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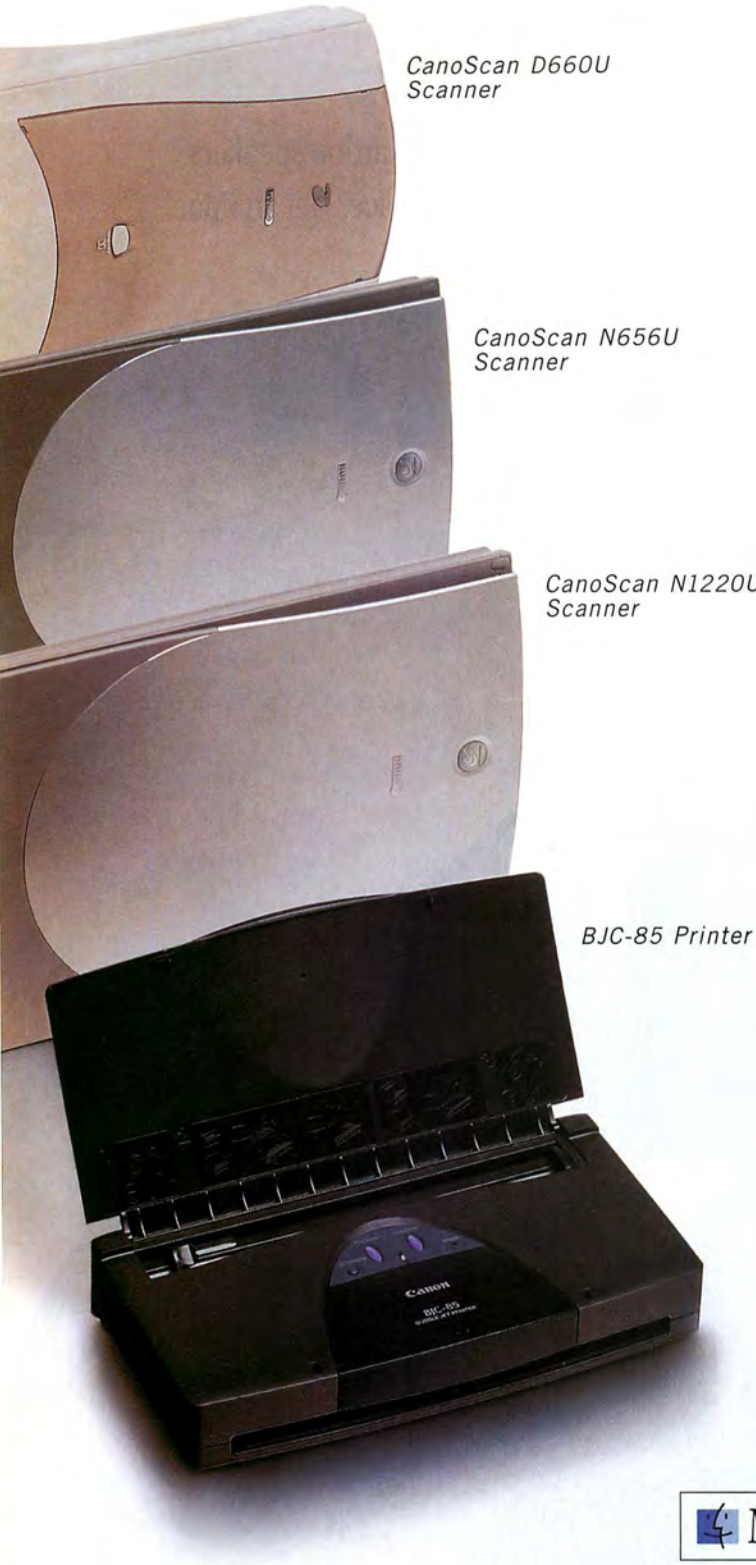

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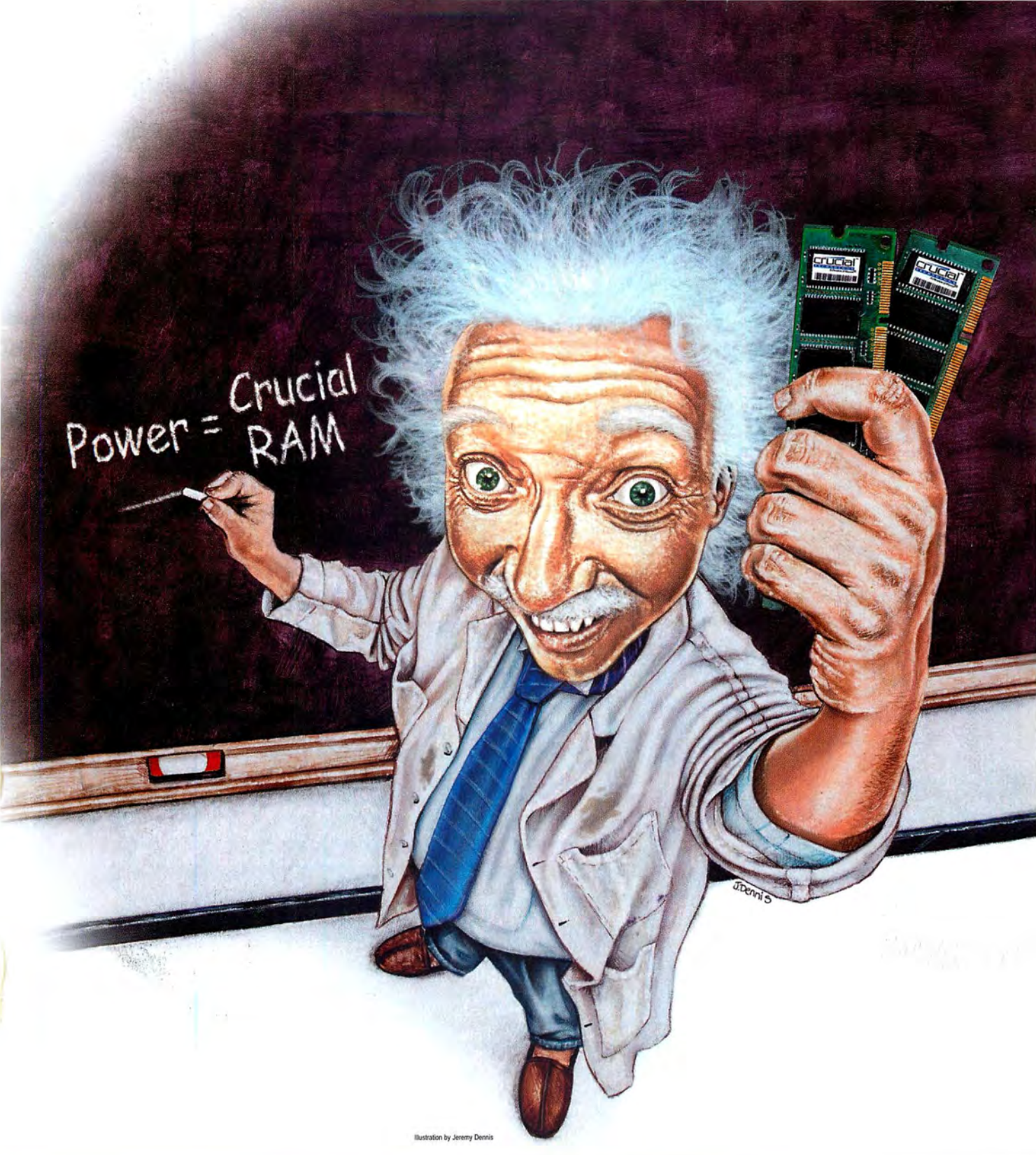

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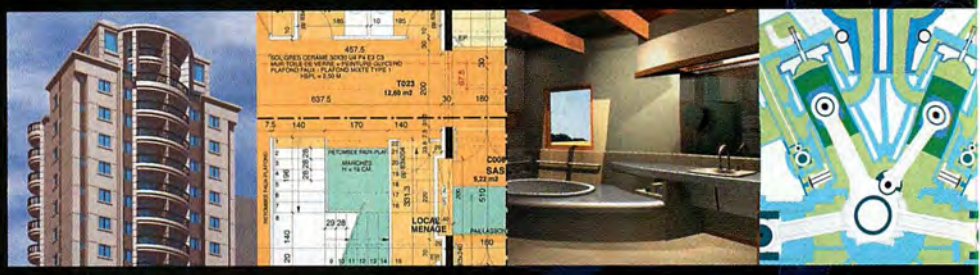

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ANDREW GORE

Your Assimilation Starts Here

AT LAST—APPLE DELIVERS A POWER MAC FOR THE MAC MIDDLE CLASS

A major perk of my job is reserved front-row seating at the Macworld Expo keynote. There was a time when this was more purgatory than perk. (I'm still recovering from Gil Amelio's infamous three-hour keynotathon.) But since Steve Jobs returned to the helm, the keynote has become the Mac market's only E Ticket ride.

At this summer's address, Steve pulled out all the stops. Apple has never introduced more products—ever. It was almost too much to bear, like the cracking of a hundred lashes across the eyes and ears of the audience: Crack! New mouse. Crack! New keyboard. Crack! Dual-G4 Power Macs. Crack! iMovie 2. Crack! Crack! Crack! Crack! Crack! Crack! Crack! Crack! New iMacs. Apple should have handed out translucent slide rules to help keep track.

My palms were sweaty and my fingers sore from trying to take notes, my eyes burned because I hadn't dared blink on the chance I might miss something, and my head reeled with monikers and configurations. What was it again? An iMac DV + that had FireWire but no DVD drive? Or was that the iMac DV? And the Power Mac G4 with the dual 500MHz processors came with the rich Corinthian leather, right? Or was that the new jellyfish-like 17-inch Apple Studio Display?

When I could bear it no more, Steve stopped, turned to the audience, and said, "Oh, just one more thing." And from behind a curtain came a shiny, silver blue box, about eight inches square, that seemed to float an inch above the table in a case of clear plastic. And he said its name: "This is the Power Mac G4 Cube."

And I passed out.

Mac³

Okay, I didn't pass out, and I wasn't even all that surprised. It would've been hard to be surprised when the rumor sites had been full of details about a cube Macintosh for weeks in advance of the intro. One site even posted pictures!

But no amount of advance info could have prepared me for the impact of *seeing* the Cube up close and personal, following, as it did, a virtual barrage of fairly uninteresting intros. (Dual-processor G4s? Call me when Mac OS X ships. New iMac colors? Oh, yeah, that's innovation. And don't even get me started on iTools.) About the only other thing that got my pulse racing was iMovie 2 (to see just how fast, check out my review elsewhere in this issue). But the Cube? I may not have lost consciousness, but I was thinking, "Oh, cooool!"

The mere fact that Mac users seem so violently divided on their opinions of the Cube proves that it's a product that's pushing the envelope (check out the Cube forum at www.macworld.com/2000/07/19/cube.html). For me, the best part is that the Cube reaches the Mac middle class: users who find the iMac hopelessly anemic yet hunger for its style and simplicity. It's a G4 that breaks the rules; the Cube's mere existence calls for an entirely new rulebook.

continues

The iMac Factor

The iMac has revolutionized the computer world by offering high style and low maintenance at a reasonable price. And while it may not offer any real expansion, it includes almost all the key enabling technologies available on the platform (AirPort, FireWire, USB, and DVD), so it can still get the job done.

However, it does leave open a large gap in Apple's desktop product line, similar to the gap between iMovie and Final Cut Pro. iMovie 1 was a low-end editing tool that was a great intro to making digital movies—but users hit its limits almost immediately. Final Cut Pro is incredibly powerful, but too expensive and way too difficult for most regular people to use. In other words, the vast majority of Mac users, those who are proficient users but not necessarily experts, didn't have a tool geared to their needs.

iMovie 2 clearly addresses that middle class of users, just as the Cube will address users in search of both power and simplicity in a Macintosh. It's about time Apple figured out that there's a huge number of users who have either had to make do with an iMac or knuckled down and bought a G4 tower that they really didn't need. I believe the vast majority of the Mac community is composed of people who are experts at using a Mac in their job or hobby but not experts at every aspect of that computer.

Case in point: I have a friend who's a Web designer and a mixed-media artist. She can make HTML jump through flaming hoops, but ask her to set up an AirPort network or edit a DV stream in QuickTime Pro, and she balks.

Now, my friend is certainly no newbie, and she needs the power of the G4 to get her job done. But she doesn't need all those PCI slots or the extra bulk of a tower in a home office already crammed with her art. And it would be nice if the computer were easy to set up and use. Until now, her only choice has been a G4 tower. But by the time you read this, she'll be able to get a Cube, and I'm guessing she'll already have one.

About the only stumbling block will be the price. At $1799—which doesn't include enough RAM or a display—the Cube is too expensive. It should fit between the high end of the iMac line and the low end of the G4 towers, not float between single- and dual-processor G4 machines. A price tag of $1499 would allow users to get a reasonably equipped system for just under $2000, a magic number in the midrange market.

Prepared to Be Assimilated

I find it more than a little ironic that just a few summers ago the most popular Expo fashion was a T-shirt with a picture of Bill Gates on it. He had an assortment of cybernetic implants pasted to his head, like a dorky Locutus of Borg. The caption below the picture stated, "Prepare to be Assimilated."

Three years later, it looks as though it's Apple who will be doing the assimilating. And I, for one, can't wait for the Apple Cube to invade our space. **m**

ANDREW GORE is *Macworld*'s editor in chief. To comment on this column, please visit the Vision Thing forum at www.macworld.com/columns/visionthing/.

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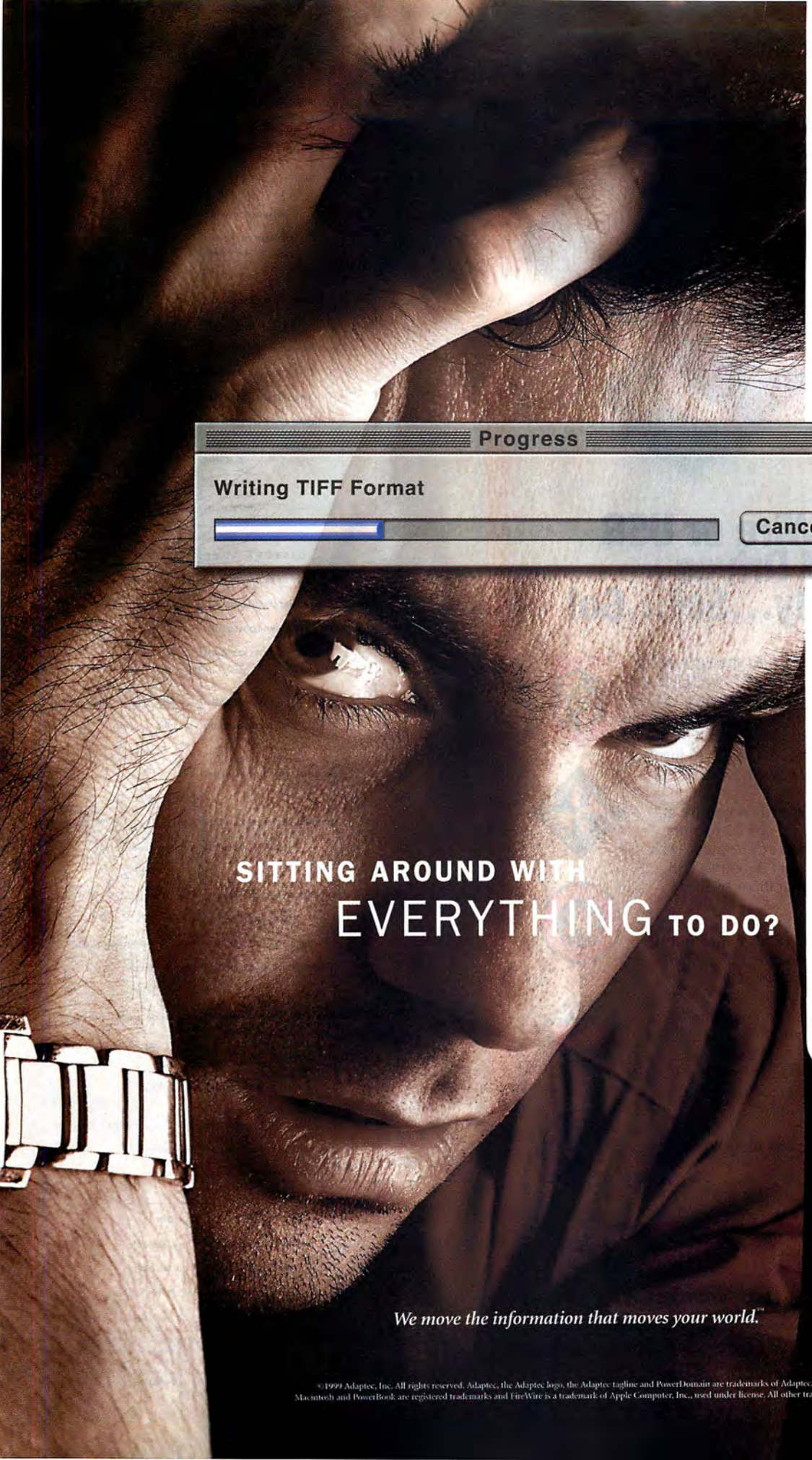

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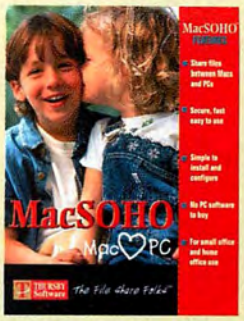

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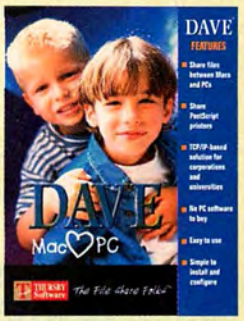

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Feedback

The Future in Your Palm

The July 2000 article "Anywhere, Everywhere, Everything Palm" states that the Handspring Visor OS is not upgradable. According to the Handspring Web site, the OS is upgradable through software patches.

Joel A. Karahadian, *Pasadena, California*

You can update the Handspring OS using patches, but you can't upgrade it to newer full versions (such as Palm OS 3.3 or 3.5, the current versions) because the Visor ROMs can't be upgraded. It's kind of like fixing the plumbing in your house: you can bring a plumber out to repair leaks and extend connections (patches), but if your pipes are really shot, you need to replace the whole system (upgrade).—Jeff Carlson

Alligators in the Moat

In the sidebar "Your Cube Is Not Your Castle" ("Protect Yourself Online," July 2000), you suggest that former CIA director John Deutch should have protected his Mac with OS 9's Voiceprint feature. It has been my experience that Mac OS 9's Multiple Users is not secure; with a different start-up disk—such as an external drive or even the Mac OS 9 CD—you can easily access the hard drive. While Mac OS is the best platform out there, OS 9's Voiceprint is certainly not a secure means of locking a hard disk.

Matt McEmber
Midland, Michigan

The sidebar "Your Cube Is Not Your Castle" states, "If you use text passwords, include capital and lowercase letters." While this is generally good practice, it's pointless with Mac OS 9's Multiple Users feature because the passwords, unlike those for File Sharing, are not case sensitive. This may have been done intentionally to improve ease-of-use for new users, but case sensitivity should be an option for the security conscious.

Kurt Sheffer
Wilmette, Illinois

Help for Internet Explorer 5

As anyone who has spent any time with Microsoft Internet Explorer (IE) 5 (*Reviews*, July 2000) knows, the program is great as long as you're viewing a single Web site and not using Java. Try opening multiple pages—especially dynamically generated e-commerce pages—and the browser becomes increasingly unstable. A crash in IE 5 doesn't lock up the application and require a forced quit; it brings down the whole system, forcing a reboot. IE 5 looks great and renders pages quite nicely, but it is in desperate need of some under-the-hood improvements.

Rob Wyatt
Los Angeles, California

I am routinely able to have five or ten pages open in IE 5. All you have to do is give IE a bigger memory allocation. (I currently have the program running at 10Mb.) As for Java, IE 5 uses Apple's MRJ (Macintosh Runtime for Java). MRJ for Mac OS 9 is behind the times—and Apple has no plans to improve it. When you are able to upgrade to OS X, you'll get a modern Java from Apple. However, it's not fair to dun Microsoft for

continues on page 24

Jodie
world traveler

"I switch from words to numbers to pictures all day. From mental to global. And back. I need tools that can keep up with me and my Mac." **Microsoft® Office 2001.** All the essentials. Made easy. Made for my Mac.

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continued from page 21

Apple's poor implementation of Java. Netscape 4.X still uses its own Java virtual machine, which is even older than MRJ.—Tom Negrino

Bad Eggs

Just picked up your July 2000 issue and noticed a little blooper. In Christopher Breen's *The Game Room,* a caption titled "Madden's Missing Easter Egg," makes reference to the "1984 Raiders-Chiefs Super Bowl." While I agree with Breen that it would've been cool to see Apple's famous "1984" commercial during the game's halftime show, it would've been cooler to see the Raiders play the Chiefs in the Super Bowl at all (they're both AFC teams).

Warren Oshita
Palo Alto, California

You're absolutely correct: the 1984 Super Bowl was played by the Oakland Raiders and the Washington Redskins, not the Raiders and the Chiefs. We'll just have to chalk this one up to brain fade. Thankfully, my condition wasn't so extreme that I listed the Atlanta Braves or Cleveland Indians—and placed baseball players at the Super Bowl.—Christopher Breen

Sad Eyes

Thanks for a great column ("Real Estate Breakers," *The Desktop Critic,* July 2000). The reason for Apple's bigger icons is the only in-house designer that counts: Steve Jobs. In case no one has noticed, this forty-something suffers from a common malady—aging eyes. Notice how the old Apple print ads were full of text? That was Steve's influence back then. Notice the new print ads? Just a couple of words. I understand completely what's going on. Reading glasses have become the norm for both Steve and me. Expect ever larger icons.

Jim Hoyt
Portland, Oregon

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CORRECTIONS

The Power Macintosh G4/500 (*Reviews,* July 2000) has a 27GB hard drive. m

The Feedbag

This month's comments come to us from postings at Macworld.com. Many are reactions to stories about hopes for an Apple handheld and about the cost of a Mac versus the cost of a PC. To participate in the Macworld.com forums on hot topics, visit www.macworld.com/buzz.

Just give me a tan metal box, and knock several hundred off the price tag, please.

Settle for cardboard, and we'll knock the price down even more!—Ed.

If price *is* inversely related to market share, then I guess that explains why the infamous Yugo has dominated the auto market since it was introduced.

Well, it has in Yugoslavia, anyway....—Ed.

What is this obsession with using Macintoshes right out of the box? I saw a Mac nut at work proudly demonstrate that he could set up a brand-new iMac and be online in less than 10 minutes. I bought an eMachine a few weeks later and decided to time myself. I was online in about 15 minutes. This was the first non-Apple computer I had set up. I don't think those five minutes of my life were worth paying for.

That's the problem with products today. If only they were more difficult to set up and inefficient to use. Whatever happened to the good old days of slide rules, manually operated printing presses, and Soviet-made cars?—Ed.

Rome wasn't built in a day, but if it had been, Apple would've built it.

But then they would've announced a shipping delay.—Ed.

I've lost my Newton pen and am not having much success with fingernails and pencils. I live in London, and I haven't yet found a place to buy Newton pens in the United Kingdom. Is there a mail-order service I can contact?

Snide answer: Might we suggest crayons? Useful answer: Cross makes a pen with a stylus tip. Levenger (www.levenger.com) has plenty to choose from.—Ed.

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The CUBE

The plastic, cube-shaped device may look spartan, and it may be no bigger than a tissue box. But hidden beneath the Power Mac G4 Cube's deceptively simple design is a machine that will change the way you think about what a computer—or a TV, video game, or home stereo—can be.

The Cube, which should be shipping by the time you read this, doesn't have a single analog circuit in it, except for the power supply. By leaving analog behind, the Cube is a product that should appeal to Mac users who've longed for the power of a G4 but have hesitated to embrace the complexity (not to mention the expense) of the G4 tower.

"A lot of pros wanted the simplicity of an iMac," says Jon Rubinstein, Apple's senior vice president of hardware engineering. "A lot of consumers were buying G4s to get the power."

Hence, the Cube's price: at $1,799, it costs more than the 400MHz G4. But it also packs more of a wallop. The Cube comes with two USB Harman Kardon speakers, a digital amplifier, and iMovie 2. (A 500MHz G4 Cube sells for $2,229.)

At 9.8 by 7.7 by 7.7 inches, the Cube is hardly bigger than its top-loading DVD slot drive. Instead of a fan, a large radiating vent on the top of the box dissipates the heat generated by the Cube's 450MHz G4 processor.

Because of its excellent digital audio capabilities and its ability to play DVD-quality movies, the Cube is likely to end up in home entertainment centers.

Combine it with an array of third-party USB-based peripherals, and the Cube could become the tiny translucent center of an audio/video/Web-surfing/game-playing system to make even hard-core digital-convergence naysayers fall to their knees and beg forgiveness—or at least stop comparing the Cube to a tissue box.—ANDREW GORE

"Holy st, they've done it again."**

—Lee Clow, chief creative officer of TBWA/Chiat/Day, on his initial reaction to the G4 Cube

Buzz

News, Views, and Chatter from the World of Macs

An iMac of a Different Color

When Steve Jobs returned to Apple in 1997, he looked at the jumble of names and numbers that made up the product line and blanched. Jobs immediately made order of chaos by paring Apple's offerings down to a few distinct products. After all, it's easier to sell folks something when they can actually remember what you sell.

The idea of keeping it simple appears to have gone out the window with the latest round of iMacs. When the iMac debuted two years ago, it came in one color, with one processor speed and one price tag. The product line has now swelled to four configurations and five colors (see "The Not-So-Usual Suspects"). You could buy eight brand-new iMacs and never get the same one twice.

The latest versions of the iMac don't have a huge boost as far as cold hardware specifications are concerned. The colors and prices really make the machines stand out.

Take the least-loaded of the new iMacs. It has the same 350MHz G3 processor and the 64MB of RAM included in its predecessor. But it features a new color, indigo, and a low price of $799. Think of it as a machine that offers easy Internet access while providing more pop than dumbed-down Internet appliances.

The $999 iMac DV model—available in ruby and indigo—now comes with a 400MHz G3 processor. Unlike with past iMac DV models, you won't find a DVD drive, just a slot-loading CD-ROM model.

The confusion begins with the inelegantly named iMac DV+. Available in ruby, indigo, and sage, the $1,299 iMac DV+ runs on a 450MHz G3 processor. It sports a 20GB hard drive—twice as big as the original iMac's—and adds a DVD drive.

Finally, there's the iMac DV Special Edition, a $1,499 machine that comes in graphite and snow. Unlike the original iMac DV Special Edition, which came with the same processor as the other models, this version features a 500MHz G3 processor. All the iMac DV models ship with iMovie 2.0.

There's something to be said for variety, but not if it requires you to consult a cheat sheet to make sure you're buying the computer with the DVD drive but without the graphite casing.

The new iMacs certainly win Apple some style points while keeping an aging product line fresh. As for simplicity, be happy with what comes inside the machine, because the names and specs on the outside are becoming more muddled than ever.—PHILIP MICHAELS and JASON SNELL

The Not-So-Usual Suspects

MODEL	PROCESSOR	MEMORY	OPTICAL DRIVE	FIREWIRE	HARD DRIVE	VIDEO OUT	PRICE
iMac	350MHz	64MB	CD-ROM	No	7GB	No	$799
iMac DV	400MHz	64MB	CD-ROM	Two ports	10GB	Yes	$999
iMac DV+	450MHz	64MB	DVD-ROM	Two ports	20GB	Yes	$1,299
iMac DV Special Edition	500MHz	128MB	DVD-ROM	Two ports	30GB	Yes	$1,499

PHOTOGRAPHS COURTESY OF APPLE COMPUTER

POWER MAC G4

Dual Processors: TWICE AS NICE

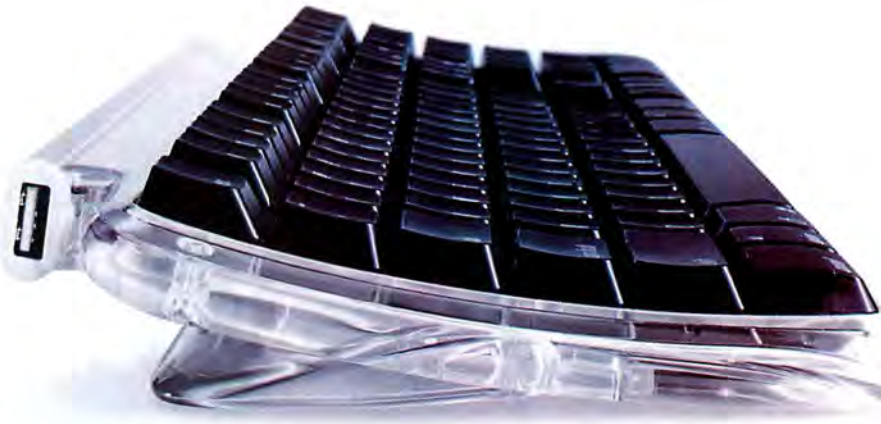
Apple's been down the dual-processor road before: back in 1996, when the Chicago Bulls and Gil Amelio still ruled the land, the company rolled out the power-mad Power Mac 9500. It had two 180MHz PowerPC 604e processors, and to really take advantage of the second one, you had to use software written specifically for the task.

But unlike the evolutionary dead end of four years ago, Apple's release of two dual-processor Power Mac G4s means multiprocessor Macs are here to stay. Don't start adding two 500MHz G4s together and coming up with a gigahertz, though: today's Mac OS isn't multiprocessor-savvy enough to tax both processors to their limits.

The arrival of dual-processor Power Macs steers the G4 minitower toward high-end users. The base configuration remains the same—you still get a Power Mac G4 at 400MHz, with a 20GB hard drive, for $1,599.

Beyond that, the G4 minitowers are all about dual processors. The next step up from the 400MHz model is a $2,499 G4 with two 450MHz G4s. High atop the mountain stands the new Mac speed king, a dual-500MHz box that sells for $3,499.

One problem: these new multiprocessor Macs will make killer Adobe Photoshop machines, but they won't transform the entire Mac experience until OS X arrives. Unlike the current Mac OS, Apple's new operating system can innately use multiple processors, dividing all the duties of the computer with ease.—JASON SNELL



NEW PERIPHERALS

The Mouse That Roared

The best news out of the New York metro area this summer wasn't the New Jersey Devils' Stanley Cup victory. It was Apple's decision to take its hockey puck–like mouse and send it away faster than a Claude Lemieux slap shot.

Both the mouse and the munchkin-compatible keyboard head off to well-deserved graves with the release of the Apple Pro Mouse and Apple Pro Keyboard, already shipping with Apple's newest computers.

The Apple Pro Keyboard sports full-size function keys, audio controls, navigation keys, and a number pad. It also features a media-eject key that lets you eject CDs and DVDs without having to drag and drop desktop icons. The Apple Pro Mouse features a more ergonomic shape and optical tracking instead of a ball. Apple trumpets the mouse as "uniquely designed to fit any hand," due to its click-anywhere full-surface button. Optical tracking means you won't need a mouse pad and won't have to worry about cleaning gummy mouse balls ever again.—MATHEW HONAN and LISA SCHMEISER

More Info: www.macworld.com/2000/01/20/micetable.html

Macworld rates an array of USB mice and trackballs.

LINKS

More Info: www.macworld.com/columns/mediamagnet

Jonathan Seff is never mute about sound and the Mac. Catch up with his rantings here.

LINKS

THE SPEAKERS

The Cube Sounds Off

Because of the G4 Cube's small size, Apple was forced to "think outside the box"—literally. There isn't enough room to put everything inside. The Cube's external power supply, for example, takes up about as much room as a three-egg omelette, a fact Apple didn't bother to publicize.

Also completely external is the Cube's sound output.

The G4 Cube comes with a pair of crystal-clear, eyeball-shaped speakers created by Harman Kardon and Apple. They belt out 20 fair-sounding watts of sonic force between the frequencies of 80Hz and 20kHz, all through the power of the Cube's USB port. How? Because of the efficiency of the digital amplifier housed in a box along the USB cable. The amp even has an analog headphone jack—good news since the Cube itself has no I/O for speakers or microphones, other than USB.—JONATHAN SEFF

"This is at the heart of Apple. We want Apple to stand at the intersection of art and technology."

—Apple CEO Steve Jobs on iMovie 2

iMOVIE 2

The Next Picture Show

Rarely does a sequel measure up to the original. But Apple hopes iMovie 2 is more like *The Godfather, Part II* than *Breakin' 2: Electric Boogaloo.*

iMovie 2 offers an OS X–like interface, though the software runs on OS 9. More important, the interface is more intuitive than the original iMovie's and lets you put in as many clips as you want.

Apple has also added a new effects panel that gives you the ability to tweak the look of your videos. Want that family movie to look more like an old newsreel? With iMovie 2, you can give the image a sepia tone or make it black-and-white. Other effects can give video clips a soft focus or employ slow and fast motion.

Additional changes offer greater editing control. You can now lay secondary video clips over the primary video while keeping the primary video's audio track.

Apple has already added the software to the new iMac DV models and the Power Mac G4 line, including the G4 Cube. iMovie 2 goes on sale in September for $49. Popcorn sold separately.—PHILIP MICHAELS

THE MONITORS

Enjoy the View

So you've got a sleek new G4 Cube and you're ready to put it through its paces. Only one question: what do you use for a monitor?

The new Apple Studio Display might fit the bill. The 17-inch monitor with a 16-inch viewable area looks how the engineers of the 1950s thought gadgets of the year 2000 would look. Straight out of Tomorrowland, the $499 display sports a Natural Flat Diamondtron CRT up front and a curvy, translucent design in back.

Other new monitors designed to complement the G4 Cube and the other G4 desktops include the 15-inch Apple Studio Display flat-panel monitor for $999 and the 22-inch Apple Cinema Display for $3,999.

All three displays are powered from the computer; they don't need a separate power cord. Each sports a two-port USB hub for peripherals. And all three use the Apple Display Connector, which carries analog and digital video signals, USB, and power over a single cable.—BRETT LARSON

OS X
HEADED FOR A FALL?

Technically, the autumnal equinox does not happen until September 21, meaning that summer doesn't end on the last day of August. So if the public beta of OS X ships in early September—as Apple CEO Steve Jobs insisted it would at July's Macworld Expo—it shouldn't count as a product delay. Apple said a public beta would be out this summer, and as we've just established, summer lingers until September 21.

Still, with another Expo come and gone and no OS X beta in hand, it's easy to understand why some of the Mac faithful may be feeling a little antsy. And users are ready. A poll of Macworld.com readers found that 78 percent of you can't wait for OS X's release.

Even with all the products launched by Apple recently, no OS X news is not necessarily good news. And make no mistake: Apple had little to add about OS X at Macworld Expo. Jobs used part of his keynote to run through some of the new operating system's features—the Aqua interface, the Dock, the ability to keep running applications even after one has crashed.

"Isn't that nice?" Jobs asked after showing off OS X's new interface.

Sure. But it was just as nice six months ago.—PHILIP MICHAELS

Ready to Upgrade to OS X?

ANSWERS	TOTAL	PERCENT OF TOTAL
Ask me again next June.	266	18
OS X? Gimme, gimme, gimme.	1,129	78
We don't need no stinkin' upgrades.	57	4
Grand Total	1,452	100

"You can now get a Mercedes or a BMW for the price of a Ford Taurus."—Apple CEO Steve Jobs on the $799 iMac

FUN WITH iMACS

Sale of the Century

Since the first iMac debuted two years ago, Apple has sold 3.7 million of them. As some number cruncher in Cupertino likes to put it, that translates to 5,000 iMacs sold each day, 200 each hour, and 3.5 every minute. Telling numbers, to be sure, but we think we've found even more eye-popping sales statistics.

- 0.5 iMacs were sold for every person born in the United States last year.
- 58.7 iMacs were sold for every bug rumored to be in the shipping version of Windows 2000.
- 70 iMacs were sold for every person in Cupertino.
- 169.2 iMacs were sold for each inning played during a 162-game Major League Baseball season.
- 8,314 iMacs were sold for every page of the Starr report.
- 8,462 iMacs were sold for every mile of a round-trip drive between Cupertino and Redmond, Washington.
- 37,755 iMacs were sold for every year that Senator Strom Thurmond has been alive.
- 1.2 million iMacs were sold for each announced delay of the OS X launch.
- 3.7 million iMacs were sold for every dollar of Steve Jobs's annual base salary at Apple.

COLOR ME RAGWEED?

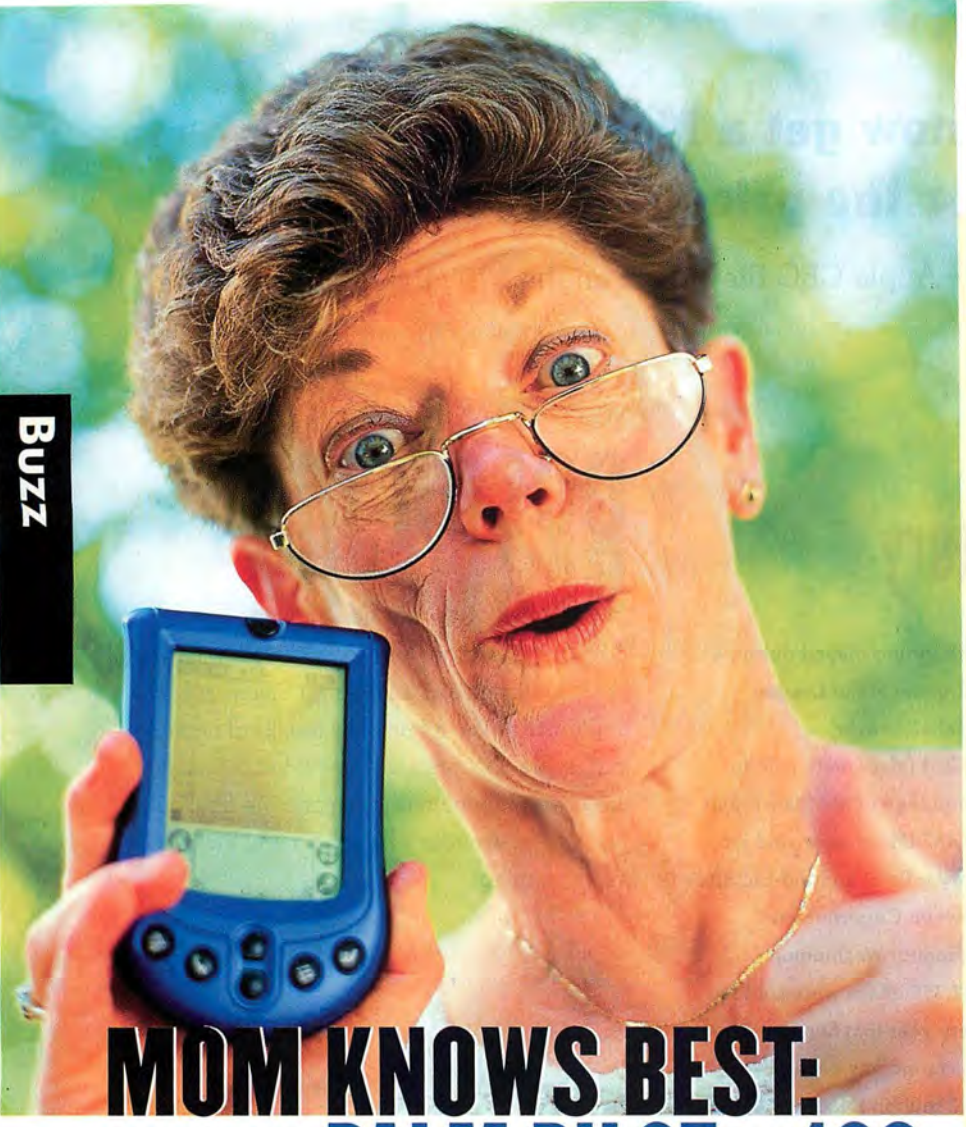
Ruby, sage, indigo, and snow? Though it sounds like a lounge lizard butchering Simon and Garfunkel lyrics, it's actually the list of names that Apple has given the new iMac colors. If these were the names that made the final cut, you have to wonder what else might have been in the running.

Ruby (red)
- Aorta
- Bing cherry
- Crimson
- Bloody Mary
- Clown nose

Sage (green)
- Asparagus
- Algae
- Poison oak
- Ragweed
- Wormwood
- Shamrock Shake

Indigo (blue)
- Tap water
- Blue Meanie
- Smog
- Windex
- Denim
- Kool-Aid

Snow (white)
- Coconut
- White zinfandel
- Meringue
- Cataract
- Nondairy creamer
- Spackle



MOM KNOWS BEST: PALM PILOT m100

Mom was alternately delighted and unimpressed by features available on the new Palm m100.

Palm has won the hearts of techies with its self-named personal digital assistant (PDA). Now the company has its sights set on a new market—consumers who have yet to jump on the handheld-organizer bandwagon.

But can Palm hold its own against my mother?

Palm thinks it can with the m100, its first device aimed at folks who don't know a PDA from their elbow. The m100 boasts a retooled design, an easy-to-use Note Pad application, and even customizable faceplates.

It sounds as if Palm is targeting people like Mom. She finally gave that newfangled audio-CD technology a try last year. She thinks DVD is something you treat with penicillin shots.

But Mom has heard of Palm, and she wanted to give the new PDA a try. "I've seen that commercial where the woman's in the train, and she sees the good-looking man," Mom says. "So she uses her Palm to send over her address. I'd like to be able to do that."

My father was unavailable for comment.—PHILIP MICHAELS

WHAT PALM AND MOM HAVE TO SAY

DESIGN

Sleeker design, rounded bottom gives the m100 a look that appeals to consumers.
It looks classy.

DURABILITY

Thicker frame lets users take the m100 anywhere without worrying about breakage.
The casing seems pretty sturdy.

CUSTOMIZABLE FACEPLATES

Colorful snap-on faceplates (sold separately) let users have fun personalizing their Palm.
Why would I want to change the color? The black looks fine.

NEW BUTTONS

A Note Pad button has replaced the traditional Memo Pad one, making it easier for users to scribble notes in their own handwriting.
How do you turn it on?

CLOCK APPLICATION

Pressing the Scroll Up button lets users see the time and date through the window of the m100's flip cover.
Oooooh. That's handy.

MAC COMPATIBILITY

The m100 offers out-of-box support with Mac software included on the dual-platform CD-ROM. A free adapter is available via the Web.
I use Windows.
(My mother is dead to me.)

ON-DEVICE TUTORIAL

The m100 offers a tutorial to users after they set the time and date.
This is good, because otherwise I wouldn't know what to do.

PRICE

$149
I'd pay $60. But I wish it cost $20.

PHOTOGRAPHS BY DEBRA McCLINTON

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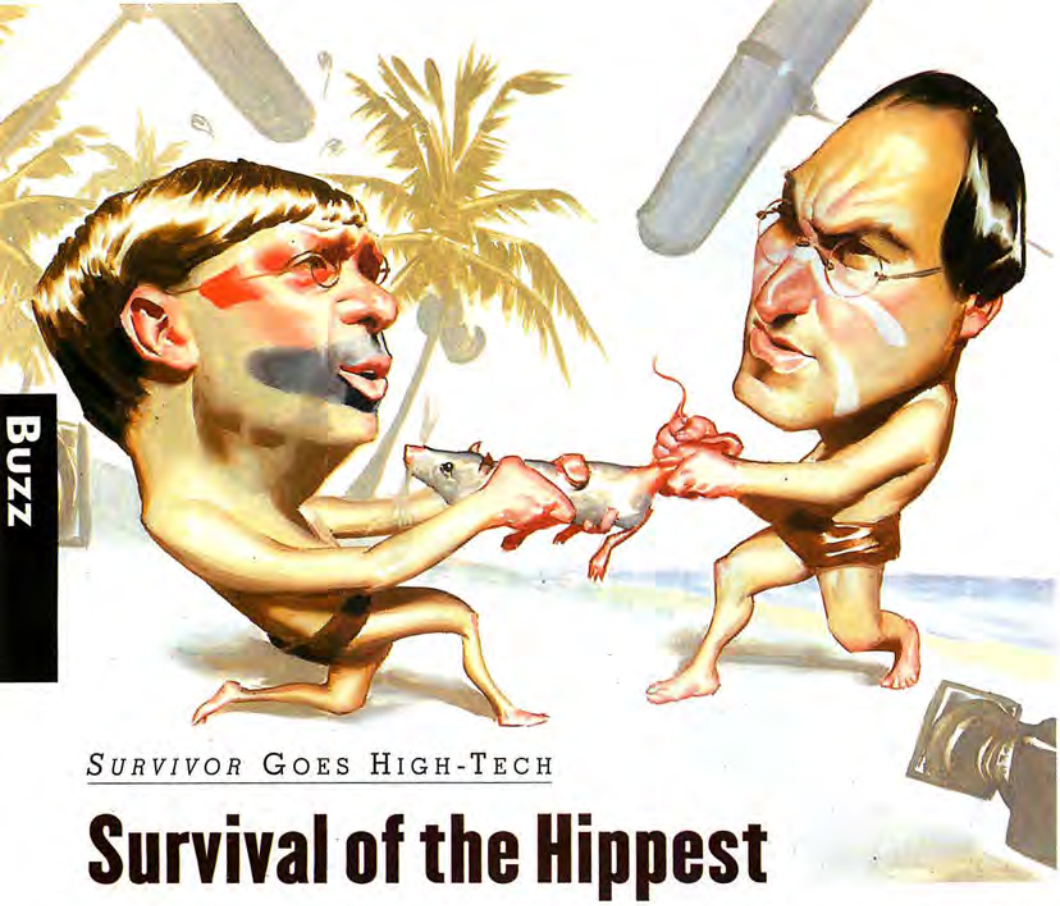

ILLUSTRATION BY DANIEL ADEL

Survivor Goes High-Tech

Survival of the Hippest

Few TV shows have captured the imagination of viewers as much as *Survivor,* the hit show that pits 16 contestants against nature—and each other—on a tropical isle. The show divides the contestants into tribes, which compete in contests of skill. Each week the losing tribe votes to expel a member from the island, until only one remains—the hearty individual who has bested personal politicking, petty bickering, and the occasional meal of grilled rat to reign as sole survivor. But why not populate the island with computer-industry heavyweights? After all, who's more familiar with personal politicking, petty bickering, and vermin than the titans of Silicon Valley?—PHILIP MICHAELS

APPLE TRIBE

JOHN SCULLEY, Apple CEO 1983–93
Assets: Brings an almost limitless supply of Pepsi. **Liabilities:** Obsession with crafting a crude handheld device out of a hollowed-out coconut.

GIL AMELIO, Apple CEO 1996–97
Assets: Helped turn around the last island he was marooned on. **Liabilities:** First thing he does is lay off 25 percent of the cabana boys and cut back on everyone's rice rations.

STEVE JOBS, Apple CEO
Assets: So resilient that even if he's voted off, he'll return later in the role of interim tribe member. **Liabilities:** Stubbornly refuses to stay in tribe's hut until it's translucent and candy colored.

STEVE WOZNIAK, Apple cofounder
Assets: Uses technical know-how to build bamboo-encased Macs for each team member—out of his parents' cave. **Liabilities:** Keeps falling for Jobs's "I won't vote you off the island if you don't vote me off the island" ploy.

SILICON TRIBE

BILL GATES, Microsoft founder
Assets: In exchange for support from other tribe members, he offers to buy them their own island. **Liabilities:** Builds haphazardly erected huts that mimic Apple tribe's design but periodically tip over.

STEVE BALLMER, Microsoft CEO
Assets: Harnesses motivational tools of screaming and derision to drive his teammates to excel. **Liabilities:** You've all read *Lord of the Flies,* right?

LARRY ELLISON, Oracle CEO
Assets: Uses cunning private investigators to dig up dirt on rivals and teammates. **Liabilities:** Inexplicable fear of wicker.

STEVE CASE, America Online CEO
Assets: Has the financial resources to buy the island and turn it into an AOL subsidiary. **Liabilities:** Justice Department blocks his attempt to merge competing tribes into a single entity.

Click Here

Put Up Your Dukes

Al Gore may have invented the Internet, but the presidential candidate for Mac lovers has to be *Doonesbury*'s Ambassador Duke. You may not agree with Duke on all the issues, but man, what a Web site. Featuring top-notch 3-D graphics, **Duke2000.com** offers manna for political junkies and tech enthusiasts alike. Regularly posted campaign videos show how QuickTime livens up a Web site when used well. But it's Duke's perspective on the issues that really sets Duke2000.com apart. Education? "I'd hire one teacher for every subject, give them a cable channel, and let the kids watch at home." Maybe Duke uses a Mac, maybe not. But he definitely thinks different.—MATHEW HONAN

www.Duke2000.com

THE LACIE POCKETDRIVE™ Measuring just 3.5" x 5.75" x 1" and weighing a mere 12.5 oz., it's the hard drive equipped with both USB and FireWire™ connections, and available in either 6 or 18 gigabytes of portable storage.

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Who Wants to Be a MAC-ILLIONAIRE?

Sure, the stock market looks shaky now. But Apple looked like a bad bet on July 10, 1997—the day its stock price fell to a low of $12.75 a share. What if you were able to buy 500 shares then and sell them when Apple peaked at $150.38 a share last March? Assuming a 10 percent capital gains tax, you'd end up with a tidy profit in the neighborhood of $61,931.25. What should you do with all that money? Set it aside for a rainy day? Reinvest in another company? Nah—you'd do what we would do: blow it all on Mac stuff.—PHILIP MICHAELS

ILLUSTRATIONS BY JOHN FARNSWORTH

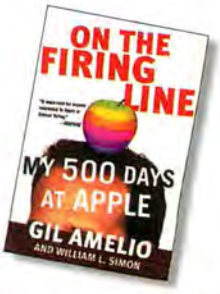
No Longer Business As Usual

Scan the business-software landscape for the Mac, and you half expect to see tumbleweeds blowing on the horizon. It's not that the programs are lackluster; it's just that since Intuit stopped developing QuickBooks for the Mac several years ago, there hasn't been that one software package that handles the nuts and bolts of running a small business.

MYOB thinks it can change that. It's planning a fall 2000 release for MYOB AccountEdge, the successor to Accounting Plus 9.0. AccountEdge includes the same features as Accounting Plus and adds contact-management capabilities that let users call up data on customers, vendors, and personnel. But one of AccountEdge's greatest strengths may come from the company supporting it: Apple has put its heft behind the product. "The small-business market has been missing one thing," says Clent Richardson, Apple's vice president of worldwide developer relations. "We haven't had a great solution that empowers small businesses."—PHILIP MICHAELS

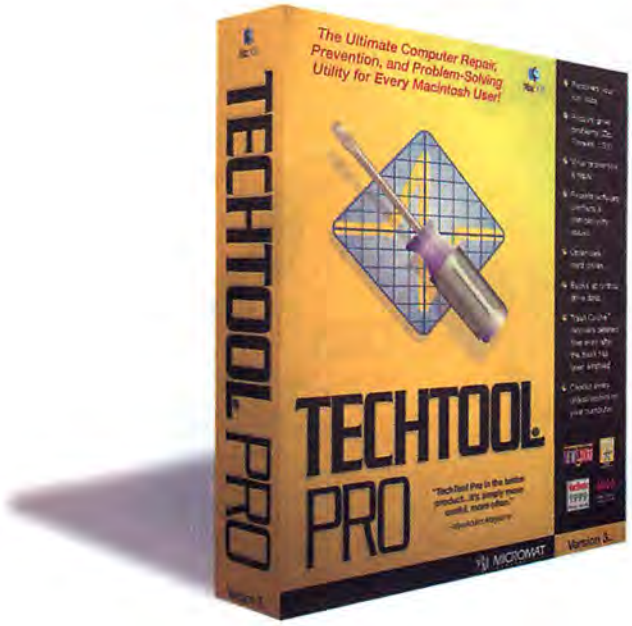
WHAT DOES $61,931.25 GET YOU THESE DAYS?

- Every product that won *Macworld*'s 15th Annual Editors' Choice Award: **$12,063**
- A 500MHz Power Mac G4 with an Apple Cinema Display, a Sony DCR-TVR 900 digital video camera, and Final Cut Pro with the Media Cleaner Compression software suite: **$11,845**
- Six iMac DVs (all five flavors plus the graphite Special Edition model) with MacAlly iShock USB gamepads, Harman Kardon iSubs, and Microsoft IntelliMouse Explorers: **$9,211.70**
- All the Best of Show–award winners from the January 2000 Macworld Expo: **$5,031.89**
- A VST 12GB FireWire external hard drive and 72GB FireWire RAID array: **$4,219.90**
- A 500MHz PowerBook with 128MB of SDRAM, an AirPort Base Station, and an AirPort card: **$3,897**
- Copies of QuarkXPress 4.1; Adobe Photoshop 5.5, Illustrator 9, and InDesign 1.5; Macromedia Flash 4; and MetaCreations Poser 4: **$2,904.75**
- MacGaming.com's ten best-selling Mac games for the week of May 8: **$2,203.90**
- A Umax PowerLook 1100 scanner: **$1,799**
- One Sony SDM-N50 15-inch monitor: **$1,465.95**
- Three versions of Microsoft Office 98 for the Mac: **$1,259.85**
- Copies of WebObjects, QuickTime Pro, Apple Works 6, and FileMaker Pro 5: **$1,047.94**
- A 2GB internal Iomega Jaz Drive, a Jaz USB adapter, and two three-packs of 2GB Jaz disks: **$1,029.80**
- One Nikon Coolpix 950 digital camera: **$789.95**
- An Epson Stylus Color 900G printer and ten ink cartridges: **$769.95**
- A Palm Vx with MacPac, a Palm V travel kit, and 45 replacement styluses: **$680.20**
- Eight AC power adapters: **$552**
- Eight copies of Quake III Arena: **$400**
- A Handspring Visor Deluxe with Tiger Woods PGA Tour Golf module: **$278.95**
- 90 feet of USB cable: **$240**
- A Logitech QuickCam Pro USB video camera: **$129.95**
- A Newton Message Pad 120, an Apple Lisa keyboard with a missing V key, and an Apple Lisa mouse, all bought on eBay at their latest top bids: **$90.94**



That leaves you with $19 and change—just enough to buy a copy of Gil Amelio's *On the Firing Line: My 500 Days at Apple* from Amazon.com. Shipping and handling included, of course.

One Box. Fix All.



Micromat's disk repair and Macintosh troubleshooting utility just became a whole lot better. Besides repairing drives, recovering data and checking the health of your Macintosh components, TechTool Pro 3 can now help protect you against virus problems and software conflicts. Version 3 also sports a new modern interface. But the real power of TechTool Pro 3 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. Simply put, TechTool Pro 3 is the most complete and powerful troubleshooting utility available for your computer. Why settle for anything less?

MacWorld Aug. 1999

MacAddict FIVE STARS

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THE E-COMMERCE CRUSH

Dot Schadenfreude

Those poor dot-coms. Once they were the golden promise of the New Economy, flush with cash and partying like it was 1999. But since the market downturn in April, many Internet-only companies can't afford a pity party.

In a particularly cruel twist, the dot-coms are getting their comeuppance from the Internet itself. Take Phillip Kaplan, who used to play a game with friends via e-mail in which they tried to predict which companies would suffer a setback. "I was bored over Memorial Day weekend and made [the game] into a real site," he says.

Result? F***edCompany.com, a dot-com betting pool. Players pick five companies per week and get points based on bankruptcies, layoffs, and other e-commerce woes.

Kaplan's site follows the grand tradition of BlowTheDotOutYourA**.com. Instead of celebrating the dot-com demise, the site parodies e-madness. (As the names suggest, some of these sites aren't for everyone.)

Then there's DotcomFailures.com, a dot-collapse Web log. The site's top feature is a "lackey calculator" that tallies a dot-com drone's hours worked, stock options, and salary, and then figures out how much those options would have to be worth to make up for the unpaid overtime. If you actually *are* a dot-com drone, it could be unsettling. But for the rest of us, schadenfreude has never been so much fun.—MATHEW HONAN

RATING THE SITES*

URL	Meanness	Info	Fun
BLOWTHEDOTOUTYOURA**.COM	10	1	3
DOTCOMFAILURES.COM	6	10	3
F***EDCOMPANY.COM	10	7	11

*on a scale of 1 to 10

NEWS

The Next Big Thing? It's Very, Very Small.

So you've downloaded every song that Metallica has ever recorded, but you don't have a way to take your tunes with you? Soon you will, thanks to IBM's new Microdrive. The diminutive drive can store up to 1GB of data in a matchbook-size CF+ Type II device.

What will this little package mean for Mac users? IBM says the Microdrive will work with G3 and G4 Macs running OS 8 or later, via a PCMCIA adapter.

But the real story is what the 1GB Microdrive will do for your handheld devices. The new drive has enough storage to hold more than 17 hours' worth of CD-quality MP3s, thousands of digital photos, or entire databases. It uses less battery power than its predecessor, the 340MB Microdrive—so you won't run out of power when you're listening to the extended version of "Master of Puppets."—MATHEW HONAN

ILLUSTRATION BY ROSS MACDONALD. PHOTOGRAPH BY SUZANNE ROADY

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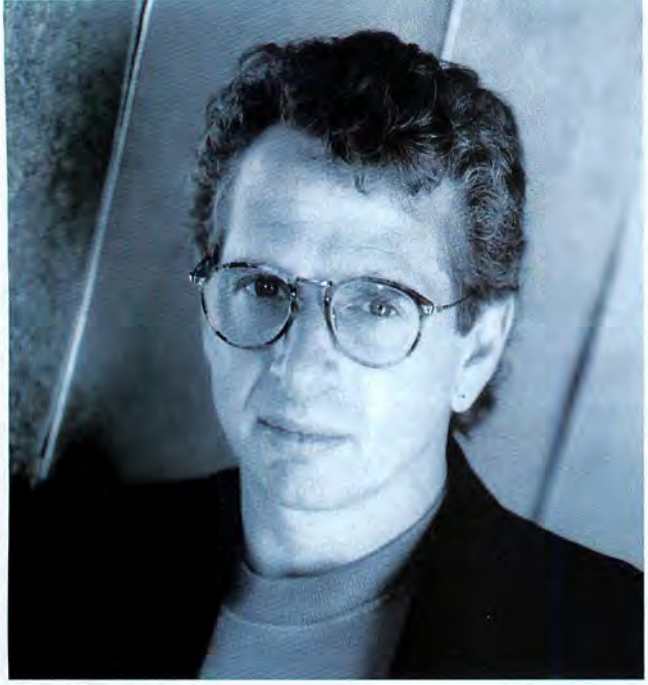


PRO FILE

Master of His Domain

Scott Ross wanted to be a jazz musician. "But I kept having a dream that I'd wake up and be 40 years old, wearing a black, shiny suit, stinking of cigarettes and playing 'Hava Nagila' at bar mitzvahs," he says. So Ross opted for a career in special effects instead. Things have worked out pretty well: Ross is cofounder of Digital Domain, a special effects outfit. He may not be available for weddings and bar mitzvahs, but his special-effects gig gives Ross, who bought his first Mac in 1984, a front-row seat for the technology revolution sweeping moviemaking.—ADELIA CELLINI

Q: ***How does Digital Domain use Macs?***

A: We have a smattering of Macintoshes that sit on our lead creators' desktops. They act not only as administrative computers, but as creative work environments where staffers can take images and do rough composites, storyboards, and small animations in a preproduction environment. I would say every executive, every head creative person, every administrative person has a Mac on their desk.... Unfortunately, we have not really used Macintoshes in creating special effects. What we use Macintosh platforms for is e-mail, the Internet, editing, storyboarding, some rough compositing, and some preproduction material and graphic art, such as single-frame graphics we'll produce.

Q: ***What additions to the Mac would make it more special-effects friendly?***

A: In terms of what the Macintosh does today as opposed to the other platforms available, it does [special effects] better than anything else. It's not really an issue regarding hardware. It's an issue regarding software applications ported to the hardware. Today in the high-end visual-effects area, there really isn't [much] software available on the Mac platform—and a lot of it is legacy software. I hope that people like Discrete Logic, Soft Image, and Houdini start porting their products to a Mac platform. And I'd like a better interface. I'm tired of clicking and pointing.

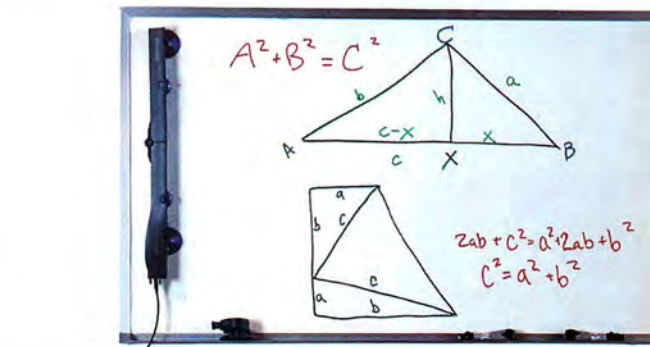
Q: ***What would you change?***

A: How wonderful it would be to build an object in virtual space, wearing some sort of 3-D glasses and using tracking software to actually walk around the object and see what it looks like in the same way that a sculptor models a lump of clay.

MAC STUFF

COPY CAT

Doodlers rejoice. Now your whiteboard scribbling can be preserved for posterity with Mimio, from Virtual Ink (877/696-4646, www.mimio.com). The $599 Mimio features a USB-powered capture bar and four casings that hold any standard-size dry-erase marker. As you write, the pen casing sends a signal to the capture bar, which renders a near-perfect image of your musings on the computer. Software lets you save, edit, send, and re-create erased whiteboard images stroke by stroke.—PHILIP MICHAELS



What's HOT

A QUICK LOOK AT THE WORLD OF TECH

1. **Apple releases dual-processor G4s.** *Now you can watch downloaded pornography twice as fast.*
2. **Microsoft buys Mac gaming stalwart Bungie.** *Next game from Bungie: Windows Soulblighter.*
3. **Open-source advocate Eric Raymond riles up developers at MacHack conference.** *But that was nothing compared to the fierce Wookiees versus Tribbles debate that followed.*
4. **Cube-shaped G4 unveiled at Macworld Expo.** *Radical design OK'd after orb-shaped G4 kept rolling off of desk.*
5. **Metallica's Lars Ulrich testifies before Congress.** *Senators praise him for his testimony on music copyright issues and for the pulsating drumbeat on "Enter Sandman."*

Product WATCH

RELEASED

- A new graphics tablet from Wacom Technology (800/922-6613, www.wacom.com): The $3,999 **PL500 Pen-Tablet System** features a 15-inch diagonal screen, full 24-bit color with 1,024-by-768-pixel resolution, and a DVI-to-DVI connection for sharper, crisper images.
- Processor upgrades from Newer Technology (316/943-0222, www.newertech.com): A 500MHz G4 **Maxpowr** upgrade with a 1MB L2 cache running at 250MHz sells for $799. The company also revived three G3 upgrade cards that it had stopped shipping due to financial woes earlier in 2000.
- New animation software from BeatWare (650/556-7900, www.beatware.com): **EZ Motion** creates animated graphics for small office and home office users. The $99 software includes a library of templates.
- A new system utility from Power On Software (800/344-9160,www.poweronsoftware.com): **Rewind** lets users recover from file overwrites, software conflicts, and unknown viruses. Pricing was unavailable at press time.
- New games from Aspyr Media (888-212-7797, www.aspyr.com): The game publisher has brought **Deus Ex** and **The Sims** to the Mac. Both games sell for $50.

UPDATED

- A Photoshop plug-in from Vivid Details (800/948-4843, www.vividdetails.com): **Test Strip 3.0** features automated photo enhancement, greater layout selection, and movable gels that let you preview images. The product sells for $149. Test Strip 2.0 users can upgrade for $50.

ANNOUNCED

- A graphics chip from Nvidia (408/615-2500, www.nvidia.com) for non-PC platforms: The **GeForce2 MX** features Digital Vibrance Control to make images crisper, as well as new TwinView display architecture. In addition to its traditional Wintel clientele, Nvidia plans to target the Mac and mobile markets with its graphics processor.
- Cutbacks at Scansoft (800/654-1187, www.scansoft.com): The maker of software including **TextBridge, OmniPage,** and the **Kai** products closed its West Coast office and cut 20 percent of its workforce.—Compiled by PHILIP MICHAELS

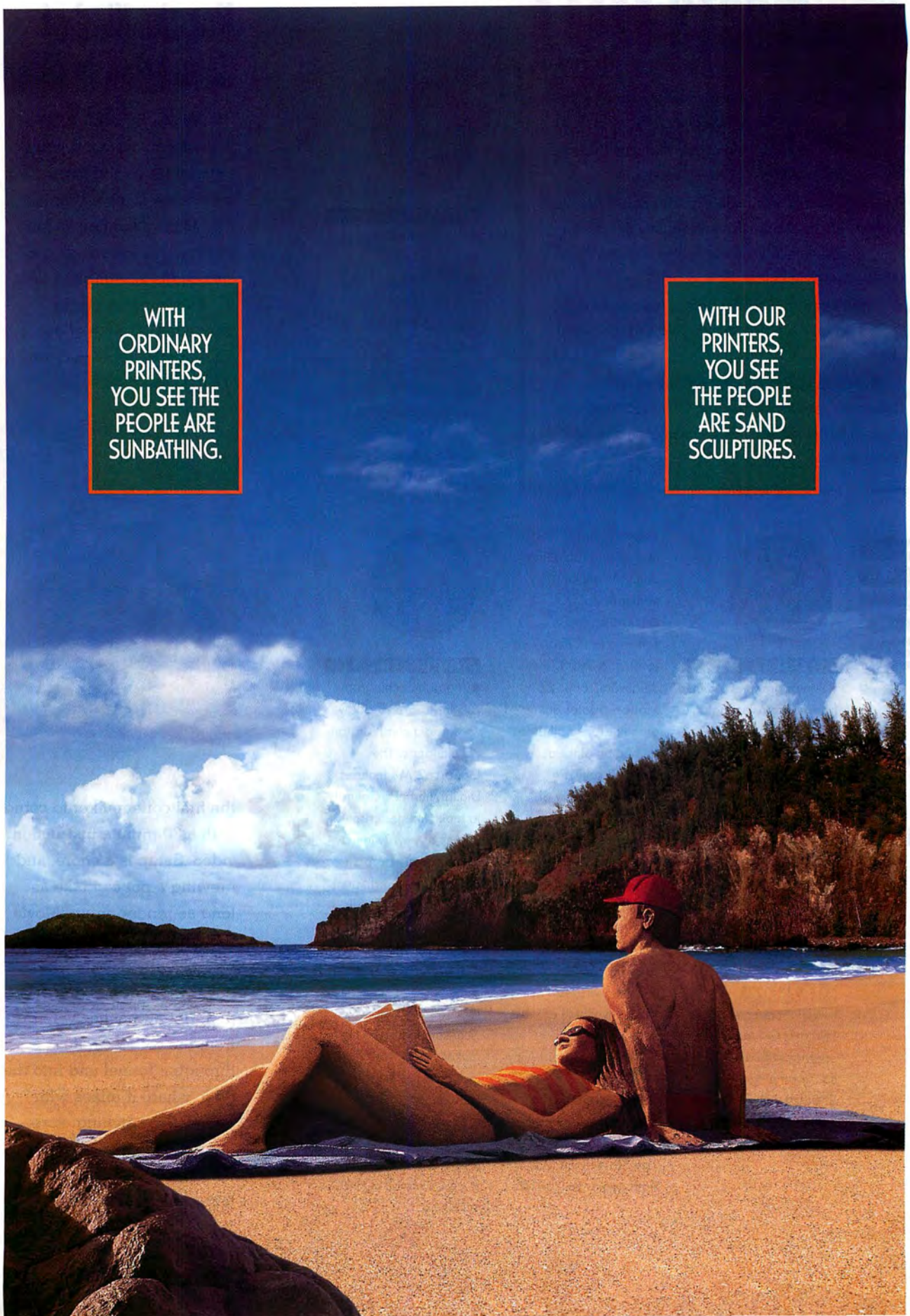
ILLUSTRATIONS BY MARK MATCHO. PHOTOGRAPH BY KEVIN CANDLAND

WEIRD STUFF

Not the Kind of Java I Had in Mind

Starbucks (800/782-7282, www.starbucks.com) points to the iMac as the inspiration for its new Barista Utopia. And they're similar, as long as the comparisons stop at *encased in see-through plastic.* As for matching the iMac's famed ease of use, the Barista Utopia may be

the first coffeemaker to come with a 30-minute instruction video. Setup is a chore, and brewing a pot can take as long as rendering an iMovie transition. That flaw overshadows the Barista Utopia's novel vacuum-brewing system. Hot air pushes water up from the coffee carafe through a funnel and into the filter, where it mixes with beans. Eye-catching, sure—but the iMac has proven it takes more than a pretty face.—PHILIP MICHAELS


WITH ORDINARY PRINTERS, YOU SEE THE PEOPLE ARE SUNBATHING.
WITH OUR PRINTERS, YOU SEE THE PEOPLE ARE SAND SCULPTURES.

YOU'VE GOT TO SEE IT IN EPSON COLOR.

It's true. The couple enjoying the sand is actually made from it. As are their clothes, glasses and book. Even the blanket they're lying on. It's all sand. Meticulously sculpted, painted and photographed to fool the eye. So when the artists who created this difficult illusion wanted to reproduce it for a brochure, there was only one printer they could trust with the job. An Epson. As you can see here, it captured not just the vibrant color of the setting but also the incredible detail in the sculptures. And turned what could have been a nightmare of a project into a day at the beach.

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USE THE INTERNET TO EXPAND YOUR KNOWLEDGE, NO MATTER WHAT YOUR AGE

BacktoSchool.com

Can you imagine how your life would change if you could plug your brain into a computer and learn any subject in a flash? Although instant cyberlearning is still science fiction, thousands of educational Web sites let you transform any Mac into an electronic schoolhouse. Alas, with so many choices, finding the best sites for learning is a tough assignment. Relax. We did your homework for you by picking 22 of the best learning sites—for kids and adults—on the Web. They're simple to navigate and pleasing to look at, and each provides strong educational value or guidance—they're even free. We've included an age range for every site, but bear in mind that they're only suggestions. If you have a favorite educational Web site that we missed, post your suggestion in the message area that follows the online version of this article at www.macworld.com/2000/10/features/backtoschool.html. (To find out about learning software on CD ROM, see the sidebar "New on Disk.") But before you or your child sits down for a computerized lesson, don't forget to set limits. The sidebar "Computers in Education: Brave New World" looks at the pros and cons of computer-based learning and gives practical tips.

BY FRANKLIN N. TESSLER

Illustrations by Pamela Hobbs

Exploring Science and Math

Persuading your kids to spend extra time studying math or science can be like coaxing them to eat their veggies at the dinner table. We found six Web sites packed with fascinating facts and hands-on experiments that will make kids—and adults—forget that they're learning.

By the Numbers If your children are stymied by math, Math for Kids (ages 4 to 18; www.kidsmath.about.com/kids/kidsmath/mbody.htm) offers games, articles, and links to help kids get up-to-speed fast. Site guide Nikki Katz covers everything mathematical, from addition to word problems. One of the site's best areas describes activities that children can do at the grocery store, a surefire way to keep them out of mischief and help them learn at the same time.

Children also get to practice their problem-solving skills at Brain Teasers (ages 8 to 14; www.eduplace.com/math/brain/index.html). This site presents three challenging new math problems every week, arranged by grade level, along with the answers to the previous week's teasers. If your kids aren't keen on this site at first, they'll beg to have a turn solving the puzzles when they see how much fun *you're* having.

Science Fun Even children who shy away from science will find something to grab their attention at BillNye.com (ages 5 to 11; www.nyelabs.com), the home page of Bill Nye, the Science Guy. Although the eponymous PBS television program is no longer in production, the site includes more than 40 simple home science experiments. (This site requires Macromedia's Shockwave plug-in.)

Older children and adults should check out Scientific American Online (www.sciam.com), which showcases the current issue of *Scientific American* and includes an archive of articles from previous issues. "Ask the Experts" lets you send in queries about any scientific

Computers in

With politicians pumping millions into technology for schools and parents snapping up iMacs and early-learning software for babies and toddlers, you'd think that computers were the ideal remedy for every educational problem. But even the most ardent supporters of computer-based learning admit that computers are no panacea. As Steve Jobs noted in a 1996 interview in *Wired* magazine, "What's wrong with education cannot be fixed with technology." Just like any other educational tool, computers have the potential to do harm if they're not used properly.

Home-Computer Woes

If you have a Mac at home, chances are it's located in a bedroom or den. Although keeping the computer out of sight means you won't be bothered by the din of the latest shoot-'em-up, you also won't know whether your child is zapping space aliens or visiting adult chat rooms instead of doing her homework.

As the American Academy of Pediatrics noted last year, electronic gadgets in the bedroom also mean less time for socializing with friends and family. In her book *Failure to Connect: How Computers Affect Our Children's Minds—and What We Can Do About It* (Simon and Schuster, 1998), educational psychologist Jane Healy suggests that parents limit their children's time at the computer. As she aptly puts it, computers shouldn't substitute for "conversation, chores...or just relaxing and 'hanging out' together." Dr. Healy also points out that computers pose potential health risks for children. (See "Parents' Guide to Erogonomics," *How-to*, elsewhere in this issue, for a primer on setting up computer workstations for kids.)

School Daze

If you think that keeping up with the steady stream of new hardware and software is tough at home, imagine what it's like for school administrators who may have 50 or more aging computers to manage. Over time, maintenance and upgrades often cost more than the original hardware and software. As Healy notes, ongoing expenses take their toll on tight school budgets, so there's less funding for traditional activities such as music and art instruction.

Unfortunately, all the money in the world won't help if teachers don't learn how to use computers effectively. Surprisingly, even teachers graduating from

Education: **Brave New World**

training programs may not have the necessary computer skills. In a 1999 survey conducted by the National Center for Education Statistics, only 33 percent of U.S. public school teachers with computer or Internet access reported feeling "well prepared" or "very well prepared" to use computers in their classrooms. Healy's advice: spend less on technology and more on people.

Introducing Computers: When Is Best?

In a suggestion that's guaranteed to shock many parents, Healy recommends keeping computers away from children until they're seven years old. Before then, she cautions, computers may actually interfere with a child's physical and mental development. (According to Healy, children with certain physical and psychological handicaps are a notable exception.) Even if you discount Healy's warning, don't expect computer learning to take the place of what children learn from other activities, such as going for a walk in the park or playing with blocks.

McGill University educational psychologist Dr. Glenn Cartwright disagrees with Healy's advice, saying that he knows of "no evidence that computers should be reserved for anyone of a particular age." In Cartwright's opinion, the real problem is that desktop computers usually aren't suitable for small kids. The challenge, Cartwright adds, is to design computers that are tailor-made to support the developmental activities of babies and young children.

Using Software Effectively

Even skeptics admit that kids who are at least seven years old could benefit from computers, whether they're used for instruction or for specific jobs such as writing a research paper. The problem, she claims, is that so much educational software is written by programmers who know more about whiz-bang graphics than about instructional design. Healy offers valuable tips for parents who want their children to use educational software:

- Work with your children as they explore new programs.
- Ask yourself what your child is actually getting from the software and what habits she's learning. You may be able to accomplish the same goals with a real-life experience or activity.
- If you notice that your child responds impulsively—by clicking on the screen until he achieves the desired result, for example—ask him to explain what he's doing and why he's doing it.

Caught in the Net

According to Healy, there's still no solid evidence that the Internet is beneficial for children. As she puts it, "Anyone who assumes that being connected to the Internet...automatically assures learning is either a fool or a salesman." At the very least, Healy says, you should teach your children not to believe everything that they read online. She also warns that children may be tempted to plagiarize when they can download pages of formatted text and graphics with a few mouse clicks.

As with educational software, Healy has some practical advice for parents:

- Teach your children never to give out personal information about themselves or their family. (For more on Internet safety for kids, check out the Department of Education's Web site at www.ed.gov/Technology/intsaf.html.)
- Help your children choose Web sites relevant to their homework assignments. If they use any material they find online, make sure that they cite the sources in their writing.
- Set strict time limits for Internet access, and supervise online sessions closely.
- Encourage your children to read and talk about the Web sites they visit—with hypertext, it's easy for kids to look at pictures and click on links without actually comprehending what they're reading.

Back to the Future

Not even the most vocal critic of educational technology would suggest that computers should disappear. As Cartwright says, computers in education are here to stay—the challenge is to develop computers that don't have to be confined to a computer lab or special corner of the classroom. And, as Healy writes, we must also make certain that the future remains dedicated to people, not machines.

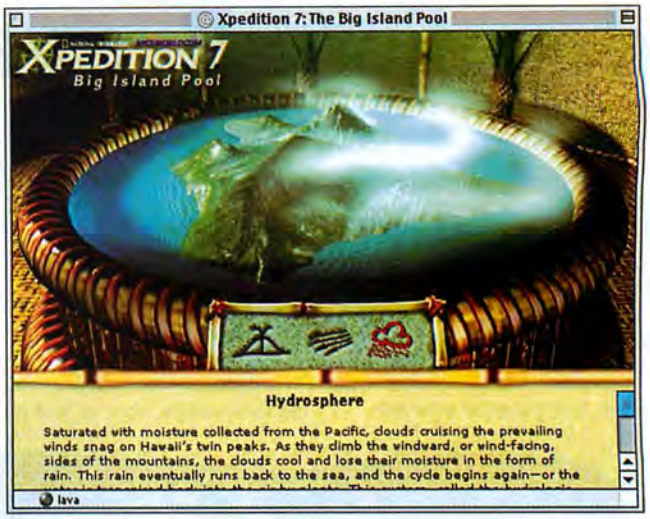
topic. You can also browse the archive for responses to questions such as "Why do we sneeze?" Even young children will learn something if you visit the site with them.

A comprehensive resource for kids interested in learning about health, KidsHealth (ages 8 to 18; www.kidshealth.org/kid/) covers all the bases, from acne to X rays. Children will love reading answers to questions such as "What is earwax?" and finding out what digestion is all about. An interactive guide lets younger kids learn about the human body by clicking on on-screen organs. KidsHealth also includes special areas for teens and parents, with advice on topics such as drugs and pregnancy. (Some areas require Macromedia's Shockwave plug-in.)

If you've ever struggled with your child's science-fair project, Science Fair Central (ages 7 to 18; www.school.discovery.com/sciencefaircentral) is the site for you. This Discovery Channel Web site has everything you need, from topic suggestions to tips on completing a project without breaking your back or your bank account.

Social Studies Online

No wonder kids roll their eyes at the mere mention of history or geography—didn't you hate memorizing all those names, places, and dates? These Web sites make historical events and world geography come alive, with adventures, pictures, and fascinating trivia.



Island Expedition This National Geographic Xpeditions interactive exhibit shows the wiles of tropical weather.

Where in the World? National Geographic Xpeditions (ages 5 to 18; www.nationalgeographic.com/resources/ngo/education/xpeditions/main.html) lets kids take part in interactive geography adventures, such as exploring weather patterns on a tropical island. The stunning exhibits, which make extensive use of QuickTime VR, are all based on strict standards developed by geography educators. You'll also find helpful links to other geography resources on and off the Web.

You and your kids shouldn't miss The CIA World Fact Book Web site (ages 8 and up; www.odci.gov/cia/publications/factbook/index.html). Courtesy of the helpful spies at the U.S. Central Intelligence Agency, this site has the lowdown on every country in the world, including some places that you've probably never heard of. If you need to know how many kilometers of oil pipeline there are in Canada, this is the place to go.

This Day in History The History Net (ages 10 to 18; www.thehistorynet.com) lists hundreds of articles and links about U.S. and world history. The site includes sections devoted to the U.S. Civil War and World War II. There's even a special area about the role that aviation and technology play in war and peace. Interviews, profiles, and eyewitness accounts

New on Disk

Some of the best educational material is being served up on disk rather than on the Internet. Here are our top picks of programs that have come out in the past year. To see full reviews of these and many other educational programs, go to www.macworld.com/2000/10/reviews/education.html

GENERAL EDUCATION

1/2 Arthur's 1st Grade, The Learning Company

1/2 Reader Rabbit 1st Grade, The Learning Company

SCIENCE AND MATH

Digital Frog 2, Digital Frog International

1/2 Math Mysteries Measurements, Tom Snyder Productions

FOREIGN LANGUAGE

1/2 Language Now 8, Transparent Language

The Rosetta Stone 2000, Fairfield Language Technologies

SOCIAL SCIENCE

Talking Walls: The Stories Continue, Edmark

Where in the World is Carmen Sandiego? The Learning Company

Get away from the office without missing a beat.

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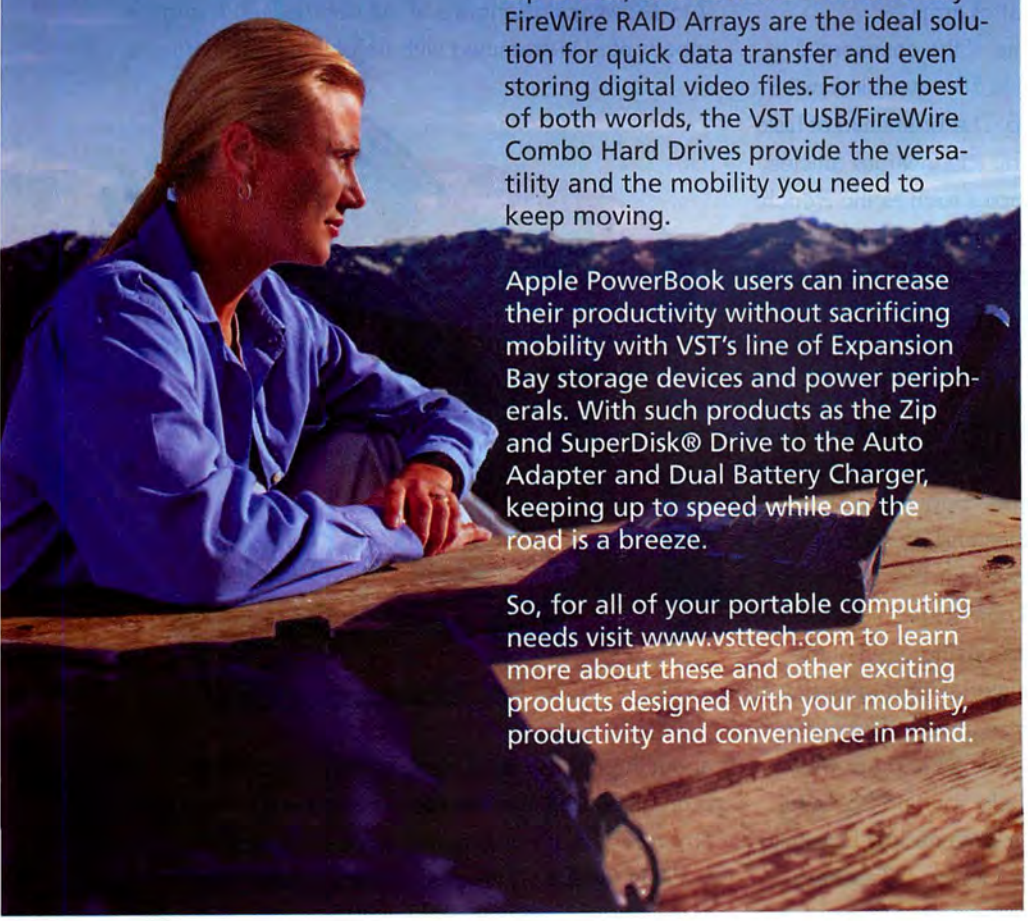
VST's portable USB products, such as the CD-R/W Drive and the Tri-Media Reader, provide a convenient way for you to easily back-up and transfer your data. If you're looking for faster storage solutions, VST's FireWire Hard Drives, Zip Drives, and now the revolutionary FireWire RAID Arrays are the ideal solution for quick data transfer and even storing digital video files. For the best of both worlds, the VST USB/FireWire Combo Hard Drives provide the versatility and the mobility you need to keep moving.

Apple PowerBook users can increase their productivity without sacrificing mobility with VST's line of Expansion Bay storage devices and power peripherals. With such products as the Zip and SuperDisk® Drive to the Auto Adapter and Dual Battery Charger, keeping up to speed while on the road is a breeze.

So, for all of your portable computing needs visit www.vsttech.com to learn more about these and other exciting products designed with your mobility, productivity and convenience in mind.



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FireWire Hard Drive

Tri-Media Reader

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USB CD-R/W Drive

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VST SmartDisk Personal Storage Systems

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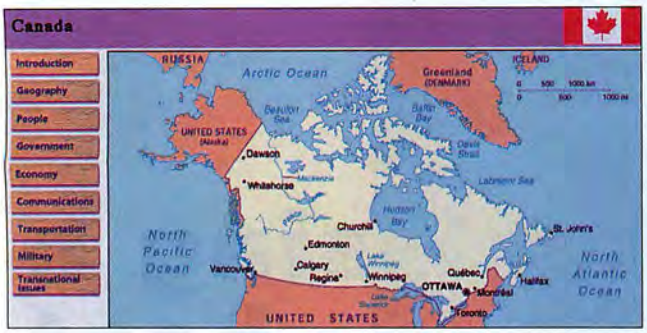

Just the Facts Gather information about any country in the world from the CIA World Fact Book.

add a personal perspective that makes historical events seem especially relevant and poignant.

BBC Online's History Site (ages 7 and up; www.bbc.co.uk/history) is a portal to 27 Web sites about British and world history from the British Broadcasting Corporation. Kids will enjoy playing detective in an interactive archeology game, and you can learn how to research your family tree and coat of arms.

It's not quite as polished as some of the commercial sites, but The History Wiz (ages 8 to 18; www.historywiz.com) is still too valuable to pass up. The brainchild of historian Jennifer Brainard Schneider, this site includes articles and links about various historical topics such as the French and American revolutions. The site's exhibits illustrate some of the most tragic episodes in modern world history, including the Holocaust and the Armenian genocide.

The Finer Things

Teaching children to appreciate literature and art is always a challenge, especially when you're competing against the hottest new Backstreet Boys video or computer game. From online style guides and books to virtual museums, the Web can help you get your kids hooked for life—and can broaden your own knowledge.

Literature 101 Whether you're buying a gift at the bookstore or picking up reading material for a rainy day at the library, finding the perfect book can take hours. The Children's Literature Web Site (ages 14 and up; www.acs.ucalgary.ca/~dkbrown) can help you find books for kids of all ages. The site, which is maintained by University of Calgary Director of the Doucette Library of Teaching Resources David Brown, offers links to reviews of children's books. You'll also find links to authors on the Web and lists of children's literature awards from English-speaking countries around the world.

Never Ending Stories Stories to Grow By (ages 6 to 12; www.storiestogrowby.com) is an online library of charming short stories for children, gathered from countries around the world. Although you won't find the latest Harry Potter adventures here, the stories are all nondenominational and beautifully illustrated with children's drawings. You can browse through the collection or search for stories by type, theme, or age level. To make sure that your kids don't stay up past their bedtime, the listings include an estimate of how long each story will take to read.

English with Style Even best-selling authors need help with grammar now and then. If you can't tell a dangling participle from a comma splice, check out Good Grammar, Good Style (ages 14 and up; www.protrainco.com/info/grammar.htm). At this site, you'll find an extensive archive of answers to hundreds of questions about English grammar and usage. If the answer you're looking for isn't here, you can send your question by e-mail.

Whether your children are already fluent or are studying English for the first time, Language Arts for Kids (ages 7 to 18; www.kidslangarts.about.com/kids/kidslangarts/mbody.htm) is crammed with helpful links and articles

about the English language. Although most of the content is on other sites, the lists are comprehensive and logically organized, so it's easy to find what you need.

A Is for Art The goal of the Cyber Playground (ages 15 and up; www.edu-cyberpg.com/TOC.asp) is to bring the arts to life on the Web. This site's main attraction is its extensive list of links to art sites, where kids can take free painting classes or write folk tales with Native American elders.

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American art is the focus of the Smithsonian Institution's National Museum of American Art Web site (ages 7 to 18; www.nmaa.si.edu/referencedesk). An interactive monthly calendar highlights artists and art-related events. Art expert Joan of Art answers kids' questions about American art by e-mail.

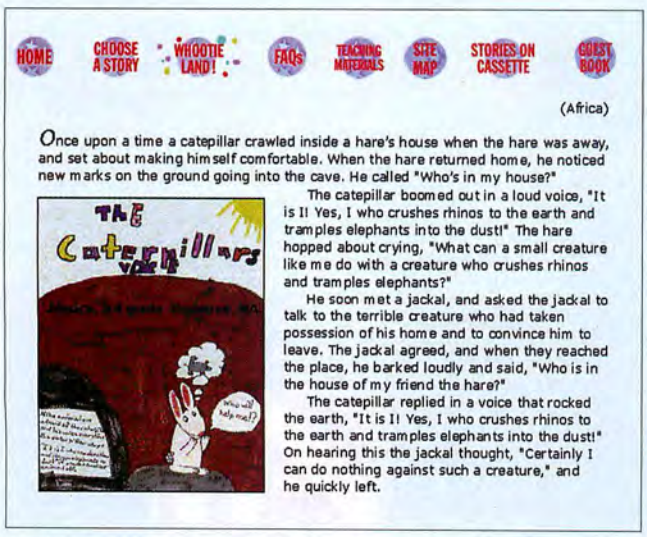
Resource Finders

Whether you're looking for help with your child's homework or you want to earn college credits for yourself, you'll save hours online if you know where to look. These sites can help you find all types of learning resources on the Web.

Links and More Sponsored by the U.S. Department of Education, Gateway to Educational Materials (ages 13 and up; www.thegateway.org) is an online database of free and commercial educational Web sites. You can search more than 10,000 entries by subject or grade level, or you can browse by subject or keyword. The listings give each site's URL, a brief description, and an age range.

If you can't find the site you're looking for at the Gateway, head over to Education World (ages 14 and up; www.education-world.com), which catalogs more than 100,000 learning resources on the Internet. You'll also find helpful articles for parents, teachers, and school administrators, covering everything from educational standards to lesson plans.

Game Time Experienced parents and teachers know that kids learn more when they're having fun. At



Bedtime and Beyond Stories to Grow By is an excellent source for lively stories, such as this one about an overly confident caterpillar.

But Why? Children get to ask questions in their own words at Ask Jeeves for Kids.

funschool.com (ages 5 to 12; www.funschool.com), children can choose from more than 300 interactive games organized by grade level. Most of the activities have a specific educational theme, such as telling time or world geography, but you'll also find a generous helping of arcade games. (The site requires a Java-enabled browser and Macromedia Flash.)

Impeccable References If you're over 30 years old, you probably remember reaching for the family encyclopedia for those last-minute school assignments. Now your kids can do the same by visiting britannica.com (ages 8 and up; www.britannica.com), the online version of the venerable reference collection. Britannica.com's search engine looks for Web sites, books, magazines, and Encyclopedia Britannica articles about any topic.

If you're tired of answering your children's endless questions, you'll be thankful for Ask Jeeves for Kids (ages 8 and up; www.ajkids.com), a Web site where kids can enter questions about any topic in plain English. The results are presented in a kid-friendly format, so children will probably have an easier time using Ask Jeeves than a general-purpose search engine. **m**

Contributing Editor FRANKLIN N. TESSLER has been writing instructional software since 1972.

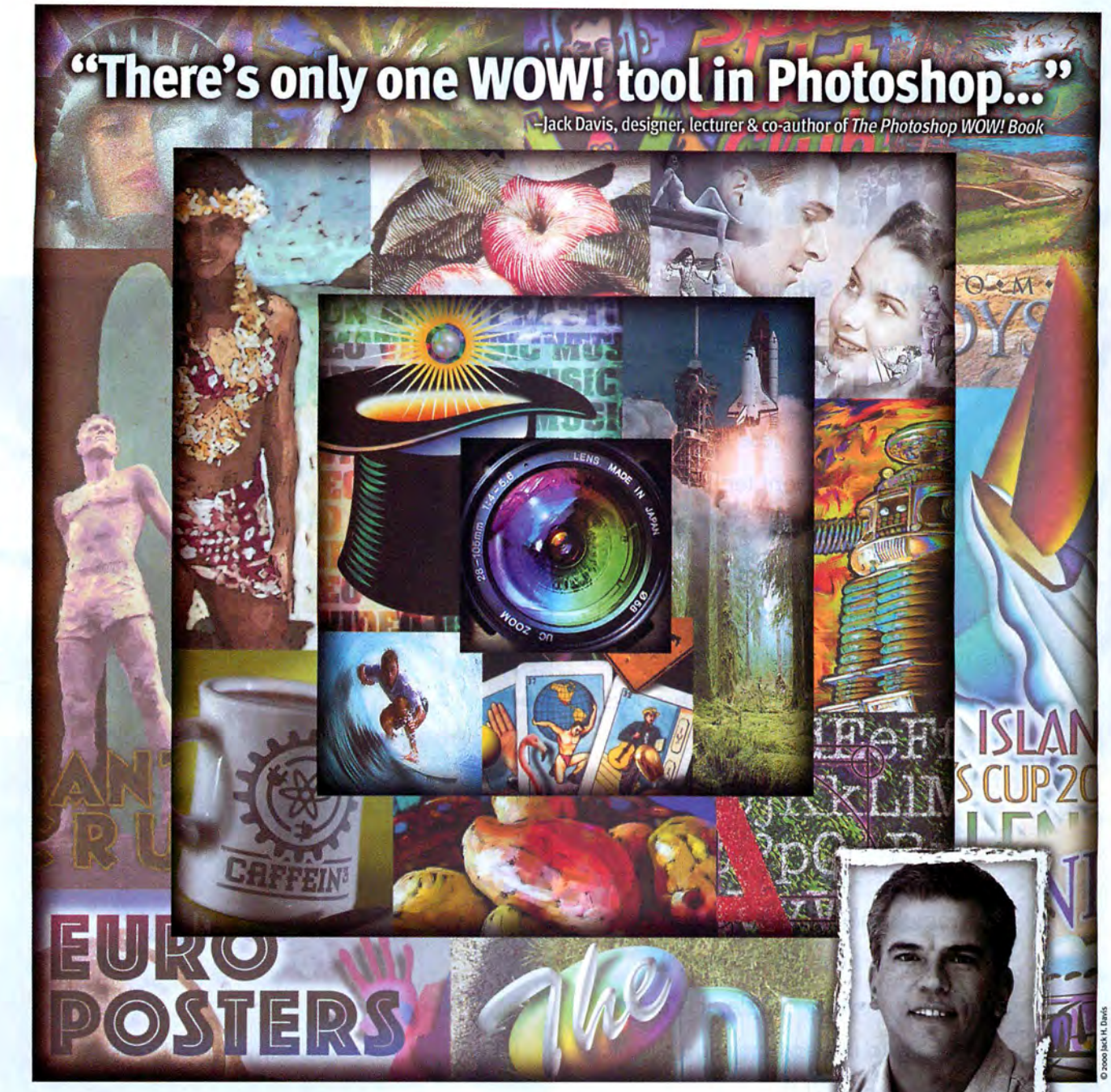
More Info: www.macworld.com/2000/10/features/sites.html

If you want suggestions for even more education sites, see our list and descriptions of 50 of the best that the Web has to offer.

LINKS

"There's only one WOW! tool in Photoshop..."

–Jack Davis, designer, lecturer & co-author of *The Photoshop WOW! Book*



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Inside XML

<by Lisa Schmeiser>

Staying up-to-date on the latest tech talk is difficult—and keeping your business humming with the most-recent technology can seem nearly impossible. You must be able to publish in print and on the Web, and pretty soon you'll also need the tools to deliver information to cell phones, Internet appliances, e-books, and countless other gadgets.

The new wave of computer gizmos poses a significant challenge to creative professionals. How do you keep current and *compatible* with the ever changing world of technology? Although the answer isn't exactly simple, it is easy to learn, easy to understand, and easy to use. Welcome to XML.

Few people know what XML is, and chances are, even fewer know that it stands for Extensible Markup Language. But don't let what you don't know frighten you. XML promises to make Web publishing as simple as an elementary-school grammar lesson. And *Macworld*'s in-depth XML tutorial will show you what it's all about.

ILLUSTRATIONS BY ANASTASIA VASILAKIS

WILL THESE THREE LETTERS CHANGE THE WEB FOREVER?

The Family Tree

To understand XML, you must go back to its roots and look at the parent languages—HTML and Standard Generalized Markup Language (SGML)—that spawned this new dialect. HTML possesses several attributes that make it the perfect enabler for creating an easily accessible, global network. It is a noncentralized way of putting information into a file and guaranteeing readability across a wide variety of networks. The content is marked up with a series of tags that designate *what kind* of information is being read. For example, an article's headline and contents would be marked up like this:

<h1>Headline: All headlines in standard HTML are enclosed in tags like this.</h1>

** Paragraph: Individual paragraphs are enclosed in tags that mark each paragraph as a discrete chunk of information. **

HTML owes much of its success to SGML, which was founded on a generic coding concept: devise a flexible, precise, *and* descriptive vocabulary for expressing the contents of electronic documents. This vocabulary defined a document's structure and organization, thus making it easily readable across several different types of applications—provided those applications could read SGML (which is still widely used by people with very complex information to organize, such as librarians or editors creating large technical documents).

SGML flourished because it gave documents unprecedented portability. The language's downside was its complexity, and HTML was created in part to provide a quick and easy tool for accomplishing portability across networks.

However, HTML lacks two characteristics that Web developers and users demand: easily indexable data structures and customizable appearances. Because HTML provided only a very basic document structure, people who wanted to mark up data in a way that would reflect the underlying organization of their content were out of luck. Site creators who wanted to control the appearance of content were even unluckier.

Early in the Web-development game, HTML's document-structure tags such as ** ** and **<body>** got tied up with document-appearance attributes such as **<font color>**. As a result, many Web sites became elaborate nests of tables, font tags, and images. Web designers often succeeded in specifying how a site should look, but they did so at the expense of a document's structure. The end result was a lot of work for the people charged with maintaining the site.

For example, a Web-site designer might put all headlines in a big, bright-red Arial font. Any reader who sees this using the correct browser may deduce that any instance of big, red text is a headline. But from a markup-language grammar perspective, the document is disorganized. There is no way to tell which tags are meant to identify the headline. XML solves that problem by providing a data-encoding method that can be easily defined and exchanged across several different computers.

XML and HTML Compared

HTML falls short in two critical areas: organizing information into categories or hierarchies is difficult, and HTML doesn't let you easily control the appearance of items on your page. When it comes to organizing information, HTML coders rely on a series of headings—headline sizes that can denote a hierarchy: **<h1>** through **<h4>**.

The headings work well if you're organizing a document according to a strict outline, but not all types of information fit neatly into this model. For example, if you wanted to mark up a document about swimming, you might have the following groups of information: types of swimming strokes, distance of different races, and

composition of races by strokes.

In HTML, there's no neat way to indicate that these different groups of information are related but not nested within each other. In XML, however, you can write a Swimming Markup Language and set up elements such as:

```
<stroke></stroke>
<race></race>
```

You can also set up subcategories within each to indicate different kinds of strokes and races, for example:

```
<stroke>
    <butterfly></butterfly>
    <breast></breast>
    <back></back>
    <freestyle></freestyle>
</stroke>
or
<race>
    <100></100>
    <200></200>
</race>
```

Best of all, you can then group the different elements together to create more-complex data:

```
<race="IM">
    <stroke>
        <butterfly></butterfly>
        <breast></breast>
        <back></back>
        <freestyle></freestyle>
    </stroke>
</race>
```

This would indicate all the different strokes that make up the IM race. Organizing data like this in HTML would be very difficult; there would be no way for you to draw distinctions between the information.

A further drawback to HTML's system of headings and text is the lack of control you have over your site's appearance. Although you can write stylesheets to specify how different HTML elements such as **<h3>** or **<p>** look, you can't easily attach a specific appearance to recurring data.

For example, you might decide that all instances of a site's name must appear in blue. In HTML, there's no easy way to do this—you would have to search for the word *AcmeCo* and attach tags such as **AcmeCo** to each instance.

XML lets you create a tag called **<company></company>** and use it to enclose every instance of *AcmeCo*. To change the appearance of *AcmeCo*, you simply write a stylesheet to control the appearance of whatever appears within **<company></company>**. This way, you have to change only one line in the stylesheet.

Behind the Scenes

Before you try your hand at XML, you'll need to familiarize yourself with its lingo. The way a browser interprets a markup language is similar to the way a person understands a spoken or written language. Just as a person learns grammar and vocabulary to interpret strings of words, a browser has the ability to understand a file's set of rules and vocabulary. With markup language, the companies that make the browsers determine what a browser will read and understand.

Fortunately, these companies don't have to invent the grammar and vocabulary their browsers will understand—the World Wide Web Consortium (W3C) has already done that. The W3C is the closest thing the Web has to a governing body. It decides on the technical protocols that computers connected to the Net must be able to recognize and implement. The W3C's recommendations outline what the grammar and vocabulary that compose a markup language should be.

If a browser's going to recognize an XML document, it must understand four W3C recommendations, which work in concert to render XML pages. If you try to write XML without meeting all of these recommendations, your code won't work.

XML The grammar for markup languages, XML is the general guideline to follow when writing different types of languages that will organize and present your site content.

XML Linking Language (XLink) Hyperlinking is the core of what makes the Web work. XLink is a W3C recommendation that outlines hyperlink behavior. In other words, it tells the browser what it should do when it encounters a hyperlink in a document.

XML Extended Pointer Notation (XPointer) If XLink dictates how links behave, XPointer specifies what information those links contain. Hyperlinks now simply point to a document address; they don't actually contain any information. XPointer supplies a way to add highly spe-

It's Greek to Me

Even though the terms are in English, you may not be able to make sense of all the XML jargon. Our glossary will help you separate the Greek from the geek.

NAME	DEFINITION
data	The two different types of information that describe an entity—character and markup. Character data explains the content in an entity, and markup data describes the logical structure (i.e. where it fits) of the entity.
Document-Type Definition (DTD)	A file containing the formal definitions that will describe the content structure and attributes within a document. A DTD dictates what names will be used for different tags (also known as elements), how frequently elements can occur, and how assorted elements fit together.
DTDless	A file created without a DTD. Because writing a DTD is often a complex and time-consuming task, XML can also work without a DTD.
element	A building block for a markup language's structural organization and content. For example, **<link>** would be an element specifying the relationship among different documents.
entity	A widely used term, with several definitions. Entities are usually coded into a document's DTD. They can perform repeated tasks such as setting up nicknames for frequently referenced data. Instead of typing **Go to Macworld.com** every time, you could create an entity such as **<!ENTITY mw "Go to Macworld.com">**.
Standalone Document Declaration (SDD)	If your XML document doesn't have a DTD, it must tell the application reading it that it's an SDD. To alert the XML-reading application to the document's DTDless state, the XML document in question should include an SDD.
Standard Generalized Markup Language (SGML)	The international standard for setting the descriptive rules of electronic documents' structure and content. SGML spawned both XML and HTML. Just as different dialects alter textbook English, these markup languages are considered variants.
XSL	Extensible Stylesheet Language is an XML-based language devoted to specifying a visual style for the items in an XML document.

cific information about the role specific links play relative to the rest of the content in a document. For example, links in a navigation bar can now specify which page they should point to, in addition to specific addresses. This means you can more easily track hyperlinks and change them across an entire site: instead of changing a specific hyperlink address on several thousand pages, you can change it once, and the other links will all redirect based on the altered information.

Extensible Style Language (XSL) XML documents are controlled by a stylesheet; the only question is which type of stylesheet to use. The newcomer in the stylesheet market is Extensible Style Language, an XML-based recommendation drafted specifically for XML documents. The biggest difference between XSL and *CSS* (Cascading Style Sheets—for more information, see "Reconcilable Differences," *How-to*, September 2000) lies in the language used to write the stylesheets: XSL is XML-based, and CSS is not.

XLink, XPointer, and XSL are written using XML syntax, and all three different protocols help to build a typical XML Web page: XSL might determine a page's appearance; XLink and XPointer determine what the links will do on the page. The page's content will be organized and marked up using an XML Document Type Definition (DTD).

I Want My DTD

The four protocols are the building blocks—what makes them all tick is the DTD. If XML is like markup-language grammar, the DTD acts as the markup language's dictionary and style guide. A DTD defines the terms of an XML-based document, the specific details each term has, and the relationships the terms have to one another. The DTD excerpt below identifies common elements in a markup language designed to format Shakespeare's plays.

```
<!ELEMENT SPEECH (SPEAKER+, (LINE | STAGEDIR
| SUBHEAD)+)>
<!ELEMENT SPEAKER (#PCDATA)>
<!ELEMENT LINE (#PCDATA | STAGEDIR)*>
<!ELEMENT STAGEDIR (#PCDATA)>
```

The elements identified are: speech, to be used when a character is making a speech; speaker, to be used to identify characters with speaking roles; line, to designate each line in a speech; and stagedir, which dictates the directions that accompany the speech. You can see from the example that elements can nest inside each other.

Although one of the biggest advantages to developing a site in XML is having the ability to set up your own logical data structure via a customer-built DTD, another advantage is being able to use a different, standard DTD. These DTDs can be specific to industries (imagine a group of markup tags devised especially for accountants) or other, already established means of organizing content. For example, Jon Bosak has written DTDs for Shakespeare plays, thus providing a grammar for denoting characters and their lines (http://metalab.unc.edu/bosak/xml/eg/shaks200.zip).

The DTD is crucial for providing the "rules" in an XML document or on an XML site. Since we're still in an HTML

Find Out More About XML

Want to take your XML knowledge to the next level? Start with these informative Web resources.

NAME	URL	WHAT IT DOES
XML.com	**www.xml.com**	Anyone interested in staying up-to-date on the latest XML developments should save this url. Sporting everything from product news to beginning tutorials, this site also boasts columns and how-tos from XML gurus.
XML Software	**www.xmlsoftware.com**	If you're itching to try XML on your own, it helps to have browsers and tools that can render and convert it. Check out the complete collection of XML-centric applications.
The XML Cover Pages	**www.oasis-open.org/cover/sgmlnew.html**	For XML news—from tracking the progress of the latest XML-related W3C recommendations to newly launched XML sites—this site has it all.

world, most Web documents have HTML DTDs—if they have DTDs at all—and a general syntax to organize markup tags. How, then, will you move the Web pages you have from one type of markup language to another?

The Missing Link

Changing a Web site's markup language from HTML to the more advanced XML is an evolutionary step. Extended HTML (XHTML) mixes HTML's limited vocabulary with XML's data-organizing capabilities. To make the transition, you must follow a number of simple format rules:

- All markup must be in lower-case tags:
  <h1>My page title</h1>
- All attributes must be in quotes:
  <body bgcolor="#FFFFFF">
- All elements must have opening and closing tags:
  **
list item
**
- All documents *must* have a DTD. XHTML authors can choose from three different XHTML DTDs, all of which are hosted on the W3C's Web site (www.w3.org).

To attach a DTD to your document, you need a statement at its beginning called a *doctype* declaration, which says what sort of DTD the document uses and where the DTD lives.

For example, to include a strict doctype declaration (which assumes you're using strict XHTML) in your document, put these lines at the very top:

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/strict.dtd">

The transitional doctype declaration is the most flexible: you use it if you're trying to ensure that people using non-CSS enabled browsers can see your site. If you're still using tables to lay out your Web site, you'll want to use this one:

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/transitional.dtd">

The *frameset* declaration is what you use if you're writing a document with frames. Its syntax is:

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Frameset//EN" "http://www.w3.org/TR/xhtml1/DTD/frameset.dtd">

Once you've converted your site to XHTML, you can use an XML DTD to refine the way your site's content is organized through defined markup tags. Novice DTD writers can also check out www.dtd.com to find a well-sorted directory of DTDs designed for everything from advertising to ontology to travel. You can also check out a list of Web sites that have integrated XML into their content at XMLTree (www.xmltree.com).

What's Next for XML

Although it's tempting to begin plotting your site's conversion from HTML to XML, it's easy to get bogged down in practicalities. Developing a specific markup language is only part of the process; you must also figure out how to map your current HTML content to a more structured XML markup. In addition, there will be a learning curve: many Web developers are quite familiar with HTML because they've been using it frequently and for a long time. Acquiring the same familiarity with XML—and the tools you can use to develop Web sites in it—will require practice. Within a year, however, building XML-based Web sites based on different DTDs or XML-based markup languages should be simple. And in the end, getting your content out to *all* the people who want to see it may be that much easier. **m**

LISA SCHMEISER is Macworld.com's senior editor.

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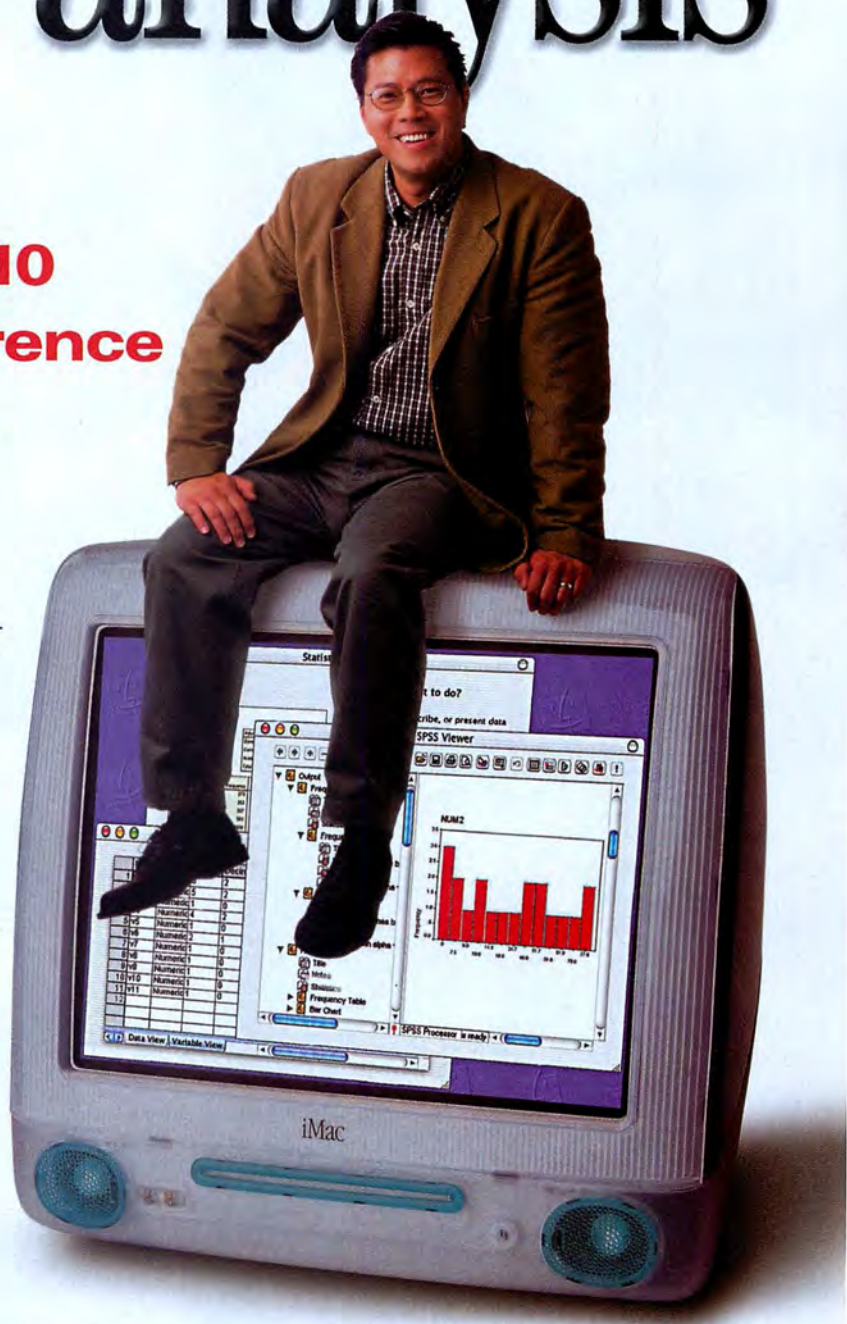

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How-to

Mac Rx

From Hiccups to Heart Attacks, We've Got the Cure for What Ails Your Mac

by Ted Landau

In a perfect world, you'd be reading something else right now. Of course, in a perfect world, you would not be seeing a Type 2 error message on your monitor as you try to start up your Mac—and frantically worrying whether you and your files will ever meet again. You'd go to the Web to look for the solution, but your computer's on the critical list, so you can't very well use it to get online. And calling tech support means hours of hold time and countless transfers—and maybe a big bill if your computer is no longer under warranty. You need help, and you need it fast.

That's where this guide comes in. Whether you're facing a computer crash or any of an assortment of other ills, I'm here to tell you the probable cure—as well as which common suggestions may just waste your time.

Stopped Before You Start

WHAT TO DO WHEN YOU CAN'T EVEN GET YOUR MAC TO START UP

You know you're in trouble. Almost as soon as you turn on your Mac, it makes a noise you've never heard before—it may sound like glass breaking in a car crash or like a series of beeps. If you have an older Mac, the dreaded Sad Mac icon may appear, or you may just get a blank gray screen. After that, your Mac acts as though it's dead in the water. What do you do?

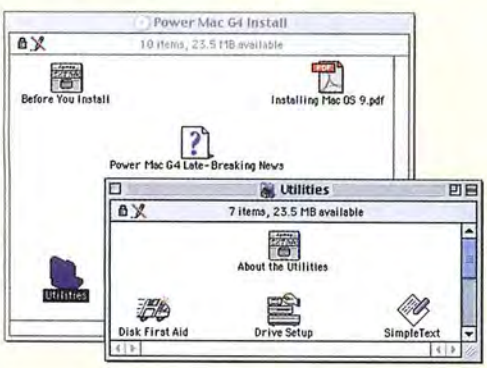
You can try out a few tricks at home before calling tech support or, even worse, lugging your computer to a service shop.

1 **Restart** You can't select the Restart command in the Finder—after all, you can't even get to the Finder—but you have other options. What to do varies with different Mac models. In most cases, you're guaranteed success if you press the reset button (the triangle-symbol button on your Mac).

Starting All Over Again *Find and press the reset button on your G4, iBook, iMac, or PowerBook if you can't select the Restart command.*

2 **Start Up from a Bootable CD** If the reset button doesn't help, try starting up from a bootable CD such as the Install or Restore CDs that come with every Mac.

Insert the disc immediately after pressing the reset button (you may need to hold down the C key or option key to get the Mac to start from the CD).



Treating the Symptoms

How do you deal with the computer symptom that causes more nightmares than any other—a Mac that fails to start up? In the worst-case scenario, you could lose all the data on your hard drive—a major disaster, especially if you don't have a recent backup. Fortunately, the worst-case scenario is rare. More likely, your files are intact and you just need to figure out how to get to them. Here's your road map.

What's with the Question Mark? Your Mac shows a persistently flashing question-mark icon at start-up.

Solution Try to start up from the Mac's Install or Restore CD. If this succeeds, check your System Folder and make sure it still has the Mac OS icon on it. If it doesn't, a critical file may be missing from the folder. For starters, just open and close the folder. If the icon does not return, make sure you have both a System and a Finder file in the folder. If you've removed either from the System Folder, find it and drag it back or install a new copy (using the installers on the aforementioned CDs).

If everything seems in order with your System Folder, check for disk damage. If all of this fails, reformat the drive (typically using Apple's Drive Setup utility). Aren't you glad you backed up your drive last night—you did, didn't you?

"Almost" Doesn't Count Your Mac shows at least some signs of intelligent life. The Happy Mac icon and the "Welcome to Mac OS" screen both appear. You look like you're making progress—but then you get a crash.

Solution Make a first pass at checking for an extension conflict by starting up with Extensions off (hold down the shift key during start-up). If this bypasses the crash or freeze,

restart again with Extensions on. If this works, the computer gods have smiled upon you—be grateful and hope the crash does not return. Otherwise, you'll need to isolate the problem extension.

Apple recently identified an obscure Mac OS file called SerialShimLib that, if present in the Extensions folder, might cause FireWire PowerBooks to crash on start-up. Updating to Mac OS 9.0.4 or later—which has a revised version of this file—fixes the problem.

If the symptom persists even when you start up with Extensions off, the cause could be a peripheral device connected to your Mac. These days, USB devices are the most common culprits—the workaround is to not connect the device until start-up finishes. Ultimately, look to Apple or the device vendor to offer a better fix.

In general, you can avoid many problems by updating to the latest Mac OS software. For Mac OS 9 users, keeping up-to-date with Apple software couldn't be easier: just click on Update Now in the Software Update control panel and let it do its thing. If Software Update fails (as it sometimes does), you can still download most updates from the Web (for Apple software, check out http://asu.info.apple.com/swupdates.nsf/).

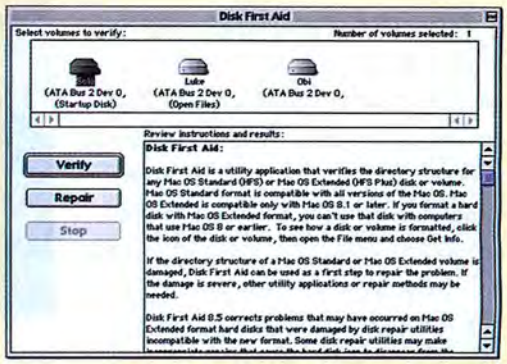
One caution: software updates can introduce new problems as well as fix old ones. Web sites such as my own MacFixIt (www.macfixit.com) can alert you to any dangers that may lurk in a new update.

The Comatose Mac Start-up goes fine. The real problem occurs after you put the Mac to sleep. A crash or freeze occurs when it wakes up, leaving your Mac in a state of limbo.

Solution USB devices cause

3

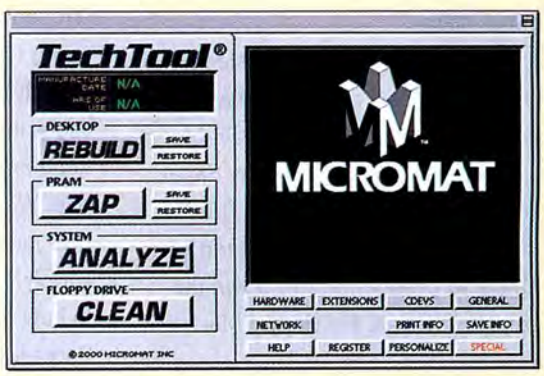
Check for Disk Damage Once you've started up from the Install CD, check your hard drive for damage with Disk First Aid and make any recommended repairs. Restart.



Choose the disc you want to check. Then click on Verify to check the integrity of your disc and its file structures. Finally, click on Repair to fix the problem(s). If Disk First Aid cannot correct all the problems, you may want to try starting up from another disc, such as Norton Utilities.

4

Zap the PRAM If trouble persists, repeat the procedure, this time zapping the PRAM.



You can zap the PRAM by pressing ⌘-option-P-R at start-up, but TechTool can provide a more complete zap—and you can save your settings to restore afterwards.

5

Check for Hardware Problems If your Mac still needs resuscitation, you probably have a hardware problem. The most common one is a defective memory module. Now may be the time to take your Mac to an Apple Authorized Service Provider if you aren't comfortable opening it up and swapping parts.

6

Run the Apple Hardware Test Diagnostic CD If you have the Apple Hardware Test Diagnostic CD that recently started shipping with FireWire PowerBooks, give it a try. It can check for hardware problems even if your Mac can't start up.

many of these wake-from-sleep crashes. Once again, the workaround is to disconnect the device before the Mac goes to sleep.

Some intermittent wake-from-sleep crashes stem from specific applications (Microsoft Internet Explorer 5 is one example). The solution here follows similar logic: make sure you've closed the problem program before letting your Mac go to sleep. If you do get one of these freezes, use a force-quit (⌘-option-escape) to exit the offending software and return your Mac to life (although it's still best to restart as soon thereafter as possible).

Disabling Apple's InputSprocket Extension may also prevent some of these crashes. Since you need this extension only for playing certain games, you can leave this extension permanently disabled if you're not a game player.

Finally, some wake-from-sleep crashes happen only if you have the Preserve Memory Contents On Sleep option enabled in the Energy Saver control panel of iBooks and FireWire PowerBooks. In this case, restart your Mac and press and hold down the escape key until the Happy Mac icon appears. If even this fails, you may be looking at a rare instance where only reformatting the drive can get you back in business. Happily, updating to Mac OS 9.0.4 will prevent this crash from occurring in the first place. Otherwise, make sure you never enable this option (to help out, Apple released a Sleep Memory extension that grays out the option so you cannot select it).

New Hardware, New Errors

Apple's most recent Macs feature a host of options not found on older models. These include DVD drives, USB ports, and FireWire ports. Using these options can lead to never-before-seen error messages. Checking Apple's Tech Info Library (http://til.info.apple.com) is a good way to keep up with the latest trends in Apple error messages or troubleshooting tips in general. For now, here's a starter kit.

Make sure you've got the latest drivers for your USB devices.

USB's Powerful Needs You get a "Not enough power" message when trying to use a specific USB device.

Solution Unlike some error messages that say one thing but mean another, you can usually believe this one. While the Mac's USB ports can give juice to USB devices that do not supply their own power, there is a limit to how much these ports can do. Surpass that limit, and you get the "Not enough power" error message. The solution is to add a self-powered USB hub, or you can remove nonessential devices, swapping them in and out with the remaining devices as needed.

USB Drivers MIA At the end of start-up, an error message indicates that the Mac couldn't find a needed driver for a connected USB device.

Solution USB devices require software drivers (usually installed in the Extensions folder of the System Folder) to work. If you connect a device without installing its driver, you may get an error message. The solution is to install the missing driver (it should be on a CD-ROM packaged with the device or on the company's Web site). In Mac OS 9, your computer will offer to search online for the needed driver and download and install it. Very convenient—when it works.

Luckily, Apple has improved your odds of avoiding this error. Mac OS 9 includes a generic set of built-in USB drivers. For this reason, many USB devices will work without the addition of any further software—although you may sacrifice access to some specialized features of the device, such as scrolling on a third-party mouse.

Surprisingly, in a few cases, getting rid of the device-specific driver is the key to success. For example, the Gravis GamePad comes with a driver called InputSprocket Gravis USB. But don't use this file if you want to use the GamePad with Star Wars Episode I Racer. The game will only recognize the GamePad if you *don't* have the extension installed.

Alessandro Levi Montalcini's $20 shareware program USB Overdrive (www.usboverdrive.com) offers another set of generic drivers. This software can often get a USB device to work even when the device's own driver fails. It has proven particularly effective in solving problems with non-Apple mice.

If none of this works, try some of the more generic solutions for an assortment of odd USB problems: unplug the device from its USB port and plug it immediately back in, or unplug the device from its USB port and plug it back into another port (for example, switch from port 1 to port 2).

DVD Hardware Errors A message about a hardware error appears when Apple DVD Player launches.

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Solution Updating to a newer version of DVD Player should eradicate this error. For example, if you are running Mac OS 9.0.4, you should use Apple DVD Player 2.2 or later. Just remember that the Apple DVD Player application requires four extensions (DVDRuntimeLib, DVD Region Manager, DVD Navigation Manager, and DVD AutoLauncher). If you copy the application without the extensions, you'll get an error message when you try to open DVD Player. It's best to let DVD Player Installer do the updating.

Also make sure you've installed the Apple CD/DVD Driver, Foreign File Access, ISO 9660 File Access, and UDF Volume Access extensions. These belong to Mac OS, and you should already have them on your Mac unless you disabled them (for example, by installing a third-party CD driver).

The first Macs to include DVD drives (some blue-and-white Power Mac G3 models) came equipped with a hardware-based DVD decoder. These Macs should use Apple DVD Player 1.3. DVD Player 2.X is for Macs that use software-assisted decoding (these include the slot-loading iMac, the Power Mac G4, and the FireWire PowerBooks).

DVD Out-of-Sync Errors When your Mac is playing DVD movies, the audio and video can fall out of sync, with the audio typically lagging behind what you are seeing on the screen.

Solution Once again, fixing this requires that you use the latest software. In particular, update to Mac OS 9.0.4 or later, DVD Player 2.2 or later, and QuickTime 4.1.1 or later. If problems persist, turn off virtual memory before playing a movie.

DVD "Dirty" Movies When trying to mount a DVD disc, you get this error message: "Disc may be dirty or scratched."

Solution While the disc may indeed be dirty or scratched, it's more likely that you need to get your Mac to mount it as an ISO 9660–formatted disc (rather than DVD's UDF format). To do this, hold down ⌘-option-I when inserting the disc. If the disc mounts but still does not play, control-click on the disc icon and select Mount As ISO 9660 from the contextual menu. Most DVDs will not need this fix. In any case, upgrading to Mac OS 9 should eliminate the problem altogether.

Cures for the Common Cold

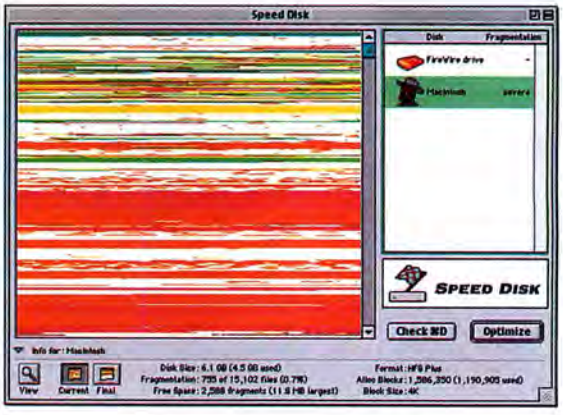
Some common troubleshooting techniques are equivalent to taking aspirin—no matter what is wrong with your Mac, someone will tell you to "take one of these" and hope for the best. But rather than just talk about how to do them, let's consider whether these cure-alls really live up to their billing.

Check for Extension Conflicts

Does RealPlayer 7 crash every time you quit? You might need to update your copy of Kaleidoscope to version 2.3.3 or later. Does Norton AntiVirus send you alert messages for no particular reason? If so, updating to FinderPop 1.8.9 may be the answer.

Welcome to the world of extension conflicts. Those icons that scroll across the bottom of your screen at start-up represent your extensions. Too often, an extension will tell your Mac to do something that doesn't sit well with other software on your disk, resulting in a system crash, a nonfunctioning menu command, or something equally unpleasant. There are at least as many potential symptoms as extensions—and there are thousands of extensions. Given this diversity, how can you know if a problem is due to an extension, and, if it is, how do you figure out which one?

For starters, you can easily check for a potential extension conflict by starting up with Extensions off (just hold down the shift key at start-up). If the problem goes away, you have a conflict. Your job now is to figure out which extension is giving you grief. Apple's Extension Manager does not really cut it here. You'll want Casady & Greene's $80 Conflict Catcher (800/359-4920, www.casadyg.com). Once this program has isolated the problem extension, you'll usually need to disable it. However, if two extensions conflict with each other, reversing the order in which they load at start-up may fix the problem. In any case, report the conflict to the vendor and hope for a bug-fix update (as the



Speed Things Up
Through everyday use, your hard drive can become a mess, slowing you down and creating problems. A program such as Speed Disk, part of Norton Utilities, can help put things back in order.

Oh well, at least you can control your fonts.

So many things are out of your control in this world... even your personal space. If you're feeling crushed by your surroundings, just practice this simple technique:

Breathe in. Imagine a world where your fonts are organized. Where you're able to quickly preview fonts, print out sample pages, and make sure your workgroup has access to the same fonts. A place where your system runs faster and crashes less. Breathe out.

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authors of Kaleidoscope and FinderPop have provided).

Bottom Line This one is a keeper. Don't leave home without it.

Check for Disk Damage One day, a file appears to have vanished from your drive. Or maybe it's there but refuses to open, citing some odd error. Eventually, you start getting frequent system crashes, culminating in your hard drive finally refusing to start up at all. Often the ultimate cause is corrupted data in a disk's directory, an invisible area of every disk containing critical information about the organization of software on your drive.

Recognizing the potential dangers here, Apple includes Disk First Aid, a Directory repair utility, as part of the system software. If Disk First Aid discovers a problem it can't fix, don't despair. Other utilities, such as Symantec's $100 Norton Utilities (800/497-6180, www.symantec.com), Micromat's $98 TechTool Pro (800/829-6227, www.micromat.com), and Alsoft's $70 DiskWarrior (800/257-6381, www.alsoft.com), may help.

Bottom Line This is another keeper. In fact, you should regularly run at least one of these utilities as a preventive measure, even if no sign of trouble appears on the horizon. The only dilemma is choosing a utility to use. Disk First Aid comes free with your Mac, so start with that. For those times when it fails to work, you should have at least one alternative ready to go. Get all three if you don't mind spending the cash—there's always a chance you'll get a problem that only one of these utilities can fix.

Rebuild the Desktop If you've ever had files lose their custom Finder icons, or if you've encountered documents that can't locate the application needed to open them, it's time to rebuild the desktop. To do so, hold down the ⌘-option keys at start-up (until the message asking whether you want to rebuild the desktop appears), or use a utility such as Conflict Catcher or Micromat's free TechTool.

Bottom Line You'll probably need to rebuild the desktop from time to time—especially after installing new software. But doing so is far from a cure-all. Many users survive without ever doing this at all (I've had to rebuild only once in the last year, even though I regularly work with three different Macs).

Caution: software updates can introduce new problems as well as fix old ones.

Zap the PRAM A PRAM zap can potentially fix otherwise unexplained start-up or shutdown crashes. The PRAM is a semipermanent area of memory that holds information about the date and time, as well as customized settings for various control panels. If the PRAM data gets corrupted (which can happen after a system crash or for more-obscure reasons), start-up failures may result. A PRAM zap can fix this by restoring the PRAM to its default values, thereby trashing the corrupted data. To do a zap, hold down the ⌘-option-P-R keys at start-up (see the Apple TIL article at http://til.info.apple.com/techinfo.nsf/artnum/n2238 for more details), or use TechTool. After a zap, you'll probably need to redo the settings in several Mac OS control panels (such as AppleTalk, Memory, and Startup Disk).

Bottom Line A PRAM zap is worth a try when nothing else seems to be working and reformatting your disk looks like the probable next step. Don't expect miracles, though.

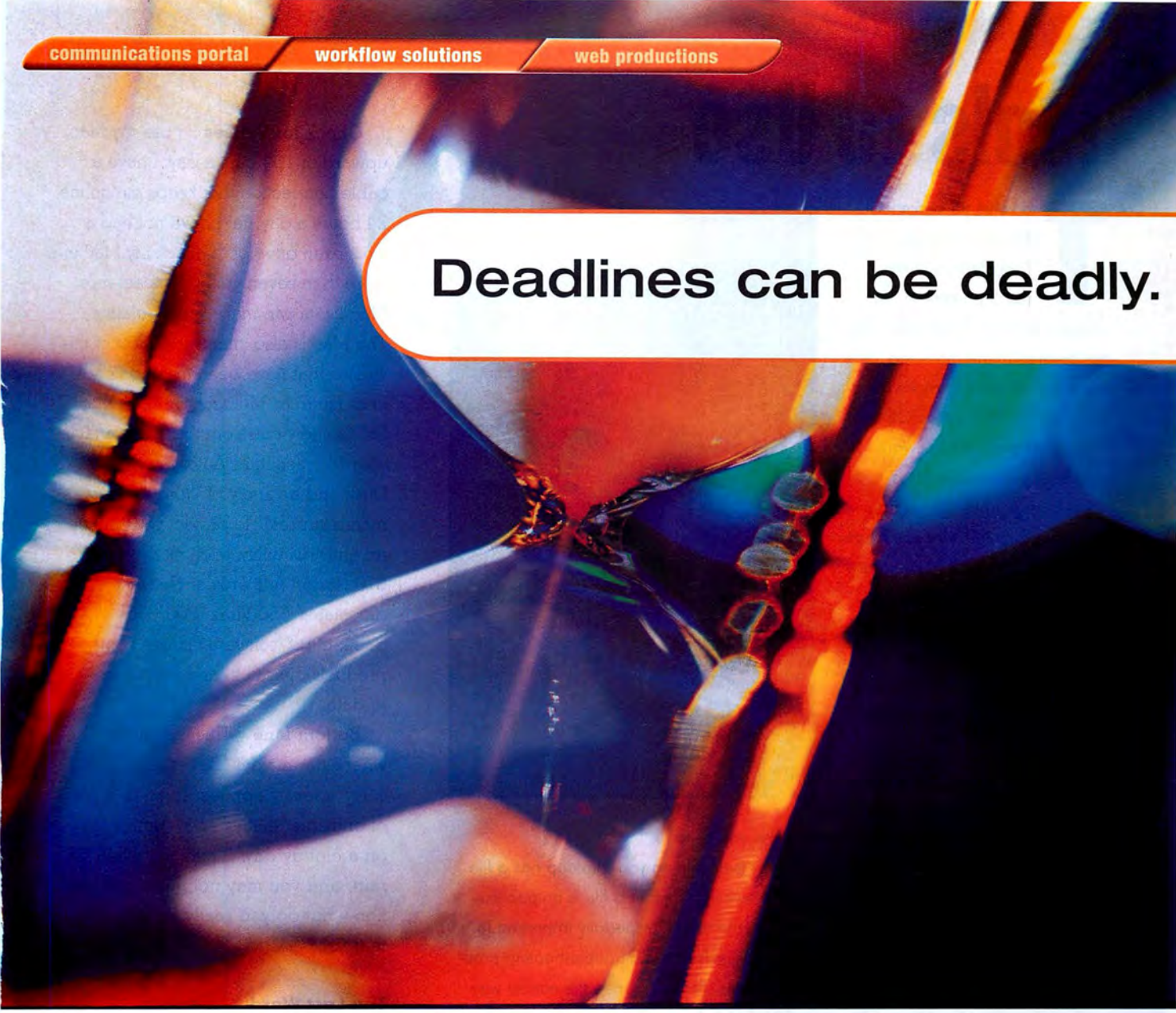
Defragment a Disk Does your Mac seem atypically slow when opening applications? Are you having trouble getting digital video to play smoothly on your Mac? If so, defragmenting your drive may be the cure. Defragmenting (or optimizing) reorganizes the storage of files on your disk, ideally leading to increased performance by reducing the need for time-wasting jumps to different locations on the drive. To do so, use utilities such as the SpeedDisk component of Norton Utilities or Alsoft's $30 PlusOptimizer.

Bottom Line If you regularly use your drive for multimedia tasks, such as recording video streams, or if you're constantly on the edge of completely filling your hard drive, defragmenting can help. Apple has even identified a rare case where a heavily fragmented disk can cause a start-up failure (see http://til.info.apple.com/techinfo.nsf/artnum/n25145). However, for most users, defragmenting is a waste of time. Read a good book instead.

More Info: www.macfixit.com

Keep up to date with the latest troubleshooting tips and utility upgrades every day.

LINKS



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Tools to Use

To solve 95 percent of the problems you will likely face, you need just 5 percent of the utilities out there. Besides the utilities covered in the main text, here are a few others that make my 5 percent list—all are Mac OS software, shareware, or freeware.

Seeing Invisible Files Sometimes a troubleshooting technique requires that you locate and delete an invisible file. Many utilities, including Apple's Sherlock, can do this. The main difference is in the level of convenience they offer. My personal choice is SkyTag Software's $40 File Buddy (www.skytag.com). It allows you to search quickly for just the file you want and then make it visible, delete it, or do whatever else you need to.

Changing Type and Creator Codes Every file on your desktop has a file type and creator code. These help the OS determine whether a file is an application, a document, an extension, or another element, and (especially important for documents) what application created the file. To solve certain troubleshooting problems, you'll want to make changes to these codes. For my money, the easiest way to do this is with Nifty Neato Software's $20 Snitch (www.niftyneato.com). It appears in the Finder's Get Info windows. I especially like to use it to change the code of a read-only SimpleText document to one I can copy and paste. Otherwise, Apple's free ResEdit (http://asu.info.apple.com/swupdates.nsf/artnum/n10964) can handle this (and can do many more things, including check for damaged files).

Checking Hardware Specs Do you need to know what processor is in your Mac or the BootROM version of your Mac's firmware? If so, the Apple System Profiler (part of Mac OS 9) is likely all you need. If you find that it fails to provide the answer you seek, try Decision Maker's $15 TattleTech (www.users.uswest.net/~mjohn5/index.htm) or Newer Technology's free Gauge Pro (www.newertech.com).

Checking Open Processes Solving memory-related problems often requires knowing exactly what programs you have open, how much memory they are using, where in the memory space they are located, and then quitting certain open programs. This can get tricky because often "faceless" programs (or processes) run without appearing in the Application menu. Here is where a utility such as Clarkwood Software's $20 Peek-a-Boo (www.clarkwoodsoftware.com/peekaboo) can help. It lists *all* open processes and allows you to quit any one you want.

Check for Viruses I use my Mac upward of 10 hours a day. I have a cable connection that keeps me online 24 hours a day. Yet I have not had a virus even *attempt* to attack my Mac in more than seven years. I expect most Mac users can make similar claims. The Mac is also immune to most of the viruses that have been making headlines (such as Melissa and Love Bug). Still, some viruses out there can attack your Mac (such as Autostart, Seven-Dust, and a variety of Word and Excel macro viruses). To protect yourself, get an antivirus utility, such as Symantec's $70 Norton AntiVirus or Network Associates' $50 Virex (800/338-8754, http://software.mcafee.com/products), install it, and keep it up-to-date.

Bottom Line This is one case where the maxim "Better safe than sorry" clearly applies. You can think of antivirus utilities as an umbrella on a cloudy day. It may not even rain, and you may not need protection—but do you really want to take that risk?

The Last Word

If there's a silver lining in this cloud of troubleshooting, it's this: you can fix most Mac problems without having to open up your Mac or haul it in for repair. Usually, all it takes is a few minutes at your keyboard, and your Mac will be humming smoothly again. Try that with a PC. **m**

Contributing Editor TED LANDAU is the author of the recently released fourth edition of *Sad Macs, Bombs, & Other Disasters* (Peachpit Press, 2000), which picks up where this article leaves off.

Do viruses drive you bananas?

VirusBarrier. The new Antivirus solution for your Macintosh.

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TOM NEGRINO

Corral Your E-mail

Use Outlook Express 5 to Control the E-mail Stampede

The blessings of e-mail are many: almost instant communication with family and friends; easy business collaboration; and of course, endless opportunities for workplace humor. The downside is unsolicited commercial e-mail, often known as spam. Almost as soon as you open a new e-mail account, you start receiving unwanted offers for fraudulent business opportunities and steaming hot pornography. This load of spam is *on top* of your legitimate mail, which, however welcome, adds up quickly.

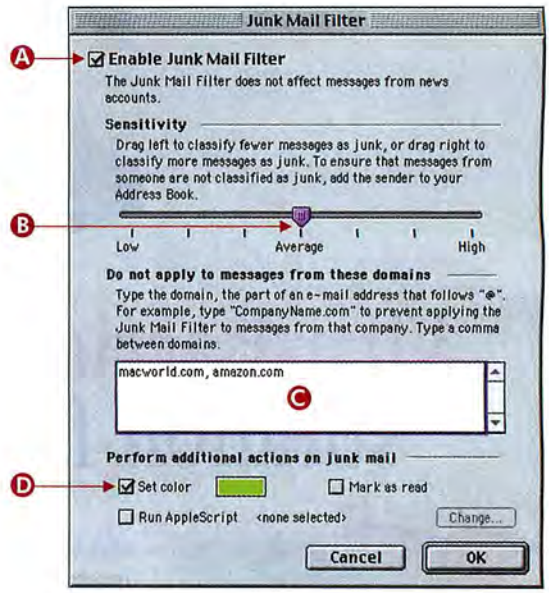
Controlling the daily deluge of mail can be a challenge if you don't have a top-notch e-mail program such as Microsoft's Outlook Express (OE) 5 (see *Reviews,* March 2000), which hosts an arsenal of weapons for filtering out the messages you don't want and managing those you do.

If you don't already have this latest version of OE (it ships with Mac OS 9), you can download a free copy from Microsoft's Web site (www.microsoft.com). Because OE will share virtually all of its e-mail interface and features with Entourage (the code name for the e-mail client and Personal Information Manager in the forthcoming Microsoft Office 2001 for the Mac), learning how to create Mail Rules with OE now will give you a leg up when Office 2001 is released later this year. **m**

Contributing Editor TOM NEGRINO filters his mail compulsively. His latest book is *Quicken 2000 for Macintosh, Visual Quickstart Guide* (Peachpit Press, 1999).

1 Filter Out Spam Junk Mail Filter is your first line of defense against spam. To prevent being traced, spammers often put false information in their e-mail's From field. This filter scans every incoming message's routing information for signs of forgery.

Open the Junk Mail Filter dialog box from the Tools menu. Make sure the Enable Junk Mail Filter check box (A) *is selected.*



Next, set the Sensitivity slider (B) *according to your needs. The slider determines how vigilant Outlook Express is at classifying spam. The Average setting will satisfy most people, but you should experiment with it. If too much junk is getting through, adjust the Sensitivity setting until you're pleased with the results.*

The filter sometimes errs on the side of junkiness, classifying as spam mail that's really mail from unfamiliar correspondents. To protect future messages from legitimate but infrequent writers, add their addresses to the Address Book. You can also instruct Junk Mail Filter to ignore all messages from a specific domain—such as Macworld.com—by entering the address in the Domain window (C).

To be able to spot junk in your mail folders at a glance, select Set Color (D) *and choose a color swatch.*

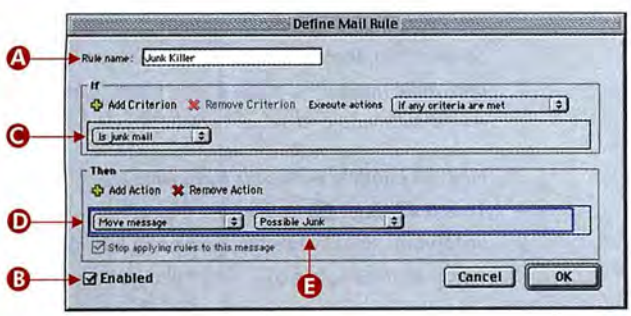
2

Organize Messages Junk Mail Filter only *flags* messages as potential spam. Use Mail Rules to put messages into action according to criteria you select. You can use Mail Rules to automatically file messages into folders, forward e-mail to colleagues, or send automated replies.

Because Junk Mail Filter isn't perfect, you'll want to create a rule that automatically sends all designated junk mail into a folder called Possible Junk, so you can decide if individual messages need to be deleted or have been unfairly maligned.

Choose Rules from the Tools menu and click on New.

Give the new rule a name (A) *and make sure that Enabled is selected* (B).



The If section of the window determines which criteria messages must meet for the rule to apply. Click on the pop-up menu (C) *and choose Is Junk Mail from the list of options.*

The Then section specifies which action the program should take. Choose Move Message from the pop-up menu (D). *A new pop-up menu will appear to the right; choose the folder in which you want the junk mail to appear* (E).

TIP: *Mail Rules applies rules in order. If it appears that a rule you created isn't working, another, higher rule may be interfering.*

More Info: www.macworld.com/2000/10/howto/mailrules.html

Get instruction on using Mail Rules to prioritize your incoming messages.

LINKS

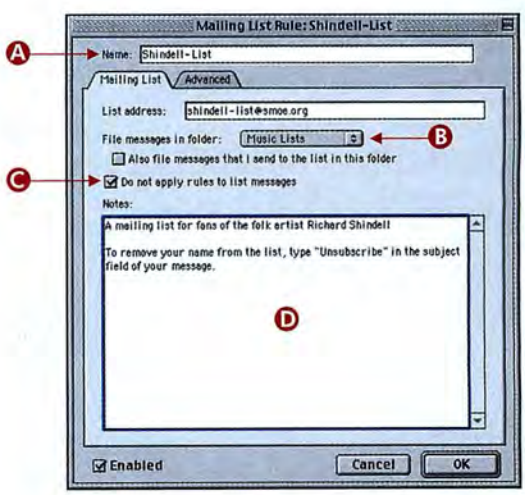
3

Manage Your Lists A special—but good—type of bulk e-mail comes from mailing lists. There are mailing lists on virtually every subject you can name, from skiing to your favorite music. Mailing List Manager helps you efficiently manage mailing lists.

It's a good idea to file list mail in folders separate from your personal or business mail. First, select a mail message that came from the mailing list and choose Mailing List Manager from the Tools menu. Click on New. You'll usually want one rule for each list.

Outlook Express uses the list's address as its default name, but you may want to change it to something a bit more descriptive (A).

Choose the destination folder for the list mail from the File Messages In Folder pop-up menu (B).



You can apply regular Mail Rules to list messages, but most people need only file list messages somewhere they're easily found. In this case, leave the Do Not Apply Rules To List Messages option selected (C).

TIP: *When you first subscribe to a new mailing list, you usually get instructions on how to unsubscribe; you can copy and paste these instructions into the Notes field for future reference* (D).

DAVID BLATNER

Casting Out Unwanted Color

Correct Color Casts with Adobe Photoshop

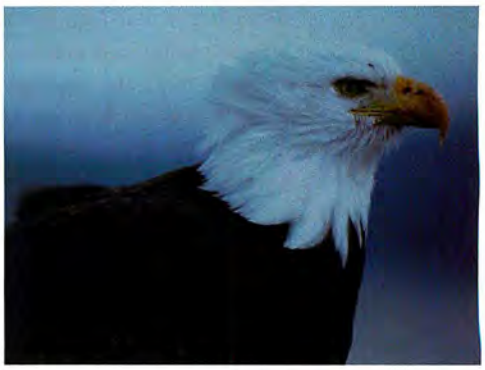
Although the human eye is capable of detecting thousands of different hues and tones in a single glance, we often end up seeing exactly what we expect to see. For example, take three pieces of white paper collected from different sources (a white napkin, a sheet of copier paper, and a catalog page, for example). Individually, each sample looks as though it's neutral white. It's not until you place them side by side that you see a color cast—subtle tints of yellow, blue, or magenta.

Such color casts commonly create problems in scanned photographs. An image may appear neutral on screen (and perhaps even in a printed proof), but when you place it next to other images or on a bright white sheet of paper, you discover a slight tint.

Clearly, some images *should* have a color cast (for example, a photo taken at the beach just before sunset), but many others should not—and you must remove the tints manually. Using Adobe Photoshop, I'll show you how to strip away unwanted color casts simply by neutralizing the black, white, and gray pixels in your image. **m**

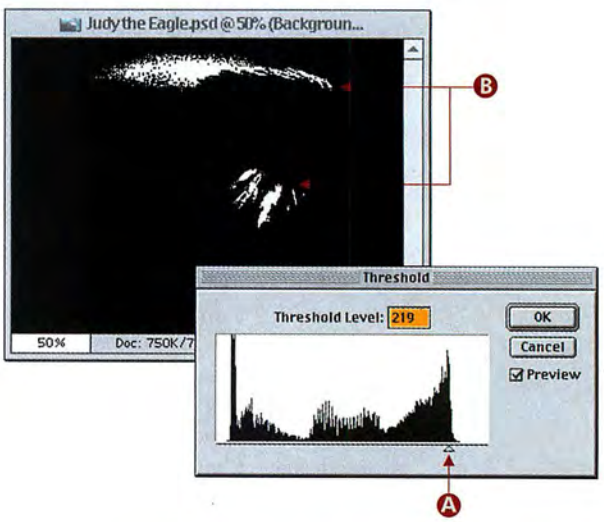
DAVID BLATNER is a coauthor of *Real World Photoshop 5* and the author of *The QuarkXPress 4 Book* (both Peachpit Press, 1998) and other books from Peachpit Press. He can be found at www.moo.com.

1 Find the Highlights At first glance, the bird's feathers in this photograph appear to be white, but closer inspection reveals a blue or cyan cast. By neutralizing the image's white and black pixels, you can correct the entire image and return the eagle to its true shade.



To locate the image's highlight and shadow pixels, use Photoshop's Threshold command, which converts the photograph to a high-contrast black-and-white image. From the Image menu, open the Adjust submenu and select Threshold.

Find the image's highlights by moving the Threshold slider **A** *to the right end of the histogram. This reveals the location of the lightest areas: at the eagle's crest and below the eye* **B**.



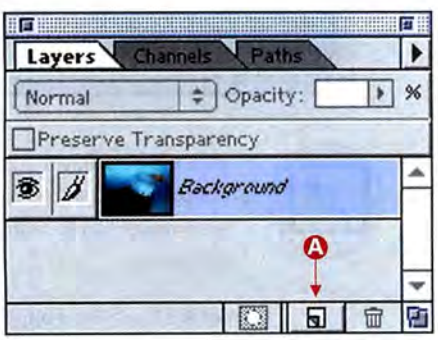
Move the slider in the opposite direction to find the image's darkest areas—in this case, the feather tips in the lower left corner.

Click on Cancel to leave the dialog box and return to your color image.

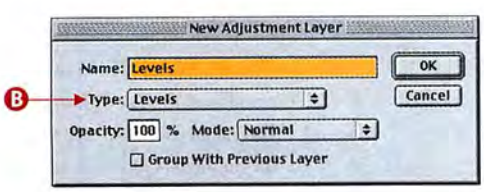
2

Create Adjustment Layers Once you've identified the highlights and shadows, use an adjustment layer to correct the image. These layers let you apply a tonal or color adjustment (such as Curves or Hue/Saturation) as a layer rather than changing the actual image data.

Adjustment layers offer several advantages over applying changes directly to your document. First, you can always go back and change layers without adversely affecting the image itself. Adjustment layers also give you an easy way to judge results—just turn the layer on and off.



Create a new adjustment layer by ⌘-clicking on the New Layer button at the bottom of the Layers palette (A).

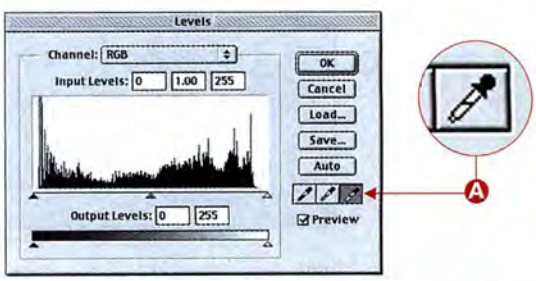


In the New Adjustment Layer dialog box, specify what type of layer you want to use (B). *In this case, I've chosen Levels. (If you prefer, you can also use Curves here; you would follow the same steps). Click on OK.*

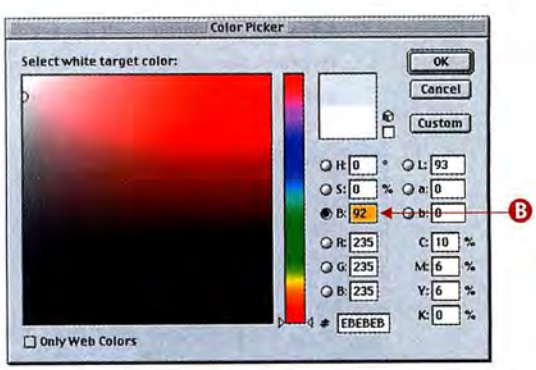
3

Adjust Your Highlights Next, you need to change your image's highlight and shadow pixels—which currently have a color cast—to the correct neutral colors. To do this, you'll use the black and white eyedropper tools in the Levels dialog box.

TIP: *When you create the adjustment layer, Photoshop automatically opens a Levels dialog box. Later, if you want to change your settings, simply double-click on the adjustment layer in the Layers palette to reopen it.*



In the Levels dialog box, double-click on the white eyedropper tool (A) *to display the Color Picker dialog box.*



The Color Picker dialog box lets you specify the correct neutral color for your highlights. To retain some ink in the lightest parts of your image, don't use solid white for the highlight. Here I've set brightness to 92 percent, which results in an 8-percent-neutral color (B).

By using the Brightness setting, you avoid the hassle of figuring out proper RGB and CMYK values for neutral colors. You might want to select a darker neutral, depending on the needs of your output device. Click on OK.

continues

More Info: www.macworld.com/subject/photoshop

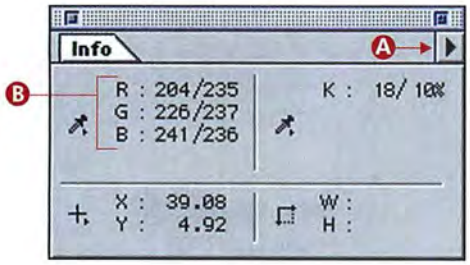
For additional tips, techniques, and Photoshop-related news, visit Macworld.com's Photoshop subject page.

LINKS

4

Choose Your Pixel You're now ready to snap the image's highlights to the new, correct eyedropper color. Take care, though; picking a pixel outside the highlight area can drastically degrade image quality. If that happens accidentally, just choose a different, more appropriate pixel.

If you don't see the Info palette, open it from the Windows menu. If the palette doesn't already display RGB values, open Palette Options from the window's pull-down menu **A** *and change one of the Modes to RGB.*



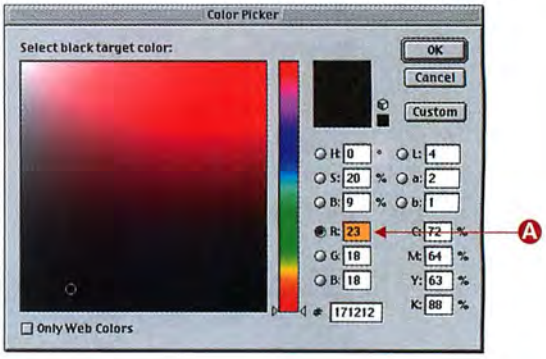
With the adjustment layer's white eyedropper tool selected, press ⌘-plus (+) to zoom in on the area of the image containing the highlights you found in step 1.

Using the Info palette's numbers as a guide **B**, *search the area for the pixel that best represents a neutral white—it should have approximately equal R, G, and B values.*

When you find the right pixel, click on it with the white eyedropper. Photoshop then forces that pixel to match the color you set in the Color Picker. Once you select a pixel, the Info palette displays its values before and after the effect (separated by a slash). If you don't like the change, use the first set of numbers to choose a different pixel.

5

Set Your Shadows After you've set the highlight, it's time to adjust the shadows. Repeat steps 3 and 4 using the black eyedropper tool. Sometimes it's difficult to find a true neutral black, so you may wish to target a slightly off-neutral color.



With the adjustment layer's Level dialog box still open, double-click on the black eyedropper tool to reopen the Color Picker dialog box.

Set the black eyedropper tool to a neutral, near-black color. (In this case, I didn't want a completely black shadow because the feathers are actually brownish, so I added a tiny amount of red **A**.*) Then click on OK.*

With the black eyedropper tool selected, click on a pixel in the darkest area of your image. (Thanks to step 1, I know the darkest pixels appear in the lower left corner of the image.) The pixels will then snap to the neutral—or off-neutral—color you selected.

You can see from the finished image that the eagle has finally lost its blue cast.

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FRANKLIN N. TESSLER

Parents' Guide to Ergonomics

Set Up a Healthy Workstation for Your Kids

Today's kids spend hours in front of computers every day. If you think that's good news, you're not alone—parents and educators everywhere are clamoring for increased funding for computers in the classroom. And after school comes even more computer time, as kids play games, chat, and do homework.

In the rush to plant a computer on every child's desktop, potential risks to children's physical health have gone largely unnoticed. Although researchers disagree on the scope of the problem, kids *are* beginning to suffer from the same repetitive stress injuries, headaches, and other illnesses that have plagued their parents for years.

No matter how old a child is, preventing computer-related disorders is much easier than treating them after they strike. You can design children's computer work areas with ergonomics in mind and teach kids good habits that will stick with them.

To help you get started, we've compiled tips to help you set up kid-safe computer work areas. To make monitoring their computing habits easier, you may want to locate the family Mac in a room where an adult will spend a lot of time. (For a guide to computer-based education for kids, see "BacktoSchool.com," elsewhere in this issue.) **m**

Contributing Editor FRANKLIN N. TESSLER, M.D., has been writing about computer ergonomics and input devices since 1991.

All Ages While different body sizes require different ergonomic adjustments, certain basics apply to all children. Kids like to squirm, so getting them to avoid stressful postures is a challenge. Rather than telling children what to do, sit down and show them how to use pointing devices and keyboards without twisting, reaching, or stretching.

ILLUSTRATIONS BY PETER HOEY; PHOTOS BY GIBSON

Glare is hard on even young eyes. Ambient and task lighting should illuminate the keyboard and work area without overwhelming the screen **A**. *Glare shields cut down on reflection, but they also reduce the monitor's effective brightness. The best way to limit glare is to reorient the entire workstation.*

An adjustable keyboard tray **B** *helps keep hands and wrists in a neutral position. This one from Proformix (model number EF3505P; 800/973-2739, www.proformix.com) costs $320.*

Dangling legs put extra stress on the thighs. If necessary, use a small stool, an old telephone book, or a knapsack as a footrest **C**.

2

Ages 5 to 10 You wouldn't expect a five-year-old to wear your clothes. Full-size furniture and computer hardware don't fit small kids any better than adult clothes do.

Keep the top of the monitor at or below eye level (A)*, so the child doesn't have to look up to read the screen.*

Hands and wrists should be straight (B)*, and elbows and knees should be open to more than 90 degrees* (C).

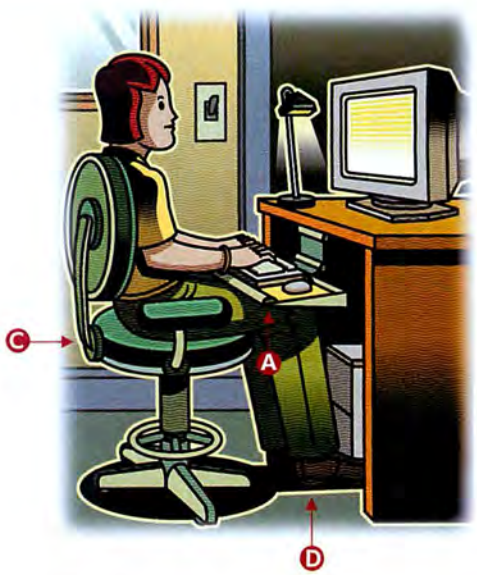
Small hands may find a trackball easier to use than a conventional mouse. If your child prefers a mouse, try Macally's diminutive iMouseJr. ($39; 626/338-8787, www.macally.com), a USB option (D).

DataDesk Technologies' Little Fingers (E) *($70; 888/446-3222, www.datadesktech.com) sports smaller keys. It's also available with an integrated trackball.*

A firm pillow or rolled-up towel (F) *keeps young backs straight and allows a child to reach the mouse and keyboard without stretching unnaturally.*

3

Ages 10 to 15 If older kids are big enough, they can use standard computer equipment, desks, and chairs with only minor modifications.



Some sources say that wrist pads are fine for resting, but they shouldn't be used when the child is typing (A).

Some children may benefit from Contour Design's Perfit Mouse (B) *(price varies; 800/462-6678, www.contourdesign.com), which comes in a range of sizes for left- and right-handed users. If your child is left-handed, put the pointing device to the left of the keyboard.*

An adjustable chair (C) *supports a child's back and legs. As with smaller kids, feet should lie comfortably on the floor or on a footrest* (D).

TIP: *Encourage brief rest breaks every 15 or 20 minutes.*

More Info: http://ergo.human.cornell.edu/

This site provides easy-to-understand advice from Cornell University.

LINKS

MOLLY E. HOLZSCHLAG

Roll Over with LiveMotion

Add Interactivity to Your Site with Remote Rollovers

Adobe LiveMotion is a great tool for Web enthusiasts and professional designers. It lets you create static and motion graphics easily, thanks to its familiar Adobe interface.

LiveMotion independently modifies individual images, so creating sophisticated effects such as remote rollovers is relatively simple. Unlike standard rollovers, which swap one graphic with another, remote rollovers allow one graphic to trigger the behavior of another. For example, say a page on an animal lover's site shows a Pet The Cat button on the left and a blank space on the right. When you mouse over the button, a picture of a contented cat appears in the space. As the mouse moves off the button (called *mouse out*), the cat disappears.

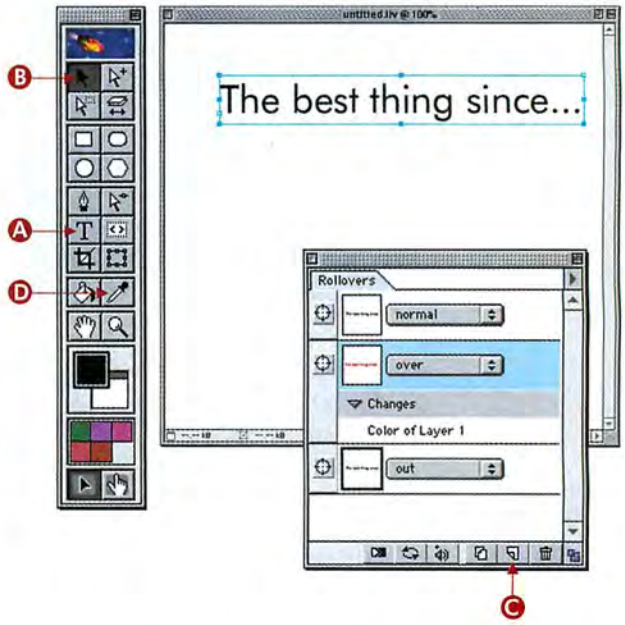
Remote rollovers add interactivity and a bit of fun to your sites. I'll show you how to create basic remote rollovers and then export them in formats that almost all Web surfers can see. If you want to try before you buy, download a free 30-day trial from www.adobe.com/products/livemotion. **m**

MOLLY E. HOLZSCHLAG is the author of *Teach Yourself Adobe LiveMotion in 24 Hours* (Sams, 2000). You can learn more about her books, articles, and seminars at www.molly.com.

1

Design the Trigger Object The first task is to create a trigger—the object people see when they load the page. After you create the trigger in LiveMotion or import it, you'll add standard rollover states to it (Normal, Over, and Out).

To create a canvas, select New from the File menu. Click on OK to accept the default composition settings. Make a trigger object in the program or place a premade object. I used the type tool (A) to create a text trigger.



Next, produce standard rollovers for the trigger object. Select the object with the pointer tool (B). In the Rollovers palette (choose Window: Rollovers), click on the New Rollover State button (C). The Over state will appear in the palette.

Select the Over state and change the trigger object's appearance. Because I wanted the object to change from black to brown when it was moused over, I selected the object and used the eyedropper tool (D) and the color picker (choose Window: Color) to grab a different color.

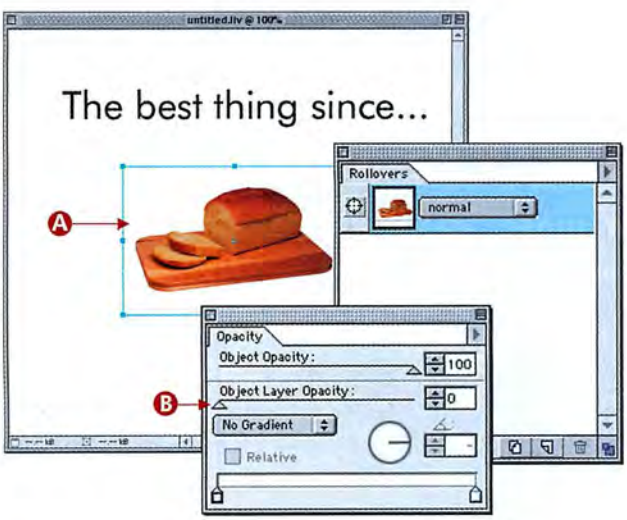
Click on the New Rollover State button again to create an Out state. I made my Out color black, the same as my Normal color.

2

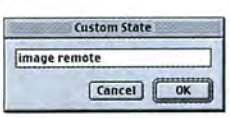
Creating the Remote Object The remote object—the one that appears when you mouse over the trigger object—can be simple or complex, and it can appear anywhere on the page. As you do for the trigger object, you create separate Normal, Over, and Out states for the remote object.

Place the remote object Ⓐ (File: Place). Select it, and in the Rollovers palette, you'll see the Normal state.

Because I wanted my remote object to be invisible at first, I set its Normal-state opacity to 0 by moving the Object Layer Opacity slider Ⓑ in the Opacity palette (Window: Opacity) to 0.



Ⓒ



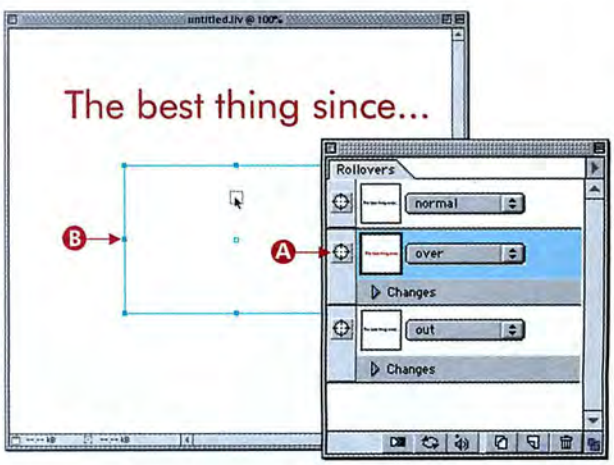
Click on the New Rollover State button. When the default Over state appears, choose Custom State from the pop-up menu. In the resulting dialog box Ⓒ, name the state. I named mine image remote. For this state, I set the Object Layer Opacity slider to 100 percent, because I wanted the remote object to appear when someone moused over it.

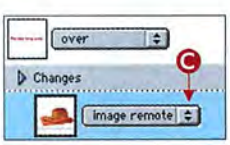
Click on the New Rollover State button again. Choose Out from the pop-up menu. Now you can control what the object looks like when the mouse leaves it. I set the Object Layer Opacity slider to 0, making it disappear on mouse out.

3

Connecting the Trigger and the Remote Objects Now you have rollovers for the trigger and remote objects, but the rollover states aren't connected between objects. To make that connection, you'll target the corresponding rollover state in the Rollovers palette.

Select the trigger object. In the Rollovers palette, highlight the first state in which a rollover occurs. In my example, that's the Over state. Drag the targeting button (to the immediate left of the Rollover thumbnail Ⓐ) from the palette to the remote object. When the boundary box of the remote object appears Ⓑ, drop the target.



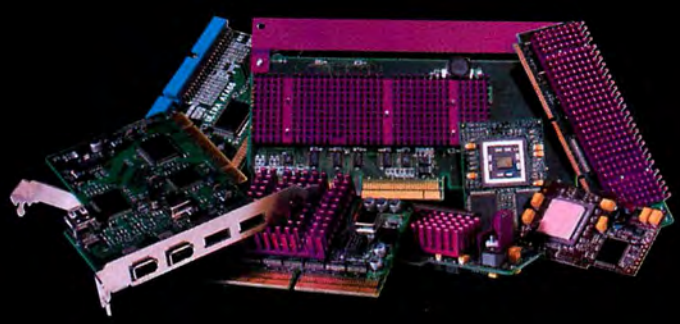


The remote object now appears in the Rollovers palette, underneath the Over state. From the pop-up menu Ⓒ choose the corresponding rollover state for the remote object (here, Image Remote).

Connect the Out states in the same way.

To preview what you've done, click on the Preview button in the Tool palette Ⓓ, and then pass your mouse over the trigger object. If it triggers the remote event, you're on the right track.

continues



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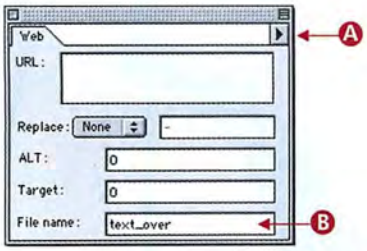
4

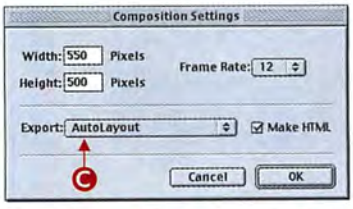
Prepare for Export You can save this remote rollover as a Flash file and embed it in an HTML page. However, if your audience isn't likely to have the Flash plug-in, I recommend saving your rollover as HTML and JavaScript.

5

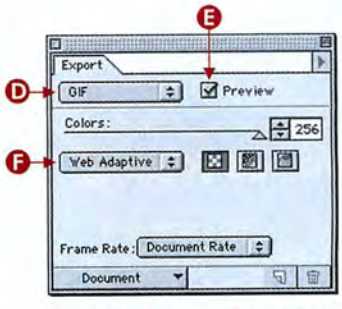
Exporting HTML and JavaScript Exporting is the last stage of creating a remote rollover. You can export the files as HTML, GIF, JPEG, or Flash files. For Flash export directions, go to www.macworld.com/2000/10/howto/rollover1.html.



First, name your images. Select the trigger object. Open the Web palette (Window: Web). If you don't see a File Name field, choose Detail View by clicking on the arrow in the upper right of the palette **A**. *In the File Name field* **B**, *enter a name for the trigger image. I named mine text_over. Click on the remote object and name it using the same method.*



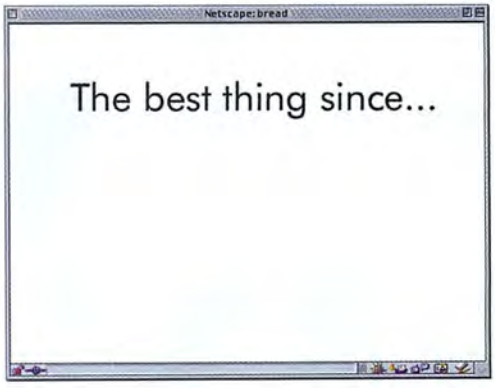
Next, choose Edit: Composition Settings. When the dialog box appears, choose AutoLayout from the Export pop-up menu **C**. *Select the Make HTML option. Click on OK.*



Open the Export palette (choose File: Export Settings). Choose GIF or JPEG from the pop-up menu **D**. *If you're not sure which format to use, click on the Preview check box* **E** *and test your design using different settings. Use the Web Adaptive option* **F** *to limit the number of colors in the composition—this makes the size of the graphic files smaller.*

Once you're satisfied with the export settings, choose File: Export As. Determine a location for the exported file and name the HTML file. Click on OK, and LiveMotion will render all the necessary graphics and code. To check the results, open the HTML file in your Web browser **A**, **B**.

A



B

More Info: www.macworld.com/2000/10/howto/rollover2.html

If a picture is worth a thousand words, a rollover on the Web is worth a million. Visit Macworld.com to see these files in action.

LINKS

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CHRISTOPHER BREEN

Mac 911

This month's *Mac 911*, while it deals with myriad topics, has one common thread—each question is about *something*. That's right, from the mailbag I drew questions about something that should work (but doesn't), something that could work, and something of a workaround. Let's rip open the first message, from a reader seeking the kind of sound advice we generally dispense here at 911 HQ.

DA on a DV

Apple's QuickTime Pro is so full-featured that you'd think a request made by San Diegan Lawrence Carleton would be reasonable. He wanted to use QuickTime Pro to record a couple of minutes of digital audio with his iMac DV's built-in microphone. Regrettably, the program isn't capable of that.

QuickTime Pro can capture audio from CDs and open and convert WAV, sfil, AIFF, uLaw, and MP3 files, but you can't use it to record sound from a microphone.

Thankfully, Apple provides another way to record sound into your Mac. It's an application called SimpleSound, which you'll find in the Applications folder at the root level of your Mac's hard drive.

Wait, wait—I hear a faint yowling in the distance. "You idiot!" these yowlers yowl, "SimpleSound can only record a few seconds of audio!"

To which I politely retort, "Sez you!"

True, if you open SimpleSound and click on the Add button in the Alerts Sounds window, the program limits you to five seconds of recording time. However, if you instead choose New from SimpleSound's File menu, you can record as much audio as will fit on the volume where SimpleSound resides. To gain the maximum recording time, move SimpleSound to your largest hard drive or partition. You can also gain more time by recording at a lower quality—switching from CD to Music quality, for example, gives you four times as much recording time. If you'd like a more capable sound-recording application—one that more clearly defines recording parameters such as resolution and bit depth, for example—I'd give E.J. Campbell's (http://members.aol.com/EJC3/) $20 shareware application, Ultra Recorder, a try. Ultra Recorder doesn't edit audio—meaning you can't use it to divide the audio file into smaller pieces or lop off pieces you don't care for. But once you've recorded your audio with either SimpleSound or Ultra Recorder, you *can* use QuickTime Pro as a simple sound editor—using the Cut and Clear commands to remove selected bits of audio and the Cut and Paste commands to assemble a group of sound clips into a single file.

Plane Power

David Das, proud owner of a brand-new iBook, writes that he'd like to take advantage of the Empower AC ports beginning to sprout up in the tonier sections of airplanes. These receptacles let you plug in your PowerBook. However, this Nashville, Tennessee, resident fears that no Empower AC adapter supports his two-toned portable. David, allow me to allay your fears.

Although your iBook ships with a round power

continues

adapter apparently manufactured by Duncan Yo-Yo Company, that adapter provides the same connection and au jus as the AC adapters that shipped with the PowerBook 1400 and 3400 and every G3 model. This tidbit saved my bacon at the last Macworld Expo, where I had to bum the power adapter from a friend's iBook to recharge my Wall Street PowerBook.

Now that you know you can use your iBook with any adapter that supports a recent PowerBook (and therefore any car or airline adapter intended for PowerBooks), you must stalk and snare one of the few Empower adapters compatible with your lapster. I've done the stalking for you and found the Port Auto/Air Notebook Adapter–PowerBook, G3 ($80; model number PWCF401), from Port (800/950-5122, www.port.com). It's Empower certified.

Commandeering ⌘-tab

One of the Windows features worth stealing is the keyboard shortcut that allows you to cycle through running applications (called *keyboard cycling*). Apple *did* steal it—and then assigned it the ⌘-tab shortcut and plunked it into Mac OS, beginning with version 8.5. Unfortunately, some folks—Ernie Grafe of Rapid City, South Dakota, for example—mourn the fact that the new ⌘-tab shortcut supplants the same helpful key combination (used for other purposes, of course) in programs such as FileMaker and QuarkXPress. While Ernie enjoys OS 9's many advantages, he would like to dispense with this shortcut.

You can disable keyboard cycling in several ways. If you're a do-it-yourselfer, just open Apple's Script Editor and enter this simple AppleScript:

```
tell application "Application Switcher"
set keyboard cycling active to false
end tell
```

Use this one to turn cycling back on:

```
tell application "Application Switcher"
set keyboard cycling active to true
end tell
```

You can also disable ⌘-tab with a shareware or freeware utility. My personal favorite (because it's free and doesn't involve a control panel) is Mitch Crane's SwitcherSetup CM (www.macdownload.com). It lets you use contextual menus to switch off keyboard cycling or assign it a different key combination. Catalunya Disseny Informatic's $5 SwitcherMaster (www.catdis.com/realcode/) provides similar services via a control panel. Although Michael F. Kamprath's $10 shareware control panel, Program Switcher (www.programswitcher.com), doesn't specifically let you turn off keyboard cycling, it comes with an AppleScript that lets you turn keyboard cycling on and off with a single script. **m**

Contributing Editor CHRISTOPHER BREEN offers Mac tips and tricks each business day via the Macworld Daily Tips and iTips newsletters. Visit http://lists.macworld.com to subscribe.

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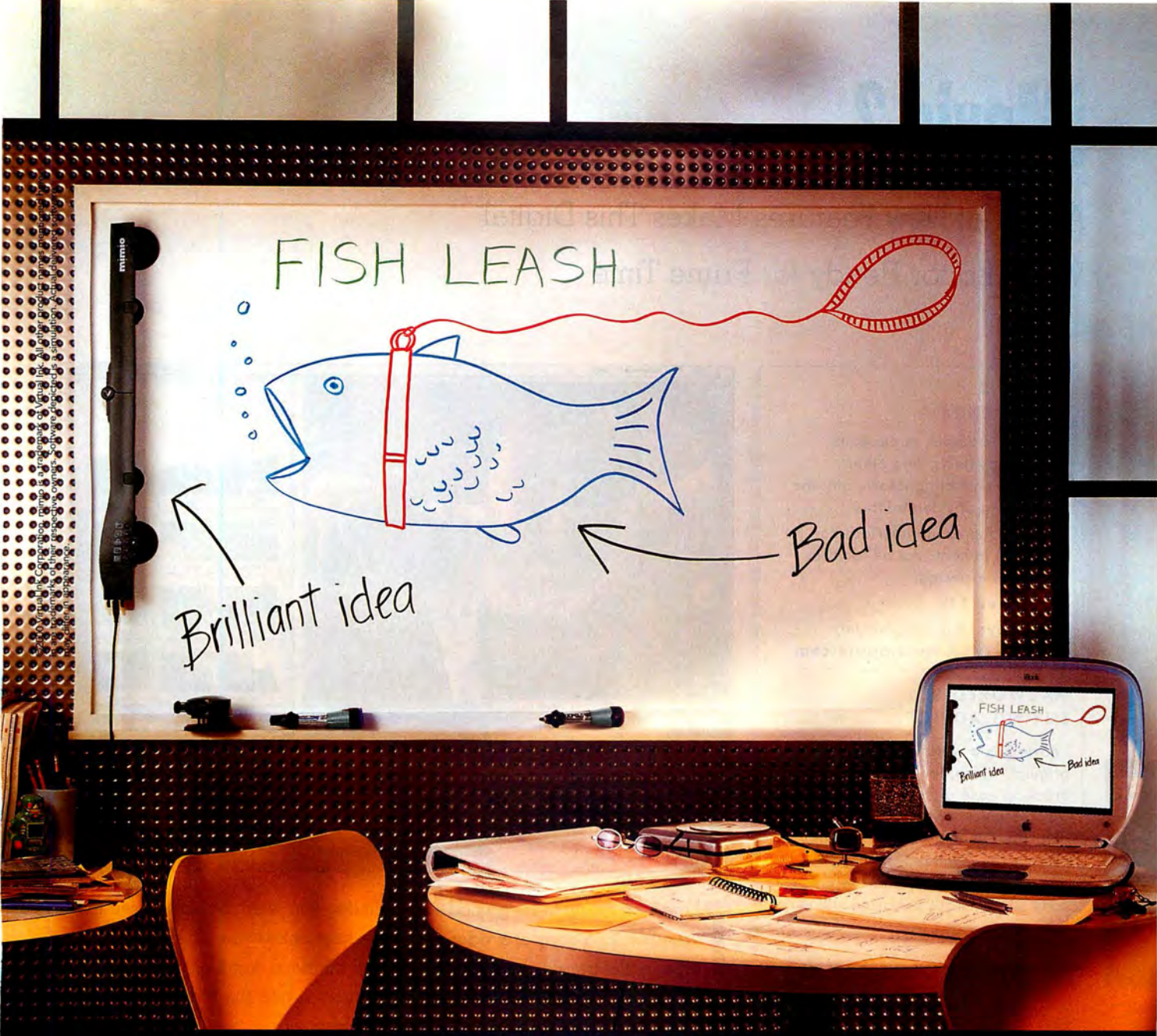
Shareware and freeware mentioned in Mac 911 is available from the Macworld Online software library (www.macdownload.com).

Desktop Picture Template Use your Mac's desktop to design Web pages for multiple screen sizes.

Tip of the Month

If you design Web pages using a large monitor, you can easily check how your page layout will look on smaller screens by customizing Apple's desktop picture. Create a graphic at the exact resolution of your monitor (1,024 by 768, for example), and then draw boxes inside the graphic at other common monitor sizes such as 800 by 600 and 640 by 480. Set this graphic as your desktop picture. You can then resize windows in your authoring software using the desktop picture as a guide.

Matt J. Fuller
Cincinnati, Ohio



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iMovie 2

A Host of New Features Makes This Digital Video Editor Ready for Prime Time

iMOVIE 2

Rating: 4½

Pros: Insert Edits, audio edits, QuickTime effects, and other enhancements bring iMovie into the mainstream of video editors.

Cons: Aqua-esque interface can be difficult to fathom; not all features behave as expected.

List price: $49

Company: Apple Computer, *800/692-7753*, **www.apple.com**

MACWORLD'S BUYING ADVICE:

iMovie 2 is a worthy successor to the original, which, for all its groundbreaking ease of use, ran out of gas way too quickly. Version 2 is feature-rich, capable of very sophisticated movie editing without the need for add-on applications, and despite some idiosyncratic behavior, still very easy to use.

There's an axiom in Hollywood: Whether it's a copy of a video tape, a film transfer, or a script, quality goes down with each generation. The movie is never as good as the book, the film is never as clever as the pitch, and the sequel is always inferior to the original.

I'm glad to report that at least in this respect, iMovie isn't following the entertainment industry's example. And while the program is no longer free (although it is bundled with all desktop Macs), iMovie 2's new capabilities more than justify its $49 price tag.

Marquee Features

When you first launch iMovie 2, you might think that not much has changed. The interface still takes over the desktop—if you use Application Switcher to go to the Finder, you won't be able to see the desktop unless you hide iMovie first. The interface is still divided into three primary zones: the Marquee, where you view video; the Clip Shelf, where you store your clips; and the Timeline Viewer, a horizontally scrolling panel where you assemble clips and audio to make a movie.

The Timeline Viewer, although it looks remarkably similar to the Audio Viewer in iMovie 1 (see *Reviews*, August 2000), is very different functionally. You can change the time scale of the Viewer so that even tiny clips are easy to discern, and each clip now includes a picture, so you can easily distinguish one clip from another. There are still two audio tracks, but now they can contain an unlimited number of audio clips,

Reversal of Fortune Visual effects may make for cool eye candy, but their real power is their ability to enhance a shot or create missing shots. In this example, I had a video clip of moving toward my son to kiss him good night, but I didn't have footage of moving away afterward. Using the new Reverse Clip command, I copied the clip and then reversed the copy, shown here selected in the timeline.

either layered or in succession. Every media element is displayed in proper time scale—even sound effects fill exactly the amount of space in the timeline as it takes for them to play—and the new motion-speed slider in the Timeline Viewer lets you adjust a clip's playback speed.

You can even edit sound—cut audio into smaller clips, layer sound, blend one sound into another (using transitions, of course), and set sound fades and durations for each clip.

Like a lot of iMovie 2's new functionality, this feature isn't immediately obvious: you get to it either by selecting Get Clip Info in the File menu or by double-clicking on a clip (yes, you can still set audio fades and audio levels directly in the Timeline Viewer, but you can't set fade duration). By the way, the Clip Info dialog box also gives you the name of the clip file in the Media folder, even if you've given the clip a new name inside iMovie (see "Need the Info").

With iMovie 2, the upgrade is in the details; Apple has added or enhanced hundreds of features. Unfortunately, accessing some of the new features is a matter of trial and error. It wasn't until I tried to drag a clip back to the Clip Shelf from the Timeline Viewer that I discovered that you can open dead space in the middle of a movie, effectively adding blackouts between clips. I also stumbled upon a feature downgrade: you can no longer drag clips back to the Clip Shelf from the Timeline Viewer. Instead, you need to toggle to the Clip Viewer to move clips back to the shelf. This is especially annoying if the Timeline Viewer is your preferred area for editing footage.

On the Menu

If the changes in the Timeline Viewer aren't enough for you, a quick tour of iMovie 2's menus will reveal a wealth of new capabilities.

iMovie veterans will love the new Create Still Clip option—it grabs the frame displayed in the marquee and turns it into a static five-second clip in the Clip Shelf, a process that used to take several steps.

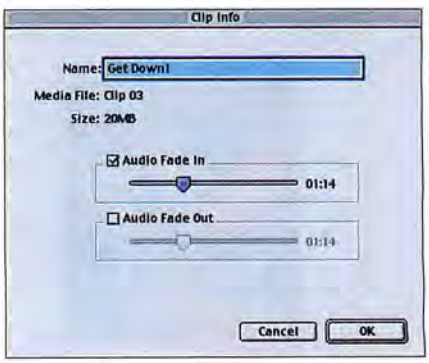
But most of iMovie's flashiest capabilities are stored in the new Advanced menu. Chief among these is the Paste Over At Playhead command, which lets you insert one video clip inside another ("add an insert edit," in video-editing parlance), overwriting the video for the portion of the clip inserted but keeping the original clip's audio intact. This allows an iMovie maker to add a steady stream of shot changes while a narrator continues to talk in the background, and then reconnect the narrator and his voice at the end of the clip.

Speaking of extracted audio, another important new feature is the ability to extract audio from a video clip. This happens automatically when you do an insert edit, but you can also extract audio from a video clip as a separate action. You can then edit the audio clip as you would any other. And you can "lock" any audio clip at any point to ensure audio and video stay in sync.

Reverse Clip does exactly what its name implies—takes the selected clip and reverses it. And while this will no doubt result in hundreds of home movies of dogs jumping backward through hoops, its real power is the ability to create missing sequences, such as zooming out when all you have is a zooming-in shot. The problem is that once a clip is reversed, it's impossible to crop it accurately. When you attempt to crop the end of the clip, iMovie 2 cuts the footage outside the cropping markers—not inside, as with a normal clip.

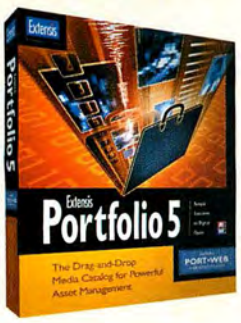
Luckily, the Advanced menu offers a panic button in the form of the Restore Media option. If you've

continues on page 91



Need the Info A well-hidden new feature of iMovie 2 is the Clip Info dialog box. It displays not only the clip name but also the name of the clip file in the media folder. Inexplicably, this dialog box can also set fade-in and -out duration for a single clip.

Get the monkeys off your back!



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PORT5MWNA010200

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taken a clip and split it, Restore Media can rejoin the two clips, no matter how many actions you've taken since splitting them. Of course, if you've cut a clip into several smaller clips and renamed them, Restore Media will reintegrate all the cuts into the original clip (unless you've deleted some of them). In a complex edit, that can get confusing.

No More Drawers

Perhaps the most maligned feature of iMovie 1 was the Clip Shelf, which let you store clips in a maximum of 12 slots. (Apple's justification for limiting the number of wells was simplicity: apparently, scroll bars were too complex for beginning users.) I'm delighted to report that the company has added scroll bars to the Clip Shelf. Now you can store as many clips as you have space for on your hard drive. Unfortunately, the way the Clip Shelf manages this space can get pretty confusing: when you edit clips, iMovie places them in seemingly random locations on the Clip Shelf. This can make keeping your clips in neat little groups nearly impossible.

In iMovie 2, the Clip Shelf no longer uses a drawer to hold sound effects, titles, and transitions. Instead, those features are accessible through a row of buttons at the bottom of the shelf. Click on Transitions, and the Clip Shelf is replaced with the Transitions Palette; click on Titles, and you get the Titles palette.

Unfortunately, Apple has done little to improve the functionality of titles and transitions. While titles now feature a font-size slider, the maximum size still isn't as big as iMovie 1's "large type" titles. The variety and flexibility of titles plug-ins are still somewhat limited, and the titles still look cheesy when exported to QuickTime. Nor have transitions improved: users looking to produce a polished movie will still want to stick with fades and washes or forgo transitions altogether.

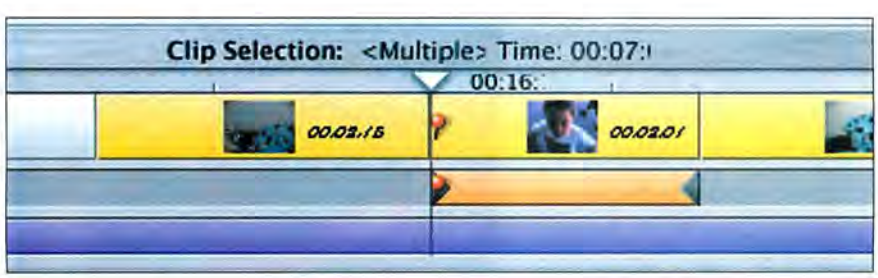
Apple did add one major new feature to the Clip Shelf: the Effects palette. It's fairly obvious from this palette that the iMovie team purloined a lot of the application's new functionality from QuickTime Pro. And the new effects—including Mirror, Brightness/Contrast, and Sharpen—will look very familiar to QuickTime users. That doesn't take anything away from the usefulness of these effects plug-ins; it's just one less reason to fork over $49 for QuickTime Pro.

Special Delivery If these special effects (new to iMovie 2) look familiar, it's because they're taken directly from QuickTime Pro. Wherever they come from, they're a nice addition to a movie editor's bag of tricks.

Interface Confusion

Like most pioneering products, iMovie 2 doesn't have a lot of examples to draw from for its interface conventions. Powerful capabilities can be hard to unearth, and behaviors can be difficult to fathom and don't necessarily act the way you expect them to. And there's still no comprehensive documentation to speak of, which means users are left to discover what works and what doesn't on their own.

Then there's the interface itself. The new Aqua-fied look is mostly window dressing, doing little to advance usability and actually getting in the way in places. The new scroll bars, for example, don't have page-up or -down buttons. Clicking on the arrowheads scrolls the Viewer, but you can't fast-forward or jump to the beginning of the timeline.—ANDREW GORE



Insert Easy Performing an insert edit (adding footage to the middle of a clip without losing sync with that clip's audio) used to be a nearly impossible task in iMovie. With iMovie 2, it's just a matter of cutting and pasting.

Apple Pro Mouse

Apple's New Optical Mouse Is a Work of Art Carved in Lucite

APPLE PRO MOUSE

Rating: 4 mice

Pros: Attractive design; clickable surface; optical sensor.

Cons: Cable is too short; no second button; more expensive than Microsoft's optical mouse.

List price: $59

Company: Apple, *800/538-9696*, **www.apple.com**

MACWORLD'S BUYING ADVICE:

A major improvement over Apple's much-maligned hockey puck, the new Apple Pro Mouse is an optical input device that is as precise as it is beautiful.

Long-suffering mouse users, rejoice—Apple's round mouse has breathed its last. Born as part of the original iMac's revolutionary design, the round and colorful input device would ultimately become Apple's most maligned product since the Newton—with good reason. Its round shape was difficult to position and too small for adult-size hands, and the device itself was so light that it could easily lose contact with the mouse pad.

Apple's second attempt at a designer mouse is a much worthier rodent. While it won't make all Mac users deliriously happy (especially those waiting for an Apple-branded two-button input device), it's a vast improvement over the so-called hockey puck.

A Shiny New Mouse

The new mouse's design is a far cry from that of the round mouse, with its color-coded side panels that appeared to be attached with Elmer's Glue. Seemingly formed from a block of Lucite, the new mouse looks more like a drop of mercury than an input device.

The mouse is also a breakthrough in technological design. Apple will be the first computer vendor to bundle an optical mouse with all desktop systems. An optical mouse uses a beam of light and an optical sensor to detect movement over a surface—there are no moving parts. This makes the mouse more reliable and much more precise. The new mouse can also operate on almost any solid or opaque surface, including the palm of your hand (but not glass tabletops or mirrors).

From a usability standpoint, the new mouse is nearly flawless. Gliding over most surfaces with the ease of an Olympic skater, it's a vast improvement over any mechanical mouse. The entire top of the mouse is a button, allowing you to click simply by applying pressure with your palm. My only major complaint is that the cable is too short.

Priced to Go

At $59 (or free with the purchase of a new desktop Mac), the Apple Pro Mouse is decently priced, although it's a bit more expensive than Microsoft's Intellimouse, an optical device with two buttons and a scrolling wheel. In any event, this new mouse is a solid option for Mac users who are tired of mousing in the round.—ANDREW GORE

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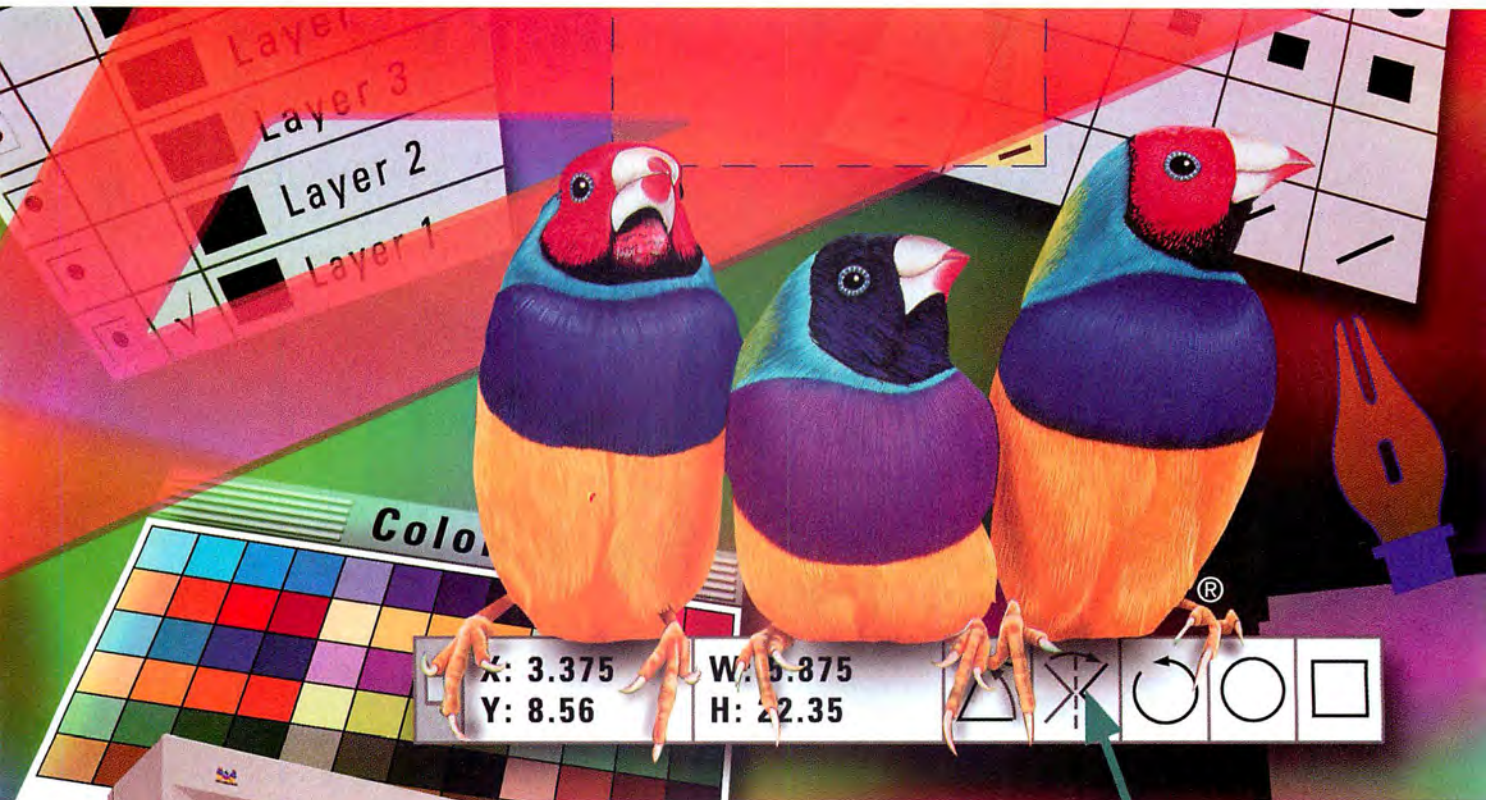

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One-Megapixel Cameras

Low-Priced Models Deliver a Range of Features and Image Quality

ARNOLD TIOSEJO

Olympus D-460 Zoom

Why would you even consider a one-megapixel camera in this era of two- and three-megapixel powerhouses? Because, as with so many things, more is not necessarily better. Just because a camera has higher resolution doesn't mean it takes better pictures; you really need all that extra resolution only if you want to print pictures larger than 5 by 7 inches or blow up part of an image. Granted, today's state-of-the-art 3.3-megapixel cameras offer improved image processing and new features, but most camera manufacturers have been diligent about migrating such features down to their one-megapixel models.

For this roundup, we looked at five cameras: Olympus's D-460 Zoom and D-360L, Kodak's DC240 Zoom and DC215 Zoom, and Fuji's FinePix 1400 Zoom. We found quite a lot of variation in both image quality and features, but we also found that it's possible to get a great balance of image quality and features in a very affordable package.

Image Quality Counts

A camera is only as good as its output, and several of the cameras we looked at produce high-quality prints. For overall image quality, it's hard to choose between Olympus's D-460 Zoom and Fuji's FinePix 1400 Zoom; both cameras deliver images with excellent detail and good color reproduction. The FinePix tends to produce images that are a tad brighter and have slightly more-accurate color, however, while the D-460's images generally have slightly better contrast. The D-460's images are consistently a bit dull when compared with the FinePix's, though you can easily correct this with a few simple contrast adjustments in an image-editing application. And the D-460's images have markedly better saturation and tone than those produced by its predecessor, the D-450.

The Kodak DC240 Zoom isn't quite up to the standards set by Olympus and Fuji, producing images that have good detail but frequently look washed out. It appears that Kodak has sacrificed image highlights in an effort to improve shadow detail, resulting in bright colors that frequently have a

continues

One-Megapixel Cameras Compared

COMPANY	Fuji	Kodak		Olympus	
PRODUCT	FinePix 1400 Zoom	DC215 Zoom	DC240 Zoom	D-360L	D-460 Zoom
MOUSE RATING	🖱🖱🖱	🖱🖱	🖱🖱🖱	🖱🖱🖱	🖱🖱🖱🖱
COMPANY'S ESTIMATED PRICE	$399	$299	$479	$299	$399
CONTACT	800/800-3854 www.fujifilm.com	800/235-6325 www.kodak.com	800/235-6325 www.kodak.com	800/622-6372 www.olympus.com	800/622-6372 www.olympus.com
CCD RESOLUTION (in millions of pixels)	1.3	1.0	1.3	1.3	1.3
DEFAULT MEMORY	4MB	8MB	8MB	8MB	8MB
REMOVABLE-MEDIA FORMAT	SmartMedia 3.3v	CompactFlash	CompactFlash	SmartMedia 3.3v	SmartMedia 3.3v
OPTICAL-ZOOM FUNCTION	3×	3×	3×	none	3×
FOCAL LENGTH (35mm-equivalent)	38mm–114mm	29mm–58mm	39mm–117mm	36mm	35mm–105mm
ADJUSTABLE ISO	no	no	no	yes	yes
SPOT METER	no	no	no	yes	yes
MANUAL WHITE BALANCE	yes	no	yes	yes	yes
RECHARGEABLE BATTERIES WITH CHARGER	no	no	yes	no	no
MACINTOSH CONNECTIVITY	USB	serial	USB, serial	serial	serial

yellowish green cast. The camera's color accuracy is also a little off. Kodak's DC215 Zoom fared far worse: in addition to turning out images that were too soft, it consistently produced inaccurate, washed-out color.

Similar to the DC215 in size and price is the Olympus D-360L, an upgrade from Olympus's popular D-340. Although it's roughly the same size and price as the DC215, it produces much better images—they sometimes look a little washed out, but they have good color accuracy and contrast.

Curiously, the D-360L fared the best in our flash tests, with the DC240 not far behind. The D-360L and FinePix also did well, though all the cameras we looked at were a little disappointing: with their weak flashes, they often produced images that were too dark. And because all these cameras are small, their flashes are placed close enough to the lenses that red-eye is a common concern.

Look and Feel

Of course, image quality is irrelevant if you don't have the features you need to take good pictures. Olympus is way out in front in this department. For example, the D-460 packs a 3× optical zoom, a spot meter, manual white balance, three ISO choices, exposure compensation, and a big memory buffer for high-speed shooting. The D-460 also includes an 8MB SmartMedia card. Unfortunately, the camera offers only serial connectivity; if you're using a USB Mac, you won't be able to connect the camera directly to your computer.

Olympus's D-360L offers roughly the same features as the D-460, but it has a fixed-focus lens rather than a 3× zoom. The camera produces very good results, though the images sometimes appear washed-out.

Although the FinePix offers slightly better image quality, it does not deliver the speedy performance of the D-460. In addition, the lack of an LCD status display—not to be confused with the 1.8-inch LCD viewfinder—makes shooting more complicated. You have to turn on the LCD viewfinder to read any of the camera's settings, and changing a setting usually requires delving into the camera's menu system. The camera does have a USB connection, but it lacks a spot meter and adjustable ISOs.

The largest, heaviest camera we tested, Kodak's DC240 packs some nice features—such as manual white balance, manual sharpness control, two metering modes, exposure compensation, and a number of special effects—and includes Mac and Windows serial cables, a USB cable, and rechargeable batteries. Although the Kodak DC215 offers an assortment of accessories, the camera is uncomfortable to use, and it offers poor feedback when you're shooting. Its image quality is by far the worst in the lot—images were soft and underexposed, with flat, inaccurate color.

Macworld's Buying Advice

Both the Olympus D-460 Zoom and the Fuji FinePix 1400 Zoom are proof that you don't need a lot of pixels to take excellent pictures. For the best balance of features, price, and image quality, choose the Olympus D-460 Zoom. If simple snapshots are all you're after, and you don't need a zoom lens, check out the Olympus D-360L—it offers almost all the features of the D-460 for about $100 less.—BEN LONG

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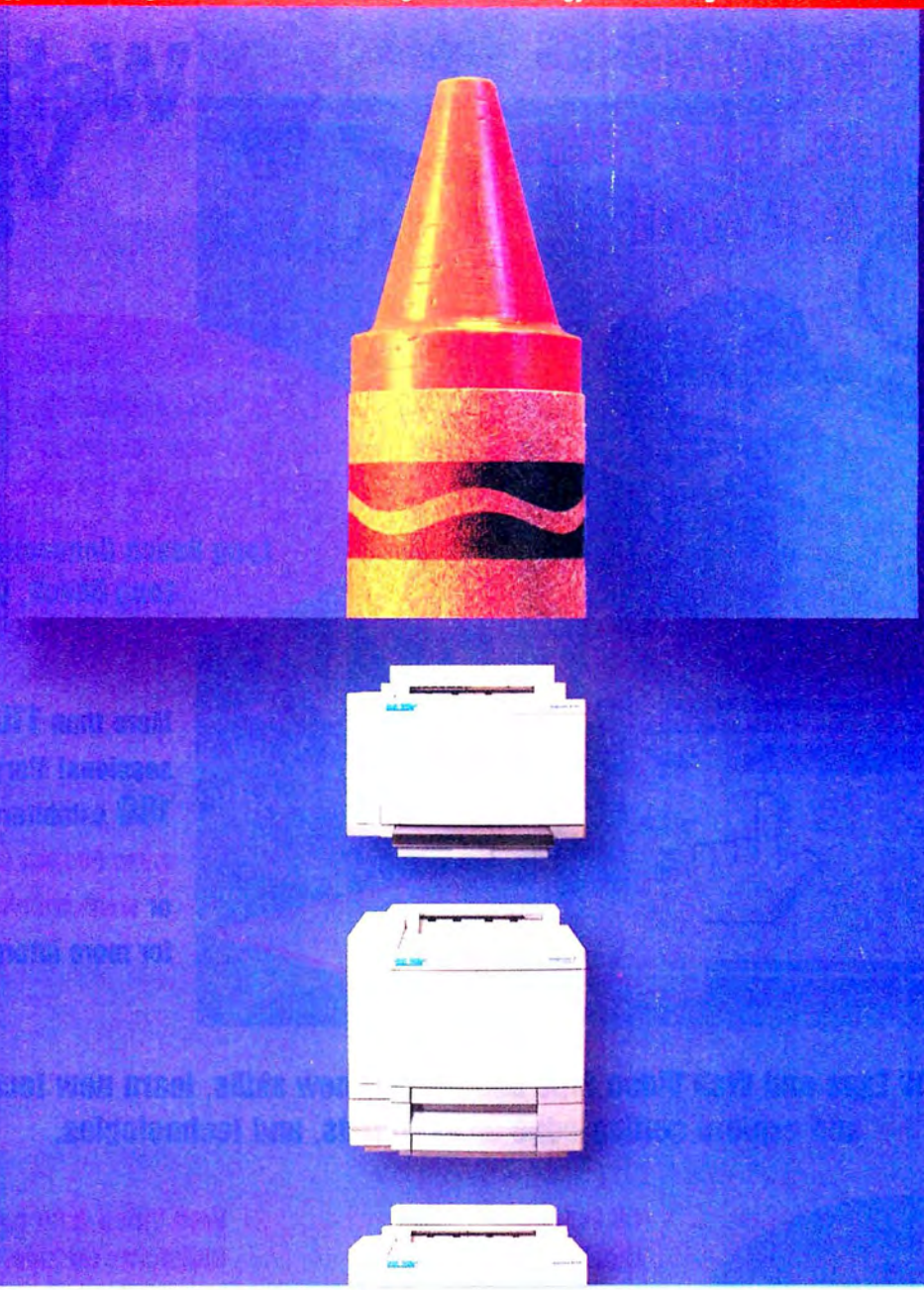

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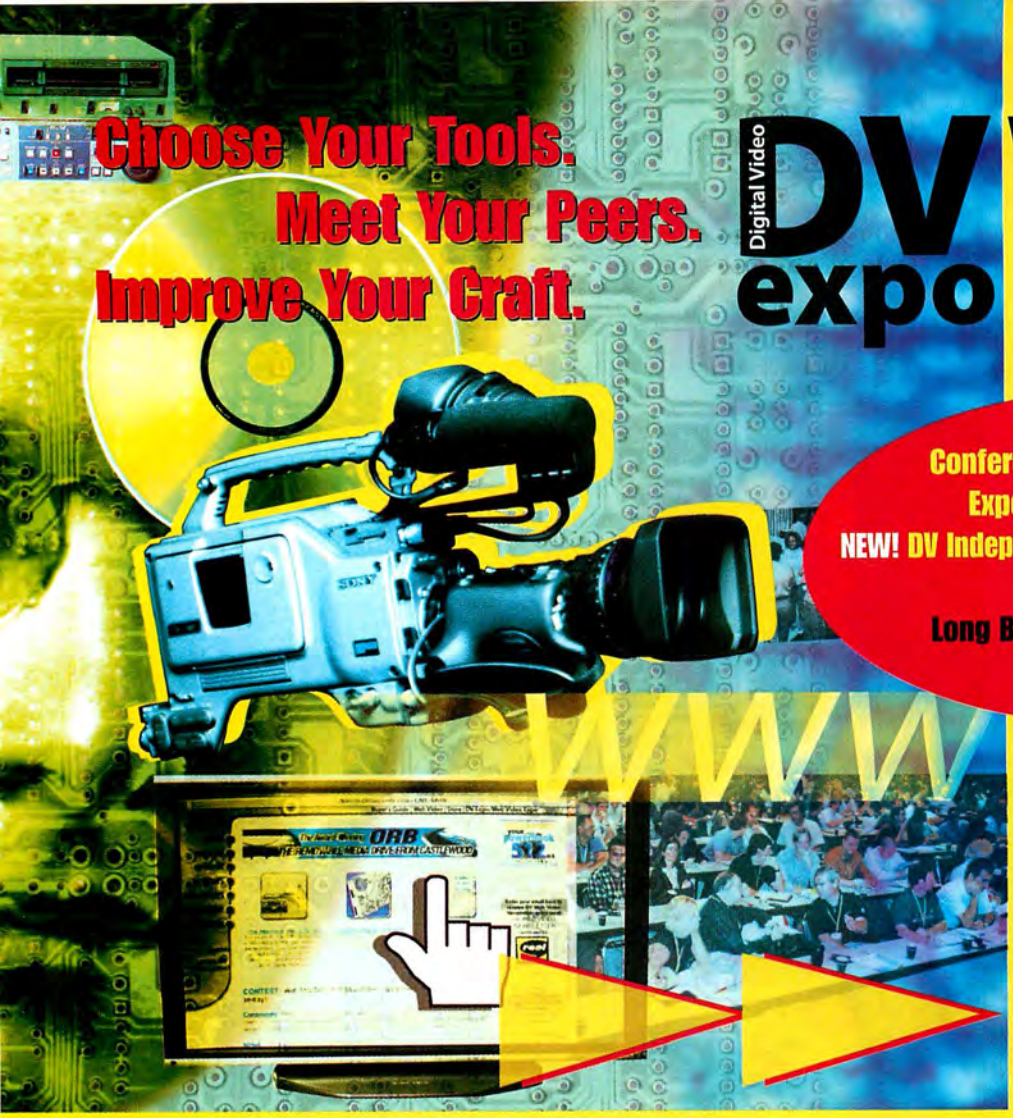

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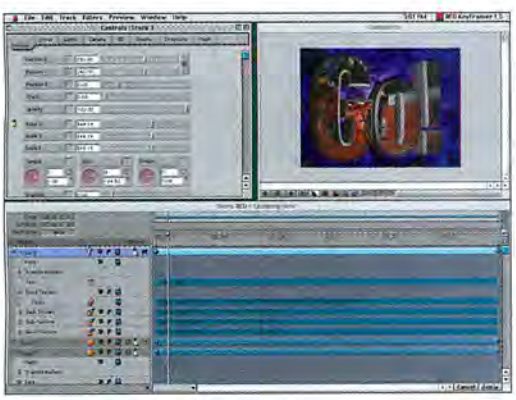
Boris Red 1.5

Pricey Plug-in Brings 3-D Motion Graphics to Video-Editing Programs

Most video producers live in editing applications such as Adobe Premiere or Apple's Final Cut Pro. Those are great programs, but they lack the rich palette of motion-graphics effects found in Adobe After Effects. As a result, many producers turn to After Effects to produce footage and then import it into their editing projects. This program hopping works, but it's hardly efficient.



Looking at Boris Boris Red 1.5's effects-generating prowess is wrapped up in an elegantly designed interface similar to that of Adobe After Effects.

Boris FX's Boris Red 1.5 is the cure for After Effects envy. The program lets you create gorgeous 3-D motion graphics, titles, and transitions directly within an editing program. Boris Red works in Premiere and After Effects, Final Cut Pro, and several Avid and Media 100 systems.

At $1,995, Boris Red costs more than many of the programs it plugs into. It's worth it. Indeed, Boris Red out-effects After Effects in many areas. If you've been contemplating buying After Effects to complement your editing application, you may want to try out Boris Red first.

A Vaguely Familiar Face

Boris Red's many talents fall into several overlapping categories: motion graphics (spinning, rotating, and stretching video clips, complete with motion blur); 3-D effects and transitions (page peels, rotating cubes, and video clips mapped onto shapes); text and titling (with 2-D or 3-D text); keying (superimposing footage shot in front of, say, a green background); and filters (for adding spotlight and lighting effects, exploding particle effects, and more).

When you invoke Boris Red, it takes over the screen, replacing your editor's menus with its own. Boris Red's interface loosely resembles After Effects': a timeline window visually depicts your project's flow and lets you set keyframes, which specify effect parameters at a given point in time.

You position and size clips in the Composite window, which also displays a preview of your project. The Controls window is packed with dials and sliders for specifying everything from scaling to rotation speed, to motion blur. When you finish a project, choose Boris Red's quit command, and you're back within your editing application.

continues

BORIS RED 1.5

Rating: ♦♦♦♦

Pros: Elegant interface; versatile; excellent documentation; superb rendering quality.

Cons: Expensive.

List price: $1,995

Company: Boris FX, *617/451-9900*, **www.borisfx.com**

MACWORLD'S BUYING ADVICE:

Boris Red is the most capable video-effects plug-in available. From its stunning effects capabilities to its workflow-streamlining features, there's no better way to add advanced motion graphics and 3-D titling to your video-editing program.

A Multidimensional Performer

Boris Red does many things well, but it excels at *Z-space* control: the ability to determine what happens when elements overlap in 3-D space. It's easy to create dramatic 3-D effects in which elements intersect or travel through one another—great for animated logos.

Text is often an afterthought in effects packages, but it's a star player in Boris Red. A Microsoft Word–like text-editor window lets you create and animate 2-D or 3-D text. You can apply textures, gradients, static images, and even movie clips to 3-D text characters. And you can animate text to create everything from crawling credits to movie-of-the-week–style flying logos. (If you don't need Boris Red's full effects arsenal but crave its textual talents, you can buy them separately in the $495 Boris Graffiti.)

Boris Bonuses

Boris Red includes a stand-alone program, Boris Red KeyFramer, that provides access to all of Boris Red's features but lacks rendering abilities. You can use KeyFramer to build motion-graphics projects that you'll later render in an editing application. KeyFramer uses only 32MB of memory and runs well, even on elderly Power Macs. Better yet, the Boris Red license agreement lets you freely copy KeyFramer to all your Macs. That means each member of a production team can simultaneously work on different projects, deferring final rendering until later.

On top of all this, Boris Red lets you use many popular After Effects plug-ins within editing applications that wouldn't otherwise support them. It supports numerous popular After Effects plug-in packages from DigiEffects, Puffin Designs, and others.—JIM HEID

NIKON TAKES AIM AT PRO CAMERA MARKET

Nikon D1

Rating: ●●●½

Pros: Looks, feels, and handles like a professional camera.

Cons: Images need cleaning up.

List price: $5,999

Company: Nikon, *800/645-6687*, **www.nikonusa.com**

Macworld's Buying Advice: Once Nikon fixes the D1's image-quality issues, this camera could become the model Nikon set out to produce. It's just not there yet.

Nikon has decided the best way to ensure the success of the D1, the company's long-awaited entry into the professional digital-camera market, is to make the camera's feature set transparent to users of Nikon's professional film cameras. In this endeavor, the company succeeds admirably—veteran Nikon shooters will immediately be comfortable with the look-and-feel of the D1, which incorporates many of the best features of Nikon's F5 and F100 35mm cameras. The D1's image quality, however, is disappointing.

The Write Stuff

The camera has three modes: Play, Single, and Continuous. Play is for viewing stored images or displaying the camera's menus. You can't capture additional images in Play mode; you must switch back to Single or Continuous. In the latter, you can capture as many as 10 frames in Nikon's proprietary Raw file format. The temporary memory buffer, where images are stored before they're written to the storage device, is available only in Continuous mode. (The D1 uses CompactFlash storage cards, including the new CompactFlash Type II cards and IBM's 340MB Microdrive.)

Noise Problem

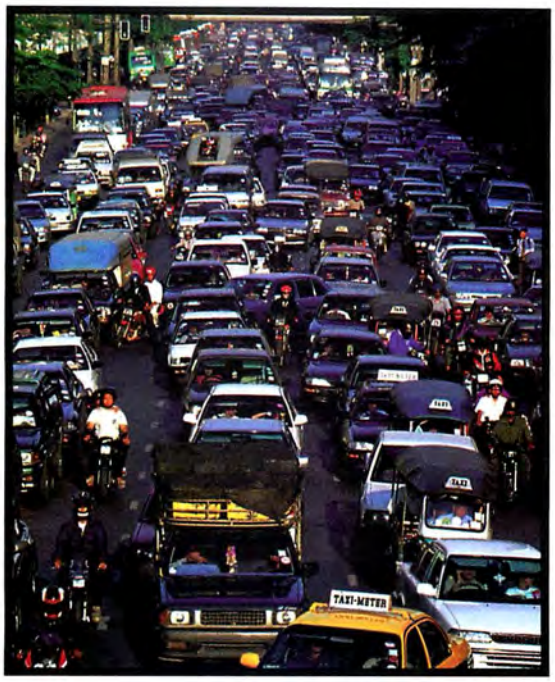
You can capture images in two TIFF formats and at three levels of JPEG compression. The Raw format produces the best image quality, but to use it you'll need to purchase Nikon's $500 Capture 1.0. This software lets you apply image-editing techniques, such as color correction and unsharp masking, to Raw files and then export them to a Photoshop-compatible format. The current version has several bugs, however—wait for version 1.1, whose enhancements include a completely rewritten unsharp-masking algorithm.

Even with the Capture software, we were disappointed with the D1's image quality, which is roughly similar to what you'd get with a comparable professional digital camera. Images contained significant levels of noise, especially in the red channel. Skin tones carried a noticeable magenta cast, and shadow details frequently lacked definition and exhibited increased levels of noise.—RICK OLDANO

KIRK AMYX

Nikon D1 (with optional lens)

So many things in life are way too slow.



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PDF Preflight Tool Speeds Prepress Production

InProduction

INPRODUCTION 1.0

Rating: ♦♦♦♦

Pros: Excellent workflow automation; supports Adobe in-RIP trapping; color separation previews.

Cons: Lacks multiuser workflow management tools.

List price: $899

Company: Adobe, *800/833-6687*, **www.adobe.com**

MACWORLD'S BUYING ADVICE:

Everyone in direct-to-press production knows how even minor document glitches can gum up workflow. InProduction's preflight tools let you catch the most common workflow gremlins, and its support for registration marks, trim, and bleed boxing makes it the perfect final step before sending your work out for printing.

The days of galley proofs and last-minute changes at the printer are gone forever in modern print publishing: the name of the game today is direct-to-press, which requires near perfect preparation of documents to ensure the printer won't have trouble generating output from your electronic files. Serious problems, such as a missing font, can render printed results unusable; even subtle errors, such as trap misregistration, can dramatically reduce final print quality. Adobe's InProduction 1.0 aims to give your prepress files a good once-over before you launch them to the Heidelberg.

InProduction is a set of five Acrobat 4 (included) plug-ins for preflight analysis, trim/bleed specification, color conversion, color separation, and in-RIP trapping. You start with the preflight tool, which analyzes your document using a set of predefined rules for the destination print device and reports problems so you can fix them. Preflighting catches leftover annotations, missing fonts, non-CMYK colors, margin overflow, and overprint density problems. A common problem when producing parallel online and print documents is having residual HTTP links in the print version; InProduction finds and eliminates them. Other problems require rerendering the PDF from original production files, after which you can rerun the preflight as a final check.

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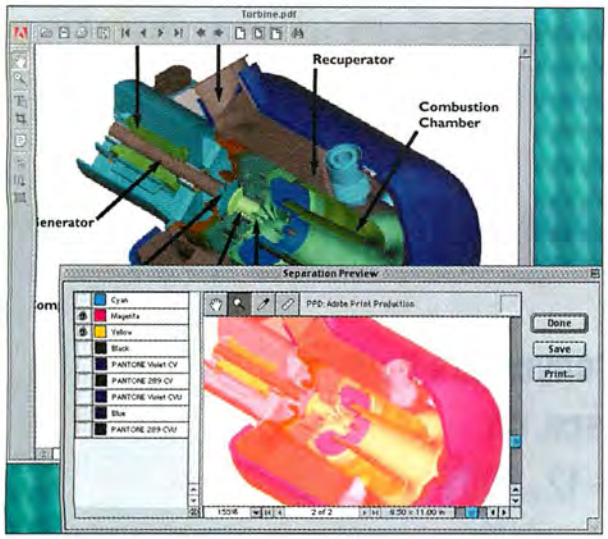

Color Sep Preview InProduction lets you preview color separations as overlays so you can check color combinations to verify proper registration and trapping.

Once your document gets a clean bill of health, you're ready for the final touch-ups. InProduction's trim/bleed tool lets you specify trim and bleed boxes to ensure clean edges. The color converter changes any existing color system to CMYK; knobs and dials let you fine-tune colors using ICC color management.

If your page-layout program doesn't generate trapping, you can use InProduction's support for Adobe in-RIP trapping to automatically trap during the RIP process: you specify either pages or regions on a page where trapping is required, and the PostScript 3 destination device automatically computes the necessary trap offsets. InProduction's color separator tool generates CMYK separations and lets you preview them as overlays to check trapping, whether it's pregenerated or in-RIP.

Because the tools are Acrobat plug-ins, they integrate well with an existing PDF production workflow. But although Adobe bills InProduction as a workflow-management tool, the application doesn't really manage workflow in the sense that graphic artists expect: it lacks tools for multiple users working on the same document in a production sequence. For example, there's no way to see at a glance what prepress changes have already been made to a document.

A log of operations performed on a file, and the ability to lock certain attributes to prevent inadvertent changes, would make the program more useful in a multiperson shop. But if you're a single user bringing postlayout files to print-ready condition, InProduction provides everything you need.—MEL BECKMAN

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Media-Management Tools

Two Cataloging Applications Powerful Enough for Professionals but Priced for Consumers

Not long ago, only designers and multimedia professionals needed tools to keep track of their image, sound, and video files. But with an increasing number of people using their Macs to make movies, retouch digital photos, design media-rich Web sites, and convert their CD collection into MP3 files, single-user media-management tools such as Canto's Cumulus 5.0 and Extensis's Portfolio 5.0—applications that help you collate and catalog the files on your hard drive—may soon be as common on personal Macs as on those found in design studios and publishing houses.

Upper Management

Cumulus 5 and Portfolio 5 have similarities beyond their version numbers. Both allow you to create extensive catalogs of your media assets, complete with thumbnails and information such as a file's size, location, creation and modification dates, and format. These catalogs can include graphics, audio, video, multimedia, and text files, as well as files created by QuarkXPress; Macromedia Freehand; Microsoft PowerPoint; Adobe Acrobat, Illustrator, PageMaker, and Photoshop; and other applications. In truth, you can catalog *any* type of file in either program. And if the program doesn't support that file type natively, you can add new types.

Both programs also allow you to preview files (or *assets*) and copy or move them to another location. Additionally, the two applications offer alternative ways to view your assets—as thumbnails and as lists—and let you tag individual files with keywords. The programs include an abundance of identifying fields, and both allow you to create custom fields. And both Cumulus and Portfolio make it easy to turn catalogs into HTML files. You can also export your catalogs as stand-alone QuickTime movie slide shows, complete with transitions, in either program.

Although we examined the single-user editions of the two programs, both Cumulus and Portfolio are available in workgroup editions that manage assets across local and remote networks. The

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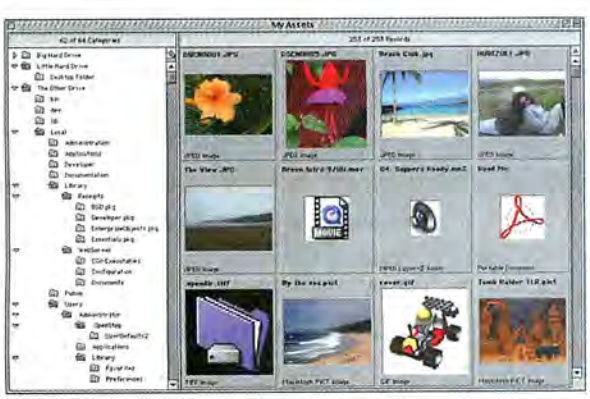

Complete Catalogers Both Portfolio and Cumulus (pictured here) let you catalog and find every file on your hard drive.

CUMULUS 5.0

Rating: ♦♦♦♦

Pros: Capable cataloger; great value; large thumbnails.

Cons: Catalogs slowly.

List price: $100

Company: Canto Software, *415/703-9800*, **www.canto.com**

PORTFOLIO 5.0

Rating: ♦♦♦♦

Pros: Capable cataloger; can embed watermarks; fast.

Cons: More expensive than the competition.

List price: $200

Company: Extensis, *800/796-9798*, **www.extensis.com**

MACWORLD'S BUYING ADVICE:

Cumulus and Portfolio are both capable programs that offer a variety of ways to catalog and search for just about any media file on your hard drive. Although you'd be happy with either one, Cumulus has a slight edge over Portfolio; its lower price and larger thumbnails make up for its slower performance.

single-user editions support Mac OS and Windows 95, 98, 2000, and NT; the server editions support just Mac OS and Windows NT.

Price and Performance

With so much in common, how do you choose between the two? Users on a budget are likely to give the nod to Cumulus simply because it costs $100 less than Portfolio. But price isn't Cumulus's only attractive feature; the program allows you to easily attach catalogs to e-mail messages via a Mail To command. Cumulus's thumbnails are larger than Portfolio's and are easily scaled with a single menu command; to get the same effect in Portfolio, you have to rummage around in a dialog box.

But Portfolio is no slouch. For example, it displays a file's information within the application; when you wish to view the intimate details of your Cumulus assets, that program launches a separate Information application. In addition, Portfolio allows you to embed watermarks in your graphic assets and is significantly faster when cataloging volumes. Seeking JPEG, TIFF, GIF, AIFF, PICT, and QuickTime movie files on a 450MHz Power Macintosh G3 with a 2GB hard drive containing 3,091 files, Portfolio cataloged 707 items in 4 minutes and 17 seconds—and that includes the time it took to display four apparently unnecessary error messages. Cumulus took 20 minutes and 57 seconds to perform the same operation.

Although Cumulus's relatively slow performance might be explained by its larger thumbnails, the slowdown appeared to be related to the amount of time Cumulus took to determine whether or not it fell within the bounds of the search criteria. Portfolio quickly sped past any files that didn't match our search filter.—CHRISTOPHER BREEN

PRECISE, CHALLENGING VIDEO EDITOR

EditDV 2.0

Rating: ●●●●

Pros: Pro-quality precision and effects; welcome enhancements.

Cons: Complex; manual and tech support need improvement.

List price: $499; with FireWire card, $599

Company: Digital Origin, *650/404-6300*, **www.digitalorigin.com**

Macworld's Buying Advice: Despite minor flaws, EditDV 2.0 is cutting-edge, efficient, and rich in special effects (such as picture-in-a-picture, blue screen, and animated text).

Digital video-editing software ranges from Apple's free iMovie to its $1,000 Final Cut Pro. If your needs fall somewhere in between those extremes, you have two choices: Adobe Premiere or the newly enhanced EditDV, an increasingly popular powerhouse for pros and semipros.

Version 2.0 offers unflashy but practical enhancements: the ability to trim clips by dragging their ends, multiple-clip selection, contextual menus, and more. What hasn't changed: the understaffed help line (a one-hour wait is typical), the novice-hostile manual (with Windows illustrations), and a timeline window that shows only clip names, not images.—DAVID POGUE

TRACKBALL MAKES SCROLLING A CINCH

TurboRing

PHOTO BY STEPHEN SUGG

Rating: ●●●●½

Pros: Scroll ring simplifies scrolling; ergonomic design; capable, easy-to-use software.

Cons: For right-handed users only.

Company's estimated price: $80

Company: Kensington Technology Group, *650/572-2700*, **www.kensington.com**

Macworld's Buying Advice: The TurboRing is pricier than other trackballs, but even without the scroll ring, it would be too good to pass up.

Like the wheel on a scrolling mouse, the movable ring on Kensington's TurboRing trackball lets you scroll through long documents with ease. To scroll the active window, you simply rotate the ring clockwise or counterclockwise. MouseWorks, an application that ships with the TurboRing, lets you reverse the scroll ring's action, adjust scrolling speed, or disable scrolling entirely. The program also lets you customize the trackball's cursor response and configure its three buttons.

The TurboRing's sculpted gray case doubles as a handrest, and the angled ball and ring reduce stress on your arm and wrist. (Alas, the TurboRing is for right-handed users only.)—FRANKLIN N. TESSLER

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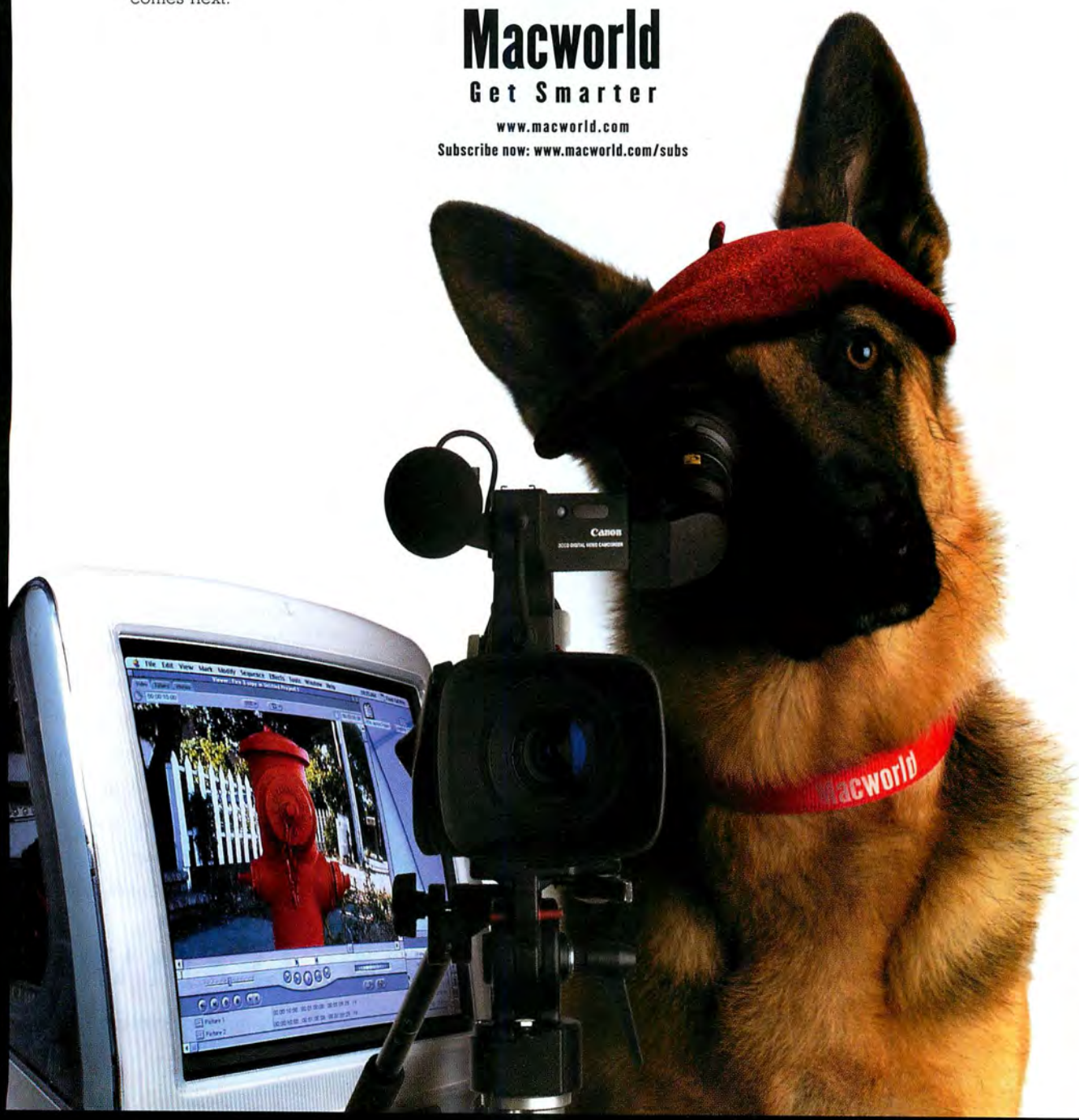

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Dreamweaver UltraDev

Web Authoring Tool Streamlines Application Development

Because consultants who develop Web-based applications often can't select the server environment in which their program will run, they need to master a slew of Web-development platforms. Worse, when testing an application, developers must either replicate the client's server network in their own shop or schedule test time on the client's network.

Macromedia's Dreamweaver UltraDev attacks both problems by providing a common visual development interface for three server environments—Microsoft Active Server Pages, Allaire's ColdFusion, and Sun's Java Server Page—as well as tools that let you test an application remotely using a customer's data.

Beyond Dreamweaver

At the core of UltraDev is an enhanced version of Dreamweaver 3.0. In addition to Dreamweaver's rich set of HTML design tools—a page-layout environment, site and link management, predefined JavaScript behaviors, and graphical layout aids—you get the ability to import database definitions and bind them to a live database connection. UltraDev also lets you attach server-side scripts to Web pages, buttons, and links and add database connectivity by dragging content from a database definition onto your layout.

Web designers often need direct access to the HTML source code their development tool generates. This is an area where many Web development products fail, either by hiding the source code or by making it available only for inspection. Products that do let you modify the source code usually overwrite your modifications once you regenerate the HTML. UltraDev's HTML Inspector, on the other hand, lets you edit HTML using the editor of your choice. When you make changes in the visual layout, UltraDev preserves your HTML edits rather than overwriting them.

UltraDev works well in team-development environments, supporting source-code control features and automatic FTP file synchronization. A nice touch is Ultra-Dev's Design Notes widget, which lets you attach Post-it–like notes to files for communicating with other team members.

continues

Get Connected Dreamweaver UltraDev can test server-side scripts using live data from any remote database that supports ODBC, JDBC, or ColdFusion.

DREAMWEAVER ULTRADEV

Rating: 4 mice

Pros: Supports multiple server environments; excellent HTML source interaction.

Cons: No built-in support for popular open-source databases; Live Data feature cumbersome to use.

List price: $599

Company: Macromedia, *415/252-2000*, **www.macromedia.com**

MACWORLD'S BUYING ADVICE:

The ability to develop for three server platforms using a single visual interface is a boon to consultants serving multiple clients. Access to source code makes UltraDev practical even for high-end development, while live database connectivity and application preview shorten the design-code-test cycle considerably.

UltraDev's database connection tools let you quickly incorporate database functionality into your application. You can connect to any remotely accessible SQL ODBC- or JDBC-compliant database, retrieve table definitions and store them with your application, and later use the stored definitions to place database fields on pages by dragging and dropping. UltraDev's query-authoring tool lets you compose any SQL query and then test the query on live data before pasting it into server-side scripts. The only thing UltraDev's database aids lack is built-in support for the three open-source databases popular with Web developers: MySQL, mSQL, and Postgres.

Going Live

When you're ready to write application code, you can choose from UltraDev's built-in Server Behaviors—prewritten subroutines that handle common chores such as reading, inserting, and updating database records and executing SQL queries. Server Behaviors include error-checking code, making it possible to build a complete application without writing any server-side code.

With UltraDev's Live Data feature, you can preview dynamic content on individual pages, using a remote server only to execute server-side scripts and SQL queries. You specify the values of HTML variables needed for a particular page's test environment, and UltraDev uses the server-resident scripts and database to generate dynamic output on your page. However, this feature is complicated to set up, and it doesn't guarantee your application will work in its production run-time environment. You'll still need to upload your application to the target server for further testing.—MEL BECKMAN

SOFTWARE ROBOT LEARNS NEW TRICKS

QuicKeys 5.0

Rating: ♦♦♦♦

Pros: More useful than ever.

Cons: More complex than ever.

List price: $100

Company: CE Software, *800/523-7638*, **www.cesoft.com**

Macworld's Buying Advice: QuicKeys 5.0's enhancements are fairly minor, and the interface remains complex. Still, even if you master only enough of the program to create a handful of macros, QuicKeys will quickly pay for itself by saving you both time and repetitive stress.

It's been so long since CE Software's QuicKeys got any press, those in Generation iMac may not even know of its existence. This remarkable program can record and then automatically play back any action you take on your Mac: jumping to a certain Web page, renaming every file in a folder, typing boilerplate text, and so on. You trigger QuicKeys' macros with a keystroke; through a menu, palette, or desktop icon; or by timer. With version 5, you can also trigger a macro by speaking its name. Other improvements include the ability to create tabbed tool bars and turn on a password-protected screen saver.—DAVID POGUE

CACHING PROXY SERVER SPEEDS NET ACCESS

RapidCache 2.0

Rating: ♦♦♦♦

Pros: Easy to configure; Web-based administration; selective caching.

Cons: Fast Internet connections require PowerPC and extra RAM.

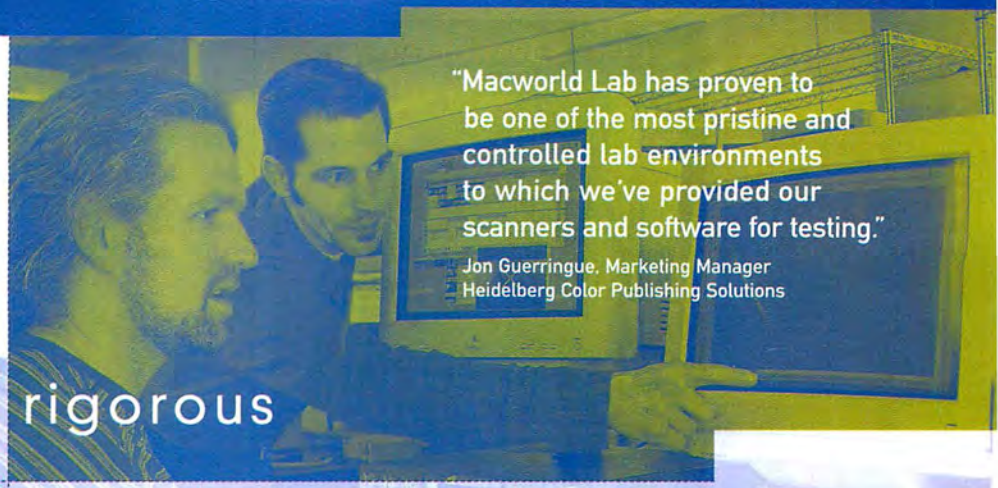
List price: 10 simultaneous users, $199; unlimited users, $299

Company: Vicomsoft, *800/818-4266*, **www.vicomsoft.com**

Macworld's Buying Advice: RapidCache 2.0 eliminates redundant traffic but requires a PowerPC and at least 64MB of extra RAM to keep up with a fast Internet connection.

When users share an Internet connection, they tend to access many of the same sites. The result: redundant data transfer. Vicomsoft's RapidCache 2.0 lets you turn any spare Mac into a caching proxy Web server. The program runs as a stand-alone application or as an adjunct to a TCP/IP router, such as Vicomsoft's SoftRouter. In the latter arrangement, users need not configure their browsers for proxy mode.

RapidCache is easy to set up using Web-based administration. It sports Java-based real-time performance graphs, along with a multitude of options for choosing content to cache. Optionally, it logs Web traffic for processing by standard Web log-analysis tools.—MEL BECKMAN



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PUZZLING RETURN OF LARA CROFT

Tomb Raider: The Last Revelation

Rating: ♦♦♦♦

Pros: Focuses on puzzles instead of precision.

Cons: Enough with the gargantuan breasts already.

List price: $40

Company: Aspyr Media, *512/708-8100*, **www.aspyr.com**

Macworld's Buying Advice: In a game that could have been just more of the same, Tomb Raider: The Last Revelation is a worthy sequel in an already formidable franchise.

Just when you think you've seen the last of her swinging ponytail and improbable chest, Lara Croft is back with another adventure. Thankfully, balanced game play and a focus on problem solving make Lara's latest Tomb Raider escapade, The Last Revelation, one of her most satisfying.

While plundering an Egyptian tomb, Lara accidentally brings a long-dead king back to life. To put things right, Lara must dash about some beautifully rendered locations in the Middle East, collecting artifacts and dispatching evildoers. Unlike the last couple of Tomb Raider sequels, The Last Revelation is largely puzzle oriented, demanding that you stop and think rather than execute split-second keyboard commands.—CHRISTOPHER BREEN

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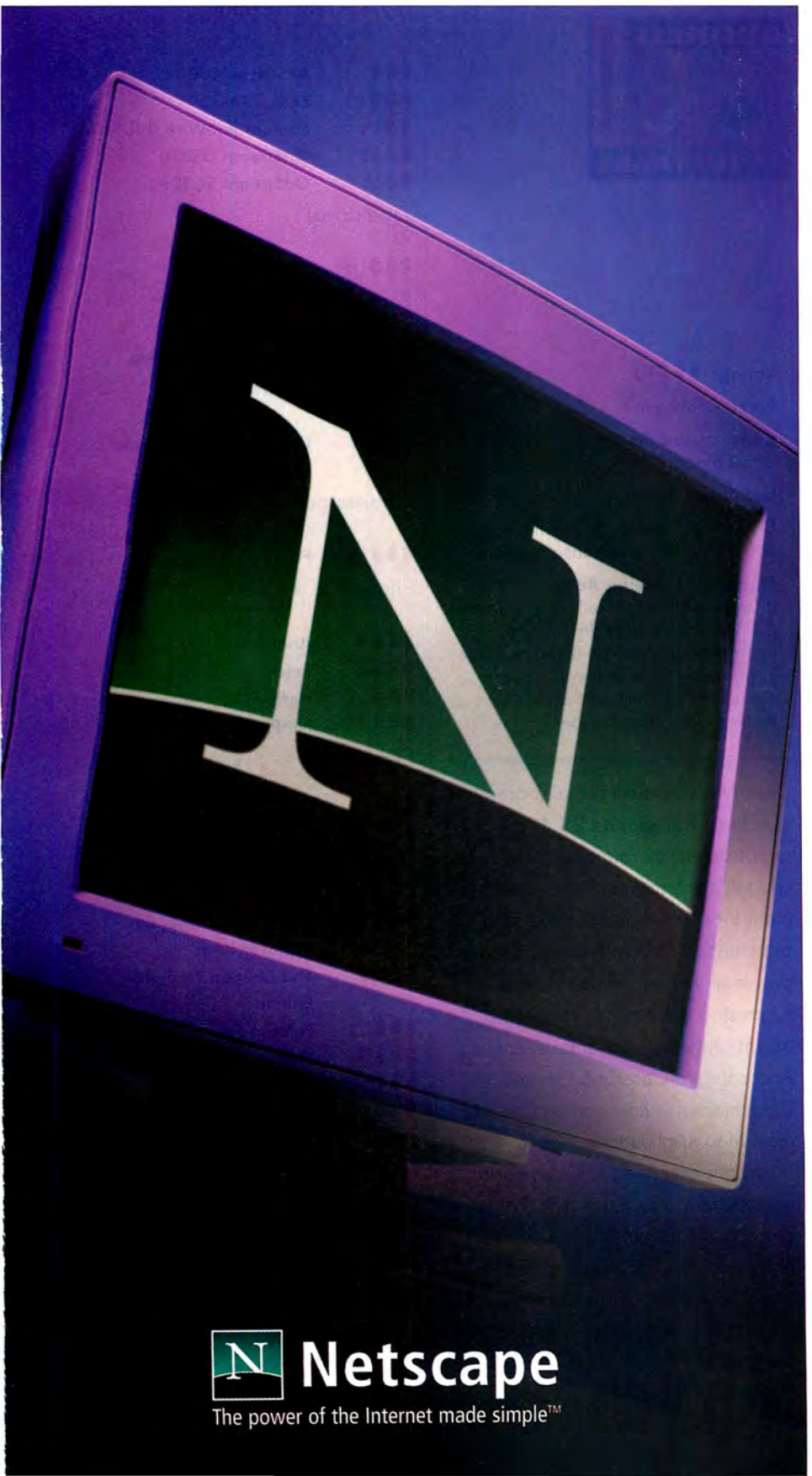

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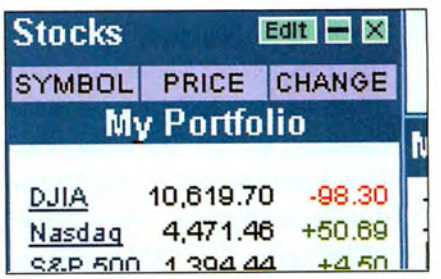

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STORAGE AREA NETWORK SPEEDS FILE SHARING

SANcube

Rating: ●●●½

Pros: Fast; built-in FireWire hub; automatic drive-failure notification.

Cons: Limited number of users; drives not field-replaceable.

List price: 1 user (90GB), $1,499; 4 users (270GB), $3,899

Company: MicroNet Technology, *949/453-6100*, **www.micronet.com**

Macworld's Buying Advice: The SANcube can easily record from two DV cameras simultaneously. If you need speed, the minor drawbacks will stay you not.

Digital video recording requires fast hard disks. One solution is MicroNet's innovative SANcube, a FireWire storage area network whose hefty disk drives—up to 220GB—move as fast as 30MB per second. The stylish, stackable enclosure contains hard drives that you configure as one or more RAID 0 (striped) or RAID 1 (mirrored) shared volumes; the SANcube supports any number of shared or dedicated partitions. In RAID 1 operation, the SANcube's driver software alerts you when a drive fails. A built-in hub and supplied FireWire cables let you instantly connect the unit to FireWire-capable Macs.—MEL BECKMAN

PHOTO BY ARNOLD TIOSEJO

GRAMMAR CHECKER CATCHES MAJOR SLIPS

Grammarian 2.1

Rating: ●●●½

Pros: Unobtrusive.

Cons: Misses more errors in interactive mode.

List price: $50

Company: Casady & Greene, *800/359-4920*, **www.casadyg.com**

Macworld's Buying Advice: If you already write well, Grammarian 2.1.1 probably can't do much to improve your style. But if you're prone to grammatical errors, you'll appreciate having an electronic copy editor looking over your shoulder.

Casady & Greene's popular grammar checker, Grammarian 2.1.1, sits unobtrusively in your menu bar until you tell it to proofread your document for miscues in grammar and punctuation. When the utility finds a problem, you can accept one of its suggested corrections, retype the errant phrase, or continue scanning. According to Casady & Greene, Grammarian is now compatible with most Mac applications.

In our documents, Grammarian occasionally flagged words that were correct. We also found that the program's interactive mode, which checks syntax on-the-fly, missed some mistakes that batch checking detected.—FRANKLIN N. TESSLER

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●●● **APS HyperDAT**
●●●½ **Ecrix VXA-1**
●●½ **Fantom FireWire DVDS-DAT**
●●½ **OnStream USB30**
●●½ **OnStream SC30e**
Tape drives

●●●½ **Canon BJC-85**
Portable printer

●●●½ **SuperDisk USB Drive**
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●●● **Farallon 11Mb SkyLine Wireless PC Card**
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●●●½ **Farallon HomeLine**
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●●●● **Anarchie**
●●●● **Fetch**
●●●½ **Hefty FTP**
●●●●½ **NetFinder**
FTP clients

●● **Anakin's Speedway**
●●●½ **Carmen ThinkQuick Challenge**
●●● **Clue Finders 5th Grade**
●●½ **The Magic School Bus Explores Bugs**
●●●● **The Oregon Trail, 4th Edition**
●●●½ **Pajama Sam 3**
●●●● **That's a Fact, Jack! Read**
●●● **USA Explorer**
●●●● **Virtual Labs**
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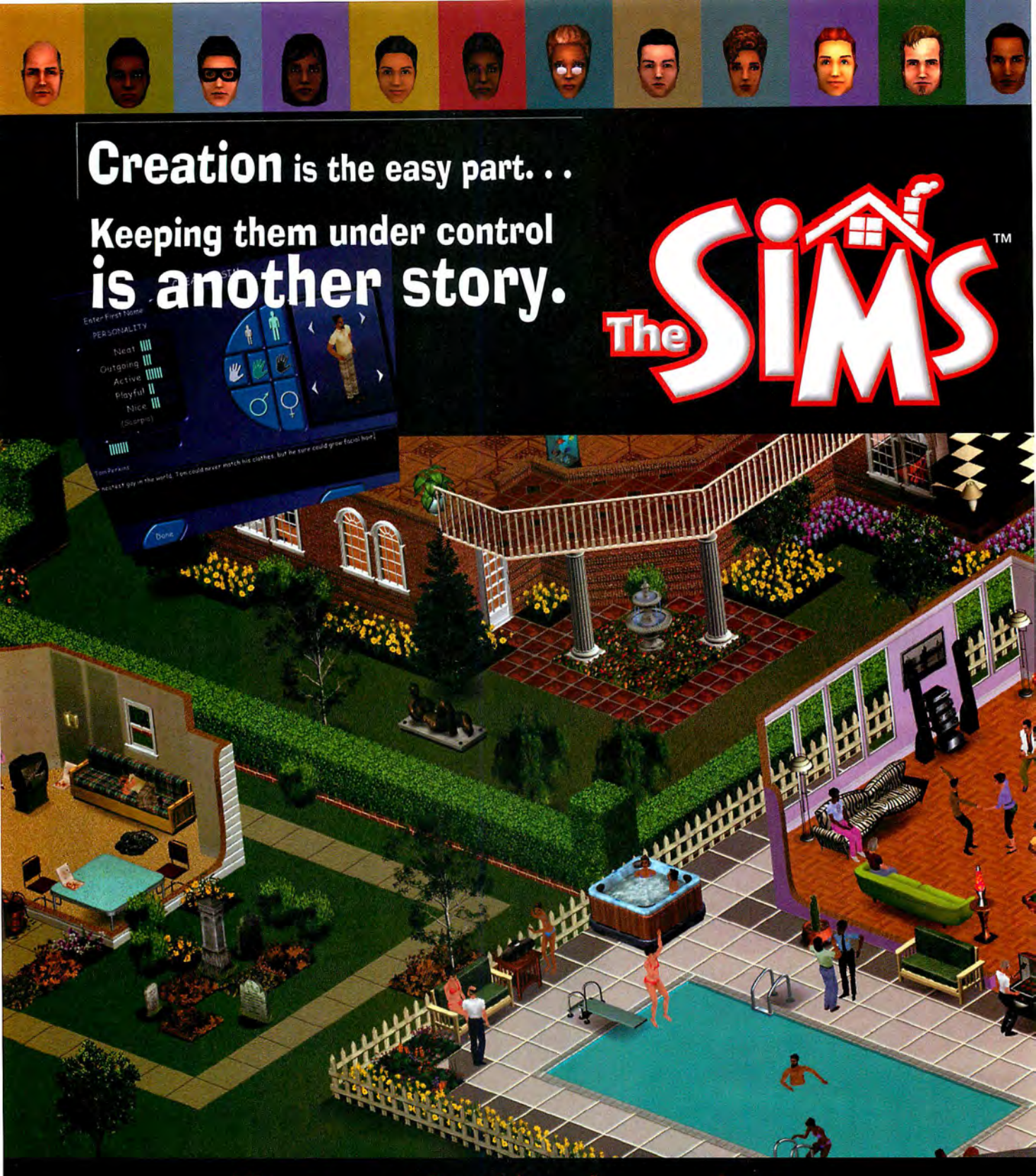

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ANDY IHNATKO

The Game Room

When was the first time someone told me to get a life? I've been sitting here at my PowerBook for 20 minutes pondering this one. I'm thinking junior high, but wouldn't it be difficult to say that to a 12-year-old and make it *really* sting? Besides, on the occasions when my classmates felt it necessary to actualize their emotions on the subject of Young Ihnatko, they universally preferred the "thrown beer bottle" method.

Regardless, I've been hearing it for years, from parents, coworkers, soon-to-be-former girlfriends—the list is endless. The difference between today and my younger days? I know how to deal with it: "Oh, I *have* a life," I retort, throwing a wallet of CD-ROMs at them. "See? I've got at least ten fulfilling lifestyles in there, from Korean War Fighter Pilot to Napoleonic War General."

And *that* pretty much shuts them up, particularly the future former girlfriends. Yes, thank goodness for simulation software, without which I'd occasionally have to leave the sofa and risk missing this week's episode of *The Real World*.

Ready to Fly

Terminal Reality's Fly 2K ($30; 877/463-4263, www.iflytri.com) is an exciting offering, not the least reason being that it's the first aggressive attempt at ironclad flight simulation to come down the pike in years.

Fly 2K's raison d'être is to offer the best approximation of flight possible on a desktop Mac. It ships with five types of aircraft, and every dial, knob, and indicator is fully functional: if you can see it, you can kill yourself by messing around with it. A Fly 2K plane handles and interacts with earth and air precisely the way a real plane does.

What does all of this mean? It means that Fly 2K is a huge intellectual challenge, just like actual flying. Stultifying boredom soon gives way to the trance of Working On Getting Things Exactly Right, and when you touch down again, from minutes to hours later, there's an extreme sense of satisfaction. You didn't just slay the Orc of Ba'Hhhra with a quick stroke of your +1 vorpal blade, you flew a freakin' *plane* across the *country* on nothing but *instruments*, man!

Naturally, there are folks who'll be thrown off by the words *boredom* and *trance*—however positively they're used—in a column about games. If you're looking for the sort of action that gives the more primitive sections of your brain a workout, you might be disappointed.

Fly 2K can be expanded and enhanced, though, so maybe some day it can be made more fun for everyone else. Given recent aviation news that's hit *Entertainment Tonight*, I think the company would be well advised to come out with a Celebrity Pilot Enhancement Pack, where you have to ditch an open container of alcohol and come up with a good story for the FAA and the press after overshooting the runway and losing a wingtip or two.

Pre–Millennium Falcon

Perhaps the only uniformly disappointing area of Fly 2K is the crashing. Steer into another plane, and you'll just harmlessly bump away. . . . What fun is *that*? MacSoft's Falcon 4.0 ($29.99; 800/229-2714,

continues

www.wizworks.com/macsoft/) is a vast improvement. Here, sending fellow pilots screaming into the waiting arms of whatever god they've arrogantly scorned is actually encouraged.

Falcon is a slightly less meticulous simulation of an F-14 fighter, with the accent on giving you access to all the jolly mayhem that America's Screaming Bringer of Death can insert into a rainy afternoon. So you won't see photo-realistic renderings of cabin views or experience detailed engine startup and spin-down procedures.

But in rebuttal to any complaints about the shallowness of the simulation compared with Fly 2K, I say this: Kill. *Kill, kill, kill kill kill kill kill.* And *I'm* a pacifist, you know?

Falcon is just a good hybrid that accents the simulation of combat piloting, as opposed to flying. Half of the game is just managing the complicated offensive, defensive, and control systems and still somehow getting yourself in the right position to take that shot. The flight and combat-training manuals that come with Falcon are worth half the game's price in and of themselves.

Learnin' to Fly Intense realism (especially in the plane's instruments) is the hallmark of Terminal Reality's Fly 2K.

If only Falcon weren't so *old*. If this game were a hamster, it'd be dead by now. Version 4.0 was released nearly two years ago. That's not to say that there's any detectable level of lameness here. But when you compare its overall technical accomplishments to those of Fly 2K (released only a few months ago) you'll weep and gnash your teeth that Falcon 5.0 may never see the light of day.

Fly This, Pal

Maxis's The Sims ($50; 877/324-2637, www.thesims.com) doesn't simulate war. It simulates something a magnitude scarier: life. *Real* life. Your Sim is a little cartoon human in a little house in a little neighborhood.

You create your Sim (which can be either male or female) as you would a character in a role-playing game and choose a career path for it to follow. You can customize its appearance, choose from a Maxis-supplied library of prefabbed Sims, or download user-created designs available online.

From that point onward, you're the Little Voice inside your Sim's head—its basic motivation. You don't physically steer the thing around its house or direct it by-the-numbers when it's in the bathroom. But you watch a set of gauges that indicate how your Sim is doing vis à vis its basic needs. When it's hungry, you tell it to make itself some lunch. Its overall happiness goes down a bit while it's working in the kitchen but goes back up and then some after getting a good meal inside it.

It's interesting. Simple actions can have big consequences. Watching TV makes your Sim happy, but watching too much TV will lead to, well, watching *way* too much TV, which means it won't socialize with the other humans and won't do well at work. But "buy" your Sim a mirror, and it'll get an improved outlook on itself, which will increase its self-confidence, which means it'll do better at work, which means it'll get a big raise, which means you can afford to buy it a big-screen home theater . . . which will make it *really* happy.

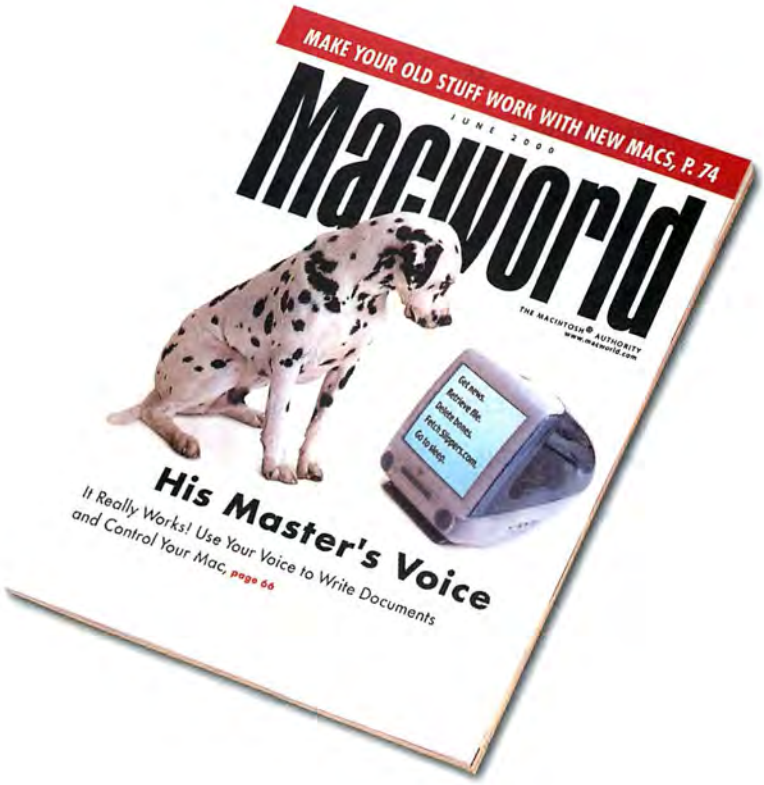
The game is fabulous eye candy. It's like an ant farm, except the ants are in color, and they wear pants. But what's the goal? Well, I don't know; as in life, you just sort of find amusement and distraction as you await the random Great Crash. In theory, you want to manage your Sim's life to ensure its personal happiness, fulfillment, and career success. But many play The Sims to lose. If you woefully mismanage its life, your Sim will grow increasingly grouchy and depressed, literally spending all of its time on the sofa, letting its job go to pot and refusing to listen to any of your input.

Got Life?

That attitude actually makes a lot of sense. After all, thanks to all of your simulation CD-ROMs, you're spending all of your time at the keyboard, living various digitally simulated lifestyles. Wouldn't it suck if after a few months of this, your Sim was having a more successful and fulfilling life than you were? **m**

In his mind, the flight crew is incapacitated, and it's up to ANDY IHNATKO to land the bird safely—which explains much of the content at www.andyi.com.

Go from "No Way" to Know-How.



Remember the first time you set type on a computer? Manipulated a photo? Created an interactive Web design? Remember that "No Way" feeling before you conquered the new skill?

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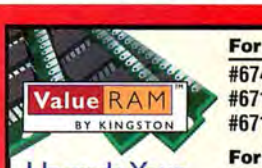

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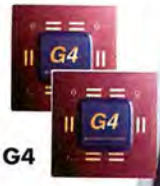

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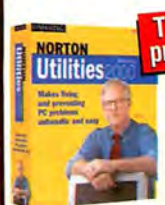

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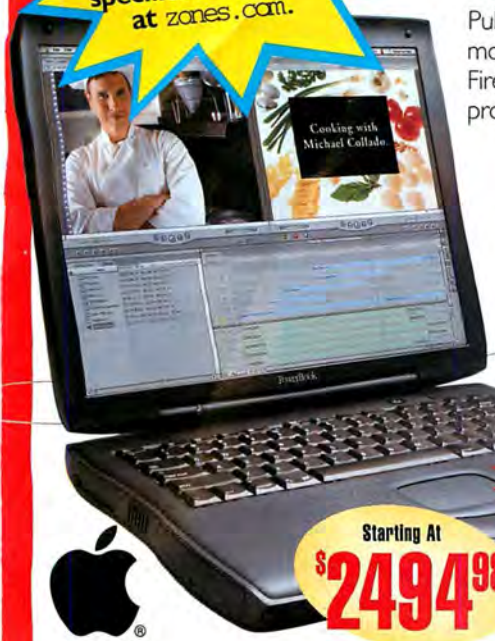

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*Price AFTER manufacturer's $20 mail-in rebate. Before rebate: $149.95. Rebate coupon available at www.warehouse.com/rebate/umax, or call us at 1-800-390-0706 to request one. Offer expires 9/30/2000.

PAGE 3 OF 8

Apple Introduces New iMacs: Faster

iMac / 350MHz

Indigo: Item #CPU1649

Available in September

$799!

Business Lease only $25/mo.§

NEW!

This entry-level iMac is the one you want for surfing the Internet. You get a faster processor, a bigger hard drive and a built-in Harman Kardon Odyssey audio system!

Features:

- 350MHz PowerPC G3 Processor
- 64MB SDRAM
- 7.0GB Ultra/ATA Hard Drive
- 24X (maximum) CD-ROM Drive
- 56K Internal Modem
- 15" Display (13.8" Viewable Image Size)
- Two USB Ports
- Apple Pro Keyboard and Optical Mouse

iMac DV / 400MHz

Indigo: Item #CPU1650

Ruby: Item #CPU1651

$999! ea.

Business Lease only $29/mo.§

NEW!

The iMac DV takes you beyond the Internet and into the home movie business. Featuring **iMovie 2**, the iMac DV brings desktop video editing to an under-$1000 iMac.

Features:

- 400MHz PowerPC G3 Processor
- 64MB SDRAM
- 10.0GB Ultra/ATA Hard Drive
- 24X (maximum) CD-ROM Drive
- 56K Internal Modem
- 15" Display (13.8" Viewable Image Size)
- Two USB Ports/Two FireWire Ports
- Apple Pro Keyboard and Optical Mouse

iDOCK 2 USB MULTIPORT HUB

CompuCable Manufacturing Group

Providing Connectivity Solutions Since 1979

- Floppy drive
- Swivel Base for iMac
- 4 USB ports
- 2 Serial ports
- 1 ADB port

Only $259.99!

Item #DEH4620

Includes 3.5" floppy drive!

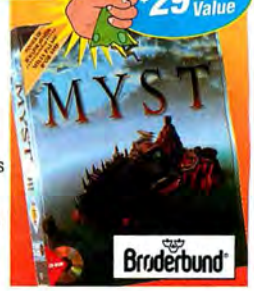
MYST

FREE*

with any purchase from MacWAREHOUSE

Item #AAA0742

A $29.95!** Value



• Challenge your puzzle-solving skills in the Island world that is Myst!

*$3.95 shipping and handling applies. Shipped in promotional packaging. Hurry! Offer good while supplies last.
**Value based on MacWAREHOUSE pricing as of this magazine printing.

Orbit USB for Mac

Only $49.95!

Ask for item #INP1761.

• Designed for iMacs and USB Power Macs
• Fits the natural shape of your hand; ideal for right- or left-handed users • Manufacturer's 5-year warranty

KENSINGTON

HP DeskJet 970cse Printer

Only $399.95!

Ask for item #PR15465.

• 12ppm black • 10ppm color
• PhotoREt III technology • USB compatible

Black Ink Cartridge, only $29.99, item #67208.

Sony Digital FD73 Mavica

Only $499.95!

Ask for item #IN7834.

• 10x optical zoom • E-mail mode • 2.5" Color LCD • VGA resolution • Quick Access 2X Floppy Disk Drive • Picture effect • File copy/disk copy

SONY

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ing at just $799!

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iMac DV+ / 450MHz

Indigo: Item #CPU1652
Ruby: Item #CPU1653
Sage: Item #CPU1654

$1299! ea.

Business Lease only $38/mo.§

NEW!

The iMac DV+ featuring **iMovie 2**, enables you to watch the latest DVD title in Theater Mode ... and it couldn't be simpler, thanks to the slot-loading DVD-ROM drive.

Features:

- 450MHz PowerPC G3 Processor
- 64MB SDRAM
- 20.0GB Ultra/ATA Hard Drive
- DVD-ROM w/DVD-Video Playback
- 56K Internal Modem
- 15" Display (13.8" Viewable Image Size)
- Two USB Ports/Two FireWire Ports
- Apple Pro Keyboard and Optical Mouse

iMac DV Special Edition / 500MHz

Graphite: Item #CPU1655
Snow: Item #CPU1656

$1499! ea.

Business Lease only $44/mo.§

NEW!

iMac DV Special Edition, the ultra iMac, has it all — Internet, **iMovie 2**, Theater Mode, a super-fast 500MHz PowerPC G3 processor and a massive 30.0GB hard drive!

Features:

- 500MHz PowerPC G3 Processor
- 128MB SDRAM
- 30.0GB Ultra/ATA Hard Drive
- DVD-ROM w/DVD-Video Playback
- 56K Internal Modem
- 15" Display (13.8" Viewable Image Size)
- Two USB Ports/Two FireWire Ports
- Apple Pro Keyboard and Optical Mouse

MICROSOFT OFFICE 98

Microsoft

Includes:
• Word 98 • PowerPoint 98
• Excel 98 • Outlook Express

Upgrade only

$249.95!

Item #UPG0778

Microsoft Office 98 Full Version
BUS1150 ..... $419.95

EPSON STYLUS COLOR 740i PRINTER

- Blueberry cover standard
- 1440 x 720 dpi with smaller ink drops
- 6ppm black; 5ppm color
- USB/Mac serial compatible

Only

$129.95!

Item #PR15063

Color Ink Cartridge
PA1582 ..... $25.99

Other color covers available for only $14.95 each! Call for details.

EPSON

§ Leases are available to business customers with approved credit on product orders where at least one product totals $750 or more. Payments are based on a 48-month Lease. Leasing terms subject to change without notice. Call for complete details. Other leasing terms available.

Iomega 100MB USB Zip Drive

New Low Price!
Was: $129.95
Now only $99.95!

Zip Disk sold separately.

Item #DR9464

Get 2 FREE* Iomega 100MB Zip Disks with the purchase of an Iomega Zip 100MB 4-pack.
4-pack: only $47.00, #ME8899.
*2 free disks included in pack. Offer expires 10/3/2000.

EtherMac iMac iPrint Adapter with built-in PhoneNet!

Only $104.99!

Item #DEP1900

- Connects your iMac to LocalTalk printers and other Macs
- Easy plug-and-play installation

Farallon

Ethernet iPrint Adapter for Stylewriter, only $79.99, #DEP1739.

Canon ZR10 Digital Video Camera

Only $899.95!

Item #IN8604

- 10X Optical/200X Digital Zoom
- Image stabilizer
- 2.5 LCD screen

Canon

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Only $129.95!

Item #BUS1511

- Customized vocabularies that recognize computer, business, and financial terms!

IBM ViaVoice

New! Adobe LiveMotion

Only $99.95!*

*When purchased with Photoshop, Illustrator, or GoLive on the same invoice. Offer expires 8/31/2000.

Item #AAP1140

Adobe LiveMotion
COM1340 (Full version) $289.95

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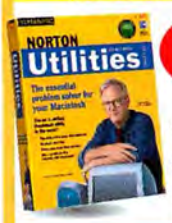

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- Speeds recovery from emergencies

SYMANTEC.

USB to Serial

Only $59.99!
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- Supports either the Mac modem or printer port

BELKIN

Palm m100 Connected Organizer

SHIPS WITH MAC SOFTWARE

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New!

- Includes HotSync Cradle
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Olympus D-360L Digital Camera

1.3 MEGAPIXEL!

Only $299.95!
Item #IN8569

OLYMPUS

- 2x digital zoom • 8MB SmartMedia card included
- 1.3 Megapixel • 1.8" Ultra-bright color LCD

SupraExpress V.90 56K* Modem

Only $78.99!*
Item #DMD3503

- 56K ITU Standard
- 230Kbps throughput
- Voicemail/Caller ID

*Capable of receiving data up to 56Kbps. Actual send and receive speeds may vary.

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HP LaserJet Printers

As low as $769.95!

HP LASERJET 2100M

- Prints 10ppm
- 1200 dpi resolution
- HP PostScript Level 2
- LocalTalk connectivity

Item #PR14691

Black Toner Cartridge (2100): Item #PA1871, only $99.95

HP LaserJet 2100 shown.

HP LASERJET 4050N

Only $1289.95!* After mail-in rebate

Lease It for $37/mo.†

Item #PR14947

- Prints 17ppm
- 1200 dpi max. res.
- 133MHz RISC processor
- Ethernet 10/100Base-TX

Black Toner Cartridge (4050): Item #PR13025, only $85.99

HP LASERJET 5000N

Only $2049.95!

Lease It for $59/mo.†

Item #PR13443

- Prints 16ppm
- Up to 1200 dpi max. res.
- Prints sizes 3"x 5" thru 11"x 17"

Black Toner Cartridge (5000): Item #PR13742, only $139.99

HP LASERJET 8000N

Only $2549.95!

Lease It for $74/mo.†

Item #PR13724

- Prints 24ppm
- Up to 1200 dpi max. res.
- 133MHz RISC processor

Black Toner Cartridge (8000): Item #63223, only $155.99

*Price BEFORE manufacturer's $200 mail-in rebate is $1489.95 – $200 rebate = $1298.95. Rebate coupon available at www.warehouse.com/rebate/HP or call us at 1-800-390-0706 to request one. Offer valid from 7/10/2000 - 10/31/2000.

HP LASERJET 8100N

- Prints 32ppm • 1200 dpi

Item #PR14315 ..... Lease It for $85/mo.† $2899.95

Black Toner Cartridge (8100): Item #PA1662, only $178.99

MAC OS 9.0.4

Only $99.95!
Item #BND3934

BONUS* iTools from Apple with purchase of Mac OS 9.0.4!

Features you'll love!

- Sherlock 2: Easily find people, news, and shopping on-line!
- Easy-to-use, functional interface
- Additional FireWire® and USB support.
- Compatibility with popular search engines such as AltaVista, CNET, Excite, Infoseek, and Lycos
- Plug-ins that search popular sports, financials, and news sites such as CNN and ESPN
- Ability to search multiple shopping and e-commerce sites at the same time
- Built-in Open GL for accelerated 3-D graphics and an improved gaming experience

PLUS...

FREE!** MacLinkPlus Deluxe v11.0 with the purchase of Mac OS 9.0.4. $89.95† Value!

Tools is a bonus to Macintosh users running the Mac OS 9.0 or 9.0.4 operating system, and can be accessed at www.apple.com. See box for details.

**Offer good with purchase of Mac OS 9.0.4. Offer does not apply to Multipack, Academic, or other promotional offers. Shipped in promotional packaging. Offer good until 8/31/2000 or while supplies last.

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PRINCETON GRAPHIC SYSTEMS

- 21" screen (20.1" viewable image size)
- .25mm dot pitch
- 1920 x 1440 @ 75Hz

Only $729.95!
Item #MT2395

IOMEGA 100MB ZIP DISKS

Back to school special!

100MB Zip Disk 4-Pack only $47!
Item #ME8899

*2 free disks included in pack. Offer expires 10/3/2000.

2 FREE* Zip Disks with Zip 100MB 4-pack purchase!

TDK All Speed CD-Rs

Only 86¢ each, in 150-pack spindle

Ask for item #ME7492.

- 74 min.
- 650MB

TDK.

3Com U.S. Robotics 56K* V.90 FaxModem

Only $89.99!

Ask for item #DMD3448.

- Manufacturer's lifetime warranty

*Capable of receiving data up to 56Kbps. Actual send and receive speeds may vary.

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FREE* InkJet Cartridge with the purchase of an inkjet cartridge 4-pack.

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• 64MB SDRAM • 6.0GB Ultra ATA/66 HD • DVD-ROM
• 2 FireWire® ports
Item #CPU1580 ..... $2499
Lease It for $73/mo.§

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• DVD-ROM • 2 FireWire® ports
Item #CPU1581 ..... $3499
Lease It for $102/mo.§

SPECIAL EDITION iBOOK

- 366MHz PowerPC G3 processor
- 64MB SDRAM • 56K modem
- 6.0GB Ultra ATA/66 hard drive
- 24X (max. variable) CD-ROM
- Integrated ATI RAGE Mobility 2D/3D Graphics Controller with 2X AGP
- Supports AirPort™ wireless networking (AirPort Card and Base sold separately)

Only **$1799!**
Lease It for $52/mo.§
Item #CPU1579

300MHZ iBOOK G3

- 300MHz PowerPC G3 processor
- 64MB SDRAM • 56K modem
- 6.0GB Ultra ATA/66 hard drive
- 24X (max. variable) CD-ROM
- Integrated ATI RAGE Mobility 2D/3D Graphics Controller with 2X AGP
- Supports AirPort™ wireless networking (AirPort Card and Base sold separately)

Only **$1599!** ea
Lease It for $47/mo.§
Blueberry: #CPU1577 Tangerine: #CPU1578

POWERBOOK G3 PC100 MEMORY

- New PC100 100MHz memory upgrades for 400MHz and 500MHz G3s

64MB PowerBook G3 Memory
$169.95! each
Item #CHP1064

Memory prices subject to change.

AIRPORT CARD & STATION

- Transmits up to 150 feet
- Speeds up to 11MB per second

AirPort Card for iBook, only $99!
Item #DEC4142

AirPort Base Station for iBook (shown)
Item #DEB2777 ..... $299

120MB USB SuperDisk Drive

Only **$149.99!**
Item #DRI3350

- Reads and writes 3.5" floppies
- USB & Hot-Swappable

120MB SuperDisk Media 10-pack, only $99.90 (only $9.99 ea.), #BND3239.

IMATION

Targus Universal Notebook & Printer Case

Only **$69.95!**
Item #AC28478

TARGUS

- Two individual padded compartments that measure 11" x 13' 'x 2.5"

PowerBook G3 Battery

As low as **$139.95!**
Item #ACC3728

- Lithium-Ion

ACC3728 (fits new 1999/2000 models), only $139.95
ACC3307 (fits 1998 models) shown, only $199.95

Farallon FastEther 10/100 Adapter

Only **$45.99!**
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Farallon

- 10 times the bandwidth of 10Base-T Ethernet.
- Auto-negotiate to achieve maximum speed or backward compatibility with older devices.

Fast Ether TX 10/100 PCI Ethernet Card 5-Pack, only $219.99, item #DEC3195.

PowerLogix iMac Upgrade

500MHz G3 with 1MB Backside Cache

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PowerLogix

- Installs in minutes
- iForce utility included

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- 600 x 1200 dpi
- Built-in transparency & slide bay
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Snaptrans templates included in box!

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- 8MB of memory
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palm

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Power Mac G4 BLOWOUT

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Prices Slashed! Save up to $500!

Monitors sold separately.

Now as low as $1399!

- Up to 500MHz G4 processor
- Up to 256MB SDRAM
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- 1MB Backside Level 2 Cache

Save $200! 400MHz G4 processor/64MB SDRAM (exp. to 1.5GB)/10.0GB Ultra ATA/66 hard drive/ DVD-ROM/ 56K modem
Item #CPU1574.....was: $1599 NOW: $1399
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Save $500! 450MHz G4 processor/128MB SDRAM (exp. to 1.5GB)/20.0GB Ultra ATA/66 hard drive/DVD-ROM/ 56K modem/100MB Zip drive
Item #CPU1575.....was: $2499 NOW: $1999
Business Lease only $58/mo.§

Save $500! 500MHz G4 processor/256MB SDRAM (exp. to 1.5GB)/27.0GB Ultra ATA/66 hard drive/ DVD-RAM/100MB Zip drive
Item #CPU1576.....was: $3499 NOW: $2999
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17" APPLE STUDIO DISPLAY

- 17" (16" viewable) Diamondtron CRT
- 0.25mm aperture grille pitch
- Seven resolutions up to 1600 x 1200 @ 60Hz

With Diamondtron CRT!

New Low Price!
Was: $499
Now only $349!
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While supplies last.

15" APPLE STUDIO DISPLAY LCD

- 15" viewable screen
- 1024 x 768 max. resolution
- Wide viewing angle
- Outstanding brightness, contrast, and sharpness for optional viewing

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Was: $1299
Now only $999!
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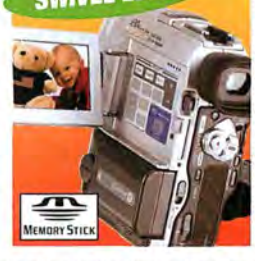
While supplies last.

SONY DCR-PC100 VIDEO CAMERA

SONY

- 10x Optical/120x Precision Digital Zoom
- 2.5" Precision SwivelScreen™ LCD • 1/4" CCD

SWIVEL LCD!



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New Low Price!
Was: $1999.95
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SONY E500 21" MONITOR

SONY

- 21" monitor (19.8" viewable image size)
- 2048 x 1536 @ 65Hz
- .24mm aperture grille

Ideal for graphic applications!

Only $1069.95!
Item #MT3655

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Ask for item #MED0508.

iomega

Quantity:	1-2	3+
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EPSON ELP 5700i Laser Printer

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EPSON

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- Supports Mac, PC, and Unix
- Built-in 4-port 10/100 Switch
- Connect up to 250 users using one ISP account and a cable/DSL modem

Order online at: www.warehouse.com

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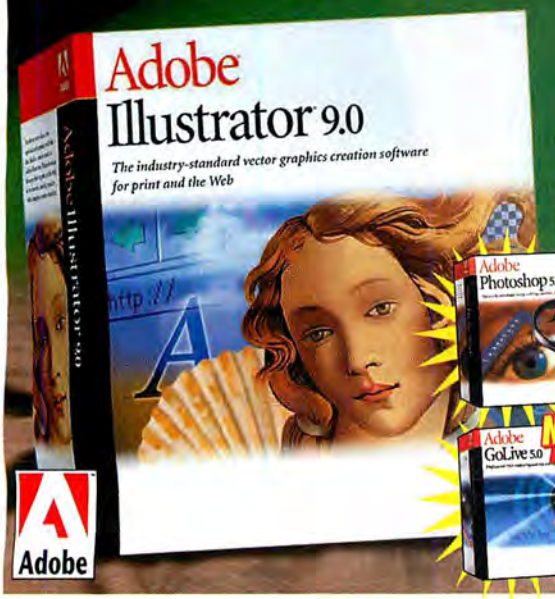

- Unlimited transparency capabilities
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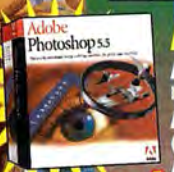

Adobe Photoshop 5.5

Adobe Photoshop 5.5 Upgrade Item #UPG1049 ..... $179.95

Adobe Photoshop 5.5 (Full Version) Item #GRA2951 ..... $599.95

Adobe Photoshop LE Item #GRA2973 ..... $99

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MPEG/Voice recording modes included

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32MB Storage Card
Only $79.95! Item #MY8875

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RAGE ORION ACCELERATOR

- Provides outrageously fast 128-bit 3D gaming

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ViaVoice IBM

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Here are seven great reasons to get complete system coverage:

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5. 24-, 36-, and 48-Month Coverage—available from date of purchase!
6. Fully Insured—Program underwritten by an "A-Excellent" rated insurer
7. Fully Transferable—Even if you move or sell the equipment, full coverage remains in effect.

Service you can depend on! Consult the chart below to see which warranty best fits your needs:

Cost of Computer and/or Peripherals	Warranty Price (36 months)	Ask for item #
$701 - $1,200	$149.99	MW3003
$1,201 - $2,000	$189.99	MW3004
$2,001 - $3,000	$219.99	MW3005

Call your Account Manager for terms and other pricing options.

Call your customer service representative to get extended support for just pennies a day!

*Note: This promotion is not a service agreement, but an outline of coverage available through Service Net. Please call Micro Warehouse, Inc. for information and read the complete Service Agreement from Service Net, for exact coverages, terms, and conditions. Coverage begins after a manufacturer limits its warranty in any way. Plan not available on international orders.

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Upgrades for your iMac and iMac DV

VIKING COMPONENTS

Have your RAM professionally installed by one of our factory-trained technicians for only $30. Ask for #2214. See page 12 or visit our Web site: macmall.com for more Viking memory. Prices are valid at time of press & are subject to change due to market fluctuations. Please call for most current pricing.

#52913	64MB PC100 SDRAM	$146.99
#52914	128MB PC100 SDRAM	$276.99
#52915	256MB PC100 SDRAM	$528.99
#58576	512MB PC100 SDRAM	$1,384.99

New iMac DV+

Now with iMovie 2!

With the iMac DV+, you can slip the latest DVD title into the slot-loading drive and watch it on a brilliant 15" built-in display. And with the new Theater Mode, your viewing experience is positively cinematic, with high-fidelity playback of full-screen video.

Awesome Performance!

- 450 MHz G3 PowerPC processor
- 64MB SDRAM; support up to 1GB
- 20GB Ultra ATA hard disk drive
- Slot-loading 4X DVD-ROM drive
- Built-in 15" CRT (13.8" viewable size)
- ATI RAGE 128 Pro with 8MB of SDRAM
- 10/100Base-T Ethernet (RJ-45)
- Apple Pro Keyboard and Pro Mouse

450MHz iMac DV+

only **$1,294**

#951060 (Indigo)
#951064 (Sage)
#951062 (Ruby)

64MB RAM; 20GB Hard Drive; 4X DVD-ROM Drive; 56K modem

All new Macs come standard with the Apple® Pro Optical Mouse and the Apple® Pro Keyboard.

The Fastest iMac Ever!

The NEW iMac DV Special Edition!

For those looking for even more, there's the new iMac DV Special Edition, the fastest, most powerful iMac ever. And it comes with iMovie 2!

Desktop Movie Studio!

- 500MHz G3 PowerPC processor
- 128MB SDRAM; Support up to 1GB
- 30GB Ultra ATA Hard Drive
- Slot-loading 4X speed DVD-ROM drive
- Two FireWire ports and two USB ports
- Built-in 56K V.90 modem
- 10/100Base-T Ethernet
- Built-in 15" CRT (13.8" viewable size);
- ATI RAGE 128 Pro with 8MB of SDRAM
- Integrated Harman Kardon audio system
- Front-mounted dual headphone jacks
- Apple Pro Keyboard and Pro Mouse

Software and Extras

- iMovie 2 software
- Mac OS 9
- AppleWorks
- Quicken 2000 Deluxe
- Bugdom
- Nanosaur

500MHz iMac DV

only **$1,494**

#951063 (Graphite) #950988 (Snow)

128MB RAM; 30GB Hard Drive; 4X DVD-ROM Drive; 56K modem

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New Apple iMac and Apple iMac DV's

The New iMac! Now only $799!

Authorized Reseller

350MHz G3 Processor & Stereo Sound!

Check out the surprisingly affordable new iMac. It has a faster processor, a bigger hard disk and lets you do more things online than the original iMac, like surf the Internet, send and receive e-mail, whip out your homework assignments and play music CDs on its Harman Kardon Odyssey audio system.

Processor and Memory
- 350MHz G3 PowerPC processor
- 512K backside level 2 cache
- 64MB SDRAM; support up to 1GB
- 7GB Ultra ATA hard disk drive
- Slot-loading 24X speed CD-ROM drive

Display
- Built-in 15" (13.8" viewable image size)
- 0.28mm dot pitch
- Theater Mode for enhanced brightness of full-screen video

Graphics support
- ATI RAGE 128 Pro with 8MB of SDRAM
- Resolutions up to 1024 x 768

Communications
- Built-in 56K V.90 modem
- 10/100Base-T Ethernet
- AirPort Ready (purchased separately)

Peripheral connections
- Two USB ports

Keyboard and mouse
- Apple Pro Keyboard and Apple Pro Mouse

Extras Include:
- Mac OS 9
- AppleWorks
- Quicken 2000 Deluxe
- Palm Desktop
- Bugdom • Nanosaur

Own this iMac for as low as $23/month with the NEW MacMall EZ Payment Plan!

iMac

350MHz iMac
only $799 #951155 (Indigo only)
64MB RAM; 7GB Hard Drive; 24X CD-ROM Drive; 56K modem

iMac

Own this iMac for as low as $28/month with the NEW MacMall EZ Payment Plan!

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only $999 #951066 (Indigo) #951065 (Ruby)
64MB RAM; 10GB Hard Drive; 24X CD-ROM Drive; 56K modem

Make Your Own Movies!

iMacDV—Your Personal Movie Studio!

The era of Desktop Movies has arrived! Assemble an all-star cast from among your friends and family. Then with your DV camcorder, your new iMac DV and iMovie 2 software, you're ready for action.

Luscious new colors!

Ruby or Indigo? It's your choice with the iMac DV Model!

Processor and Memory
- 400MHz G3 PowerPC processor
- 64MB SDRAM; Support up to 1GB
- 10GB Ultra ATA hard disk drive
- Slot-loading 24X speed CD-ROM drive

Display
- Built-in 15" CRT (13.8" viewable size);
- Theater Mode for enhanced brightness of full-screen video

Graphics Support
- ATI RAGE 128 Pro w/ 8MB of SDRAM
- Resolutions up to 1024 x 768 pixels

Communications
- Built-in 56K V.90 modem (RJ-11)
- 10/100Base-T Ethernet (RJ-45)
- AirPort Ready (purchase separately)
- Two FireWire and two USB ports

Keyboard and Mouse
- Apple Pro Keyboard and Pro Mouse

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#813179	64MB SDRAM DIMM	$146.99
#813177	128MB SDRAM DIMM	$276.99
#813178	256MB SDRAM DIMM	$538.99
#58576	512MB SDRAM DIMM	$1,384.99

Authorized Reseller

New Power Mac G4

Available with Dual Processors!

Monitor sold separately.

All new Macs come standard with the Apple® Pro Optical Mouse and the Apple® Pro Keyboard.

The Power Mac G4 with Velocity Engine is available with either single or dual processors. With speeds up to 500MHz, the dual processor Power Mac G4 delivers up to twice the firepower of previous G4 models.

Supercomputer Performance!

These significant speed gains let you rip through complex tasks, pound digital video files into submission, produce dynamic web content or thrash out solutions to intensive math and science problems faster than ever before.

Technical Specifications

- 400MHz (single) or 450-500MHz dual PowerPC G4 processor(s) depending on configuration
- Velocity Engine vector processing unit
- 1MB backside level 2 cache per processor
- 64, 128 or 256MB of SDRAM
- Supports up to 1.5GB of PC100 SDRAM
- 10/100/1000BASE-T Ethernet
- 20, 30 or 40GB Ultra ATA/66 hard drive
- DVD-ROM drive or DVD-RAM drive
- Two 400Mbps FireWire ports
- Apple Pro Keyboard and Pro Mouse

Order	MHz	RAM	HD	Cache	Drive	Modem	Networking	Price	or as low as
#951068	(1)400	64MB	20GB	1MB	DVD-ROM	56K	Gigabit Ethernet	$1,594	$45/mo*
#950986	(2)450	128MB	30GB	1MB	DVD-ROM	56K	Gigabit Ethernet	$2,494	$70/mo*
#951067	(2)500	256MB	40GB	1MB	DVD-RAM	56K	Gigabit Ethernet	$3,494	$98/mo*

New Apple® Power Mac G4
starting at
$1,594 #951068

Own this Power Mac G4
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The Original Apple® Power Mac G4—

Monitor sold separately.

The Power Mac G4 features the revolutionary PowerPC G4 processor with Velocity Engine, which crunches multimedia data at blazing-fast speeds. The Velocity Engine uses true independent vector processing—a technology originally developed for use in scientific supercomputers.

Outrageous power

- PowerPC G4 processor running at 400, 450 or 500MHz
- Velocity Engine processing unit
- 1MB of backside level 2 cache
- 64, 128 or 256MB RAM
- 10, 20 or 27GB Ultra ATA hard disk
- DVD-ROM drive or DVD-RAM drive
- 100MB Zip drive (some configurations)
- Built-in 10/100BASE-T Ethernet networking; optional Gigabit Ethernet
- Three 400Mbps FireWire ports
- Two USB ports
- Optional AirPort networking card
- ATI RAGE 128 Graphics Accelerator with 16MB of SDRAM graphics memory
- Includes Mac OS 9

Order#	#57560	#57561	#57562
MHz	400MHz	450MHz	500MHz
RAM	64MB	128MB	256MB
Hard Drive	10GB	20GB	27GB
Multimedia	DVD-ROM	DVD-ROM	DVD-RAM
Zip Drive	N/A	Yes	Yes
Modem	56K	56K	N/A
Price	$1,349	$1,949	$2,899
Or As Low As	$38/month*	$55/month*	$81/month*

Original Power Mac G4
starting at
$1,349 #57560

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for as low as
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G4's/Power Mac G4 Cube

New Power Mac G4 Cube!

At less that one quarter the size of most PC's, the Power Mac G4 Cube delivers awesome performance. With the power of the Velocity Engine, the G4 processor can calculate over one billion instructions per second! You'll have more than enough power to make Desktop Movies, be a desktop publisher, play 3D games and watch DVD movies right on your monitor!

Virtual Silence

Cooled without a fan, the Power Mac G4 Cube runs in virtual silence. You can truly appreciate the crystal clear audio quality of the Harman Kardon speakers that are included. Bring hi-fidelity sound to music, movies, and games!

Less Is More!

In another first, the G4 Cube connects to your display in an entirely new way, thanks to a bit of nifty engineering. It's called the Apple Desktop Connector (ADC), and it reduces desktop clutter even further by combining power, video and USB signals on a single slim cable.

Outstanding performance
- 450MHz PowerPC G4 processor with Velocity Engine
- 1MB of backside level 2 cache
- 64MB of high-performance memory
- 20GB Ultra ATA/66 hard disk drive
- DVD-ROM drive with DVD-Video playback
- Harman Kardon speaker system
- ATI RAGE 128 Pro graphics card with 16MB of graphics memory, Apple Display Connector, and VGA connector

Authorized Reseller

Elegant design
- Small footprint for convenient desktop use
- No-fan cooling system maintains a quiet working environment
- Apple Display Connector for easy display hookup and reduced desktop clutter
- Optical mouse for precision cursor control; works on nearly any surface and features a unique design that makes clicking extremely comfortable

The Power Mac G4 Cube is the first computer to come standard with an optical mouse, for precise control on almost any surface. Bring hi-fidelity sound to music with the included Harman Kardon speakers.

New Apple® Power Mac G4 Cube

only

$1,794 #951069

Own this Cube for as low as $50/month with the New MacMall EZ Payment Plan!

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Apple 22" Flat Panel Cinema Display
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Outrageous Performance
- PowerPC G3 processor running at 300MHz
- 512K backside level 2 cache
- System bus running at 66MHz
- 64MB of SDRAM; supports to 320MB
- 6GB IDE hard disk ● 24X CD-ROM

Connectivity
- One 12Mbps USB port
- Built-in 10/100Base-T Ethernet
- Optional 11MB/s AirPort networking card

Advanced Battery Technology
- Li-ion battery with up to 6 hours of life

Great Graphics and Video Features
- ATI RAGE Mobility graphics controller
- 4MB SDRAM video memory
- 12.1" TFT SVGA active-matrix display
- 800 x 600 resolution

Input Controls
- Full-size keyboard with keypad

300MHz iBook

only **$1,594**

- #56184 Blueberry
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For those looking for the best performance, there's the iBook Special Edition. With a blazing 366MHz processor, it's even faster than the standard iBook models. And it comes in an eye-catching Graphite color.

Special Offer—Free Battery!

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The Fastest iBook!
- PowerPC G3 processor running at 366MHz
- 64MB of SDRAM; supports to 320MB
- 6GB IDE hard disk ● 24X CD-ROM

366MHz Special Edition Graphite iBook

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Surprisingly Light, Very Powerful!

Incredible speeds up to 500MHz!

With the PowerPC G3 processor running at up to 500MHz and built-in FireWire®, the new PowerBook gives you the performance and portability you need. It is an ideal choice for creative professionals who needs performance to go. And with an ultrasharp, 14.1" TFT active-matrix display and 8MB of video memory, the PowerBook lets you do it all with exceptional clarity.

Processor and Memory

- 400 or 500MHz PowerPC G3 processor—fastest performance ever in a notebook!
- 64 or 128MB RAM; support up to 512MB
- Internal 6 or 12GB IDE hard drive
- DVD-ROM drive with video play back
- Hot-swappable expansion bay
- 2 USB ports, 2 FireWire ports
- Built-in 10/100Base-T Ethernet
- 14.1" TFT XGA active matrix display,
- 16-bit CD quality stereo input/output
- 8MB video RAM ● S-Video port
- Li-ion battery for 5 hours of use
- 10.4" x 12.7" x 1.7"
- 5.9 lbs. with battery
- Mac OS™ 9

PowerBook G3 Series

starting at $2,494 #56143

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Order	MHz	RAM	HD	Cache	Drive	Modem	Display	Price	or as low as
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- Belkin USB Printer Cable
- Umax Astra 1600U Scanner
- PhotoDisc® Starter Kit

*Bundle offer valid only with CPU purchase. Your cost is $149.99 - $20 scanner mail-in rebate and $30 printer mail-in rebate = $99.99. Availability may effect actual bundled items. We reserve the right to substitute like items. Please contact Account Executive for updated information.

YOUR CHOICE! Free 128MB RAM or Epson Stylus® 740 Printer

with purchase of any PowerBook!

$30 professional installation fee applies to free RAM offer. Mfr reconditioned printer. All offers valid while supplies last and cannot be combined with any other promotion.

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Design graphics and site concepts in FreeHand, using industry-leading creative tools, including 3D perspective grids and vector transparency. Then integrate into Flash, fusing vectors, bitmaps, motion, MP3 audio, form input and interactivity.

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Develop ASP, JSP and CFML Web applications in one visual environment.

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Available for Dreamweaver 3 customers only.

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No other program tests as many different aspects of your Macintosh as thoroughly as Techtool Pro 3.0. The key to maintaining a healthy Mac is to install before you have problems!

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Industrial-strength Web design, production and management for professional, dynamic, database-driven Web sites!

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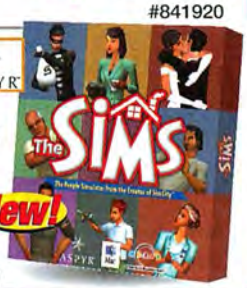

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Sys Req: Power PC, 32MB RAM, 140MB HD Space

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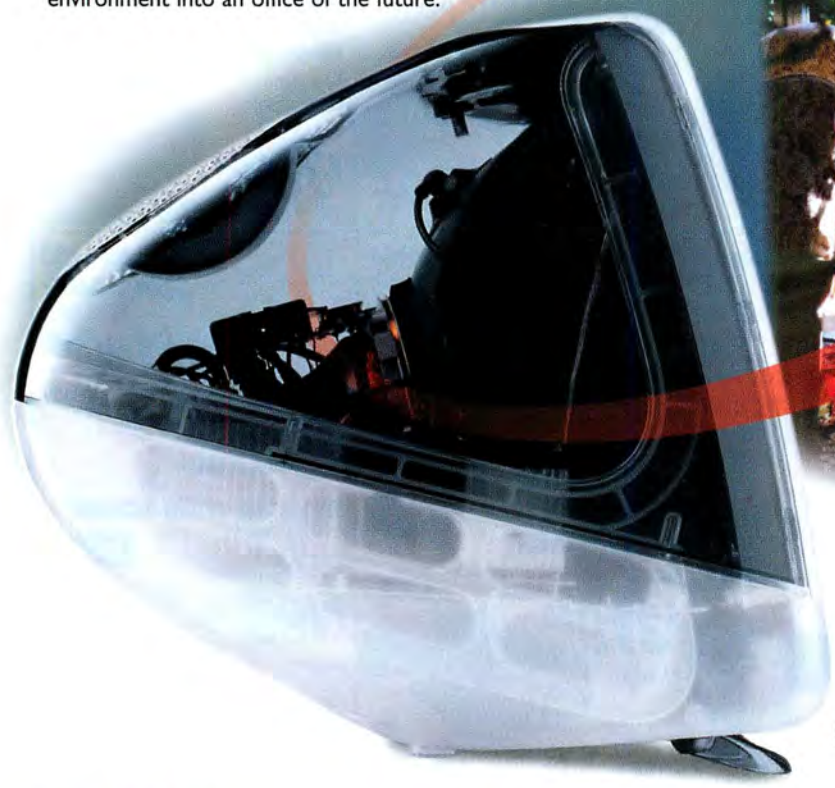

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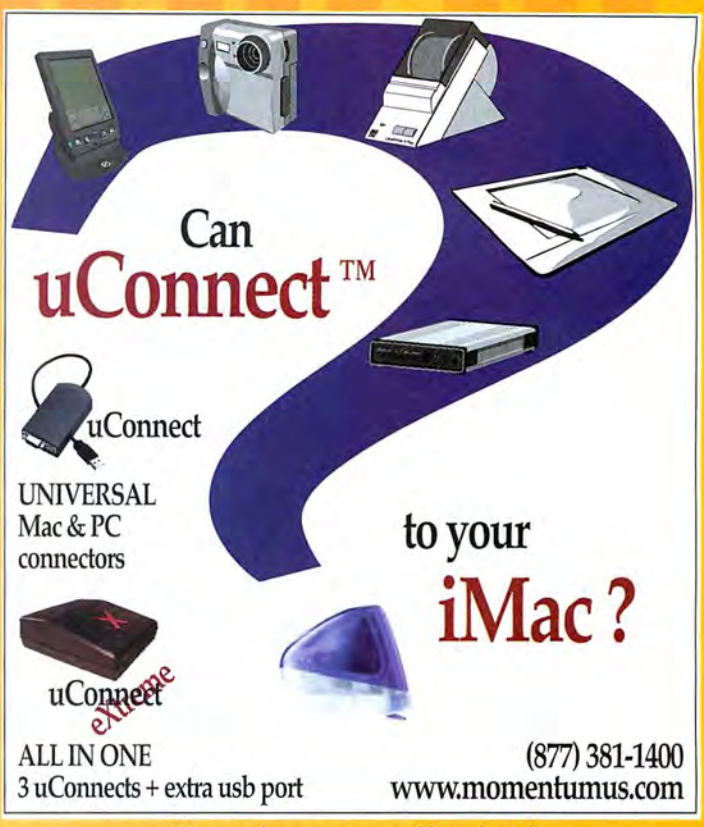

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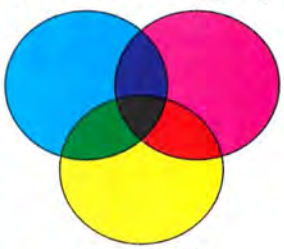

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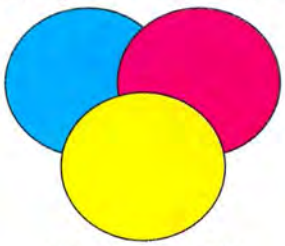

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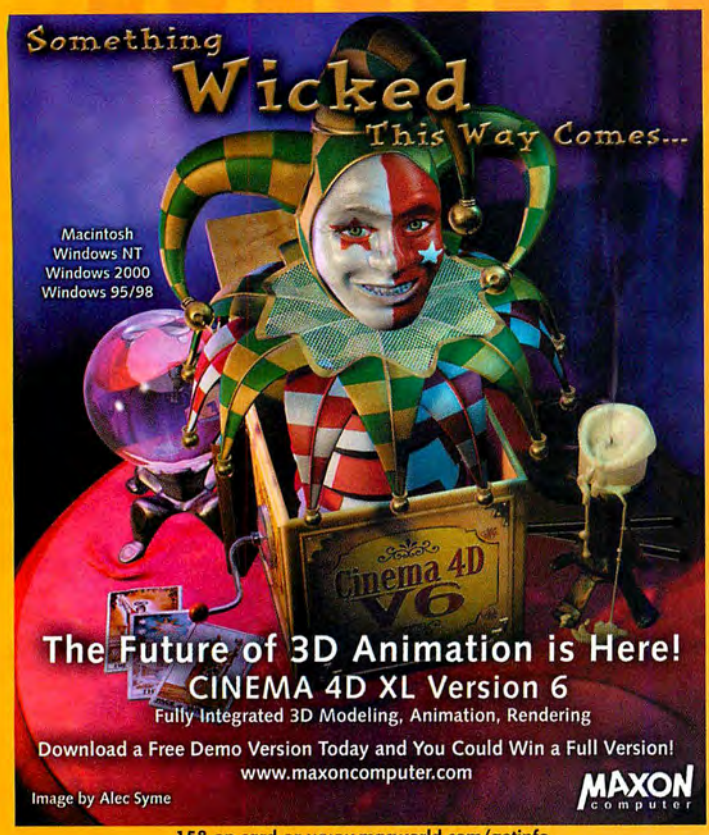

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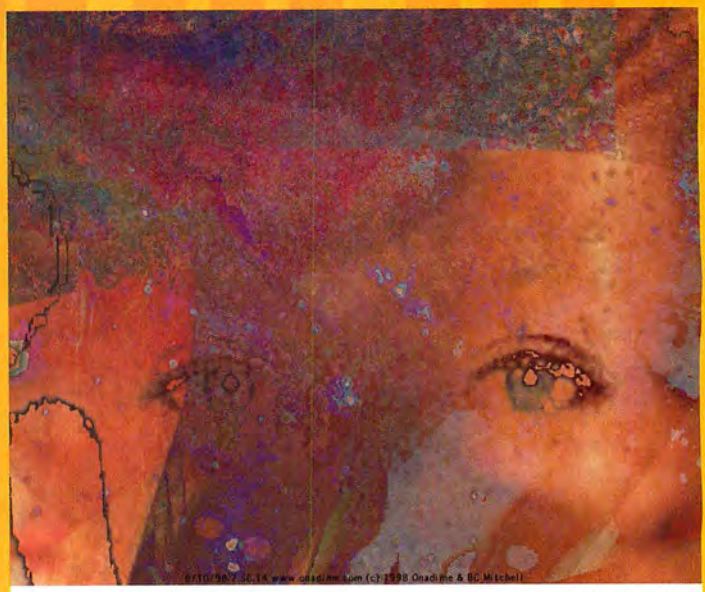

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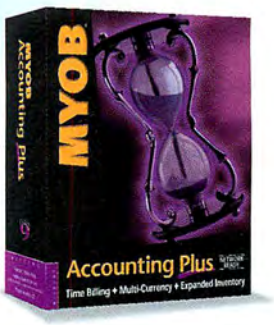

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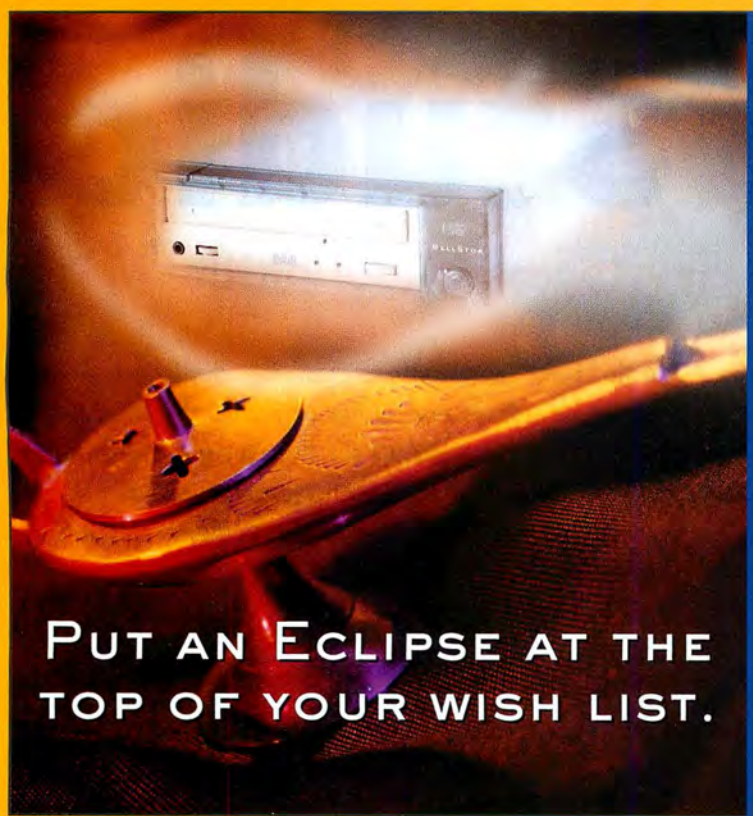

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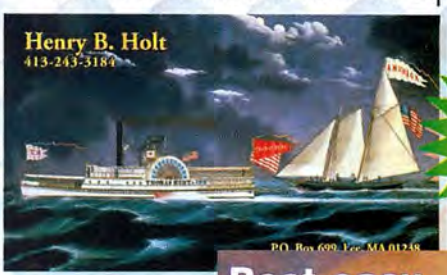

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OS 9's Multiple Users feature to keep our environments and files separate.

I gave myself the Owner account, so I'm the only one who can change the settings. But she says if I really loved her, I'd make her the Owner and myself one of the underling accounts. We've been married only six weeks, but this one could be the deal breaker. What to do?—*Unhappy Owner in Omaha*

Dear Unhappy, *If I've said it once, I've said it a thousand times: Don't share a Mac with someone you love without first signing a prenuptial computer agreement. This kind of thing would be a moot issue if you and your wife had known about each other's Macintosh needs going in.*

At this point, I advise you to enlist the aid of a certified Apple couples therapist. For a fee, these trained professionals will visit your home, replace any hockey-puck mice with the new Optical Apple model, make themselves your Mac's Owner, and give both of you equivalent underling accounts.

And good luck with the marriage; maybe you two should avoid talking about money, religion, or politics for a year or two.

Dear Rammy, My teenage son has discovered that whenever he prints over his AirPort wireless network, our next-door neighbor's garage door opens and closes. So now he makes printout after printout, all day long, just to drive the neighbors wild. What should I do? —*Neighbor in Nebraska*

Dear Neighbor, *Tell your son to print blank pages. That way, he won't use up the ink cartridge and he can use the paper over and over again.*

Dear Rammy, I came home early from work one afternoon to find my girlfriend on America Online. There she was, in a private chat room called 25 and Beautiful, seducing some guy with some of the juiciest language you can imagine. I'm crushed and heartbroken!—*Betrayed*

Dear Betrayed, *What's her screen name?* **m**

David Pogue (www.davidpogue.com) is the author of *Mac OS 9: The Missing Manual* and *iMovie: The Missing Manual* (both Pogue Press/O'Reilly, 2000).

DAVID POGUE

Dear Rammy

MACWORLD'S FIRST ADVICE COLUMN DEBUTS

Parenting magazine has one. *Men's Health* has one. Almost every newspaper has one. Why shouldn't *Macworld*, too, have an advice column? It'll be great: Readers write in with their Mac-related love triangles, points of etiquette, and moral dilemmas. (No technical questions—too boring.) Everybody wins: the magazine fills a page, the letter writer gets a solution, and you get to read about the misery of others. Shall we begin?

Dear Rammy, I love my iMac. Literally. I've dated hundreds of men but have never met one who's as reliable, friendly, and committed as this machine. He's gorgeous, with a sculpted, hard body, and he's hot—we're talking body temp of 120, easy. (My iMac has no fan. Except me.) I've rigged him with AppleScripts that make Macintalk tell me what a wonderful woman I am, how brilliant and charming I am, and so on. And the Bruce voice I use even has a cute European accent!

My friends tell me that I should be out there cruising the bars for "real" men instead of having all-night talks with my iMac, playing games with him, and sometimes taking him to a bed-and-breakfast for a weekend. But I say I've got it made. What's your take—is it somehow unnatural to fall for such a colorful companion?
—Puppy Love in Petaluma

Dear Puppy, *Falling in love with your Mac is nothing to be ashamed of. In fact, hundreds of thousands of people live completely fulfilled lives alone with their Macs. If friends think you're coming unhinged, get new friends.*

Dear Rammy, My buddy Frank gave me a copy of Photoshop. When I had a problem, I called Adobe for tech support, but because it was Frank's copy and I was using Frank's serial number, I had to pretend that I was Frank. I gave them Frank's name but my own phone number and address. Pretty soon, I started getting junk mail and special offers, even from other companies; I couldn't change my story at that point, so I continued to masquerade as Frank.

Eventually I was given graphic-design jobs and even a couple of awards, all as "Frank." And then, last week, I won $200,000 in a MacSuperstore.com sweepstakes—as Frank. I'm getting nervous about maintaining this dual identity.
—Imperfectly Frank

Dear Frank, *You certainly should be nervous! You can't keep living a lie; you'll go quietly insane. I think that, deep down, we both know exactly what you've got to do to make things right. Head directly to the county department of records and get your name legally changed to Frank.*

Dear Rammy, I share a Power Mac with my new wife. To prevent domestic squabbles, we've been using Mac

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