively inexpensive devices producing results that are more than adequate for most image-reproduction processes and certainly good enough for all but the finest-quality offset printing. It's somewhat disappointing to see that the scanner software is lagging behind the hardware, but we're confident that it will catch up eventually. **m**

Contributing Editor BRUCE FRASER is a coauthor of *Real World Photoshop 5* (Peachpit Press, 1998).

### EDITORS' CHOICE

★★★★ Nikon Super Coolscan 2000 Although we have some reservations about Nikon's software, this is a fine scanner for the price. Company: Nikon (800/526-4566, [www.nikonusa.com](http://www.nikonusa.com)). List price: \$1,899.

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# Secrets

## Files without Borders

SECRETS OF THE MAC'S BUILT-IN FILE-CONVERSION TOOLS

by Joseph Schorr

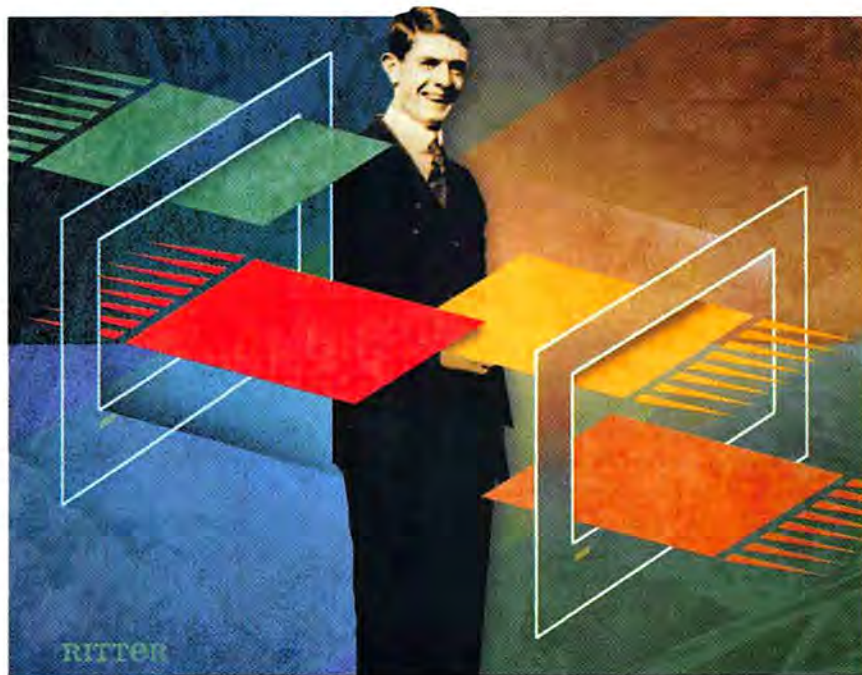
There are two computers on my desk—one Macintosh and one PC—and lately they've been getting along quite well. Part of the reason is that exchanging files has gotten easier with Mac OS 8.5's File Exchange 3.0 control panel. File Exchange has two basic functions—opening a PC file based on the extension used in the file's name (such as .txt or .doc) and determining which program can open a document when the application that created it can't be found.

However, both parts of File Exchange can be used to do much more than open and convert files. Here's how to tap into other aspects of File Exchange's file-handling smarts.

### Streamline the Creation of PDFs

You may think of File Exchange as a tool strictly for crossing from PC to Mac or vice versa, but its ability to link specific document types to specific applications can pay off in other ways—even if you never touch a single PC disk.

One useful trick, for example, is to turn PostScript files into PDFs simply by double-clicking on them. To configure File Exchange for this trick, follow these steps: In the File Translation panel of File Exchange, click on the Add button to open the Add Translation Preference dialog box. Select a PostScript file in the dialog box, and then click on Continue. From the list of applications available to open the file, choose Acrobat Distiller,



and click on OK. (You may have to turn off the Show Recommended Choices Only check box to make Distiller appear as a choice in the window.) You'll end up with a translation-preference listing like the one shown in "Click to Distill." Now when you double-click on a PostScript file, your Mac will launch Distiller and process the file, no questions asked.

### You Choose the Application

With the help of the PC Exchange window in File Exchange, you can even control which program will open a given file—simply by changing the file's name.

That's because PC Exchange chooses the program it will use to open up a PC file based on the DOS-style extension tacked on the end of the file's name: double-click on a .doc file, and Microsoft Word is launched; double-click on a .xls file, and you get Excel; and so on. Change a file's name to include a different extension, and PC Exchange will fire up a different application to launch it.

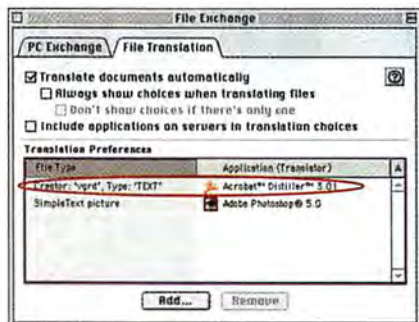
Imagine you have three text files imported from a PC. All three files bear the .txt extension, but one of them is a document created in a word processor,

*continues*



one is a tab-delimited text file exported from a database, and the third is financial data exported from a spreadsheet.

By default, double-clicking will open all three as SimpleText files—readable but not terribly useful. With a few keystrokes, though, you can have each file open in a more appropriate application.



**Click to Distill** This translation preference in File Exchange causes PostScript files to automatically open in Acrobat Distiller, allowing you to turn them into PDF files simply by double-clicking on them.

Add a .fm3 to the name of the second file, for example, and double-clicking on it will launch FileMaker Pro, putting the data into a new database. Change the end of the third file's name to .xls, and the spreadsheet data will open in Excel.

Alternatively, you can choose which program you want to use to open a specific file by turning off the second check box in the PC Exchange window—the one that says Open Unmapped Files On Any Disk Using Mappings Below. With that option turned off, when you double-click on a Windows file, you'll see all the available applications that can open the file. Just pick the one you want to use from the list.

### Control Numerous Files

The previous secret is useful if you have a handful of individual files that need converting, but what if you have dozens—or even hundreds—of files you need to open with a specific program? Instead of adding the correct extension to each file's name, you can create a global translation preference in File Exchange that teaches your Mac to open the files in whatever application you want, regardless of how the files are named.

For example, you could configure File Exchange so that multiple HTML files created on a PC would open directly in a Web authoring program, such as Adobe GoLive. To do this, go to File Exchange's File Translation panel and click on Add. Select one of the PC HTML files (you can just drag one from the Finder straight into the Add Translation Preference window to select it), and click on Continue. From the list of applications available to open the file, choose GoLive, and click on OK. The translation preference will now cause the PC files to open in GoLive (see "Program of Preference").

After you're done editing all those pages, you can change the translation preference again, deleting the GoLive preference and replacing it with a mapping that links the HTML files to, say, Internet Explorer. Now, clicking on the same

Just about everyone knows that a .doc file is a Microsoft Word document. But what exactly is a .pot file or a .ram document? If you mix with the Windows world with some frequency, you'll probably encounter such files and want to know what they are.

In such cases, you can use File Exchange as a miniglossary that serves as a guide to the world of PC extension names. By default, the control panel lists more than 200 different extensions (along with the names of the applications needed to read them). To find out which application belongs to a particular extension, just click on File Exchange's PC Exchange tab and type the first letter or two of the extension in the list. Moments later you'll find out that a .pot file is a PowerPoint template and that those .ram files your friends sent you are Real Player documents.

You can do reverse lookups, too. Need to know what the three-letter PC extension is for a Microsoft Excel template? Click on the Application header in the PC Exchange list, and type the first few letters of the word *Microsoft* to see all the extension entries for Excel—including .xlt for Excel templates.

HTML files will make them open not in GoLive but in Internet Explorer.

Even with these tips, you're still likely to encounter the odd file that takes a little more effort to open, but with File Exchange properly configured, most of the journeys your files take from Windows to the Mac OS should involve little more than a simple double-click. **m**

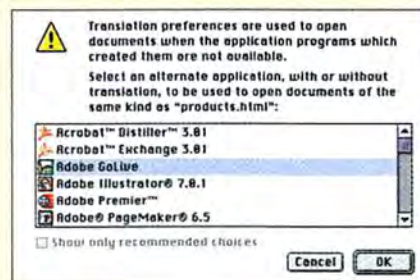
JOSEPH SCHORR is a coauthor of *Macworld Mac Secrets*, fifth edition (IDG Books Worldwide, 1998).

## Program of Preference

Teach File Exchange which program should open which document, by creating new translation preferences.



To set up a new preference, open File Exchange and click on the Add button (not shown). Then, target the file type you want to open—in this case, PC HTML files.



Next, click on Continue and pick the program you want to use to open the file.



The new preference will automatically open the files in the program you chose, without prompting, as long as the second check box (Always Show Choices When Translating Files) is left unchecked.



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## Tips, Tricks, and Shortcuts

by Lon Poole

**L**ove your iMac or blue-and-white G3, but hate its %\$#@! round mouse? Frank Sauer of Reston, Virginia, found a simple way to improve its ergonomics. Buy a tube of Testor's cement for plastic models (number 3501). Put four or five tiny beads of glue on the mouse's equator at the colored-plastic parts, using a toothpick or a straightened paper clip to control bead size. Wait about two hours for the glue to dry. Presto—you now have tactile reassurance that you've grasped the mouse properly and it's pointing in the right direction. The principle is the same as the small guide beads on the surface of the F and J (or D and K) keys on your keyboard: to let you orient your fingers without looking.

If you don't have one of the newer round mice with the dimpled button, try what Troy Danielsen of Wellsville, Utah, recommends: place a single touch-reference dot of ordinary white glue on the mouse button. When dry, the glue becomes translucent, letting the color of the mouse plastic show through.

### Transfer Files to Your iMac

**Q** I'm considering buying an iMac, but how will I transfer all the info from my Performa 6290 (which has only serial, ADB, and SCSI ports) to an iMac (which has only USB)?

SEAN HARRIS  
Columbus, Ohio

**A.** The simplest solution is to buy a Zip drive for each computer, download your files to a Zip disk, and then transfer them. The cheapest solution is to transfer files via the Internet. For example, you can get 25MB of space for just this purpose at [www.freemacspace.com](http://www.freemacspace.com). Caveat: If you have a modem con-

nection to the Internet, consider the hours you'll spend uploading each 25MB from your old Mac and then downloading that 25MB to the iMac.

The most expeditious solution is to connect the two computers via Ethernet (as described in December 1998's *Quick Tips*) and use the Mac OS file-sharing feature to transfer files. Since your old Mac apparently does not have the optional Ethernet port, you must either add one, or attach a LocalTalk connector to the 6290's serial port and bridge

Online, the latest Global Village software, and so on, and put the old modem script named Platinum V Modem Definition in the Modem Scripts folder in the Extensions folder, where it belongs. Now I can connect to AOL, use a little app called Set Clock, and send and receive faxes, but I can't connect via an AppleWorks communications document. The modem dials correctly but can't make a final connection; after the usual squawking sound, it emits a continuous high-pitched tone. I'm stumped.

JIM SCHWALM  
Rockford, Illinois



LocalTalk to Ethernet with a device such as Asanté's AsantéTalk or Farallon's EtherMac iPrint Adapter LT (as illustrated in January 1999's *Quick Tips*).

### Connect Through AppleWorks

**Q.** My Performa 6300CD's internal Global Village TelePort Platinum V modem worked fine until I cleaned up my hard drive. I did a clean installation of Mac OS 8.5.1, AppleWorks 5.0.3, America

**A.** AppleWorks (a.k.a. ClarisWorks) does not use items in the Modem Scripts folder. It uses another item in the Extensions folder called the Apple Modem Tool, which is initially configured for a generic Hayes-compatible modem. You can change the configuration using AppleWorks and your old Platinum V Modem Definition file or a newer modem-definition file (look in Global Village Software: Scripts: GV Modem Defs. for AMT 1.5).

Open your AppleWorks communications document and choose Connection from the Settings menu. In the Connection Setting dialog box that appears, make sure that you have the Method pop-up menu set to Apple Modem Tool, and then choose Modify This Menu from the Modem pop-up menu. In the next dialog box, click the Import button, and then in the following dialog box, select your modem-definition file. Click Open and then Done to get back to the main Connection Setting dialog box, where the Modem pop-up menu now lists the

*continues*





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additional modem definitions. Choose the one that's right for your modem (Global Village tech support should be able to help you determine which one), select the port to which you have your modem connected, and click OK.

### Simulate Missing Keys

**TIP** Do you find yourself missing the end and forward-delete keys on your iMac, blue G3, or older PowerBook keyboard? Here's how to simulate them, using Chris Cummer's \$5 shareware ASCII Shall Receive in conjunction with any commercial or shareware program that lets you assign typed text to a keystroke or function key, such as Connectix's \$60 Speed Doubler 8 ([www.connectix.com](http://www.connectix.com)).

Open ASCII Shall Receive, and choose ASCII from the pop-up menu and then List All from the File menu. Scroll to ASCII character 4; this is the character for the end key. Select this line and control-drag it to the desktop to create a clipping file containing just the character. Open the clipping file and choose Copy from the Edit menu. Open SpeedDoubler 8, select the box that receives the typed text, and choose Paste from the Edit menu. Then specify the keystroke you want to simulate the end key (I used control-page down) and click OK.

Repeat this process for forward-delete by copying ASCII character 127, pasting it into SpeedDoubler 8, and assigning a different keystroke. I assigned F12 to trigger forward-delete, since it's right above the delete key, but control-delete would be another good choice.

MIKE MCKAY  
Youngstown, Ohio

Other keys you may want to simulate on an older PowerBook keyboard: home is ASCII 1, page up is ASCII 11, and page down is ASCII 12.—L.P.

### Eliminate Web Image Gaps

**TIP** When creating a Web page, you can use HTML styles to position two images without a separation. However, HTML styles are complicated and work only in Netscape Navigator and Microsoft Internet Explorer versions 4.X and later. Instead, keep images together

with the `<noabr>` (no break) HTML tag, which older browsers support as well. The `<noabr>` opening tag has a matching `</noabr>` closing tag. Here's an example:

```
<noabr>

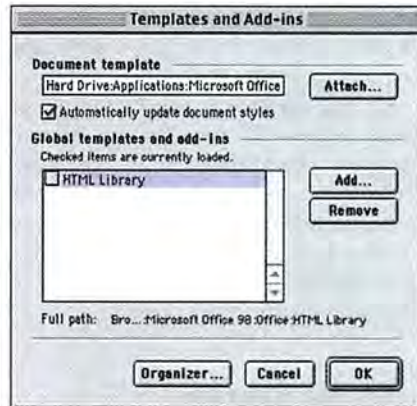
</noabr>
```

You can put text and tables as well as images between `<noabr>` and `</noabr>`, and you can designate discretionary breaks with `<wbr>` tags. But take care not to leave any stray spaces between images or other elements that `<noabr>` and `</noabr>` enclose.

ADOLFO QUEVEDO  
Miami, Florida

### Fix Word's Format Update

**TIP** Microsoft Word 98 has an annoying bug that crops up in documents using an attached template other than Normal. If you selected the Automatically Update Document Styles option when you attached the template via the Templates And Add-ins dialog box, you may find that after you use the



**Repair Word's Format Bug** If you're using the format painter in an attached template other than Normal in Microsoft Word 98, you can restore formatting lost in "unpainted" paragraphs by fiddling with the Automatically Update Document Styles option, shown here.

format painter, some "unpainted" paragraphs lose the attributes of their assigned styles. If this happens, don't panic—you can restore the style formatting to all affected paragraphs by resetting the option. To do this, choose Templates And Add-ins from the Tools menu. In the dialog box that appears, turn off the Automatically Update Document

*continues*





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## SECRETS QUICK TIPS

Styles option and click OK (see “Repair Word’s Format Bug”). Immediately repeat the same steps, this time turning the option back on, and click OK. This should restore your paragraph’s original style formatting.

WILL PEARCE  
Raleigh, North Carolina

*You might also try the Reset Character Formatting command (⌘-shift-Z) and Reset Paragraph (⌘-option-Q). You don’t normally see these commands on any menu, although you can add them to a menu or a tool bar using the Customize command in Word’s Tools menu.—L.P.*

### Adjust Sound-Effects Volume

**TIP** If you have sound effects turned on in the Appearance control panel of Mac OS 8.5 or later and want to change their volume independent of other sounds on your Mac, adjust System Alert Volume in the Alerts section of the Monitors & Sound control panel rather than Computer System Volume in the Sound section.

DANIEL VANWIE  
Whittier, California

### Count Words in Excel

**TIP** Here is a simple approach to counting the number of words in a cell (here, cell F9) of a Microsoft Excel worksheet:

**=LEN(TRIM(F9))-  
LEN(SUBSTITUTE(TRIM(F9)," ",""))+1**

An interesting extension of this formula counts the number of words in a range (here, F9:F16):

**(=SUM(LEN(TRIM(F9:F16))-LEN(SUBSTITUTE(TRIM(F9:F16)," ",""))+1))**

This is an array formula, so don’t type the outer curly brackets; instead, press ⌘-return when you create or edit the formula, and Excel adds them.

SHANE DEVENSHIRE  
Walnut Creek, California

### Quickly Edit Icon Names

**TIP** If you want to edit an icon name, you don’t have to wait several seconds for the text to turn highlighted after you’ve clicked the icon name in the Finder. Instead, just click the



icon and immediately press enter or return to highlight the name.

RICH GLASS  
Brooklyn Park, Minnesota

*In order to set the insertion point at the beginning or end of the name, just perform the actions mentioned above, and then immediately press one of the arrow keys. In order to select a whole name quickly with the mouse alone, simply click the name and as soon as you release the mouse button move the mouse slightly.—L.P.*

### Connect Invisibly

If your Mac has the Control Strip, you needn't launch the Remote Access or PPP control panel to avoid the modal dialog box that blocks other work while connecting or disconnecting a dial-up Internet connection (as suggested in July 1999's *Quick Tips*).

James A. Baker of Murfreesboro, Tennessee, was the first of several readers to point out that the Remote Access module, which is standard on the Control Strip in Mac OS 8.5 and later, has Connect and Disconnect commands that work invisibly. If you use Mac OS 8.1 or earlier, Catherine Hummel of Hollywood, Maryland, suggests that you install OTPPP Strip, a free Control Strip module by Simeon Leifer (<http://u1.netgate.net/~simeon/software.html>); no waiting, no window!

If your Mac doesn't have the Control Strip, you can install it by doing a custom installation of Mac OS 7.6 through 8.1.

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, 1999).

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

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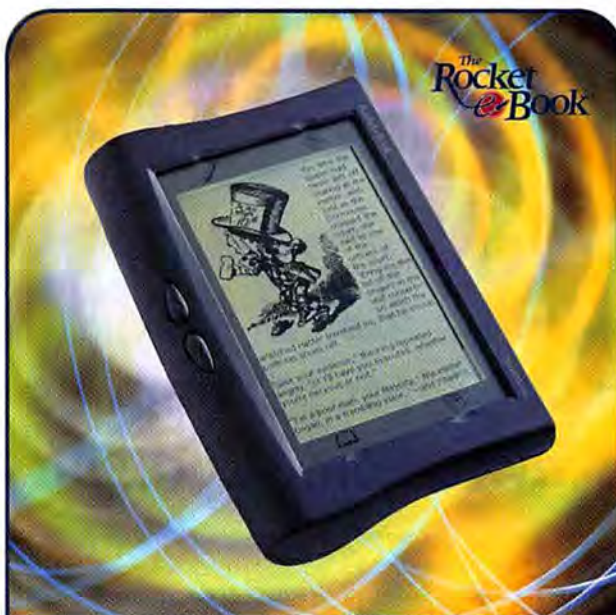
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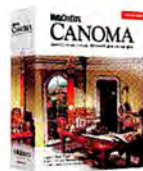
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## Avoid Photoshop's Color Calamities

HOW TO NAVIGATE AROUND PHOTOSHOP'S RGB COLOR-SPACE PITFALLS

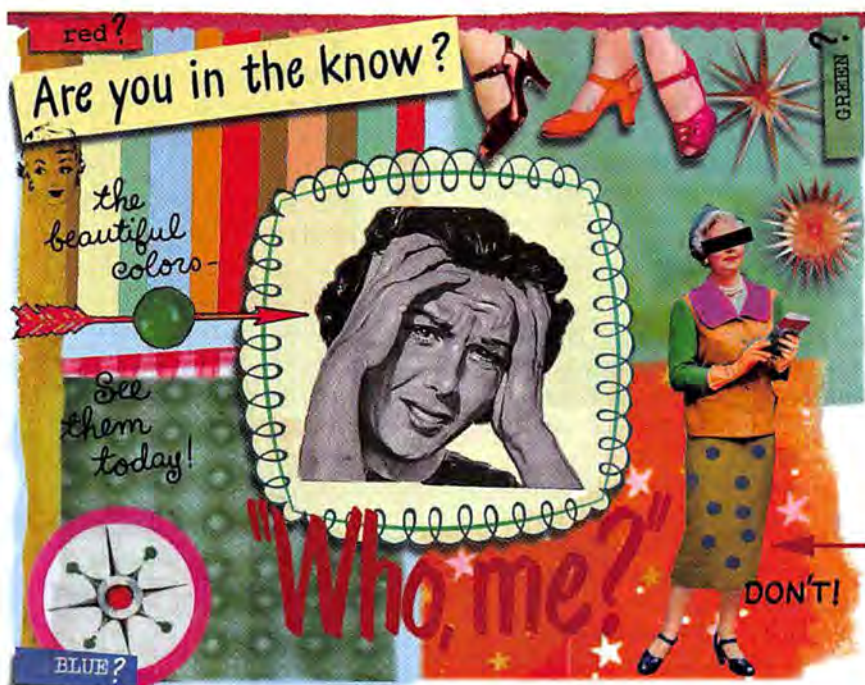
by Bruce Fraser

**D**esktop color-management technologies give designers the possibilities of superior color control—but also some serious headaches. A prime example is one of the more controversial color-management features of Adobe's Photoshop 5: the adoption of RGB color-space definitions that are not based only on your monitor. This was a great leap forward for color on the desktop (see the sidebar, "Why Use RGB Color Spaces?"), but created problems with most scanner-driver software on the market. As a result, the image you see in your scanner software often looks different when it arrives in Photoshop. So how can you reconcile the two, end up with an image that has the colors you want, and make sure they stay that way?

### A Troubling Mismatch

Most scanner software does not yet take advantage of Apple's ColorSync color-management technology, and simply sends your image's RGB values directly to your monitor. (If you're fairly new to color management or you aren't sure how ColorSync works, check out Apple's ColorSync Web site at [www.colorsync.com](http://www.colorsync.com).) Photoshop 5, however, interprets these RGB values according to the settings you've made in the RGB Setup dialog box and uses your ColorSync System Profile to transform the values that get sent to your monitor (see the screen shot "Your Monitor's Profile"). This disagreement between Photoshop and your scanner software creates color havoc—how can you tell what your image will *really* look like?

You have a number of options for avoiding the color-fidelity problems that arise when you're scanning into Photoshop 5. For one, you can just



hobble Photoshop 5 by using your monitor RGB as Photoshop's RGB workspace, but this isn't a great idea (see "Workaround 1: Downgrade Photoshop 5," below)—plus it defeats part of the purpose of upgrading to Photoshop 5 in the first place.

Other options let you reap the benefits of Photoshop 5's advances but involve a little more effort with your scanner software. For example, sometimes your best bet may be to do the bulk of your editing in the scanner software (see "Workaround 2: Correct the Prescan Image," below). Most scanners can capture more than 8 bits per channel but are limited to 8 bits on output. You can obtain significantly better quality by making as many of your large edits as possible in the scanner software, where

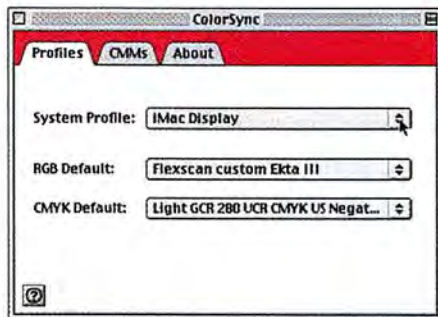
you'll have more data and more detail to work with, rather than editing the reduced data in Photoshop.

When you edit the high-bit data in your scanner software, you still end up with a full 256 levels per channel in the final 24-bit image. But when you edit this image in Photoshop, you immediately start to lose some of the possible levels in each channel (see the screen shot "Image Quality Control"). For example, when you make tone or color corrections on a 24-bit image, some levels that were formerly adjacent get stretched apart. If they get stretched too far apart, you start to see obvious jumps of color instead of smooth gradations—a phenomenon called *posterization*. Similarly, some levels that were formerly

*continues*



apart get squashed together, resulting in loss of detail. So there's a significant advantage to editing the high-bit data in the scanner software instead. But then again, if the scanner soft-



**Your Monitor's Profile** To use a custom monitor profile on your Mac, you must load it in the ColorSync control panel as the System Profile. (Currently, only AppleScript uses the RGB Default and CMYK Default settings, so if you aren't scripting ColorSync conversions, you can ignore them.)

ware displays the image differently than Photoshop, you may wind up with an image that looks beautiful in the prescan display but awful in Photoshop.

If your scanner has a color profile, you can use that to convert the color values to those in Photoshop's RGB profile (see "Workaround 3: Convert from Your Scanner Profile," below). But some scanner drivers insist on making automatic corrections and don't let you turn this feature off—in this case it's impossible to create a ColorSync profile for the scanner. To profile a scanner (or any other device), you must be able to keep it in a consistent state; automatic corrections mean that the scanner scans each image differently.

Even better is when your scanner driver allows you to scan to an output profile (see "Workaround 4: Choose Your Output Profile," below). Heidelberg CPS's LinoColor, Imacon's ColorFlex 1.8, LaserSoft's SilverFast, Nikon's scanner software, and Second Glance's ScanTastic all let you do this, and other scanner-software makers are likely to follow suit in future.

The best option of all may be to bring a high-bit image into Photoshop if your scanner software can save high-bit scans (a growing num-

## Why Use RGB Color Spaces?

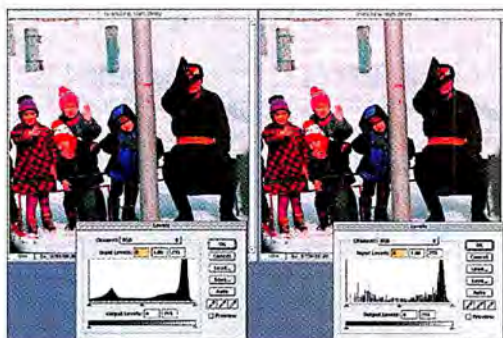
APPLICATIONS WITHOUT COLOR-MANAGEMENT FEATURES SIMPLY send the RGB values in your image directly to your monitor. This creates several problems.

- Since every monitor behaves differently (sometimes a *lot* differently), when you send the same RGB numbers to different monitors, the images don't look the same. Even when you calibrate monitors to the same specifications, it's rare for them to match exactly.
- Monitor color gamut—the range of colors a monitor can reproduce—is generally larger than the gamut of most output devices, including printing presses. However, it's much smaller than the gamut of film, and it also limits some of the colors you can reproduce on a press, particularly cyans, and adjacent blues and greens. If you work in monitor RGB, you limit the range of colors you can capture in your scans, as well as the range of colors you can print.
- Monitors are inherently nonlinear, and their RGB color spaces are *perceptually nonuniform*. This means the same increment of change you gain by using editing tools such as Photoshop's Levels, Curves, or Hue/Saturation may produce varying perceptual changes in different parts of an image's tonal range or color gamut. The same move may result in a barely perceptible change or in a large jump, depending on where you apply it.

Photoshop 5 lets you address all three of these issues by uncoupling the RGB color space from the monitor—it's an arbitrary color space that doesn't depend on the quirks of any particular device. For maximum editing flexibility, you can select a perceptually uniform RGB workspace with a large enough gamut to encompass your devices. Plus, you can standardize on a single RGB workspace for your workgroup and then move files around from one machine to another without worrying about color variations.

By default, Photoshop 5 automatically embeds a ColorSync profile in every image when you save it. When you move the image to another machine, Photoshop knows what actual colors the RGB values represent—or, to put it another way, the program knows what the colors are supposed to look like.

Photoshop's Display Using Monitor Compensation feature (see the screen shot "Downgrading Photoshop") uses the information stored in your ColorSync System Profile to perform a customized on-the-fly conversion of the RGB values in the image file as they're sent to your monitor. This makes it possible for the image to appear the same on everyone's monitor, as long as the ColorSync profile describes your monitor accurately.



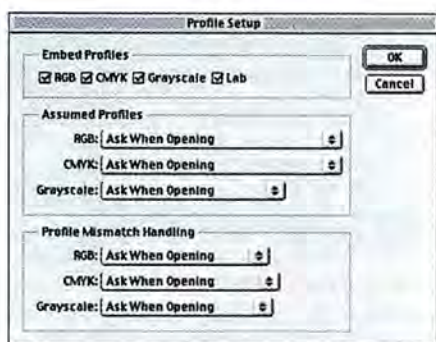
**Image Quality Control** The 16-bit-per-channel image on the right and the 8-bit-per-channel image on the left may look similar, but their histograms show a big difference. The higher-bit image contains a full 256 levels in each channel, but the 8-bit image has lots of missing levels that will cause the image quality to deteriorate under subsequent editing.

ber of scanner drivers can do this). When you save a high-bit scan, you're grabbing all the data the scanner can capture (see "Workaround 5: Import Masses of Raw Data," below). This will create a huge file, but all the image's data will be there for you to edit as needed in Photoshop.

### Choosing a Lesser Evil

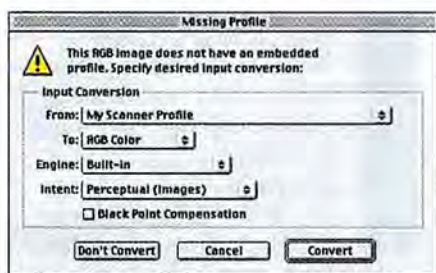
Depending on the capabilities of your particular scanner software, you can use one or more of the workarounds discussed below (presented from least to most desirable) to get around





**Automatic Mismatch Warning** You can make Photoshop's Profile Mismatch Handling feature let you convert an image as you open it. To do this, choose Profile Setup from the File menu's Color Settings submenu. In the Profile Setup dialog box (above), set all the Assumed Profiles settings and Profile Mismatch Handling settings to Ask When Opening.

When Photoshop's Profile Setup is configured like this, you'll see the Missing Profile dialog box (below) when you open a file that has no embedded profile. You can then convert the image into your RGB color space as it opens, instead of using Profile To Profile after the fact.



the mismatch between Photoshop's RGB and your scanner's RGB. At least one of these solutions should work for you.

Note: All the workarounds assume that your scanner driver operates as a Photoshop plug-in. If you scan to disk with a stand-alone application and you have Photoshop set up to warn you of profile mismatches (see the screen shot "Automatic Mismatch Warning"), you can use the Profile Mismatch Handling feature instead of Profile To Profile to make conversions, using the same settings mentioned in each workaround below.

### Workaround 1: Downgrade Photoshop 5

The simplest solution is to make Photoshop 5 behave like older versions of the program. I recommend using this approach only if your scanner software doesn't let you turn off automatic corrections, doesn't support high-bit

export, and doesn't support output profiles—and you can't be bothered to learn to work with the new behavior of Photoshop 5.

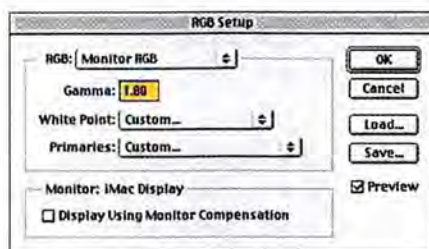
**What to Do** In Photoshop 5, choose RGB Setup from the File menu's Color Settings submenu. In the resulting dialog box, choose Monitor RGB from the RGB pop-up menu, and turn Display Using Monitor Compensation off (see the screen shot "Downgrading Photoshop").

**Pros** The problem disappears, because Photoshop now simply sends the RGB values in the file straight to the screen.

**Cons** The fairly substantial disadvantage is that you lose all the benefits of the RGB color-space approach introduced in Photoshop 5. Your color gamut is limited to what your monitor can display, and your editing space won't be *perceptually uniform* (see "Why Use RGB Color Spaces?" for a definition). Plus, if you send the files to someone else, they'll have to run the files through a conversion process to get them to display properly. And even if they are also using Monitor RGB as their color workspace, it's extremely unlikely that their monitor's color quirks will match yours.

### Workaround 2: Correct the Prescan Image

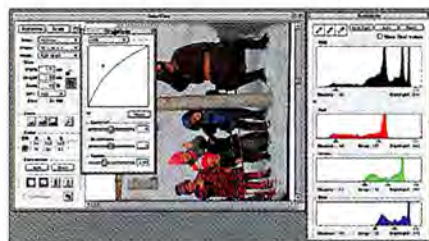
Even if your scanner software doesn't let you turn off automatic corrections, doesn't support high-bit export, and doesn't support output profiles, there's a better solution than downgrading Photoshop 5. If you correct an image based on the prescan, you can make



**Downgrading Photoshop** To make Photoshop 5 behave essentially like Photoshop 4, choose Monitor RGB from the RGB pop-up menu in the RGB Setup dialog box, and then turn Display Using Monitor Compensation off. Photoshop will then simply send raw RGB values to your monitor,

your monitor, not your scanner, the source profile for the image.

**What to Do** Scan as usual, making the image look good in the prescan (see the screen shot "Prescan Editing"). Once the image is in Photoshop, choose Profile To Profile from the Image menu's Mode submenu. In the Profile To Profile dialog box (see the screen shot "Converting Your Monitor Profile"), choose your monitor profile in the From pop-up menu. In the To pop-up menu, choose RGB Color. For the Engine pop-up menu, I generally recommend choosing Built-In, but in most cases you'll get virtually identical results no matter which engine you use. Then choose Perceptual (Images) from the Intent pop-up menu, turn Black Point Compensation off, and click on OK to perform the correction. Once it's done, the image should look the same in Photoshop as it did in your scanner driver.



**Prescan Editing** If your scanner software sends raw RGB values to the monitor, you can use that software to edit the prescan and use the monitor profile to bring the image into Photoshop's RGB workspace.

**Pros** This approach is fairly simple, lets you scan the way you're used to scanning, and allows you to take advantage of most of Photoshop's new color-handling features.

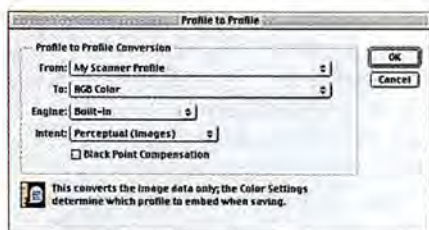
**Cons** The colors in the scan are limited to those your monitor can display. And since the conversion is performed on 24-bit data, you may lose some image quality.

### Workaround 3: Convert from Your Scanner Profile

If you have a profile for the scanner—and the scanner driver allows you to disable all automatic corrections—converting the profile is a more favorable approach.

*continues*





**Converting Your Scanner Profile** To convert an image from your scanner's RGB color space into Photoshop's RGB color space, use Photoshop's Profile To Profile command. Choose your scanner profile in the From pop-up menu, and RGB Color in the To pop-up menu.

**What to Do** Scan the image with no corrections. In Photoshop, choose Profile To Profile from the Image menu's Mode submenu. In the Profile To Profile dialog box (see the screen shot "Converting Your Scanner Profile"), choose your scanner profile in the From pop-up menu, and RGB Color in the To pop-up menu. Then choose Built-In from the Engine pop-up menu, and Perceptual (Images) from the Intent menu. Turn Black Point Compensation off and click on OK. Once the conversion is done, the resulting image should look very much like the original.

**Pros** You can preserve colors that lie outside your monitor's gamut.

**Cons** Since the conversion is performed on 24-bit data, you may lose some image quality.

#### Workaround 4: Choose Your Output Profile

If your scanner driver allows you to choose an output profile, use the Photoshop 5 RGB color space. You can create a ColorSync profile for your RGB workspace by clicking the Save button in Photoshop's RGB Setup dialog box (see the screen shot "Saving a ColorSync Profile"). To make this profile available to other applications and to your scanner software, make sure you save it in your ColorSync Profiles folder, which you can find at the root level of your System Folder.

**What to Do** Scan as usual, making global corrections in the scanner software. When the image lands in Photoshop, it will look the same as it did in the scanner software.

**Pros** You can preserve all the

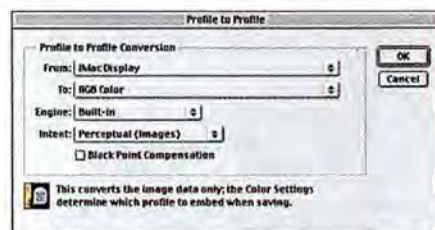
colors your scanner can capture. Plus, you'll get better image quality because the color conversion is performed on the high-bit scanner data rather than the 24-bit final image.

**Cons** You're making all your edits based on a smallish prescan image, so you can't see all the detail in the final scan. Also, your scanner software's tools are most likely not nearly as comprehensive as Photoshop's.

#### Workaround 5: Import Masses of Raw Data

If your scanner driver allows it, bring the raw high-bit scanner data—with no prescan corrections—into Photoshop as a 48-bit RGB file, and make all your corrections in Photoshop.

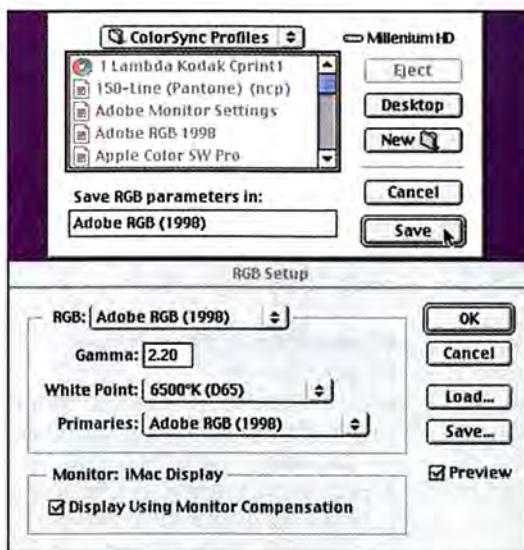
**What to Do** Set the image crop and resolution in your scanner soft-



**Converting Your Monitor Profile** You can convert your image from the Monitor RGB color space into Photoshop's RGB color space using Photoshop's Profile To Profile command. Just choose your monitor profile in the From pop-up menu, and choose RGB Color (which selects whatever color space you've chosen in the RGB Setup dialog box) in the To pop-up menu.

tion image using Photoshop's tools rather than correcting the low-resolution prescan image using the more limited tools scanner software offers.

**Cons** The file size is twice as large (at least initially) as that of a 24-bit image. Once you've done the conversions, you can downsize the image to 8 bits per channel by choosing 8 Bits/Channel from the Mode submenu on the Image menu. However, you could make a good case for archiving the high-bit file for future conversions to output devices, since you'll always get a better result doing the conversions on 48-bit data than you will on 24-bit data.



**Saving a ColorSync Profile** To create a ColorSync profile of your Photoshop workspace, first load the space you want to use in Photoshop's RGB Setup dialog box, then click Save. Save the resulting profile in the ColorSync Profiles folder so that your scanner software (and other ColorSync-savvy applications) can locate and use it.

ware, and bring in all the data you can. If you have a profile for your scanner, you can use Profile To Profile to convert the image from scanner RGB to Photoshop's RGB color space before you make any corrections. This should get the raw image closer to the appearance of the original so you'll have fewer corrections to make.

**Pros** You correct the full-resolu-

The new color architecture in Photoshop 5 may cause a few folks to do some head scratching, but this feature really does offer some major advantages over the old ways. Eventually all scanner software will integrate seamlessly with Photoshop 5, but for now, one of these methods should help you work around the mismatches. No matter which method you choose, you should get predictable color from your scanner. ■

BRUCE FRASER is a self-confessed color geek and a coauthor of *Real World Photoshop 5* (Peachpit Press, 1999).

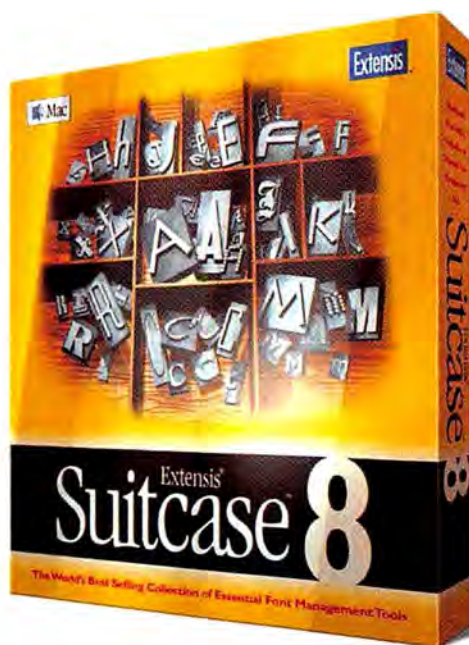


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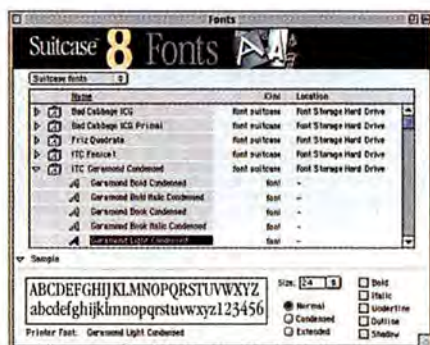


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### Fast, Filmless Photo Collages

TRANSFORM DIGITAL-CAMERA SNAPS INTO INSTANT ART

by Mike Wooldridge

**D**igital cameras still can't quite match film's image quality when it comes to high-end photography, but they do offer distinct advantages when it comes to the artistic process. With a digital camera, you don't have to interrupt your creative momentum by sending out film for processing. Instead, you can immediately dive into the results of photo sessions and begin creating.

San Francisco-based photographer John Lund, though schooled in traditional film-based techniques, discovered digital imaging eight years ago and has never looked back. He likes to use a digital camera so he can begin work on his photo art only moments after shooting.

For this Magritte-like photo collage, *Blinders*, Lund shot most of the elements—the train, the umbrella-toting man, and the blinders (composed of a belt and a wallet)—in his studio with a digital camera. This piece is typical of the surreal artwork he creates for his many clients, including Federal Express, IBM, Kodak, and UPS (you can view more of his art at [www.johnlund.com](http://www.johnlund.com)).

Digital artists tend to rely exclusively on Adobe Photoshop for digital-image editing, but Lund says that many artists—including him—prefer Live Picture. He finds its brush-based tools more efficient and precise than Photoshop's filters for mixing the different photographic elements in his work.

Lund shoots images in his studio using a Leaf DCB I digital camera with 2,048-by-2,048-pixel resolution. He then imports them onto a DayStar Genesis Mac clone with four 200MHz processors. In addition to Live Picture 2.5.1, he uses Photoshop 4 and 5. **m**



**Full Steam Ahead** The completed Live Picture collage included 51 layers. Lund finished by rendering the image as a TIFF file and then bringing it into Photoshop to touch up any remaining stray pixels. He also adjusted the Hue/Saturation controls in Photoshop to give the piece its sepia coloring. The resulting image is a surreal and startling juxtaposition of photo elements that required no trips to FotoMat.

MIKE WOOLDRIDGE is a freelance writer and new-media developer based in Berkeley, California.





**1** Lund started by photographing a miniature model train in his studio. After importing the digital photo into Photoshop, he duplicated the file and applied the Zoom Blur filter to create a version of the train that conveyed a sense of speed. Then in Live Picture he painted parts of the blurred version on top of the original image, so he could depict the illusion of motion while keeping some of the train's details sharp.



**2** For the smoke and steam, Lund used stock photos of an oil refinery and processing plant. He painted parts of the photos into the image in Live Picture using a large brush with very soft edges to keep the softness of the smoke and steam intact. Then he added a few more sharpen and blur effects in Live Picture to complete the background.

**3** Lund shot the image of the man with the bowler hat and umbrella in his studio with a digital camera. He brought the image into Photoshop and masked it from the background using the pen tool. Then Lund imported the image and its alpha-channel mask into the Live Picture file containing the train, smoke, and steam.



**4** Next, Lund built the blinders on the man's face by photographing a belt and a wallet separately. He photographed the belt wrapped around the model's face so it would have the right shape when added to the collage. In Live Picture, he painted strips of dark color beneath the belt sections to create subtle shadowing on the man's face, and added an extra layer of color atop the wallet to give it a more wrinkled look.





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- The New York Times, January 7, 1999

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## Collaborate Long-Distance

SPAN THE MILES WITH THE RIGHT SOFTWARE AND SOME TELEWORKING TIPS

by Jim Heid

It used to be that the people who worked together on a project were located under the same roof. Today, they might not be on the same continent. The Internet has enabled workers to scatter like dandelion seeds in a gale, and it isn't unusual to find yourself working closely with someone you've never met in person.

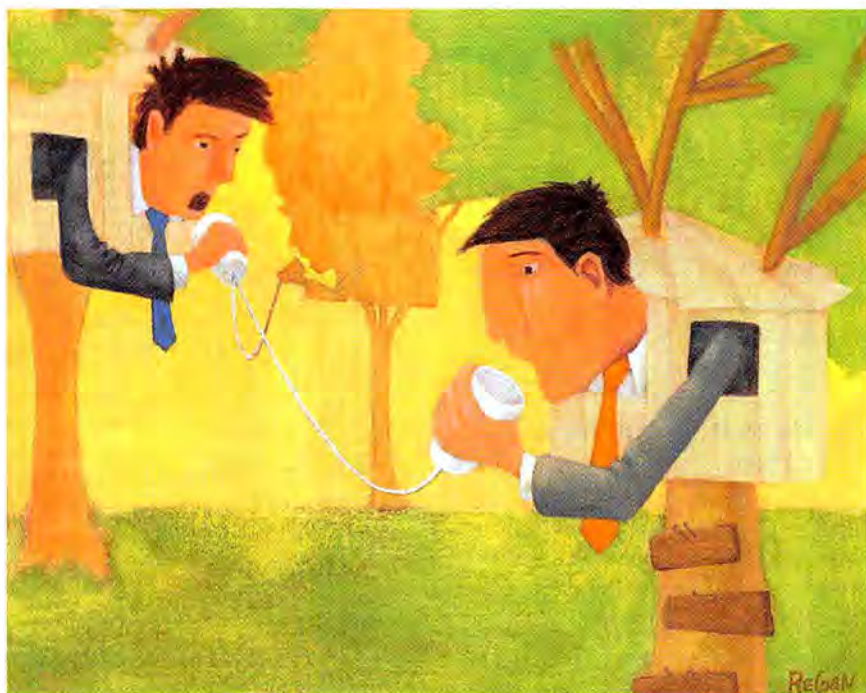
Telecommuting is wonderful, but it does introduce complications. How can you proof and comment on page designs and other documents without the delay and expense of couriers? How can you brainstorm in real time without racking up huge phone bills? How can you monitor or control a Web server that's located a thousand miles away?

Several software tools can help you address these issues. Here's a guide to stocking a remote-collaboration toolbox, and some tips for my favorite tools.

### Please Comment ASAP

They're common requests: Look over the latest brochure layout and get back to me. Approve the new logo design. Proof the annual report before tomorrow.

These chores used to mean last-minute sprints to the express mail drop-off box. Then fax machines came along and made their contributions to eyestrain and aggravation. E-mail has made it far more convenient to move documents around, and business software has



evolved accordingly—Microsoft Word and Excel, for instance, have features for adding annotations to documents. These sticky-note-like comments don't appear within a document's text, but instead show up as small icons. Double-click on an annotation's icon, and up pops a small window containing the comment.

But graphics and design programs generally don't offer annotation features. And even with Word and Excel, there's the risk that someone will make changes to a document without letting others know about it.

The answer: Adobe Acrobat 4.0. Acrobat has always been a great tool for distributing documents electronically—convert a file into Acrobat's Portable Document Format (PDF), and then send the PDF to your colleagues, who can review it and print it using the free Acro-

bat Reader software. Acrobat adeptly preserves the original document's formatting, even simulating fonts not installed on a recipient's system.

Acrobat 4.0 goes beyond these basics to pack a full array of collaboration tools (see "Acrobat Annotated"). Each member of a workgroup can attach annotations to a document and review annotations others have made. Acrobat 4.0 also enables you to mark up a document: you can, for instance, draw a strike-through bar to mark a section of text for deletion, and then attach replacement text by typing it in a pop-up window. Because reviewers are working on a PDF file and not the original, there's no worrying about changes to the original file and no fretting over whose copy is the current version.

*continues*

### WHAT YOU NEED

Adobe Acrobat

Netopia's Timbuktu Pro

Instant-messaging software, such as ICQ

Internet access



## Chat and Swap

Annotation features are noteworthy (get it?), but they don't allow for real-time remote brainstorming and collaboration. The telephone does, but can lead to a hefty long-distance phone bill.

One potential solution is instant-messaging (IM) software. Several free IM programs are available for both the Mac OS and Windows, and although they're most commonly associated with lovelorn teens, they can be powerful collaboration tools, too.

From a telecommuter's perspective, the best IM software for the Mac is the freeware ICQ ([www.icq.com](http://www.icq.com)). ICQ's interface is cluttered and cumbersome at

times, but the software has two crucial features: it supports file transfers and URL exchange.

## Remote Nirvana

ICQ does the job for occasional tele-brainstorming, but if remote collaboration is a big part of your work life, go all the way to Timbuktu. Available for both the Mac OS and Windows, Netopia's Timbuktu (510/814-5000, [www.netopia.com/software/tb2/](http://www.netopia.com/software/tb2/)) provides first-rate chat and file-exchange features and even an intercom mode that lets you chat using your vocal cords instead of your hands.

But these goodies are only side

dishes; Timbuktu's main course is remote observation and control. Outfit two or more computers with Timbuktu, and each user can watch the others' screens or even control other computers via modem, local network, or the Internet (see *Reviews*, November 1998).

You get real power by combining remote observation with Timbuktu's chat, intercom, and file-exchange features, as in the following example:

"I've got the latest layout on my screen. What do you think?"

"Change the headline font to Ransom Note Bold."

"OK. How's that?"

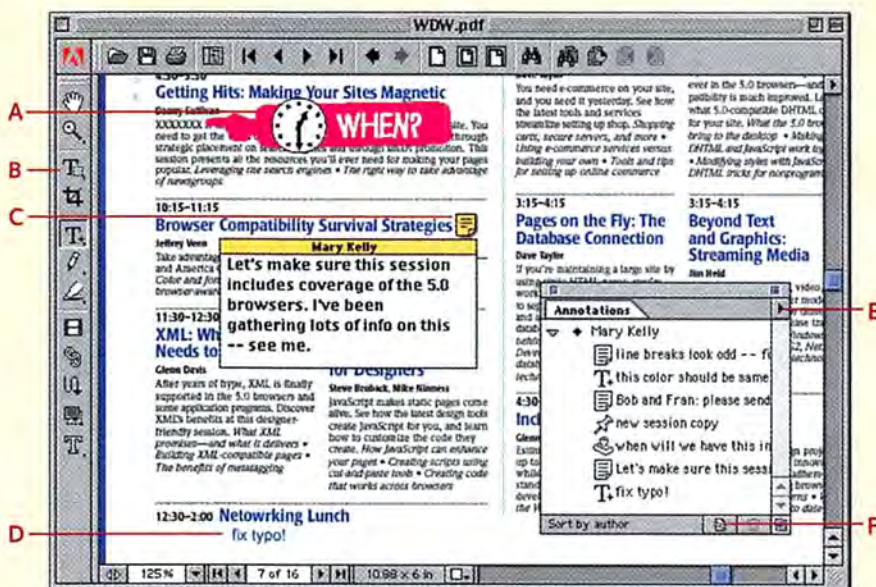
"Good. And by the way, I rescanned

# Acrobat Annotated

ACROBAT 4.0'S ANNOTATION AND MARKUP FEATURES SIMPLIFY THE PROCESS OF REVIEWING AND COMMENTING ON DOCUMENTS.

## Tips for Working with Acrobat Annotations

- To change an annotation's properties—for example, to use a different icon for notes or a different graphic for stamps—press control while clicking on it, then choose Properties from the pop-up menu.
- To make an annotation with a custom size—for example, a very large Note—don't just click. Instead, drag across the PDF until the rectangle is the desired size and then release the mouse button.
- You can import and export annotations with the File menu's Import and Export submenus. One reason to do so is to combine annotations from several people into one master file. Each user exports his or her annotations and then e-mails the file to whoever is assembling the master list. That person then imports all the annotation files into a single PDF.
- Want to see only a certain type of annotation, or view only one person's comments? Choose Filter Manager from the Tools menu's Annotations submenu, and then choose which or whose annotations you want to see.



(A) The Stamp tool is a virtual rubber stamp. Acrobat includes dozens of stamp graphics—everything from the usual Confidential and Approved to offbeat ones like Nuke This.

(B) The preset annotation tool is the Notes tool. To choose other annotation tools, point to the Notes tool and hold down the mouse button to make a pop-up menu appear, then drag to select the desired tool.

(C) The page icon denotes a Note. Double-click on the icon to view the annotation.

(D) A Text annotation appears directly on the PDF—there's no need to double-click an icon to view it.

(E) Click on the triangle to display a shortcut menu that enables you to import, export, and sort.

(F) Click this icon to scan the PDF for annotations and update the contents of the Annotations palette.



the photo. I'm sending you a revised version now."

This live collaboration is faster than annotating and e-mailing PDFs. It's almost like sitting alongside a colleague, but you can't catch his or her cold.

One of the beauties of Timbuktu is its support for multiple platforms and protocols. You can tap into other Macs on your network via AppleTalk, or you can use the Internet to tap into remote Macs or Windows machines using TCP/IP. You can even mix and match within a single chat window, connecting to local Macs via AppleTalk and remote machines via TCP/IP. (For more tips, see "Telecommuting with Timbuktu").

### It's No (Company) Picnic

Remote-collaboration tools can span the miles, but they aren't always a perfect substitute for getting together in what some call *meatspace*. A lengthy chat session can take its toll on your wrists.

Intercom features such as Timbuktu's can address these shortcomings, but voice-over-Internet technology lacks the sound quality and reliability of the telephone. Videoconferencing also holds promise; however, all but the most expensive videoconferencing tools deliver frustratingly poor quality. Until we all have Jetsons-quality videoconferencing systems, the best tools for remote collaboration are the ones I've discussed here.

And even these tools don't allow the kind of spontaneous brainstorming that can occur around watercoolers or in hallways. Telecommuting will always have some disadvantages in that regard, but the advantages often outweigh these—geographic and scheduling versatility, economy, and the flexibility to choose colleagues based on their talents rather than their locations. That's not to mention the chance to take your dog to the beach when you've finished a project. **m**

A contributor to *Macworld* since 1984, JIM HEID (www.heidsite.com) writes and lectures about Internet and multimedia technologies and lives near a beach on California's Mendocino Coast.

## Telecommuting with Timbuktu

NETOPIA'S TIMBUKTU PRO IS A TELECOMMUTER'S DREAM, PACKING REMOTE CONTROL, FILE TRANSFER, AND CHAT INTO A SINGLE APPLICATION AVAILABLE FOR THE MAC AND WINDOWS ALIKE.

### Tips for Working with Timbuktu

- Timbuktu Pro provides two ways to send files. The Exchange window (shown at the upper right in the screen shot) provides two-way exchanges. That's convenient, but it's much slower than the Send command, which simply zaps a file from one machine to another.

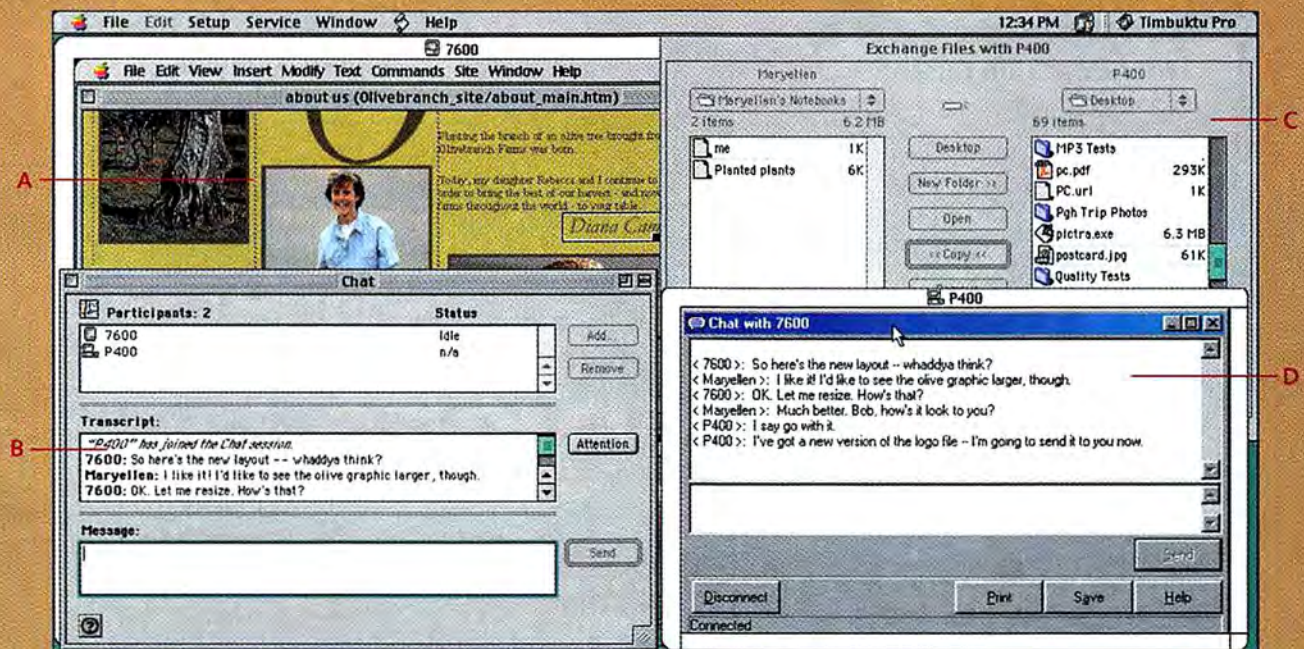
- Timbuktu Pro does a remarkable job of enabling you to remote-control a computer via a modem connection. It feels like running under water sometimes, but it works. To ensure that remote-control sessions run as fast as possible, eliminate any background images from your Mac or Windows desktops. Solid-colored backgrounds yield the best results.

(A) A distant Web designer's latest layout appears on a colleague's local Mac.

(B) Both designers are chatting with a third colleague about the layout.

(C) The file-exchange window lets you beam files between machines and platforms.

(D) No platform barriers—here a Mac controls a Windows 98 machine remotely.





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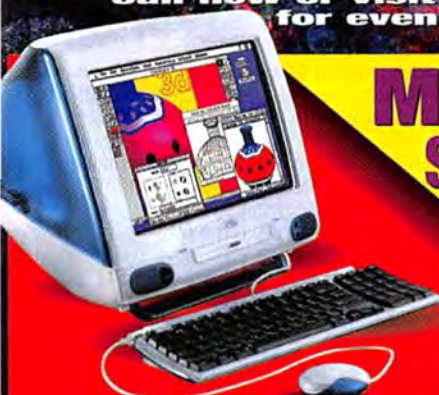
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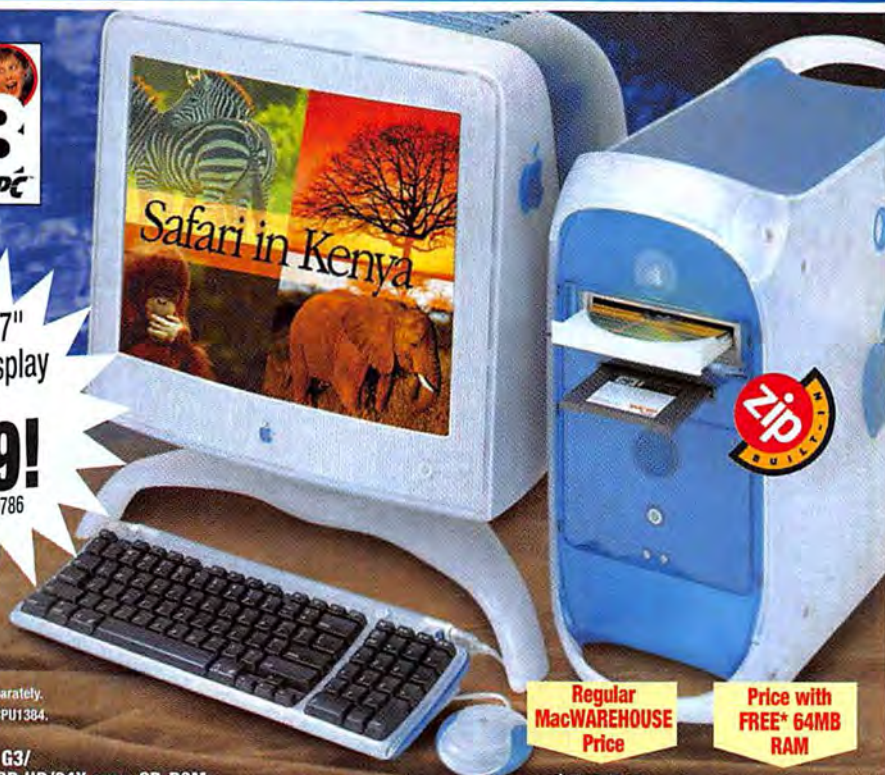
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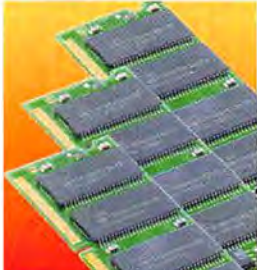
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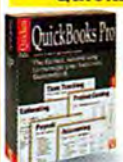
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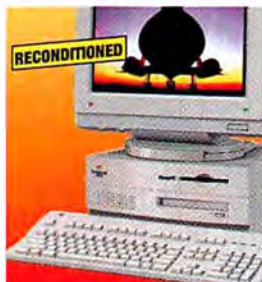
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RECONDITIONED

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### SONY

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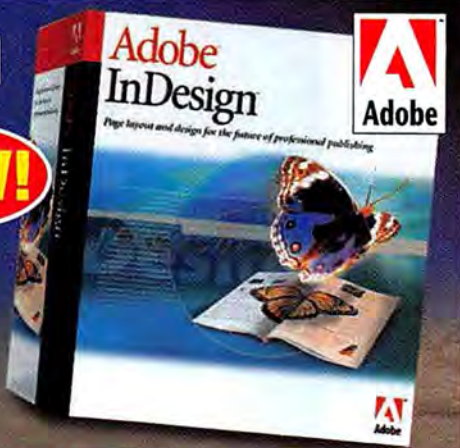
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Drives on these pages are covered by the APS 30-Day Money-Back Guarantee.

## APS CD-RW 8x2x20

- Blazing new rewritable CD drive with fastest record speeds ever
- 8X record/2x rewrite/20X read mechanism
- Includes full-featured CD recording software for Mac and PC

 Isn't it about time you got up to speed? This brand-new rewritable CD gives you our fastest record and read speeds ever. At 8X, you can burn a full disc in just nine minutes! And just in case you make a mistake or forget a file, you get a "do-over" with CD-RW discs. For inexpensive distribution, the CD-RW 8x2x20 also burns CD-R media. If you've been waiting for rewritable CD technology to catch up with you, the wait is over. Call us today for the APS CD-RW 8x2x20.

**\$489.95**  
External Configuration



Cruise over to our website at

[www.apstech.com](http://www.apstech.com)

for the most up-to-date prices




# your work better.



## APS HyperDAT® IV


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

 If you trust your desktop and workstation backup to DAT/DDS, but you thought it didn't meet your server or workgroup needs, take a second look. New DDS-4 technology has increased capacity by 67% over DDS-3 and shrunk your backup time in half. But the HyperDAT IV can read and write to your older DAT/DDS tapes, so migration is painless. Add the HyperDAT IV for your big jobs.

**w/ Retrospect \$1,299.95**  
External Configuration

## APS NS-20


- Protects up to 4GB of critical data (native)
- "...the best back-up solution available for the home and small offices." – Brad Miser, *Using Mac OS 8.5*

 The APS NS-8 (the drive formerly known as the APS HyperQIC) is now better than ever. This Travan NS-8/QIC drive now has hardware ALDC compression for faster backups and more efficient data storage. You can safeguard up to 8GB of valuable business or personal files on one tape with the new compression. The APS NS-8 is recommended as the best backup solution for home and small offices in *Using Mac OS 8.5* by Brad Miser. The NS-8 is just as good for Windows users, too.

**w/ Retrospect \$549.95**  
External configuration

## APS HyperDAT® III


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

 The APS HyperDAT III provides a cost-effective solution to the backup needs of data-intensive systems. Transfer rates of up to 60MB/s for fast backups.

**w/ Retrospect \$999.95**  
External Configuration

## APS AIT Plus

- Safeguards up to 35GB native on AIT Plus tape
- Super-fast backup speeds for mid-range and application server backup, even DV storage

 If you thought DLT was your only choice for gigantic backups, think again. The new AIT Plus challenges the DLT70 in both capacity and transfer speeds. Self-cleaning features and low cost of ownership.

**w/ Retrospect \$1,999.95**  
External Configuration

APS TAPE BACKUP SYSTEMS		
Model	Description	External
APS NS-8	Travan-4/NS8/QIC	339 <sup>95</sup>
APS NS-20	Travan-5/NS20/QIC	549 <sup>95</sup>
APS HyperDAT® II	DDS-2/DAT (4-8GB)	649 <sup>95</sup>
APS HyperDAT® III	DDS-3/DAT (12-34GB)	999 <sup>95</sup>
APS HyperDAT® IV	DDS-4/DAT (20-40GB)	1,299 <sup>95</sup>
APS DDS-3 Autoloader	4mm DDS-3 Autoloader (196-192GB)	2,999 <sup>95</sup>
APS DLT40	DLT 4000 (20-40GB)	1,999 <sup>95</sup>
APS DLT70	DLT 7000 (35-70GB)	3,999 <sup>95</sup>
APS AIT Plus	8mm AIT (35-70GB)	1,999 <sup>95</sup>
APS AIT Autoloader	8mm AIT Autoloader (140-280GB)	4,799 <sup>95</sup>



## APS DVD-RAM

- Stores 5.2GB of data on double-sided discs
- Reads all previous CD and DVD formats
- Get Wired4DVD card to play DVD movies

This powerful data storage technology now also plays DVD movies with the DVD card. Plus, the DVD-RAM reads all your CDs – including CD-R and CD-RW.

**External SCSI \$749.95**


**Internal SCSI w/ Wired4DVD \$839.95**

**External SCSI w/ Wired4DVD \$939.95**



## APS 5.2GB MO

- Highest capacity magneto-optical drive ever
- Use LIMDOW disks to cut rewrite times in half

 The new APS 5.2GB MO drive gives the IS/IT manager corporate-class archiving capabilities. And the disks still have an expected data-storing lifespan of 50 years or more. If your business already relies on MO for archival and backup functions, the 5.2GB MO is backward-compatible with your existing disks. And LIMDOW (Light Intensity Modulation Direct Overwrite) technology lets you write over data without erasing first. So move up to the APS 5.2GB MO.

**Super Archiving \$1,699.95**  
External Configuration



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International (816) 920-4109**







# If you've got the

## APS Ultra SCSI Drives

Item	RPM	Bare Price	Internal Price	APS Pro Price	Formatted Capacity MB	Seek Time	Trans Rate Read	Trans Rate Write	Wnty	Int Price /MB
APS Q 2GB	5400	\$189.95	\$199.95	\$259.95	2051	8.4MS	6.7MB/s	8.50MB/s	3	0.10
APS Q 3GB	5400	199.95	209.95	269.95	3079	7.1MS	6.7MB/s	8.50MB/s	3	0.07
APS ST 4GB	7200	209.95	219.95	279.95	4340	9.5MS	6.7MB/s	8.50MB/s	3	0.05
APS I 9GB	7200	349.95	359.95	419.95	8715	3.8MS	6.7MB/s	8.50MB/s	5	0.04
APS ST 9GB	7200	319.95	329.95	389.95	8683	5.0MS	6.7MB/s	8.50MB/s	3	0.04
APS ST 18GB	7200	699.95	709.95	769.95	17501	3.3MS	6.7MB/s	8.50MB/s	5	0.04

## APS Ultra 160m / Ultra 2 Wide LVD SCSI Drives

Item	RPM	Internal Price	APS Pro Price	Formatted Capacity MB	Seek Time	Trans Rate Read	Trans Rate Write	Wnty	Int Price /MB
APS I 9GB LVD	7200	\$349.95	\$419.95	8760	2.8MS	10.4MB/s	11.2MB/s	5	0.04
APS Q 9GB Ultra 160m L	7200	399.95	469.95	9053	4.17MS	6.9MB/s	12MB/s	5	0.04
APS ST 9GB LVD	7200	429.95	499.95	9217	2.9MS	6.9MB/s	7.4MB/s	5	0.05
APS I 9.1GB LVD 10K	10000	549.95	619.95	9024	5.3MS	8MB/s	14MB/s	5	0.06
APS Q 9.1GB Ultra 160m LVD 10K	10000	569.95	639.95	9049	5MS	7.4MB/s	13.04MB/s	5	0.06
APS ST 9.1GB LVD 10K	10000	539.95	609.95	9042	3.08MS	5MB/s	6MB/s	5	0.06
APS I 18GB LVD	7200	699.95	769.95	18100	7MS	13MB/s	15.9MB/s	5	0.04
APS Q 18GB Ultra 160m LVD	7200	729.95	799.95	18200	4.17MS	6.9MB/s	12MB/s	5	0.04
APS ST 18GB LVD	7200	729.95	799.95	18210	2.4MS	6.9MB/s	7.1MB/s	5	0.04
APS I 18GB LVD 10K	10000	949.95	1019.95	18100	6.5MS	14.7MB/s	15.7MB/s	5	0.05
APS Q 18GB Ultra 160m LVD 10K	10000	969.95	1039.95	18200	5MS	7.4MB/s	13.04MB/s	5	0.05
APS ST 18GB LVD 10K	10000	949.95	1019.95	18200	3.08MS	5.7MB/s	6.5MB/s	5	0.05
APS I 36GB LVD	7200	1299.95	1359.95	36400	7.5MS	12.3MB/s	15.1MB/s	5	0.04
APS Q 36GB Ultra 160m LVD	7200	1399.95	1469.95	36400	4.16MS	7.9MB/s	12MB/s	5	0.04
APS ST 36GB LVD	7200	1279.95	1349.95	36400	2.4MS	7.4MB/s	8.2MB/s	5	0.04
APS Q 36GB Ultra 160m LVD 10K	10000	1559.95	1629.95	36400	5MS	7.4MB/s	13.04MB/s	5	0.04
APS ST 36GB LVD 10K	10000	1599.95	1669.95	36400	3.08MS	5.7MB/s	6.5MB/s	5	0.04
APS ST 50GB LVD	7200	1599.95	1669.95	50100	2.64MS	7.4MB/s	8.2MB/s	5	0.03

## APS Ultra ATA Drives

Item	RPM	Internal Price	Formatted Capacity MB	Seek Time	Trans Rate Read	Trans Rate Write	Wnty	Int Price /MB
APS 10GB ATA	5400	\$169.95	10275	5.5MS	9.3MB/s	12.2MB/s	1	0.05
APS 20GB ATA	5400	209.95	20553	5.5MS	9.3MB/s	12.2MB/s	1	0.26

## APS Laptop Hard Drives

Item	RPM	Internal Price	Formatted Capacity MB	Seek Time	Trans Rate Read	Trans Rate Write	Wnty	Int Price /MB
APS 5.1GB Notebook Hard Drive	4200	\$249.95	4886	13MS	4MB/s	3.2MB/s	1	0.04
APS 6.4GB Notebook Hard Drive	4200	349.95	6243	13MS	4MB/s	3.2MB/s	1	0.6
APS 8.1GB Notebook Hard Drive	4200	499.95	7924	13MS	4MB/s	3.2MB/s	1	0.53

## APS USB Hard Drives

Item	RPM	Internal Price	Formatted Capacity MB	Seek Time	Trans Rate Read	Trans Rate Write	Wnty	Int Price /MB
LaCie EKO 6GB USB Hard Drive	5400	\$249.95	6400	11MS	1MB/s	1MB/s	1	0.04
LaCie EKO 10GB USB Hard Drive	5400	299.95	10200	11MS	1MB/s	1MB/s	1	0.53
LaCie EKO 20GB USB Hard Drive	5400	499.95	20544	11MS	1MB/s	1MB/s	1	0.26

## APS ST 18GB 10K Ultra2 Wide LVD SCSI

- Brand-new, third-generation Cheetahs offer even better performance and reliability
- 10,000 rpm and Ultra2 Wide LVD for multimedia, 3D, even digital video
- 18GB capacity for high-performance workstation and creative department/workgroup servers

Get the ultimate performance from your content creation workstations and servers. These Cheetahs really scream, with up to 28MB/s internal data rates and super-low 5.2msec seek times. Third-generation technology and experience make this line more reliable than ever. For your next digital masterpiece, order an APS ST 18GB 10K today.

**APS ST 18GB U2W LVD SCSI \$949.95**

Internal Configuration

Surf on over to our website at [www.apstech.com](http://www.apstech.com)

for the most up-to-date prices



## APS ST 9GB Ultra SCSI

- Inexpensive 7200 rpm drives with Ultra SCSI interface
- 4 and 9GB capacities for workstation through server storage



With this Medalist Pro-based drive, you can upgrade your file and print servers to 7200 rpm speed and keep your budget well under control.

**APS ST 9GB ULTRA SCSI \$319.95**

Bare Internal Configuration

## APS I 9GB 10K Ultra2 Wide LVD SCSI

- 10,000 rpm drives from the original developers of the hard drive
- Maximum performance for graphics and video editing workstations and demanding servers



For the absolute maximum hard drive performance on an Ultra2 Wide LVD SCSI-based system, ramp up with a 10,000 rpm Ultrastar from IBM and APS. Based on the new Ultrastar 9LZX18ZX mechanism, these drives offer seek times as low as 5.6ms and very high sustained internal data transfer rates (up to 23.4MB/s). Upgrade your creative workstations and servers to the power of one of the fastest mechanisms in the world and Ultra2 Wide LVD SCSI speed.

**APS I 9GB 10K U2W LVD SCSI \$549.95**

Internal Configuration

## APS I 36GB Ultra2 Wide LVD SCSI

- 7200 rpm mechanisms from the inventors of the hard drive
- 36GB capacities for high-volume workstations, departmental/enterprise servers



This Ultrastar-based drive turbocharges your high-volume servers. The Ultra2 Wide LVD SCSI interface is perfect for huge files that need maximum throughput.

**APS I 36GB U2W LVD SCSI \$1,289.95**

Internal Configuration



# passion, we've got the drive.



## APS 20GB IDE

- Ultra ATA interface keeps up with fast hard drives with 33MB/s transfers
- Always the best price/performance available

Save time, save effort AND SAVE MONEY with the APS Ultra ATA series of drives. We've done the research for you, picking the best Ultra ATA storage options from the world's premier mechanism manufacturers, all at awesome prices. You always get the best price/performance possible with an APS Ultra ATA drive.

**APS 20GB IDE \$289.95**  
Internal Configuration

## LaCie USB CD-RW

- Finally, a rewritable CD drive with a USB interface
- Hot-swappable, so your workstations can quickly and easily share one CD-RW drive



You asked. We answered. Many of you have been clamoring for USB-based devices for your iMacs, new G3s and USB Windows™ machines. So, APS is pleased to offer the LaCie USB CD-RW. This drive combines the power and flexibility of a rewritable CD drive with the hot-swappable ease of USB. USB eliminates the toil and trouble of shutting down your system, checking SCSI IDs or ATA settings, configuring your system, and so on. USB is truly plug and play. So your USB workstations can quickly and conveniently share one CD-RW drive.

**LACIE USB CD-RW \$349.95**  
External Configuration

## LaCie EKO 10GB USB

- Among the first hard drives with USB
- Easiest way to add over ten gigabytes of storage

Adding more capacity to your desktop, workstation or server is a snap with this USB hard drive. It's hot-swappable; just hook it up and go.



**LACIE EKO 10GB USB \$299.95**  
EKO Enclosure

**LACIE EKO 20GB USB \$499.95**

## VST 10GB FireWire Hard Drive

- Ample hard drive with fast, hot-swappable FireWire/IEEE-1394 interface
- Great for multimedia/digital video pros, graphic designers

Forget device IDs termination, and hassle. This 10GB FireWire drive offers hot-swapping to any FireWire-equipped Mac or PC. Perfect for transferring video and other huge files among workstations and offices.



**VST 10GB FIREWIRE \$779.95**  
External

## APS 18GB ShortStack Disk Array

- Choose from RAID levels 0, 1, 0+1 or 5\* for greater speed and/or data availability
- Complete with Ultra2 Wide/LVD SCSI drives
- Perfect for small graphics/multimedia businesses and high-end workstations
- Easy connectivity for instant results

Now, even small and home businesses, or individual workstations, can enjoy the blistering performance of an array. The APS ShortStack Disk Array is made up of two 7200 rpm disks that work together with your choice of RAID software products to become a high-performance disk array. The ShortStack is perfect for graphic design and image editing, digital video production, database environments, transaction processing and more.

**APS 18GB ShortStack Disk Array \$1199.95**  
External

## Iomega Zip 250

- Now holds 250MB – even better for content creators
- SCSI version (Mac or Windows) is 50% faster than original SCSI Zip
- Also reads and writes original 100MB Zip disks to extend your investment



Now you can store, work with, and transport even bigger files, like multimedia, animation, 3D, CAD and graphics files. Based on the immensely popular Zip, the new Zip 250 holds 250MB of data. And the SCSI version is up to 56 times faster than your floppy drive. Or choose the parallel port version for nearly instant hook-up to your PC. The Zip 250 is read/write compatible with 100MB Zip disks, so you can purchase it with confidence. The Zip 250 is an exciting and intelligent investment.

**IOmega ZIP 250 \$179.95**  
External, SCSI or Parallel Version



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# How to turn your

## LaCie electron22Blue

- Brand-new 22" Diamondtron Natural Flat technology eliminates distortion and glare
- Mammoth resolution of 1800 x 1440 pixels at 80Hz for biggest layouts
- Five USB ports for the most advanced, convenient computing system ever

Introducing quite possibly the most advanced monitor ever for digital visionaries. This 22" display gives you outstanding color fidelity and perfectly geometrical images. No more distortion or straight lines that curve on screen. And the USB connections let you quickly swap USB devices like the LaCie USB CD-RW, new scanners, and more.

### LACIE ELECTRON 22BLUE

**\$1,399.95**

### LACIE ELECTRON 19BLUE \$769.95

## Wacom LCD Display Tablets

- Amazing tablets act as monitors – you draw and design directly on screen and work more intuitively
- Pressure-sensitive tablets (256 levels) include cordless Erasing UltraPens
- Must-have for cutting-edge graphics pros, animators, Web designers, multimedia



At APS, we are not easily impressed by new technologies. But Wacom has knocked our socks off. The new LCD Display Tablet line is like having the monitor screen on your lap or desk. You can design, illustrate, paint, animate and edit on-screen more accurately – to within 0.02 inches. We could say more, but you really have to see it to believe it. Be the first on your block to get a Wacom LCD Display Tablet. Call today.

### WACOM PL-300 W/ 10.4" WORK AREA

**\$2,199.95**

### PL-400 - 13.3" work area - \$2,999.95

## Agfa DuoScan Solo Color Scanner

- Versatile scanner for creative departments, small firms
- Innovative TwinPlate for transparencies and reflective documents
- One-pass tri-linear CCD with 1000 x 2000 ppi resolution

The DuoScan handles all of your business scanning needs with ease, capturing images from virtually any kind of document. The built-in scanning bed for transparencies makes switching between media types easier than ever. And the DuoScan is fast. You will see your preview in just 11 seconds. And the DuoScan can deliver A4-sized color scans at 1000 ppi in just two minutes. So get high-quality scans for business documents fast with the DuoScan from Agfa.



### AGFA DUOSCAN SOLO (MAC/PC)

**\$2,459.95**



## EPSON Stylus Color 900 Printer

- 1440 dpi and Micro Piezo technology for sharp details, no splatters
- Faster color printing (up to 10 ppm) makes you more productive

The new Stylus Color 900 lets even home and small businesses print corporate-class documents. And you can print color pieces faster than ever. So you spend less time waiting and more time drumming up business. Plus, with USB, parallel and Mac serial connections, you can use this image-maker with almost any computer. Get sharp, brilliant color fast and make a splash with the Stylus Color 900 from EPSON.



**EPSON STYLUS COLOR 900 PRINTER \$429.95**

## APC Back-UPS Pro

- Extra surge suppression and longer runtime
- Safeguards data & equipment from lightning strikes and blackouts



Tape backup is critical to safeguarding your irreplaceable data. But it won't stop lightning from frying your motherboard. Back-UPS Pro, the ultimate workstation UPS, safeguards your data and equipment, like your CPU, drives, and monitor, against disasters like lightning strikes. And the uninterruptable power supply gives you time to save your files and shut down in case you ever lose power. Don't wait until it's too late. Get Back-UPS now.

CAT. #	ITEM DESC	OUTPUT VA	CAP WATTS	TYPICAL RUNTIME	BAT. OUTLETS	SURGE ONLY OUTLETS	DIMENSIONS (H" X W" X D")	PRICE
108355	BP280S	280	180	7-13 MIN	2	1	6.6 X 4.7 X 14.5	\$134.95
108356	BP420S	420	260	12-18 MIN	3	3	6.6 X 4.7 X 14.5	219.95
108357	BP650S	650	410	35-40 MIN	3	3	6.6 X 4.7 X 14.5	269.95
108717	BP1000	1000	670	10-15 MIN*	6	N/A	8.5 X 6.7 X 17.3	365.95
108714	BP1400	1400	950	15-20 MIN*	6	N/A	8.5 X 6.7 X 17.3	459.95

\*With 3 computers connected.





# dreams into digital reality.

## Canon ELURA Digital Video Camcorder

- Palm-sized DV Camcorder with Canon 12X optical/48X digital Zoom lens
- Noise reduction and Optical Image Stabilizer give you top quality footage

Now, you can get the power of digital video and the precision of Canon, all in the palm of your hand. The ELURA sports all of the advanced capture features of Canon's larger camcorders. You get crystal-clear digital video, with intricate details and true colors. The progressive scan CCD captures much better quality images than other, interlaced CCD camcorders. With up to 500 lines of horizontal resolution, you get 20% better-than-analog quality. Automatic or manual controls satisfy both the beginner and veteran. Plus, you can easily add your own personal touch to your video using the faders, effects, and a multi-image screen. So get the power of the Canon ELURA in the palm of your hand today.

**CANON ELURA \$1,299.95**

## Adaptec Ultra HotConnect 8945

- Connects both digital video camcorders and Ultra Wide SCSI devices to your computer using only one PCI slot
- Includes DV capture software, FireWire and SCSI cables/connectors

This PCI card lets you connect your digital video camcorder to your Mac or PC on the same slot as your SCSI drives. You can chain up to 62 IEEE-1394/FireWire devices and up to 15 SCSI devices, like Ultra Wide SCSI hard drives, CD recorders, Jaz and tape devices. This awesome package includes a complete set of SCSI and 1394/FireWire cables and connectors, plus digital video capture software.

**ADAPTEC 8945 \$539.95**



## Sony DSC-D700 Digital Camera

- 1.5Megapixel images (1344 x 1024) for top-quality print projects
- 5X manual optical zoom, equivalent to f28mm to 140mm zoom lens on a 35mm camera
- Includes Type II PC Card and reader for easy transfer to desktop computer

Professional photographer for print? You may think that digital photography just doesn't have the quality or flexibility of your SLR camera. Well, now it does. Introducing the Sony DSC-D700 Digital Camera. This powerful device captures 1.5 million pixels per image to give you the kind of resolution you want for print. The DSC-D700 also gives you the control you are used to with your traditional camera. You get a 5X optical zoom lens with a manual focus ring that feels familiar and professional. Choose between using the 2.5" color LCD screen or the viewfinder, depending on your situation. Advanced features include manual white balance, a center-weighted spot meter, auto/manual exposure, and a Hot Shoe for connecting an external flash with strobe lights. The pop-up flash comes in handy out in the field.

**SONY DSC-D700 \$1,699.95**



## Sony MVC-FD91 Digital Mavica Cameras

- Convenient digital cameras capture photos and video
- Store and transfer content on standard floppy disks
- Add images and multimedia to presentations, Web sites

The MVC-FD91 Digital Mavica Camera grabs digital photos and video quickly. And these smart cameras store their contents on standard floppies that you can use to easily transfer your images to your Mac or PC. The FD91 really gets in there at 14X. And you can record up to 15 seconds of presentation-quality MPEG video or 60 seconds for a video e-mail. Pick up a MVC-FD91 Digital Mavica Camera today.



**MVC-FD 91 \$947.95**  
**SONY MVC-FD83 \$699.95**

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- Monitor and 3rd party products carry warranties from their respective manufacturers.
- 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.
- Refused orders subject to 20% restocking fee.
- International customers must pay for all shipping charges.
- Listed capacities are formatted.
- Actual data compression and tape 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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Why dream in black and white

*when you can dream in color!*



*\*Dreams sold separately.*

# REAL

Only \$1199

## Apple® iMac™

- ◆ 333MHz PowerPC G3 processor ◆ 15" display, 13.8" viewable, with 1024 x 768 resolution ◆ 32MB SDRAM ◆ 6GB hard drive
- ◆ 24X Max CD-ROM drive ◆ 56Kbps modem ◆ 10/100BASE-TX Ethernet
- ◆ Two 12Mbps Universal Serial Bus (USB) ports ◆ 6MB video memory
- ◆ Built-in stereo speakers with SRS sound

### Blueberry

CDW 161620

### Strawberry

CDW 161623

### Tangerine

CDW 161632

### Grape

CDW 161627

### Lime

CDW 161634



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## Apple® Power Macintosh G3 Series

- 350MHz PowerPC G3
- 1MB backside cache
- 100MHz system bus
- 64MB SDRAM
- 6GB Ultra ATA hard drive
- 24X Max CD-ROM drive
- 16MB video memory

**\$1594.00**

CDW 171054

- 400MHz PowerPC G3
- 1MB backside cache
- 100MHz system bus
- 64MB SDRAM
- 6GB Ultra ATA hard drive
- 5X/32X DVD-ROM drive
- 16MB video memory

**\$1994.00**

CDW 171055

- 400MHz PowerPC G3
- 1MB backside cache
- 100MHz system bus
- 128MB SDRAM
- 12GB Ultra ATA hard drive
- 24X Max CD-ROM drive
- 100MB Zip drive
- 16MB video memory

**\$2494.00**

CDW 171056

- 450MHz PowerPC G3
- 1MB backside cache
- 100MHz system bus
- 128MB SDRAM
- 9GB Ultra2 SCSI hard drive
- 24X Max CD-ROM drive
- 16MB video memory

**\$2994.00**

CDW 171057

Slim, stunning, superfast

## Apple Macintosh

### PowerBook G3 Series

- 400MHz PowerPC G3 processor
- 1MB backside cache
- 160MHz bus speed
- 64MB RAM
- 6GB hard drive
- 2X Max DVD-ROM drive
- 56Kbps (V.90) modem
- 14.1" active-matrix display

**\$3494.00**

CDW 167073



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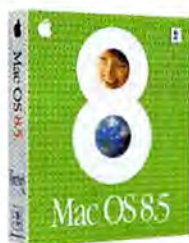


# WORLD



## Know your options

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CDW 134030

Entrega 4-port USB Hub

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CDW 133137



UMAX 1220U  
Flatbed scanner with 4-port  
USB Hub

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CDW 171415

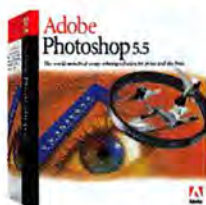
Global Village Teleport  
Internal 56K modem

**\$109.18** CDW 148272



Epson Stylus Color 740i  
Color inkjet printer  
for Mac

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Mitsubishi  
Diamond Pro 900U  
19" truly flat screen monitor

**\$689.89**  
CDW 130067

### MONITORS

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Apple Studio Display 17"	
(16" view) 0.25mm AG	\$499.00
Apple Studio Display 21"	
(19.8" view) 0.25-0.27mm AG	\$1499.00
Apple Studio Display LCD 15.1"	
(15.1" view)	\$1299.00

#### MITSUBISHI

Diamond Pro 900U 19" (18" view)	
0.25-0.27mm AG	\$689.89
Diamond Plus 70 17"	
(16" view) 0.25mm AG	\$345.40

#### PHILIPS/MAGNAVOX

105S 15" (14" view) 0.28mm	\$155.67
107S 17" (16.2" view) 0.28mm	\$239.97
109S 19" (17.9" view) 0.26mm	\$417.17

#### NEC

MultiSync A500+ 15" (13.8" view) 0.28mm	\$195.34
MultiSync A700+ 17" (16" view) 0.28mm	\$316.19
MultiSync E750 17" (16" view) 0.25mm	\$409.57
MultiSync E900+ 19" (18" view) 0.26mm	\$694.88
MultiSync P1250+ 21" (19.6" view) 0.28mm	\$969.52

#### SONY

100ES 15" (14" view) 0.25mm	\$199.76
200ES 17" (16" view) 0.25mm	\$336.43
400PS 19" (18" view) 0.27mm	\$719.27
500PS 21" (19.8" view) 0.26mm	\$1165.31

#### VIEWSONIC

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G790 19" (18" view) 0.26mm	\$464.77
P810 21" (20" view) 0.25mm	\$917.62
PS775 17" (16" view) 0.25mm	\$434.50
QB10 21" (20" view) 0.25mm	\$874.15
PS790 19" (18" view) 0.25mm	\$585.98
PT813 21" (20" view) 0.28mm AG	\$1119.78
P815 21" (20" view) 0.25mm	\$1158.79

### VIDEO BOARDS

#### ATI TECHNOLOGIES

ATI NEXUS GA 16MB	\$389.25
ATI RAGE ORION 16MB	\$178.16
ATI NEXUS 128 32MB	\$259.06
ATI XCLAIM 3D+ LCD 8MB	\$129.44
ATI XCLAIM VR 128 16MB TV	\$199.09

### IX MICRO

Ultimate Rez 2D/3D 6MB PCI	\$315.39
ix3D Pro Rez 8MB PCI Power Mac	\$219.23
TV Tuner Card	\$99.84
Road Rocket PC Card	\$254.01

### COMMUNICATIONS

#### GLOBAL VILLAGE

TelePort 56K V.90 external USB	\$119.33
TelePort 56K V.90 external	\$109.66
TelePort 56K V.90 internal for the G3	\$109.18

#### 3COM/U.S. ROBOTICS

Sportster 56K Faxmodem external	\$117.99
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### VIKING

Viking 56K V.90 Modem external USB	\$115.24
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### DATA STORAGE

#### IOMEGA

Zip drive 100MB external USB	\$129.95
Zip drive 100MB external SCSI	\$99.95
100MB Zip disk 3-pack	\$39.95
Zip drive 250MB external SCSI	\$199.95
250MB Zip disk 4-pack	\$69.95
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Jaz drive 2GB external	\$349.95
2GB Jaz disk 3-pack	\$299.95

#### LACIE

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4X4X16 CD-RW external w/ PCI SCSI card	\$329.00
4X4X16 CD-RW external SCSI	\$349.00
USB external CD-RW drive	\$349.00
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2.6GB DVD RAM disc single sided	\$29.00
5.2GB DVD RAM disc double sided	\$39.00
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9.1GB external SCSI hard drive d2 case	\$359.00
1.1GB external SCSI hard drive d2 case	\$399.00
18.0GB external SCSI hard drive d2 case	\$779.00
36.0GB external SCSI hard drive d2 case	\$1899.00
10GB external USB hard drive	\$299.00
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9.1GB Atlas III Ultra SCSI	\$394.34
18.2GB Atlas III Ultra SCSI	\$719.43
18.2GB Atlas III Ultra2 SCSI	\$719.43

#### IMATION

USB 120MB SuperDisk drive USB	\$169.99
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### SCANNERS

#### AGFA

SnapScan 1236S	\$199.00
SnapScan 1212U for the iMac	\$129.00
DuoScan T1200	\$644.90

#### EPSON

Perfection 636	\$299.00
Perfection 636U	\$329.00
Expression 800 Executive	\$699.00
Expression 800 Artist	\$799.00
Expression 800 Professional	\$999.00
Expression 836XL	\$2499.00

#### MICROTEK

ScanMaker 4	\$666.15
ScanMaker 9600XL	\$1388.22
ScanMaker X6	\$138.87
ScanMaker X6EL	\$226.87
ScanMaker X6 USB	\$144.87

#### NIKON

CoolScan III LS 30 film scanner	\$959.34
Super CoolScan LS 2000 film scanner	\$1817.27

#### POLAROID

SprintScan 4000	\$1909.27
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#### UMAX

Astra 1200S	\$149.00
Astra 1220S	\$149.00
Astra 1220U USB	\$129.00
Astra 2400S	\$299.00
Powerlook III	\$895.00
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6x24 Teac mechanism, tray load, 2MB buffer	\$359	\$419
8x20 Sanyo mechanism, tray load, 2MB buffer	\$369	\$429
8x20 Plector mechanism, tray load, 4MB buffer	\$489	\$549
8x24 Teac mechanism, tray load, 2MB buffer	\$439	\$495

	Int.	Ext.
<b>CD REWRITABLE Includes 5 Free Rewritable Disks!</b>		
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6x4x16 Yamaha mechanism, tray load, 2MB buffer	\$339	\$399
4x2x20 Plector mechanism, tray load, 2MB buffer	\$369	\$429
8x2x20 Plector mechanism, tray load, 2MB buffer	\$489	\$549
8x2x20 Sanyo mechanism, tray load, 2MB buffer	\$439	\$499

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9.1GB 10,000 2MB	TN309100LW	\$489
18.2GB 7200 2MB	KN318200LW	\$659
18.2GB 10,000 2MB	TN318200LW	\$829
36.4GB 7200 2MB	KN336400LW	\$1269

**IDE**

9.1GB 7200	512K	KA309100A	\$149
13.6GB 7200	512K	KA313600A	\$165
18.2GB 7200	512K	KA318200A	\$229

**IDE Ultra ATA/66**

6.8GB 7200	512K	KX306800A	\$129
10.2GB 7200	512K	KX310200A	\$149
13.6GB 7200	512K	KX313600A	\$169
20.6GB 7200	512K	KX320500A	\$259
27.3GB 7200	512K	KX327300A	\$339

### IBM

**ULTRA SCSI**

4.5GB 5400	512K	IBM34560N	\$199
9GB 7200	2MB	IBM309170N	\$379
18.2GB 1" High	2MB	IBM318350N	\$669

**ULTRA WIDE SCSI**

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18.2GB 1" High	2MB	IBM318350W	\$669

**ULTRA-2 SCSI**

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9.1GB 10,020	4MB	IDRV59U2A	\$539
18.2GB 10,000	2MB	IDMV518U2	\$1049
18.2GB 10,020	4MB	IDRV518X2	\$839
18.2GB 1" High	2MB	IBM318350U2	\$669
36.4GB 7200	4MB	IDRHS36U2	\$1199
36.4GB 10,000	2MB	IDMV536U2	\$1699

**IDE**

9.1GB 7200	512K	IBM9GXP	\$179
10.1GB 5400	512K	IBM10GP	\$165
10.1GB 7200	512K	IBM10GXP	\$189
13.5GB 7200	512K	IBM13GXP	\$245
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15.2GB 5400	512K	IBM15GP	\$225
18.0GB 7200	2MB	IBM18GXP	\$299
20.3GB 5400	2MB	IBM20GP	\$285
22.0GB 7200	2MB	IBM22GXP	\$365
25.0GB 5400	2MB	IBM25GP	\$350

## WESTERN DIGITAL

**IDE**

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6.4GB 5400	512K	WDAC26400	\$119
8.4GB 5400	512K	WDAC28400	\$129
9.1GB 7200	2MB	WDAC29100	\$199
10.2GB 5400	512K	WDAC310200	\$155
13.0GB 5400	512K	WDAC313000	\$179
18.0GB 7200	2MB	WDAC418000	\$289
20.0GB 5400	2MB	WDAC420400	\$279

## HARD DRIVES

### Seagate

**ULTRA SCSI**

4.5GB 7200	512K	ST34520N	\$189
4.5GB 7200	512K	ST34573N	\$315
9.1GB 7200	512K	ST39140N	\$315
9.1GB 7200	1MB	ST39173N	\$375
18.2GB 7200	1MB	ST118273N	\$669

**ULTRA WIDE SCSI**

4.5GB 7200	512K	ST34520W	\$195
4.5GB 7200	512K	ST34573W	\$320
9.1GB 7200	512K	ST39140W	\$320
9.1GB 7200	1MB	ST39173W	\$380
18.2GB 7200	1MB	ST118273W	\$669

**ULTRA-2 SCSI**

9.1GB 10,000	1MB	ST39103LW	\$539
9.1GB 10,000	4MB	ST39103LW4	\$575
9.1GB 7200	1MB	ST39175LW	\$369
9.1GB 7200	1MB	ST39175LW4	\$425
18.2GB 7200	1MB	ST318275LW	\$695
18.2GB 7200	4MB	ST318275LW4	\$765
18.2GB 10,000	1MB	ST318203LW	\$889
18.2GB 10,000	4MB	ST318203LW4	\$905
36.4GB 7200	1MB	ST136475LW	\$1279
36.4GB 10,000	1MB	ST136403LW	\$2239
50.1GB 7200	1MB	ST150176LW	\$2579

**IDE**

4.3GB 5400	512K	ST34312A	\$89
6.4GB 5400	256K	ST36422A	\$119
8.6GB 5400	512K	ST38422A	\$129
10.2GB 5400	512K	ST310232A	\$159
13.3GB 5400	512K	ST313032A	\$169
17.2GB 5400	512K	ST317242A	\$219

### Maxtor

**IDE**

8.4GB 5400	512K	M90845D	\$129
10.0GB 7200	512K	M91024D	\$175
13.0GB 5400	512K	M91303D	\$175
17.2GB 5400	512K	M91728D	\$215
20.4GB 7200	512K	M92048D	\$319

**IDE Ultra ATA/66**

6.5GB 5400	2MB	M90650U	\$125
10.2GB 5400	2MB	M91020U	\$169
13.6GB 5400	2MB	M91360U	\$185
20.4GB 5400	2MB	M92040U	\$239
27.2GB 5400	2MB	M92720U	\$369

## 2.5" IDE LAPTOP

3.2GB	8.45mm	Toshiba	MK3212MAT	\$135
4.3GB	8.45mm	Toshiba	MK4309MAT	\$149
6.4GB	8.45mm	Toshiba	MK6412MAT	\$209
10GB	12.5mm	Toshiba	MK1011AV	\$389
3.2GB	9.5mm	IBM	DB203240	\$149
4.8GB	9.5mm	IBM	DB204860	\$169
6.4GB	9.5mm	IBM	DB206480	\$229
8.1GB	12.5mm	IBM	DC208100	\$339
10GB	12.5mm	IBM	DC210000	\$365
14.1GB	17mm	IBM	DC214000	\$555

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## USB PRODUCTS

4x2x8 CD Rewritable (USB4X2X8)	\$Call
100MB Zip (ZIP100USB)	\$145
USB to SCSI adapter (USBSCSI)	\$89
SuperDisk drive, 120MB & floppy (USBL5120)	\$149
Floppy Drive (USBFLOPY)	\$99
8GB Hard Drive (USB8GB)	\$229
12GB Hard Drive (USB12GB)	\$309
16GB Hard Drive (USB16GB)	\$379
USB Case for IDE hard drive (USBCASE)	\$99

## G3 UPGRADES

Upgrades for the new G3 Mini Tower Macintosh computers.

Adaptec PCI SCSI card (A2906E)	\$65
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**4x4x16 CD-RW Drive**

Internal (YCRW4416M)	\$239
External (YCRW4416MX)	\$289

**6x4x16 CD-RW Drive**

Internal (YCRW6416M)	\$279
External (YCRW6416MX)	\$339

Fargo InkJet CD Color Printer (CDPRINTER) \$999  
 Adaptec Ultra Wide PCI controller (A2940MUW) \$285  
 Adaptec Ultra-2 PCI controller (A2940MU2W) \$385  
 Toshiba SCSI SX DVD ROM (SDM1201) \$159

### DVD RAM

Toshiba SCSI DVD RAM drive (SDW1101)	\$449
Panasonic SCSI DVD RAM drive (LFD101U)	\$559
Mac DVD RAM driver software (MDVDSFT)	\$59
DVD RAM media (DVDAMDISK)	\$35

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**• SCSI •**

NEC CDR1910	32X	85ms	\$85
Plextor PX32TS (tray)	32X	85ms	\$119
Plextor PX32CS (caddy)	32X	85ms	\$149

Toshiba XM6401B 40X 79ms \$95  
 Plextor PX40TS 40X 85ms \$139

**• WIDE SCSI •**

Plextor PX40TSUW	40X	85ms	\$169
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**• IDE •**

NEC CDR3000	40X	75ms	\$65
Mitsumi CRM40X	40X	80ms	\$59
Memorex CD48X	48X	90ms	\$72
Kenwood UCR412	52X	90ms	\$121
Memorex CDS6X	56X	90ms	\$89

**• CD CHANGER •**

Pioneer 24X 6 Disc external SCSI DRM6324X \$419

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Capacity Native-Compressed Max. Speed

**• 4mm DAT •**

2-4GB	66MB/min	Seagate STD24000N	\$549
4-8GB	66MB/min	Seagate DDS-2 STD28000N	\$629
4-8GB	90MB/min	Sony SDT7000A1	\$559
4-8GB	60MB/min	HP C1599A1	\$719
6GB	52MB/min	Indigita IDT2500	\$489
12-24GB	14MB/min	Sony DDS-3 SDT9000A1	\$759
12-24GB	132MB/min	Seagate STD224000N	\$849
12-24GB	120MB/min	HP DDS-3 C1554A1	\$929
20-40GB	288MB/min	Sony DDS-4 SDT10000A1	\$1129
32-64GB	90MB/min	Sony TSL7000 8 tape load	\$1899
49-96GB	48MB/min	Seagate SLT496000N	\$2199
72-144GB	120MB/min	HP C5648A 6 tape load	\$2679

**• EXABYTE 8mm DAT •**

7-14GB	120MB/min	ELIANT820	\$1279
20-40GB	360MB/min	EXB8900	\$2489
70-140GB	60MB/min	EXB1010 10 tape loader	\$2699

**• QUANTUM DLT •**

20-40GB	180MB/min	DLT4000	\$1859
35-70GB	600MB/min	DLT7000	\$4579
40-80GB	600MB/min	DLT8000	\$5339

**• REMOVABLE MEDIA •**

Iomega

100MB Zip Ext SCSI w/ 1 disk	\$119
2GB Jaz Internal SCSI	\$300
2GB Jaz External SCSI	\$319
1GB Jaz disk 2-4/5-9/10+	\$77/75/73
2GB Jaz disk 2-4/5-9/10+	\$86/84/82
Maxoptix Magneto Optical	
2.6GB SCSI drive	\$1129
5.2GB SCSI drive	\$1509
Sony Magneto Optical	
5.2GB SCSI drive	\$1529

## CD RECORDABLE PLATINUM MEDIA

5 Pack (CDR74P-5)	8x	\$23	\$21
20 Pack (CDR74P-20)	8x	\$45	\$42
50 Pack (CDR74P-50)	8x	\$102	\$97
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640MB, 3.5", 2048K	\$19	\$17	\$15
1.3GiB, 5.25", 1024K	\$26	\$22	\$20
2.3GiB, 5.25", 512K	\$30	\$26	\$24
2.6GiB, 5.25", 1024K	\$33	\$29	\$27
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8mm DAT 160M	\$17 \$14 \$12
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TR5	\$47 \$44 \$41

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## Epson Printer



### EPSON Stylus® COLOR 740i

USB Ink Jet Printer for Mac G3s  
•1440 x 720 dpi •USB port (requires USB cable)  
•Blueberry cover matches G3

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•9ms seek time •7200rpm •3-year limited warranty

**\$399.99** (LAC 3000-43)

## CD-Writers



### QPS Que! Drive

4x2x8 CD-ReWritable Drive  
•4x write, 2x rewrite, 8x read •USB

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### Sony Spressa® CRX100E/X

External USB CD-RW Drive Kit  
•6x read/4x write / 2x rewrite •USB

**\$299.99** (SDN CRX100E/X)

## Monitors



### Panasonic PanaFlat® LC505

15" LCD VIS Flat Panel Color Monitor  
•Active-matrix •USB •For Mac w/adapter •Speakers

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### ViewMate

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•Digital on-screen controls •Mates with G3 computer

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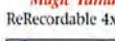
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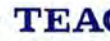
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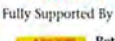
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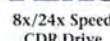
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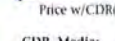
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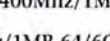
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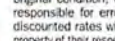
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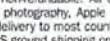
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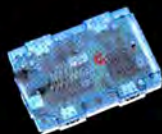
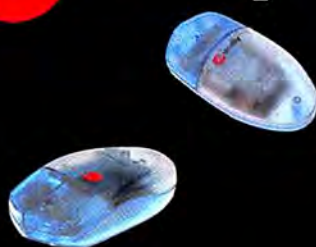
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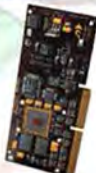


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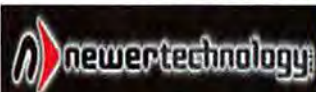
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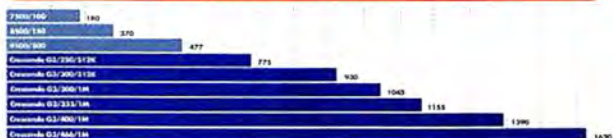
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# The Desktop Critic

by David Pogue

## Stealing for a Better Tomorrow

WHAT THE MAC OS AND WINDOWS CAN LEARN FROM EACH OTHER

**S**OONER OR LATER, STEVE Jobs and Bill Gates will be hauled into that big principal's office in the sky. "You've been bad boys," Saint Peter will boom. "Haven't you ever heard that thou shalt not steal look-and-feel?"

Steve will shuffle his feet and point accusingly at Bill. "He started it!"

He'll be right: for years, Microsoft Windows engineers have shamelessly ripped off Apple's best design ideas. But after lawsuits proved to be futile, Apple began helping itself to a few features of its own. Mac OS 8.5, for example, could almost be Windows 98's better-looking brother: the Favorites menu, draggable window edges, proportional scroll boxes, the little arrow "badge" on an alias icon, program switching via  $\mathbb{H}$ -tab, daylight saving time self-correction, and the Network Browser all debuted in Windows.

Now Apple and Microsoft are both gearing up for massive OS overhauls: Mac OS X and Windows 2000. In the interest of better computing for all, I wholeheartedly applaud their dueling intellectual-property raids. Here's what's worth pilfering from each company's rival OS... that hasn't already been stolen.

### What Apple Should Steal

In Windows, you can press Windows key-M to jump to the desktop. All windows in all programs are instantly hidden, giving you uncluttered access to your icons, disks, and the Recycle Bin. Wouldn't that be nice?

Furthermore, in Windows, you can assign a keystroke to any alias; you don't have to buy QuickKeys just to get program launching from the keyboard.

The Calculator, the Mac's handy but antediluvian desk accessory, hasn't changed since Reagan was president. The Windows calculator has bigger buttons,

memory functions, a clear-error key, and a complete HP scientific-calculator mode.

The Windows Start menu is an obvious rip-off of our Apple menu—and now it's payback time. Apple should add a Programs menu item, like the one in the Start menu, to the Apple menu. It lists *every* program on your hard drive, which saves everyone, novices and experts alike, infinite window burrowing.

In Windows, little underlines tell you what keystrokes activate menu commands, check boxes, and radio buttons.



Apple has always resisted giving us such total keyboard control. But now that large numbers of Mac buyers are refugees from Windows, it's time to reconsider. (If Apple's worried about cluttering up the screen, it should do what Claris used to do: make the little underlines appear only when you're pressing the  $\mathbb{H}$  key.)

### What Microsoft Should Steal

Windows desperately needs a title-bar doodad, like the Mac's zoom box, that resizes windows so they're exactly large enough to contain the icons in them.

Windows PCs don't come with a system-software start-up CD-ROM like

every Mac does; older models can't even boot from a CD. If your Windows folder gets corrupted, get ready for three hours on the phone with a tech-support rep.

Despite the fact that Windows 98 is supposed to be able to handle file names up to 255 characters long, the vast majority of files provided by Microsoft itself still have stupid names like F\_WINIT.DLL. For heaven's sake, Microsoft: you've got the space, now give self-explanatory names to your own files, as Apple does. Or come up with an equivalent to the Mac's Extensions Manager, to help us figure out what all this lint is.

AppleScript. Enough said.

Hard though it may be to believe, when you quit a Windows program, some of its windows may remain open, stranded on your screen—a complication of Windows' window-centric approach. The Mac's application orientation works better.

Finally, despite all its recent talk about simplicity, Microsoft still believes that what makes a better Windows is more features. The Microsoft credo, "If you upgrade it, they will come," only aggravates the worst aspects of Windows—bloat and complexity. On the other hand, it's been years since Apple foisted useless, porcine features on us (remember OpenDoc and PowerTalk?). These days, the Mac's designers consider new OS features much more carefully, weighing how each will affect the whole. When it comes to enhancing system software, Microsoft is still years away from stealing—or even noticing—Apple's crown jewel: knowing when to stop. **m**

DAVID POGUE is a coauthor, with Adam C. Engst, of the forthcoming *Crossing Platforms: A Mac↔Windows Dictionary* (O'Reilly, 1999).





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