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OCTOBER 1993

MacUser

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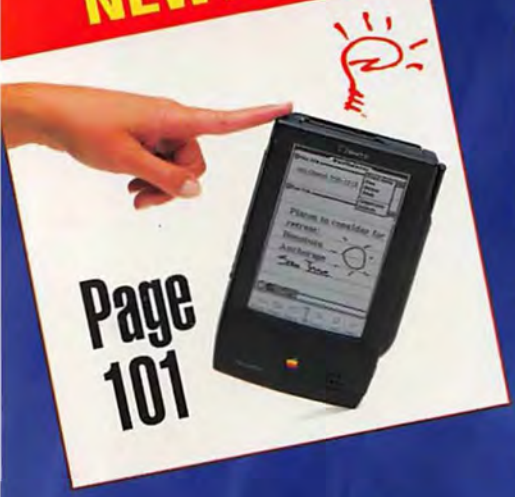

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Interactive Macs!

Revolutionary New Technologies

- Speech Recognition
- Full-Motion Video
- Voice-Mail

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Super Power-Saving Utilities Reviewed

CD-ROM SHOOT-OUT
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One cool tool: The Newton MessagePad.

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Plunge into the world of shareware.

On the cover: Apple's newest Macs, the Centris 660AV and the Quadra 840AV, promise new power for multimedia applications.
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Cover Story

MacUser SPECIAL REPORT CENTRIS 660AV QUADRA 840AV

Sound and Vision

By Russell Ito

Apple's next-generation audiovisual Macs combine telephony, video, and speech technologies in the most versatile and exciting Macs to date. **76**

Apple Phone

MacUser LABS The marriage of Macintosh and telephone: With Apple's new telephony technologies and the high-speed GeoPort, the Mac becomes a total telecommunications solution. **87**

Video Prime Time

MacUser LABS Get ready for *real* desktop video. Apple's new audiovisual Macs deliver built-in full-screen, full-function video at 30 frames per second. All you need is a camcorder and a VCR to plug in to your computer. **91**

PlainTalk

MacUser LABS Apple's new PlainTalk lets you tell an AV Mac what to do without so much as touching a mouse. At the same time, text-to-speech technology gives Macs a powerful new voice. **95**

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The Centris 660AV and Quadra 840AV are true multimedia Macs.

Features

The Newton Generation

By Henry Bortman

MacUser LABS Apple PIE announces not a Mac — but a Newton. The Newton MessagePad is the first of Apple's new family of small, hand-held pen-based computers based on an entirely new operating system. The only question is, Is it really a tool or just a toy? **101**

Double-Time CD-ROM Drives

By John Rizzo

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Faster CD-ROM drives can double your pleasure.

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PBTools, Power To Go, and **CPU 2.0** We put three PowerBook-utility collections side by side — and one comes out on top. **48**

Ofoto 2.0 Throw away that image editor! With Ofoto 2.0, you can get accurate, quality images on the first scan. **50**

Radius PrecisionColor Pivot Centris and Quadra users will flip over Radius' new pivoting software — but the memory price is steep. **51**

Apple LaserWriter Select 300 The 300-dpi Apple LaserWriter Select 300 is bargain-priced, but it lacks PostScript and suffers from poor speed. **52**

Power Team Seven-modules-in-one PIM sacrifices depth for breadth. **53**

DateBook Pro and **TouchBASE Pro** The latest versions of After Hours' calendar and address-book programs feature sophisticated use of data links that integrate the programs via Apple events. **54**

Freedom of Press Classic and **T-Script** Two utilities offer slow but cost-effective routes to PostScript output from non-PostScript printers. **58**

Local Expert and **NavigaTour** Disk-based travel guides sound promising, but these two have a way to go. **62**

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Powerbox: A 4-pound package of PowerBook storage — 200 to 500 megabytes' worth. **ColorUP:** Color coordinating. **Lunicus:** Free Earth from alien drones. **Eight Ball Deluxe:** Pinball WYSIWYG. **StrataType 3d:** More options for high-quality 3-D-type rendering. **71**

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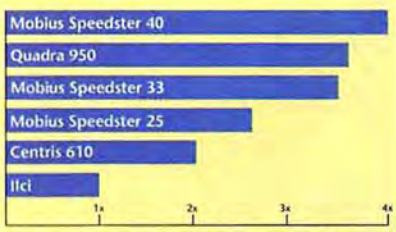

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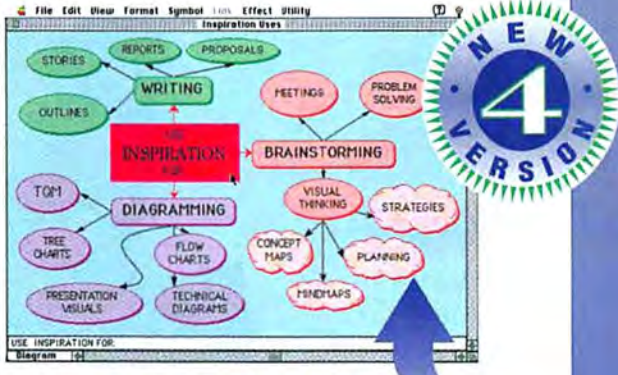

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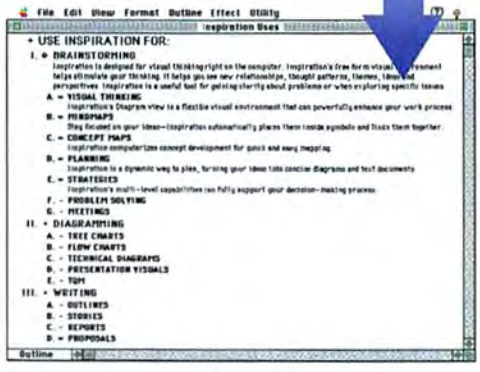

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Well, you can. It's time to take a fresh look at shareware. That's the try-before-you-buy plan that makes its home on bulletin boards, on-line services, and even some CD-ROM collections. It's the salvation of small, independent developers who — rather than battling the software giants for dealer shelf space — distribute their works electronically, encouraging people to copy them and give them to their friends, with this proviso: If you like it, you pay the developer what's called a shareware fee. Some of this shareware is excellent.

ZiffNet/Mac sysop Greg Wasson picks the best shareware programs for the Mac.

And — some of it isn't. It takes some winnowing. You can learn a lot from talking to users on-line or in user groups. You can read Greg Wasson's *MacUser Guide to Shareware,* published by Ziff-Davis Press. And you can read Greg's tribute to the best shareware of the year in this issue (see "The 1993 MacUser Shareware Awards," page 143).

Greg is the chief sysop for ZiffNet/Mac's Download & Support Forum, which is the most popular forum on ZiffNet/Mac, with hundreds of downloads each month. "The most popular shareware programs are system extensions, followed by games," says Greg.

Shareware fees run from $2 to $75, averaging $15 or $20. Not bad, compared with commercial applications. But Mac shareware is in danger. According to the Association of Shareware Professionals, *PC users have a much better record of paying for shareware.* Greg is mystified about why this is so. "If people don't pay, shareware will go away."

That would be a bad thing. Even *The Wall Street Journal* has pointed out that paying for shareware is in the self-interest of computer users because it keeps alive the kind of garage-shop innovations that often leads to technical breakthroughs. It also keeps affordable software a reality.

Besides that, shareware points the way toward a new cost-effective, environmentally friendly model for software design and distribution. The future of application software is not the bulky dinosaurs of today but smaller, more focused products, documented and distributed electronically. Sound like shareware?

OK, then — let's send in those shareware fees.

— *Nancy Groth*

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And you were told Pentium was powerful.

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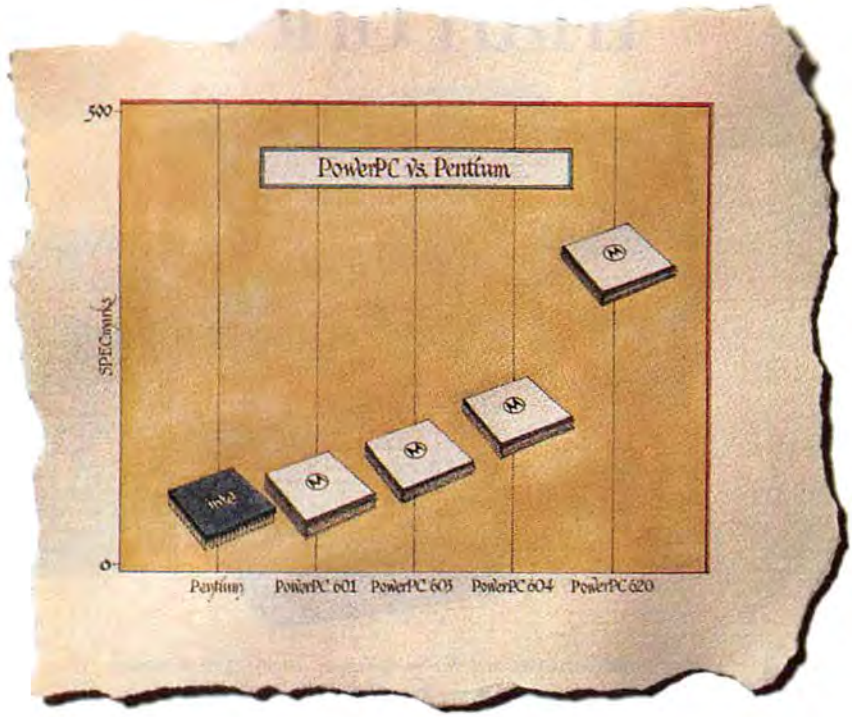

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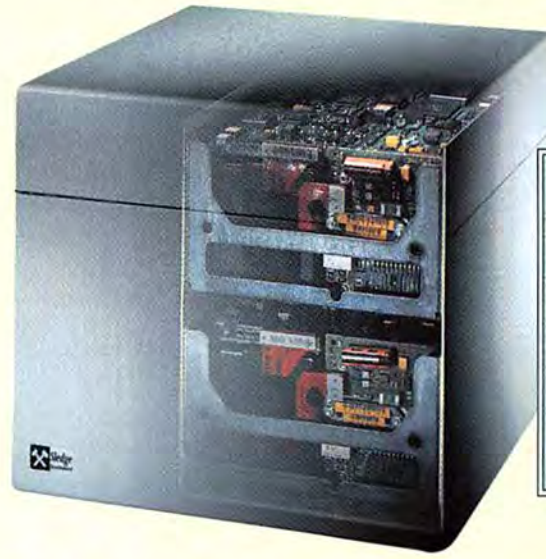

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They're blindingly fast, and they're unerringly reliable. And no matter what capacity you choose them in—from 1,050 MB to 5.6 gigabytes—the new SledgeHammer® Arrays from FWB are the first and only drives that offer any Macintosh both speed and security in a single RAID* system.

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SledgeHammer Series	Capacities
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CIRCLE 71 ON READER SERVICE CARD.

Enough, already! Each month letters mentioning that ubiquitous television/radio commentator arrive at the *MacUser* offices. We've been puzzled by the rash of Rush references, which touch on everything from his political persuasion to his penchant for PowerBooks. But this query from Joseph L. Klausky, of Daytona Beach, Florida, tops them all: "Does John C. Dvorak look as much like Rush Limbaugh in person as he does in his column picture in *MacUser*?" You know, there is a resemblance . . . .

Write to Letters to the Editor, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404, or post your letter on the

MacUser Forum of ZiffNet/Mac, our on-line service. All letters become the property of *MacUser*, and we reserve the right to edit any letters we print. Please include a return address and a daytime phone number.

A Hand Wrote Ink

I enjoyed the anagrams in Jon Zilber's column "Mixed Messages" (July '93, page 21), but I have to say he really dropped the ball when it came to rearranging Andy Ihnatko's name.

Those of us who know Andy as *Andrew Ihnatko* have the inside story. I've known Andy personally for years and can attest that he certainly does *own a kind heart*. I have been waiting for this opportunity to *handwrite an OK* with regard to his writing. *I thank a wonder* of a magazine such as yours for running his column, and I don't *think one award* would be enough praise for his work. The technical assistance Andy provides on-line is some of the best information to be *had in a network*.

But most of all, I think we all agree that his column consists of some pretty *neat handiwork*.

John Holderried
Brooklyn, NY

Drive Hard

How in the world did you rate the 1- and 2-gigabyte drives ("Heavyweight Hard Drives," July '93, page 92)? Did you let the mice do it for you, or did you just use your Apple II's built-in random-number generator?

The Dynatek HDA 1.2 GB is one of the slowest, most expensive drives in the test, with no money-back guarantee, few software features, and no visible FCC Class B certification: three mice. The Focus 1.2 GB is one of the fastest, most reasonably priced drives in the test and has a 30-day money-back guarantee, a five-year warranty, and FCC Class B certification: three mice. The CMS Platinum II Enhanced 1.0 is essentially the same drive as the Focus except that it costs $2,000 more and has no money-back guarantee and only a one-year warranty. Perhaps its five-mouse name earned its rating: three mice.

We care about design and ergonomics, but lighten up and join the practical club: Nobody's going to cart around a behemoth like the CMS Platinum just because it has switchable termination: The SCSI termination is probably going to be set once — by a network administrator. Why go beyond what people really want in your evaluations for the sake of a useless rating system? You could have done this article in one sentence: "If you want a fast, quiet drive with a great warranty and a reasonable price, buy the APS Micropolis 1.2 GB, the Spin Peripherals 1.2 GB, or the Focus 1.2 GB."

Bruce Pierson
Bozeman, MT

Although the three drives you mention in your second paragraph did receive similar overall scores, their specific strengths and weaknesses varied. The Dynatek drive is more expensive (except in its native Canada, where FCC certification is less of a concern), but the construction of

Open Folder

Recent letters from customers who feel burned by rapidly declining Mac prices stirred veteran Mac buyers to recall the good old days, back when Macs were *really* expensive. Writes Mark Isaacs-Ward, of San Francisco, "I remember paying nearly $12,000 for a Lisa, $5,000 for a LaserWriter, and about $1,500 for a 5-megabyte Profile hard drive." Adds Robert Simon, of Reseda, California: "How about paying $2,700 for a 128K machine when it came out?" At least they didn't have to walk seven miles through a blizzard to get to the computer store.

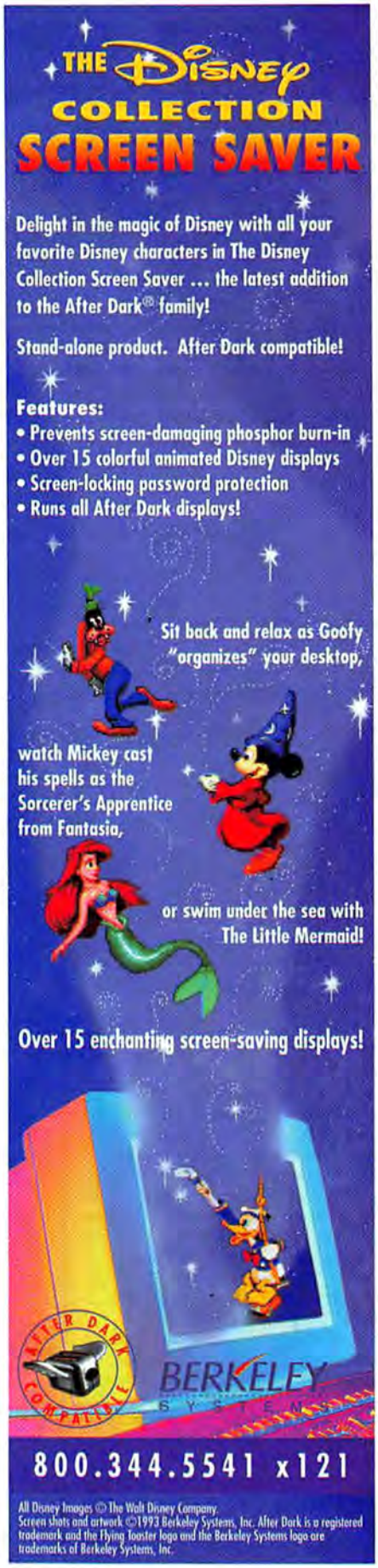
But Mark and Robert agree that it's been worth it. "I've been through houses, cars, and wives, but my passion for Apple hardware has stayed with me. Why? Because it works," Mark says. Robert, on the other hand, hit some hard financial times and bought a DOS machine when his 512K Mac died. "I inherited a lot of money recently, and when I receive it, I am taking my pile of 286 junk skydiving — and it will *not* be equipped with a parachute."

It's this tenacious love for all things Mac that's caused Scott Gilbert, of Summerland, California, to note that people start to resemble their computers, sort of like owners and pets. "Using a Mac is almost cultlike, and using a PC is pro-establishment." Scott uses both and takes care not to flaunt one platform around the users of another ("I did slip once, when I asked why Mac people don't rebuild their tree upon startup.") But Scott isn't neutral when it comes to *MacUser*. "I'm confounded and disgusted by Jon Zilber's announcement that he wrote a *MacUser* article on a PC ("Apple, from A to Zeos," June '93, page 21). He should go write for a PC magazine." Well, as a matter of fact, he did.

Finally, Richard A. Knopp sends this confession from Lincoln Christian College, in Lincoln, Illinois: "I married a Mac in 1984 and am on the verge of adultery. I've been lusting for a 486 PC. They tell me these PC harlots would be less satisfying if I got into bed with one, but I wonder. Give more exposure to these seductive sluts, and help me see them for what they really are." Clearly, Richard's fallen prey to one of the seven deadly SIMMs.

Got a gripe? Need to get a grip? Express yourself: Write to Open Folder, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404. The usual caveats about letters apply.

ILLUSTRATION: JOHN CORBITT



LETTERS

the unit is high-quality and the company's tech support is excellent. The Focus drive is not the same as the CMS drive: It's less expensive, but it has few hardware-interface features, its software offers little more than partitioning, and its SCSI cable lacks proper shielding. The CMS drive includes thoughtful touches in its interface design, but it's not very portable or inexpensive, and it suffered from poor after-sale support. To get the most from our rating system, set your own minimum acceptable mouse rating and prioritize which features are important to you. Then focus on the products that meet your criteria. — MF

As I read your review of hard drives, I looked in vain for any mention of the words *noise* and *decibels*. Although many computer users care little about the noise level of their environment, I care a lot and am willing to trade other price/performance benefits for a quiet drive and cooling fan. How hard would it be to add a sound-level meter and a spectrum analyzer to your test lab?

George D. Allen
East Lansing, MI

Getting accurate data on noise is harder than you might think. The trick is finding a place that's quiet enough to do the testing, and even the most subdued test lab is awash in background noise. To that end, an acoustically shielded chamber has just been inaugurated at ZD Labs, our parent company's testing facility. We'll begin testing in it soon, and you'll get the accurate noise-level data you need. — RM

Color Her Happy

I just wanted to tell you how much your magazine helped me with the purchase of my new PowerBook 165c. After seeing the initial ads for the 165c, I was excited. I have used just about everything except the Mac (computers from IBM, Hewlett-Packard, and Unisys plus several VAX machines), and I wanted to add a Mac laptop to the list.

I took two of the latest issues of *MacUser* to work — I work as a graveyard-shift computer operator — and read through the ads, letters, and articles. The next day, I walked into Computer City with my notes and questions. I was prepared to deal with the salesperson and buy exactly what I needed. Thanks.

Roxanne Sumner
Lakeville, MN

Clone's Throw Away

I had to laugh while reading Michael Swaine's column "Blood from a Clone" (June '93, page 29). Swaine's comment "It was supposed to be impossible to clone a Mac" hit close to home. I've been using an Apple drive and Mac-compatible software on my Commodore Amiga computer for some time, using an A-Max emulation board. For only $250, I've got two computers in one box. Thanks to Apple, this used to be close to impossible. But why buy a Mac when you can do everything on a PC (a lowly Amiga, yet) that you can do on a Mac? If Apple paid its lawyers less and brought down its Mac prices more, the company wouldn't have to worry about this.

Rick Rudge
Milwaukie, OR

And don't forget the Outbound computers, which also use Mac ROM chips. What's new about NuTek is that no Macs have to be killed to make its machines. — MS

What an incredible line on the cover of the June *MacUser:* "$899 Mac Clone: The Hot News from NuTek." Incredible in every sense. *UNcredible* is probably a better term. I can imagine the ridicule the Mac press would heap on a DOS publication that had a line: "$69 PC Clone: The Hot News from [pick a motherboard maker]" (you can find $69 286 motherboards, after all). I'm appalled at the level of hype, although on the positive side, Michael Swaine's column is more realistic.

I would like to see *MacUser* do a serious review of the NuTek Duet. What is this machine really capable of? What programs work with it? What hardware works with it? How does a Duet compare with a real Mac with a PC card (such as one from Orange Micro) in terms of price and performance? My own sense is that this beast is unlikely to be more than a market oddity for fuzzy-thinking people who have no real sense of what a Mac can do.

Bill Stewart-Cole
via ZiffNet/Mac

Power-Full Book

I couldn't help but notice the letter from Kenneth Miller in your June issue (page 11) concerning the lack of articles about the PowerBook 100. Granted, in its base 2/20 configuration, the model is more of a teaching aid on how to boot a

Introducing Astound. It's kinda like. Well, sorta like. Actually, it's nothing like Persuasion.

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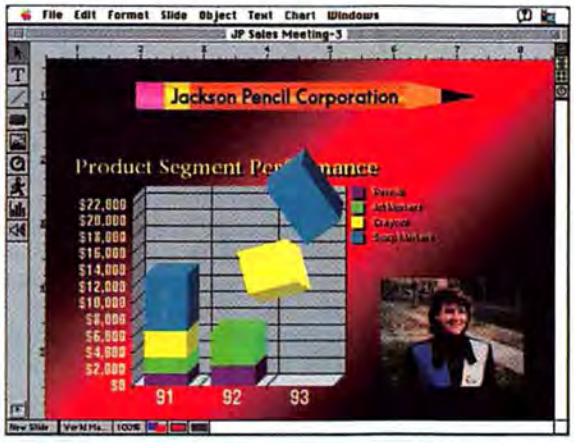

Unlike Persuasion, Astound lets you pick from dozens of animated text, graph and chart transitions to add interest and emphasis to your presentations. In fact, any object can be animated "on-screen" with just a few clicks.

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CIRCLE 45 ON READER SERVICE CARD.

Mac and use the Finder than anything else. But speaking for myself (and I'm sure others): I love my PowerBook 100!

And I especially love it when I'm traveling and a 140 or 160 owner — or even a PC owner — looks over and says, "Oh, I see you picked up one of those closeout 100's. I looked at them but decided to drop the extra two grand and get a 4/40 setup." I respond, "Oh really? Well, if we both started from our Finders, even with your 25 megahertz to my 16, I would be loading my Aldus FreeHand, WriteNow, and GreatWorks into my 8 megabytes of RAM from my Quantum 125-megabyte hard drive before you finished clicking on your third icon. My Now Utilities would make quick work of it by guiding my System 7.0.1 through its paces. As a matter of fact, while you're still trying to figure out how to load that third program, I might even check my Now Up-To-Date calendar. But then again, I just might plug my RJ-11 in to that wall jack over there and fax a letter with my Global Village PowerPort/Silver fax modem. By the way, I notice your 'Out of Memory' box doesn't want to go away. Oh, and one more thing. My entire hardware setup, including the PowerBook, was less than two grand. Later . . . ."

If the screen of my PowerBook 170 develops a crack, it's not my fault.

David Mecey
Los Angeles, CA

Henry Bortman claims, "One of the dumber things Apple did in designing PowerBooks — the now-defunct 100 was an exception — was not to include a small internal battery that could keep your PowerBook sleeping peacefully just long enough [to swap batteries]" ("Ten Ways to Longer Life," July '93, page 203). Well, this is not quite correct. Both of the PowerBook Duo models have an internal battery that does just this. Apple says that these internal batteries give you about four minutes to swap main batteries, which is ample time, in my book.

Espen H. Koht
via ZiffNet/Mac

The Screen Crack'd

I'm a frightened owner of an as-of-yet-intact PowerBook 170. I transport my computer at least once a day. I've had this computer for a year and a half, and I've treated it better than Apple could ever hope to expect a user to treat it. I'm amassing witnesses to my delicate treatment of my computer. Why? If a screen crack develops, as many PowerBook owners have reported, it is not my fault. I will not abide Apple's current policy of blaming users for their cracked screens. It's obvious that the screen casing puts pressure on the crystal when the case is opened and closed — a design flaw. Lots of us are scared for our PowerBooks, and potential customers are being turned off. Here's hoping that Apple will admit

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its culpability and restore its reputation for quality hardware by offering to replace damaged screens.

Tig Tillinghast
Hanover, NH

There are several theories about why some PowerBook screens crack, but until Apple acknowledges the problem and devises a satisfactory solution for those PowerBook users who now have to pay for replacement screens out of pocket, we recommend closing your PowerBook carefully, grasping its lid with both hands near the hinge rather than at the top to minimize stress on the screen. — PP

Stupid Editorial Tricks

I'd like to point out that readers who complain about John C. Dvorak's column are missing the point completely. What seems a mindless, grating ramble month after month is actually a masterstroke of comedy genius. See, the real Dvorak long ago ceased to write the column and has been replaced by laid-off writers from David Letterman's show or *Spy* magazine, who were hired to turn out perfect column parodies.

What tipped your hand was the superlative June column ("Mac's Monochrome World," page 310). Imagine the brilliance: Mac users are switching to DOS *— for the advanced color capabilities.* Truly inspired.

I have to hand it to you: It's a stunning bit of comic invention that leaves me rolling on the office floor, howling in tears of derisive laughter. I only hope my discovery doesn't lead to the discontinuation of the finest entertainment to be had since Dan Quayle stopped umpiring spelling bees.

Michael McClung
Brooklyn, NY

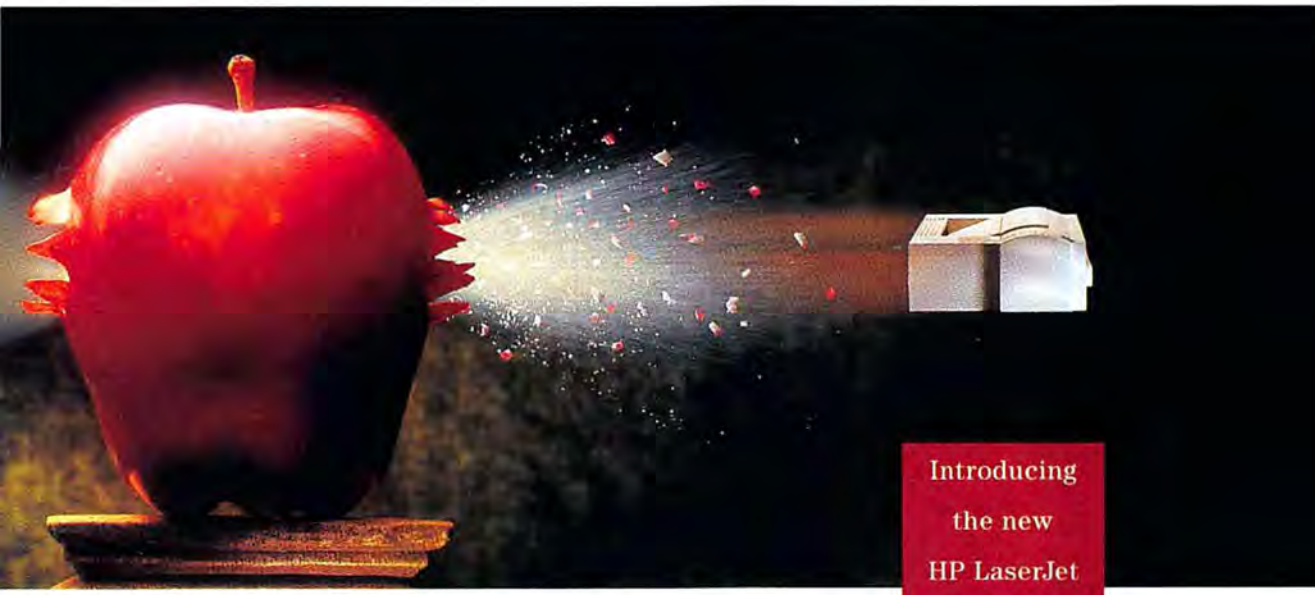
In his June column, John Dvorak claims that people are switching to Windows because "the Mac is not as jazzy a machine in color." I strongly disagree. However, his premise that people switch to Windows because of "the diverse new applications that pour into the market for Windows machines" is right on the money (literally). Apple is losing customers because many applications are available only under Windows.

By introducing variations on the Mac operating system, Apple will cut into its own market share, not Microsoft's. Apple has a better chance against the PC platform than it does against the Windows operating system. Apple should license the Mac ROMs to PC and workstation manufacturers to build Macintosh-Application-Capable (MAC) machines. This strategy wouldn't require huge amounts of R&D, company restructuring, strategic alliances, or any other money-pit schemes that would dilute Apple's efforts and market share.

Tom Urban
Palo Alto, CA

Wow! I Coulda Had a vx!

Hooray for Jon Gaines, whose comments mirror my feelings ("Letters," June '93, page 14). I too dread turning to the letters pages and reading about all the



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HEWLETT PACKARD

users who complain because Apple is making better computers at lower prices. These people probably complain because CD players and VCRs cost less these days too.

This sort of attitude was acceptable a few years ago, when technology advanced at a slower rate. But now, no matter what you buy, you'll find the same thing cheaper and faster a week later. C'mon people, you know a Quadra is gonna be cheaper a year from now, and the decision whether to buy one now or wait is yours. But it's *your* decision.

Greg Salter
via ZiffNet/Mac

I'm tired of reading letters from IIvx purchasers who complain and whine that their computer's value dropped drastically when the Centris was introduced so quickly. These people have confused computers with stocks. You buy stocks for the value to appreciate; you buy computers to use for years. Does anyone buy a computer to sell it within three to six months?

There are four IIvx's in the school lab where I teach; they're workhorses with lots of memory (and room for more), color, and CD-ROM players. We didn't buy them for resale value; we bought them as an investment in children's futures. The investment has already paid off. Nobody "ripped you off." You paid for a damn nice computer, and that's exactly what you got. However, if any of you really consider your computer worthless, please donate it to your local school.

Debby Berry
Van Nuys, CA

Macs for Sale

Because columnists generally consider themselves The Final Word and many readers consider columnists The Gospel, I feel compelled to disagree with Andy Ihnatko's column "Selling Your Mac" (June '93, page 25). Andy considers newspaper want ads "next to useless," but I have found them inexpensive and effective. Selling a used computer means matching a market. Harried parents sending their kids back to school shop the want ads for such items. Computers sold through want ads make excellent entry-level buys, because often they contain all the software you need, up and running. And you'll usually find the owner willing to introduce you to the machine and even set it up for you.

Otis Headley
Vicksburg, MS

Corrections

In "How to Buy Memory" (July '93, page 207), we incorrectly stated the maximum RAM configuration of the LC III. The LC III can use 1-, 2-, 4-, 8-, 16-, and 32-megabyte SIMMs, with a maximum of 36 megabytes.

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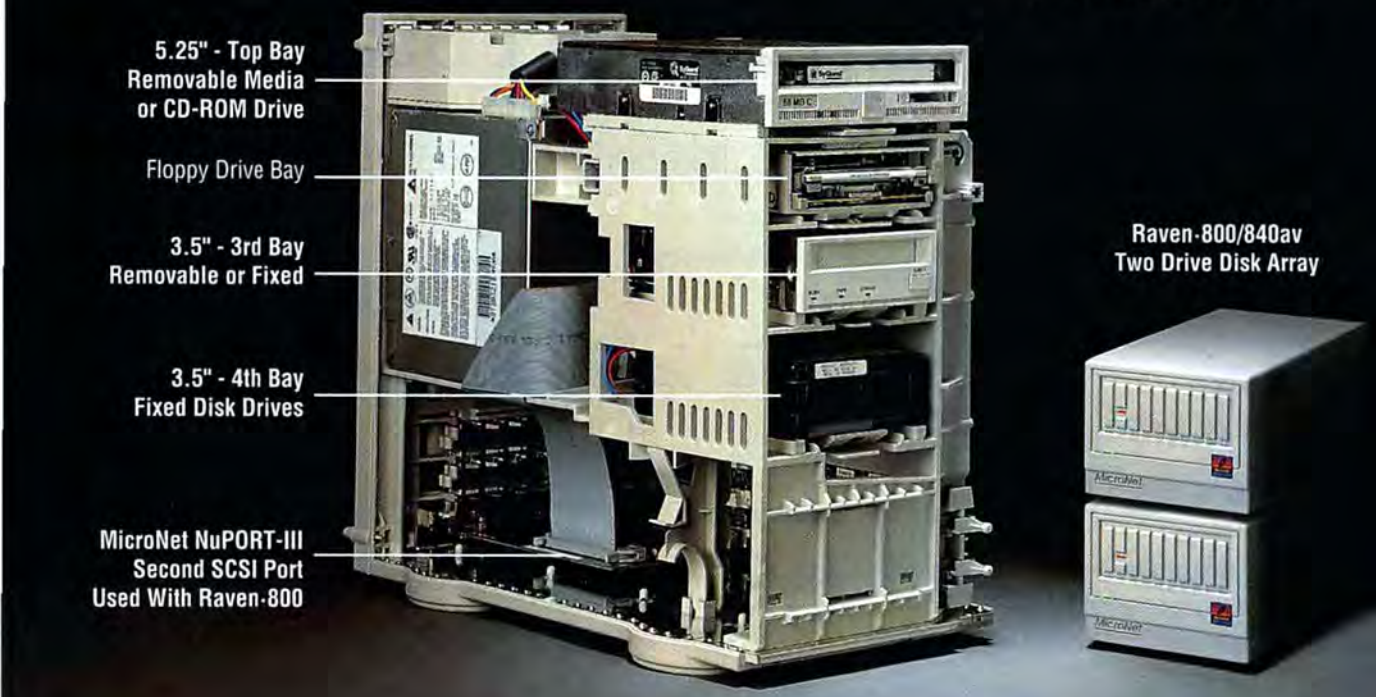

MicroNet's Raven·800. Disk Array Power For The Quadra 800/840av.

MicroNet is the first to bring disk array power to the Quadra 800/840av. Using a pair of fast spindle disk drives, the Raven·800 transfers up to 6.2 MB/sec of sustained data with average access as fast as 4 ms.

Disk arrays can improve performance up to 400 percent over standard drives. Combine MicroNet's Raven·800 disk array with the speed of the Quadra 800/840av and you have an unbeatable system for audio recording, full rate digital video, and graphics applications such as PhotoShop.

Cost effective two drive disk arrays are available in capacities of 1030 to 5560 MBytes and are expandable to more than 38 GBytes. MicroNet offers Raven upgrade kits for existing MicroNet or factory installed Apple 500 or 1000 MByte drives.

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Built on award winning technology, the Raven·800 takes full advantage of Apple's existing hardware. One drive connects to the native SCSI port of the Quadra, and one connects to a MicroNet NuPORT-III, SCSI-2 host adapter. Together, these two drives create a fast, parallel, 16-Bit data path.

MicroNet offers a family of internal data storage systems for the Quadra 800/840av. Included are SyQuest removable systems, rewritable optical drives, and DAT backup systems. We back you with our 24-hour tech support and Over-Night-Exchange service.

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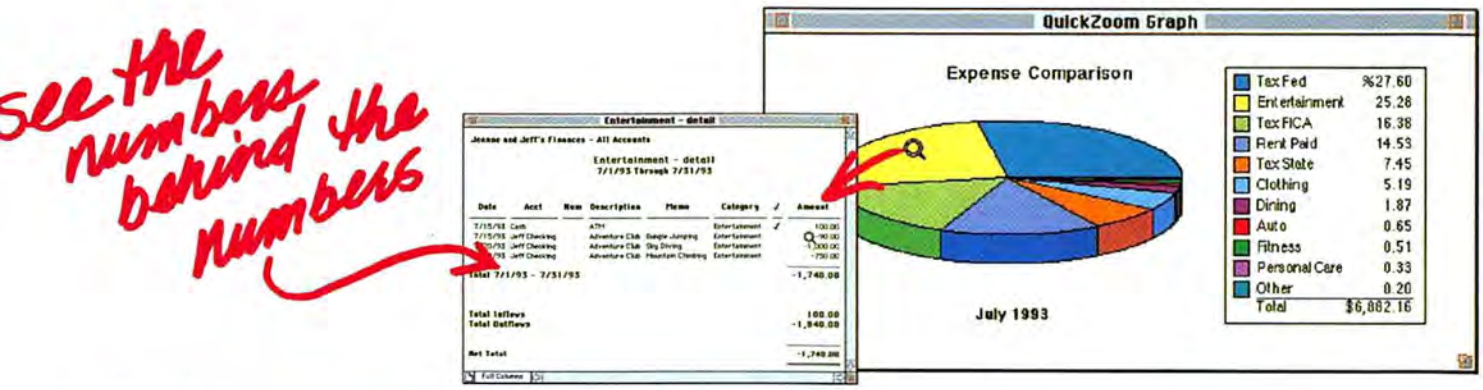
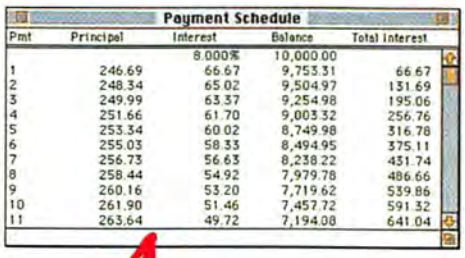
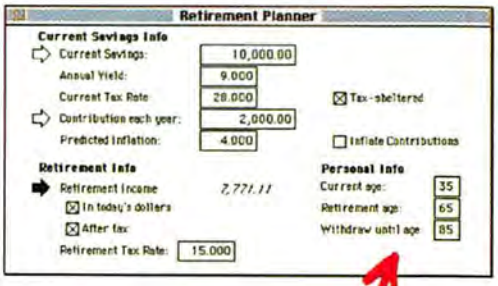


How do you improve a product that many people think is already perfect?

In our case, we listened to some pretty radical suggestions from some of the 4 million users who wanted Quicken to be even easier, faster, and more fun to use. The result is the most exciting announcement since we introduced Quicken: new Quicken 4, a major upgrade, with over 100 new features, that breaks new ground in financial organization. Here's a preview of some of those new features:





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Plan the future

Slash data entry with QuickFill.™

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Less data entry

Get greater insight with graphs.

Graphs make it simple to spot financial trends at a glance. Use a bar graph to see how your spending patterns change over time. Or a pie chart to provide a dramatic overview of payments by categories. It's a great way to get real insight into your income and expenses, investments, net worth, and budget vs. actual.

QuickZoom™ delivers the numbers behind the numbers.

Just double-click on any number in a report or any part of a graph, and QuickZoom shows you the transactions that make up that number. Click again and see a specific transaction in your register. Now getting insight into your finances is incredibly simple!

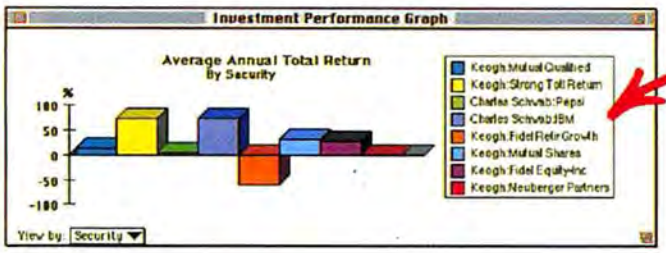
Easy investment tracking.

Quicken can manage all your investments — stocks, mutual funds, brokerage accounts, bonds, and others. New Quicken 4 offers QuickAction Forms that make potentially complex procedures Quicken-easy. Investment reports let you always know how your investments are performing and provide detailed trade and capital gains information for taxes. So it's simple to manage, analyze, and plan your portfolio.

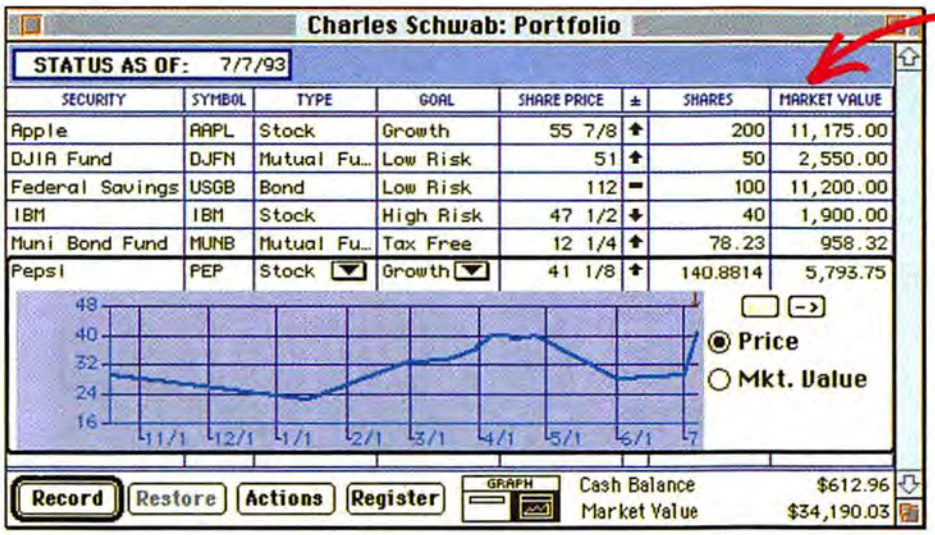
Loan amortization made easy.

Quicken tracks your loans by automatically calculating principal and interest, then providing a complete loan payment

improvement in financial invention of Quicken.



graphs



Track investments

schedule. New Quicken 4 handles a variety of loan options, including variable interest rates and balloon payments. Now you'll always know how much interest you've paid and exactly what your loan balances are.

Handy financial planners let you see into your future.

Wouldn't you love to be able to make "what if" calculations to plan for the future? Quicken 4 lets you make smart financial decisions regarding loans, mortgage refinancing, investment and saving, retirement, and college savings.

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2. Find the best price, then purchase Quicken from your favorite software dealer. If you're a previous Quicken owner, the deal is even better — with a **$10 rebate.**†

As you can see, there's a lot to like about new Quicken 4. But this is just the tip of the iceberg. In all, there are over 100 powerful new features to let you organize all your finances. With the ease-of-use to get it done quickly. And a price that's a true bargain. Plus a 60-day money-back guarantee.

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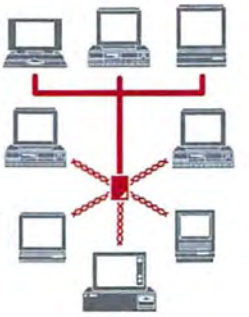

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CIRCLE 86 ON READER SERVICE CARD.

PowerPC Prophecies

In July 1991, when Apple announced it was codeveloping with IBM and Motorola a new RISC (reduced-instruction-set computing) microprocessor to replace the aging CISC (complex-instruction-set computing)-based 68000 CPUs, most Mac users nodded their heads and went about their business, figuring this was several years off and they'd worry about it when it was a reality. Well, now that the reality of PowerPC is just around the corner, readers such as Robert Stallings, of Rutherfordton, North Carolina, have written *MacUser*, wondering whether their considerable investment in Macintosh software applications and peripherals will continue to be viable when Apple introduces products that are based on the new high-performance processor.

Apple is betting its future on the PowerPC. The real winner could be you.

Although the PowerPC proof will be in the pudding and although a few issues remain unresolved, it's not too soon for a quick rundown on the PowerPC product line and the impact it is likely to have. Apple's new products will be based on a family of PowerPC chips — beginning with the PowerPC 601. Initially, the PowerPC Macintoshes will ship with System 7.1; PowerOpen (UNIX for PowerPC) and Taligent OS (the next-generation OS) will be available as options later. The vast majority of 68000-based applications, utilities, extensions, software drivers, printers, scanners, NuBus cards, and the like will be compatible with the new machines (Apple publicly demonstrated this at the Apple Worldwide Developers Conference in May). Apple will market upgrades for the Centris 610 and 650, the IIvx, the Performa 600, and the Quadra 800. The PowerPC Macs will debut during the first half of 1994.

All this sounds good, but a few areas of concern still remain. According to Apple, the PowerPC Macs will be priced competitively, but although I'd like to think Apple learned its lesson last quarter about product pricing, I wouldn't want to wager my next paycheck on it. And it's not just the pricing of the new machines that's important; it's the pricing of the upgrade kits as well. Certain compatibility issues are unresolved too, such as what will happen when Apple moves from the NuBus architecture to the new industry standard PCI (peripheral component interconnect).

Will PowerPC Macs make your life better? Possibly — it depends on your computing needs. If you're a professional power user, the kind who has 25 icons marching across the bottom of your screen when you turn on your Mac or who spends most of your time crunching numbers or manipulating complex graphic images, I would venture to guess that the PowerPC products will be as tempting to you as double-fudge brownies are to a chocoholic.

The PowerPC 601 chip is testing as fast as 80 megahertz (with the first product versions running at 66 megahertz), and that will probably seem slow before we know it. Although the current crop of Mac applications will run in emulation mode as fast as they do on Macs from IIci's to Quadra 950s, depending on the product, native apps will run two to four times as fast, and many will possess new capabilities — such as speech recognition and telephony, not to mention cool things we haven't even thought of yet — that are built in to take advantage of the new processor.

Think you don't need that kind of power? Don't be so sure. Eventually, everyone will need more processing power. As corporate America evolves, many professionals will have an office, a mobile office, and a remote office. We're talking about a radical restructuring of American business. Corporate types and entrepreneurs alike will need powerful computers that can enable them to do more work with fewer resources and that will let them communicate and work with far-flung enterprises. The software applications necessary to make this happen will require power. Lots of power.

One question I get asked a lot by prospective buyers is whether they should wait to buy a PowerPC Mac. The simple answer is, "Not if you need to get your work done today." If you can wait until next year to do your work, then you can hold on to your checkbook for a while, although I don't know many people who can put off their work for months. For now, there are plenty of good desktop Macs and PowerBooks, and they've never been cheaper.

For all the bad press Apple has suffered from lately, the PowerPC remains good news for most Apple customers. Overall, PowerPC products will give Mac users as much functionality as any DOS/Windows machine or more. Based on what Apple's been saying and showing, it looks like the company will make a much smoother transition to the PowerPC line than it did from the Apple II to the Mac.

Apple's a different company now. The personal-computer industry is far too competitive for any company to be off on an island flying pirate flags, and Apple knows it.

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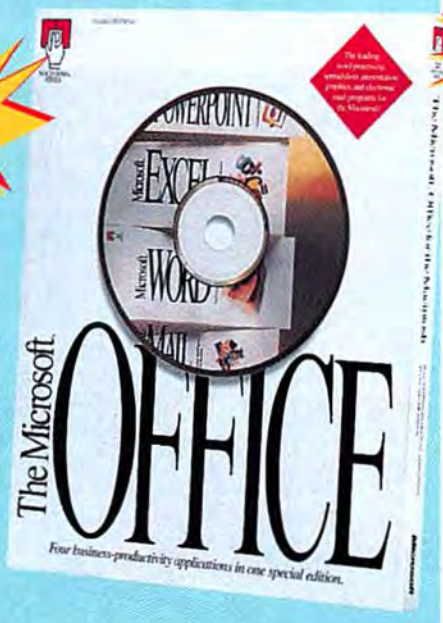

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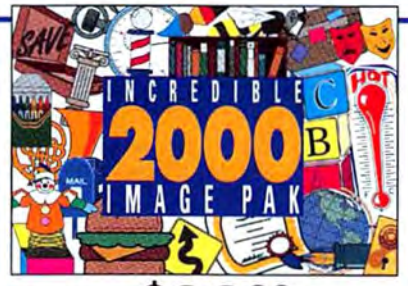

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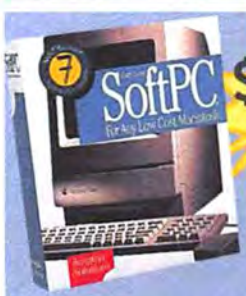

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04776	Suitcase II 2.1	$49.98
05679	Super 7 Utilities	$62.98
05433	System 7.1 Personal Upgr Kit	$78.00
04178	Think Pascal 4.0	$164.00
04066	Think Reference 2.0	$88.98
04347	TypeStyler 2.0 w/ATM	$124.00
05323	Userland Frontier 2.0	$184.00
00641	Write Now 3.0 w/Correct Grammar	$35.98

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06513	A.E. DataLink PowerBook 160, 180	$499.00
04956	A.E. Plus Drive-1.44/800K FD	$298.00
05998	Adv. Gravis MouseStick II	$68.98
05628	Axion Serial Switching Device	$128.00
06654	DayStar 33MHz Turbo 040 For Mac CI & SI	$1,169.00
04322	DayStar Universal PowerCache 50MHz / FPU	$794.98
05684	Global Village PowerPort Gold	$398.00
06267	Global Village TelePort Gold	$398.00
05176	Kensington TurboMouse 4.0 Trackball	$110.00
06251	Microtek Scanmaker II	$898.00
06252	Microtek Scanmaker II XE	$1,198.00
05849	NEC CD Express Mac W/ CDR 25	$349.00
06722	NEC Multispin CDR 74-1	$636.00
06701	NEC SilentWriter M95F	$1,349.00
06215	Performantz 105MB Ext	$358.00
06222	Performantz 105MB Int	$216.00
06576	Performantz 14.4 Ext Fax/Modem	$249.00
06575	Performantz 24 / 96 SR	$119.00
02181	PLI Infinity 40 Turbo HD	$525.00
06547	PLI Infinity 88 / R-W 44	$668.00
00182	PLI Infinity 88 Turbo HD	$648.00
04698	PLI Infinity Opt Sony 3.5 128MB	$1,549.00
06546	PLI Toshiba CD ROM Drive Multisession	$699.00
06022	PowerBook Battery 140, 170	$62.98
00062	Promethus Promodem 144 Ext	$268.00
06552	Radius PrecisionColor Pivot	$998.00
05250	Radius Rocket 33	$1,588.00
05650	Radius VideoVision	$2,098.00
05653	SIMMS 1MBx8-80ns 2 Pack	$88.98
05655	SIMMS 2MBx8-80ns 2 Pack	$156.00
06729	SIMMS 4MB-70ns 72 Pin	$158.00
05656	SIMMS 4MBx8-80ns 2 Pack	$318.00
05393	SIMMS 6MB PowerBook 140, 170	$278.00
06756	SIMMS 8MB - 50ns 72 Pin	$368.00
06755	SIMMS 8MB - 70ns 72 Pin	$318.00
06692	SIMMS10MB PowerBook 160, 180	$498.00
06808	SIMMS16MB - 70ns 72 Pin	$598.00
06697	SIMMS16MBx8 - 70ns Low-profile	$2,636.00
05654	SIMMS4MBx8-80ns 4 Pack	$636.00
05117	Supermac Spectrum/24 Series IV	$872.00
05123	SuperMatch 17 Multimode Color	$999.00
06100	SuperMatch 17 T Trinitron Color Display	$1,149.00
98851	SuperMatch 20 Color Display Plus	$1,798.00
00413	Supra Fax Modem V.32BIS w/ Sft Cable	$293.00
00414	Supra Fax Modem V.32BIS w/o Sft Cable	$249.00
02183	Syquest 44MB Cartridge Unformatted	$64.98
00183	Syquest 88MB Cartridge Unformatted	$106.00
04096	TI PS 17 MircoLaser	$1,198.00
06904	Umax UC 840 Scanner w/ Photoshop 2.5	$1,444.00
06593	Wacom Art Z	$327.00

BEST OF THE REST

05354	A.E. Full Cycle PowerBook Battery Charger	$104.00
05689	Altec ACS300 Speaker System w/ Sub WFR	$298.00
00847	Asante EN/SC	$328.00
03642	Asante MC+IIET64 for Mac II Performa 600 TK/10T	$155.00
00511	Asante MC3NB for Mac II Performa 600 TN/TK/10T	$218.00
01584	Datadesk Mac 101E Keyboard	$125.00
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00321	Dayna EtherPrint Plus 4 Dev	$449.00
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06653	DayStar 25MHz Turbo 040 for Mac CI & SI	$989.98
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00832	Farallon Phonenet DIN 8 PN308	$31.98
06265	Global Village TelePort Bronze	$179.00
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06543	Hayes ACCURA 144+ FAX144 Ext	$258.00
09916	Iomega Bernoulli 90MB Cartridge 3-Pack	$438.00
05177	Kensington Notebook Keypad	$78.98
04690	Kensington Notebook Traveler Deluxe Case	$78.98
06512	Kensington Notebook Traveler Executive	$112.00
02813	Keytronics Mac Pro 105 Plus Keyboard	$128.00
05831	Logitech Fotoman	$638.00
04258	Logitech MouseMan	$76.98
02561	Logitech Scanman Mod 32 Digital Darkroom	$295.00
06280	Lyte PowerPoint (Laser Light Pointer)	$98.98
06789	Hello! Music!	$298.00
99801	NEC Multisync 15 Mtr 3FGe	$629.00
99990	NEC Multisync 17 Mtr 5FGe	$1,188.00
05521	Pantone Process Color Imaging Guide 1000	$63.98
06216	Performantz 210MB Ext	$528.00
06574	Performantz 2400 Modem External	$75.98
06587	Performantz PowerBook 14.4 Fax/Modem Int	$289.00
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04817	PLI Infinity Floptical 3.5 Ext 21MB	$429.00
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04351	Supra Fax Modem Plus	$149.00
06363	Targus Business Traveler Standard Version	$198.00
06610	Targus Leather PwrBook Case	$99.98
06023	Targus Notepac Case Black	$35.98
05284	Targus Premiere Leather Notebook Case	$138.00
07454	Targus Universal Notebook Case	$68.98
04666	Texas Instruments Toner Kit	$47.98
02212	Thunderware LightningScan 400	$318.00
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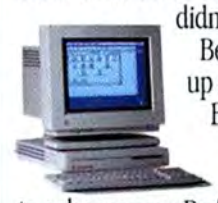

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ANDY IHNATKO

The Vacation Column

Real life doesn't always stop when a deadline hits — here are some updates.

My mandate for this column is obvious: Each month, I'm to provide two or three pages' worth of information and commentary on all concepts consumerological. It is inscribed in what I assume is Latin on the vellum parchment of commission I was issued upon agreeing to assume this seat.

So when I decide to devote an entire column to nothing more than a rehash of previous columns, some explanation is required. Most of you, I'm sure, are familiar with the concept of lead time: the inevitable and sometimes lengthy period of time between when I write this column and when it's published. My lead time is generally about three months, and if you do the math, you'll probably understand why I've chosen this particular column topic.

I want you to imagine me here in scenic beachside Falmouth, Massachusetts, where the water is a balmy 58 degrees with swells to 17 inches. To the left of my beach chair is a pile of P. G. Wodehouse books, Cerebus anthologies, and Blues Travelers audio CDs. To my right are two file folders, one containing follow-up information on previous columns, the other containing the explosive results of my eight-month investigation into a possible plot by the Trilateral Commission to oust John Sculley. Then imagine that I have a PowerBook in my lap and a column to write, and I think all will become clear.

Did I also happen to mention that one of the best clam shacks on the Cape is within walking distance?

Mandated Practical Advice

Nonetheless, I can't let a month go by without passing on some sort of practical information, so chew on this: If you Velcro a PowerBook to a lazy Susan, the result is a desktop computer console just like the ones in "Star Trek: The Next Generation." Try it for yourself — you can snap it around on your desk just like Captain Picard! And the PowerBook's trackball buttons are even the right size and shape and in the same location as the one mechanical button on its Starfleet counterpart.

For added realism, stick on some decals from the Playmates Lights & Sounds Enterprise 1701D toy. The warp-nacelle insignia and pinstripe fit perfectly above the Apple logo on the lid of your PowerBook, and the ship's registry designations perfectly match the curves of the trackball indentation above the screen. I have no idea why Playmates doesn't list this feature on the box. For me, it was a deal-clincher.

The Merdinger 140

To those of you who thoughtfully took my suggestions in last month's column to heart, my thanks. However, you can stop sending Apple your canned goods and old clothing: The company has finally done right, and Ilene's ordeal is now at an end. If you're just tuning in, last month I told the tale of Ilene Merdinger, her PowerBook 140, and the Herculean efforts she made over the course of six months to get Apple to properly honor her warranty.

Well, just as the September issue went to press, Apple's head PowerBook honcho, Randy Battat, actually started returning Ilene's and my phone calls, and a shiny new PowerBook 165c was second-day-aired to Ilene. PowerBook and owner are doing nicely, and I feel there's no need to embarrass Apple further by mentioning that the 165c had to be replaced within weeks because of a wonky screen. After all, Ilene made just one call to Randy and received another new PowerBook the very next day.

Mr. Battat was not eager to discuss the specific problems involved with Ilene's case, except to admit that Apple's customer-service procedures, designed to prevent such horror stories, had completely failed to work and that this whole ugly incident could lead Apple to rethink those procedures.

Still unanswered is the larger and more insidious question of what happens when a customer gets caught in The Path — a scary term familiar to folks such as Ilene who've learned firsthand that Apple customer-service reps tend to use it whenever something unpleasant is about to happen, as in: "Sorry, that particular solution isn't in The Path," "As soon as we exhaust The Path for this problem, we can try something else," or "The tour car has stalled, and we're in The Path of a hungry Tyrannosaurus Rex; should we be concerned?"

A small but disturbing percentage of Apple's customers finds that The Path leads inevitably to The Brick Wall, in the form of a senior customer-service representative who is convinced that the customer is acting like an unreasonable pest, insists on personally fielding all of that customer's phone calls,

and thereby ensures that absolutely no progress is ever made in the case. If you find yourself in such a situation, your only recourse, unfortunately, is to rationally and regularly pester the appropriate Apple vice presidents and hope they wake up long enough to give the aforementioned customer-service rep a good kick where it counts.

Writing letters to your friendly neighborhood consumer columnist doesn't hurt either.

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CIRCLE 130 ON READER SERVICE CARD.

Software Rights and Lefts

In March, I took a break from my Supreme Court clerkship to write a column in which I tried to decipher the common legal clauses found in most software-licensing agreements, explaining exactly what your rights were (and weren't) and offering a glimpse of how some such clauses (such as the "no copy" clause) are treated seriously by the publisher and others (the "no reselling" clause) can be readily dismissed.

Two readers sent me equally amusing responses. The first came from an author who outlined five major areas in which I had blown that topic completely and clearly didn't know what I was talking about. But seeing as four of the gentleman's points were, as my legal sources confirmed, complete nonsense and the fifth regarded (as I stated in the column) a matter of opinion, I politely turned down the reader's offer to send me his book for thirty dollars.

Because software is not sold but licensed and because it may or may not be classified as "goods and services," the Implied Warranty of Merchantability may not be applicable.

Jay Wood, however, spotted a possible serious bloomer and set me hip to an interesting point of law. Most software licenses contain a clause stating that the software is provided as-is, meaning basically that if it starts shooting off fireworks when you try to run it, that's your own tough luck. I suggested, however, that this clause was at least partially full of beans, because if a program were so full of bugs as to be *blatantly* unfit for sale, tenacious consumers could invoke the Implied Warranty of Merchantability (IWM) and get their money back. This was based on my reading of Article 2 of the Uniform Commercial Code (which contains the IWM). Jay pointed out that because software is not sold but licensed and because it may or may not properly be classified as "goods and services," the IWM may not be applicable.

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CIRCLE 115 ON READER SERVICE CARD.

There's been some robust debate on the subject (Jay cited some helpful articles), so if you're including this topic in a Perry Mason script you're writing, use discretion. My gratitude to Jay for bringing this to my attention.

Solid Gold

My May column of useful information about credit cards yielded a friendly letter from a vice president of a well-known credit-card issuer, who wished me to report that although, as I stated, most of the bonus features of a credit card (refusing payment to a shifty vendor, purchase protection, and the like) are indeed the province of the bank that issued the card and not of the card company (hence my advice to shop for features as well as interest rates when signing up), in general a Gold Card entitles you to use the credit-card company as Big Brother. Duly reported.

Trading Places

I omitted an increasingly important topic in my June column on selling your Mac: companies that offer trade-ins on new equipment. If you decide to go this route, keep in mind that you're probably settling for less than 75 percent of the fair selling price of whatever you're trading in. Also, before you send in your Mac for a trade, make sure the company mails you a written document describing the equipment you're getting and its source. A bad deal can turn even worse if the seller transplants your trade-in machine's existing hard drive and memory into your "new" Mac, thus forcing you in effect to pay for the same hardware twice.

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A Heartfelt Plea

Finally, when I first took on the mantle of consumer crusader, I mentioned that one of my goals with this column was to somehow manage to weasel my way into the cushy world of the entertainment industry. That was 13 months ago, and to date, my only success in this regard has been a color glossy promotional photo from the "Batman" animated series. Come on, people — surely one of you has an in and can get me onto the set of "Star Trek: The Next Generation." I mean, take a good look at that picture. Are you saying that John Tesch made a better Klingon than I would?

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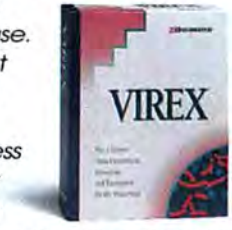

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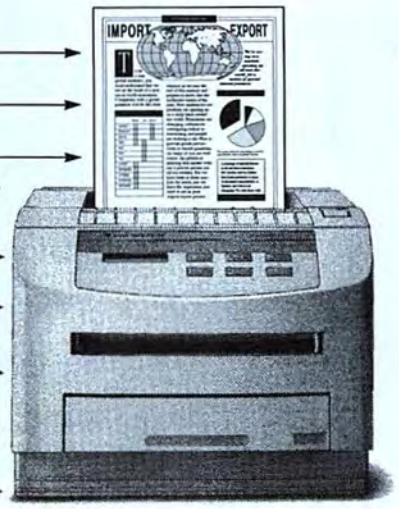

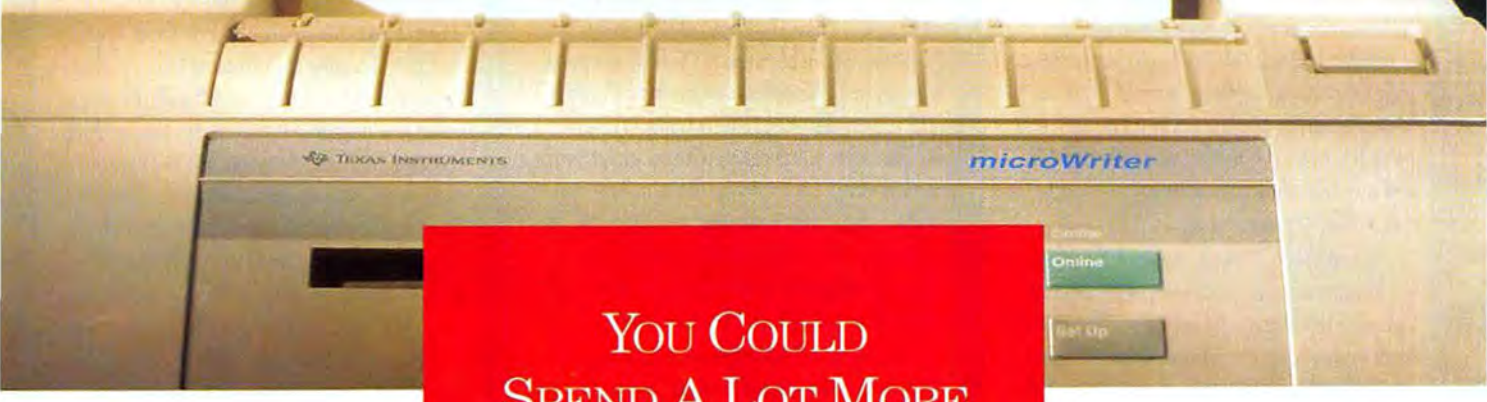

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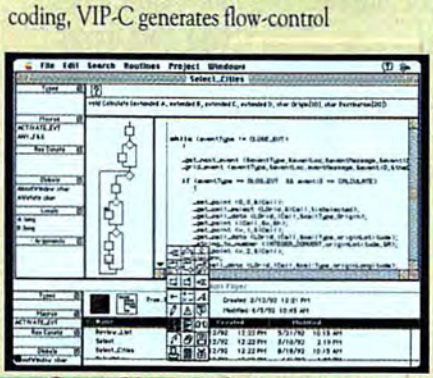

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Check and run your program at any time using the integrated interpreter. Track down elusive problems with the integrated debugger — even set, show, and lock debugging to a specific context routine. Also, Monitor mode executes and displays your code at reduced speed, showing code progression and results at the same time. It's like watching a movie of your application.

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The VIP-C Dispatcher simplifies program development by automating the main event loop. It acts as a central controller to manage program events by distributing tasks to different routines—all without any programming. User interface items—menus, dialogs, buttons, etc.—are created with integrated resource editors that automatically link user action to your code.

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Functions for the most frequently used features of the Mac interface have been prewritten and stored in a palette for instant use. With the click of a mouse you can lighten your programming workload and speed design and coding time by a factor of 10. In fact, you can write an entire program without any Toolbox calls, just by using VIP-C Functions.

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Compiler Hotlink

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VIP-C's suggested retail price is $495. But from now until October 31, 1993, MacUser readers can order VIP-C for only $295. Call Mainstay to order VIP-C today.

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MICHAEL SWAINE

Ghosts on the Screen

What do you get when you cross Hollywood with Silicon Valley? A multimedia creature feature.

At this year's Digital World conference in Beverly Hills, an annual gathering of multimedia's would-be movers and shakers, industry-shaking alliances were being formed. Whole new industries were being created. But the news didn't reveal the hidden agendas, and the public statements made by participating companies were often deliberately vague or misleading.

Let's look through some Illusion-O glasses.

Illusion-O, you may recall, was the brainchild of producer/director William Castle, a true multimedia pioneer who in the late '50s hung plastic skeletons over the heads of audiences at his films and wired their seats with electricity to add interest to his horror films. Illusion-O used special glasses to reveal ghosts moving about among the actors, pursuing their own hidden agendas.

The Player

The most impressive thing I saw at the show was a demonstration of a multimedia authoring system that was not a multimedia authoring system. Wait — let's try that again without the glasses.

ScriptX is the fruit of a year's efforts at Kaleida Labs, the Apple/IBM multimedia joint venture. The demo showed nifty multimedia products, such as a car catalog and a tour of Monterey Bay, running without modification on a Mac and on a PC.

So ScriptX is a hot new multimedia authoring system, right?

Wrong. Let's put the glasses back on.

Kaleida's agenda is not to compete with existing multimedia authoring systems such as Macromedia Director but rather to deliver a universal multimedia standard and dominate the market. The ScriptX language sits between the hardware platform on the one hand and the development tools and multimedia titles on the other. To the hardware, it provides whatever is needed to play the titles. To the titles, it's a virtual machine — a player.

You got it. Kaleida has created a market for its product to dominate. This is a great deal if you can pull it off, and a lot of market creation is going on in this confluence of industries.

Sleepless in Seattle

At the present rate, by the time this column sees print, every computer company will have some sort of deal with a telephone or cable company and a movie studio.

The biggest, still in negotiation as I write this, is Cablesoft, a Microsoft/Telecommunications, Inc./Time Warner alliance whose mission is to set a standard for interactive television. An executive of one of the firms, each of which is the largest in its field, said they don't want the alliance to be seen as a threat to other companies.

Now let's try it with the glasses on.

Truth is, the companies don't really know what interactive-TV services will succeed. Their idea seems to be to squat on as much territory as possible and wait for the market or the FCC to set the limits.

The folks at Microsoft, you may be certain, are staying up late thinking up new ways to dominate the world. Windows for TV. Windows for office equipment. Windows for hairdressers.

Life with Mikey

But that's just tools. The real money, entertainment folks know, is in content. "It's the content, stupid," says Todd Rundgren, and John Sculley apparently agreed, given some elements of Apple's complex agenda. But will new Apple CEO Michael Spindler take the content out of the agenda? Maybe the glasses will reveal what life with Spindler will be like.

Pragmatic Spindler is likely to be sensitive to the dangers of investing in content. Legendary game designer Chris Crawford has written eloquently about the false god of content. Creating good interactive content is hard, he says. Putting text and pictures onto a disk and adding some links does not an interactive multimedia presentation make. Meanwhile, the Voyager Company is putting text and graphics onto disks and adding a few links and doing very well. Is Crawford wrong? No, Voyager is just in a different market — one in which the rules are entirely different. The moral is, we don't know yet what the new content markets are.

Sears and IBM thought they were in the content business when they launched their on-line service, Prodigy. What they discovered was that the communication service they were providing was worth more to their customers than its content.

Bottom line: It's dangerous to ignore content and risky to invest in it. Let's hope Michael Spindler has a pair of Illusion-O glasses.

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**Check out the Quad 040 – a 40 MHz 68040 accelerator without the imaging package. Brochure 4002*

CIRCLE 93 ON READER SERVICE CARD.

NEW ON THE MENU

There's a new 40-40 club — and it doesn't include Jose Canseco. We're talking about the 40-megahertz 68040 Club. With Apple having released its first 40-megahertz 68040 Mac, the Quadra 840AV, in August, several accelerator manufacturers have jumped on the bandwagon and rushed out their own 40-megahertz products.

The company with the most to offer is **DayStar Digital** (404-967-2077), which has three 40-megahertz 68040 accelerators. The **Quad 040** ($1,899), for Centris and Quadra Macs, is the mainstay of the line. A PDS card, it includes a 128K static-RAM cache, which most other companies offer only as an option.

The **Image 040** ($2,699) is the same as the Quad 040, but it includes a pair of 64-megahertz AT&T 16A DSP (digital signal processor) chips for accelerating graphics filters. Unlike the AV Macs, DayStar's DSPs are not for real-time processing.

The **Value 040** ($1,799) brings the power of the Quad 040 to LC-class owners. Speeds range from 20 to 40 megahertz, with and without an FPU. The 40-megahertz version comes bundled with DayStar Digital's FastCache Turbo 128K cache card, and the cache card is additionally available as an option for the other Value models.

Applied Engineering's TransWarp 6440f (which also comes in 25- and 33-megahertz versions) also makes use of the PDS on the Macs from the IIci to the IIvx (including the Performa 600), and Applied Engineering offers an adapter for the IIsi. An optional 128K static-RAM cache card is also available for $189. The 40-megahertz version of the TransWarp 6440f, which includes an FPU, is $1,499, and the IIsi adapter goes for $49. 800-554-6227 or 214-241-6060.

Mobius Technologies' Speedster also uses the PDS on the Macs from the IIci to the IIvx (including the Performa 600) and also comes in 25-megahertz and 33-megahertz versions. The Speedster includes an FPU, and Mobius offers an optional 128K static-RAM cache card as a $199 add-on. The 40-megahertz version of the Speedster is $1,399. Adapters for the IIsi and other Macs are available for $49 each. 800-523-7933 or 510-654-0556.

Up to Date . . .

Quicken 4.0 is a major upgrade of Intuit's personal-finance package. New features include graphs, investment tracking, loan amortization — including fixed- and variable-rate loans — and a tie-in to VISA. 800-624-8742 or 415-322-0573. $69.95. **JAG II,** Ray Dream's anti-aliasing package, now supports a resolution-enhancement algorithm that lets it smooth graphics with restricted color palettes and black-and-white images. 415-960-0768. $129. **DeBabelizer 1.5,** Equilibrium Technologies' megatranslation and image-processing utility, offers NTSC-safe color remapping, batch processing for compositing images, Apple-events support, and optimization of 8-bit color palettes. 415-332-4343. $299. **Showplace 2.0,** Pixar's 3-D-scene-building package, includes NetRenderMan; Glimpse, for editing shaders; and DXF import. 510-236-4000. $695 ($495 for CD-ROM).

By Russell Ito

The new PowerBook 165 delivers the speed of a PowerBook 180 but at a lower price.

PowerBook 165

The new PowerBook 165 uses the same 33-megahertz 68030 as the top-of-the-line 180 but lacks the 180's FPU. So you get 180 speed but a passive-matrix display.

The 165 includes a full set of System 7.1 disks, and Apple is also including AppleTalk Remote Access client software plus demo versions of TouchBASE Pro, Dynodex 3.0, DayMaker 2.0, In Control 2.0, and Local Expert.

The 165 replaces the 160 and should sell for about the same price as the 160.

Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014; 408-996-1010. Price undetermined at press time.

WordPerfect, Take 3

We're in the middle of the latest word-processing wave. Claris' long-awaited MacWrite Pro got things rolling, and now WordPerfect Corp. has introduced the latest version of its word processor: WordPerfect 3.0 for Macintosh. This time out, WordPerfect's goal was to make the interface more accessible and to add several features.

WordPerfect 3.0's most notable interface change is the adoption of ruler and button bars, which make various functions available via buttons instead of through dialog boxes. The ruler bars include formatting, font, style, and layout buttons. A control bar that sits above the ruler bars lets you select which ruler bar, if any, you wish to view.

The button bars are essentially palettes of buttons that are context-sensitive, so you can have different button bars for documents, graphics, and equations. The button bars are customizable and can be positioned anywhere along the perimeter of a window (top, side, or bottom).

WordPerfect 3.0's most important new feature is the table-making capability. You can now create true tables in WordPerfect 3.0 instead of the specialized columns of previous versions. WordPerfect 3.0's tables let you perform cell-based functions on each cell, including paragraph-formatting, cell-merging (both horizontal and vertical), and mathematical functions. The Tables ruler bar makes creating tables easy, because you use a pull-down palette to create a table with the desired dimensions.

WordPerfect 3.0's beefed-up interface includes specialized ruler and button bars, and true tables.

Other new features include an equation editor for creating mathematical equations, drag-and-drop text, and a grammar checker (Grammatik 5 for Macintosh).

WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057; 800-415-5151 or 801-222-5800. $495.

At Ease Succeeds

Last year when Apple released At Ease, its simple alternative to the Finder, it seemed like a good idea that was missing just a few key features. With At Ease 2.0, however, Apple has filled those gaps and produced a solid Finder alternative that should find a home in shared-Mac environments.

At Ease 2.0 still uses a card metaphor for its interface: You get one card for your applications and another for your documents. Launching an application or opening a document is just a matter of clicking on an extra-large button on the appropriate card. The original version of At Ease, however, didn't let you create multiple sets of cards — a serious limitation. But the simple installer application, which walks you through the process, lets you create multiple At Ease "profiles" for users, so each user can have access to different applications. You can also restrict access to the Apple-menu items, so one user may have access to the Control Panels folder while another may not. You can also limit access to the hard disk, so some users may be forced to save to a floppy disk.

And for groups of users, Apple has taken At Ease even further. At Ease 2.0 for Workgroups offers a variety of network-administration capabilities, letting you create At Ease configurations for groups of users. The At Ease administrator can set up or update multiple Macintoshes from a single workstation over an AppleTalk network. The administrator can create At Ease configurations with all the restrictions found in the non-workgroup version, and At Ease for Workgroups also monitors who uses which application, for how long, and how often and then produces an activity log, which the administrator can use to tune the At Ease setups.

Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014; 408-996-1010. At Ease 2.0, $59; At Ease 2.0 for Workgroups, $259.

Now's PIM

The PIM wars continue, but Now Software's entry may top them all. Now's PIM, Now Contact, offers tiny file sizes, incredibly fast searches, and an integrated word processor for form letters and quick correspondence. It also integrates seamlessly with Now's scheduling package, Now Up-To-Date, so you can schedule appointments and retrieve contact information from either program. Now Contact requires a new version of Now Up-To-Date (version 2.1), but the upgrade is necessary only for Now Contact users.

The integration between Now Contact and Now Up-To-Date is accomplished

through Apple events, but you don't have to have both programs open for them to share and retrieve information. You can schedule an event in Now Contact, and if Now Up-To-Date is open, the event will be updated immediately. If Now Up-To-Date isn't open, your event is posted to a store-and-forward file that automatically updates your calendar the next time you launch Now Up-To-Date. Conversely, if you need to retrieve a contact's information while you're in Now Up-To-Date, you can get the contact information even if the contact file isn't open.

Some of Now Contact's other features include a fully editable list view and customizable views that allow you to decide how much contact information you want to view. You can also store your most frequently called contacts in a menu on the right side of the menu bar that's always accessible.

Now Contact lets you attach documents of any type to a contact and then open them directly from Now Contact, and you can even attach contact information and documents to events posted in Now Up-To-Date.

You can create categories for your contacts and assign keywords to them, making retrieving groups of contacts easy. Now Contact is expected to be available in the fourth quarter.

Now Software, 319 S.W. Washington Street, 11th Floor, Portland, OR 97204; 503-274-2800. $99.

Replicant Documents

Farallon Computing, which first postulated the concept of portable documents many years ago with its mythical DiskPaper product, has finally entered the market, following Adobe and No Hands Software into the fray. Replica is a cross-platform (Windows and Mac) portable-document technology that is significantly cheaper than Adobe's Acrobat and more sophisticated than No Hands' Common Ground.

Like its competition, Replica uses a two-pronged system: a driver that creates Replica versions of a document (similar to the way fax-modem software creates fax documents) and a freely distributable viewer that allows anyone to view and print the Replica document without benefit of the originating application or fonts.

Replica works primarily with TrueType fonts, capturing the TrueType-font information so the fonts scale and print smoothly. The fonts, however, aren't truly embedded, because Replica documents aren't editable. For Type 1 fonts, Replica captures 300-dpi bit-mapped images of the fonts. The Mac version of Replica should be available by the end of the year.

Farallon Computing, Inc., 2470 Mariner Square Loop, Alameda, CA 94501; 510-814-5000. $99 (single user); $749 (ten-pack).

— *Russell Ito*

Now Software's new PIM, Now Contact, offers small files, fast searches, and tight integration with Now's scheduler, Now Up-To-Date.

NewsLine

Reports and Analysis

Apple's Q3: Losses and Layoffs

CUPERTINO, CA — Apple Computer's third fiscal quarter was pretty much filled with bad news. In spite of a 7-percent increase in net revenues and a 20-percent increase in unit sales compared with the same period a year earlier, Apple's returns were well under market projections, and the company has undertaken a major reorganization to cut costs and overhead. To pay for the costs associated with the reorganization, which includes laying off 2,500 employees, Apple had to take a charge of $198.9 million after taxes against its third-quarter revenues, which translated into a loss for the quarter of $188.3 million — its biggest ever.

More Apple Price Cuts

CUPERTINO, CA — Still valiantly fighting the PC price wars, Apple Computer has slashed its list prices yet again. The price cuts affect desktop, portable, and server computers and range from as little as 7 percent to as much as 34 percent. The desktop-CPU price cuts apply only to the Quadra 950, which had its list price slashed by more than $1,600 for the 8-megabyte, no-hard-drive version. Similar reductions were also made to hard-drive-equipped models. The 950's price is being slashed in anticipation of the Quadra 840AV's release. The price of every configuration of the Workgroup Server 95 was slashed by $1,500. The PowerBook price cuts affected the entire line, with the exception of the Duos. Price cuts ranged from as little as $310 for a configuration of the PowerBook 180 to as much as $820 for the 4/40 PowerBook 160 and $1,060 for the 4/80 PowerBook 165c.

SuperMac Sticks with Gray

SUNNYVALE, CA — Although its bread-and-butter business remains in color products, SuperMac Technology has kept its foot in the monochrome world. SuperMac's Platinum displays come in full- and two-page versions. The Platinum 20 Full-Page Display meets the Swedish MPR II emission standards, and both monitors have antireflective coatings on their screens.

ChipSoft/MECA Merger Mugged

SAN DIEGO, CA — The merger of the two largest personal-finance-software companies in the U.S. — ChipSoft and MECA Software — fell apart after the U.S. Department of Justice threatened a civil suit. The merger, the Justice Department charged, would have let ChipSoft control pricing in the tax-preparation-software market by dominating as much as 80 percent of the market.

Active-Matrix Tariff Tossed

WASHINGTON, DC — The U.S. Department of Commerce has revoked the 63-percent tariff on active-matrix display panels it originally instituted to protect the fledgling U.S. active-matrix industry. Laptop-computer manufacturers, including Apple, had fought the tariff, claiming that the few U.S. panel makers couldn't produce screens in the volumes the computer industry needed. As a result, Apple and other laptop manufacturers were forced to build their notebook computers overseas, because the tariff affected only uninstalled active-matrix panels. With the repeal, Apple has announced that it plans to begin manufacturing active-matrix notebook computers in the U.S. as soon as possible.

— *Russell Ito*

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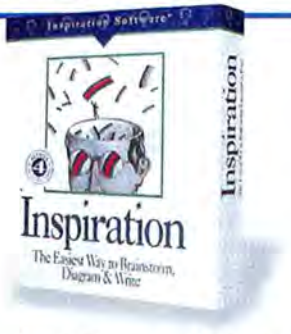
11269 Inspiration 4.0..... 159.



★**Inspiration Software ... 30 day MBG**
11269 *Inspiration 4.0*—Easiest way to brainstorm, diagram & write! Offers powerful diagrams & presentation visuals to transform concepts into stories, proposals & reports. Clearly communicate even complex info ..... **$159.**

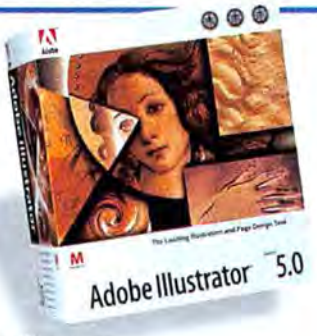
★ **Intuit ... 30 day MBG**
11845 Quicken 4.0..... *special* 39.
★ **Lotus Development ... 60 day MBG**
11580 Special: 1-2-3 Mac & DeltaGraph Pro Bun. 99.
MECA
2796 Managing Your Money 5.0 ..... 32.
★ **Microsoft ... 30 day MBG**
Upgrades available ..... call
2884 Works 3.0. 155. 3669 Excel 4.0..... 295.
4902 Word 5.1.. 295. 2878 PowerPoint 3.0 295.
2565 Project 3.0 445. 5454 MS Office 3.0.. 475.
★ **Niles & Associates ... 30 day MBG**
4602 EndNote 1.5.1.. 85. 8010 Plus 1.3 .. 142.
★ **Nolo Press ... 30 day MBG**
2981 WillMaker 4.0 35. 1204 Living Trust 43.
★ **Now Software ... 30 day MBG**
1793 Now Up-To-Date 65. 2366 *(10 pack)* 519.
★ **Palo Alto Software ... 60 day MBG**
6975 Business Plan Toolkit 4.0 ..... 75.
★ **Pastel Development ... 30 day MBG**
1785 DayMaker 2.03 ..... 79.
★ **Peachtree ... 60 day MBG**
9584 Acct. for Mac 115. 9588 Insight Acct. 299.
★ **Personal Training Sys. ... 60 day MBG**
Training for System 7, Excel, 1-2-3 Mac, Persuasion, FileMaker Pro, PageMaker, Illustrator, FreeHand, Word, PowerPoint, WordPerfect, QuarkXPress, ClarisWorks MS Works, Photoshop & Quicken.. ea. 49.
★ **Portfolio Systems ... 30 day MBG**
7992 DynoPage 2.0 or 6916 Dynodex ..... *ea.* 49.

★**ProVUE ... 60 day MBG**
11540 *PowerTeam*—Seven organizer tools in one package! Mailing lists, correspondence, a phone book that auto dials, a versatile calendar, financial tracking, and more..... **$95.**

★ **ProVUE ... 60 day MBG**
4582 Panorama II 239. 11540 PowerTeam 95.
★ **Reality Technologies ... 30 day MBG**
6929 WealthBuilder 2.0 ..... 69.
★ **Spinnaker Software ... 30 day MBG**
7696 Calendar Creator or 7694 Address Book + 40.
State Of The Art Accounting
3041 Mac P & L..... 175.
★ **Symantec ... 30 day MBG**
7636 ACT! 269. 10317 ACT! Comp. Upgrd. 79.
★ **Teleware ... 30 day MBG**
7616 M.Y.O.B. 3.0 109. 10726 BESTBOOKS 55.
★ **WordPerfect ... 60 day MBG**
3800 WordPerfect 2.1.4 125. 4711 Upgrd. 75.
10773 WordPerfect Works Bundle..... *special* 99.
★ **WordStar ... 30 day MBG**
7664 WriteNow with Correct Grammar ..... 42.

GRAPHICS & DESIGN

★ **Abracadata, Ltd. ... 30 day MBG**
12083 Design Your Own Railroad..... 39.
Architecture, Interiors or Landscape *ea.* 48.
Adobe Systems (full line available)
12724 Acrobat Starter Kit *(10 User)*..... 669.
12732 Acrobat Exchange *(1)* 125. 12731 *(5)*. 489.
2224 Acrobat Reader *(50 user)*..... 1559.
10167 Adobe Dimensions 93. 5001 Streamline 119.
10289 SuperATM 89. 4145 Adobe Premiere 429.
11843 Illustrator 5.0 368. 6644 Photoshop 548.
★ **Aldus ... 30 day MBG**
6674 Personal Press 99. 2461 Gallery Effects 128.
10176 Fetch..... 199. 7541 IntelliDraw..... 194.
3506 SuperPaint 99. 4751 Persuasion..... 325.
1330 FreeHand 394. 11548 PageMaker 5.0 579.
Altsys
1983 EPS Exchange 89. 1195 Fontographer 258.



Adobe Systems
11843 *Adobe Illustrator 5.0*—More innovations in illustration and page design! Directly manipulate overlapping areas of objects. Combine, divide, slice, dice, or crop. Create new objects and special effects ..... **$368.**

★ **Apple Computer ... 30 day MBG**
3008 Apple Font Pack ..... $74.
Broderbund Software
3572 Kid Pix 1.2.. 34. 7293 Companion ..... 23.
1427 Print Shop... 35. 6281 TypeStyler 2.1 126.
Caere
4930 OmniPage Professional 649. 7705 Direct . call
★ **Claris ... 30 day MBG**
2518 MacDraw Pro 275. 8007 Claris CAD 599.
★ **Claris Clear Choice ... 30 day MBG**
11203 Brushstrokes 95. 11473 Comp. Upgrd. 75.
★ **DeltaPoint ... 60 day MBG**
11580 Special: 1-2-3 Mac & DeltaGraph Pro Bun. 99.
★ **Deneba Software ... 30 day MBG**
11055 artWORKS... 99. 3227 Canvas 3.0... 259.
★ **Eastman Kodak ... 30 day MBG**
12270 Photo CD 29. 12265 ColorSense Mgr. 329.
★ **Expert Software ... 30 day MBG**
4870 Expert Color Paint, 1737 Landscape, 8619 Home, or 1731 Office Design *ea.* 29.
Fractal Design
1068 Sketcher 1.0 ..... 93.
10402 Painter 2.0 265. 1564 PainterX2 *special* 79.
Gold Disk
12279 Astound 95. 12276 Animation Works 115.
Graphsoft
11723 BluePrint... 199. 11724 MiniCad +.. 589.
Gryphon
4202 Morph 1.1 ..... 89.

★**Central Point Software ... 30 day MBG**
11882 *MacTools 2.0*—1992 *MacUser*'s Editors' Choice Award Finalist for *Best Protection Program.* New Version offers auto backup, data recovery and virus protection. Now bundled with *Now Utilities* **$99**

★**Fifth Generation ... 30 day MBG**
5342 *MacPak 1.0*— Includes AutoDoubler, CopyDoubler Lite, DiskLock PB, FastBack Express, DiskTools, and PIMs which can be accessed through the popular Launch Pad Utility. Indispensable utilities collection **$96.**

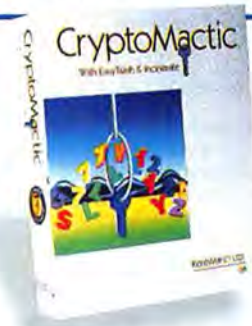
★**Manhattan Graphics ... 30 day MBG**
4990 *Ready,Set,Go! 6.0*—Desktop publishing that puts professional layout capability within every user's reach. Includes grids, an electronic pasteboard, precision text & object rotation, & a powerful typographic word processor **$219.**

★ **Letraset ... 30 day MBG**
Letraset FonTek Library - Full line avail. call
Light Source
11059 Ofoto 2.01 ..... 275.
★ **Manhattan Graphics ... 30 day MBG**
4990 Ready,Set,Go! 6.0 *(August '93)* ..... 219.
Postcraft International
2210 Effects Specialist 2.0 ..... 89.
Quark
7612 QuarkXPress 3.1 ..... 549.
★ **Ray Dream ... 30 day MBG**
12264 JAG II *(increase image quality)* ..... 89.
4761 Designer 199. 12280 addDepth 1.0.2 125.
★ **Specular International ... 30 day MBG**
4962 Infini-D 2.5 ..... 699.
★ **Synergy Software ... 30 day MBG**
6617 KaleidaGraph 3.0 ..... 149.
★ **T/Maker ... 30 day MBG**
ClickArt *(bitmapped)*.. 34. or *(EPS)*... 55.

PROGRAMMING

★ **Abbott Systems ... 30 day MBG**
11735 FindAll 1.0 36. 5236 CanOpener 2.0 59.
2515 Calc+..... 36. 9578 Kaleidoscope... 25.
★ **Aladdin Systems ... 30 day MBG**
7410 StuffIt SpaceSaver 3.1 34. 6740 Deluxe 65.
★ **Apple Computer ... 30 day MBG**
1206 At Ease 44. 7072 QuickTime Starter Kit 105.
1074 System 7.1 *(with free PCTV video)* ..... 79.
★ **Berkeley Systems ... 30 day MBG**
1502 The Disney Collection Screen Saver..... 28.
5737 After Dark 2.0x *(30+ screens!)* ..... 28.
2198 More After Dark.. 23. 2196 Bundle.. 39.
3392 Star Trek: The Screen Saver..... 34.
★ **Binary Software ... 30 day MBG**
12475 Bloopers 19. 11989 Square One 1.5 45.
Casa Blanca Works
1593 Drive 7 2.3 ..... 49.
★ **CE Software ... 60 day MBG**
1727 CalendarMaker 39. 8024 QuicKeys^2 89.
★ **Central Point ... 60 day MBG**
10595 Safe & Sound 32. 11882 MacTools 2.0 99.
★ **Claris Clear Choice ... 30 day MBG**
11205 Retrieve It! ..... 60.
★ **Dantz Development ... 30 day MBG**
9115 DiskFit Direct 1.0... 29. 3393 Pro .... 72.
5255 Retrospect.. 147. 7945 Remote 2.0.. 259.
★ **Datawatch ... 30 day MBG**
4803 Virex/Mac 57. 11486 SuperSet Utilities 85.
★ **Fifth Generation ... 30 day MBG**
5342 MacPak 1.0.. 96. 3955 Suitcase 2.1.2 53.
7404 DiskDoubler 52. 4838 AutoDoubler ... 58.
12298 AutoDoubler/DiskDoubler Combo ..... 85.
10398 CopyDoubler 39. 7704 Public Utilities.. 98.

FWB, Inc.
2999 Hard Disk ToolKit $125. 7929 Personal $49.
★ **Golden Triangle ... 30 day MBG**
11731 TimesTwo *(1.44)*.. 95. 11773 *(800K)*.. 95.
★ **Harvard Systems Corp. ... 30 day MBG**
11193 Kai's Power Tools for Photoshop ..... 89.
★ **Inline Design ... 30 day MBG**
7068 INITPicker 49. 1740 Redux Deluxe 1.63 49.
★ **Kent Marsh Ltd. ... 30 day MBG**
9513 FolderBolt 71. 1839 NightWatch II ..... 89.
1725 CryptoMactic ..... 55.
★ **Kiwi Software ... 60 day MBG**
11736 Screenscapes ..... 34.
★ **Logical Solutions ... 30 day MBG**
10169 7th Heaven 2.5 67. 11191 Chameleon 39.
MicroMat Computer Systems
3732 MacEKG II 89. 11794 MicroProbe ADB 69.
2998 Drive Tech ..... 41.
★ **No Hands Software ... 30 day MBG**
11195 Magnet 85. 11194 Common Ground 122.
★ **Now Software ... 30 day MBG**
12303 Now Compress.. 65. 12304 Now FUN! 45.
6925 Now Utilities 4.0 84. 8471 *(10)* ..... 775.
★ **Quadrangle ... 30 day MBG**
5288 Lights Out Sports Fans ..... 35.
SNA, Inc.
10594 OffLine ..... 62.
Stac Electronics
11568 Stacker for Mac ..... 65.



NEW!

★**Kent Marsh Ltd. ... 30 day MBG**
1725 *CryptoMactic*—Invincible encryption built-into the desktop. Optional use of override makes its security impenetrable. Incl. EasyTrash & Incinerate, for trashing or shredding w/a single keystroke. See line listings for addt'l prod. **$55.**

MicroMat Computer Systems
3732 *MacEKG II*—Performs diagnostic tests to inform you of problems..... **$89.**
11794 *MicroProbe ADB*—Quickly tests Mac's ADB as well as other vital components.... **69.**
2998 *Drive Tech*..... **41.**

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★**Quadrangle ... 30 day MBG**

5288 *Lights Out Sports Fans*—A Major League Baseball screen saver with 10 exciting game plans. Watch your favorite Major League Baseball team logos in action while they prevent burn-in. Includes all 28 teams.... **$35.**

★ **Symantec ... 60 day MBG**
5176 SAM 3.5 64. 6748 Norton Utilities 2.0 95.
11727 C++ 6.0 for Mac 339. 2688 THINK C 6.0 199.
★ **Teknosys ... 30 day MBG**
5203 Help! 88. 12291 Competitive Upgrade 49.
UserLand Software
4753 Frontier 2.0 ..... 185.

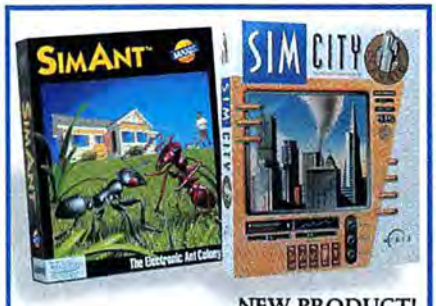
LEARN & PLAY

ActiVision
1039 Shanghai II 29. 1134 Lost Treasures Vol. I 40.
Broderbund Software
Carmen Sandiego Series *(CP)*..... *ea.* 29.
8285 Where/World Carmen Sandiego Deluxe 47.
11561 TRISTAN Pinball ..... 35.
Buena Vista Software
1711 Heaven and Earth ..... 34.
★ **Callisto ... 30 day MBG**
11369 Super Mines 29. 11756 Super Maze Wars 39.
★ **Carina ... 30 day MBG**
7761 Voyager II, the Dynamic Sky Simulator.. 99.
★ **Centron Software ... 30 day MBG**
5910 Crossword Creator 39. 8524 Casino Master 45.
★ **Davidson & Associates ... 30 day MBG**
10953 Kid Pictures 19. 2574 MathBlaster Plus 34.
7942 Kid Works 2 34. 1076 Zoo Keeper..... 34.
Delta Tao Software
2536 Spaceward Ho! or 2439 Strategic Conq. 36.
★ **Edmark Corporation ... 30 day MBG**
7155 Kid Desk 24. 7318 Millie's Math House 29.
1078 Bailey's Book House ..... 29.
Electronic Arts
1907 PGA Golf 38. 2805 Tournament Course 18.
Graphic Simulations
8083 Missions at Leyte Gulf *(req. Hellcats)*.... 20.
4756 Hellcats Over the Pacific 1.0.3 ..... 38.

★**Davidson & Associates ... 30 day MBG**

7942 *Kid Works 2*—Gives kids all the tools they need to create & hear their own stories!. **$34.**
1076 *Zoo Keeper*—Kids learn about all sorts of wild & wonderful animals. Real-life photos, sounds, and animations ..... **34.**

★ **Great Wave ... 30 day MBG**
6693 KidsMath 2.0 or 2276 Kid's Time .. *ea.* $25.
8527 NumberMaze or 3471 DaisyQuest.. *ea.* 35.
★ **HyperGlot Software ... 30 day MBG**
(Language Tutorials: full line available)
★ **Inline Software ... 30 day MBG**
1562 3 in Three... 31. 11188 Pax Imperia... 35.
Interplay Productions
1615 Mario Teaches Typing..... 29.
Bridge Deluxe or Out Of This World ea. 34.
★ **Learning Company ... 30 day MBG**
Reader Rabbit Series..... *ea.* 34.
★ **Leister Productions ... 30 day MBG**
7126 Reunion 3.0..... 115.
★ **Maxis ... 30 day MBG**
11272 SimAnt..... 29. 11270 SimLife..... 39.
11629 SimCity Supreme Bundle ..... 45.
5279 SimCity Classic 24. 11628 A-Train Bun. 45.
★ **MECC ... 30 day MBG**
3959 Word Munchers 18. 3963 Oregon Trail 28.
★ **Microsoft ... 30 day MBG**
2868 Flight Simulator 4.0 *(CP)*..... 42.
Psygnosis
11562 Lemmings..... 35.
Software Toolworks
4619 Mavis Beacon Typing 2.0 *(CP)*..... 29.
5201 The Miracle *(piano teacher)* ..... 349.
★ **Spectrum Holobyte ... 30 day MBG**
3464 Tetris ..... 23. 4835 Super Tetris .... 29.
3017 Wordtris 1.0 29. 9113 Falcon Color.... 39.



NEW PRODUCT!

★**Maxis ... 30 day MBG**

5279 *SimCity Classic*—You're the planner. Fight urban blight and build a prosperous city, or lose your precious citizens! ..... **$24.**
11272 *SimAnt*—Ants. You've squashed, sprayed, cursed, and bombed them. Now *be* them! **29.**

StudyWare
ACT, GMAT, GRE or SAT Prep ..... *ea.* 29.
Velocity
11538 Spectre Supreme 40. 11537 LAN 2-Pak 52.
Virgin Software
Scrabble or Monopoly *ea.* 19. 1746 Risk 29.

VIDEO AND SOUND

Articulate Systems
Voice Navigator SW (Head/Desk Mike) *ea.* 319.
Coda Music Technology
8188 MusicProse 2.1 189. 5604 Finale 3.0 549.
Macromedia
7651 Action Mac 369. 5087 Director 3.1.... 799.
4598 MacRecorder Sound System PRO..... 255.
★ **Media Vision ... 60 day MBG**
12577 Pro AudioSpectrum for LC ..... 299.
11738 Pro AudioSpectrum 16 NuBus ..... 329.
Nova Development
11101 Kaboom! 29. 12278 w/More Kaboom! 40.
Opcode Systems
12230 Midi Translator II.. 42. 12225 Vision.. 339.
12226 Audioshop 1.05 61. 12227 Musicshop 1.0 99.
Passport Designs
10362 Passport Producer 95. 8250 Encore 379.
Radius
1738 PrecisionColor Pivot *(reqs. interface)*.. 999.
RasterOps
8944 24STV 799. 3043 Paint Board Turbo 1199.
3048 20/20 Multiscan Color 20" Display..... 1499.

★**Berkeley Systems ... 30 day MBG**

1502 *The Disney Collection Screen Saver*—Incl. over 15 well-known Disney characters.. **$28.**
3392 *Star Trek: The Screen Saver* ..... **34.**
5737 *After Dark 2.0x (30+ screens!)*..... **28.**
2196 *After Dark & More After Dark Bundle* **39.**

Sigma Designs
1565 MovieMovie 299. 11541 ErgoView 17 1199.
★ **Sony ... 60 day MBG**
10530 CPD-1430 14" Multiscan Trinitron Monitor 689.
10529 CPD-1730 17" Multiscan Trinitron..... 1149.
★ **SuperMac/E-Machines ... 30 day MBG**
4122 VideoSpigot LC 245. 4164 *(for NuBus)* 375.
7677 SuperMatch 17" Color 999. Trade Up.. call
12704 20" Plus Color..... 1799.
4720 21" Platinum Two-Display ..... 1099.
10321 ColorPage T16II ..... 1299.
11983 Thunderstorm 619. 11982 Thunder/24 2299.
9066 Futura SX.... 369. 9065 Futura MX... 649.

CD-ROM

Against All Odds
10330 From Alice To Ocean Book *(w/CDs)*..... 39.
Broderbund
3730 Just Grandma and Me..... 34.
9059 Arthur's Teacher Trouble..... 41.
CD Technology
2321 CD-ROM Caddy.. 11. 2533 *(5 pack)*. 49.
4084 America Alive! 75. 8057 Porta Drive 619.
FWB, Inc.
10198 CD ToolKit.. 49. 11582 HammerCD.. 739.
★ **Highlighted Data ... 30 day MBG**
1488 Elec. Map Cabinet or 7771 Webster's Dict. 149.
Interplay Productions
7111 Battlechess CD-ROM Enhanced..... 45.
★ **Media Vision ... 60 day MBG**
CD-ROM Multimedia Kit *(Sony or NEC)* 699.
★ **Microsoft ... 30 day MBG**
1741 Musical Instuments on CD-ROM..... 55.
NEC
6577 CDR-38 Portable CD-ROM Drive..... 369.
6582 CDR-74-1 CD-ROM Drive ..... 599.

★**Media Vision ... 60 day MBG**

Multimedia Kit Mac—Get a super-fast CD-ROM drive, speakers, the Multimedia Encyclopedia, Battle Chess, Out of This World, & the CD-ROM ToolKit, at a great price! (Sony or NEC) **$699.**
12577 *Pro AudioSpectrum for LC* ..... **299.**

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★Lotus/DeltaPoint ... 60 day MBG

11580 *1-2-3 for Mac 1.1/DeltaGraph Pro Bundle*—Get Lotus' easy-to-use, full-featured spreadsheet, and DeltaPoint's comprehensive, flexible charting and presentations package, both for one great price! While supplies last..... **$99.**

★Kensington ... 30 day MBG

9585 *Notebook Traveler Executive*—Kensington cases feature internal PVC supports, closed-cell padding, removable shoulder strap, and a protective wire frame to maintain shape .. **$115.**

1092 *Deluxe*..... **75.** **11552** *Compact*... **49.**

★SuperMac Technology ... 30 day MBG

12027 *SuperMatch 17" Multimode Trade Up*—Send us your Apple 13" Color Monitor (we'll pay the postage) & save *up to $275 off* our $999 regular price on a SuperMatch 17" Multimode Color Display..... **call for details***

Key Tronics
6974 Mac Pro + Kybrd. 139. 1070 TrakPro 219.
★Logitech ... 30 day MBG
1671 MouseMan... 77. 1672 TrackMan..... 55.
★Microtek Labs, Inc. ... 30 day MBG
5438 ScanMaker II w/Adobe Photoshop LE. 899.
5441 ScanMaker IIxe w/Photoshop *(full pkg.)* 1199.
★Mouse Systems ... 30 day MBG
7520 Little Mouse ADB or 8001 Plus ..... *ea.* 68.
9471 A³ Mouse..... 74.
NEC
2933 SilentWriter Model 95 with Fax..... 1199.
★Sophisticated Circuits ... 30 day MBG
8009 PowerKey 2.01. 75. 8008 Remote ..... 32.
Thunderware
4994 LightningScan 400 319. 3107 Pro 256 489.
★WACOM ... 30 day MBG
11259 The ArtZ *(6" x 8" Graphics Tablet)*..... 325.

UPGRADES & DRIVES

SIMMs ... *Various, incl. manual & video* call
★Applied Engineering ... 30 day MBG
8361 1.44 MB HD Drive 229. 5290 Plus Drive 299.
10282 TransWarp 4300 *(40 MHz, no FPU)*.... 389.
★DayStar Digital ... 30 day MBG
Does not include optional math chip.
1613 FastCache 040 *(Quadra 700 or 900)* .. 279.
11987 FastCache 040 *(Quadra 700, 800, 900, 950)* 409.
1312 Turbo 040i 20 MHz 719. 1302 33 MHz 899.
PowerCache for SE/30, II, IIx, IIcx, IIci, IIsi, LC 40 MHz ..... 539. 50 MHz..... 679.
FWB, Inc.
9529 PocketHammer 170 599. 2314 PH 240 739.
12011 PH 525 1349. 7991 hammer1000FMF 1749.
IOMEGA
6499 90 MB Transportable *(reqs. interface)*. 659.
2467 90 MB Gold Std. Rem. Cart. *(Qty. 3)*... 379.
8781 Mac Transportable 90 PRO..... 499.
10499 Transportable MultiDisk 150..... 799.
MASS Microsystems
3678 120 MB Port. HD 345. 3663 210 MB 499.
★MDS Drives ... 60 day MBG
MDS 44 SyQuest w/SW & cartridge *ea.* 389.
MDS 88... *ea.* 489. MDS 88c... *ea.* 539.
11881 MDS 120 MB Fixed Drive *(zero footprint)* 319.
11880 210 MB..... 439. 11863 540 MB ..... 999.
11963 MDS 120 MB Fixed Drive *(upright)* ..... 349.
11962 210 *(upright)* 469. 11961 540 *(upright)* 999.
Peripheral Land, Inc. (PLI)
6432 3½" Optical Media 52. 9737 *(10 pak)* 499.
4645 PLI Infinity MO 3.5" Optical Drive ..... 1449.
8327 PLI Infinity 40 Turbo 479. 9752 Inf. 88 579.
11470 PLI Infinity 88/RW 44..... 649.
2864 PLI Infinity Floptical Drive *(21 MB)*..... 399.
2865 Floptical Cart. *(21 MB)* 29. 2899 *(10 pk.)* 259.
★SuperMac/E-Machines ... 30 day MBG
2256 Thunderstorm Deluxe..... 899.
10322 PowerLink Presentor..... 439.

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★BASF ... 30 day MBG
11803 3½" HD Disks *(40)* w/free T-120 *special* 45.
★Fuji ... 60 day MBG
4863 3½" HD Disks *(20)* with storage case.... 24.
★KAO Infosystems ... 60 day MBG
11870 3½" HD Disks *(10)*.. 12. 11869 *(30)*.... 35.
★KOMAG ... 30 day MBG
10439 3½" Optical Media.. 39. 10442 *(5)*... 175.
★Sony ... 60 day MBG
3298 3½" HD Disks *(10)*. 13. 6495 *(50)*..... 50.
1603 DG60M..... 15. 2520 DG90M..... 19.
1895 QD2120..... 19. 11524 3.5" Opt. Media 50.
★SyQuest ... 60 day MBG
5912 44 MB Cartridge *(1)*... 65. 5528 *(5)* .. 310.
3603 88 MB Cartridge *(1)*.. 100. 5530 *(5)* .. 480.

ACCESSORIES

★Apple Computer ... 30 day MBG
9773 StyleWriter Ink Cart. 19. 8499 *(3 pack)* 55.
7748 Personal LaserWriter Toner Cartridge .. 65.
1115 LaserWriter II Toner Cartridge..... 85.
★Avery ... 60 day MBG
5392 Avery 5196 (3½"-Disk Labels-Laser)..... 29.
★I/O Design Cases ... 30 day MBG
8812 Ultimate Classic 60. 1941 Ultimate LC 89.
1473 PowerBook Attache Case *(burgundy)*. 149.
★Kensington *(full line)* ... 30 day MBG
2559 Apple Security Kit 33. 4973 Pwr. Tree 20 24.
★Moustrak ... 30 day MBG
Star Trek Mouspads..... *ea.* 14.
★Targus ... 60 day MBG
7369 Notepac 35. 7370 Business Traveler 199.

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3052 *Interface Kit (required for above)* ..... **325.**

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PRESENTATIONS

Astound

Gold Disk's multimedia presentation program is new, but it takes business users over familiar ground.

Astound rewrites the rules for multimedia-presentation software. With an intuitive slide-show interface, it provides an easy transition to multimedia for business-oriented users of static-slide-presentation programs such as Aldus Persuasion and Microsoft PowerPoint.

Astound 1.0
Published by: Gold Disk, Inc., P.O. Box 789, Streetsville, Mississauga, ON L5M 2C2, Canada; 416-602-0395.
List Price: $399.

Astounding Results

What sets Astound apart from other multimedia-presentation programs is its ability to make multimedia resources as easily accessible as the titles and bullet points in Persuasion and PowerPoint. You simply click and drag within a slide to create a box and then use Astound's tools to place a QuickTime movie or animated graphic (an AnimationWorks or PICS file) within the box. To add sound to a slide, you load a sound file into memory and click on a button.

Businesspeople who rely heavily on outliners to create their presentations will feel right at home with Astound. In Outline view, Astound provides an efficient outliner for entering and editing text. The outliner supports four formatting levels for creating title and bullet-text styles. A spelling checker with customizable dictionaries is available in both the Outline and the Slide views.

Astound also enables you to create interactive presentations with buttons that trigger events, stop or restart a show, or move you to another slide. You can assign interactive properties to any object in your presentation.

To add movement to objects on a slide, Astound provides rudimentary animation tools. You can set paths so objects move onto and off the screen as your presentation plays.

Good Timing

To the familiar slide, outline, and slide-sorter views typical of traditional presentation programs, Astound adds a Timeline window, which lets you coordinate the timing of the multimedia objects and transitions in your presentations. Event timing is defined during each slide in seconds or as a percentage of a slide's total length. For example, a QuickTime movie may start four seconds into a ten-second slide. That's also defined as 40 percent of the total slide duration. If you change the overall duration of a slide, Astound automatically modifies event lengths according to the percentages.

Each object in an Astound Timeline is represented by a bar with three adjustable segments. The segments represent the timing for entry, duration, and exit. You can control the timing by grabbing handles within the bar and dragging them.

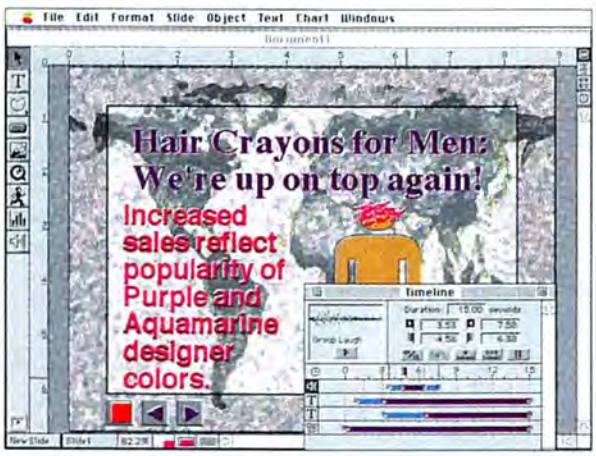
With few exceptions, those already familiar with Persuasion or PowerPoint will grasp Astound's slide-based event timing more easily than the real-time synchronization used by Passport Producer, a program tailored to multimedia experts. However, Astound's method makes it impossible to stretch multimedia events over several slides. So, for example, you can't add continuous background music to your entire presentation. We also found the handles hard to see and grab. In general, however, Astound wins big points for making event timing easier to master than in any other multimedia-presentation program.

Astound provides limited editing facilities for QuickTime movies and digital audio. You can identify a segment of a QuickTime movie for playback and then loop it, either from end to start or forward and then backward. You can also insert markers to begin playback from any point in the movie.

Astound can import digital audio samples from SND resources, AIFF, AIFFc (compressed format), SoundEdit, Amiga IFF, and Windows WAV files. You can also record digital samples from within the program. Rudimentary sample editing and looping are available. Most useful is the ability to record and coordinate a narration track in real time as you play back your completed presentation. Unfortunately, Astound doesn't support playback of MIDI files.

Double Duty

Its multimedia muscle aside, we discovered that Astound also makes an excellent static-presentation program. It can



Astound's slide-based approach to creating multimedia presentations will make business people feel right at home. The Timeline window (lower right) lets you coordinate the timing for the objects on a slide.

create overhead transparencies, 35mm slides (PostScript is supported), and stand-alone click-and-play Macintosh- or Windows-based presentations. You can also create handouts from your slides and print them.

The package comes with 35 slide-template collections customized for slides and overheads as well as for color-screen displays and nine-inch monochrome and PowerBook displays. The templates aren't outstanding, but they do give your work a consistent, professional appearance. You can edit existing templates or create your own and save them in libraries. If you've already amassed a substantial collection of Persuasion or PowerPoint slides, you can import them into Astound and enhance them with multimedia elements.

Text creation in the Slide view is convenient and comprehensive. Astound provides full control over font, style, size, kerning, leading, justification, and color.

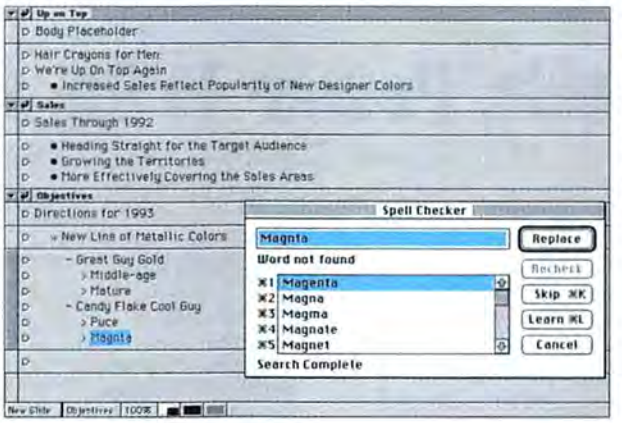
Take Note

You can even attach notes to slides to document your efforts or to provide additional text for handouts. Astound can also display notes on a second, "teleprompter" monitor as you're giving your presentation. Astound's multiscreen capabilities let you send separate elements of a presentation to separate screens for multiple-monitor shows.

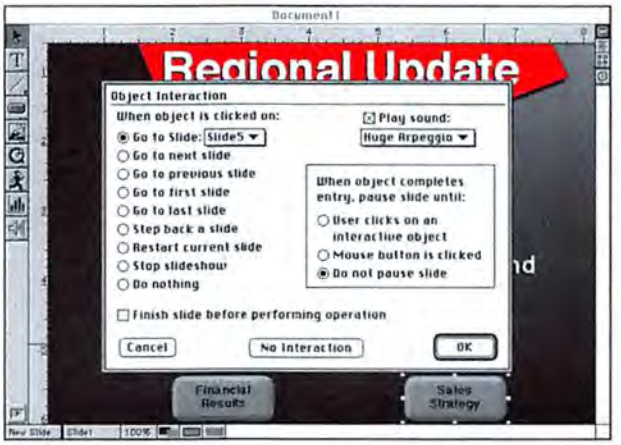
One highlight is Astound's charting feature. You can enter data directly into an Astound data sheet or import it from Excel or Lotus 1-2-3 spreadsheets. Charting options include basic pie and bar charts, scatterplots, and 3-D charts.

Astound imports and scales PICT, TIFF, GIF, PCX, EPS, Photo CD, JPEG, and BMP images, which you can use as graphic elements or as slide backgrounds. If you're artistic, you may want to use the pop-up palette of drawing tools, which lets you draw and edit object-oriented polygon or freehand shapes or develop pictographs for use with charts.

Astound breathes life into all of your presentations, with a stunning array of transitions. Slides dissolve, zoom, and splatter into place. Text drops or sweeps into a slide letter by letter, word by word, or paragraph by paragraph. Astound's transition effects are breathtaking, and they add eye-grabbing intensity to any presentation.



Astound's outliner supports four hierarchical levels and includes a spelling checker with custom dictionaries.



Interactive presentations are easy to create with Astound's Object Interaction dialog box. Each object on a slide can become a button that triggers another event.

Better yet, the transition effects are easy to create and manage. Pop-up menus allow you to browse through entry and exit transitions. An animated thumbnail shows you exactly how the effect will look.

The Slide view's icon/menu interface makes all of Astound's features readily accessible. Pop-up dialog boxes walk you through slide creation. A preview icon provides swift playback of any slide under construction, and a slide sorter displays a thumbnail overview that lets you rearrange slides.

The Player

Astound lacks a Windows-based version, so Gold Disk has provided a player that lets Windows machines play Astound presentations. However, there are limits to the sounds and graphics that can be ported to the PC. Plus, QuickTime movies can't be bundled in self-contained files and transferred to the PC — you must transfer them manually, a real sneakernet pain if you don't have the advantage of a mixed Mac/PC network.

Gold Disk's recommended system requirements for Astound are System 6.0.8 or later, a hard-disk drive, a Mac-compatible monitor, and 4 megabytes of RAM. However, for smooth operation, we recommend at least 8 megabytes of RAM. And as with all multimedia programs, you'll want the fastest Mac you can afford, to optimize the performance of animations and QuickTime movies.

The Bottom Line

If you've ever struggled to finish a presentation the night before an important meeting, you've probably avoided the current crop of multimedia-presentation programs. All require considerable effort to learn and master. But Astound takes an interesting approach that should prove attractive to busy businesspeople. With a slick, intuitive interface and outstanding effects, Astound takes presentations to the next level without substantially increasing users' workloads.

— Bob Lindstrom

UTILITIES

PBTools, Power To Go, and CPU 2.0

PBTools tops the competition with its single-minded focus on PowerBook-battery management.

Finding the best PowerBook-utility collection is no simple task these days. Since our last roundup (see "Traveling Companions: PowerBook Utilities," May '93, page 90), the field has gained two more products — PBTools and Power To Go — and a major revision to CPU, bringing the number of players in the field to four. With its well-defined focus and easy-to-live-with stability, PBTools outdistances both rivals reviewed here as well as the fourth contender, Norton Essentials for PowerBook.

PBTools 1.0
Published by: Inline Software, 308 Main Street, Lakeville, CT 06039; 203-435-4995.
List Price: $99.95.

Power To Go 2.0
Published by: Claris Clear Choice, 5201 Patrick Henry Drive, Santa Clara, CA 95052; 408-727-8227.
List Price: $99.

CPU 2.0
Published by: Connectix, 2655 Campus Drive, San Mateo, CA 94403; 415-571-5100.
List Price: $99.

PBTools

PBTools' strengths are an elegantly designed interface and the undivided attention PBTools gives to power saving and battery tracking, which are the two most important features in a PowerBook-utility package.

PBTools offers the most sophisticated yet simplest battery-management tool of all the PowerBook utilities. A single well-designed battery icon in the menu bar indicates the power level in your battery (you can calibrate it to make sure the icon accurately reflects the battery state), whether the battery is charging, when the drive is spinning up or running, and whether AppleTalk is on. You can keep track of as many as four batteries and track their discharge curves over time.

Unlike CPU and Power To Go, PBTools doesn't use "sets" to manage power. You simply define time intervals for system sleep, drive spin-down, and backlight dimming. Other power-control necessities such as AppleTalk control and keyboard commands for sleep and spin-down are available too.

PBTools includes only a few extras beyond its essential power- and battery-management tools, but it takes care of all the necessities. Even more important, its performance is solid as a rock.

To avoid a network disconnect during a file transfer, PBTools doesn't let the PowerBook sleep if AppleTalk is active. However, there is one drawback — you can disconnect from a network, switch to battery power, and forget to turn AppleTalk off. Norton Essentials for PowerBook has the right idea here — when you disconnect from a network, it automatically turns off AppleTalk.

One other minor complaint has to do with PBTools' compact interface design. Generally, this is a plus, but it can cause problems. For example, because there are so few control panels, the check box for the thick cursor is inconveniently positioned in the panel designated for power-saving controls.

Additional features include a thick-cursor option; the ability to remap keys to serve as the Page Up, Page Down, Home, and End keys; control over that pesky Caps Lock key; and password protection for startup and wakeup.

Power To Go

Power To Go, from Claris Clear Choice, uses a customizable floating bar to present its controls. Minimalists can choose to display only a single battery icon, and those who want more controls can opt for battery-power gauge bars, a clock, and a sleep button. A major drawback is Power To Go's lack of AppleTalk control.

Power To Go's power management is handled through a control panel. You can set time intervals for system and hard-drive sleep, processor rest, and backlighting. As with CPU, you can save "sets" of combinations — keyed to battery and AC power — for different operating conditions or for multiple users.

The utility's Menu module is more annoying than useful. Menus drop down without a mouse click, and they stay down. That means if you change your mind, you must click outside the menu to close it. By contrast, CPU handles menu management correctly — it closes the menu automatically after you move the cursor away.

Other Power To Go modules provide a cursor-finder and -replacement option and password security, and the Airport module is supposed to get you through security faster than doing a regular startup. (Hint: The best way to get through security is to have your PowerBook in Sleep mode or to do a startup with your extensions off.)

Overall, we found that Power To Go takes its modular approach too far — it becomes inconvenient to operate. For example, you use one module to position the modem-activity icon on screen and another to position the drive-activity icon.

In addition, Power To Go aims to avoid a crowded menu bar by placing its controls on the floating bar, but PowerBook screen space is at even more of a premium than menu-bar space. And with an application such as Microsoft Word running, there's no unused corner of the screen where you can place a control. It's true that you can hide and retrieve the bar with a keystroke, but a good PowerBook utility keeps all of your controls in view. Another point against Power To Go is that it not only alters system resources but also doesn't restore what it's altered to its original condition

whenever you deinstall it.

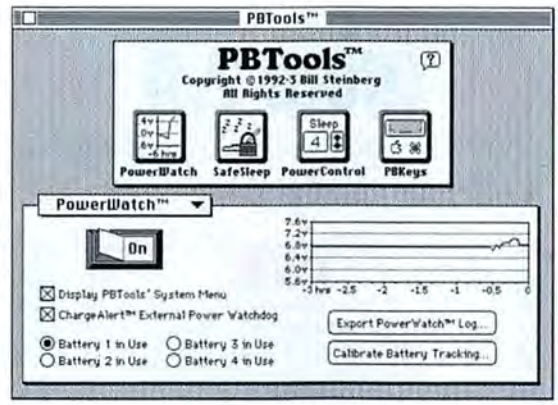
Power To Go is the only PowerBook-utility package that includes a file-compression utility, Aladdin Systems StuffIt SpaceSaver. You can use it to compress files manually or have it compress selected groups of files in the background during your PowerBook's idle time. The file-compression utility is wonderful, but it shouldn't sway you to buy this PowerBook collection in place of another. If you don't already have a compression utility, you'll probably want the full version of SpaceSaver, direct from Aladdin.

CPU 2.0

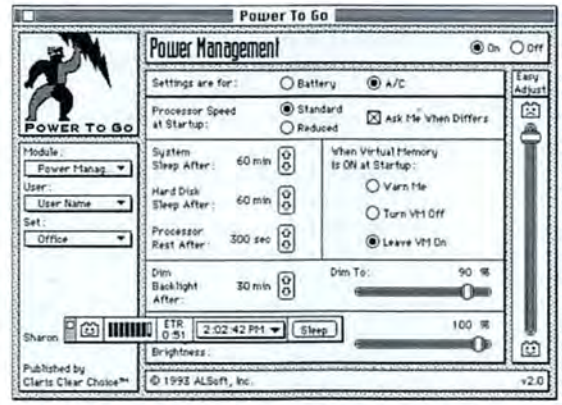
CPU takes one step forward and two steps back with its latest release. When we installed version 2.0 on a PowerBook 170, it immediately interfered with the screen rendering of Geneva 9-point type. Triggered by combinations of popular extensions such as Thunder 7, Tempo II Plus, and a hierarchical Apple menu, the problem was erratic. It sometimes appeared at startup, sometimes at wakeup, but often enough to be annoying.

Like the previous version, CPU 2.0 handles battery management with "sets" that require you to specify time intervals for such tasks as spinning down the hard disk, dimming the backlight, and putting the system to sleep. The package also provides thick cursors, Caps Lock control, password protection, and keyboard control of menus and dialog boxes.

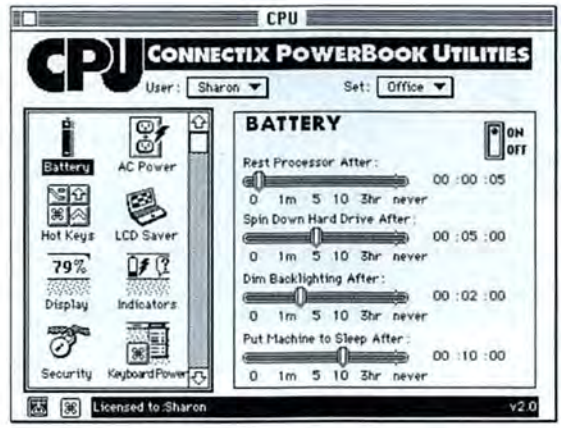
A major addition to version 2.0 is the separate EasySync extension. When you drag a file or folder from one volume to another, if an item with that name already exists on the destination volume, CPU displays a synchronization dialog box with buttons for Merge (for one-way updates) and Sync (for two-way updates). But you can run EasySync only from your PowerBook and not from your desktop machine. Furthermore, EasySync is missing the most important feature of a file-syncing utility: the ability to notify you when both files have been changed since the last synchronization.



PBTools provides the simplest approach to PowerBook management of all the utility packages reviewed here. When you click on one of the four buttons in the top pane of PBTools' control panel, the lower pane changes to reflect your choice of controls.



You set Power To Go's power-management features with the control panel shown here. The utility's floating controls bar, positioned here just above the Brightness setting, aims to save space on the menu bar.



Like the first version, CPU 2.0 handles the management of batteries through the use of "sets." A major addition to the new version is a file-syncing extension.

Also new with version 2.0 is the ability to switch applications from the keyboard and to hide each application as you leave it. In addition, the Extended Keys feature gives you Page Up, Home, Forward Delete, and function keys. You can also change processor speed on the fly. When you're plugged in, use full processor speed. When you're unplugged, take the speed down a few notches to conserve power.

CPU can now load AppleTalk on startup — a toggle command turns AppleTalk on and off. However, CPU doesn't check AppleTalk status or look for network activity before putting your PowerBook to sleep, so it may conk out in the middle of a file-syncing operation.

CPU has a checkered past. The initial release was bug-ridden. Its most fatal flaw — allowing the PowerBook to go to sleep during a communications session — was fixed quickly. But, almost unbelievably, this problem is *back* in version 2.0. CPU also alters system file resources, although at least it restores them to their original state when you deinstall the software. As a result of these problems, and despite the package's potential, we can't recommend CPU 2.0 as highly as we did the previous version.

The Bottom Line

A good PowerBook-utility collection is worth its weight in gold to PowerBook users. It can help you prolong the life of your battery, but beyond that, it can make you more productive with your PowerBook. Of the three collections reviewed here, we give the nod to PBTools. It's simple and effective, a winning combination for PowerBook users on the go.

— Sharon Zardetto Aker

IMAGE EDITING

Ofoto 2.0

The latest version of Light Source's ground-breaking software makes simple work of scanning color images.

Light Source recently updated its revolutionary scanning software to work with color images as well as grayscale and line art. Like its predecessor, Ofoto 2.0 eliminates time-consuming rescanning and image tweaking by producing an accurate image with the first scan — a boon to inexperienced and expert users alike.

Support for 24-bit-color images is the major enhancement to Ofoto 2.0, but it has several other noteworthy new features. Version 2.0 lets you get the best possible scan, even when the original image is of poor quality, by providing tools for correcting common photographic pitfalls, including color-cast problems, poor focus, and exposure error. Also new is background scanning.

The secret to Ofoto's success is its special combination of sophisticated features and simple interface. To use the software, you first set it up to work with your printer, by selecting a calibration. Ofoto provides a set of built-in calibrations for most popular laser printers and desktop color printers. A calibration contains the information Ofoto uses to optimize the scan for your particular printer.

For even more accurate results, you can create a custom calibration for your printer. To do so, you simply print Ofoto's calibration chart and then scan the printout back into Ofoto. With the data it collects, the software creates the custom calibration.

Once you've created a calibration, scanning becomes pretty much a one-step operation. You click on the Autoscan button, and Ofoto does the rest. The software automatically balances color and brightness, straightens the image if it's skewed, eliminates moiré patterns, and sharpens the image.

Ofoto is anything but speedy when all automatic functions are operational (it may take as much as three times as long to scan with Ofoto than with your scanner's software), but you'll be pleased with the results. They're usually so good that you won't be tempted to rescan or tweak the image with an image-editing program. If you're in a hurry and don't need all of Ofoto's automatic functions, you can disable them individually.

4½

Ofoto 2.0
Published by: Light Source, 17 E. Sir Francis Drake Blvd., Suite 100, Larkspur, CA 94939; 415-461-8000.
List Price: $395.

Another helpful feature for those who frequently use the same scanning procedures is the ability to save the state of Ofoto's windows, parameter values, and slider settings as template files.

Once you've scanned an image into Ofoto, the software provides a variety of basic image-editing controls. The Suggest Crop command automatically determines the proper cropping area for a scanned image. The Tone and Balance Exposure commands let you interactively adjust shadow and highlight values as well as perform basic color correction and matching.

Ofoto can generate color separations in TIFF, EPS, or Desktop Color Separation formats. It also supports virtual-memory scanning, so you can scan images too large to fit into available RAM.

If you frequently import scans into a page-layout program, you will want to use Ofoto's ability to calibrate for specific applications. The calibration takes into account the application's screen frequencies, color-separation methods, and printer drivers.

To create an application-specific calibration, you save the calibration file you've created for your printer to disk, import it into your page-layout program, print it, and rescan it into Ofoto.

The new Ofoto also supports Apple's ColorSync calibration system as well as monitor calibration. The program's monitor calibration is a bit less scientific than its printer calibration. Ofoto uses an on-screen gamma control, similar to Photoshop's, that lets you visually set gamma and white-point values. This approach is useful, but it's no match for self-calibrating monitors.

Our one complaint about Ofoto is minor. We miss support for devices such as film scanners and slide scanners. The current version supports flatbed scanners only, including ones from Agfa, Apple, Epson, Hewlett-Packard, La Cie, Microtek, and UMAX.

The new color version of Ofoto provides a set of built-in calibrations for many desktop color printers and for most popular laser printers. Ofoto not only automatically cropped the image shown here but was smart enough to include the photographer's signature in the crop area.

The Bottom Line

If you're looking for a painless way to achieve good scan results the first time around, Ofoto is for you. Version 2.0 extends the program's success with gray scale into the world of color-image scanning.

— *David Biedny*

Radius PrecisionColor Pivot

Radius displays for the Centris and Quadra will flip for the latest release of Soft Pivot.

If you're a Centris or Quadra user, new software from Radius lets you take advantage of the company's versatile PrecisionColor Pivot display. Soft Pivot 2.2.2 supports the internal video circuitry for 16-inch displays that comes in the latest Macintosh computers. We found the PrecisionColor Pivot and its new software to be a solid and cost-effective video system for users who spend much of their time juggling word-processing, page-layout, and spreadsheet documents. Special pivoting talents aside, however, the display's somewhat fuzzy colors, coupled with large RAM requirements, make an Apple 16-inch or NEC display a better choice for Macintosh users who rely heavily on color-graphics applications.

To put the new Soft Pivot software through its paces, we tested it on a Quadra 700 with a PrecisionColor Pivot display. True to its moniker, the Pivot display jumps from portrait to landscape mode on the fly when you rotate the screen 90 degrees. Side-mounted controls center the display and resize it both horizontally and vertically. The brightness and contrast knobs are additionally located on the side of the monitor.

Radius' manuals make installing the Soft Pivot software a snap. The company provides an Apple installer that places all the necessary control panels in their proper places within the System Folder. Without Soft Pivot installed, the Pivot serves as a standard 16-inch display.

Soft Pivot comprises two components: the main control panel and the RadiusWare collection of display utilities. The control panel provides access to several Pivot controls. You can set the maximum bit-depth level for the display as well as set the display to support pivoting or run in landscape mode only. In landscape mode, you're spared Soft Pivot's large memory needs. When set at 8-bit depth, for example, Soft Pivot requires 708K of memory. When set at 24-bit, a whopping 2,808K is required! Even with a bare-bones System 7 configuration, your Macintosh needs 4.5 megabytes just to function with a 24-bit display.

Radius PrecisionColor Pivot and Soft Pivot 2.2.2
Manufactured by: Radius, Inc., 1710 Fortune Drive, San Jose, CA 95131; 408-434-0770.
List Price: 2,499.

The RadiusWare control panel provides access to Radius' standard suite of productivity-enhancement settings, which include system aids, desktop-clean-up utilities, and several application-specific functions.

The system aids include a master switch for all RadiusWare features, on/off controls for the enlarged menu font, tear-off menus, a screen saver, and screen-capture options. The enlarged-menu-font option doubles the font size on the menu bar, making it more readable. Tear-off menus used to be a valuable RadiusWare feature in the days of System 6, but because this feature hasn't been updated to work with System 7, it's useless to Mac Quadra and Centris users. The screen saver dims the display when it's been inactive for a specified period (from 5 seconds to 60 minutes). The screen capture improves on System 7's capture feature by adding a marquee selector.

With new software from Radius, Centris and Quadra users can take advantage of the PrecisionColor Pivot's talents.

The desktop utilities include Dynamic Desktop and Finder Cleanup (both can be toggled on and off). Dynamic Desktop is the core of the Pivot display. It's what allows the Pivot to switch its orientation instantaneously as you flip the display. When you turn Dynamic Desktop off, the Pivot requires a restart to change its orientation between landscape and portrait mode. Finder Cleanup relocates your desktop icons after you've changed the display orientation.

RadiusWare's application-specific features comprise a complex set of windows and buttons that let you create special settings for individual applications. Settings include auto-centering and auto-lowering of windows. The software comes with preset controls for numerous applications, but you may need to adjust settings as upgrades become available.

We found the PrecisionColor Pivot display fairly bright although not as sharp as an Apple 16-inch display. The new Pivot software worked without a hitch on our Quadra 700, but we did have two complaints. You can't switch from one application to another by simply clicking on an application window. And for most users, the RadiusWare system aids will be of little use — their functionality is duplicated by several utility packages.

The Bottom Line

The Radius PrecisionColor Pivot is a good monitor for users who frequently switch from word-processing documents to large spreadsheets. The latest Soft Pivot software brings this technology to Centris and Quadra users. The one caveat is the software's prodigious appetite for memory when the monitor is running in 8- and 24-bit video mode.

— Sean Safreed

OUTPUT DEVICES

Apple LaserWriter Select 300

Apple's new low-cost laser printer isn't as select as it could be.

Apple has overhauled its low-end line of personal laser printers and come up with two new models: the Apple LaserWriter Select 300 and the Select 310. The Select 300, reviewed here, is an $819 300-dpi QuickDraw printer targeted at budget-minded home and small-business users. Unfortunately, despite a solid feature set, we found the Select 300 has already been eclipsed by the current crop of rock-bottom-priced PostScript laser printers, best represented by the highly rated HP LaserJet 4ML.

Apple LaserWriter Select 300
Manufactured by: Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; 408-996-1010.
List Price: $839.

Select Features

Unlike PostScript printers, such as the LaserJet 4ML and the LaserWriter Select 310, the Select 300 isn't equipped with an internal processor — it relies on your Mac to do all the print processing. That means if you have a fast Mac, speed won't be as much of a problem as it will on a slow Mac. The Select 300 also comes equipped with Apple's GrayShare technology, which lets you share the printer that's connected to your Mac with other Macs on an AppleTalk network.

The 300-dpi Apple LaserWriter Select 300 is bargain-priced, but it lacks PostScript and suffers from poor speed.

The Select 300 comes with 39 TrueType fonts and Apple's FinePrint technology, which ensures high-quality text output at any point size. The printer uses a 5-page-per-minute Fuji/Xerox laser engine. It is lightweight (26 pounds) and fairly compact (8 inches high by 5 inches wide by 18.3 inches deep), although not nearly as diminutive as the HP LaserJet 4ML.

The paper-handling features are fairly standard. The Select 300 comes with a 250-sheet tray. Additional 250- and 500-sheet trays as well as a 50-sheet multipurpose tray are optional. Using the manual-feed option, you can print envelopes and nonstandard paper one sheet at a time. Apple ships a toner cartridge with each printer; additional cartridges retail for $89.

An installer program makes setup easy and fast. You connect the printer to the modem or printer port of your Mac with a standard mini-DIN 8-pin cable that's supplied with the printer.

The Select 300 is essentially a stripped-down version of its PostScript sibling, the Select 310. To turn the Select 300 into a 310, you can purchase a PostScript upgrade that brings the total cost of the printer to $1,168 (ouch! — the 310 sells for $1,079). However, considering that the Select 310 was among the lowest-rated personal printers tested by MacUser Labs for *MacUser*'s September blockbuster printer story, we can't recommend the upgrade.

One that we can recommend is a 4-megabyte memory upgrade that lets the 300 take advantage of Apple's PhotoGrade gray-scale-enhancement feature. Apple sells a PhotoGrade upgrade kit for $269, but you can also do the upgrade yourself for a much lower price by using third-party 30-pin SIMMs rated at 80ns.

We tested the performance and output quality of the Select 300, using the standard suite of MacUser Labs test documents. Our test platform was a Mac IIcx with 8 megabytes of memory, running System 7.1. The Select 300 did an admirable job of printing text at various point sizes. The characters were clean and legible, even at 6-point size.

Without the PhotoGrade option enabled, the Select 300's gray-scale output was a disappointment — it suffered from pronounced banding, although scanned images were acceptable for low-end DTP work. Printing a full-page, 120-dpi gray-scale document took just less than 3 minutes with our Mac IIcx. With the memory upgrade installed and PhotoGrade enabled, gray-scale output was much improved, but speed decreased dramatically.

Our page-per-minute test clocked the Select 300 at about 3.5 ppm, with our Mac IIcx serving as the processor.

The Bottom Line

A year ago, the modestly priced Select 300 would have been an attractive alternative to an inkjet printer for users who don't require PostScript. Today, however, the rules of the game have changed drastically. You can buy a personal laser printer with PostScript for only about $200 more than the cost of the Select 300 — that's the Select without its PhotoGrade option, which is much needed for optimal gray-scale-output quality. And considering the Select 300's poky speed and physical bulk, especially when compared with the HP LaserJet 4ML, it's hard to find a winning hand for Apple in this round of the laser-printer game.

— *Gregory Wasson*

PERSONAL INFO MANAGERS

Power Team

More doesn't always add up to better — ProVue's seven-modules-in-one PIM is a case in point.

This ambitious new PIM from ProVue Development features no fewer than seven modules to help keep you organized. Power Team combines a Rolodex-style phone book with a calendar and to-do-list manager. The program also provides mailing-list and letter-writing features, Expense Report and Checkbook modules, and a conversion calculator. The flip side of Power Team's innovative versatility, however, is the relative weakness of its modules — many lack key features provided by less ambitious but more focused PIMs.

Power Team 1.0.1
Published by: ProVue Development, 15180 Transistor Lane, Huntington Beach, CA 92649; 714-892-8199.
List Price: $149.95.

Power Team's Phone Book module provides all the expected fields for data entry (name, address, title, company, phone numbers, notes), but you can't customize fields as you can with many contact-management programs, such as ACT!. You can view your Phone Book information in several ways. Most useful for individual records is the Natural window, designed to resemble a Rolodex card. List windows come in two flavors — a full address list and an abbreviated one that simply lists name, phone number, and company.

Power Team is fast and efficient at searching. To search for a record, you can type data into an entry bar located in the Natural window and press the Enter key. However, to search for more than one record and view the results in a list, you must move to a separate list view and use the Select command — a somewhat awkward implementation.

The Power Team Calendar module includes a reminder feature and displays events and to-do items in day, week, and month views. A yearly calendar view lets you quickly navigate to specific dates. You can enter start but not finish times for your events — a major stumbling block, because you can't manage blocks of time, as you can with Now Up-To-Date and DayMaker. We also missed the ability to categorize appointments.

You can create basic letter, fax, and label forms with Power Team's Correspondence module, but the program lacks most mail-merge features found in contact-management programs, including ACT! and Contact Ease. You also can't mix fonts and styles in forms you create.

The Correspondence module does use ProVue's time-saving Clairvoyance technology. As you begin entering data, Power Team searches its database and automatically fills in the correct information. For example, when you type *Fred* in an address field, Power Team fills in Fred's last name, company, address, and other information for you.

You can print mailing labels in most of the major Avery formats directly from Power Team's address list. Oddly, the program also provides a separate Mailing List module that isn't linked to the address file in the Phone Book module.

Power Team's Calculator module allows you to perform basic numeric, loan-analysis, measurement-conversion, date, time, and time-zone calculations.

Power Team is ambitious in scope, as evidenced by its inclusion of a Checkbook module as well as an Expense Report module. The Checkbook module lets you create any number of accounts for personal and business financial transactions. You can assign income and expense categories to your entries — a big help come tax time. With Power Team's reminder feature, you can even set the program to remind you when bills are due. Other features include check printing, automatic check reconciliation, the transfer of funds from one account to another, checkbook analysis that compares and graphs transactions by category, and profit and loss calculations. The Checkbook module also features the Clairvoyance link to the address file in the Phone Book. That means the program can automatically complete company names for you as you're writing checks. Although Power Team's Checkbook module is not as feature-rich as the checkbook function of Intuit's Quicken (it lacks automatic check numbering, for starters), it comes in handy if you're looking to manage all of your business and personal activities with one program.

Power Team's Expense Report module lets you enter travel, mileage, and entertainment expenses into an on-screen voucher. You can view all expense details for a specific day and all meal details as well as scroll through lists to quickly scan many expense reports.

Although Power Team is an innovative PIM, it has several design flaws. Its colored menu-bar text, HyperCard-like windows, and poorly designed graphics make Power Team unattractive when compared with competing PIMs. We were also frustrated by the program's many nonresizable windows.

The Bottom Line

By incorporating both a Checkbook module and an Expense Report module, Power Team breaks new ground in the PIM and contact-management arena. However, the program's versatility fails to compensate for an outdated interface.

— *Tom Petaccia*

Power Team is versatile, but its tools lack some key features.

PERSONAL INFO MANAGERS

DateBook Pro and TouchBASE Pro

Enhanced links between two After Hours stalwarts make for one slick PIM.

DateBook Pro
Published by: After Hours Software, Tri Center Plaza, 5990 Sepulveda Blvd., Van Nuys, CA 91411; 818-780-2220.
List Price: $79.95; bundled with TouchBASE Pro, $149.95.

TouchBASE Pro
Published by: After Hours Software, Tri Center Plaza, 5990 Sepulveda Blvd., Van Nuys, CA 91411; 818-780-2220.
List Price: $79.95; bundled with DateBook Pro, $149.95.

When does 1 plus 1 equal more than 2? Check out After Hours' newly enhanced address-book and calendar programs to find out. With two sweeping upgrades, TouchBASE and DateBook go Pro with an array of new features. Most notable are enhanced data links that integrate the programs by using System 7's Apple events, making the two substantially more than the sum of their parts.

The Main Event

Although the previous versions of TouchBASE and DateBook could share data, sharing was not much more than automated cut-and-paste between the two programs. The new Pro versions' implementation of Apple events, however, lets you establish permanent links between DateBook's calendar items and TouchBASE's contact database. The result may be one of the most functional yet simple-to-use PIMs you can find.

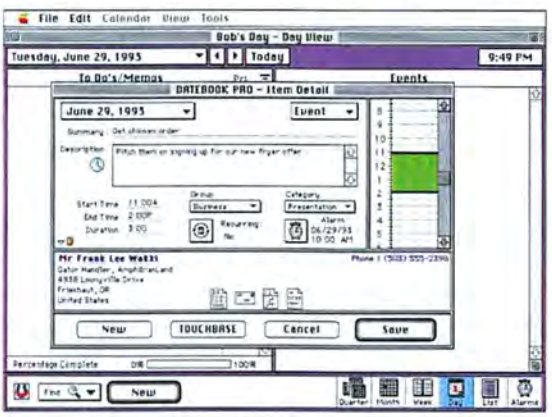
The interface for creating links between the two programs is elegantly implemented. DateBook's Item Detail window, where you create calendar events and to-do items, contains a TouchBASE button. Once you've created an item, clicking on the button brings up the TouchBASE Search dialog box, which lets you select a TouchBASE file and search for a specific name. You simply select the name and click on the Link button to establish the link.

Similarly, clicking on a button from within TouchBASE takes you into DateBook, where you can create a calendar item that is automatically linked to the contact you have selected in TouchBASE.

Once you've established links between the two programs, you gain several new DateBook options. In the Item Detail window, you can view the name, address, and phone number of the TouchBASE contact that's linked to that item. To view the contact's complete TouchBASE record, you simply double-click on the entry. You can even have TouchBASE dial the phone number with your modem or Mac speaker and then display the full contact record — all from within DateBook. Conversely, you can view a list of linked DateBook calendar items from within TouchBASE.

Linked calendar items also let you take advantage of TouchBASE print options from within DateBook. Options include the ability to print complete contact records, envelopes, fax cover sheets, and FastLetter form letters.

We found two minor drawbacks in the synergy of TouchBASE and DateBook. One is the RAM requirement. Both programs must be running in order to access the data links, so you need to dedicate at least 1.4 megabytes of RAM to them. Also, you're limited to linking calendar items to a single contact.



System 7's Apple events provide near-seamless integration between the new Pro versions of DateBook and TouchBASE, meaning you can link calendar items in DateBook to your TouchBASE contacts.

TouchBASE Pro

Apple-events links also let DateBook share FastLetter, a new and handy TouchBASE feature. By clicking on the FastLetter icon, which is available in either program, you can bring up a dialog box that lets you select from a customizable collection of form letters. FastLetter lets you insert contact information in mail-merge fields and includes a built-in editor for modifying letters and importing text files.

You can add to your FastLetter arsenal by creating templates for custom labels, listings, Rolodex cards, fax cover sheets, and envelopes. Font, Size, and Style menus provide plenty of character-formatting options. Unfortunately, you can save only the templates and not the FastLetters themselves.

Links and the FastLetter feature aren't all that is new in the Pro version of TouchBASE. The program is now a full-fledged application and no longer a DA. Although some users may flinch at its added girth (it now needs 800K of RAM), few will resist trading diminutive size for more power and versatility.

Headers in the Detail view are now customizable, as are many other view options, and the program boasts more custom fields. Data entry is accelerated by ShortCuts — pull-down/pop-up

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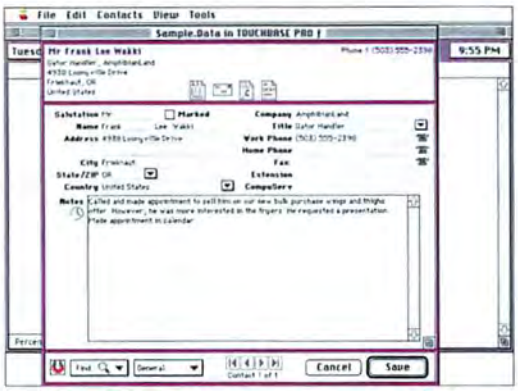
menus with field-entry selections. Equally welcome is the ability to have several TouchBASE files open simultaneously — you use the same command palette for all open files.

List management has also been overhauled. The program now supports compound searches, and data swapping between lists has been simplified to a click-and-drag operation. The new Global Replace feature provides a one-step method for updating fields for multiple contacts, and new import facilities convert contact files from Portfolio Systems' Dynodex and Power Up Software's Address Book Plus.



TouchBASE Pro's detail views can now be customized. Notes can now be as long as 32,000 characters, and a time/date stamp can be placed on each entry.

For creating new contacts or combining two contact files, TouchBASE provides a facility for identifying duplicate records. You specify the fields you want it to compare in the process.

For reconciling two copies of the same file (one on your desktop machine and one on your PowerBook, for example), TouchBASE has two options. The faster of the two works by keeping a log of all file changes; the program then uses the log to update the master file. The other method scans and compares all the fields in the files.

DateBook Pro

DateBook's Pro version also has several new features. The new Memo item provides a welcome catchall for random notes. Enhanced printing options include Quick Print, which lets you print Month, Week, Day, and List views as well as any event, to-do item, or memo. Print preview and multipage wall charts are also new. The program features much-improved screen-display customization, the ability to click and drag items in any view, and support for item descriptions as long as 32,000 characters.

You still can't stretch an event or to-do item over several days. But unfinished to-do items now carry forward, and a "days overdue" feature shows you graphically how far behind you've fallen. We were disappointed in the new word-wrap feature for the Month and Quarter Year views. Designed to display the maximum amount of text for calendar items, it breaks words unattractively and often leaves a trailing letter out of view.

After you've viewed the results of a search in DateBook's List view, a handy SearchLight feature highlights the results of your search in other views as well. Last, the Mini-DateBook Pro extension lets you set alarms and create calendar items without launching the full 768K program.

Manuals for the Pro versions of both TouchBASE and DateBook are thorough, although each needs a more complete index. Several items — including the handy ShortCuts and SearchLight features — don't appear in the index. And if you want to learn everything these programs can do, plan on reading each manual cover to cover.

After Hours provides 180 days of technical support without charge through its tech-support phone line and AppleLink, America Online, CompuServe, and fax. Current owners of either program can upgrade for $24.95 each or receive both upgrades for $39.95.

The Bottom Line

With the latest Pro releases of DateBook and TouchBASE, After Hours has taken the two programs well beyond basic calendar and Rolodex surrogates. Enhanced Apple-events links have significantly improved data integration between the two, resulting in a single-minded full-featured PIM rather than the previous two-headed Hydra. The only outstanding item on our wish list is the ability to link calendar items to more than one contact.

This aside, the Pro versions of DateBook and TouchBASE link up to create a slick, convenient, flexible environment that can keep the busiest user well organized.

— Bob Lindstrom

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PRINTING UTILITIES

Freedom of Press Classic and T-Script

Two utilities offer slow but cost-effective routes to PostScript output from non-PostScript printers.

With the price of PostScript printers falling through the floor, we were tempted to dismiss Freedom of Press Classic and T-Script, two low-cost utilities that produce PostScript output from non-PostScript printers. Even on fast Macs, these software PostScript language interpreters can't come close to the speed of a PostScript printer. However, we found both utilities worthy of consideration if you need only occasional PostScript output from your non-PostScript printer or if you want to print PostScript documents to a low-cost color printer.

Freedom of Press Classic 1.0
Published by: ColorAge, 900 Technology Park Drive, Billerica, MA 01821; 508-667-8585.
List Price: $149.

T-Script 3.3
Published by: Teletypesetting, Inc., 311 Harvard Street, Brookline, MA 02146; 617-734-9700.
List Price: $145.

Alike but Different

Freedom of Press Classic and T-Script are similar in their basic operation. You use the Apple LaserWriter driver to print a PostScript file to disk. Either utility then converts the file to a bit map at the resolution of your printer. If you have enough RAM to run both the utility and the application you're printing from, the entire process can work just like a normal print operation.

Both utilities can also act as network print servers. On the network, they appear as LaserWriters in the Chooser. Depending on the host machine's configuration and the type of document being printed, slowdown on the host ranges from slight to unacceptable.

In general, we found T-Script to be about twice as fast as Freedom of Press Classic on Macs that lack a math coprocessor. On Macs equipped with a coprocessor, Freedom of Press Classic is faster by about the same margin. File content also makes a difference in speed. T-Script has the edge for pure PostScript interpreting, but when you add scanned images, Freedom of Press Classic comes out ahead. Speed, however, isn't the only criterion you'll want to consider in choosing a utility. Each offers special features designed to enhance certain printing scenarios.

We found both utilities capable, but there are caveats. Neither deals well with the problem of limited disk space. We recommend that you keep at least 5 megabytes of disk space free, more if you are queuing files for batch printing. And although we didn't encounter any major PostScript incompatibilities, we did uncover several glitches.

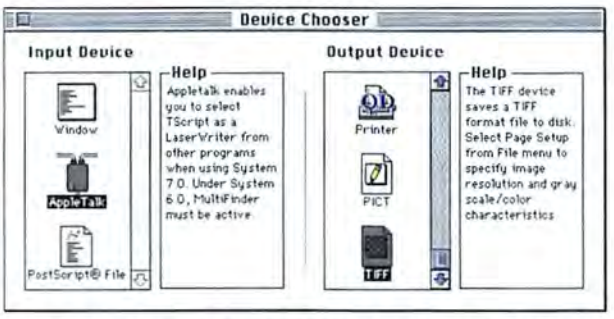
T-Script couldn't reproduce a light background screen on monochrome printers, yet it handled the same screen perfectly on color printers. Freedom of Press Classic occasionally produced pages marred by horizontal white lines when we printed from PageMaker, using the Aldus driver. Both utilities support all PostScript Type 1 and Type 3 fonts and are compatible with Suitcase, MasterJuggler, and Adobe Type Manager.

T-Script

T-Script has two modes of operation: automatic and manual. With automatic mode, the printing operation works just like printing to any printer. T-Script appears in the Chooser as a LaserWriter printer — once you've selected it, you simply choose Print from your application's File menu.

However, to print in automatic mode, you must be running either System 7 or MultiFinder under System 6 and have enough RAM to run both T-Script and the application from which you're printing. Your printer must also be directly supported by T-Script. The current version supports the Hewlett-Packard DeskWriter; HP LaserJet series and compatibles; HP DeskJet; HP PaintJet; Apple LaserWriter LS; GCC PLP printers with installed memory; Canon LBP series; Epson 9-pin and 24-pin dot-matrix printers; Mitsubishi S340, G650, and G730 printers; and the Mirus Film Printer.

To print to a device other than those listed above, you must use T-Script's two-step manual process. First, you select the LaserWriter driver in the Chooser and print a PostScript file to disk from



Both T-Script (shown here) and Freedom of Press Classic can act as network print servers. T-Script, however, lets you rasterize PostScript files to a higher resolution.

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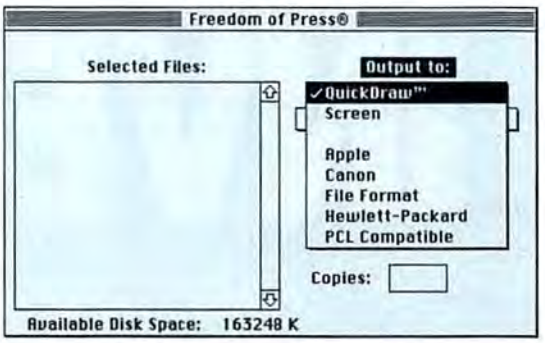
your application. Then you select your printer in the Chooser, launch T-Script, and finally open the PostScript file from within T-Script.

T-Script has two features Freedom of Press Classic lacks. You can rasterize any PostScript file to a 24-bit RGB TIFF or PICT, at any resolution you specify, from 72 to 300 dpi. This feature is useful for printing to dye-sublimation printers, because it allows you to proof the page before committing to expensive dye-sublimation media and it allows you to perform color correction in an application such as Adobe Photoshop.



Freedom of Press Classic's QuickDraw driver allows its automatic mode to work with any printer, not just those the program supports directly.

T-Script also lets you work directly with PostScript code in a text-editor window. This is useful for debugging PostScript files and is a great way to educate yourself on PostScript's inner workings. You can create or modify the code contained in files 100K or smaller and preview the results on-screen.

Freedom of Press Classic

Like T-Script, Freedom of Press Classic provides a manual mode and an automatic one. The only constraints that force you to use manual mode are the absence of MultiFinder or the lack of sufficient RAM to run the foreground application as well as Freedom of Press Classic and the FP Spooler application simultaneously.

FP Spooler is a small application that appears as a LaserWriter in the Chooser. When you select FP Spooler as the current printer and print from an application, FP Spooler automatically creates a PostScript file in the Freedom of Press Classic folder, located in your System Folder (the utility's Installer creates these necessary folders automatically). If Freedom of Press Classic is also running, it automatically selects the PostScript files that appear in the folder and prints them to an output device, to the screen, or to a PICT file.

Unlike T-Script's, Freedom of Press Classic's automatic mode can work with any printer — not just those directly supported by the utility. Freedom of Press Classic provides a built-in mechanism that directs QuickDraw output to QuickDraw printers, so you don't have to select the printers in the Chooser.

If you don't have enough RAM to run FP Spooler and Freedom of Press Classic simultaneously, you can print to FP Spooler and then set Freedom of Press Classic to batch-process the PostScript files unattended. The utility also lets you choose to delete PostScript files after they've been printed.

Freedom of Press Classic can print to a PICT file, but unlike T-Script's PICTs, Freedom of Press Classic's are strictly 72-dpi, 256-color dithered bit maps. They produce acceptable results on inkjet and thermal-wax printers, but they aren't suited to dye-sublimation printers. However, for color output on the Apple Color Printer, the HP DeskWriter 550C, and the Canon BJC-820, Freedom of Press Classic provides ColorSync support and its own proprietary color-correction system, ColorVantage. We found that ColorVantage gives excellent results when you're printing scanned images with these devices. For that reason alone, we highly recommend Freedom of Press Classic over T-Script if you own one of these printers.

The Bottom Line

If your printing requirements call for frequent PostScript output, you're probably better off purchasing one of the current crop of attractively priced PostScript printers rather than a software PostScript language interpreter. But if you print PostScript documents only occasionally, if you want to share a QuickDraw printer across a network, or if you want color PostScript output but can't afford a color PostScript printer, either utility will do the job. When choosing which one to buy, consider the speed of your Mac, the kinds of documents you'll be producing, and the special features each program has to offer.

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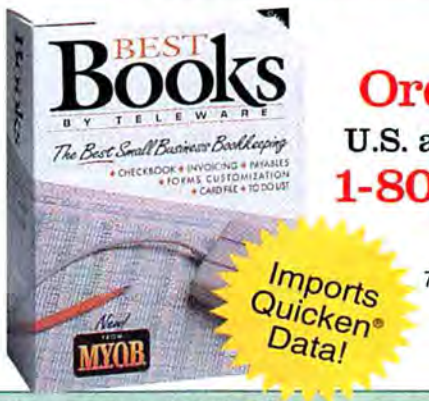

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RESOURCES

Local Expert and NavigaTour

Disk-based travel guides sound promising, but both Local Expert and NavigaTour fail to deliver.

Electronic renditions of novels and resource books have been available for some time now, but the latest in the genre is electronic travel guides. Tailor-made for PowerBook users, these disk-based guides sound tantalizing — they aim to provide timely information on top restaurants, entertainment, and business services for a wide variety of locales worldwide. Unfortunately, both guides carry hefty baggage in the form of high prices, spotty information, and onerous system requirements.

Local Expert 1.01
Published by: Strategic Mapping, 3135 Kifer Road, Santa Clara, CA 95051; 408-970-9600.
List Price: $99; City MapSets, $25 to $18 each, depending on quantity.

NavigaTour 1.0
Published by: Medi*Alive*, 766 San Aleso Avenue, Sunnyvale, CA 94086; 408-752-8500.
List Price: $129.

Local Expert

Local Expert comes on four high-density disks. When installed, the program takes up 6.2 megabytes of disk space. It comes with a core set of regional maps for the world that includes major U.S. and European highways and Strategic Mapping's City MapSet for Memphis, Tennessee. You get one additional free City MapSet when you return your registration card. The company offers more than 100 City MapSets, ranging in price from $18 to $25 each, depending on the quantity you order.

Local Expert's disk-based travel guide can plot street-level maps, with the locations of hotels and other attractions. However, for each city, you must purchase a City MapSet, at $18 to $25.

To make the most of Local Expert, you need City MapSets for the cities that interest you. The MapSets contain information that is organized into four main categories: Food, Drink & Entertainment; General & Business Information; Sporting Events & Activities; and Events, Activities & Shopping. Each contains subcategories with specific areas of interest. Although the City MapSets contain much of the same information as printed guidebooks, Local Expert provides special ways of accessing the information.

You can drill down through data until you find what you want or search by name to jump to a particular entry, such as a favorite restaurant. Or, by entering the type of cuisine you are interested in, you can view the appropriate selections as numbered locations on the map. Succinct descriptions of the locations appear in a scroll box that also contains street addresses, phone numbers, and hours of operation. You can also search for things to see and do based on date or price range. About 25 percent of the data is time-sensitive, so City MapSets are updated monthly. The information is compiled by Worldview Systems from more than 5,000 sources, including local correspondents and major travel guides.

Local Expert's tool bar contains icons that allow you to change views, measure distances, find locations, access information, select locations, and create notes. Unfortunately, the tool bar and other interface elements don't work intuitively.

NavigaTour

The NavigaTour program comes on five high-density disks. The program requires 4 megabytes of RAM and 9.3 megabytes of disk space (by paring it to the necessities, you can retrieve 3.6 megabytes of disk space). NavigaTour gobbles up so much disk space because it serves as both a multimedia travel guide and a customizable scrapbook.

The program's main map displays the 50 American states. By clicking on a state's button, you can view a separate window in more detail. For example, when you click on California, the program calls up a state map; when you click on Los Angeles, you can view a city map with several major highways and areas identified. Unfortunately, you can't zoom in or have more than one Maps window open at a time.

For more information, you click on the Text button, which opens a window that lets you select items of interest,

NavigaTour looks and feels like a sluggish HyperCard stack. The travel information it provides is disappointingly meager and unimaginative.

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including Climate, Geography & Location; Sights & Recreation; Hotels, Dining & Entertainment; Phone Numbers & Addresses; and Transportation.

NavigaTour doesn't offer nearly as many categories of information as Local Expert. All restaurants, for example, are lumped together in one long list, with no way to sort by cuisine or price. Even worse, their locations aren't highlighted on the map. And although you can edit the program's existing information and enter your own notes, the notes aren't separated by location, so remarks about Reno are jumbled with comments about Cleveland.

In addition to the Text button, there are buttons that open slide-show, sound, and QuickTime movie files. But all are devoid of truly useful content. You can also link NavigaTour to America*Alive* GUIDisc, a $149 companion CD-ROM that contains QuickTime clips for many other locations. Unfortunately, these consist mainly of tourist-bureau promotional clips.

Without the link to America*Alive* GUIDisc, NavigaTour covers only 20 U.S. cities, 29 parks, and 22 attractions — information is gathered by Medi*Alive* from local tourist boards and chambers of commerce. Attractions coverage is meager (heck, even Disneyland didn't make the cut). City information is equally shallow. If you want to correct such oversights, you can create your own custom scrapbook of cities, parks, attractions, and states, but they won't appear on any maps. If you want to create a scrapbook or presentation, you can link slides or movies to a location, provided they're in QuickTime format.

The Bottom Line

Neither Local Expert nor NavigaTour provides the detail available in a Michelin guide, although of the two disk-based guides, Local Expert comes closer. With its City MapSets, Local Expert can create customized street-level maps that show locations of interest — a feature no printed book can match. But the program's awkward interface makes it difficult to take advantage of Local Expert's many powerful features. NavigaTour, on the other hand, suffers from a sluggish HyperCard-like interface and lackluster content. What meager travel information it provides is typical tourist-bureau and chamber-of-commerce fare.

— Owen W. Linzmayer

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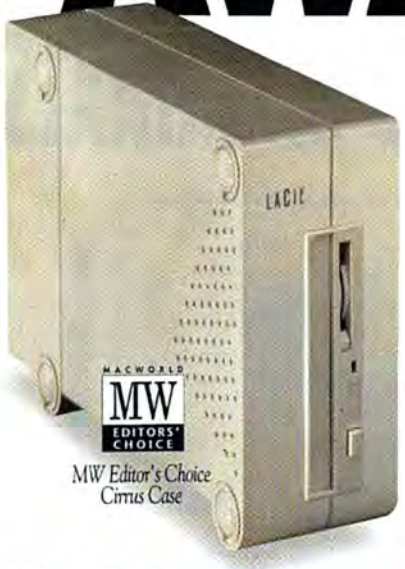

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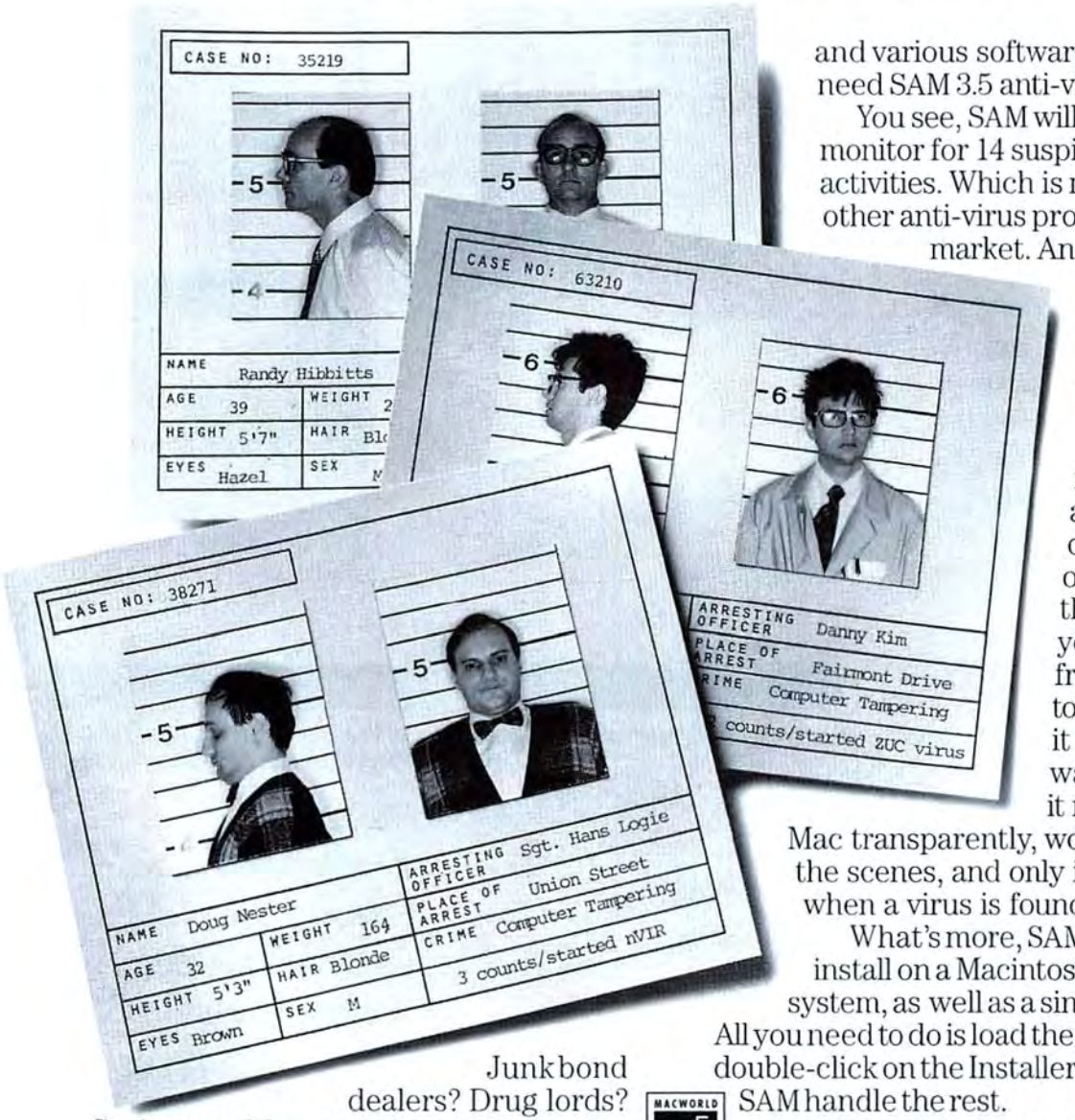

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For the most anti-viral protection, pick up SAM 3.5 at your local retailer. It's the most popular anti-virus program in the world, and will keep you from ever having to deal with this ugly crime. Or these ugly criminals.

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QUICK CLICKS

Powerbox

★★★½

Although PowerBooks make it easy to take your work on the road, their modest hard drives don't make it easy to take lots of data. If you opt for an extra, high-capacity hard drive, you're generally stuck with a mess of SCSI cables, incompatible batteries, and an extra carrying case — unless the hard drive is the Adambyte Powerbox.

The 4-pound Powerbox, which comes in 200- and 500-megabyte configurations (a 1-gigabyte version is in the planning stages), fits right under the PowerBook — same footprint, 1.4 inches tall — and connects to it with a tidy 8-inch SCSI cable. In addition to the hard disk, the box can contain one of two other options: a 155-megabyte streamer-tape-backup drive (bundled with NovaStor's easy-to-use NovaMac backup software) or a 21-megabyte Floptical-disk drive.

Cosmetically, the Powerbox is a dead ringer for the PowerBook: same gray color, same ridged texture. The similarities aren't just skin deep either: The Powerbox runs on standard PowerBook batteries, allowing users to mix and match power sources. If the hard drive's battery goes out, there's no worry: Those PowerBook batteries you charged back at the hotel can just as easily be used in the Powerbox.

Because the devices have similar electrical systems, they don't need to use separate outlets when they're plugged in — just stick the Powerbox cord into an outlet, and run the included piggyback cord from the Powerbox to the PowerBook. When the Powerbox is turned off, it charges both its battery *and* the one in your PowerBook.

The Powerbox also performs well. A PowerBook/Powerbox combination smoothly played a QuickTime movie while being carried down a hallway on one hand.

The convenience of the Powerbox is not without a price, however. The hard drive and optional secondary drives contained in the Powerbox can be bought individually for much less than the Powerbox's list price.

As a result, the Powerbox probably isn't for PowerBook users who need extra storage only when they're at home or for people who are short on cash and need just a *little* more storage while they're on the road.

But if you need to carry large amounts of data conveniently and make sure it's always backed up, the Powerbox is a great choice.

Adambyte, 2672 Bayshore Parkway, Suite 1045, Mountain View, CA 94043; 415-988-1415. $999 (200-megabyte hard drive only) to $2,449 (500-megabyte drive plus tape-backup drive).

— Jason Snell

ColorUP

★★★★

If you've ever created a color presentation and struggled to find even four colors out of 16.7 million that look good together, you'll understand why Pantone created ColorUP — a software package that takes the guesswork out of the color-selection process.

ColorUP's Palette Chooser asks you to select an output medium: paper, 35-millimeter slides, overhead transparencies, or on-screen presentations. ColorUP optimizes its color palettes for the medium you choose; you can even coordinate several forms of output by creating similar palettes for each medium.

After picking an output medium, you select a background color from a pop-up palette or list of names. To help you choose, ColorUP describes the mood each color is supposed to convey (for example, yellow is "associated with sunshine and cheer in every culture"). Once you've chosen the background color, you can pick from several 15-color palettes designed to coordinate with it. Aiding in this choice are ten or so examples — such as bar, pie, and bullet charts — that use the palette. If you want, you can customize the colors on the palette or give the background a gradient look, fading to black or white.

Each color in a palette is preassigned to a specific presentation element (such as titles, subtitles, and portions of a chart). When you export the palette from ColorUP into Persuasion or PowerPoint, the colors are automatically used for the assigned elements. When you export it to FreeHand, Illustrator, or MacDraw Pro, ColorUP labels the colors on the palette according to the element they correspond to. Pantone also offers a Windows version of ColorUP (convenient for cross-platform-presentation creators) and lets you export palettes into ten Windows applications.

A second application, ColorUP Explorer, provides an entertaining overview of color theory and psychology — if you have 10 megabytes of free space on your hard disk to devote to it (having this on CD-ROM instead would be useful). It tips you off to such strategies as using warm colors in the foreground and cool colors in the background to enhance depth perception.

ColorUP is a nicely designed package that does its job well. Our chief complaint is that too few third-party Mac applications are supported. At a minimum, Canvas and DeltaGraph Professional should be on the list, and probably Excel and other spreadsheet programs as well.

Pantone, Inc., 590 Commerce Blvd., Carlstadt, NJ 07072; 201-935-5500. Version 1.0. $99.95.

— Becky Waring

Lunicus

★★★★

From Spaceship Warlock to The Journeyman Project, almost every interactive game on CD-ROM has suffered from the deadly combination of slow CD-ROM access times and a creator application (Macromedia Director) that wasn't designed for fast CD-ROM access. Even on the fastest hardware, a mouse click generally produces a disconcerting delay as the game accesses the disc.

Lunicus is another story. It's an exciting and ultrafast 3-D action game from the new company CyberFlix. The game's author, Bill Appleton, wrote his own authoring system for Lunicus, optimized for CD-ROMs from the ground up — and designed to optimize itself for the quickest possible speed on your Mac (based on the speed of your CPU and the amount of available memory and disk space for storing or caching information). Mouse clicks are responded to almost immediately, even on the lowliest Mac that meets the system requirements (you need 256 colors, a hard drive, and 4 megabytes of RAM).

In the world of Lunicus, you play a member of a moon-base team; your mission is to free Earth from alien drones. The early parts of the game are an interactive movie in the moon base — you

attend a briefing, talk to various characters, explore the moon base, get a space suit, and find your aircraft. After that it's fast-paced arcade action in cities such as Tokyo, Moscow, and Los Angeles, where you engage in all-out battle with the deadly drones.

You navigate with mouse and keyboard, starting out in each city with a full complement of weapons — bullets, grenades, and rockets. You eventually run out of armament, but there's plenty more if you know where to look and can avoid the drones long enough to grab it. Three levels of play keep things interesting even after you've mastered the basics.

Lunicus' graphics are a bit crude, unlike the gorgeously rendered scenes in Spaceship Warlock and The Journeyman Project. But, for speedy and challenging arcade fun on CD-ROM, Lunicus is hard to beat.

CyberFlix, 2309 Wagon Lane, Knoxville, TN 37920; 615-573-8849. Version 1.0. $99.95.

— Bob LeVitus

Eight Ball Deluxe

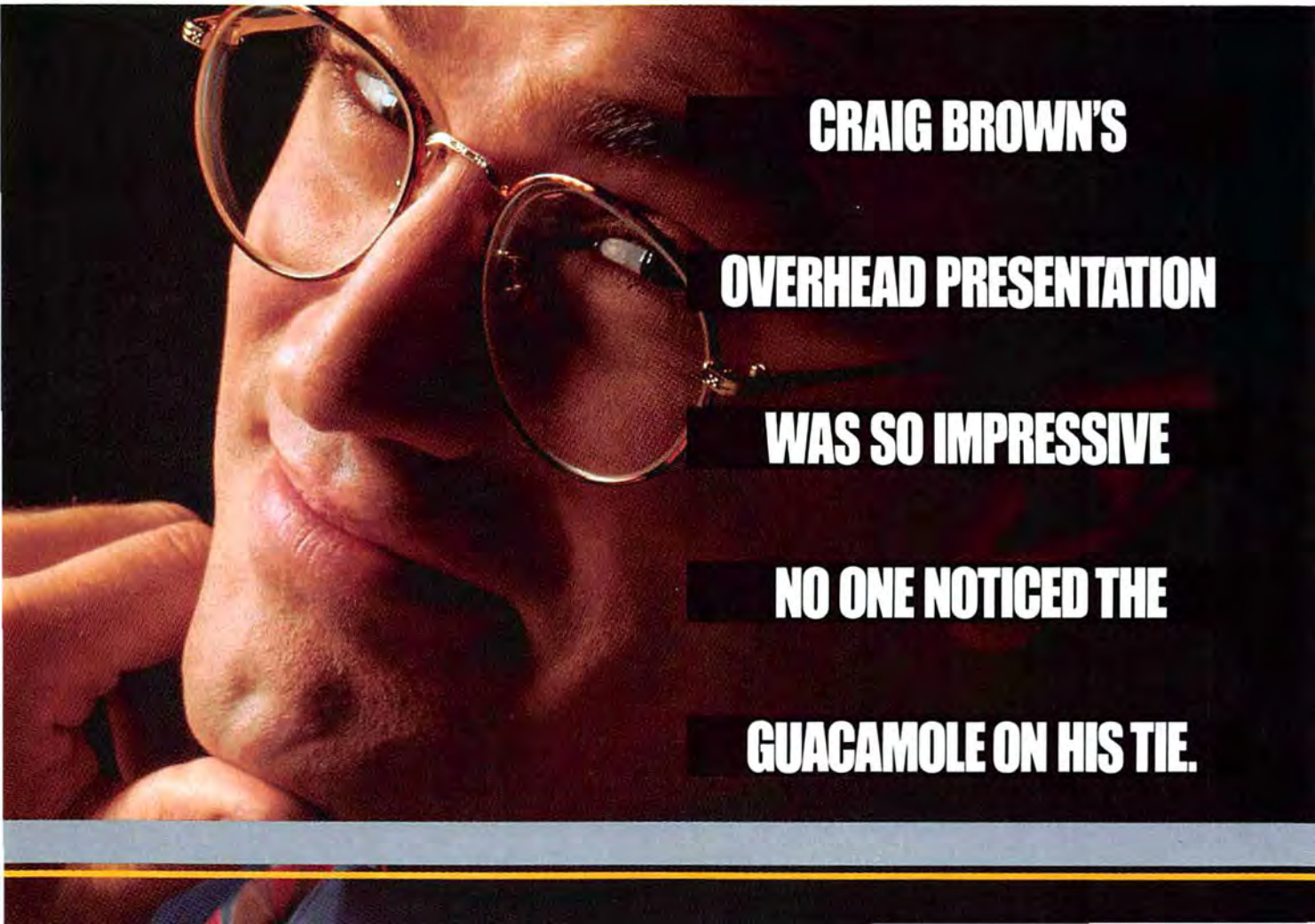
4½

Attention, pinball wizards: Amtex has just the game for you. Eight Ball Deluxe is a tour de force pinball simulation, modeled after Bally's popular coin-operated pinball machine of the same name. It's easy to learn, difficult to master, and loads of fun. And every detail is faithful to a real pinball machine, from the way the ball caroms off the bumpers to the resounding thunk you hear when you score a replay.

As many as four can play in each game. You begin by pressing the Shift key to pull back the plunger that launches the ball. The longer you hold down the key, the more forcefully the ball is propelled. From there, the game is just like real pinball — except that the flippers are controlled by the Z and slash (/) keys and the space bar "nudges" the table. As with a real pinball machine, too much nudging causes the machine to tilt, which means you forfeit the ball in play.

The playing field is spectacular, consisting of brightly colored bumpers, drop targets, rollovers, and lanes, complete with flashing lights and sound effects (not surprisingly, you need a 256-color monitor and 4 megabytes of RAM). Your chief objective is to knock down the drop targets that represent the solid pool balls (for players 1 and 3) or the striped ones (for players 2 and 4) and then sink the eight ball by knocking down its drop target. You can score in many other ways, and a replay is awarded for every 1,000,000 points (it can be done, but it's not easy).

The game's only shortcoming is that regardless of monitor size, the playing field is small — less than half the size of a standard 13-inch monitor. You won't mind much, though, because aside from that, the game is near perfect — it's beautifully crafted, faithfully rendered, and eminently playable. Eight Ball Deluxe easily qualifies as one of the most



enjoyable games released this year.

Amtex Software Corp., P.O. Box 572, Belleville, ON, Canada K8N 5B2; 613-967-7900. Version 1.0. $59.95. (Distributed by Brøderbund.)

— *Bob LeVitus*

StrataType 3d

★★★½

StrataType 3d 2.0 is a welcome upgrade to Strata's software for creating 3-D text. New features give you more options for spacing, lighting, and rendering high-quality 3-D characters.

StrataType's new kerning controls work like those in most professional drawing packages: You press the Option key along with the right- or left-arrow key to move your characters closer together or farther apart. Unfortunately, neither StrataType's interface nor its documentation specifies the distance units, so you don't know exactly how much spacing you're adding or deleting. Still, this feature is welcome, because spacing adjustments can make 3-D text much more readable.

For its new lighting controls, StrataType borrows the lighting palette from StrataVision 3d, Strata's 3-D-modeling and -animation package. You set the lights — an unlimited number of them — by clicking on a small sphere that corresponds to a sphere surrounding your text; each click creates a light focused on the text, originating where you clicked. A light meter on the palette tells you when you've added too much light. For further effects, you can overlay lights with gels that color them or create shadow patterns such as a spotlight or venetian blinds; you can add custom patterns by importing any PICT file into StrataType.

In addition to letting you add effects to your text, StrataType 2.0 lets you put picture backgrounds behind it. Previously, you had to use Photoshop or some other compositing program to create this effect.

As for the type itself, Strata improved the rendering quality in StrataType 2.0 by adding anti-aliasing options for smoother, less jagged edges. Several settings let you trade off between the speed and quality of rendering.

Although rendering in StrataType is now comparable to that of its competitor, Pixar's Typestry, the program is still less flexible than Typestry. You're limited to one text string per document (unless you import your text as an Adobe Illustrator file), and you can't illuminate your background images with gels to heighten the 3-D effect.

If you want total flexibility — or high-end features such as animation capability and photo-realistic special effects (perforations, motion blur, and so on) — you'll still need to opt for Typestry. But if you're looking for a simple, inexpensive product for creating attractive 3-D type, StrataType 3d 2.0 is a good choice.

Strata, Inc., 2 W. St. George Blvd., St. George, UT 84770; 800-869-6855 or 801-628-5218. Version 2.0. $199.

— *Sean Safreed*

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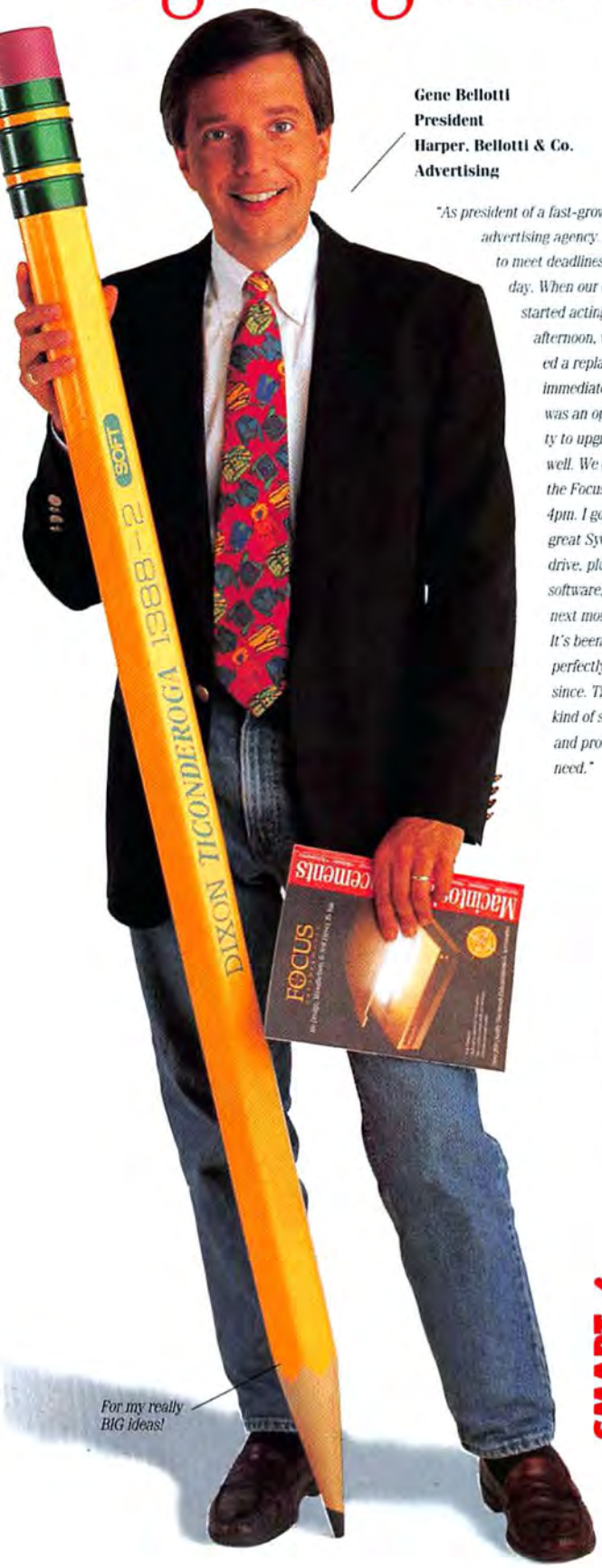

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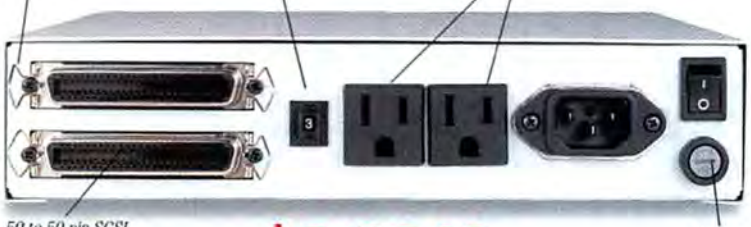

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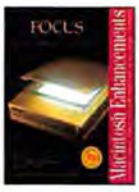

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CIRCLE 127 ON READER SERVICE CARD.

MacUser SPECIAL REPORT
CENTRIS 660AV | QUADRA 840AV

Sound and VISION

Apple's two new AV Macs elegantly blend your phone and your TV — with your voice in command.

By Russell Ito

The problem with most work spaces is that there's too much stuff lying around your computer and you can't consolidate it. You may have a fax machine; maybe a speakerphone attachment for your phone; most likely a modem; and if you do multimedia work, all manner of cords, cables, and the ubiquitous collection of black — or Mac-platinum — boxes. What you'd probably like to do is somehow mash all those disparate boxes together — retaining all of their functionality but in a significantly less complex and more accessible form.

Not coincidentally, Apple has been thinking along the same lines. That's what it set out to achieve with its newest Macs: the Centris 660AV and the Quadra 840AV. The new AV machines (*AV* stands for *audiovisual*) are the fastest, most sophisticated Macs yet. As their name suggests, audio and video are at the heart of the new computers.

For graphics and publishing professionals who don't want to settle for anything but the fastest, the new machines are the answer. For multimedia developers, who have similar power requirements as their publishing and graphics counterparts but additional needs as well, the AV Macs are also the answer.

PHOTOGRAPHY: STEVEN UNDERWOOD

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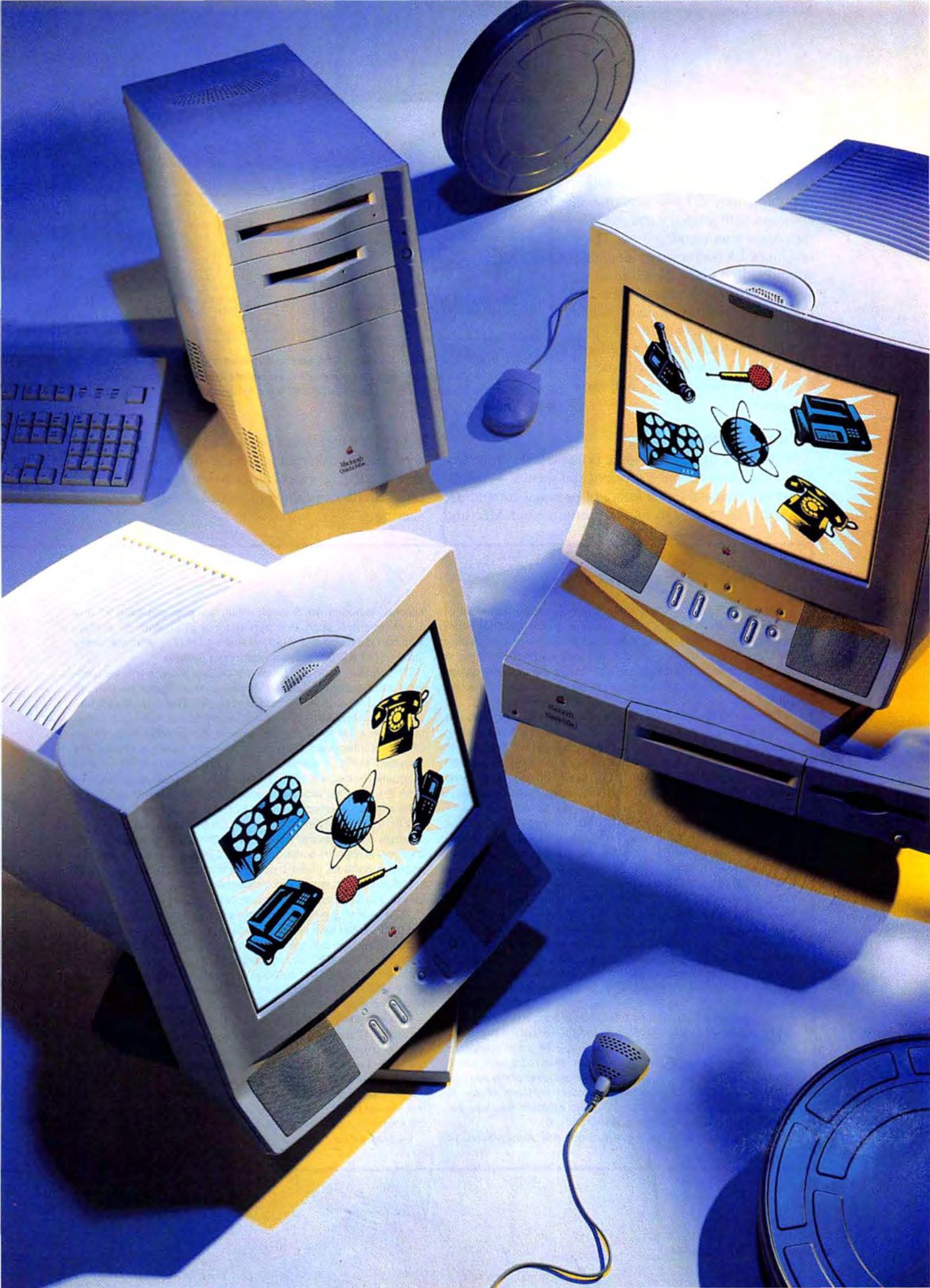


And the AV Macs even have appeal for average business users who might not think they'd have anything in common with graphics and publishing pros or multimedia authors. These machines let business professionals simplify their lives by eliminating several boxes, including their fax machines and their modems, while also giving them powerful new communications tools, including affordable videoconferencing and true integration of their phones and their computers.

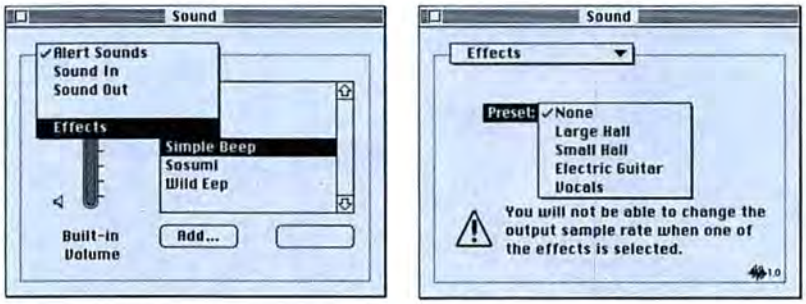


Figure 1: In addition to supporting 16-bit stereo audio samples, the new Sound Manager lets you add effects to your audio. To select an effect, you choose Effects in the Sound control panel (left) and then take your pick from the pop-up menu (right).

The AV Technologies

With the AV machines, Apple is introducing three key technologies — telephony, video, and speech — it considers fundamental to the future of personal computing.

Apple's telephony technology brings your Mac and your phone together. The AV machines let your computer serve as a speakerphone, an answering machine, a fax/data modem, a videoconferencing system, and even a collaborative working environment with remote screen sharing.

The Multimedia Monitor

With the advent of QuickTime, the Mac entered the era of the talkies. Unfortunately, the same can't be said for most monitors, which are mired in the silent era: They can display pictures — even moving ones — but they don't do anything to improve the sound coming from your Mac's miniature speaker. A new era is dawning, however, with the introduction of the first multimedia monitor: the Apple AudioVision 14 Display.

The AudioVision 14 Display combines the familiar with the unfamiliar in a single, integrated package. On the familiar side, there's the CRT itself: It's the same, crisp 14-inch Trinitron unit Apple uses in its mainstream Macintosh Color Display. What's unfamiliar in the AudioVision 14 Display is all of its multimedia functions: Stereo audio-in and -out capabilities are built in, as is direct video-in support for high-quality S-video.

A pair of stereo speakers is the AudioVision 14 Display's most visible new feature. Sitting right underneath the CRT is a fully enclosed, magnetically and acoustically shielded, ported, bass-reflex speaker system. Although the speakers themselves are small, each only about 2.5 inches in diameter, their sound is quite acceptable, with much better bass response than you might expect, thanks to the bass port at the monitor's rear. Angled slightly upward to direct the sound toward the user's ears, the sound system is designed for personal use rather than for presentations. As part of that design, Apple incorporated active equalization circuitry into the audio system, so it automatically adjusts the frequency curve to match the listening level (for example, more bass at lower volumes). Apple also focused the stereo image 17 to 24 inches from the screen, so you're in the stereo center when you're sitting directly in front of the monitor.

To complement the speakers, Apple built a unidirectional microphone into the top of the monitor. The mike works with any modular Mac that supports sound input, and when you use an AudioVision 14 Display in conjunction with one of the AV Macs equipped with a GeoPort Telecom Adapter, you can use the monitor as a full-function speakerphone.

For the video side of the equation, the AudioVision 14 Display includes an S-video input, so you can plug in any S-video source, such as a camcorder or VCR. With an AV Mac, you can combine the AudioVision 14 Display and the video input to get a basic videoconferencing system.

The AudioVision 14 Display includes more ports and up-front controls than any other Apple monitor. The ports include audio-in and -out, ADB, and S-video-in. The front panel has buttons for brightness, contrast, volume, speaker mute, and microphone on and off. Some other noteworthy features include an integrated tilt/swivel base and certification for the Swedish MPR II standard for low-frequency electrical and magnetic emissions. The AudioVision 14 Display is also an EPA Energy Star product, because it powers down automatically after a specified amount of CPU inactivity.

For maximum flexibility, the AudioVision 14 Display also includes new software that lets you change the monitor's settings on-screen to override the front-panel buttons. Plus, the software controls make it possible for software developers to customize the display — for example, the sound-out port can be configured to support a subwoofer instead of headphones.

With everything that feeds into the monitor, you might think the back would look like a spilled plate of spaghetti. It would if Apple hadn't come up with a solution, sort of. It's a single connector, the IDC (Integrated Desktop Connector), which carries all the signals: audio-in and -out, RGB-video, S-video, and ADB. It's an elegant concept, a true plug-and-play audio-visual monitor; that is, it *will* be elegant — someday.

Unfortunately, the AV Macs don't use the new integrated connector; they still use all the old, single-purpose connectors, each of which demands its own cable. To connect the new Macs to the AudioVision 14 Display, Apple has produced a squid-shaped adapter that — you guessed it — splits the single elegant IDC back into spaghetti. Future Macs, Apple says, will include the new connector, so you won't need the adapter. For the moment, however, pasta calamari is the order of the day.

— Russell Ito

QuickTime proved how eager people were to get live video into their work, but it also proved just how complex separate digitizing systems for video and audio could be. The AV Macs provide the solution. CD-quality stereo sound and full-motion video — in and out — are fundamental to the new multimedia powerhouses. All you have to do is plug in your video or audio source and start digitizing (see Figure 1).

Apple's addition of speech recognition to the Mac's operating system marks the first major enhancement to the Mac's human interface. The introduction of the AV Macs marks the realization of the technology introduced several years ago under the code name Casper. Controlling your machine via the spoken word can greatly increase the speed with which you accomplish repetitive tasks, while providing a simpler, more human level of interaction. Plus, the AV Macs not only listen to your commands but they also talk back to you. Apple also includes a text-to-speech capability you can use to scan your e-mail or listen to a lengthy Read Me file.

What's New Inside

To make all of the AV Macs' additional functions possible, Apple has packed in more new hardware than in any other Macs in recent memory (see Figures 2 and 5). The key addition is the incorporation of an AT&T *DSP* (digital signal processor) chip on the motherboard. The AT&T DSP3210 (55 megahertz in the Centris 660AV, 66 megahertz in the Quadra 840AV) is designed for real-time signal processing, including speech recognition and the processing of modem signals and sound. It can also race through floating-point calculations to speed up calculation-intensive work such as processing graphics filters.

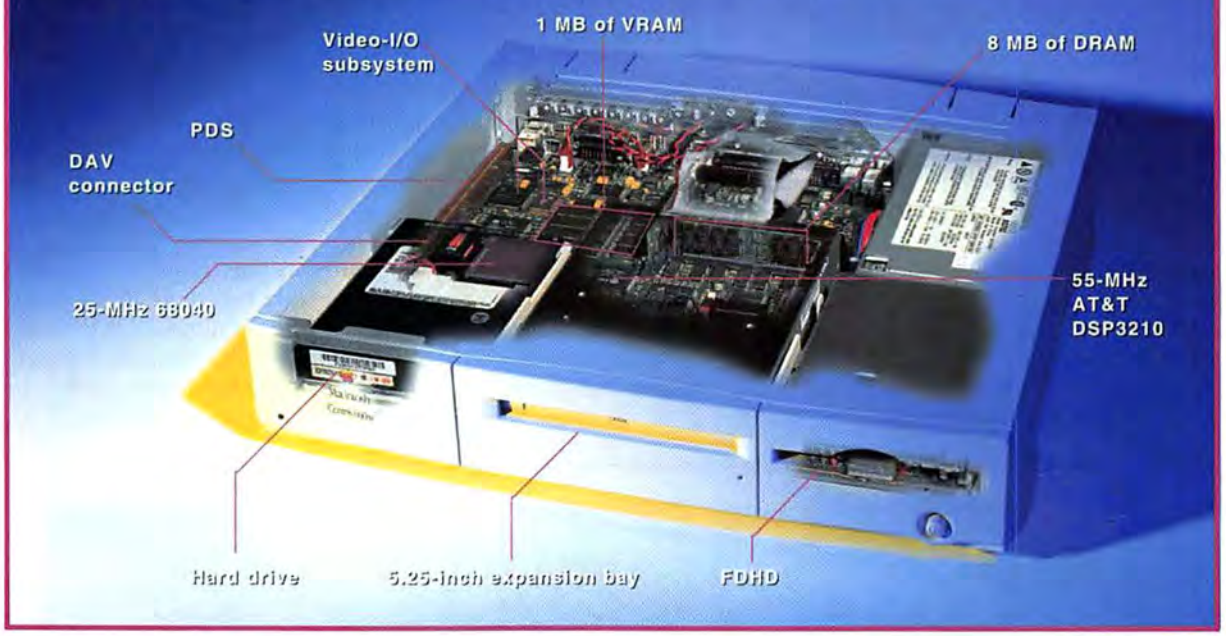
Because the DSP's real-time signal processing makes a wide range of telephony functions possible, Apple has created a new serial communications port, the GeoPort, which takes advantage of those functions. With the addition of an external box called the GeoPort Telecom Adapter, you can plug your AV Mac directly in to your phone line and get 9,600-bps data/fax send/receive (V.32,

The AudioVision 14 Display combines the image quality of Apple's standard 14-inch Trinitron monitor with a complete audio-I/O subsystem as well as S-video inputs.

Apple's new IDC (Integrated Desktop Connector) for the AudioVision 14 Display combines ADB, Mac video, stereo audio-in and -out, and S-video-in, in a single plug. Until future Macs ship with an integrated IDC port, however, you'll have to use an adapter that splits the various signals to connect to your Mac.

Figure 2: Inside the Centris 660AV

Figure 2: The Centris 660AV looks much like the Centris 610 inside, but it has many significant enhancements. The AT&T DSP3210 makes the 660AV's telephony, sound, and speech capabilities possible, and the 660AV's processor is a full 68040. The 660AV also ships with twice as much VRAM as the 610 (1 megabyte versus 512K).



V.29, Group 3 fax) without an external — or internal — modem or fax machine. Working with the DSP, the GeoPort also makes voice telephony possible, so you can use your Mac as a speakerphone and an answering machine.

For digital-video support, Apple has added an entire video subsystem that doesn't even touch the DSP. For digital video, the AV Macs use the same Philips chip set as the SuperMac VideoSpigot products. The AV machines can display full-motion, full-screen video at 30 frames per second on your Mac monitor, although capture rates are generally around 10 frames per second. The AV Macs include composite- and S-video inputs for NTSC, PAL, and SECAM plus outputs for composite- and S-video to NTSC and PAL.

And because many multimedia authors will want the best-quality output and digital capture, Apple has provided a new 40-pin slot, called the DAV (digital audio-visual) connector, for third-party add-on cards. These will generally be compression/decompression cards for the JPEG, MPEG, and DVI standards.

Figure 3: Centris 660AV Back Panel

Figure 3: With all of the Centris 660AV's added capabilities, practically every inch of its back panel is occupied. Note the four ports for composite- and S-video-in and -out and the new GeoPort to the right of the LocalTalk port.

Finally, to speed data throughput as much as possible, Apple has made three important additions to the AV systems: full DMA (direct memory access) support, asynchronous-SCSI support, and implementation of the NuBus 90 specification. With DMA, transactions between main memory and the SCSI, Ethernet, floppy-drive, and serial-port-I/O subsystems no longer have to pass through the CPU, so those transactions don't have to share the CPU, which slows processing down.

The benefit of asynchronous SCSI won't be immediate, because

application vendors will have to adapt their programs to take advantage of this function, but in the future, your CPU won't have to wait to complete a SCSI I/O request before becoming available again.

And by incorporating a new NuBus controller, Apple has enabled the use of the NuBus 90 spec. As a result, it's theoretically possible for the system's NuBus transfer rate to reach the bandwidth limit of 40 megabytes per second. Users who have large-screen, 24-bit-color video cards may see a big benefit (depending on the task being performed), because these cards will be able to accept larger amounts of data faster than before.

What's Familiar Inside

As the Centris and Quadra monikers would indicate, Apple has built the AV machines on existing models, so some of what's inside them is familiar. Each uses a 68040 (the 660AV has a 25-megahertz model and the 840AV has a 40-megahertz one), and both have the same expansion options as their predecessors, the Centris 610 and Quadra 800 — a single PDS that can accept an adapter for a 7-inch NuBus card in the 660AV and three NuBus slots in the 840AV.

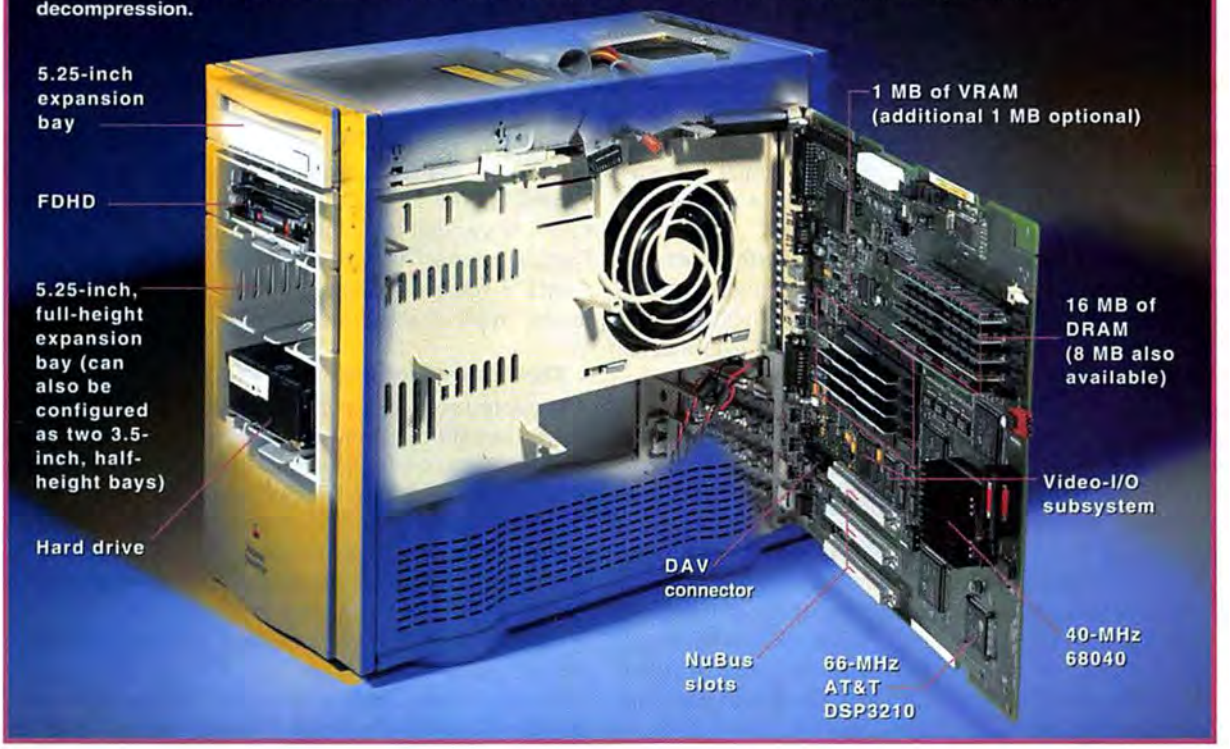
Each machine ships with 1 megabyte of VRAM soldered onto the motherboard, enough to support as many

Figure 4: Quadra 840AV Back Panel

Figure 4: The Quadra 840AV's back panel is jammed with the same variety of ports as the Centris 660AV's.

Figure 5: Inside the Quadra 840AV

Figure 5: The Quadra 840AV resembles its closest cousin, the Quadra 800. In addition to a fast DSP chip, the 840AV has twice as much VRAM as the 800 and a new DAV connector for hardware-accelerated compression and decompression.



Which Mac Should I Buy?

If you're shopping for a Mac, you may well find yourself perplexed by the panorama of possibilities and confounded by the cornucopia of configurations. Expert help is at hand, however; *MacUser*'s Which Mac Should I Buy? HyperCard stack can help you pick out the Mac model that's right for you.

Developed by HyperCard guru Danny Goodman with the help of the MacUser Labs and ZiffNet/Mac staffs, this expert system asks you about the software you use, the features you need, and your budget. It then recommends the best-suited models and lets you compare features on an interactive chart. The updated version, 2.0, features an improved decision-making process and provides technical specs for all the latest Macs, from PowerBooks to Performas to Quadras, up to and including the Centris 660AV and the Quadra 840AV.

Which Mac Should I Buy? is available exclusively under the ZiffNet Selections icon on AppleLink and on ZiffNet/Mac, where you can download the file WCHMAC.SEA from Library 7 (Reference) of the Download & Support Forum.

— *Mark Simmons*

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Figure 6: Centris 660AV Speed Tests

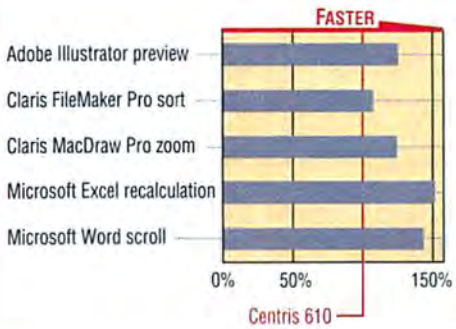

Figure 6: When performing day-to-day computing tasks, the Centris 660AV is about a third faster than the Centris 610. Excel benefits from the full FPU in the 660AV's 68040, but FileMaker Pro gains little. Only Microsoft software engineers can explain Word's scrolling speed. The Centris 660AV and the Centris 610 were tested in 8-bit color with 8 megabytes of RAM and an internal 230-megabyte hard drive.

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Figure 7: Quadra 840AV Speed Tests

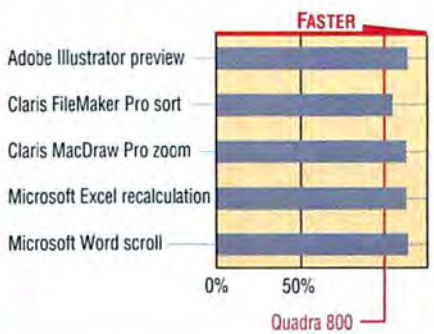

Figure 7: The Quadra 840AV is faster than a Quadra 800 but only by about 15 percent overall — a barely noticeable improvement. The FileMaker Pro sort test proved that the hard drive has the greatest influence on database-program speed. The Quadra 840AV and the Quadra 800 were tested in 8-bit color with 16 megabytes of RAM and an internal 500-megabyte hard drive.

as 16 bits of color (32,000 colors) on displays as large as 16 inches. The 840AV can accept an additional 1 megabyte of VRAM on SIMMs for 24-bit-color support on 16-inch displays.

The 660AV and the 840AV each ship with at least 8 megabytes of DRAM, but their configurations are slightly different. The 660AV comes with 4 megabytes soldered onto the motherboard and two 2-megabyte SIMMs in its SIMM slots. Two 32-megabyte SIMMs would bring the 660AV to its maximum RAM capacity of 68 megabytes. The 840AV comes with 8 or 16 megabytes on SIMMs only. With four SIMM slots, the 840AV can accept a maximum of 128 megabytes of RAM (8 megabytes less than the Quadra 800), but to achieve that figure, you have to use four 32-megabyte SIMMs, which are neither plentiful nor cheap.

And, in addition to all the ports you'd expect to find — including LocalTalk, Ethernet, SCSI, RGB-video-out, audio-in and -out, and ADB — you get a bunch of video jacks: one each for composite- and S-video-in and -out (see Figures 3 and 4).

Both the Centris 660AV and the Quadra 840AV are offered in configurations that include an internal AppleCD 300i CD-ROM drive for around $300 more than a model that isn't equipped with a CD-ROM drive. Getting a model with a CD-ROM drive is an obvious choice if you're thinking of joining the CD-ROM revolution. Apple is also bundling a bootable CD-ROM.

The New Champs

In our tests of CPU speed, we found the AV Macs to be faster than the machines they're based on but not by huge amounts (see Figures 6 and 7). Although the Centris 660AV was noticeably faster than the Centris 610, the Quadra 840AV was only slightly faster than the Quadra 800. Because none of the common business applications we used for overall testing benefit from the speed boost the DSP can provide — nor are they likely to — the overall results reflect only the basic operating speeds of the two systems.

Our prerelease Centris 660AV was about a third faster than the Centris 610 overall. The only test in which the

660AV wasn't at least 25 percent faster than the Centris 610 was for sorting a Claris FileMaker Pro database. Because FileMaker Pro makes extensive use of the hard disk in all of its operations, this test is dependent on the speed of the Centris 660AV's hard drive, which in our test unit was identical to the Centris 610's.

The Centris 660AV's big win was in the Excel 4.0 recalculation test, in which it was more than 50 percent faster than the Centris 610. Instead of the less powerful 68LC040 used in the Centris 610 — a version of the 68040 that doesn't include an FPU (floating-point unit) math coprocessor — the Centris 660AV uses a full-powered 68040 that includes an FPU, so math operations, such as the complex mortgage recalculation in our test, reap the benefit.

The most surprising Centris 660AV speed improvement we discovered was in the Microsoft Word 5.0 scroll test. For reasons known only to a hallowed few in Redmond, Washington, the Word scroll zipped by nearly 45 percent faster than with the Centris 610. Although the 660AV's 68040 is 25 percent faster than the 610's (25 megahertz versus 20 megahertz), that doesn't explain such a big jump. Suffice it to say that Word scrolls faster on the 660AV, but we really don't know why.

The prerelease Quadra 840AV we tested was faster than the Quadra 800, but the speed difference was barely recognizable — at least without a stopwatch: In our general office-productivity tests, the 840AV hovered around 15 percent faster than the Quadra 800. If you're considering buying a Quadra 840AV, look beyond speed for your justification. Apple has provided one big reason for making the investment: DSP.

The DSP Difference

Applications have to be modified to recognize and use the AT&T DSP3210 chip in the Centris 660AV and the Quadra 840AV, so we had to test our prerelease Macs with prerelease software. Therefore, although we're sure of our results, your mileage may differ. With that caveat on record, we can say that for those applications that have been revised to take advantage of the AV Mac's DSPs, you will see a speed difference — and sometimes a dramatic one.

We performed two tests on the Centris 660AV — using a Gaussian-blur filter in Adobe Photoshop and producing a lighting effect in Fractal Design's PainterX2 — and saw the DSP provide a significant speed boost in each test (see the "DSP Adds an Edge" sidebar). The PainterX2 lighting effect added three lights to the top of an image. With the DSP on, producing the effect was nearly seven times as fast as with it off and using the Photoshop filter was nearly three times as fast.

On the Quadra 840AV, we performed the Photoshop and PainterX2 tests and also produced a QuickTime video effect with a prerelease version of VideoFusion's VideoFusion. With the DSP on, using the Photoshop filter was a little more than two and a half times as fast and producing the PainterX2 lighting effect was more than five times as fast. Producing the VideoFusion pan/zoom/rotate (PZR) effect was a little more than 25 percent faster with the DSP on than with it off.

AV into the Future

Although they're the first in the AV line, the Centris 660AV and the Quadra 840AV aren't just isolated examples of cool technology. Apple considers the audiovisual technologies in these machines — telephony, video, and speech — to be core technologies and has promised to spread them throughout most of its desktop product line. Certainly future Centris-level — and higher-level — Macs will provide audiovisual capabilities, and those technologies will also carry forward to the

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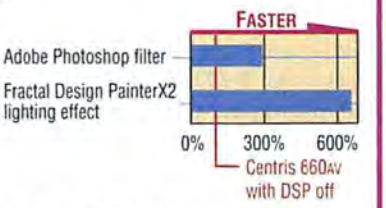
DSP Adds an Edge

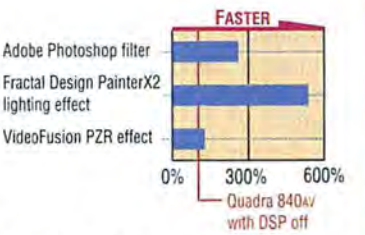
The new AV Macs are the first to include a DSP on the motherboard. A DSP — the Centris 660AV and the Quadra 840AV use an AT&T DSP3210 — can add significant power to applications that are designed to take advantage of it.

Common business applications such as word-processing, database, and spreadsheet programs won't profit from the DSP's power, but complex graphics applications such as those that use graphics filters, rendering, and image manipulation benefit greatly.

When running prerelease versions of Adobe Photoshop and Fractal Design's PainterX2 that had been modified to take advantage of the DSP, the Centris 660AV provided nearly a two-fold increase in the former's speed and almost six times in the latter's. The Quadra 840AV's DSP provided speed improvements of about 25 percent to nearly four and a half times. A prerelease version of VideoFusion's VideoFusion shaved a full 30 seconds off a test that, without the DSP, took nearly two and a half minutes to complete.



With its DSP chip in action — with applications ready for it — the Centris 660AV's speed got a major boost.



The Quadra 840AV's DSP chip produced results that were almost as dramatic as the Centris 660AV's.

upcoming PowerPC Macs, due next year.

The Centris 660AV and the Quadra 840AV are the fastest and most versatile Macs Apple has designed so far — which, ironically, also makes their benefits the most difficult to explain. Because they offer so much, it's hard — if not downright impossible — to conceive of a single user who can take advantage of every capability they have to offer. On the other hand, there's so much in these boxes that even if you were to use only a fraction of it, you could still more than justify the cost of the purchase.

And that cost should be about what their predecessors cost. The AV Macs offer more value for the money than anything else in the Mac line. And *value* means more than just speed. If speed is your only purchasing criterion, think hard before buying. Although the AV Macs are faster than the machines they're based on, the overall speed differences aren't that great if all you're doing is general business computing.

Even if your business is graphics or multimedia, remember: Your favorite applications have to be revised to take advantage of the DSP chip. Because some developers have chosen to skip the DSP in favor of preparing for the PowerPC — which will offer a speed that either matches or exceeds that attainable with the DSP — not every application will be revised for the DSP. So before you rush off to your dealer with visions of a three-day workweek, check with the developers of the applications you use most, to make sure they'll have a version that exploits the AV Macs' capabilities.

Of the two machines, the Centris 660AV is the clear winner. It's noticeably faster than the Centris 610, offers a full 68040, includes all the AV technologies, and should cost no more than a comparably equipped Centris 610 did at press time (around $2,500).

The Quadra 840AV doesn't blow the Quadra 800 out of the water, but it's no slouch, either. If you're considering buying the Quadra 840AV, don't just look at its basic speed; its AV capabilities are more compelling factors.

Even when it's time to make the move to a PowerPC Mac, either of the new AV Macs will be a powerful business partner — and a welcome antidote to workspace clutter.

Russell Ito is a senior editor who can't wait to marry his computer to his phone so he can escape *MacUser*'s voice-mail system. Sean Safreed, the MacUser Labs project leader who managed the testing for this report, anxiously awaits the first PowerPC Mac.

Table 1: Centris 660AV and Quadra 840AV Features

● = yes
○ = no

	Centris 660AV	Quadra 840AV
List price (RAM/hard drive)	$2,489 (8/230) $2,799 (8/230 w/ CD-ROM drive) $3,139 (8/500) $3,449 (8/500 w/ CD-ROM drive)	$4,069 (8/230) $4,399 (8/230 w/ CD-ROM drive) $5,119 (16/500) $5,449 (16/500 w/ CD-ROM drive) $6,249 (16/1 GB w/ CD-ROM drive)
Hardware		
CPU	25-MHz 68040	40-MHz 68040
DSP	55-MHz AT&T DSP3210	66-MHz AT&T DSP3210
DRAM	8 MB standard, 64 MB max.	8 or 16 MB standard, 128 MB max.
VRAM	1 MB	1 MB standard, 2 MB optional
Display support		
14-inch (640 x 480 pixels)	16 bits	16 bits standard 24 bits with 2 MB of VRAM
16-inch (832 x 624 pixels)	16 bits	16 bits standard 24 bits with 2 MB of VRAM
21-inch (1,152 x 870 pixels)	8 bits	16 bits with 2 MB of VRAM
Video formats		
Input	NTSC, PAL, SECAM	NTSC, PAL, SECAM
Output	NTSC, PAL	NTSC, PAL
Ports		
Display	●	●
Stereo audio (in and out)	●	●
Composite-video (in and out)	●	●
S-video (in and out)	●	●
ADB	●	●
GeoPort (high-speed serial)	●	●
LocalTalk	●	●
Ethernet	●	●
Slots		
DAV (digital AV)	●	●
PDS	●	○
NuBus	○*	●†
SCSI	●	●
Other		
Dimensions (L x W x H)	16.1 x 15.2 x 3 in.	7.75 x 16 x 14.25 in.
Weight	14 lb	25 lb

*A PDS adapter adds one NuBus slot, which accepts 7-inch cards only.

†Has three NuBus slots, which accept full-sized cards.

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Standard Features	DEClaser 1152	HP® Laser Jet IIIP	Apple LaserWriter® NTR	Apple LaserWriter Select 310
PostScript Level 2	**YES**	Yes	Yes	No
AppleTalk	**YES**	Yes	Yes	No
Resident PostScript Fonts	**17**	35	35	13
Simultaneously Active Ports	**YES**	No	Yes	No
List Price	**$999**	$1,759	$1,649	$1,079

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CIRCLE 107 ON READER SERVICE CARD.

MacUser SPECIAL REPORT
CENTRIS 660AV | QUADRA 840AV

Apple PHONE

Meet the tools that marry your Mac and your phone: the new telephony technologies and the high-speed GeoPort.

By Russell Ito

You are already a participant in the largest wide-area network in the world: the phone system. And telephones, essential parts of our work and personal lives, have become increasingly complex — especially in business. The good news is that Apple's new AV Macs simplify, simplify, simplify.

Most businesses have fax machines, and an increasing number have also adopted digital PBX phone-switching systems for their telephone lines. Unfortunately, the two don't get along. Fax machines can't accept calls routed through digital PBXs, so every business that has a digital phone system also has to maintain a dedicated analog line for its fax machine. Moving the fax machine to another location in the office means rerouting the analog line to that location. But by incorporating the AT&T DSP3210 into the Centris 660AV and Quadra 840AV, Apple has provided a means to simplify the phone situation as well as an easy way to add Mac power to your phone system.

ILLUSTRATION: LIN WILSON

The AV Macs' DSP3210 is a 32-bit processor that's specifically designed to process real-time continuous data streams such as modem signals, sound, and speech (see the "Apple Real Time Architecture" sidebar). The DSP power on their motherboards enables the AV Macs to double as voice-mail systems, speakerphones, fax/data modems, and digital answering machines. All you need is some additional software and an inexpensive interface box.

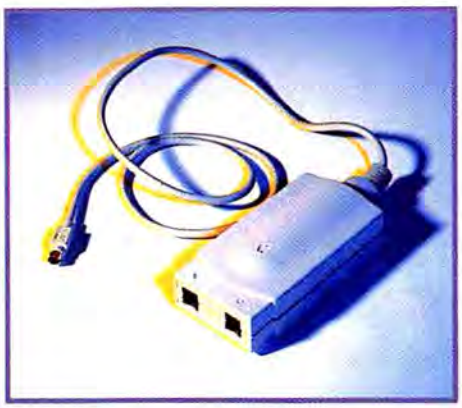


Figure 1: The GeoPort Telecom Adapter — the *phone pod* — is a line adapter that converts incoming and outgoing telephone signals into the format appropriate for your AV Mac and the phone system to which it's connected.

Calling GeoPort

The external interface that makes Apple's telephony vision possible is a new serial-port standard, which Apple has dubbed the GeoPort. At first glance, the GeoPort looks just like the serial ports on any Mac. Closer inspection, however, reveals one additional pin, which makes it possible for the GeoPort to draw power through the serial connection.

That extra pin is what powers the crucial interface box that sits between your AV Mac and the phone jack in the wall. Similar in concept to a LocalTalk drop box, the GeoPort Telecom Adapter (see Figure 1), affectionately known by those familiar with it as the *phone pod*, is essentially an analog-to-digital/digital-to-analog converter that lets the DSP send and receive its signals over standard analog phone lines. Although Apple's phone pod is designed to list for close to $100, third-party vendors will likely sell similar units for much less.

Apple Real Time Architecture

To incorporate the DSP3210 into the Mac, Apple needed a whole new architecture that could handle real-time data processing of modem signals, sound, and speech. As a result, the company designed ARTA (Apple Real Time Architecture), a custom operating system for both real-time data processing and time-share processing of non-continuous and non-time-dependent data, such as that processed by graphics-effects filters.

ARTA is based on *team processing*, an approach that divides and delegates the Mac's workload between the host processor and the DSP. It also enables the DSP to juggle real-time and non-real-time tasks, with real-time tasks always taking precedence.

Because Apple didn't want to be tied to a single processor, it designed ARTA to be processor-independent. ARTA can function with any coprocessor, as long as the chip is combined with software that lets it mimic the DSP3210's ARTA hooks. ARTA also means that developers who want to take advantage of the DSP3210 need only write driver software to do so.

The phone pod is a crucial component, because the pod — and only the pod — must be designed to match the type of phone line you're connecting to. Apple's phone pod works with standard analog lines; other vendors are likely to produce more-sophisticated pods for digital PBX systems and ISDN lines, giving you full access to the expanded capabilities of those services.

Fax On-Line

With the phone pod in place, the AV Macs — thanks to the DSP3210 — give you 9,600-bps data/fax send/receive capabilities (V.32, V.29, Group 3 fax) right out of the box — without an external or internal hardware modem. Apple provides the same Express Modem fax software that ships with the PowerBook Duos, so you can create and receive faxes without a fax machine. (It remains to be seen whether the DSP-based modem is more reliable than the quirky Apple Express Modem for the PowerBook Duo.)

Because the DSP lets developers implement modems in software, Apple expects that modem speeds faster than 9,600 bps will be achieved in the future. Modem speeds of 14,400 bps or faster are entirely possible; in fact, in our tests, we had no trouble connecting at 14,400 bps.

Fax-modem technology is nice, but it has one serious limitation: You receive bit-mapped text instead of editable documents. To improve the usefulness of AppleFax, the fax-receiving component of its Express Modem software, Apple bundles ExperVision's ExperFax OCR software with the AV Macs.

But there's a catch: The version of ExperFax included with the AV Macs has a limited life. It lets you process 30 fax documents of as many as 99 pages each and then shuts down. If, after that trial period, you decide you need fax/OCR capabilities on an ongoing basis, you can upgrade to the full product for a nominal fee.

Apple Phone

As an example of what the AV machines' telephony capabilities can mean, Apple is shipping a simple telephone application on the AV Macs' hard disks. Apple Phone is a full-featured phone application that gives you a speakerphone and an answering machine on-screen (see Figure 2). The phone component looks like a handset; you can dial your numbers either on-screen by clicking on numbers or by using the numeric keypad on your keyboard. The answering-machine component sits

next to the on-screen handset and has a Record Level meter for recording outgoing messages. Apple Phone also gives you on-screen buttons for playing back, scanning, and deleting messages.

Apple Phone requires a GeoPort Telecom Adapter, but it doesn't need anything else. The application demonstrates the versatility of Apple's software telephony technology, and it probably won't be long before you see more-sophisticated products from third-party vendors.

Figure 2: Apple's Apple Phone software, included with both AV Macs, turns your Mac into a speakerphone and/or an answering machine — all you have to do is add a phone pod.

Faster Than Expected

To test the GeoPort as a modem, we used a prerelease Quadra 840AV, a prerelease phone pod, and a prerelease CCL (connection control language) file necessary for linking up with ARA (AppleTalk Remote Access). Much to our surprise, everything worked — and at an even faster connect rate than Apple told us the ensemble would support. Using ARA, we established a connection to a Shiva LanRover (an ARA dial-in server) over a standard phone line and performed a Finder copy, moving approximately 25K's worth of text files from our Quadra 840AV workstation to the remote volume and back. We established and maintained a connection at 14,400 bps — far higher than Apple's official 9,600-bps limit for the GeoPort. The time to complete the transfer was within a few seconds of the time it took the industry-leading Global Village TelePort/Gold to complete it, also at 14,400 bps.

We had no problem sending a fax, using the Express Modem fax software, and Apple Phone also worked well as a speakerphone.

Incoming Calls

Apple Phone and the Express Modem application are clearly not the be-all and end-all of communications software, but they are fully functional and give a good indication of the kinds of products you can expect to see soon. Apple still has to complete a key software component, called Telephone Tool (see the "Telephone Tool" sidebar), before you'll see a flood of third-party products, but the company has incorporated the key enabling technologies, specifically the DSP3210 and GeoPort. With those, your Mac will finally be able to take its place on the one truly global net — the phone system.

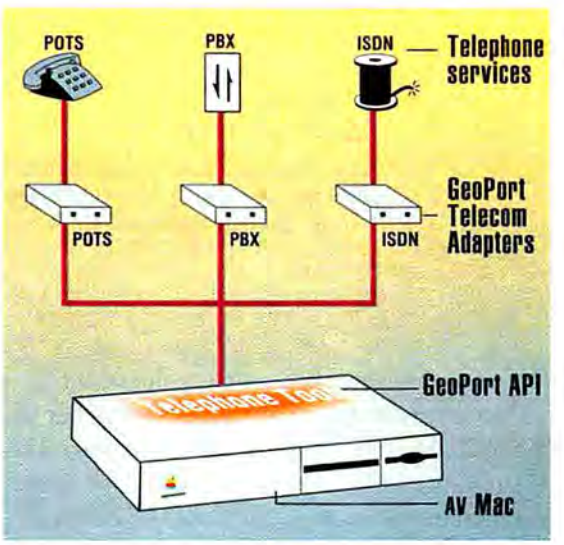
Telephone Tool

Apple's new AV technologies are fully developed, but in the rush to get the basics down and finished, Apple wasn't able to complete a key software component: Telephone Tool. A GeoPort API (application-programming interface), Telephone Tool will let third-party developers create a variety of products that take advantage of the telephony technologies in Apple's new AV Macs, regardless of the type of phone line the machines are connected to.

Currently, several phone-line standards coexist. The most common is analog POTS (Plain Old Telephone Service, the most colloquial of acronyms); there's also ISDN, for faster and more sophisticated uses, as well as a variety of PBX standards from various companies such as Northern Telecom and Rolm. The problem is that each of those line types requires a different GeoPort Telecom Adapter to cope with its data protocol.

Telephone Tool will provide phone companies and third-party developers with a common interface, so their phone pods will need to speak to only one API — there'll be a single Apple standard rather than a new standard for each new Mac.

So how did Apple create Apple Phone and the first GeoPort Telecom Adapter without Telephone Tool? Well, the company took the simplest phone standard (POTS) and stuck to the basics. As you might guess, Apple Phone doesn't support Telephone Tool (the API wasn't finished when Apple Phone was being developed), so that application will have to be rewritten once Apple finishes Telephone Tool — slated for sometime in the fourth quarter of this year.



Telephone Tool will provide a common link between a wide range of telephone-line types and the AV Macs, making it easy for third-party developers to create the necessary phone pods for each line type.

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MacUser SPECIAL REPORT
CENTRIS 660AV | QUADRA 840AV

VIDEO *Prime Time*

Full-motion video is finally right where it belongs: on the motherboard.

By Russell Ito

It wasn't so long ago that full-motion video on the Mac was considered a novelty. Although that changed with the advent of QuickTime, full participation in the video revolution remained elusive for most users. Working with digital video required a lot of additional hardware and software. Transferring digital video back to tape or onto an NTSC display required even more hardware. And after all that expense, the results still weren't always acceptable.

ILLUSTRATION: LIN WILSON

But as the name of the AV line suggests, Apple has decided that full-motion video is important enough to be embraced as a core technology: The AV Macs are designed with video input and output on the motherboard, right alongside networking, display, and communications — a remarkably rich assortment of technologies, especially when compared to PCs designed for Windows or DOS.

Apple has built an entirely self-contained video subsystem in to the AV machines, freeing both the hard-working 68040 microprocessor and the AT&T DSP3210 chip from the task of digitizing and outputting video. To handle those chores, Apple built the same Philips video-digitizing chip set in to its AV machines that SuperMac uses in its popular Video-Spigot products.

To accommodate video input and output, the AV Macs include jacks for both composite video and S-video — the formats used by most home videotape equipment. All you need in order to start digitizing is a video source, such as a camcorder, a VCR, or a videodisc player, and the cables that come with it.

Figure 1: VideoFusion's FusionRecorder, included with the AV Macs, lets you capture 16-bit-color video, using the new machines' digital-video circuitry.

Software Assistance

Of course, having all this hardware means you also need some software to control it, so Apple has bundled video-related applications with its AV machines to get you up and running. Among these applications is Video Monitor, an Apple product that lets you display 16-bit-color video in a window. Even when the window is expanded to full-screen size, Video Monitor gives you full-motion video at 30 fps (frames per second), but that's because the software is only blasting the video to the monitor — it's not *capturing* anything. Video Monitor can capture only single frames, although it accomplishes that at full 24-bit color.

Also included is VideoFusion's FusionRecorder (see Figure 1), a movie-capture application that creates 16-bit-color movies with frame rates averaging between 8 and 10 fps, depending on the contents of the source, the size of the window, and the speed of the hard drive to which you're writing. FusionRecorder can also capture audio-CD-quality, 16-bit-stereo sound samples (see Figure 2). Thanks to the DSP, you can capture audio in 8- (mono) or 16-bit (stereo) formats at sample rates that

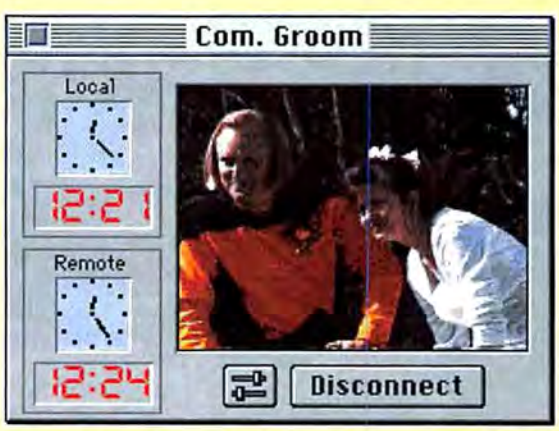
ES•F2F Videoconferencing

Videoconferencing has been around for awhile, but until recently, it involved dedicated — and expensive — hardware and software. Even recent desktop systems, although much less expensive, carry price tags of about $5,000 (or more) per node. And of course, you need at least two nodes — one on each end of the line.

By putting video hardware into the AV Macs and bundling The Electronic Studio's ES•F2F videoconferencing program with those machines, Apple has lowered the entry barrier. A LAN-based system, ES•F2F lets you see the person you're calling over a standard Ethernet connection — all you need to add is inexpensive video cameras. Depending on your chosen compression rate and the amount of traffic on the network, you can get frame rates that average 5 to 6 fps and go as high as 15 fps.

Holding a videoconference outside the bounds of your LAN, however, is a little trickier. ES•F2F does support AppleTalk and the Communications Toolbox, so if you have ISDN lines and an ISDN card, you can have a videoconference over ISDN. Because ISDN is still somewhat rare, The Electronic Studio (based in England) is also working on support for Apple's GeoPort as well as for analog phone lines. But because of the limited bandwidth of analog lines, frame rates will probably drop drastically — from numbers of frames per second to a couple of seconds per frame.

Although the version of ES•F2F included with the AV Macs doesn't include screen sharing, you can add that function by purchasing an upgrade extension from The Electronic Studio.



ES•F2F brings videoconferencing to your network. ES•F2F is bundled with the AV Macs; a screen-sharing option is also available.

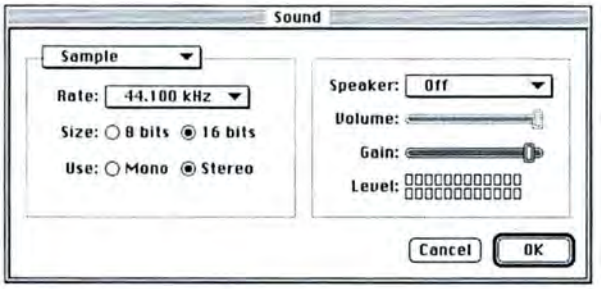


Figure 2: Just as FusionRecorder can capture 16-bit-video samples, it can record 16-bit digital audio, thanks to the AT&T DSP3210 processor inside each AV Mac.

range from 11 kilohertz to 44.1 kilohertz (audio-CD quality) — and even to 48 kilohertz for digital audiotape, or *DAT*.

Flicker-Free Video Output

For composite- or S-video output — either NTSC or PAL — the AV Macs use a technology Apple developed and then sold to Radius, which subsequently used it in its VideoVision products. This technology, which Apple calls Touchstone, eliminates the jittery video that usually results when digital video is output to NTSC devices such as monitors or VCRs.

But to get the flicker-free output, you must give up the option of displaying an additional video image in a separate window: The convolution required to get flicker-free video takes up all available VRAM, so there's nothing left to generate the window.

Show Time

Unfortunately, we weren't able to test the AV Macs' video-input capabilities for this story, but because Apple used the same video-digitizing chip set as that in SuperMac's VideoSpigot board, we expect your video-capture quality will be roughly equal to the VideoSpigot's. (Remember, we're talking about *quality* here — the fidelity with which the video image is converted to digital form — and not about frame rate. The VideoSpigot's frame rate, the number of video-image frames it can digitize each second, depends on the power of its host Mac's microprocessor.)

We were able to look at the AV Macs' video-output quality, however, which we judged high enough for use in business presentations. We output a Persuasion 2.1 presentation through the S-video output on a prerelease Quadra 840AV to a Sony Visca Hi-8 Deck. We then compared the results with the same presentation transferred to the same tape through a RasterOps MoviePak board. The 840AV's output was at least as sharp as the RasterOps MoviePak's output, and the 840AV-produced text was significantly sharper — especially on 1-pixel-wide lines. Overall, the 840AV's output was less jittery, with less bleeding in areas containing saturated colors. Although the 840AV's output color quality was somewhat less saturated than that produced by the RasterOps MoviePak, the 840AV's contrast was better in areas consisting of similar colors.

Video Is in Your Future

You might think that Apple's video technologies are only for multimedia producers, but that's not necessarily true. Add a couple of inexpensive video cameras, and you can use the video subsystem — along with the DSP3210 and the GeoPort — to create an inexpensive videoconferencing system. In fact, Apple provides the software to do just that (see the "ES•F2F Videoconferencing" sidebar). So although video may remain a curiosity for some, those who take full advantage of the AV Macs will find that video has a welcome place in their everyday business — and offers an open window to the multimedia future.

QuickFlix

QuickFlix, from VideoFusion, is one of the first applications to take advantage of the AV Macs' multimedia power. A simplified version of VideoFusion's eponymous high-end video-editing package, QuickFlix uses a simple storyboard interface for sequencing digital video clips and offers fewer effects than VideoFusion.

The QuickFlix bonus, however, in addition to its low cost, is its support for the AV Macs' speech-recognition technology. VideoFusion has built speech-recognition rules in to QuickFlix, so you can control the application by using voice commands. This simplifies the process of selecting clips and generating complex effects: You can invoke commands such as "Kubrick, three seconds, barn-door transition" merely by speaking them.

VideoFusion Ltd., 1722 Indian Wood Circle, Suite H, Maumee, OH 43537; 419-891-1090. $149.

QuickFlix, an entry-level video editor from VideoFusion, is one of the first applications to take advantage of the AV Macs' speech-recognition capability.

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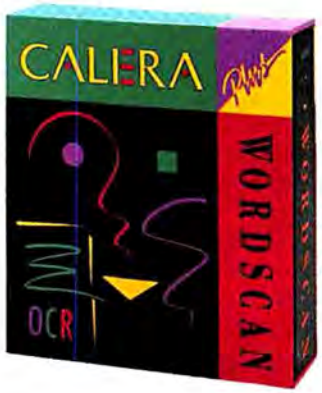

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CIRCLE 159 ON READER SERVICE CARD.

MacUser SPECIAL REPORT
CENTRIS 660AV | QUADRA 840AV

PlainTALK

It's time to stop mousing around. With PlainTalk, you can talk to your Mac — and it can talk back.

By Russell Ito

People should be able to talk to their computers. We all know that, because Hollywood tells us so. From HAL 9000 to the prosaically named Computer on the *Starship Enterprise,* talking computers are a staple in practically every science-fiction film ever made.

This vision is compelling not only for its showbiz pizzazz but also because speech holds tremendous promise for humanizing computer interfaces. It's a much more natural form of interaction than typing — or even handwriting. With the incorporation of a DSP chip into the AV Macs, Apple now has the processor power it needs in order to integrate speech into the Mac interface.

ILLUSTRATION: LIN WILSON

Apple's new speech technology, PlainTalk, has two distinct components: Text to Speech (TTS) and Speech Recognition (SR). The former is strictly for playback of text documents; the latter is a user interface that lets you control the Mac with voice-activated scripts.

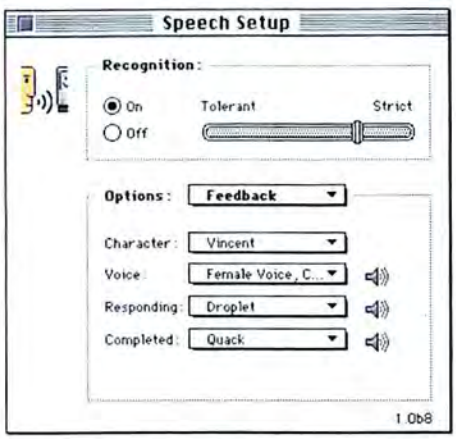


Figure 1: You activate PlainTalk Speech Recognition through the Speech Setup control panel, where you also set the threshold of acceptance and a variety of other conditions, such as whether an identifying word must be spoken before a command and the type of feedback you'd like.

Text to Speech

In terms of complexity and accessibility, PlainTalk TTS is the simpler of the two technologies. In fact, it's straightforward enough to work on any Mac — yours included — because it doesn't require the DSP circuitry on the new AV Macs.

The TTS components reside in the Extensions folder, and they occupy a substantial amount of disk space: The voice samples alone take up more than 5 megabytes, and the TTS extension occupies another megabyte. To demonstrate what TTS can do, Apple plans to ship the AV Macs with a version of TeachText that supports text-to-speech document conversion. To hear your text documents, all you have to do is open them in the new TeachText (or just type in some text) and choose a menu command.

In our informal tests, the TTS engine was surprisingly accurate. It successfully navigated the various pronunciations of *ough* in the words *rough, through, thought,* and *dough.* However, it tripped up on *daughtercard,* pronouncing the *augh* as "ow." Also, it consistently pronounced the word *tear* as "tare" rather than "teer," which produced some rather odd-sounding Shakespeare.

The TTS engine also recognizes punctuation, and it did a good job with the basics, pausing at commas and making full stops at periods. It also did a reasonable job of handling question marks.

As a proofreading tool, TTS is far from ideal. When we deliberately fed it incorrect material — including typos, missed spaces, misspelled words, and incorrect usage — it chugged right through without pausing. The one consistent error it did catch, however, was any typo that didn't include a vowel. *Bt,* for example, was pronounced "b, t" but *ov* was pronounced "of." Also, because TTS can't adjust for context, it sometimes tripped up on words that share the same spelling but that are pronounced differently depending on their use. *Read,* for example, was pronounced "red" more often than "reed," even though the context for the former didn't necessarily make sense.

Speech Recognition

Apple introduced PlainTalk SR under the code name Casper two years ago. It is by far the more complex of Apple's new speech technologies, and unlike TTS, it requires the DSP circuitry of the AV Macs.

PlainTalk SR is a speaker-independent, continuous-

Now Hear This

One of the first chores for PlainTalk users will be searching for a better microphone. Although Apple's model is unidirectional, it's far from ideal. In even moderately noisy environments, background sounds can interfere, making consistent recognition impossible. Fortunately, one standout alternative already exists: the JABRA *Ear*PHONE.

The *Ear* PHONE combines a tiny earphone speaker and a microphone into a comfortable earpiece. Instead of picking up your voice from sounds transmitted through the air, the *Ear* PHONE's microphone hears your voice as it is transmitted through the bones in your head. This minimizes interference from background noise and makes voice input to PlainTalk SR noticeably clearer and more consistent. The *Ear* PHONE is the only third-party microphone Apple has endorsed for use with PlainTalk in the AV Macs.

The JABRA *Ear* PHONE combines a speaker and microphone into an earpiece — it picks up your voice through bone conduction.

And because the *Ear* PHONE is both a speaker and a microphone, it supports all the telephony functions in the AV Macs — you can use it as a telephone receiver and a voice-input system. To close the loop between speech recognition and telephony, JABRA is bundling an application called Personal Dialer with the *Ear*PHONE. Personal Dialer is a voice-activated speed dialer that lets you store about 20 phone numbers and then dial them simply by saying the name associated with the number. When a call ends, the *Ear* PHONE automatically goes back into voice-recognition mode.

JABRA plans to publish PlainTalk phrase books listing the speech rules you can use to control the system and third-party applications by voice.

JABRA Corp., 9191 Towne Centre Drive, Suite 330, San Diego, CA 92122; 619-622-0764. $149.95.

speech-recognition system. The initial version is designed to recognize North American English only, so it becomes confused by some English dialects. Beyond that limitation, its continuous-speech architecture lets you issue commands in a reasonably normal manner of speaking, without any unusual pauses.

The speech-recognition software resides in the Extensions folder, taking up about 2 megabytes of disk space. You activate it through a control panel (see Figure 1). PlainTalk SR responds to speech commands by using either a combination of Apple events and AppleScript or a new version of QuicKeys — the latter method being an important accommodation for the many applications that don't take advantage of Apple events and AppleScript.

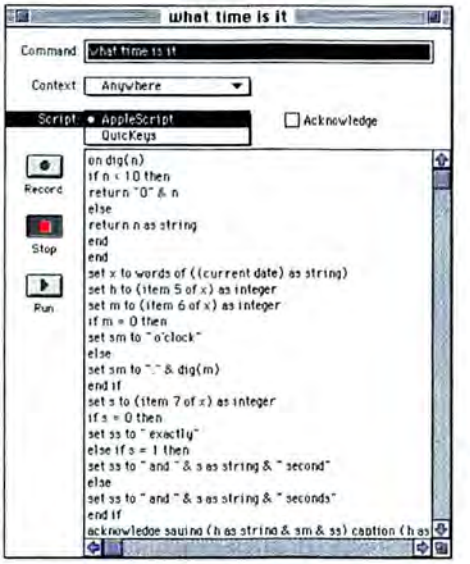


Figure 2: Although the Speech Macro Editor includes a Record function, it's not reliable. Writing and editing scripts is possible but difficult. You can choose either AppleScript or QuicKeys as the execution engine.

When the PlainTalk SR engine receives a spoken command, it launches a script that sends out appropriate Apple events to execute the order or it cues QuicKeys to do the same. The Apple-event method has the great advantage of making all the menu commands of an AppleScript-savvy application available by voice.

But because many applications bury their more sophisticated functions in dialog boxes, PlainTalk SR also supports so-called speech rules, which give users voice access to functions that aren't on menus. The problem is that speech rules are *resources* — complex bits of programming code — and someone has to write them. Application developers can write a set of speech rules and roll them into their programs or create sets of speech rules users can add by dropping them into their Extensions folders.

For more-complex operations, the AV Macs include a utility called the Speech Macro Editor (see Figure 2). Using this script editor, you can write or record a speech macro and then choose AppleScript or QuicKeys as the macro engine to execute the script. Creating speech macros isn't for the faint of heart; even with the Record function, macro creation is not for average users. If you're comfortable scripting in AppleScript, you'll probably be fine; otherwise, you'll probably get frustrated. Plus, for the Record function to work, your applications have to be recordable (in addition to supporting Apple events and AppleScript), and many applications — including the Finder — aren't.

To help make things a little more accessible, Apple has added a folder called Speakable Items to the AV Macs' Apple menu. Anything placed in the Speakable Items folder can be opened by voice command, so you can put aliases into it and use them to open various items. The folder is preinstalled with aliases for 16 common operations (open PrintMonitor, open Monitors, open General Controls, and so on), and you can add or delete as needed. However, the speed of speech recognition slows when more than 30 items are installed in the folder, so Apple recommends that you limit yourself to that number.

Command Performance

Our experiences with an early version of PlainTalk SR were mixed: When it worked, it worked well, but we were also reprimanded by a digitized "Pardon me?" a little too often. Results were very inconsistent when we used PlainTalk SR with Apple's supplied microphone in a room in which several people were talking: Sometimes it worked, sometimes it didn't, and sometimes it misrecognized a command and did something completely unexpected.

We also noticed an odd hitch in the execution process. PlainTalk SR sometimes recognized a command, acknowledged that it had recognized it, and then paused before executing it. Usually, this pause was just slightly annoying, but on at least one occasion, the wait was so long that we suspected that the machine had frozen — only to have our command suddenly execute. What made this pause-before-execution especially problematic was that its occurrence and duration were seemingly unpredictable.

Apple didn't provide us with many speech-controllable applications during our brief sneak preview, and because we had no way of knowing which commands in a speech-ready application could be controlled by voice, we weren't able to do much in the way of real-world application testing. Stay tuned for future reports.

Projecting PlainTalk

Apple's speech technologies are clearly in their early stages. The Text to Speech component works quite well and holds promise for vertical markets — products for disabled users, legal and medical offices, and remote access, for example (see the "Electronic Assistant" sidebar).

PlainTalk SR is a good initial implementation, but

speech-recognition technology still has a long way to go and several problems have to be addressed before it will be truly useful. For example, unlike the four-year-old Voice Navigator speech-recognition system from Articulate Systems, PlainTalk SR provides no way for you to find out what commands are available at any given moment. If an application has a collection of powerful speech rules or macros attached to it or if you're unfamiliar with the menu commands, there's no way to get an on-screen directory of what you can say to issue a command.

Because PlainTalk SR is speaker-independent, you can't train it to recognize speech patterns specific to an individual. That, combined with PlainTalk SR's continuous-speech architecture, can result in misrecognition of single-utterance commands such as Cut and Quit. PlainTalk SR can easily mix up those commands, and unfortunately, you can't correct the error or easily disable the misrecognized command. All you can do is increase the strictness of recognition across the entire system. Scripting is another problem: It's just too hard to create custom voice commands. Unfortunately, creating speech macros is going to be a programmers-only task for the foreseeable future.

Microphones are also a limitation. The one that ships with the AV Macs is unidirectional, but it's not focused enough to screen out even moderate office noise. Unfortunately, you can't just go down to the local electronics store and pick up another microphone, because the software won't accept input from it unless it conforms to specifications demanded by the software. So, with one notable exception (see the "Now Hear This" sidebar), you can't use off-the-shelf microphones with PlainTalk SR.

In other words, PlainTalk SR is still a far cry from HAL 9000. Like video and telephony, speech is an enabling technology third parties will have to pursue well into the year 2001 — and beyond.

The Electronic Assistant

The speech-recognition and telephony technologies introduced in the new AV Macs are impressive individually, but only when they're combined into full-scale communications systems do they fully demonstrate their power and promise.

Articulate Systems, the company whose Voice Navigator first brought speech recognition to the Mac way back in 1989, is developing a voice-driven office-automation system that lets travelers use their office-bound desktop AV Macs for remote dictation and a variety of telephone and communication services.

Code-named Personal Secretary, the system consists of four components: Dictation Manager, Telephone Manager, Telephony Speech Recognizer, and Remote Message Center. Dictation Manager, which should appear sometime this fall, automatically converts your spoken words into text, so you can create documents without touching the keyboard. The module works with WordPerfect and Microsoft Word and comes with either a 7,000- or 30,000-word active vocabulary (in RAM), with a 100,000-word dictionary on your hard disk. The system is speaker-independent and trainable: You can create personal voice files that let Dictation Manager learn and accommodate your individual speaking habits.

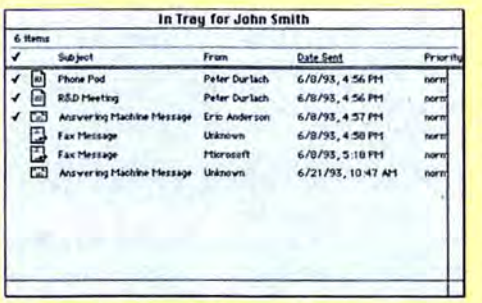
The remaining three modules integrate telephony and computing, using the AV Macs' telephony tools and AOCE — the Apple Open Collaboration Environment, a powerful message-management addition to Apple's system software. Telephone Manager lets you use voice commands to have your phone place calls and send faxes. Telephony Speech Recognizer lets you issue voice commands to your Mac over standard phone lines. And the technologies of these parts merge in Remote Message Center.

Using AOCE, Remote Message Center creates a single mailbox for your voice-mail, faxes, and e-mail messages and lets you retrieve and manipulate them by voice over standard phone lines. You simply call your Mac, using a standard phone, and then use voice commands to log in to your mailbox. Remote Message Center tells you how many messages you have and goes through them one at a time, telling you what type (voice, e-mail, fax) each message is and, if possible, who sent it.

When handling voice-mail, Remote Message Center offers the same functions as most phone-based systems, but it allows you to get those functions by talking to your Mac rather than by punching your phone's keypad. You can play back voice-mail messages and then forward, save, or delete them.

If you get a fax, Remote Message Center will tell you the number of the message-originating machine and let you forward the message to a fax machine close to you. If you have a fax/OCR program, Remote Message Center will read the fax to you, generating a voice file you can forward or save.

Remote Message Center handles e-mail equally seamlessly. It tells you who sent the message and its subject and reads the message to you. As with fax messages, you can treat the resultant voice file just like voice-mail. When it finishes giving you your messages, Remote Message Center asks you to confirm all of your message-handling instructions and carries out your orders after you hang up.



The Remote Message Center enables you to retrieve all of your messages — faxes, e-mail, and voice — from a single mailbox simply by calling your Mac with a standard phone and then issuing voice commands.

Articulate Systems will initially sell its Personal Secretary suite through VARs, packaged for special-needs users and for people in law and health care. The full package should be out by mid-1994.

Articulate Systems, 600 W. Cummings Park, Suite 4500, Woburn, MA 01801; 617-935-5656.

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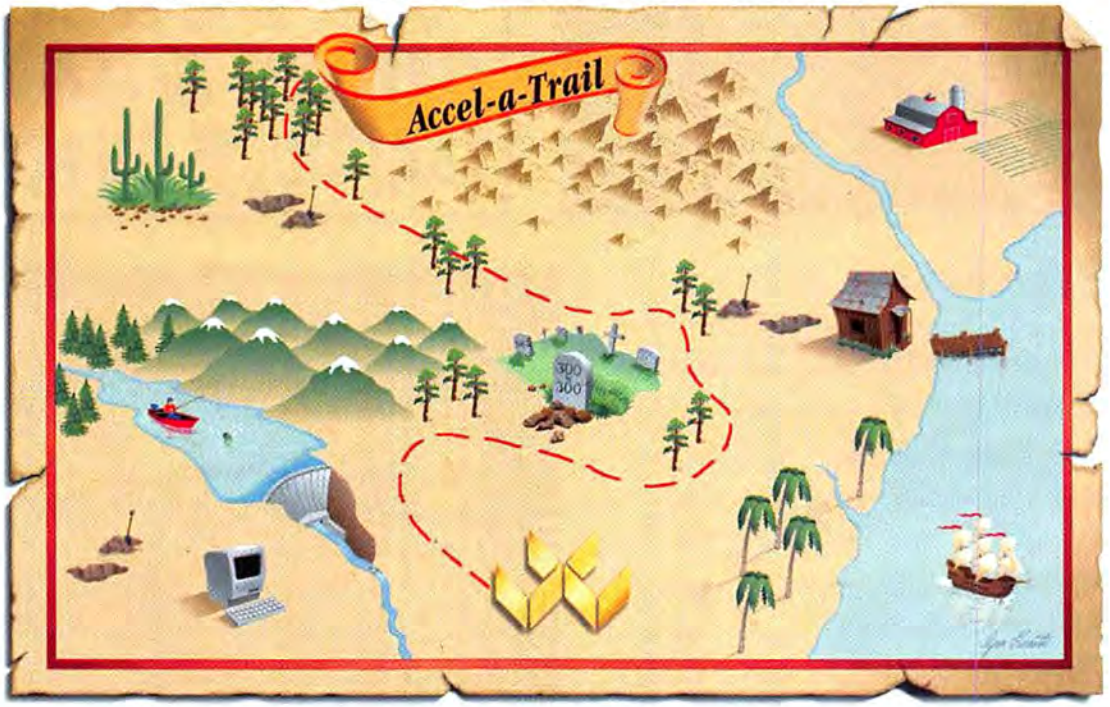

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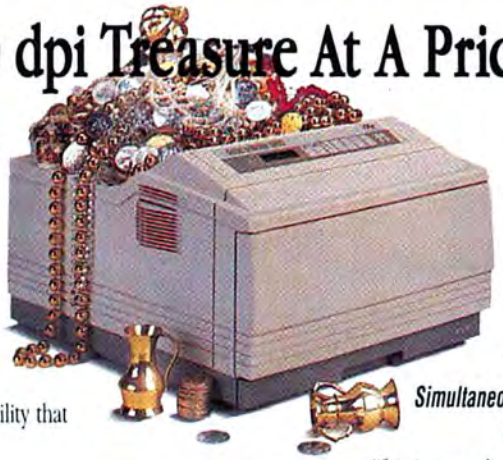

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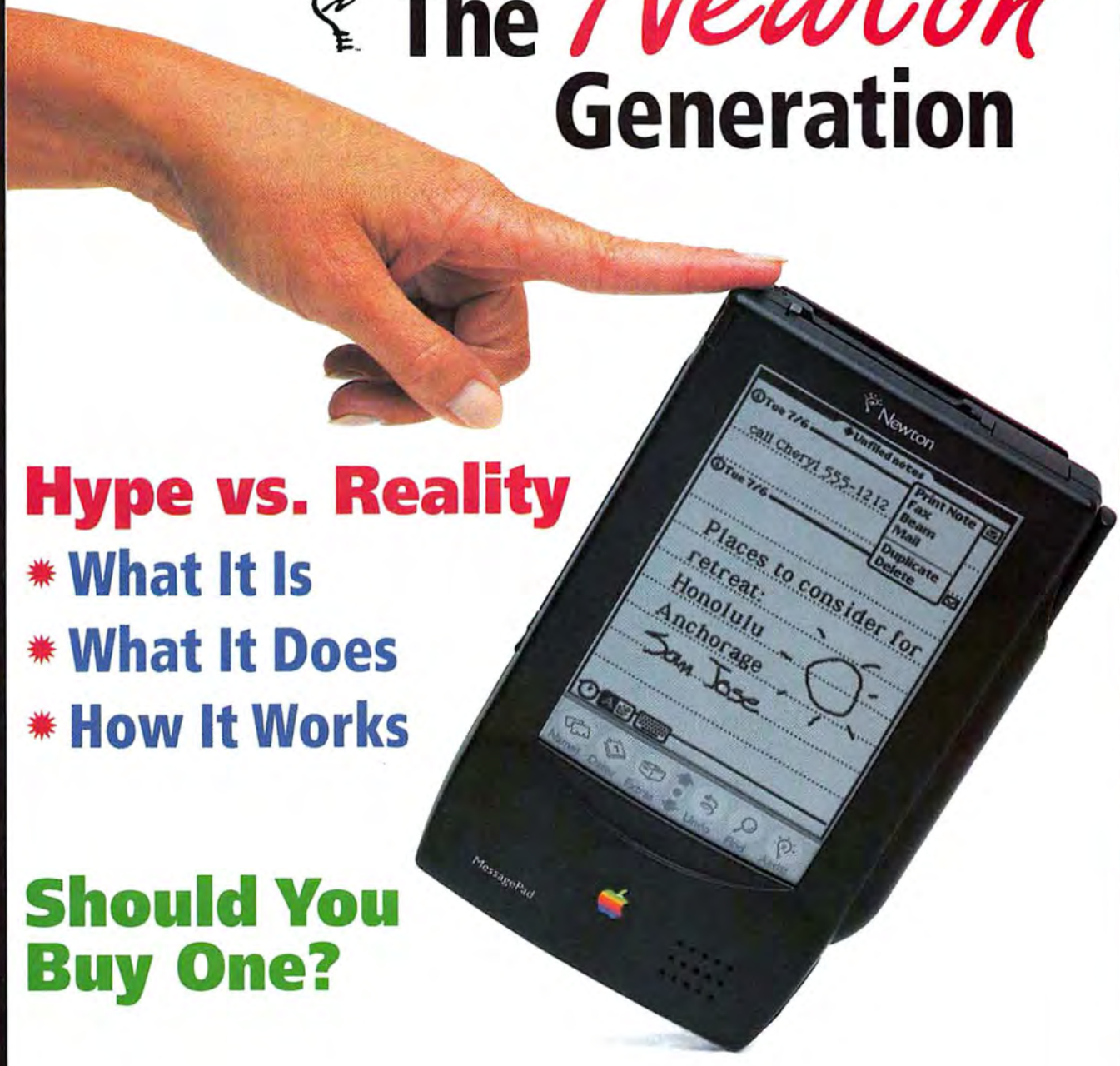
CIRCLE 126 ON READER SERVICE CARD.

MacUser

The Newton Generation



Hype vs. Reality

- **What It Is**
- **What It Does**
- **How It Works**

Should You Buy One?

The Newton

Apple is really good at hype. If you believed the first round of Newton hype, you'd expect that by Christmas of 1993, everyone from the president to kindergarten kids would be walking into a neighborhood Wal-Mart and buying a Newton. Newtons would be small, light, and portable. You'd write and draw on them with a pen. They'd help you track elusive tidbits of information. And they'd communicate with voice-mail, e-mail, pagers, cellular phones — you name it. They'd be so cheap that everyone could afford one. And they'd be so easy to use that you wouldn't even notice they were computers.

Will Apple's family of personal digital assistants redefine computing in the '90s?

Well, the first Newton, the Newton MessagePad, is here. Although it doesn't live up to Apple's vision, it does have two things going for it. For one, the MessagePad takes the lead in some up-and-coming technologies: handwriting recognition; communications capabilities; and most important, software that makes it easier than ever to handle data. And for another, it's *the* coolest electronic toy of the year. There's no question about it: You definitely want one.

Do you need one? Probably not. Especially not for $700 to $900. But then, you probably didn't need a 128K Mac either.

BY HENRY BORTMAN

PHOTOGRAPHY: PETER ALAN GOULD

Generation

Notepad
Software keyboard
Permanent buttons
Intelligent Assistance
Speaker
Stylus
Newton
Directions to Bob's
Laurel
Bob's
Green
306
Main
Names
Dates
Extras
Undo
Find
Assist
MessagePad

Newton MessagePad

Don't be fooled — it's not a consumer-electronics product.

What It Is

The Newton MessagePad is the first in a family of small, hand-held, pen-based computers based on a new operating system called Newton Intelligence. Newton Intelligence comprises four software technologies: the Newton Recognition Architecture (handwriting and graphics recognition), Newton Information Architecture (the way a Newton device stores data), Newton Communications Architecture (the way it interacts with other devices), and Newton Intelligent Assistance (the way it helps you access and work with data).

Newton Intelligence works differently than the Mac operating system does and will likely spawn a different set of applications. The Newton MessagePad is designed for working with little bits of information: jotting stuff down, storing it, accessing it at random, and communicating it to other people. Like a Sharp Wizard, the Newton MessagePad has a notepad, calendar, address book, and to-do list built in. The MessagePad, however, is easier to use, smarter, and more flexible than a Wizard. In fact, the MessagePad is so different that Sharp (which manufactures the MessagePad for Apple) will ship its own family of products based on Newton technology.

But don't be fooled. The MessagePad is *not* a consumer-electronics product. You won't see many people who don't already use computers using a MessagePad. Although it's coming out of Apple's Personal Interactive Electronics (PIE) division, most people who buy CD-ROM players and other consumer-electronics products don't need a MessagePad.

Who *will* buy the first MessagePads? Two kinds of businesspeople. The first: executives who want the latest gadget. The second: managers of people who walk, run, or drive around all day filling out and filing forms — paper forms. Before equipping staffs with these PDAs (personal digital assistants), these managers will want to test Apple's claim that by using NewtonScript (the Newton development language), they can easily create custom applications.

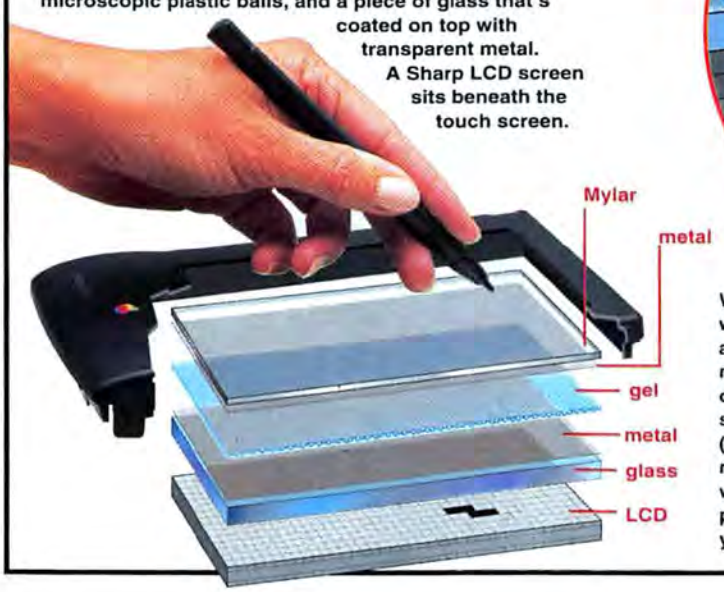
Getting It Write

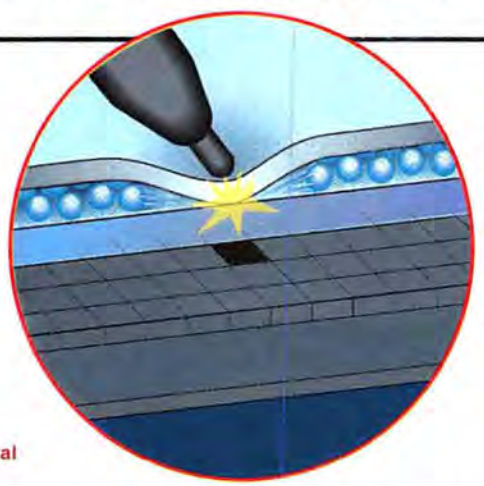
The MessagePad is so small that you can hold it in your hand. And it's light: less than a pound. The case is dark green, and it's made of sturdy plastic with a rubber-coated surface so it's easy to grip.

The MessagePad has a 336-x-240-pixel display, a little bigger than a 3-x-5-inch card turned sideways. Its crisp reflective screen is readable in fairly low light. It runs on four AAA batteries or a rechargeable NiCad battery pack. Apple claims that you'll get 5 to 32 hours of use from AAAs, depending on how much the processor runs and how often the screen image changes. With a NiCad pack, you'll get 4 to 16 hours of use. Most people will get two

Figure 1: How the Touch Screen Works

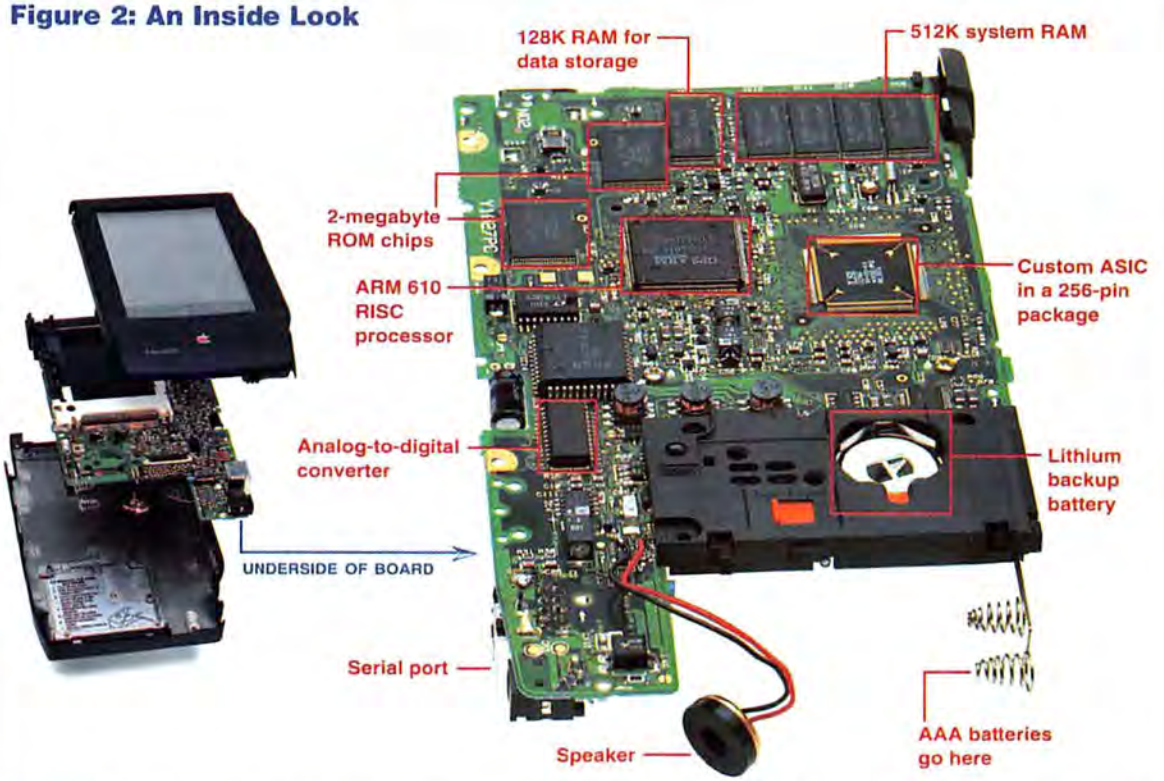
Figure 1: The MessagePad's touch screen consists of three layers: a sheet of Mylar that's coated underneath with transparent metal, a special gel that contains microscopic plastic balls, and a piece of glass that's coated on top with transparent metal. A Sharp LCD screen sits beneath the touch screen.





When you press on the MessagePad's screen with a stylus, the plastic balls in the gel scoot away, causing the metal surfaces to touch. The metal creates electrical resistance at the point of contact. A piece of software called Inker scans the touch screen to find out the value (expressed in ohms) created by the electrical resistance. Inker uses this value to decide which pixel to turn on in the LCD screen. The process happens so quickly that you see what you've written almost instantly.

Figure 2: An Inside Look



Processor. The ARM 610 is a tiny, 32-bit RISC processor from ARM Ltd. that is twice as fast as the 40-megahertz 68030 processor in the Mac IIfx. The ARM 610 uses relatively little power, however. Even better, when the operating system is idle, the processor freezes and power consumption drops to nothing.

Memory. The Apple-designed memory-management unit in the ARM 610 ensures that the MessagePad can get by with as little RAM as possible. For instance, when a program asks the system for memory in which to operate, the system says OK but doesn't give the program any memory until it tries to use it.

LCD screen. A typical LCD consumes between 100 and 200 milliwatts. At that rate, the MessagePad would be able to run for only three hours on AAA batteries. To combat this problem, Apple and Sharp (which manufactures the LCD screen) included custom driver chips on the screen. These chips cache the display image, thereby allowing the LCD to refresh without using processor cycles. As a result, the MessagePad's LCD screen consumes only 1 to 5 milliwatts.

Custom ASIC. Apple's ASIC is packed with functionality; it uses even more gates than the ARM 610. Its responsibilities include generating clock signals for the system (including the power supply), generating all the controls that handle access to the touch screen, controlling all power switches, managing the processor, and controlling the RAM and ROM cycles.

weeks of use with AAAs and one week with a NiCad pack.

The MessagePad has a LocalTalk-compatible serial port for connecting to a Mac, a Windows PC, an AppleTalk network, or an Apple Fax Modem (see the "Adding to the MessagePad" sidebar). You can even send information to another MessagePad via a built-in infrared transceiver. The MessagePad also has a speaker and a slot for PCMCIA Type 2 expansion cards.

One of the most intriguing features of Newton technology is handwriting recognition. You use a plastic stylus to write on the screen. The screen responds to pressure, so if you lose the stylus, you can write on the screen with anything that has a dull point.

There's no keyboard. If your MessagePad has trouble recognizing your handwriting, you can call a software keyboard onto your screen and tap on displayed keys to spell out words (see Figure 4). You wouldn't want to write your doctoral thesis this way, but it's handy in a pinch.

The MessagePad recognizes both cursive and printed handwriting — you can even mix the two. My handwriting, for example, is a hybrid: It's mostly printed letters, but I often connect them. Other handwriting-recognition systems are unforgiving; they require me to separate each letter, slowing me down tremendously. Newton's recognition technology is more accommodating: It requires that you carefully separate your words, but it does the best job I've seen of recognizing characters.

The Newton technology also makes the MessagePad faster at recognizing and translating characters. Still, you can't use the MessagePad for rapid note taking.

There's a lag between the time you write something on the screen and the time it takes the MessagePad to turn what you've written into ASCII text.

The only way to write quickly is to use the Newton Ink mode, in which the screen captures what you write, exactly as you have written it. The Newton technology saves characters as vectors, just as a draw program on the Mac does. You can't import the notes you take in Ink mode into a word processor and edit them, however.

You can use the MessagePad to draw too. If you ask it to, the MessagePad will look for symmetrical shapes such as circles or squares and clean them up for you. If it can't recognize what you write as either a character or a shape, it will store it as a series of ink strokes.

Erasing is simple. Making a *W*-like mark, or *gesture*, over text or graphics scrubs it out — the offending data literally poofs away in an on-screen cloud of dust. You can use other gestures to edit text and graphics.

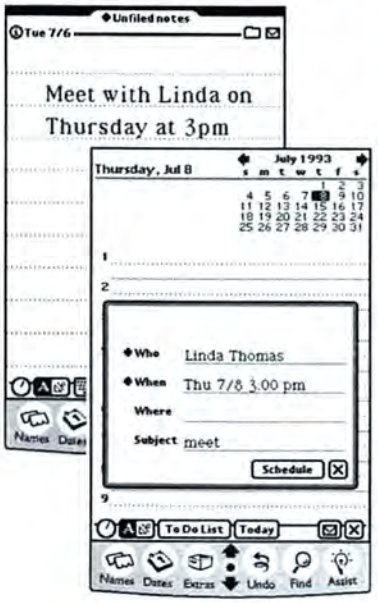


Figure 3: The MessagePad responds to certain action words, such as *meet* and *call*. Tapping the Assist button (at the lower right of the MessagePad screen) after writing a phrase that contains an action word invokes the Intelligent Assistance, which attempts to interpret what you have written and perform the appropriate action. Here, the user has written a phrase containing the word *meet* in the Notepad (left). The MessagePad opens the Date Book. It guesses the date and person and presents a confirmation slip, which you can use to edit or accept the proposed appointment.

Figure 4: If the MessagePad misreads a word, double-tapping on the misread word pops up a list of alternatives along with a copy of what you wrote (left). If none of the alternatives is correct, tapping on the keyboard icon displays a software keyboard on which you can "type" the word and optionally add it to your MessagePad's custom word list.

What It Does

Three applications — the Notepad, the Name File, and the Date Book (which contains a calendar and a to-do list) — are built in to the MessagePad. These applications, and any you add later, let you enter and view MessagePad data. But you don't save data in files. Everything you enter into a MessagePad goes into one big data soup. Your only interaction with that soup is through the applications that let you view and edit its contents. However, you must organize data in a certain way in order to view it in a certain way.

The most basic built-in application is the Notepad. When you turn on your MessagePad, you're in the Notepad. When you go to other applications, the Notepad remains active in the background. Not surprisingly, the Notepad is for taking notes of any kind and length. You can write and draw at random. Each note is time- and date-stamped. To create a new note, you draw a line across the screen. To make more room in a note, you drag its separator bar down on the screen.

You access the other two applications, the Name File and the Date Book, from buttons that are always present on the bottom of the MessagePad screen. The Name File is just what its name indicates: an address book. Likewise, the Date Book is pretty standard stuff. What's exciting is the way these three applications — and any other application you install — interact. This is where the MessagePad's Intelligent Assistance comes in.

The MessagePad recognizes and acts on a set of action phrases. For instance, if you write "Remind me to pick up some rubber bands" while you're in the Notepad and then tap the Assist button, a dialog box appears asking you to confirm that you want to put the item into your to-do list. The beauty of this approach is that you don't have to go to the to-do list to enter the item: You can simply write something down when it occurs to you and then let the MessagePad help you file or dispose of it.

Applications from Outside Apple

Right or wrong, Apple is pushing the MessagePad to businesspeople on the go. Just look at the initial third-party applications. You'll see several calculators and financial applications — Dubl-Click Software has GoFigure, a scientific calculator; Great Plains will ship a financial calculator and a time-billing package; and MobileSoft has MobileCalc, a financial-modeling tool.

How are these different from Mac applications? They perform much the same functions, but with a Newton flair. For instance, using MobileCalc, you can jot down a bunch of numbers followed by a plus sign and MobileCalc will do the math.

Can the MessagePad exchange data with Macs and PCs? Yes — sort of.

Other programs include DrawPad, a geometric-drawing program from Saltire; Fodor's Travel Manager 1994, an interactive guide to travel destinations in the U.S. from Random House; and ContactPad, a contact manager from Pastel Development that lets you attach forms to address cards (imagine a folder of forms with a business card clipped to the outside). Notify for Newton, from Ex Machina, lets you send MessagePad data over a phone line to MessagePads equipped with Apple's Messaging Card (see the "Adding to the MessagePad" sidebar).

Developers are estimating that applications will cost between $80 and $150 and will be distributed on PCMCIA cards. But MessagePads have only one PCMCIA slot, no disk storage, and only 640K of memory. What do you do if you want more than one application available at a time? And where do you store the data?

Even though the Newton operating system takes up only 444K and Newton technology offers excellent data compression, it won't be long before you'll want more applications than the built-in memory can handle. Some developers will ship applications on combination ROM/RAM cards — the application will reside in ROM and store its data in RAM. Other developers suggest uploading applications to the MessagePad's memory and then downloading them to a PCMCIA storage card.

But the Newton Toolkit, Apple's object-oriented programming environment, was still not shipping at press time, so don't expect many applications to ship at the same time as the MessagePad.

Talking PC

By now you're wondering if MessagePads can exchange data with Macs and PCs. The answer is yes — sort of. Apple will provide Connection Kits, for Macs and Windows machines, that put versions of MessagePad applications on those computers. Using the Mac or PC application (Newton Connection), you can synchronize data between one or more MessagePads and your desktop computer, edit the data, or install MessagePad software.

But suppose you've already got a PowerBook, with nice, fat address and calendar files. You'd think that two computers from the same company would offer some way of translating data between here and there.

Apple says they will. But as of early July, no one at Apple was willing to tell *MacUser* just exactly *how* they will. Or what existing Mac and Windows data formats other than ASCII or tab-delimited would be supported. Or whether existing commercial data translators would work with Newton Connection. Apple *did* tell us that the translation capability won't be available until between four and six weeks after the MessagePad ships and that you'll need to purchase the Connection Pro Kit to give your Mac or Windows PC translation capabilities.

So is there any way of getting data *out?* I'm glad you asked. Any note in the Notepad or any screen from any other part of the MessagePad environment can be printed, faxed, "beamed," or mailed.

Printing. The MessagePad has built-in support for the Apple StyleWriter I and II, PostScript laser printers, and the Apple Personal LaserWriter LS and 300. It won't work with Apple's Select line of printers. The Print Pack (about $100) is an intelligent serial cable that connects to the serial port and lets you download drivers for the Apple Portable StyleWriter, Hewlett-Packard LaserJets, and

Adding to the MessagePad

Apple is selling the MessagePad in the following three configurations (prices shown are expected street prices): **Newton MessagePad.** The basic unit ($700). **Newton Communications System.** Includes Apple's Fax Modem ($800). **Newton Professional Communications System.** Includes the Fax Modem and Newton Connection Pro Kit for Macintosh or Windows ($900).

Apple is also offering a batch of add-ons for the MessagePad owner with the urge to accessorize:

Messaging Card. Receives pager messages ($250).
1MB Storage Card and 2MB Flash Storage Card. Provide additional storage for data and applications ($200 and $299, respectively).

Fax Modem. External 2,400-bps (data)/9,600-bps (fax-send) modem ($150).

External Battery Pack. External nonrechargeable battery pack that can hold eight AAA batteries, for extra-long mobile use ($25).

Rechargeable Battery Pack. Small, light NiCad battery pack. Provides about one week of normal use ($25).
Battery Recharger. Charges NiCad battery pack in four hours. Includes one NiCad pack ($50).

Leather Carrying Case. Upscale case for carrying a MessagePad and its accessories ($80).

other popular PC printers to the MessagePad. Clever, huh?

Faxing. With the Fax Modem, a MessagePad can send faxes at 9,600 bps. It can't receive them, however. Faxes are transmitted as bit maps, and although they're compressed, they're too big for the MessagePad to store.

Beaming. The MessagePad has a built-in infrared transceiver with a range of about 3 feet. So if you and someone else with a MessagePad want to exchange information, you can beam it. Unfortunately, the MessagePad's transceiver doesn't work with the ones built in to the HP OmniBook 300 and some recent-model desktop PCs.

Mailing. Like faxing, mailing requires a Fax Modem. For data, you get a stunning 2,400-bps transmission rate. But take heart: You don't have any big files to send or receive. So this might not be so bad.

Each MessagePad comes with a coupon for opening a Newton Mail account. Newton Mail is a messaging service provided by Apple. It's the first piece of what Apple plans to expand into an extensive system that will incorporate AppleLink and other information services. Newton Mail pricing wasn't set at press time.

Newton Mail will have gateways to AppleLink, the Internet, America Online, and CompuServe. Through these gateways, Newton Mail will enable you to exchange text messages with anyone who has access to these services. To exchange mail between a network-based e-mail application such as QuickMail and a MessagePad, you will need to set up a gateway from your mail system to either AppleLink or the Internet.

Apple will also offer a Messaging Card, a PCMCIA-based alphanumeric pager. Powered by its own battery, the Messaging Card can receive messages from popular paging services such as SkyTel, even when it's not installed in the MessagePad. When you insert the card, you can review your messages on the MessagePad and use the Intelligent Assistance to store names and notes in your MessagePad applications.

Figure 5: Due this fall, the Zoomer (left) is a $699 organizer that will be manufactured by both Casio and Tandy. The Zoomer is the same size as the MessagePad and sports many of the same features. The AT&T EO Personal Communicator (right) is larger and heavier than the MessagePad but offers more storage options, a higher-speed fax modem, and a cellular phone.

Computers Are Nice. Buy Two.

This brings us to the question of whether what the MessagePad has to offer is enough. On the one hand, the Newton technology underlying the MessagePad is impressive. On the other hand, the MessagePad as a practical implementation of Newton technology is too limited.

If you grant that it will be computer users who initially — and, I think, for some time to come — adopt Newton technology, then you have to wonder just how Apple thinks MessagePads will be integrated into today's business-computing environments. Apple is promoting Newton Connection as the most advanced palmtop-to-desktop integration software available — a claim with some validity. But there is a fatal flaw in Apple's logic: It assumes that people can get a great deal of value out of a device that is limited by design to handling small chunks of data. I suspect that most people's lives contain both small and large chunks of data, thoroughly intermixed.

Take my own daily routine as an example. I often need to write up a two-page report or justify a budget request. Such longer documents — and I'm intentionally sticking to plain-vanilla business text here, rather than adding graphically rich documents — are an integral part of my daily business life. I can't separate them from my calendar, to-do list, or address book. In fact, over on the Mac side of the fence, neither does Apple. Looking ahead to the release of AOCE (Apple Open Collaboration Environment), it appears that Apple wants users to view all documents as potential messages to be routed and revised in the course of daily work. This vision seems at odds with the MessagePad, which requires that users separate small data from big data in an artificial way.

Apple's approach to the MessagePad seems neither to obviate the need to hang onto your notebook computer — so now you're carrying two computers instead of one — nor to include a well-thought-out plan about how to integrate the contents of the two. But remember, a lot of people sneered at the 128K Mac. Who needs to drag around little pictures with a pointing thing called a mouse?, they asked. What's a serious user supposed to do with MacWrite and MacPaint?, they asked. Me, I bought one.

You'll probably see me in line to snatch up a Newton MessagePad too. And you'll probably see me carrying it around wherever I go, along with my PowerBook. Because — who knows? — if Apple plays its cards right, Newton technology just might define how people communicate in the '90s. I haven't seen anything better.

Henry Bortman is *MacUser*'s technical director.

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Color printing on plain paper is, no doubt about it, a remarkable achievement. But we know there are times when you wish you weren't limited to an 8½″ x 11″ white piece of paper. You know, those times when you need a Phaser™ III color printer.

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CIRCLE 18 ON READER SERVICE CARD.

Double-Time CD-ROM Drives

Been holding out for a really fast CD-ROM drive? One that can read all your Photo CD images? Well, wait no more.

BY JOHN RIZZO

Have you noticed there's an awful lot of stuff available on CD-ROM these days? Anything from annotated symphonies and animated restaurant guides to business software and technical documentation is available on the 600-megabyte discs. And it appears that people are buying CD-ROM drives in droves — Apple alone expects to ship 1.5 million this year. That figure includes the internal CD-ROM drives in some of the newer Mac models, such as the Mac IIvx and the Centris line.

PHOTOGRAPHY: TOM UPTON

Optical Access International
CD-ROM CHANGER DRM-604X
LaserMemory
MAGAZINE EJECT
POWER
BUSY
x4
AUDIO
CD Caddy
disc
NEC MultiSpin
TEXEL
90
100
80
10
70
20
60
30
50
40
7 JEWELS
SWISS MADE

Trends

CD-ROM technology is poised to round out the multimedia revolution, but it needs some help. Today a CD-ROM can contain enough digital data for a feature-length QuickTime movie, but current limitations of SCSI efficiency, CD-ROM design, CD-ROM-drive performance, and Mac CPU power restrict today's QuickTime to small, slow, jerky video. By next year, you should be able to enjoy full-screen, full-motion video — as long as you invest in a new CD-ROM drive and a new Mac.

- **New, improved SCSI will allow better QuickTime performance.** The new multimedia Macs — the Centris 660AV and Quadra 840AV — come with Apple's new SCSI Manager 4.3. This substantial upgrade to the Mac's aging SCSI software allows asynchronous transfers, which free the Mac's CPU to spend more time processing QuickTime movies and less time managing the flow of data from the CD-ROM.
- **CD-ROMs will soon be optimized for faster drives.** Current QuickTime movies on CD-ROM are designed to run on single-speed CD-ROM drives. Even if you have a double- or quadruple-speed drive, the way QuickTime movies are stored on these discs limits their frame rate. They look just as if they were being played at the slower speed of a single-speed drive. As faster drives become more common — and Apple is working hard to make double-speed drives the next standard — expect QuickTime discs to take advantage of the higher speeds.
- **Quad-speed CD-ROM drives will become widely available in 1994.** Major CD-ROM-drive manufacturers are struggling to overcome the engineering challenges of fitting a quad-speed drive into the standard 5.25-inch form factor. Expect them to succeed in early 1994 and for prices to rise only slightly — and only at first. Double-speed drives will remain popular, and most QuickTime discs won't be optimized for quad-speed drives in the foreseeable future.
- **PowerPC Macs will greatly improve QuickTime performance.** The first PowerPC Macs will appear in early 1994. Their faster CPUs will speed QuickTime *codecs*, the compression/decompression algorithms on which QuickTime is based.

— *Rik Myslewski*

Many users are attracted to the enhanced speed of the latest batch of drives, *dual-speed* drives, which spin at two linear speeds — one speed for audio and a faster speed for other data. These are the drives that — earlier this year — we told you were just around the corner (see "Passport to the Future: CD-ROM Drives," March '93, page 124).

Yes, they're finally here. Not only can these drives operate at faster speeds than the earlier single-speed models but they can also read more kinds of discs than ever before, including Kodak's high-quality-graphics Photo CD discs. With more titles available and more people buying discs and drives these days, there are also more companies selling drives. This stiff competition means you have a lot of choice.

Although dozens of different-looking drives are available, each contains a *drive mechanism* — the part of the drive that actually reads the data — from one of a handful of companies. To help you make a selection among the new dual-speed drives, we tested four representative drives, each containing one of the major double-speed CD-ROM-drive mechanisms; we also evaluated one quadruple-speed drive. When reading nonaudio data, *double-speed* drives can spin a disc twice as fast as the earlier single-speed drives did and *quad-speed* drives can spin a disc four times as fast.

The first CD-ROM-mechanism manufacturer was Sony, which co-invented the compact disc with Philips in the late 1970s. When we ran our tests, Sony wasn't yet selling its new double-speed CDU-561 mechanism in an external drive for the Mac, so we tested the AppleCD 300, which contains this mechanism.

Three of the double-speed drives we tested — the NEC MultiSpin 74, the Texel DM-5024, and the Toshiba TXM3401E1 — are sold by the mechanism manufacturers themselves. Our quad-speed unit was the OAI (Optical Access International) CD/Turbo 6-Pak, which is based on the Pioneer 604X six-disc-changer mechanism. We also tested the older single-speed AppleCD 150 for comparison, to see what sort of real-world speed improvements you can expect from dual-speed drives.

Twice the Speed?

Let's talk about speed, because one of the drawbacks of the earlier drives was that they made you wait for your data. Double-speed CD-ROM drives can achieve transfer rates as high as 300 Kbps (kilobytes per second) versus the 153.6 Kbps of the older drives. The quad-speed Pioneer mechanism can reach 600 Kbps, twice the speed of a double-speed drive. All these drives shift down to operate at the slower rate of 153.6 Kbps for data that can't be read any faster, such as audio.

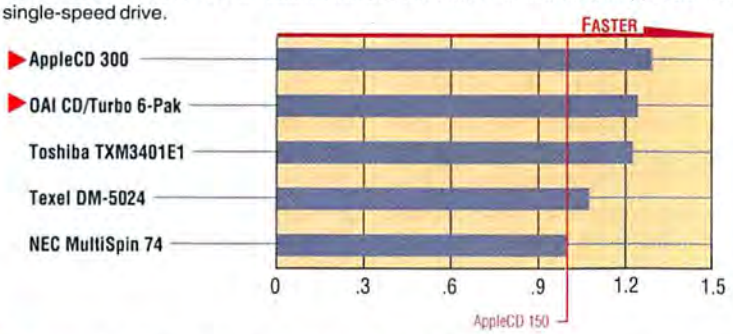
Doubling or quadrupling the rate at which the disc spins — and therefore the rate at which data passes over the read head — doesn't necessarily double or quadruple the speed at which things happen on your Mac. The performance you get depends on the application you're using — actually on the way that application gets data from the CD-ROM.

Spinning the disc faster can benefit applications that access data in large chunks, such as Adobe Photoshop and Apple's QuickTime — if and when QuickTime movies are optimized for double-speed drives (see the "Trends" sidebar). Applications such as database programs that access data in lots of short segments are not as greatly enhanced by faster spinning of the disc. The speed of these types of applications is more dependent on a drive's *cache*, the memory inside the drive that stores disc data for access by the Mac. When the Mac asks the drive for a piece of data that happens to be in a cache, the drive can send the data without accessing the disc. What happens to be in the cache depends on how the cache is implemented.

In addition to spinning the disc

LABS Figure 1: Overall Speed

Figure 1: We combined the results of our individual timed tests with Brøderbund's Just Grandma and Me, The New Grolier Multimedia Encyclopedia, Adobe Photoshop, and Kodak Photo CD Access software to arrive at an overall-speed ranking for the CD-ROM drives we tested. The results are shown relative to that of an AppleCD 150 single-speed drive.



▶ *MacUser* Bottom Line pick Speed relative to that of an AppleCD 150

These drives are all Photo CD-compatible as well as multisession-capable, so they can read all the images on a Photo CD disc.

faster, these newer drives can all read multisession Photo CD discs. A multisession disc is one to which you can copy additional images after the first batch. Some of the earlier CD-ROM drives could read Photo CD discs, but they didn't have multisession capability, which meant they could read only the first set of images put on the disc. (For more information on Photo CD, see the "Photo CD" sidebar.)

Learning to Drive

Setting up a CD-ROM drive is not complicated. You attach the drive to your SCSI chain and terminate it if it's at the end of the chain. Once

Photo CD

Remember thumbing through your grandparents' photo album of precious family memories? Unfortunately, pictures fade and become brittle with age, but now there's something better for keeping the photos you take today intact for years to come. In addition to preserving the family photos, you can edit all sorts of images for business and professional use. Called Photo CD, that something is Kodak's new process for converting undeveloped film into high-quality photographic images on a CD-ROM. Once saved in this digital format, your images are virtually impervious to the ravages of time.

Kodak has a network of 20,000 locations that can put your roll of 35mm film onto a Photo CD disc — there's even a toll-free number (800-242-2424, ext. 36) to help you find the nearest one. According to Kodak, the whole process takes about a week. Scanning in a 24-exposure roll of film typically costs around $20, and for an additional $6 or so, you can get a set of prints too. You can also convert old slides and negatives to Photo CD, but the price increases to $1 to $1.50 per image. (Prices vary, so check with a Photo CD processor in your area.)

You can put as many as 100 images on one disc, but you don't have to fill it in one session — you can take the disc back to the processor as many times as you want until it's full. To view your Photo CD images, you need a CD-ROM drive that's Photo CD-compatible. The five drives we tested are multisession Photo CD-capable, which means they can access all the Photo CD images on a disc. Some of the drives we looked at in March 1993 could read Photo CD discs, but none of them were multisession-capable.

Your Photo CD disc comes with an *Image Pack* — five Photo CD disc formats — of each picture. The Base format is for TV resolution (512 x 768 pixels). The Base x 4 format, with a resolution of 1,024 x 1,536 pixels, is for Macs, PCs, and — when it becomes available — HDTV (high-definition television). The Base x 16 format (2,048 x 3,072) is photographic resolution and acts as your digital negative. There are also two thumbnail resolutions: the Base divided by 4 format (256 x 384 pixels) and the Base divided by 16 format (128 x 192).

You can import images into applications such as QuickTime (version 1.5 or 1.6 only) or Photoshop. Kodak sells a Photoshop plug-in ($59.95), and Kodak Photo CD Access software ($39.95) lets you read images and perform some basic crops, zooms, and rotations of images.

Kodak has also introduced Kodak Pro Photo CD Master, a format that lets professional photographers store 4-x-5-inch, 120-millimeter, and 70-millimeter pictures on-disc. Because these professional formats take up a lot of space on your disc, you might be able to store only as many as 25 images.

— *Darryl Chan*

you've installed the driver software that accompanies the CD-ROM drive, you're ready to roll. You insert a CD-ROM into the drive, and the disc's icon appears on your Mac's desktop.

Most of the drives acted as we expected Mac peripheral devices to act. Only the Texel DM-5024 exhibited a bit of un-Mac-like behavior: It did not automatically eject a disc on shutdown or when we put the disc icon in the Trash. With this drive, you must eject the disc manually by pressing a button on the drive's case.

The Pioneer mechanism inside the OAI CD/Turbo 6-Pak is a CD-ROM jukebox. You insert into the case a caddy that holds as many as six discs. At startup, the jukebox goes through a cycle of inserting the discs, one at a time, into the drive mechanism. It mounts each disc on the desktop and reads a directory of the disc contents into a cache, so you can browse through a disc's contents in the Finder without having to have that particular disc in the drive. This startup procedure takes about a minute and a half, even if the caddy contains only one disc — the drive can't tell how many discs are in the caddy without attempting to insert each one. If you need to access data on a disc that is in the caddy but not in the drive, you have to wait a few seconds while the jukebox inserts the selected disc from the caddy.

Of course, in case you encounter problems while using your CD-ROM drive, you'll want to know what sort of tech support the vendor provides. See the "Rating Tech Support" sidebar for our evaluation of the service provided by all five vendors.

Less Waiting

If you've used a single-speed CD-ROM drive, you're probably used to waiting, so you'll be glad to know the new dual-speed drives are significantly faster. But remember, the terms *double-speed* and *quad-speed* don't necessarily mean you'll get your work done twice or four times as fast as you would with a single-speed drive. To find out how much faster the new drives really are, we devised tests that mimic what people actually do with CD-ROMs and CD-ROM drives. (For a detailed description of our tests, see the "How We Tested CD-ROM Drives" sidebar.)

We began with a couple of popular discs, Brøderbund's Just Grandma and Me and The New Grolier Multimedia Encyclopedia. We also created a couple of test discs of our own: a CD-ROM containing Adobe Photoshop files and a Photo CD disc we accessed with Kodak Photo CD Access software.

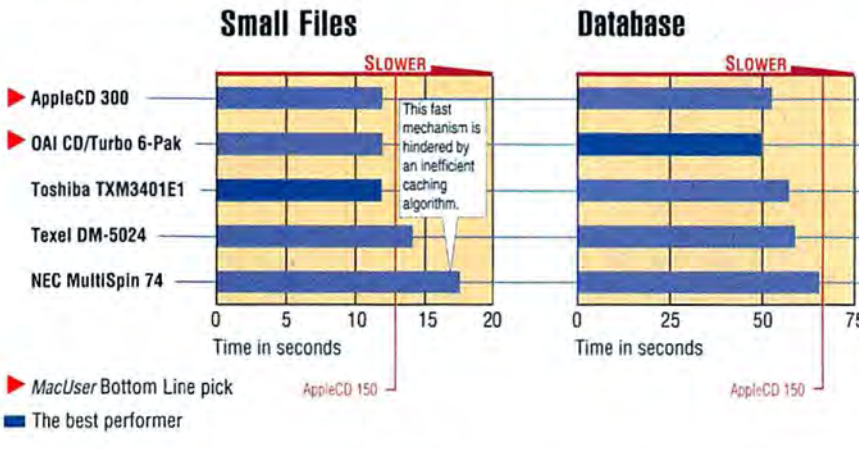
Who's the Fastest?

The best overall in our speed tests was the Sony-mechanism-based AppleCD 300, a consistently fast performer (see Figure 1). The quad-speed OAI CD/Turbo 6-Pak and the Toshiba TXM3401E1 were close behind, but their performance was not consistent.

The problem with the Toshiba TXM3401E1 was its driver. Preliminary time-test results with version 1.5.2 of the driver were poor: The drive came in last in all tests, sometimes taking almost twice as long as the leader to perform a test. However, with a just-released driver — version 1.6 — the TXM3401E1 took first place in two of our time trials. (Owners of version 1.5.2, don't despair: You can get a free upgrade if you bought your drive between February and May of 1993; otherwise, the upgrade costs $16.)

The OAI CD/Turbo 6-Pak was also often among the top-performing

MacUser LABS Figure 2: Time After Time



Small Files:

We timed how long it took to turn a page in Brøderbund's popular multimedia children's-book-on-disc Just Grandma and Me. Turning a page requires accessing large amounts of data in small (6K) blocks, an activity that mimics transferring small files. The drives with efficient caching algorithms — the AppleCD 300, the Toshiba TXM3401E1, and the OAI CD/Turbo 6-Pak — did the best in this test.

Database:

We performed a search for the word *computer* on The New Grolier Multimedia Encyclopedia disc. The quad-speed OAI CD/Turbo 6-Pak edged out the AppleCD 300, even though the OAI drive had to search through its six-disc caddy to locate information.

MacUser LABS How We Tested CD-ROM Drives

To evaluate the current crop of dual-speed CD-ROM drives, we started with a careful examination of each drive's packaging, documentation, ease of setup, and tech support. We then moved on to a suite of tests designed to see how long each drive took to find data (the access time) and how quickly it could feed that data to a Mac (the transfer rate).

We tested each CD-ROM drive with a Mac IIci that had 8 megabytes of RAM, an 80-megabyte hard drive, a cache card, and a 13-inch AppleColor High-Resolution RGB Monitor driven by on-board video. We configured each test machine with System 7.1. Virtual memory and AppleTalk were turned off, 32-bit addressing was enabled, the disk cache was set to default, and the video was set to 256 colors.

Our tests were similar to the ones we used in our previous review of CD-ROM drives. We tested a drive's ability to transfer small (approximately 6K) blocks of data to the Mac by executing page turns in Broderbund's Just Grandma and Me CD-ROM. We examined a drive's ability to access nonsequential data by performing a word search on The New Grolier Multimedia Encyclopedia CD-ROM.

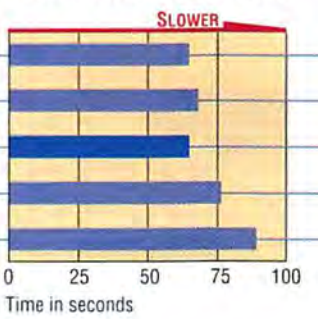
To see how each drive handled more-throughput-intensive tasks, we opened a 12.5-megabyte TIFF file with Adobe Photoshop 2.5. The image was read from a custom CD-ROM, created at ZD Labs with a Sony Compact Disc Recording Unit (CDW-900E), affectionately known as a CD-ROM burner. This test also turned out to be a good trial of how drives handle the special media required for desktop CD-ROM burners. The OAI CD/Turbo 6-Pak, which uses Pioneer's new quad-speed six-disc-changer mechanism, proved to be sensitive to the imperfections of our non-mass-produced CD-ROM, which caused the drive to spin down from quad speed to single speed.

To test how each drive handled the Kodak Photo CD format, we accessed a four-session Photo CD disc with Kodak Photo CD Access software. Using Kodak Photo CD Access' Load Contact Sheet command, we loaded wallet-sized previews of 24 test images that had been saved to the disc in four separate sessions. The ability to load all the images proved a drive to be multisession-capable; loading them quickly showed the drive to be efficient in reading small blocks of data.

— Jeff Davis

Large Files

Multisession Photo CD



Large Files:

We opened a 12.5-megabyte TIFF image directly from our own CD-ROM, using Adobe Photoshop. The quad-speed OAI CD/Turbo 6-Pak was sensitive to imperfections on our custom-produced disc, which caused it to drop down to single speed. Because the test times varied widely, depending on whether it read an imperfection at the beginning or the end of the test, we show the longest and shortest times for this drive.

Multisession Photo CD:

We timed the loading of the contact sheet of a multisession test Photo CD disc, using Kodak Photo CD Access software. This test confirmed that all the drives are Photo CD-compatible as well as multisession-capable. The faster drives were the ones with the more-efficient caching algorithms.

If you've used a single-speed CD-ROM drive, you're probably used to waiting. The new dual-speed drives are significantly faster.

Depending on the disc, a drive's caching algorithms and access times can be more important than its transfer rates.

drives, but it exhibited a problem reading the disc we created for testing purposes.

Little Stuff

Our timed tests (see Figure 2) confirmed that the speed of the drive depends on the disc you're reading. For instance, Just Grandma and Me accesses data in small blocks, so a drive's caching algorithms and access times are more important than the drive's transfer rates. This is illustrated by the fact that the quad-speed OAI CD/Turbo 6-Pak ran only about as fast as the double-speed AppleCD 300 and the Toshiba TXM3401E1 with the upgraded driver. Notice that the single-speed AppleCD 150 finished ahead of the double-speed Texel DM-5024 and the NEC MultiSpin 74, which have less efficient caching algorithms.

The results were similar for our timed tests with The New Grolier Multimedia Encyclopedia, which also accesses data in small chunks. In this case, the quad-speed OAI CD/Turbo 6-Pak came out just slightly ahead of the AppleCD 300 and the Toshiba TXM3401E1 (again with version 1.6 of the driver). Coming in last, the NEC MultiSpin 74 finished only slightly ahead of the single-speed AppleCD 150.

Big Stuff

If you plan to use a CD-ROM drive to work with graphic images, remember you're likely to be dealing with large data files. When we opened a 12.5-megabyte TIFF file with Adobe Photoshop, the AppleCD 300 took the least time and the Toshiba TXM3401E1 wasn't far behind. The OAI CD/Turbo 6-Pak had trouble reading our test disc, which was produced with a write-once drive — a Sony Compact Disc Recording Unit. The OAI CD/Turbo 6-Pak's Pioneer

MacUser LABS Rating Tech Support

CD-ROM drives are generally sturdy and reliable, but it's important to know whether you can count on the vendor for help when you need it.

We placed two anonymous calls to the vendors of the drives tested for this report to evaluate their tech support. We noted how easy each company was to contact and how long we had to wait for an answer, and we paid special attention to the staff's expertise and courtesy in solving some typical user problems. Here's what we asked:

Q. When I insert a CD-ROM, it doesn't show up on the desktop (or the drive ejects the disc).

A. You installed the CD-ROM face-down (or faceup in the case of the OAI CD/Turbo 6-Pak). Turn the disc over, and reinsert it.

Q. I've hooked up my new CD-ROM drive, and now my machine crashes about twice a day.

A. The CD-ROM drive is at the end of the SCSI chain, unterminated. Shut down the system, install a SCSI terminator, and restart.

Apple

Apple is slowly changing its reputation for unresponsive tech support. Although the representative was unable to solve our first problem, he received partial credit for walking us through a series of troubleshooting steps before asking us to send the drive in for repairs. Apple got full credit for answering the second question quickly and correctly.

NEC

While trying to contact NEC's tech support, we experienced several long periods on hold. The company's tech-support person received partial credit for taking us through a thorough series of troubleshooting questions, but he didn't give us the correct answer. After an initial hint regarding the second question, the tech-support person was able to identify the termination problem.

OAI

This was the only company to get full credit for correctly answering the first question. Unlike with the other drives, you're *supposed* to load the discs face-down in the OAI CD/Turbo 6-Pak, so this was the first problem the company's tech-support person suggested. OAI also received full credit for correctly answering the second question.

Texel

The upside-down-disc problem stumped Texel's tech-support person, but he spent time with us trying to help us locate the problem. Even after we gave him a few hints, he was unable to identify the termination problem.

Toshiba

Toshiba was the only company to receive no credit for an attempt to answer the first question. The representative asked only a couple of questions before telling us to send the drive in for repairs. After we gave him a few hints, the representative received partial credit for solving the termination problem.

— Darryl Chan

The Bottom Line

Your memories of CD-ROM drives being slow and expensive will fade after you've looked at this bunch of dual-speed drives. Given good caching techniques, these new drives provide significant improvements over traditional single-speed CD-ROM drives — and they're less expensive. The **AppleCD 300** ($599 list, $580 street), based on a Sony mechanism, was our overall favorite. It performed flawlessly during all of our tests and was either the fastest or among the fastest drives. It comes with nine CD-ROMs, giving you something to do with it once you've plugged it in.

Racing ahead of the crowd: The AppleCD 300 (top) and the OAI CD/Turbo 6-Pak (bottom).

If you need instant access to multiple discs, the quad-speed six-disc **OAI CD/Turbo 6-Pak** ($1,595 direct), which uses Pioneer's new 604X mechanism, does the job. OAI is a small company, but it provides excellent tech support.

mechanism is highly sensitive to media imperfections and spun down from quad speed to single speed. These problems with reading write-once discs caused inconsistent performance. At times the CD/Turbo 6-Pak was one of the faster drives; at other times it took half again as long as the next-slowest drive to perform this test.

For those who are jumping on the Photo CD bandwagon, these dual-speed drives are all multisession-capable. We timed how long it took to access wallet-sized images from four sessions on our Photo CD disc, using the Load Contact Sheet command in Kodak Photo CD Access software. The AppleCD 300 and the Toshiba TXM3401E1 (with driver 1.6) took the least time, and the OAI CD/Turbo 6-Pak was close behind.

A Mechanistic View

Overall, we found the best mechanisms to be the Sony CDU-561, the Toshiba TXM3401E1, and the Pioneer 604X. Don't conclude that all drives based on these mechanisms will perform as our test drives did. Although the dual-speed capability and caching technology are contained within the mechanism, the driver software supplied by the vendor can make a big difference to a drive's speed (as we saw in our preliminary tests of the Toshiba TXM3401E1, slow driver software can bring a fast mechanism to its knees).

The driver software shipped with a CD-ROM drive can come directly from the mechanism manufacturer, as is the case with the Toshiba TXM3401E1; from a third-party software house; or from the drive vendor. CD-ROM-drive vendors regularly change or upgrade the driver software they ship, so it's important to be aware of the driver's author and version number. Once you know what mechanism you want, it's worth shopping around for a drive that comes with good driver software.

If you've been holding off on buying a CD-ROM drive, these fast, versatile, and inexpensive ones should convince you to take the plunge — especially with the growing number of CD-ROM titles and the arrival of Photo CD. If you've had your CD-ROM drive for a while, now is the time to upgrade. You know where to look for our picks: "The Bottom Line."

John Rizzo is the author of *How Macs Work* and *MacUser Guide to Connectivity*. Jeff Davis, a senior project leader at ZD Labs, managed the testing for this report.

Table 1 Criteria

List price — The vendor's suggested retail price.
Street price — The average street price through mail order or dealers surveyed across the U.S. in May 1993.
Mechanism — The name of the manufacturer and the model number of the CD-ROM mechanism inside the vendor's case.
Driver — The name and version number of the software that controls the CD-ROM drive's interaction with the Mac.
CD-ROMs — The names of any discs bundled with the drive.
Audio software — The name of any bundled software (usually a DA) for controlling audio CDs.
Audio-software type — The type (DA, extension, application, or HyperCard stack) of the audio software.
Connectors (no., type) — The number of SCSI connectors on each drive and the type of each connector, by number of pins.
Termination — Whether the drive's SCSI termination is located outside the case and via a termination block (external). Switchable termination lets you turn termination on or off via a switch on the back of the drive.
ID selector — The type of control used for changing the SCSI-ID number.
Preamp output — Does the drive include two RCA jacks as a preamp output?
Location — The location of the power supply.
Power switch — The location of the drive's power switch.
Auto-switching — Can the drive automatically switch between American and European voltages?
AC fuse — Does the drive's power circuit have a fuse?
Indicator lights — The functions indicated by LEDs.
Casing material — The main material (metal or plastic) used to make the case.

continues ►

Table 1: Features of CD-ROM Drives

● = yes ○ = no	▶ Apple AppleCD 300 $$$$½	NEC MultiSpin 74 $$$	▶ OAI CD/Turbo 6-Pak $$$$	Texel DM-5024 $$$½	Toshiba TXM3401E1 $$$$
List price	$599	$699	$1,595	$599	$895
Street price	$580	$615	$1,595 (direct)	$460	$615
Pros	Good value. Well designed. Fast.	Well built. Good documentation.	Fast. Six-disc capacity. Good tech support.	Inexpensive.	Fast.
Cons		Slow. Tech support hard to reach.	Expensive. Problems reading write-once CD-ROMs.	Manual insert and eject.	Audio software is HyperCard stack.
Mechanism	Sony CDU-561	NEC MultiSpin 74	Pioneer 604X	Texel DM-5024	Toshiba TXM3401E1
Software					
Driver	Apple 1.21	Trantor 3.06	OAI 1.5.1	Trantor 3.05	OMI 1.6
CD-ROMs	Chronicle, Cinderella, Demo Applications CD, Demo Games CD, From Alice to Ocean, Mozart, Nautilus Intro, Photo CD, Titles Sampler	none	Nautilus	none	Nautilus
Audio software	CD Remote	Music Box	Access CD Player	Music Box	playCD
Audio-software type	DA	DA	DA	DA	HyperCard 2.0 stack
SCSI					
Connectors (no., type)	2, 50-pin	2, 50-pin	2, 50-pin	2, 50-pin	2, 50-pin
Termination	external	externally switchable	externally switchable	externally switchable	external
ID selector	push wheel	push wheel	push wheel	dial	dial
Audio					
Volume control	dial	dial	dial	dial	dial
Headphone output	miniphone	miniphone	miniphone	miniphone	miniphone
Preamp output	●	●	●	●	●
Internal speaker	○	○	○	○	○
Power supply					
Location	internal	internal	internal	internal	internal
Power switch	rear	front	front	rear	rear
Auto-switching	●	●	●	●	●
Case					
AC fuse	○	○	●	○	○
Fan	○	○	○	○	○
Indicator lights	power, access	power, access	power, access, audio, 4x	power, access	power, access
Casing material	metal	metal	metal	plastic	plastic
Weight	6.6 lb	7.7 lb	11.1 lb	6.6 lb	3.4 lb
Size (L x W x H)	13.25 x 7 x 2 in.	9.5 x 9 x 2.75 in.	13.5 x 8.25 x 4 in.	10.5 x 9.75 x 2.25 in.	9.75 x 8.75 x 2.5 in.
Warranty					
Length	1 year	2 years	1 year	1 year	1 year
Extended available	●	●	●	○	○
Money-back guarantee	○	●	●	○	○
	Apple Computer 20525 Mariani Ave. Cupertino, CA 95014 800-538-9696 408-996-1010	NEC 1255 Michael Dr. Wood Dale, IL 60191 800-388-8888 708-860-9500	OAI 500 W. Cummings Pk. Ste. 3250 Woburn, MA 01801 800-433-5133 617-937-3910	Texel America 4255 Burton Dr. Santa Clara, CA 95054 800-886-3935 408-980-1838	Toshiba America 9740 Irvine Blvd. P.O. Box 19724 Irvine, CA 92713 800-777-0344 714-583-3000

▶ *MacUser* Bottom Line pick

PrecisionColor™ Pro from Radius is the fastest 24-bit color graphics card available. Not in one category, not in just a few functions, but in overall performance.

So instead of sitting, waiting for your Mac to catch up to your mind, you can scream ahead with all the speed and elegance your Mac can deliver.

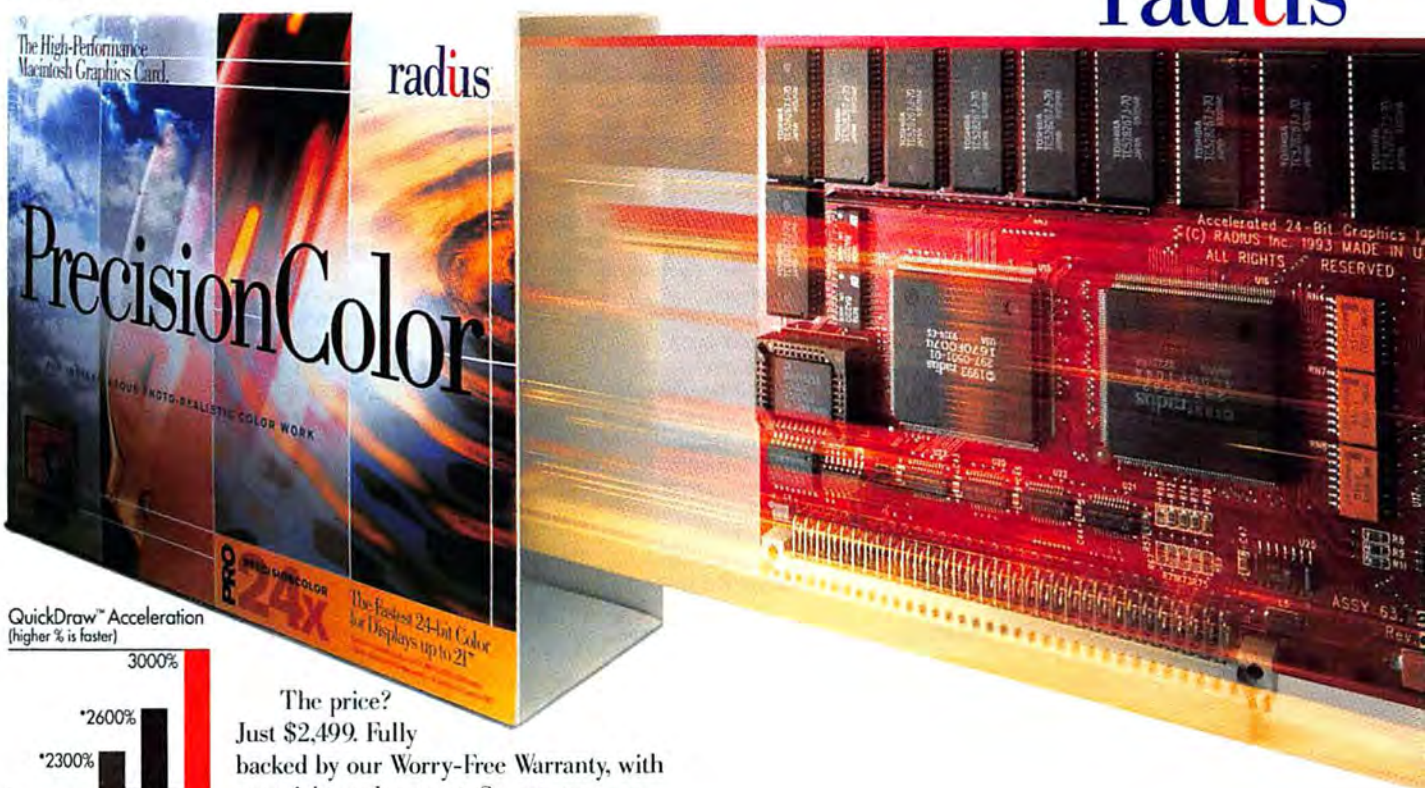
Scream With Your Mac Instead Of At It.

PrecisionColor Pro is up to 26% faster overall than the self-proclaimed "fastest" graphics card—Thunder™ II. Up to 67% faster overall than Thunder/24.™ And as much as 3000% faster than your unaccelerated Mac.*

In addition to unmatched speed, PrecisionColor Pro gives you unrivaled flexibility. You get "on-the-fly" resolution switching. And you can quickly change between one-page and two-page views without rebooting.

This new card is the only high-performance graphics card that fits in all Macintosh NuBus™ systems. And it's fully compatible with a wide range of monitors, including our new IntelliColor™/20 display.

PRECISIONCOLOR PRO radius™



*Performance percentages from publications by RasterOps Corp. and SuperMac Technology, Inc.

The price? Just $2,499. Fully backed by our Worry-Free Warranty, with overnight replacement. So now you can really scream through your color publishing work, because with PrecisionColor Pro your creativity doesn't have to wait.

And to really accelerate Photoshop,™ there's our new PhotoBooster™ with the most advanced twin DSPs, to help you run your production functions up to 10 times faster than a Quadra™ 950, for only $999.

For complete details and the name of your nearest Radius reseller, call 1-800-227-2795 Ext 101B. Or call us now at 1-800-966-7360 to receive faxed information.

Get the PrecisionColor Pro and PhotoBooster combo. And start screaming with your Mac.

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CIRCLE 68 ON READER SERVICE CARD.

Directory: The Players

Here's a list of vendors that sell CD-ROM drives based on the mechanisms discussed in this report. Remember, the mechanism manufacturer (identified in parentheses) doesn't tell the whole story. Vendors may include different software, accessories, and CD-ROMs along with the drive. Call the companies or your local dealer to find the best total package for your needs.

Apple, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
800-538-9696
408-996-1010
AppleCD 300 (Sony), $599

APS Technologies
6131 Deramus Avenue
Kansas City, MO 64120
800-235-3707
816-478-8300
816-478-4596 (fax)
APS CD-ROM 3401-E1 (Toshiba), $649

CD Technology
766 San Aleso Avenue
Sunnyvale, CA 94086
408-752-8500
408-752-8501 (fax)
CD Porta-Drive (Toshiba), $850

ETC Peripherals
5414 Beaumont Center Blvd.
Tampa, FL 33634
800-876-4382
813-884-2863
813-888-9535 (fax)
ETC CD-ROM Drive (Toshiba), $875

FWB, Inc.
2040 Polk Street
Suite 215
San Francisco, CA 94109
415-474-8055
415-775-2125 (fax)
hammerCD (Toshiba), $959

Liberty Systems, Inc.
160 Saratoga Avenue, #38
Santa Clara, CA 95051
408-983-1127
408-243-2885 (fax)
115 Series CD-ROM Drive (Toshiba), $699

MacProducts USA, Inc.
608 W. 22nd
Austin, TX 78705
800-622-3475
512-472-8881
512-499-0888 (fax)
Magic CD-ROM (Toshiba), $549

Mass Microsystems, Inc.
610 W. Maude Avenue
Sunnyvale, CA 94086
800-522-7979
408-522-1200
408-733-5499 (fax)
DataPakCD (Toshiba), $899

MicroNet Technology, Inc.
20 Mason
Irvine, CA 92718
714-837-6033
714-837-1164 (fax)
MCD-ROM (Toshiba), $995

Mirror Technologies
305 Second Street N.W.
St. Paul, MN 55112
800-654-5294
612-633-4450
612-633-3136 (fax)
Mirror CD-ROM (Toshiba), $599

NEC Technologies, Inc.
1255 Michael Drive
Wood Dale, IL 60191
800-388-8888
708-860-9500
708-860-5847 (fax)
MultiSpin 74 (NEC), $699

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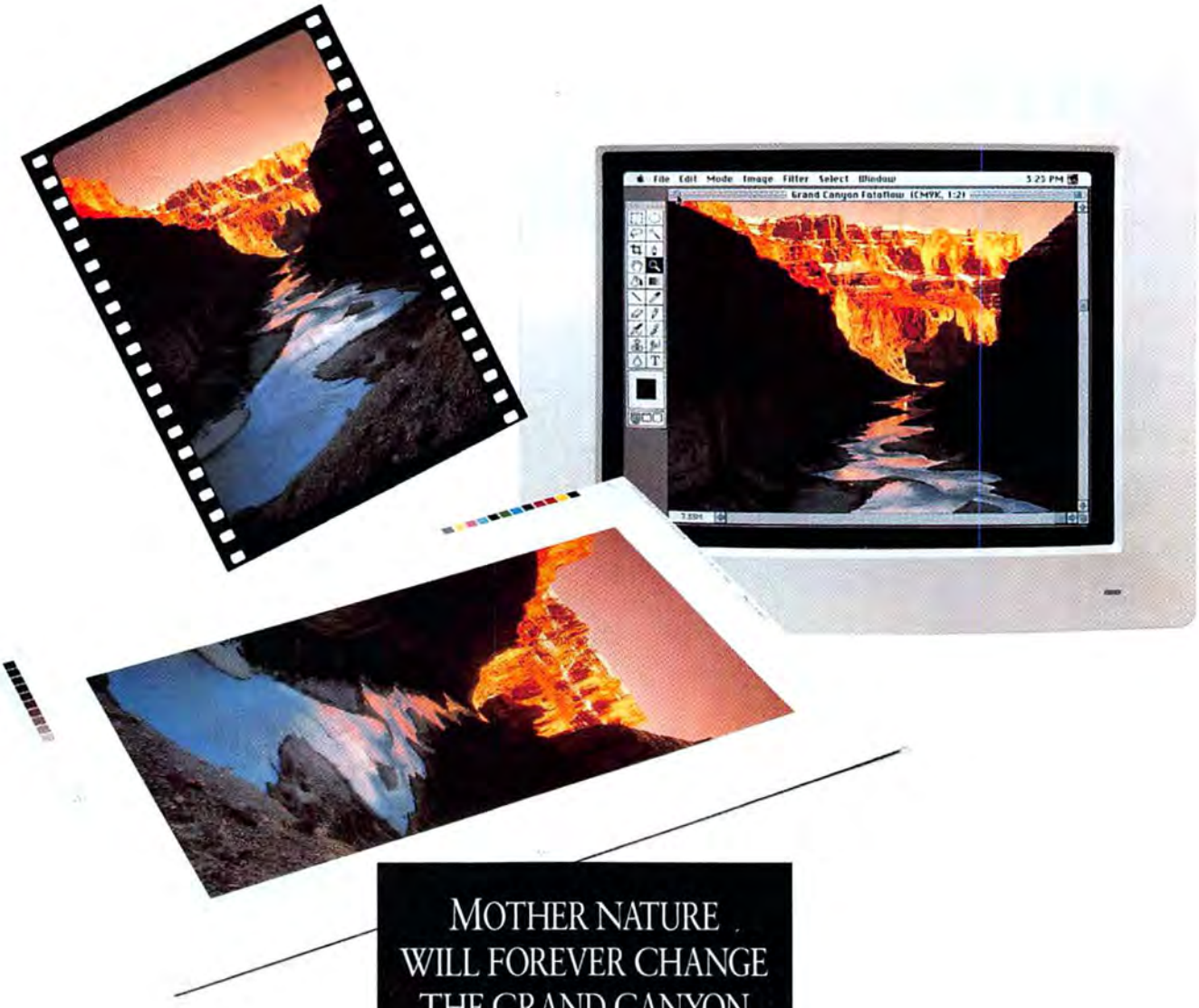

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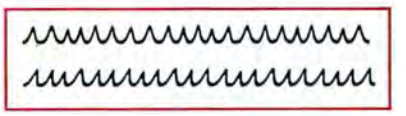
DESKTOP PUBLISHING

EZ 3-D: What presentation or QuickTime movie would be complete without words swooping across the screen? If you've ever **ogled flying logos** but thought creating your own would be too difficult, take a gander at LogoMotion, a $149 easy-to-use 3-D-animation program from Specular International. With LogoMotion you can extrude Type 1 and TrueType fonts as well as EPS outlines, add beveled edges, and then combine them with backgrounds and other objects. At the heart of LogoMotion is Stagehand: preanimated objects, lights, and cameras you can add to your scenes. If this flying-logo software takes off, Specular plans to open up the Stagehand format to allow other companies to develop objects. 413-253-3100.

Utterly chaotic: Inject a little chaos into your images with Xaos Tools' Paint Alchemy, a Photoshop plug-in that allows you to add textures and special effects with unusual brush strokes. You select brush, color, size, angle, and transparency parameters with variations based on hue, saturation, brightness, and other options, so you can layer on colors or set your brush to pick up colors from the image. Paint Alchemy ships with 75 preset brush-stroke styles and 36 brushes, but you can use any PICT file as a brush (Xaos also sells Floppy Full of Brushes, 50 more brushes, for $19.95). The tabbed-index-card interface doesn't provide a lot of feedback, but if you have ever experienced the desire to **stamp friends' faces with little feet** or to coat them with glossy cat fur, this is the ticket. 800-289-9267 or 415-558-9831. $99. ✦ Playing with goofy filters is fun, but mastering Photoshop takes a bit more discipline. For a different take on the usual ersatz manual, check out Rob Day's *Designer Photoshop,* from Random House Electronic Publishing. Subtitled *From Monitor to Printed Page,* it takes you inside Photoshop through the eyes of an accomplished artist and printmaker. Day's personal tone makes it a delight to read. 800-733-3000 or 212-995-2200. $30.

Wild and wavy: What's striking about Adobe's Wild Type collection isn't that it has wacky display **fonts shaped like skateboarders,** animals, tools, and such but that it's from *Adobe,* that bastion of type purity. Inexpensive and unusual packages, such as Bitstream's L'il Bits and Monotype's Fun Fonts, are popular these days, and Adobe has had to change with the times. That said, these are well-crafted originals, and at $60 for 14 fonts, you can't go wrong. 800-833-6687 or 415-961-4400. ✦ Art directors used to comping layouts by hand know that type isn't needed at some design phases — in fact, it can be distracting — so they draw **squiggly lines** to represent text. What's the computer equivalent? PF Systems' Squiggle Font! Type any text and select roman, bold, or italic Squiggle Font, and wavy lines substitute for words. 800-841-2893 or 516-365-1995. $49.



By Pamela Pfiffner

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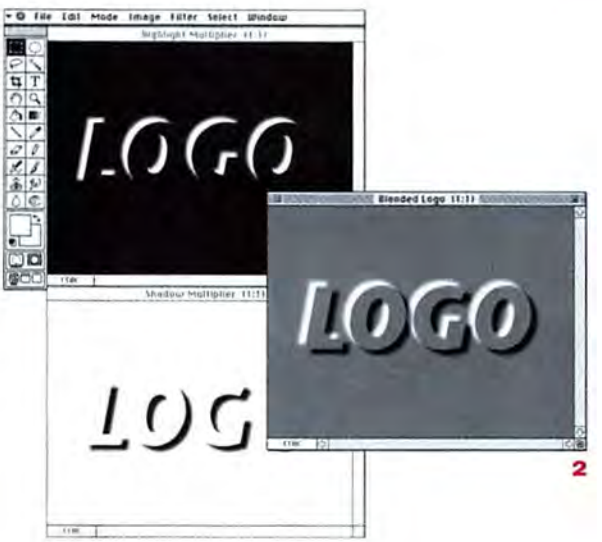
CIRCLE 22 ON READER SERVICE CARD.

More Algorithmic Painting

Photoshop's channel operations let you add embossed and metallic effects to images quickly and easily.

By Kai Krause

1



2

Channel operations — what I call *chops* — are perhaps the most powerful aspect of Photoshop. In the August issue, I introduced you to the concept of algorithmic painting, which uses chops to create original images (see "Paint by Numbers," page 157). This month we'll take that concept a bit further.

To recap where we left off:

We had created a 400-x-300-pixel gray-scale image with anti-aliased text, which we called Logo. (You can use any plain black shape, however.) We used Photoshop's Subtract and Difference calculation modes to create files containing shadow and highlight information, which you can then apply to any image at any time. These files multiply your options — you can apply the shadow data to a plain black shape and then apply the highlight data to that, for instance (see Figure 1). The result is a complex image that's much faster and easier to create than it would be with Photoshop filters and tools.

What's next? Embossed and metallic effects, leading to the supreme chop of them all.

A quick note: I recommend that you take this magazine over to your Mac and try these techniques out as you read along. Also, get in the habit of naming your intermediate files: Sorting out which of the 20 open windows you want when they're all named Untitled gets rather confusing.

Embossed Effects

Photoshop has an Emboss filter, but using the chops mode Blend (under Calculate, on the Image menu) gives you a much more flexible embossing technique. With Blend set to 50 percent, this chop adds two source images together linearly, which means that a black image *A* and a white image *B* result in a gray image *C*.

Any image blended with an exact but inverted duplicate of itself will cancel out to total gray. If, however, the copy is not exactly the same or it's offset slightly, only the common areas will cancel each other out, and the rest will behave differently. Two of the files we created in August, Shadow Multiplier and Highlight Multiplier, are perfect examples of this: They are really copies of one another, but one is inverted and offset from the other one. When we apply the Blend operation (it doesn't matter which image is designated Source 1 or Source 2), the areas that are common to both images cancel out to neutral gray (see Figure 2). If, instead, we blur the two offset

images before blending them (try a Gaussian blur of 4 pixels or so), we get a very soft emboss (see Figure 3).

You can tweak this image nicely in the Levels or Curves dialog box (under Adjust, on the Image menu), bringing out the embossed contours by making stronger shadows or toning down the highlights. But here is a cool extra step: Do a similar inversion, using the Difference chop mode. Make the last image you created Source 1, and put your original logo file into the Source 2 pop-up menu. The original plain black mask shape inverts the inside area of the last soft emboss and results in another variation, which we'll call Embossed Logo (see Figure 4).

Metallic Effects

For more variations, we can continue to build on our previous images. To create a metallic look, we can use the Curves dialog box to remap the gray shades (see Figures 5a and 5b), naming the resulting file Embossed Metallic Logo. I'm not telling you to duplicate these exact points — just look at what's happening on-screen, and adjust the Curves control points until you get an effect you like. This setting in Curves gives you a solarization effect that mimics the bright reflections of metallic or chrome shapes. (Note: You need to have Video LUT Animation, in General Preferences, on the File menu, turned on.)

An important point I want to make here is that although the solarization effect brings with it some unavoidable artifacts, such as serious aliasing around the edges of the letters, this is *not* a reason to automatically dismiss the results. It's important to master the fine art of looking for small details that are worth rescuing at any given stage as well as to be aware of the arsenal of options for damage control. (And of course, I'm not talking about the smudge tool — after all, this is not a matter of pushing pixels around on-screen; it's algorithmic painting.)

In this case, you can get rid of the rough edges by isolating the edge in a selection and then blurring it, but that's a topic for another time. A more immediate method of correcting this kind of aliasing is to superimpose a fine outline over the troublesome edge. Here's an easy way to do that:

Smooth Outlines

Make a copy of the original Logo file. For smoother results, I recommend using Blur More, on the Filter menu, on this copy. Now select Find Edges (under Stylize, on the Filter menu). The point here is to get a set of letter outlines, either white outlines on a black background or black outlines on a white background, that you can superimpose on your image. It's a little tricky, because Find Edges gives you different results depending on whether you're using Photoshop 2.0 or 2.5. In Photoshop 2.0, you get white outlines on a black background. In Photoshop 2.5, you get black outlines on a white background. To get the reverse effect in either case, simply use the Invert command (under Map, on the Image menu).

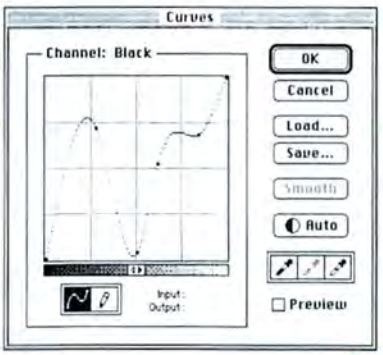
You can now use the Screen or Multiply chops (both under Calculate, on the Image menu) to add these outlines to your heavily aliased image.

To superimpose a light outline on the letters, open Screen and put the file containing the light outlines into Source 1. Make your working image the Source 2 file. Clicking on OK now gives you smooth white letter edges, for a kind of neon effect (see Figure 6).

To superimpose a dark outline on the letters, open Multiply and put the file containing the dark outlines into Source 1. Make your working image the Source 2 file. Now click on OK, and you'll get smooth black letter edges.

If you'd like a thinner outline, try using the Maximum and Minimum filters (under Other, on the Filter menu). At the

3



5a

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4

5b

7

default setting of 1 (no fractions, sadly), these filters can smoothly choke in the thin line (see Figure 7). Name this file Outline Metallic Logo.

The Real Secret

The real secret to chopping becomes apparent when you have a slew of windows open (I know from personal experience that during the course of one long night, that number can swell to more than a hundred) and you reduce their size by zooming out and tiling them manually (the bigger your screen the better). Now you can see all the ingredients in front of you (remember that Option-clicking on a window's title bar pops the window to the back — a hidden Photoshop feature).

At this point, you have the magical ability to combine any element with any other: picking the inside of one image, grabbing the edges of another, taking the background of a third, and creating subtle cross combinations thereof. You can colorize the elements, one by one (an art in itself, to be covered in a later discussion).

The point of these chops exercises is to make you aware of how the puzzle pieces fit together in a predictable manner and which processes you can employ to achieve cool effects, eliminate artifacts, or composite great details. For example, here's how you can add the metallic inside of the letter shapes to the embossed-effect image in one step, using the most powerful chops mode of all.

The Supreme Chop

Examine the Composite dialog box (under Calculate, on the Image menu). It contains two sources and a mask (plus the usual destination options). The logic is straightforward:

Wherever the mask is black, you get the background image, which is Source 2. Wherever the mask is white, you get the foreground image, or Source 1. If the mask is gray, the two sources will be blended accordingly; a midgray (which for a 256-level gray-scale image is level 127) is therefore a 50-percent blend. Here we'll simply use the original Logo file (your plain black shape) as the mask: Where it is black (in the letter shapes), we want the metallic image, so we specify Outline Metallic Logo as the image in the Source 2 pop-up menu. Where the mask is white (in the background), we want the embossed image, so make the Soft Emboss Logo file Source 1 (see Figure 8).

In one step, we have combined the results of dozens of operations into one smooth image (see Figure 9). But it doesn't end there. You can further process this image in several ways. For example, take a look at the more complex effect I call *Bubble Gum over Ice* (see Figure 10). The original version was one of 20 alternatives I created for a poster.

You can apply chops to any image, regardless of its size or resolution. (The poster I just mentioned, for example, was regenerated at 400 dpi into a 26-megabyte file.) Such resolution-independence is but one of the major benefits of algorithmic painting. Algorithmic painting is a unique approach to creating images: Instead of visualizing the final result ahead of time and committing it to canvas (or screen), you work in the opposite direction — the creativity lies in creating many elements and then steering the combination process.

The peculiar side benefits are the unexpected intermediate results that derive from this method. Even after you've spent countless hours trying to get a grip on the effects of modular combinations, every time you try another chop mode, using any two ingredients, you get something else — often a total surprise. Some find this utterly frustrating. Me? I love it!

Kai Krause has been using Photoshop since before it was in beta. He conducts a Photoshop forum on America Online (keyword kpt) and is the vice president of research and development at HSC Software.

8

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10

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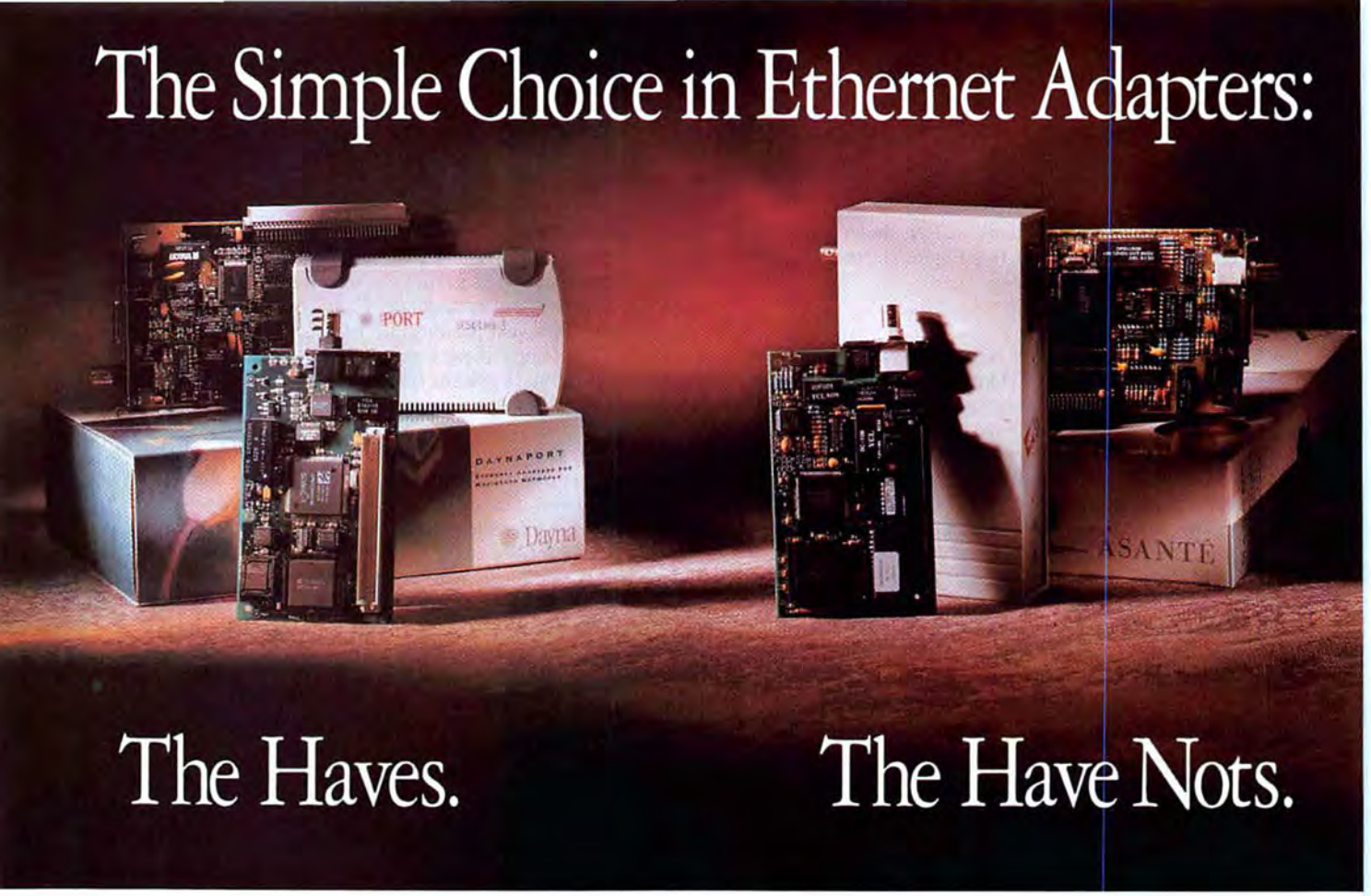

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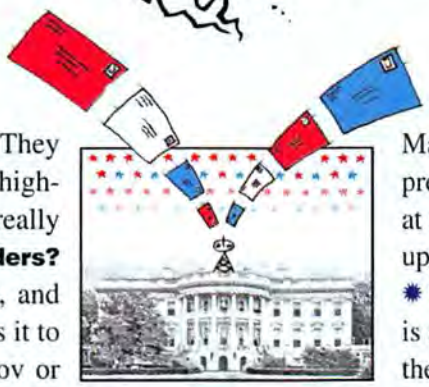
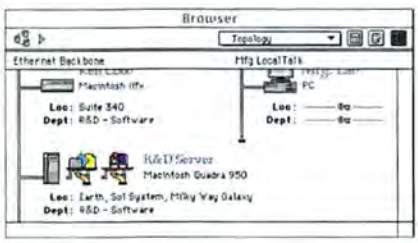


E-mail to the chief: They talk about electronic data highways, but are Bill and Al really **computer-hip commanders?** Send them some e-mail, and find out. You can address it to president@whitehouse.gov or vice.president@whitehouse.gov, and you'll get a quick response from an automated system. It's not clear that either of the two gentlemen will actually read your mail, though.

Indy 5000: Think those powerful UNIX workstations are too expensive and nerdy to win your computer dollars away from Apple? Silicon Graphics, maker of the **Dinosaur-building tools** used in *Jurassic Park,* recently announced a surprisingly inexpensive UNIX box with very impressive features. $4,995 buys you an Indy workstation with the works: a speedy, RISC-based multimedia system (including a 15-inch monitor, 16 megabytes of RAM, and a digital video camera) with a wide array of software tools and several input and output ports. You also get SGI's new user interface, Indigo Magic, which masks the Indy's less-than-friendly UNIX underpinnings. 800-960-1980 or 415-961-1980.

Attention, control freaks: Let TechWorks take you to GraceLAN, where the network manager is King, for two new upgrades. Version 3.0 of GraceLAN Network Manager boasts improved data-reporting and printing capabilities; it also gathers even more details about client Macs — and gathers them faster — than previous versions. The new version is priced at $795 for an unlimited number of clients; upgrading from previous versions costs $149.



✸ Version 2.0 of GraceLAN Server Manager is a free upgrade for registered users. Here's the **big improvement:** You can now make changes to a server's users-and-groups information without having to quit and relaunch the server. 800-765-6187 or 512-794-8533.

If you like to watch — that is, if you often look deeply into either LocalTalk or Ethernet packets — check out version 2.0.1 of AG Group's LocalPeek and EtherPeek packet analyzers ($495 and $795, respectively). Greatly improved packet filtering and decoding, along with threading and other new features, help you **find answers faster** than ever. If you're upgrading, the $75 upgrade price for LocalPeek ($120 for EtherPeek) is well worth it. 510-937-7900.

Routes great, less filling: Want to reduce the amount of routing chatter consuming precious bandwidth on your networks? Farallon has a router update for you, a free software update that makes the company's InterRoute-5 and StarRouter the first non-Apple routers to support the AURP (AppleTalk Update-based Routing Protocol). For those whose network connections' costs are measured by data volume, AURP support is one way to **cut the chitchat.** All you need in this case is version 3.2 of Farallon's StarCommand software, to upgrade the flash ROMs in the routers. The update is available directly from Farallon (510-814-5000) or through the major online services.

By Stephan Somogyi

Score Ethernet savings.

Farallon introduces new products—and new prices—for the savvy Ethernet shopper.

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CIRCLE 92 ON READER SERVICE CARD.

The Multi-OS Mac

Starting next year, computer shopping will be a lot more interesting. You might actually be able to choose both the operating system and *the hardware you like the best.*

By John Rizzo

People often compare buying a personal computer to buying a car — each costs thousands of dollars and is out-of-date in a couple of years. In fact, the two shopping experiences are totally different. When shopping for a car, you typically begin by deciding on a type: a station wagon, an expensive racing car, or the cheapest thing on four wheels. You then decide on a brand, which determines whether your car will have an engine from Ford, Maserati, or Hyundai. With a computer, however, you decide which graphical user interface (GUI) you want but you can't choose the engine. If you want a station wagon (a Mac), you get an engine based on a Motorola 680x0 chip. If you want a racing car (UNIX), you get a RISC-based engine. If you want the cheapest thing you can find (Windows), you get an engine based on an Intel 80x86 chip.

This is all going to change. Starting as soon as next year, you'll be able to pick both the GUI *and* the platform you run it on. That means you'll be able to run the Mac operating environment and your favorite applications on a beefy Sun workstation or run Windows programs on a Mac — and with little speed degradation.

The major operating-system vendors — Apple (Mac), Microsoft (Windows), and IBM (OS/2) — have begun a race to port their GUIs to multiple platforms. For Microsoft, the goal is domination: Windows, Windows, everywhere. For Apple (and to some degree, for IBM), the goal is survival by expansion into new markets. For users, the result will be more flexibility than ever before — the ability to shop for station wagons with Maserati engines. Instead of choosing between a Mac and a PC, each with its own operating system, you'll be able to choose between a Mac and a PC, either of which will run both System 7 and Windows.

Taking a RISC

Operating-system developers have turned their attention first to the powerful RISC (reduced-instruction-set computing) workstations, which typically run some version of UNIX. RISC represents the high end of desktop computing and will most likely be part of mainstream desktop computers within a few years.

Apple is betting on RISC in a big way. Not only is it using it in the PowerPC (the Apple/IBM/Motorola RISC-based processor Apple will use in Macs next year) but the company also recently announced a strategy called Apple Services for Open Systems (code-named Mac-on-UNIX) that will enable System 7 to run on top of at least four major RISC-based UNIX platforms (from Hewlett-Packard, Univel, Sun, and IBM) by the end of the year. This means UNIX users will be able to see System 7 and unmodified Mac applications running in a window next to other UNIX GUI software, such as Motif or Open Look, and at comparable speeds. Underneath System 7, there will be a standard UNIX kernel (the core operating

BRIDGES

MAC TO PC

system that controls input and output).

The Big Four UNIX-platform manufacturers support Apple's move — Mac-on-UNIX could add thousands of inexpensive Mac applications to the list of software the workstations run. And with System 7 (and the Mac) being released from the stigma of a proprietary GUI, Mac enthusiasts should find it easier to get System 7 into organizations that have previously excluded Macs.

This is not the first time people have attempted to run Mac applications on RISC-based UNIX workstations. Two products that do this to a limited degree — Quorum's Equal and Xcelerated Systems' Liken — are already available. Equal doesn't actually run the Finder or System 7, but it lets UNIX users run a few Mac programs, most notably Microsoft Excel and Word, in a Motif-like window. Liken can run more Mac applications on RISC machines in a more Mac-like way but still doesn't provide the full Mac operating environment. The reason for this limitation is that these products have reverse-engineered only a few pieces of the Mac's ROM code. With Mac-on-UNIX, however, Apple is porting part of the Macintosh Toolbox — the ultrasecret routines hidden in the Mac ROMs that are responsible for the Mac interface — to run on RISC chips.

Insignia Does Windows

Microsoft hasn't been sleeping through all this. In fact, Apple is responding in part to the Seattle-area software giant's largely successful efforts to dominate the industry with its Windows interface. Microsoft has begun expanding from the Intel 80x86 PC platforms by porting its new Windows-like operating system, Windows NT, to several RISC platforms. NT can run on a variety of computers, including those built around Digital's Alpha chip, MIPS' line of RISC chips, and Intel's new Pentium chip (not a RISC chip but as fast as one).

More interesting to Mac users is Microsoft's strategy to enable the Windows GUI to run on Macs as well as on UNIX machines. Microsoft has licensed Windows source code to Insignia Solutions, which could use the technology to create versions that will run on various platforms, including today's 680x0-based Macs and next year's PowerPC Macs. Insignia already has experience with Windows, with its SoftPC products — software that lets Macs and RISC machines run DOS and Windows. Insignia is also providing the SoftPC emulation technology that Microsoft ships with Windows NT; the technology enables the new operating system to run DOS and Windows software.

SoftPC running Windows on a Mac also uses emulation technology and therefore is nowhere near as fast as Windows on a 386 PC. But because the new strategic alliance with Microsoft gives Insignia access to actual Windows code, Insignia no longer needs to emulate an Intel chip; instead, it will run Windows directly on a CPU — a Mac 68040, say — resulting in speed as fast as you get on a PC. In addition, Microsoft has said it

Table 1: Future Shopping

Platform	Operating system
680x0 Mac	System 7 (Apple)
	A/UX (Apple UNIX)
	Windows (Insignia/Microsoft)
PowerPC 601	System 7 (Apple)
	Windows (Insignia/Microsoft)
	AIX (IBM UNIX)
	PowerOpen (Apple UNIX)
80x86 PC	DOS/Windows NT (Microsoft)
	System 7/DR DOS (Apple/Novell)
Other RISC machines	System 7 on top of UNIX (Apple)
	Windows (Insignia/Microsoft)
	PowerOpen (Apple)
	Windows NT (Microsoft)
	other UNIX (Motif, Open Look, etc.)

Table 1: Would you like the hardware features of a speedy RISC machine and the software features of easy-to-use System 7? In a year or two, you'll be able to mix and match computers and operating systems. Here's a list of computers and the multiplatform operating systems that will be available for them.

will provide Insignia with access to upgrade code. This will mean real Windows on Macs and UNIX machines, the way Apple's UNIX strategy will mean real System 7 on UNIX.

Power to the PC Buyer

Insignia will also port its SoftPC technology to several RISC chips, including the PowerPC 601 chip. Because the PowerPC 601 is very fast, a native-Windows port to a PowerPC Mac should run at least as fast as on a 486 PC and probably faster. And you won't have to give up anything, either. Apple will port portions of the Macintosh Toolbox to the RISC chip, enabling Mac applications ported to a PowerPC Mac to run at least four times as fast as on a Quadra 950. Unaltered Mac software will run at speeds similar to those on today's Macs.

Apple is betting the PowerPC will be the future of the Mac line. It has the potential to be the best multi-operating-system machine on the market.

Apple is betting on the PowerPC to be the future of the Mac line, and with Insignia's implementation of Windows, the PowerPC Mac also has the potential to be the best multi-operating-system machine on the market. The price of the chip is about a third the price of Intel's high-speed Pentium, and it promises to be slightly faster.

The PowerPC Mac could also go where no Mac has been before, inside solidly Windows companies. After all, why buy a 486 PC or a 680x0 Mac when you can have a machine that runs *all* software at leading-edge speeds?

Of course, no RISC machine would be complete without UNIX. PowerPC Macs will also run various flavors of UNIX, including AIX, IBM's version of the multitasking operating system. You'll also be able to run Apple's PowerOpen, a new UNIX that is being designed from the ground up to run on several types of computers. Unlike Mac-on-UNIX, which sits on top of existing standard UNIX kernels, PowerOpen will be an entire UNIX system.

The Race Begins

IBM is also building a new UNIX-like operating system, which it calls the Microkernel, from the ground up. This new operating system will not only be multiplatform but will be multi-GUI as well. The idea is that on top of the basic kernel, users will run multiple GUIs — OS/2, System 7, Windows, Open Look, and so on — much as users today run multiple applications on top of an operating system. IBM's Microkernel will provide all the GUIs with access to hard disks and other hardware. Although an actual product is still several years off, IBM's Microkernel will be the closest thing to a universal operating system. For now, IBM's OS/2 operating system, version 2.1, can run a couple of interfaces — its own and Microsoft Windows — on 80x86 PCs, but so far it can't run System 7.

But don't give up on PCs yet. A variety of sources indicate that Apple may be working on a version of System 7 that would run on Intel-chip PCs. One rumor has it that System 7 will run on top of Novell's version of DOS, called DR DOS, much as Windows now sits on top of MS-DOS. At press time, neither Apple nor Novell would comment on such a product, but it most likely does exist. Another possibility is that Apple is working on its own PC operating system from the ground up. The question is whether or not Apple thinks either strategy is worth pursuing. Apple attacking Microsoft's grip on the PC market is like a flea on David's big toe going up against Goliath. With Apple cutting costs and scaling back its work force, this is just the type of project that could be put on hold.

Let's hope not. While the promise of RISC beams brightly in the future, there are 70 million PCs based on Intel chips on which some of us would like to run Mac programs today. Multiplatform operating systems could well be the best thing that happens to personal-computer users since the hard drive. Fortunately for us, the multiplatform-operating-system race has begun. And may the best GUI win.

Technical editor John Rizzo is the author of *How Macs Work* and *MacUser Guide to Connectivity*, both published by Ziff-Davis Press.

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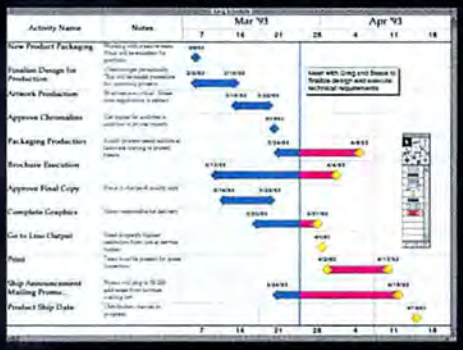

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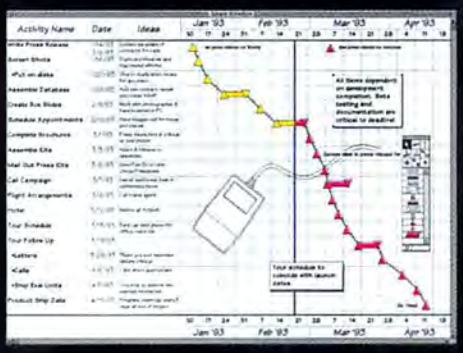

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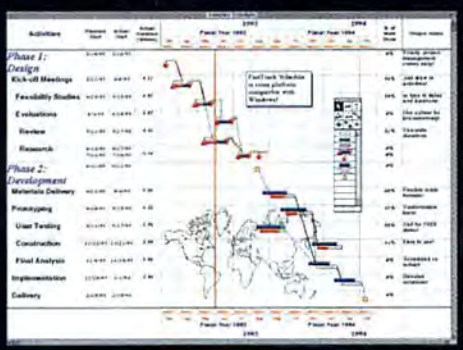

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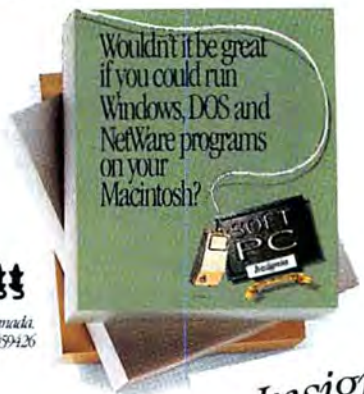

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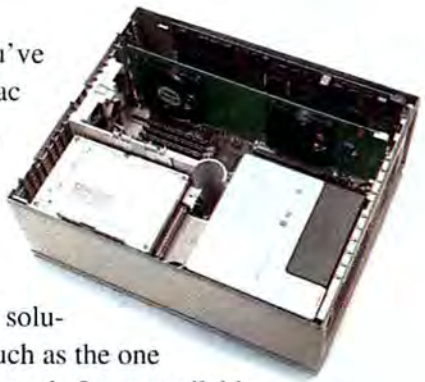
POWER TOOLS

Battery booster? PowerBook owners chasing the Holy Grail of **the ideal battery** now have a new option. The VST ThinPack for the PowerBook is a $179.95 external battery that promises to more than double the time you get from an internal battery's charge (VST claims a PowerBook 100 can run more than nine hours when using a ThinPack). At only a quarter of an inch thick, the ThinPack can be tucked into any carrying case, and you recharge it by using the AC adapter of the PowerBook. 508-287-4600.

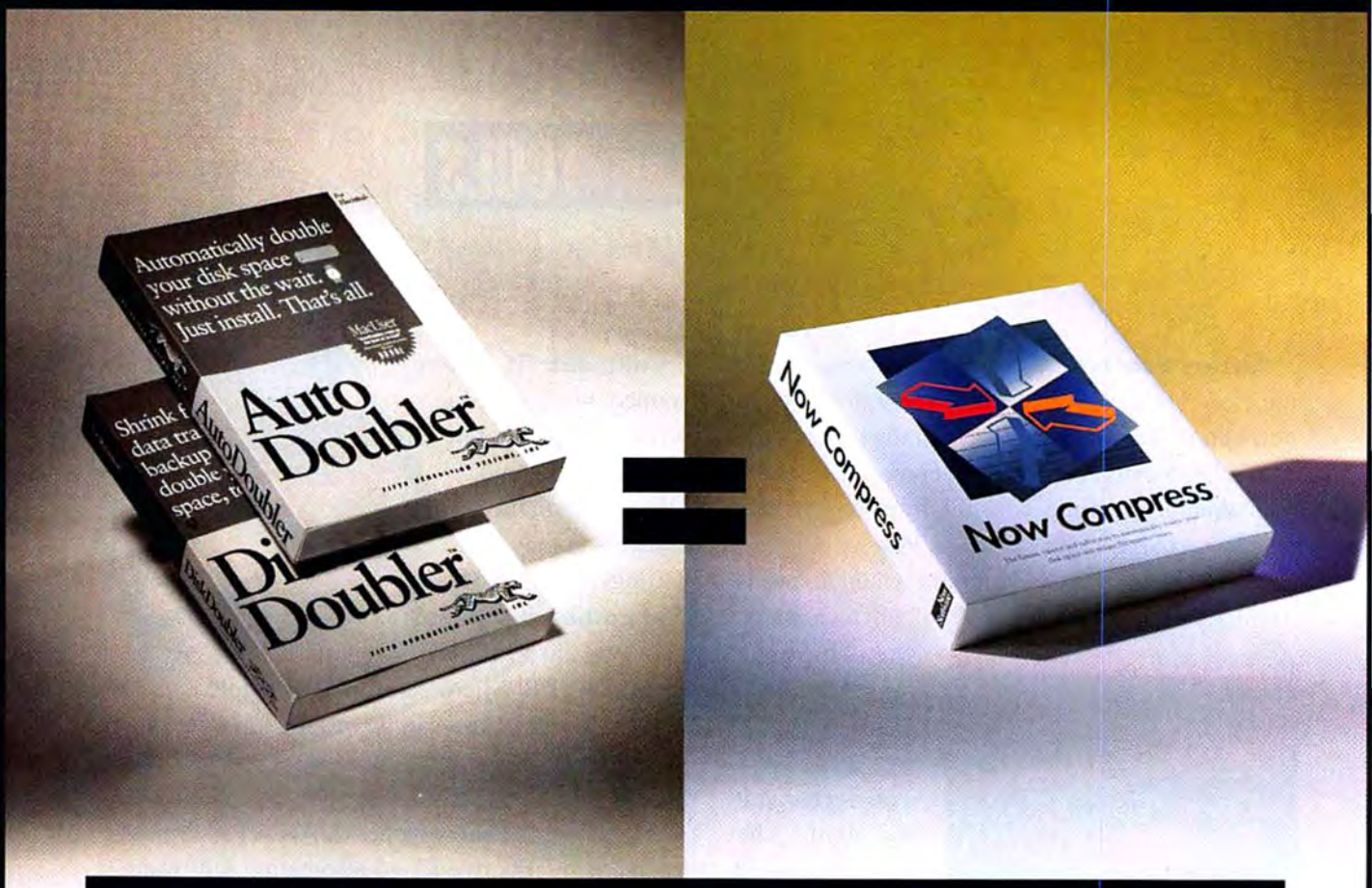
A package deal: Utility collections are proliferating, and a couple of the best new ones are from Mac stalwarts Fifth Generation Systems and Aladdin. MakPak 1.0 ($149) puts FGS's most popular Mac utilities — AutoDoubler (background compression), DiskLock PB (hard-disk security that's ideal for PowerBook users), CopyDoubler Lite (speedier copying), Fastback Express (backup), and more — into one easy-to-install program. 504-291-7221. ✧ Best known for its ubiquitous compression and archiving program StuffIt Deluxe, Aladdin Systems now has an $89.95 utilities package that's designed to **make the Mac way faster** and more convenient. Aladdin Desktop Tools (which should be available this month) **speeds up copying,** duplicating, and trashing items; lets you find and open files (including stuffed files) from the Open dialog box; adds keyboard commands to the Finder's menus; lets you choose printers from the desktop; and more. 408-761-6200.



Chill out: If you've souped up your Mac with video cards, accelerators, and other performance boosters, it may be getting a little **hot and bothered.** One solution is to add a fan such as the one offered by T.S. Microtech. Long available for PCs, the FanCard can be installed in any Mac with a spare NuBus slot. Single fan, $89.95; double fan, $109.95. 800-959-9419 or 310-787-1640.

Better business: Anyone who's ever struggled to create an effective Mac presentation will want to grab a copy of Margaret Y. Rabb's invaluable *The Presentation Design Book* (Chapel Hill, NC: Ventana Press, 1993; $24.95). It doesn't show you how to use your presentation software, but it does teach you the fundamentals of designing a presentation for maximum impact. The tips for tailoring your presentation to particular audiences are especially good. 800-743-5369 or 919-942-0220. ✧ Attention, **number crunchers.** You can put an adding machine onto your Mac's desktop with Kensington's Adding Machine ($49.95). The program looks and works like a standard adding machine (it sounds like one too), but it also lets you cut, copy, and paste as well as create multiple files and import and export to other applications. For $149.95, you can buy the Adding Machine software with Kensington's external numeric NoteBook KeyPad. 800-535-4242 or 415-572-2700.

By Victoria von Biel



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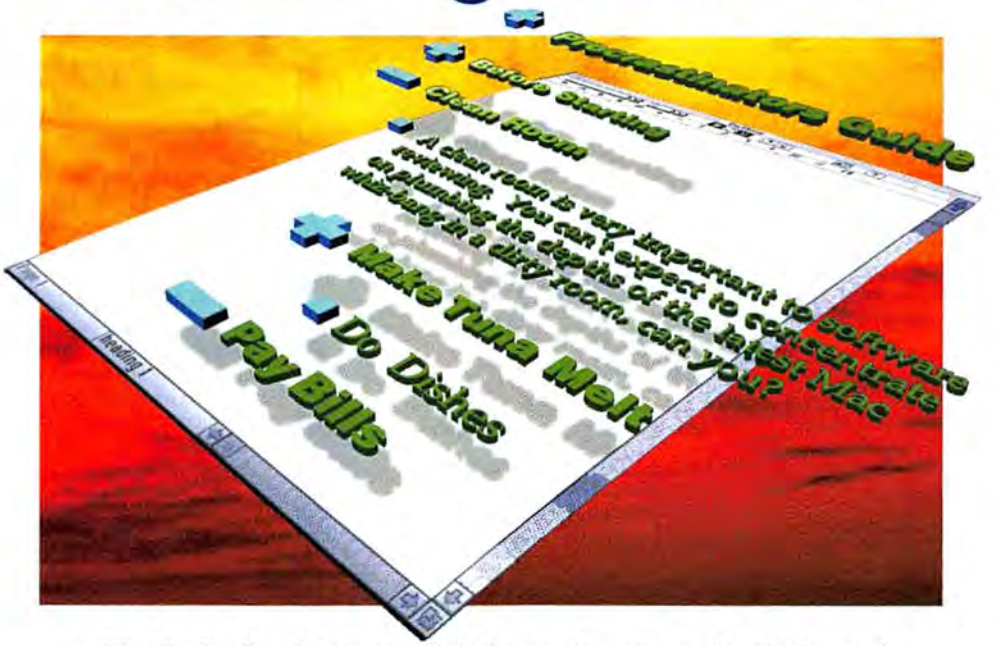
Outlining in Word



Word's Outline format is a little-known but extremely effective tool. Here's how to make the most of it.

By Eric Taub

Although other heavy-duty word processors may surpass Microsoft Word in one class or another in the bells-and-whistles derby, Word's unique ability to display an entire document as an editable outline — no matter how complicated — makes it the power tool of choice for many writers. The Outline view lets you create an outline just like the ones you learned to make back in your high-school writing class, but with one important difference: The outline *is* your document. When you rearrange the order of elements in the outline, you actually rearrange your Word document, so, for example, you can quickly swap chapters 9 and 22 of a mammoth document with just a few mouse clicks. (To display a document in Outline view, press Command-Option-O, or select Outline, on the View menu.)

But if outlining is one of Word's most powerful features, it's also one of its least understood. The Outline view has its own confusing ribbon of icons, and sometimes outlining isn't as intuitive as it might be. Here's a quick guide to getting started as well as a few tips that will make you a power outliner.

Outline Organization

In Outline view, a paragraph's margins and indents don't reflect how you've actually defined them in your document, as they do in the Normal or Page Layout views, but rather the paragraph's position in the outline's hierarchy. There's also an outline bar at the top of the document window, which displays the icons you can use to control the appearance and organization of the outline (see Figure 1).

The Outline view distinguishes between two kinds of paragraphs: headings and body text. You can have nine levels of headings in a document, and each heading can have body text and other headings associated with it. (Look at the bottom of the page on-screen, and you'll see nine ticks, each of which corresponds to a heading level.) Heading 1 is the highest level; heading 9 is the lowest. Associated text is called *subtext*.

When you're looking at a document in Outline view, you see the following symbols:

✣ This sign indicates that the paragraph is a heading with associated subtext. Clicking on this symbol selects that heading and all of its associated subtext; Option-clicking selects only the heading.

▭ If you see this sign, you have a heading with no subtext.

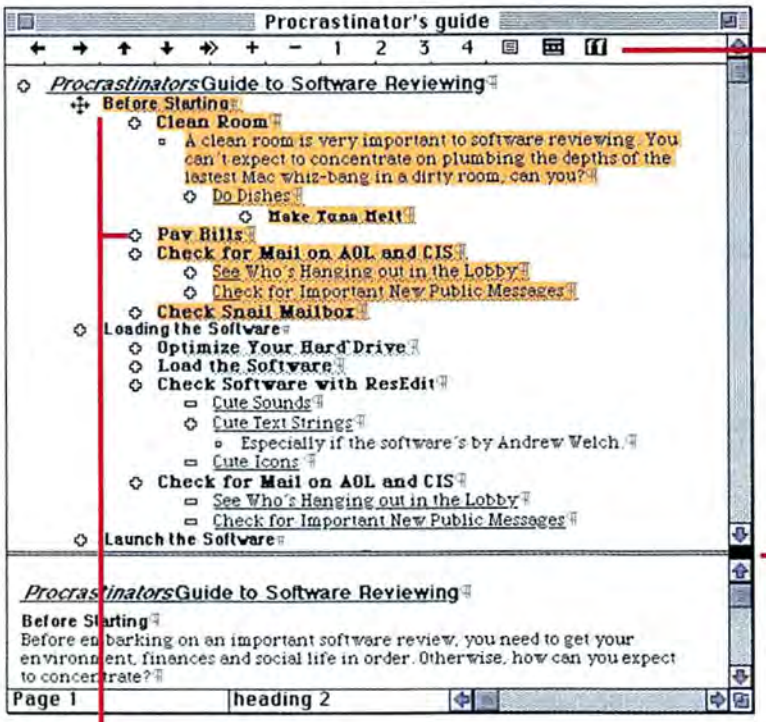
▫ A tiny square indicates that the paragraph is body text. Clicking on this symbol selects just that paragraph.

✣ When the cursor is directly on top of one of these paragraph symbols, it changes to a four-way arrow.

Showing/Hiding Body Text

One important use of outlining is to let you concentrate on a document's structure without necessarily seeing every single detail of every paragraph. It's amazing how clear and concise

Figure 1: Word's Outline View



The outline bar's icons are handy but not exactly self-explanatory. The left, right, up, and down arrows promote or demote selected paragraphs or move them up and down within the document. When you click on the double-arrow, it applies the Normal style (as defined by the Style command, on the Format menu). The + and – signs expand and collapse selected headings. The numerals collapse all the headings below the indicated number, and the three icons on the right show and hide all body text, all lines beyond the first in body-text paragraphs, and character formatting throughout the outline.

If you split your document window into two panes by dragging on the black bar at the top of the scroll bar (or by pressing Command-Option-S), you can leave one pane in Outline view and then click inside the other and put it into Normal view (press Command-Option-N). When you scroll through one panel, the other automatically scrolls to the same location.

The subtext of these headings has been collapsed, as indicated by the dotted lines under the right sides of the headings.

even the longest, most complicated document can appear when you're looking at only the major headings. Word has many controls over how much of an outline you can see.

For instance, you can control how much body text you can see and what the text looks like in the following ways:

Click on this icon in the outline bar to hide all the body text in a document. This icon is a toggle; if body text is hidden, click on the icon to show the text. (For those who are allergic to icons, the * key on the numeric keypad serves the same function.)

If you don't want to hide *all* of the body text, click on this icon to display only the first line of each body-text paragraph.

Click on the icon again to show all the body text.

Clicking on this icon in the outline bar displays all the text in the outline without any character formatting (you get the formatting specified for the Normal style).

Click on the icon again to display character formatting (there aren't many reasons for hiding character formatting — unless you've defined some distracting formatting for headings).

Collapsing/Expanding Headings

Collapsing an outline (hiding its subtext) is particularly handy when you want to see the organization of a huge document. You can collapse all the headings below a given level by clicking on the numbers in the outline bar: Click on 1 to collapse the view to only heading 1, click on 2 to collapse to heading 2 and above, and so forth.

You can expand or collapse the subtext of an individual heading in several ways: by double-clicking on the heading's paragraph symbol, by clicking on the + or – sign in the outline bar, or by using the + or – keys on the numeric keypad. (Note that double-clicking on the paragraph symbol collapses or expands all the subtext in one fell swoop. The other methods collapse or expand all the body text under the selected heading first — to keep collapsing or expanding, you continue clicking on the + or – sign or using the numeric-keypad keys.)

Promoting/Demoting

To promote or demote a heading in the outline hierarchy, just drag its paragraph symbol to the left or right. As you drag the symbol, a dotted vertical line indicates the new heading level to which

you're dragging the heading (it will line up with one of the nine ticks at the bottom of the page).

TIP Clicking on a heading's paragraph symbol selects the heading and all of its subtext and thus promotes or demotes all subsidiary headings — if you promote a second-level heading to first level, all third-level headings within the subtext will become second-level. You can also promote or demote body text by dragging it to the correct level.

TIP If you're not in a dragging mood, you can click on the left and right arrows in the outline bar to promote or demote selected paragraphs or press Option-left-arrow or Option-right-arrow.

It's handy that Word's headings are all styles. You can define the formatting of any heading by using the Style command. Also, besides using the previously mentioned methods of promoting or demoting a heading, you can simply apply the appropriate heading style to a paragraph as you would any other style (using the Style command, on the Format menu), so you can promote and demote headings even when you're not using the Outline view.

Moving Up/Down

You can move a heading and its subtext up or down in a document by dragging its symbol up or down. If you've collapsed your document sufficiently, you can make drastic changes to its organization with only the slightest movements of your mouse.

TIP To move only a heading and not its subtext, hold down the Option key as you drag. You can use the up and down arrows in the outline bar or use Option-up-arrow or Option-down-arrow on the keyboard.

TIP To number your entire outline — or even just part of it — collapse or expand the outline to the levels you want numbered. Select the text (or leave it unselected to number the entire outline), and choose Renumber, on the Tools menu. Use the By Example command to enter your own numbering scheme in the Format bar.

Experiment with Outline view on a couple of documents, and you'll get the hang of it in no time. It'll make both planning and editing your big writing projects a lot easier.

Eric Taub is a New York City-based writer and desktop publisher.

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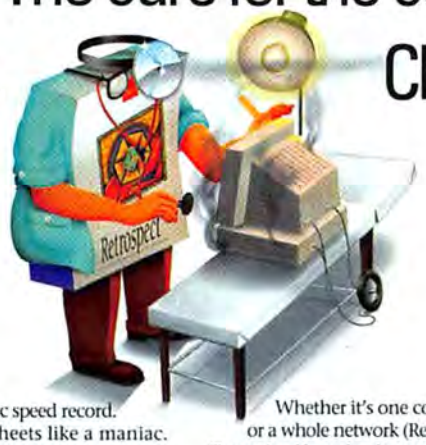

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CIRCLE 111 ON READER SERVICE CARD.

The 1993 MacUser Shareware Awards

From games to applications, here are the top 21 shareware bargains of the year.

By Gregory Wasson

Most of the time, shareware — software that's available from the developer on the honor system — doesn't get a lot of respect. Habitués of on-line services and user groups are its staunchest supporters; the rest of the Mac community is either scarcely aware of its existence or inclined to dismiss it as unimportant. In fact, shareware can be an amazing deal, providing cutting-edge products at bargain-basement prices. Many of these programs blaze new paths in areas that commercial software seldom wanders into.

Each year *MacUser* honors the best shareware (and freeware). We asked more than 100 movers and shakers in the Mac community to select this year's nominees and then vote for the winners. Our judges included the staff of on-line services such as CompuServe, America Online, and *MacUser*'s own ZiffNet/Mac; writers and editors in the Mac press; and the CEOs and staff of software and hardware companies. Here are the products they felt were the best and the brightest.

All these files are available through various on-line services — CompuServe's MAUG forums, GEnie, America Online, and ZiffNet/Mac — local bulletin-board services, and user groups. See Table 1 for ZiffNet/Mac filenames and locations.

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POWER TOOLS

SHAREWARE

Trivial Pursuits

Playing computer games is a great way to sharpen your hand/eye coordination; stimulate your imagination; and of course, make you more productive by relieving stress. This year had a bumper crop of top-notch shareware games, and the winner is . . .

Maelstrom. Maelstrom is one of the best Mac shareware games to appear since Solarian. It's an addictive, commercial-quality, arcade-style, outer-space shoot-'em-up with streaking meteors, gyrating alien spacecraft, vortexes, and other dangers flying at your ship from all sides. This $15 shareware game features outstanding color graphics, smooth animation, and great sound effects that will suck you in as inexorably as a black hole. You need System 6.0 or later and a color monitor (any size) set to 256 colors. Maelstrom is by Andrew Welch, one of the Mac community's most prolific and popular shareware authors.

Honorable Mentions

Bolo. Bolo, by Stuart Cheshire, is a splendid tank war game in blazing color. You maneuver a tank around heavily defended terrain, blasting your opponents into submission. The game has spawned its own subculture — you can find add-on shareware terrain editors that let you create your own scenarios.

Tetris Max. Tetris Max, by Steve Chamberlin, is simply the best freeware Tetris clone available for the Mac. It's color-filled and awesome — and best of all, it's free.

Extensions

There's no more popular shareware category than the extension. Extensions add new oomph to your Mac, sometimes making your work a little easier or perhaps just sprucing up the desktop. And the winner is . . .

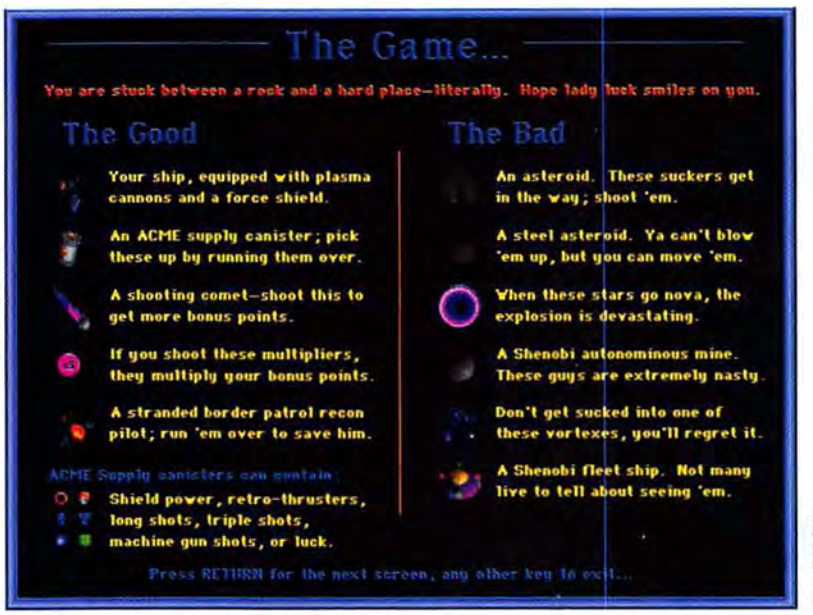


Figure 1: Improve your hand/eye coordination with a computer game. The superb arcade-style Maelstrom takes top honors in the Trivial Pursuits category, with its excellent graphics and sound effects, fast action, and smooth animation.

ILLUSTRATIONS: JACK MORTENSBAK

SpeedyFinder. When System 7 first came on the scene, complaints about its sloth when performing certain tasks surfaced immediately. To the rescue came Victor Tan's SpeedyFinder, a System 7-only control panel and extension that pumps new life and spunk into the system by speeding up various aspects of the Finder. It turns off window zooming and also energizes file copying, two chief System 7 slowdown culprits. The extension also lets you colorize floppy-disk icons, lets you rebuild the desktop without restarting your Mac, adds keyboard command equivalents to the Finder, does document linking, and much more. Some users report that it's incompatible with NowMenus 4.0, but most users will find it makes System 7 live up to its advertised promises for a modest $20 shareware fee.

Honorable Mentions

MenuChoice. MenuChoice, by Kerry Clendinning, turns the flat Apple menu into a hierarchical wonderland complete with cascading menus that make the System 7 Apple menu everything it should have been in the first place.

WindowShade. WindowShade, by Robert Johnston, is a super desktop space saver that keeps window clutter to a minimum by letting you "roll up" open windows so only the title bar shows.

General Utilities and Applications

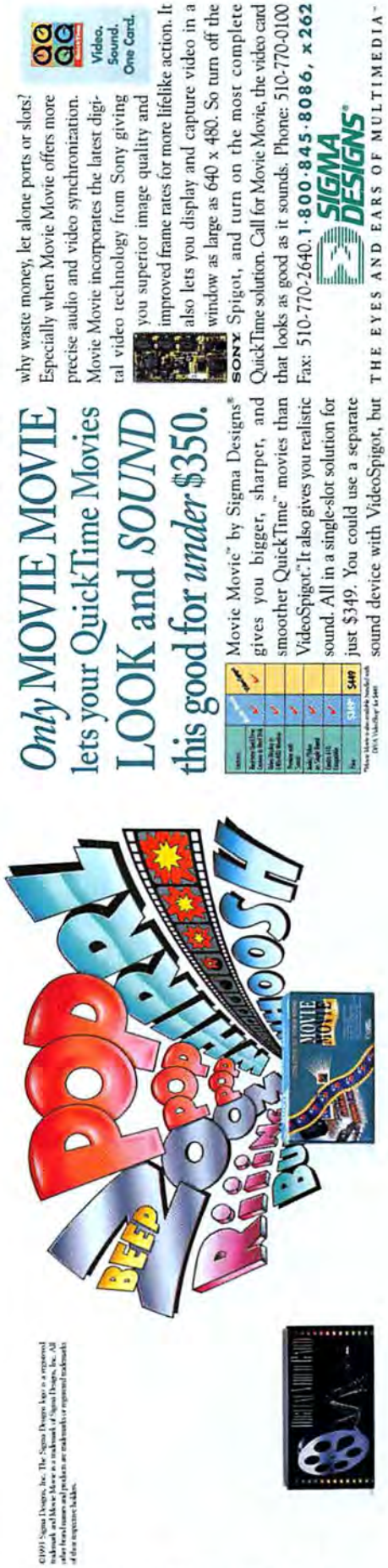
Hundreds of general utilities and applications — ranging from dinky little DAs to full-fledged, sophisticated draw programs — appear in the shareware distribution channel each year. And the winner is . . .

DarkSide of the Mac. Screen savers are one of the most popular add-ons for Macintosh users. But they often provide some unexpected side effects: system conflicts (all commercial screen savers are extensions) and large memory demands. Tom Dowdy's DarkSide is an innovative, System 7-only commercial-quality alternative that avoids both these pitfalls (see Figure 2). It's an application (not an extension) and uses only 64K of RAM. You never have to fret about extension conflicts, and even Macs with minimum RAM can cough up 64K without major problems. DarkSide comes with many built-in modules: fireworks, moiré, playful kitten, and so on. Version 4.0 even lets you use most of the modules in the popular commercial product After Dark. DarkSide's shareware fee is $15.

Figure 2: A screen saver shouldn't hog all of your RAM. Miserly memory use and inventive modules make DarkSide of the Mac a winner.

Honorable Mentions

FileBuddy. FileBuddy, by Larry Harris, is a great file-management utility that lets you change Finder flag info (toggles that make a file locked/unlocked, visible/invisible), files' Type and Creator codes, and more. Larry Harris has recently become one of the Mac community's most respected shareware authors. His creations are always eagerly awaited.



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POWER TOOLS

SHAREWARE

Calculator II. Calculator II, by Joe Cicinelli, is a replacement for Apple's ho-hum Calculator DA. It has a snazzier look and feel and offers more number-crunching options than the DA that comes with your Mac.

Text Tools

Macintosh users probably create word-processing documents more than any other kind of file, so the nominees in this category were legion. But the winner is . . .

Easy View. Distributing documents among users who may or may not have the creating application is a continuing frustration for many Mac users. New technology such as Adobe's Acrobat or No Hands Software's Common Ground offers one kind of solution, but there's another one that's often overlooked: text files enhanced by a special text-only format called setext. Setext files include unobtrusive formatting tags that let the reader software easily navigate a text-only file with a click of the mouse. M. Akif Eyler's Easy View is an excellent setext reader for the Mac that has evolved over the last year. (Mac setext booster Adam Engst distributes his popular TidBITS on-line magazine in setext format.) It's a clever, ground-breaking concept that deserves recognition.

Honorable Mentions

BBEdit Lite. BBEdit Lite, by Richard Siegel, is an excellent text editor that's the perfect replacement for the Apple Note Pad DA. BBEdit Lite can open larger files than Note Pad can and has great search-and-replace options.

DOCMaker. DOCMaker, by Mark Wall, is a program that lets you create formatted documents any Macintosh user can read without any other program. Using DOCMaker files is an ideal way to distribute ReadMe files, memos, and so on without worrying about what word processor the recipient may or may not have.

Connectivity

Whether you're connecting with a remote Mac over phone lines, networking and trading files with PC users, or changing graphics from one format to another, the name of the game is connectivity. And the winner is:

ARAClient. Ron Duritsch's ARAClient is a control-panel and application combo that immensely simplifies using AppleTalk Remote Access (ARA), itself a revolutionary approach to remote computing. ARAClient adds new features to ARA that save time, keystrokes, and RAM. ARAClient's control panel provides a one-step connection process that creates simple connection mini-applications called connectors that let users forget all the details of network telecommunication. Double-click on the connector, and sit back while it initiates a session with any remote Mac or server. There's also a much-needed redial option that's lacking in ARA and support for password-protecting the connectors. You need System 7, ARA, and a modem to use this program. ARAClient provides the easy-as-pie interface for ARA that Apple should have created in the first place. It has a $20 shareware fee.

ARAClient is the launching pad for the commercial program ARACommander, which offers even more power and features than its shareware cousin. You can try the shareware ARAClient first. If you like it (and you will!), pay the registration fee and Duritsch will automatically send you ARACommander.

Honorable Mentions

GIFConverter. GIFConverter, by Kevin Mitchell, is a dream come true for graphics power users. It lets you view and print images in GIF format, but it also translates many other graphics formats. It can be indispensable if you frequently have to deal with graphics from non-Mac platforms. GIFConverter won in this category last year (see "The MacUser Shareware Awards," September '92, page 152), and it is a tribute to

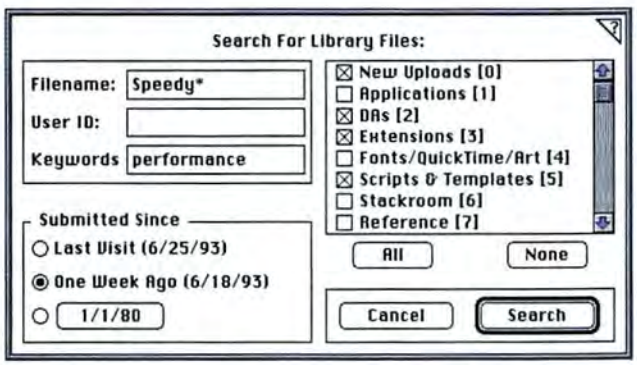
both the program and the author that it just keeps on pulling in votes year after year.

MacSEE. MacSEE, by REEVEsoft, is a Windows equivalent to the Mac commercial programs AccessPC, DOS-Mounter, and PC Exchange that lets you read high-density Mac floppy disks from within Windows. MacSEE allows you to move Mac files to any Windows PC that

Table 1: Where to Find the Winners

The winners and runners-up in this year's *MacUser* shareware awards are available on ZiffNet/Mac (see the masthead on page 4 of this issue for details on how to sign up). To make them easy to find, all these programs will be available in Library 2 of the MacUser Forum. If you'd like to see a list of all the nominees for this year's shareware awards, look for the file NOMINE.TXT in Library 2 of the MacUser Forum.

Program	Filename	Location
ARAClient 2.03	ARACLI.SEA	Library 3 (Extensions)
BBEdit Lite 2.3	BBLITE.SEA	Library 1 (Applications)
Bolo 0.99	BOLO.SEA	Library 1 (Applications)
Calculator II 1.11	CALCII.CPT	Library 1 (Applications)
DOCMaker 3.9.5	DOCMAK.SEA	Library 1 (Applications)
DarkSide of the Mac 4.0	DARKSI.CPT	Library 1 (Applications)
Easy View 2.33	EASYVW.SEA	Library 1 (Applications)
FileBuddy 1.5.1	FILEBU.SIT	Library 1 (Applications)
FirstClass Client 2.0.9	FCLASS.SEA	Library 1 (Applications)
GIFConverter 2.3.2	GIFCON.SEA	Library 1 (Applications)
MacSEE 2.2	MACSEE.ZIP	Library 1 (Applications)
Maelstrom 1.2	MAELST.SEA	Library 1 (Applications)
MenuChoice 1.6	MENUCH.SEA	Library 3 (Extensions)
Shakespeare's Works, Vol. 1	SHAKE1.SEA	Library 6 (Stackroom)
SpeedyFinder 1.5.4	SFINDE.CPT	Library 3 (Extensions)
StuffIt Expander 3.0.1	STUFEX.SEA	Library 1 (Applications)
Tetris Max 2.0	TETMAX.SEA	Library 1 (Applications)
VendorDA 1.4	VENDBW.SIT or VENDCO.SIT	Library 1 (Applications)
WindowShade 1.2	WISHAD.SIT	Library 3 (Extensions)
The Zen Guide to the Internet	ZINTXT.SIT or ZINTPS.SIT	Library 7 (Reference)
ZipIt 1.1.1	ZIPIT.SEA	Library 1 (Applications)



Even if you don't know the filename or library of a ZiffNet/Mac file, you can still search for the files you want, by using CIM's search capability. Use the Keywords field if you know only what the file does; if you know part of a file's name, use the asterisk wild-card symbol to search for all the files that have similar names.

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As a growing product category, color video cards are making the scene with flying colors. In December's article, MacUser explores 14 cards that work with NuBus and can deliver at least 16-bit color on a16" screen. All for under $1000! The experts test speed, screen image, versatility and other card features, as they compare 8-, 16, and 24-bit color. As always, MacUser explains the advantages and disadvantages of the upgrade you choose. And nobody does it better.

THE MACUSER 100 FOR UNDER $250

The annual MacUser 100 presents the latest 100 products costing under $250. This list is chock full of great gift ideas, including books, CD ROMs, mouse pads, PowerBook carrying cases, cooking software, games, and a whole lot more.

Environmental and ergonomic products are also featured. The MacUser 100 makes the perfect gift suggestions for the new user, home user, power user, PowerBook user, children, teen-agers, and college students. Whenever you're giving — or getting — Mac products, MacUser makes buying easier.

DECEMBER AD CLOSE:
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has a 3.5-inch floppy-disk drive. The interface resembles that of Apple File Exchange — so it's not the best — but MacSEE is still a valuable utility to have around.

Educational

Apple's involvement in the educational market has made the Mac a natural platform for educational or reference material. Hundreds of such programs are released by individuals and educational institutions each year. And the winner is . . .

Shakespeare's Works, Vol. 1. Mark Zimmermann has taken upon himself the daunting and admirable task of transferring the Shakespearean corpus to a digital format — in this case, HyperCard. The first volume of this amazing undertaking contains the complete text of *A Midsummer-Night's Dream, As You Like It, King Henry IV, King Lear, Macbeth, The Merry Wives of Windsor, The Rape of Lucrece, Romeo and Juliet, The Tragedy of King Richard III, Venus and Adonis,* and the sonnets. In addition to having the Bard's works in a computer format, you can add your own notes and glosses to the text. The stack is an outstanding freeware educational tool, and Zimmermann himself deserves all the accolades we can heap on him.

Honorable Mentions

The Zen Guide to the Internet. The Zen Guide to the Internet, by Brendan Kehoe, is a sublime guide to the Internet that's requisite for anyone embarking on a voyage into the bizarre inner regions of the Internet cyberspace. Don't leave your Mac without it!

VendorDA. VendorDA is a comprehensive address book by Bill Baldridge with contact listings for hundreds of Mac-related software and hardware companies. It provides the addresses and phone numbers; you provide the envelope and phone.

Telecom and Compression

Telecommunications and compression go hand in hand because the smaller the file, the less time it requires to download or transmit by modem. And the winner is . . .

StuffIt Expander. StuffIt Expander is a must-have freeware compression utility that decompresses all files in any of the StuffIt formats as well as Compact Pro and AppleLink packages. Under System 7, it lets you simply drag files onto its icon for decompressing, so you can just leave it on your desktop for easy access. If you regularly download compressed files to a particular folder, you can direct StuffIt Expander to scan that folder periodically and decompress any compressed archives it finds there. It's the only decompression utility you'll probably ever need (at least if most of your downloads are from the major online services), and it's gratis from the folks at Aladdin, maker of the commercial compression program StuffIt Deluxe. This freebie makes dealing with compressed files about as painless and unintimidating as possible.

Honorable Mentions

FirstClass Client. FirstClass Client, by SoftArc, Inc., is a truly Mac-friendly telecom program and bulletin board/e-mail system that sports a friendly icon-based interface. FirstClass Mac BBSs are popping up more and more frequently, so you'll probably need this program sooner or later.

ZipIt. Using ZipIt, by Tommy Brown, is the best way for Mac users to deal with the DOS Zip compression format. Unlike other Mac unZip utilities, this one actually looks like a Mac program. If you trade files with PC users to any extent, you'll find this program a lifesaver.

Contributing editor Gregory Wasson is the author of *MacUser Guide to Shareware* (Ziff-Davis Press) and the chief sysop of the ZiffNet/Mac Download & Support Forum.

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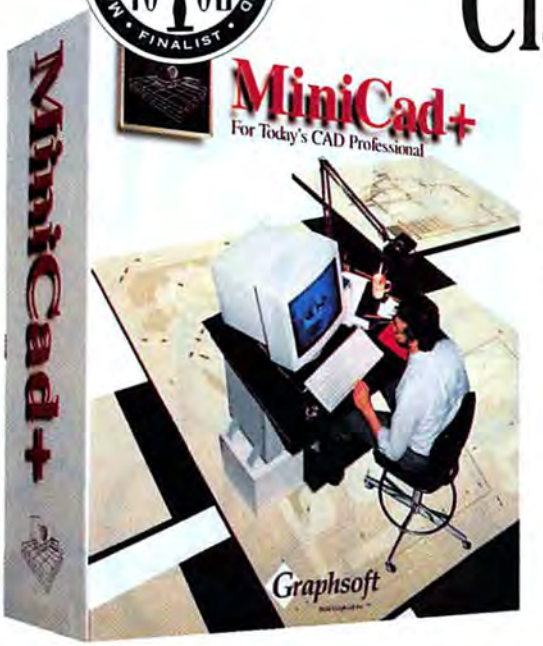

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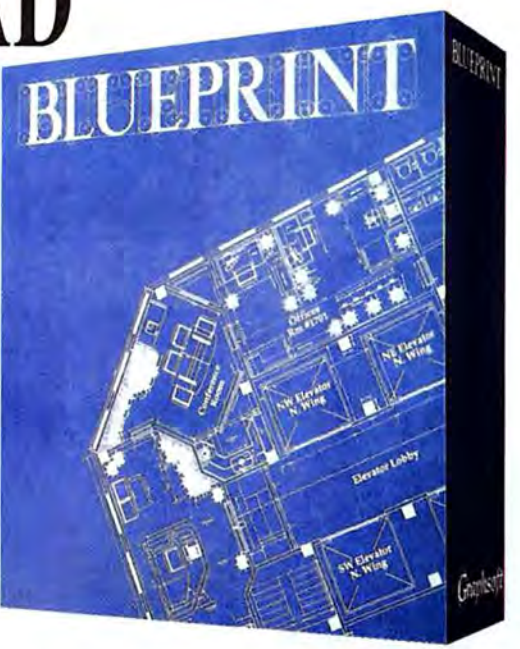

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Programmability:

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Let's AppleTalk

Some of the differences between a PowerBook and a desk machine are both subtle and annoying — take AppleTalk, for instance.

By Sharon Zardetto Aker

Answer without looking: Is AppleTalk on or off on your PowerBook? Now answer without reading ahead: Why should you care?

The answer to the second question is simple. AppleTalk — that seemingly benign system feature — can drain your battery faster than almost anything else on your PowerBook. *And* it steals RAM. So when you need it for printing, file sharing, or other network services, you should turn it on, and you should turn it off when you're not networked, right? Unfortunately, it's not that simple.

Sneak Thief

According to MacUser Labs tests, the PowerBook's biggest power hog is the CPU, followed by the backlight and the hard drive (see "Taking Charge: PowerBook-Battery Management," February '93, page 194). In fact, the CPU draws so much power that it's designed to go into a special "rest" state whenever it's not working. (This is the Processor Cycling option you can allow or prevent through the Battery Conservation Options dialog box in System 7.1's PowerBook control panel.) What has that got to do with using AppleTalk? Simple: When AppleTalk is on, the processor won't go into its rest state, which means you're wasting a lot of battery power if you leave AppleTalk on when you don't need it for printing, file sharing, or other network activity.

AppleTalk eats up memory too. Its appetite isn't voracious, but it does use about 400K of RAM when it loads at startup; if you turn it off, only half of that RAM is released back to the system.

The Chooser controls whether or not AppleTalk loads at startup. If AppleTalk is active when you shut down, it will load at the next startup; if it's inactive when you shut down, it won't load when you start up again. Like an extension, AppleTalk has to be loaded into memory at startup — you can't just turn it on later. That's why the Chooser sometimes contains a button called Active on Restart and sometimes it has the standard Active button.

Problems and Solutions

So the main problem with AppleTalk and the PowerBook is that although it's a good strategy to keep AppleTalk off for both power and memory savings, if it's off when you shut down, you'll waste time and battery power restarting just to load AppleTalk when you need it. There are smaller problems too. You have no indication of whether AppleTalk is on or off unless you open the Chooser — there's nothing on the screen to remind you that AppleTalk is on. And to turn it on or off, you have to go into the Chooser. So the "best" strategy means visiting the Chooser first, last, and several times in between: Turn AppleTalk on before you shut down so it will reload at startup; turn it off right after you start up so you save power; turn it back on when you need it and off when you don't; and

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MOBILE MAC

if you can't remember if it's on or off, just open the Chooser again and check.

There's gotta be a better way. And there is. In fact, there are several better ways, because most of the PowerBook-utility packages provide a certain measure of AppleTalk control. A notable exception is Power to Go ($89), part of the Clear Choice line from Claris (408-727-8227); it offers no AppleTalk control, even though the manual *explains* what a drain this puts on the battery.

AppleTalk — that seemingly benign system feature — can drain your battery faster than almost anything else on your PowerBook.

Thankfully, some other products have recognized the AppleTalk problem. PBTools ($99), from Inline Design (800-453-7671 or 203-435-4995), provides AppleTalk On and AppleTalk Off commands in its menu, so you don't have to open the Chooser. PBTools indicates AppleTalk status by a minor alteration of its menu-bar icon so you know at a glance whether AppleTalk is on or off, and it can force AppleTalk to reload at startup no matter what its status at shutdown. CPU ($99), from Connectix (800-950-5880 or 415-571-5100), also provides AppleTalk control in its menu, lets you set it to always reload at startup, and even makes AppleTalk status part of the "sets" you use. Norton Essentials for PowerBook ($129), from Symantec (800-441-7234 or 408-253-9600), provides AppleTalk commands in its menu and has a separate menu-bar icon for displaying AppleTalk status. It even includes an automatic AppleTalk toggle, turning it on when you hook up to your network and off again when you disconnect. On the Road ($99), a printer/fax spooler from Palomar Software (619-721-7000), also turns AppleTalk on and off automatically, based on your network status.

You don't even have to spend a lot of money to get AppleTalk control. Two shareware choices are ToggleAT, which lets you turn AppleTalk on and off with a key combination, and AppleTalk On, an extension that always loads AppleTalk at startup. You can get copies from user groups and on-line services, such as CompuServe, America Online, and *MacUser*'s ZiffNet/Mac.

Tip: If you don't have *any* AppleTalk utilities, here's a system-level tip that can save you a little grief: Put an alias of the Chooser into the Startup Items folder so it opens as soon as you start your PowerBook. If AppleTalk is on, you'll be reminded to shut it off if you don't need it right away. If AppleTalk didn't load at startup, you can restart right away, before you open applications

PowerBook Secrets: *Trackball Tweaking*

A trackball doesn't pick up as much dirt as a mouse that's rolling around on a desktop, but even the natural oil from your fingertips eventually builds up to a problem. It's important to keep the trackball mechanism clean so it works smoothly.

Open the trackball mechanism by twisting the retaining ring counterclockwise. (On some PowerBooks, especially Duos, the ring is hard to remove the first time, but it's not locked, so give it a good twist to get it off.) Remove the ball, and clean the support posts and bearings with a cotton or foam swab moistened with alcohol or tape-head cleaner; clean the ball too. Never use anything sharp to scrape the rollers, and don't drip any cleaner into the case.

The PowerBook 100's trackball tends to behave erratically and is almost unusable at times, but there's a quick and easy fix. Remove the outer retaining ring and the trackball. You'll see two metal shafts, each with a blue rubber roller. Move the rollers so they're no longer centered on the shafts: Slide the vertical one down and the horizontal one to the right. Position each roller so that only its edge contacts the ball, off the center line. You might have to try a few times to get the position just right, but when you do, the difference is significant.

I have it on good authority (a knowledgeable source on the PowerBook team) that Apple uses a special test to check the tolerance of the trackball action: dripping a blend of crushed Doritos and Pepsi into the mechanism. Don't try this at home.

— *Richard Wolfson*

and documents and get to work. And make sure the Chooser appears on the Apple menu for easy access, not buried in a folder or even a second-level submenu if you're using the Apple menu.

If you're still using Apple's Battery DA to put your PowerBook to sleep, you get an annoying dialog box about losing network services. The warning is annoying because, let's face it, it's pretty hard to open the Battery DA and click on the

Make sure you know how your PowerBook utility's automatic sleep settings interact with AppleTalk.

sleep icon accidentally — you're pretty darn sure you know you want the PowerBook to sleep even though you'll be cut off from the network. The dialog box shows up whether or not you're actually connected to a network — if AppleTalk's on, you get the dialog box.

The Sleep commands in most third-party PowerBook utilities let you bypass this dialog box, but you can circumvent it in the Battery DA too. If you're using the expanded version of the Battery DA, Option-click on the Sleep button; in the short version of the DA, Option-Shift-click on the battery icon.

If you're using a PowerBook-utility package, make sure you know how its automatic sleep settings interact with AppleTalk. Norton Essentials, for instance, checks for modem activity so it won't put the PowerBook to sleep during a communications session, but it doesn't do a similar confirmation for network activity. As a result, the PowerBook can go to sleep during, say, a file-synchronization operation. PBTools avoids such a disaster by never letting the PowerBook go to sleep while AppleTalk is active. This invites its own problem, because it's easy to disconnect from a network (which often also means you're disconnecting from AC power) and forget to turn off AppleTalk. Not only are you draining your battery because AppleTalk is still on but also your PowerBook is a dedicated insomniac at that point.

Here's a tip for PowerBook 100 and Duo owners. When you use a "bare" Duo — no Duo Dock or MiniDock — you have a single serial port available, just as with the 100. If you're using it for an external modem, you have to turn AppleTalk off. But if you want to phone home with ARA (AppleTalk Remote Access), you need AppleTalk on. You can't have it both ways, so here's the solution: In the Network control panel, which is installed along with ARA, click on the Remote Only icon.

Sharon Zardetto Aker and Rich Wolfson are co-authors of *The PowerBook Companion*.

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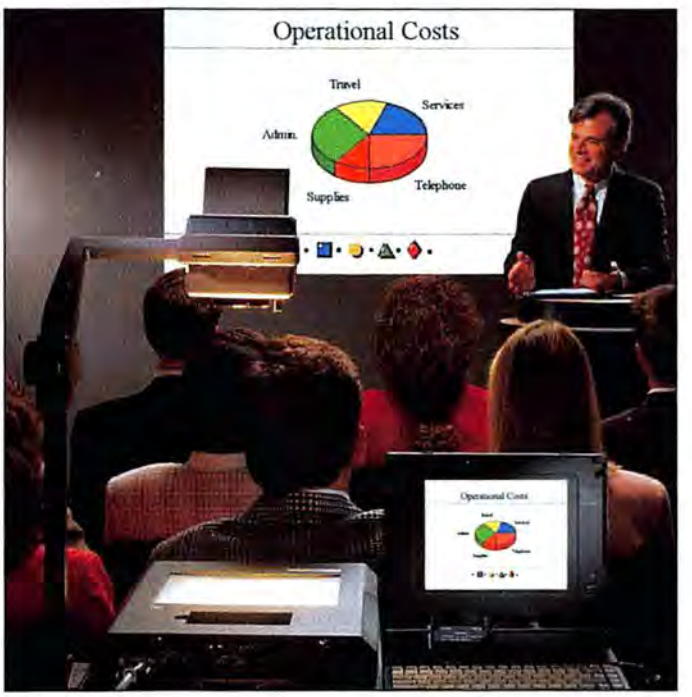

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How to Buy

A Word Processor

There are almost as many word processors as there are ways to use them. Before you buy one, consider what kind of work you'll be doing and which features you'll need.

■ Check to see that the program you're thinking of buying can function with the **amount of RAM** on your Mac. Larger programs require at least a megabyte — maybe more — to run smoothly, whereas some smaller packages need less than 500K.

■ Make sure you've got **enough space** for the application you're considering. Many Macs, especially the PowerBooks, have limited hard-disk space. Word-processing packages can range in size from as small as a few hundred kilobytes to as large as 7 megabytes. Check if you can control how much space the word processor takes up. For example, you can load Microsoft Word 5.1 with all of its bells and whistles at about 7 megabytes, or you can choose a "minimal install" of only 2 megabytes.

■ If you're buying a word-processing package to use on a **PowerBook,** look for a program that either loads itself completely into RAM or accesses the disk infrequently. This maximizes battery life by allowing your power-hungry hard disk to spin down while you type, spinning up only when you need to save your file. Large applications such as Microsoft Word often read from the hard disk, slowing down the application and making life difficult for users running their PowerBook on battery power.

■ Consider if you need to do more than just word processing. If you're also likely to need a database or spreadsheet program or both, buying an **integrated package** might save you a bundle. Programs such as Microsoft Works, WordPerfect Works, ClarisWorks, and GreatWorks combine word processors with database managers, spreadsheet applications, drawing programs, and modem software in one program (see "Getting the Works," September '93, page 166).

■ For your basic **desktop-publishing** needs, a word processor can do most of what a page-layout program does. For simple documents such as newsletters, you may not need the advanced features of programs such as PageMaker and QuarkXPress. Just make sure the program can do what you need it to — import graphics, split text into multiple columns, or perform other page-layout functions such as creating drop caps and text wraps.

■ If you're looking for a program that can cope with **large documents,** choose one that lets you create special features such as a table of contents, indexes, footnotes, and endnotes. Test-drive the program (borrow a friend's or user group's copy) to see how it handles long documents.

■ Don't buy an expensive program if you'll be creating only **simple documents** (letters and memos, for example). The biggest difference between high-end word processors and low-end ones may be functions you don't need, such as tables, outlining, styles, and macros.

■ Make sure your word processor has a good mail-merge system if you plan to use the program for **form letters.** Some applications have a limited set of mail-merge commands, whereas others allow users to give very specific instructions about what the mail-merge does. Try out the mail-merge function before you buy the program.

■ Do you work with **PCs** as well as Macs? If so, make sure the word processor you buy has versions for both machines — and make sure you can easily transfer files between the two versions.

■ Although some **spelling checkers** are better than others, don't let a poor spelling checker keep you from buying a word processor you like. You can easily replace that spelling checker with a program such as Baseline Publishing's Thunder 7, which integrates itself into your word processor's regular menus and adds features that go beyond just correcting your spelling.

■ Are you sure you really need a **grammar checker?** Although a spelling checker is essential, grammar and style checkers aren't nearly as important — they *do* catch some grammar goofs, but they also flag lots of correct phrases, can take forever to scan your file, and take up large amounts of hard-disk space.

■ For more information, check out "The Right Word Processor," September '92, page 100.

By Jason Snell

How to Maintain Your

Keyboard and Mouse

For twenty-five bucks or less, you can get everything you need to give your keyboard and mouse a long, productive life.

By Tom Petaccia

To keep your keyboard and mouse in prime operating condition, all you need are a regular-sized Phillips-head screwdriver, a can of compressed air (available in most photo- and computer-supply shops), a bottle of isopropyl rubbing alcohol, a soft cloth, some cotton swabs, and perhaps a little WD-40 (a jack-of-all-trades lubricant and cleaner) for tough dirt. To save some time, you may also want to get a Clean Mouse mouse-cleaning kit ($14.95), from Curtis (603-532-4123).

Keyboard Care

Once a month or so, it's wise to clean accumulated oils from the keys. You don't need to open up the keyboard for this, but

The 45-degree angle is the key to removing both **the cover and the circuit board** from an Apple Extended Keyboard or Apple Extended Keyboard II. To remove either, grasp the top edge (above the function keys) and pull, letting the bottom edge remain in place and act as a hinge. Once you've pulled the cover or circuit board open to about a 45-degree angle, you can lift it out. Take care to extricate the Extended Keyboard II's circuit board from the plastic tabs and slots at both edges before pulling or lifting.

When you're replacing the circuit board, make sure you line up the **ADB connectors** with the holes in the outside of the base that provide access to these connectors from outside the keyboard.

To get at **mouse crud**, first turn the mouse over. Pressing down firmly on the locking ring, rotate the ring to the left until it stops moving. Then flip the mouse over, and the ring and mouse ball should fall right out. Use compressed air to gently blow out loose dust. Clean the ball with a soft *dry* cloth. Clean the rollers with cotton swabs and isopropyl alcohol, or use a Curtis Clean Mouse kit.

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If you need to blow debris out from inside the keys, remove the tight-fitting key caps by lifting them straight up, without twisting. The space bar has an additional guide wire that snaps into two holding clips. Use your fingers or a small flathead screwdriver to pop the wire out of its clips before removing the space bar and to snap it back in before reseating the space bar.

you should disconnect it from your Mac — turning the Mac off first, of course. Start by pouring some isopropyl into a small saucer. Dab a clean, soft cloth into the saucer, and use the cloth to rub dirt off the keys. For stubborn dirt, spray the cloth with WD-40 and rub the spot again.

About every six months, open your keyboard and blow out the debris with compressed air. Start by removing the Phillips-head screws (four on the original Apple Extended Keyboard, one on the Extended Keyboard II) from the underside of the keyboard. Then flip the keyboard right-side up, and place it in front of you as if you were going to type.

To remove the cover from an original keyboard, grasp the far edge of the keyboard cover and pull it toward you, letting the closer edge of the board act as a hinge. When you've pulled it open to about a 45-degree angle, lift the entire cover straight up and set it aside.

The Extended Keyboard II opens similarly, but you have to pry a little more to get the cover off. Press one or both thumbs against the height-adjustment slot to hold the base of the keyboard down while you slide your fingernails under the back edge of the cover to loosen it. Pull upward and outward, and then open as with the original keyboard.

Use the same hinge-and-lift method to remove the circuit board containing the keys and ADB ports, making sure to unsnap the two locking tabs at the top of the Extended Keyboard II's logic board before you pull on it to hinge it open. Note that there are tabs holding down the closer end of the board: Slide them out of their slots before lifting the board out.

The only reason to pull a key off the keyboard is if you suspect a mechanical problem (for example, if typing "The Sculley Years" produces "The Sculle ears"). In this case, pull the cap off the offending key, blow out any debris, and reseat the key. If this doesn't help, the problem is probably in the soldered-on switch underneath the key — let a reputable technician tackle it.

Once you've blown out all the dust and debris inside your keyboard, use the following guidelines for reassembly:

1. When you're putting the circuit board back into the base, start with the board at a 45-degree angle to the base. Line up the slots and tabs at the end closest to you, and then guide the board back and down until it is seated.

2. Once you have the circuit board in the base, make sure the ADB connectors on the left and right sides of the base are positioned so that each port is entirely visible from the outside of the keyboard.

3. To replace the cover, line up the slots just as you did with the circuit board, and close it similarly.

Mouse Maintenance

You can clean the outside of a mouse just as you clean keyboard keys. The biggest trouble for mice, though, is "mouse crud" — dust and debris that gathers on the rollers inside the mouse.

The easiest way to vanquish mouse crud is with the Curtis Clean Mouse product, which consists of a Velcro ball, a bottle of isopropyl-alcohol solution, and a cleaning pad. Remove your mouse ball, insert the Velcro ball into the mouse, and then rub the mouse around on the cleaning pad. You can clean the mouse rollers just as well by using isopropyl alcohol and cotton swabs, of course, but it takes a little longer.

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TIP SHEET

Nobody ever said you had to live in Cupertino to be a Macintosh expert. Know-it-alls are everywhere, from Manhattan to Malibu — even in Waldport, Oregon, where we found our own Mac guru, Philip Russell. Each month Phil shares his own tips plus the best from 70-odd Macintosh-user-group (MUG) magazines. But Phil can't do it alone. To all those whose undocumented Mac tip *MacUser* prints, we pay $25, and the Reader Tip of the Month earns $100.

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ZiffNet/Mac, the on-line service for *MacUser*. Send them to Gregory Wasson at 72511,36. Be sure to include your full name and mailing address along with the text of the tip.

By Philip Russell

Reader tips compiled by Gregory Wasson

■ What's the first thing to do after removing the shrink-wrap from a software package? Lock all the floppy disks (pull up the tab in the upper left corner of the floppy disk) to protect the information on the disk from being erased. The next step is to make back-ups of your working copies and file the originals in a safe place. And don't forget to send in your registration card — that way, you'll be informed of future upgrades.

■ To print a list of all the commands that are available in **Word 5.1,** go to the Tools menu, select Commands, and click on List. You can print a 12-page table including every command in Word. Just that there are 12 pages of commands ought to intrigue you enough to give this a try.

■ If you're not careful, it's easy to end up copying an extra **TeachText** to your hard disk, because it's included with many applications. To delete all those TeachText files that might be lurking about, use a utility such as CE Software's DiskTop or Ziff-Net/Mac's Find Pro III to find and then delete them.

■ To label columns by month, year, or number in **Excel 4.0** without having to type each label in, type just the first two labels (*January* and *February*, for example). Then select these two cells and move the cursor to the lower right corner of the second cell, where the cursor will change to a bold, large plus sign. Click and drag to the right to select the cells to be labeled, and the next label in the series will appear. Note: If this doesn't work, check to make sure you highlighted *both* of the cells you started your row with.

■ To center a title over a group of cells in **Excel 4.0,** type the title in the leftmost cell above the data it applies to. Select the cell and all others to the right that are above the data. From the Format menu, select Alignment, and click on the Center Across Selection button.

■ Here's a way to keep those envelopes from crinkling and bunching up when you feed them through a laser printer. Try putting into the envelope a page of a magazine or any paper thick enough to give the envelope some stiffness.

■ If you're one of those who's still using **System 6,** it's likely you have a bunch of outline-font folders cluttering up your System Folder. A shareware DA, **SetPaths —** available on ZiffNet/Mac (filename SETPAT.SIT) in Library 2 of the Download & Support Forum — lets you store all those folders in the folder of your choice, located anywhere you wish. Just tell SetPaths to build a path to the folder, and your Mac will find them every time.

■ If you use an ImageWriter but want to print documents

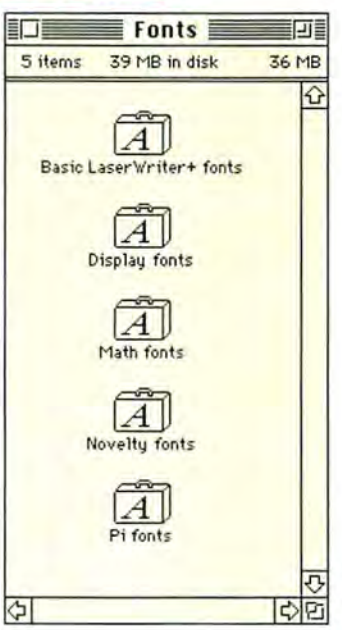
Tip of the Month: System 7.1 and Fonts

In System 7.1, when loading fonts into the new Fonts folder, you might run up against the system software's 128-item limit. However, this is a limit on the number of *suitcases,* not on the number of *fonts.* Here's how to get around it:

Merge the contents of two or more suitcases by opening the existing font suitcases and moving the fonts from their individual suitcases into one common suitcase. Retitle the suitcase to reflect its new contents. You can put the fonts in alphabetically by manufacturer (Bitstream, Monotype, and so on) and label the suitcase with the name of the first and last font families in it so you know what it contains, or you can group the fonts by kind.

Gerald R. Kreienkamp
St. Louis, MO

[*If you're planning to upgrade to System 7.1 and have more than 128 fonts in individual suitcases, you should organize your fonts according to this tip before you upgrade — this preliminary step can save you some grief during System 7.1 installation. — Ed.*]



on a LaserWriter, select LaserWriter in the Chooser when you create your document. The document will be correctly formatted to print on the LaserWriter.

■ To use otherwise wasted space when printing a small job on letter-sized paper, you can design a bookmark or a fun card to fit in the unused space. When the print job is finished, separate the two items by cutting them apart. Your client will never know the difference.

■ Not only does matte fixative (such as Blair Spray Fix #100) darken muddy laser-printer output but it also protects the toner from cracking and flaking.

■ To duplicate the tabs and indents of one paragraph for a following adjacent paragraph in **PageMaker 4,** highlight both paragraphs (they need to be part of the same text block) and choose Indents/tabs from the Type menu. You'll see the tabs and indents for the first of the two selected paragraphs. Click on the OK or Apply button, and the second paragraph will have the same tabs and indents as the first.

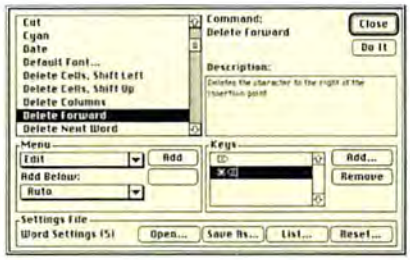
■ Have you ever printed a one-page document and had a blank page follow the page you just printed? Check if there are any returns hanging over onto the second page. If so, the Mac thinks you want to print page 2, because it detects something on that page.

■ In order to stop a sound in **HyperCard 2,** type `play stop` in the message box and press Return. This flushes all sounds from memory.

PowerBooks and Word 5.1

One feature missing on the PowerBook is the forward-delete key of the Extended keyboard. But if you have Word 5.1 installed on your PowerBook, you have a ready-made solution to this dilemma. Word 5.1 has a Delete Forward option under Commands, on the Tools menu. Simply find the Delete Forward command in the Commands scrolling list, and add it to one of your menus, assigning a suitable keystroke — Shift-Delete, for example.

Jason Chu
Berkeley, CA



Reader Tips

Word 5.1

To place every Word 5.1 command on your menus, save your current menu setup by choosing Commands from the Tools menu and clicking on the Save As button. Then click on Reset, and choose the Add All Commands to Their Default Menus option. You can then scroll through the commands and delete the commands you know you'll never use. Chances are that two or three commands will have features you weren't aware of, and a few more will give you single-keystroke access to functions that are buried in nested dialog boxes. To simplify removing unnecessary commands, assign a function key to the command Remove from Menu, thereby speeding the cleanup process.

Jeff Porten
Philadelphia, PA
via ZiffNet/Mac

System 7 Trash

The Trash icon is often automatically covered by open windows on the desktop, making it difficult to delete files, especially on Macs with smaller displays. To make deleting files and ejecting disks more convenient, open the Trash and resize the window to its smallest size (about an inch square). Unlike the Trash icon, the Trash window remains in front of background windows when the Finder is in the foreground. Note: Another technique is to place an alias of the Trash in your Apple Menu Items folder so that you can always access the Trash easily via the Apple menu.

Elliotte Harold
Newark, NJ
via ZiffNet/Mac

NowMenus 4.0.1

When you're upgrading from NowMenus 4.0 to version 4.0.1, you may lose the keyboard equivalents for commands in some programs. You can get a command back by highlighting the command in the menu and pressing the Backspace or Delete key (depending on your keyboard).

Paul J. Galanti
Indianapolis, IN

Startup Items Folder

To make it easier to open documents from various applications at one time, keep aliases of the documents on your desktop. Also, if you place an alias of the Startup Items folder on the desktop before shutting down for the day or rebooting to switch active extensions, you can put aliases of the documents you want open when you start up into the alias of your Startup Items folder. The next time you start up, everything you need will be right there and ready to go.

Thomas A. Turcich
Sugarland, TX

Everyone knows that holding down the Shift key at startup disables extensions. To disable only the startup items in the Startup Items folder, press the Shift key as the last extension's icon appears onscreen during startup.

Gregory Charles Rivers
Hong Kong
via ZiffNet/Mac

Fax Modems

If you have a fax modem and fax-modem software, you can save the cost of having images digitized by simply faxing them to your desktop modem from a fax machine. To obtain the best quality, set the sending fax machine to the highest resolution (this might be called Best). If the original is light, you may first want to make a photocopy at a dark setting.

Most fax modems receive faxes as graphics pages. If you have FAXstf, the fax-modem application from STF Technologies (816-463-2021), you can select any part of the fax to copy to the Clipboard and also save the image as a PICT file. The image may not look impressive at screen resolution, but when you print, the results are surprisingly good.

John McNamee
Burnaby, BC
Canada

System 7 Aliases

To use an alias to get to original documents on remote volumes buried deep within folders, make an alias of the destination folder and put it on your desktop. Now, whenever you need to send a file to that destination, just drag it onto the alias. The computer will send the file off to its appointed location and even establish the AppleTalk link, all in one step.

Christopher Knight
Champaign, IL

HELP FOLDER

Questions, anyone? Here's where to get answers from the experts. Bob LeVitus and Andy Ihnatko are the authors of the best-selling *Dr. Macintosh's Guide to the On-Line Universe.* Andy Ihnatko is also a longtime activist with BCS•Mac. They're ready to answer your questions about everything Macintosh. Write to Help Folder, c/o *MacUser,* 950 Tower Lane, 18th Floor, Foster City, CA 94404. Don't want to wait for an answer? Post your question on ZiffNet/Mac, *MacUser*'s on-line service, and get a reply from Bob (76004,2076), Andy (72511,204), or one of the other *MacUser* experts. See the masthead in this issue for instructions on how to sign up.

By Bob LeVitus and Andy Ihnatko

PowerBook Polka

Q. I'm trying to adjust to life with my new PowerBook 160, but I'm still unclear on the concept of sleep. As an SE owner, I'm used to minimizing the number of times I turn my computer on and off, in order to increase the power supply's longevity. Most of the time, my PowerBook is on my desk, and I use it at least once a day. Can't I just put it to sleep instead of shutting it down? Assuming it's plugged in, is there any danger in letting it sleep all week or even longer?

Furthermore, when is it safe to pull the plug? Can I put it to sleep, pull the plug, and then continue to work on battery power?

Paul Quinn
Marina del Rey, CA

Andy: Take it from me, Paul, if the concept of sleep is unclear to you, then you've definitely adjusted to life with a Mac. But as for the broader arena of PowerBook system sleep, one of the neat things about the PowerBook's design is that this computer doesn't give a hoot where or when it's plugged in. You can yank out the plug right in the middle of your work and take your PowerBook across the room to another desk without putting it to sleep. Your PowerBook will continue bopping right along as if nothing had ever happened. Even so, I'd still advise you to put Sweetums to sleep anyway. Your PowerBook doesn't care about its power cord being yanked out, but your hard drive might throw a *major* diva fit if you pick it up and jostle it around while its platters are spinning. It'll probably come through unscathed, but one good, solid bump, and you can cause permanent physical damage *and* lose your data. So it's generally good form to put 'er to sleep before you move your PowerBook or to use the freeware extension PBTools to spin down the disk. (PBTools is available from user groups and on-line services. Look for filename PBTOOL.CPT in Library 3 of ZiffNet/Mac's Download & Support Forum.)

Go ahead and keep your PowerBook in Sleep mode when it's not in use. It doesn't hurt it at all, and it's much more convenient than having to wait through a grotesquely long startup sequence when all you need to do is grab a phone number. If you're going to adopt this plan, however, put a sticker or something right on the case reminding you that your PowerBook is only asleep. Forgetting this can lead to unpleasant consequences. At the bottom of the scale would be sticking your PowerBook into your travel bag and then a few days later finding that its battery was completely discharged after only half an hour's use. At the top would be thoughtlessly plugging something in to your PowerBook's SCSI port and blowing its circuitry in a colorful way.

Bob: My PowerBook sleeps all the time, except when it's awake. It's an original PowerBook 170, more than a year old, and sleeping hasn't seemed to hurt it.

* . . . But Were Afraid to Ask

Coming, as we are, to the end of the annual heartless assault on our mind and person known as the Summer Blockbuster Movie Season, we can hardly avoid waxing nostalgic for the simplicity of old-time moviemaking. Take the "road" pictures, for instance. Start the flick by putting Bob Hope and Bing Crosby on a raft; end it by putting Dorothy Lamour on the raft with 'em. As an audience member, you're in and out in 90 minutes without having to recite the merchandising pledge of allegiance we're all familiar with today.

Well, Bing's no longer with us, and Bob's raft-riding days are, sadly, long behind him, so as a minor tribute to simplicity, we present this section. If you have a simple, basic question, just send it right here. To protect your identity from rampaging T. Rexes, we'll say your question was submitted by a nationally renowned paleontologist.

Q. When I look at the big show my Performa 405 makes of starting up in the morning, I'm sure it's trying to tell me something. What, specifically does each of those little icons mean?

Jason Fox
Braintree, MA

Andy: Basically, your Mac is setting you hip to what it's up to during the startup process.

When you flick it on, your Mac first checks its hardware. If it finds a problem, it blanks its screen and throws up the Sad Mac icon, along with an error code. Otherwise, it starts searching for mountable volumes, beginning with the internal floppy-disk drive. The Happy Mac makes its first appearance when your Mac finds a mountable volume. If that volume is unbootable (there's no System Folder, for instance), the Mac puts up an icon of a disk with an *X* in it and starts hunting for mountable volumes again.

Only when it's found a volume that is mountable, bootable, huggable, and squeezable does it throw up the "Welcome to Macintosh" screen, or the StartupScreen you've installed on that volume. Beyond that, the only icons you see before being dropped into the Finder are those of the system extensions and control panels in that volume's System Folder. These add extra important features to the system, such as making your Mac play a sound of Barney the dinosaur being brutally beaten every time a disk is inserted.

Turn-Offs

Q. When should I turn off my Mac? At the moment, I turn it off when I stop work for the night, but it's frustrating to get a phone call a few minutes later that causes me to turn the thing back on. Is it safe for me to leave my Macintosh running nonstop? Won't the hard drive's bearings melt or at least wear out? Won't it shorten my Mac's life span? Or can I do more damage by turning my Mac on and off? Is there a sort of break-even point at which it becomes advantageous to turn off the Mac — if I leave town for an extended vacation, for example?

Nicholas D. Michael
Vich
Switzerland

Bob: This has to be one of the most hotly debated topics in computing history. About three years ago, I tried to settle it once and for all by asking the experts. I posted a message on the ZiffNet/Mac forum on CompuServe, and as I expected, there were conflicting opinions, with two main schools of thought.

School 1 says that you should turn the Macintosh on in the morning and off at night. You save power, and there's less wear on the Mac's hard disks. On the other hand, heating and cooling from all that powering up and shutting down may stress the solder and electronics more than running your Mac all the time. So starting up and shutting down can actually be more stressful to hard disks than running constantly.

School 2 says that you should *never* turn off your Mac unless you plan not to use it for several days. (Optionally, you can turn off just the monitor at night.) Although it's true that this strategy reduces the heating and cooling stress on solder and electronics, having the hard disks spin all night can in fact cause more wear than shutting down.

I used to leave my Mac on all the time, but now I turn it on in the morning and shut it down at night. I believe I'm doing the right thing by conserving energy. If you leave your Mac on all the time, at least turn off the monitor and printer at night.

Andy: Apple's official word on the subject is to shut your Mac off if it's going to remain unused for more than eight hours. Conventional wisdom says that cycling a power supply several times a day leads to tragedy, but yeah, this is mostly a question of style. Generally, I shut down my Mac only when I'm about to watch a movie in Dolby Surround, and that's only to get rid of the noise from the fan. Then again, my Mac is usually in some sort of operation 18 to 20 hours a day, so this method isn't as blatant a waste of energy as it might seem. You might want to take a gander at "The Moonlighting Mac" (March '93, page 233) for some additional discussion of this subject.

The Pepsi Syndrome

Q. I finally learned why there's a big sign hanging in the computer lab forbidding food and drink inside. Late one night while finishing up a project, I knocked half of a 32-ounce soda into one of my company's computers. Most of it went into the keyboard, but some got into the Mac itself. Any suggestions?

Mike Byron
via the Internet

Andy: Well, Mike, you sent me this message way back in May. If you've managed to cover up this whole career-ending incident for the past five months, I'd suggest going for that MBA degree. With skills like yours, you'll definitely go far in the business community.

As for practical suggestions, all is not lost. Spilling something into a keyboard is really no big deal, but if any liquid makes its way into your Mac, it's important that you immediately cut the power before something inside shorts out. (***Warning:*** Be careful that you don't electrocute yourself in the process by fumbling for a power switch with wet hands, of course!) Once you have unplugged the moistened Mac, apply a time-honored technique that has solved this problem ever since computers began sharing desktop space with assorted refreshing beverages: Take the Mac apart, take the pieces to the back of the house, and clean 'em off.

No kidding. A computer will work as long as its circuitry is intact, and fortunately all soda does is make components sticky. Wash 'em in lukewarm (*not* hot) water for a little while and scrub away any stickiness with a soft toothbrush. Towel off the parts, give them a day or three to air-dry completely, clean off any remaining water with some isopropyl, put the computer back together, and then just hope for the best.

One of two things will happen: Either the machine will work, which is not unlikely, or it won't. And if it won't, then you will have removed the physical evidence of Pepsi infiltration, so if your computer's still under warranty, you'll be able to present it to your local Apple dealer, along with a shrug and the old standby line, "I dunno, it *just stopped working*."

Stand by Your Mac

Q. I'm making the transition to a Mac after ten years of PC use. In the PC world, the accepted mantra is "back up every day." And I do. How come no one writes about backup in the Mac environment? Macs crash too, don't they? Is this a conspiracy of silence?

Patrick de Freitas
Salt Lake City, UT

Bob: First, congratulations on moving over to the Mac. You won't regret it.

Now about this "conspiracy

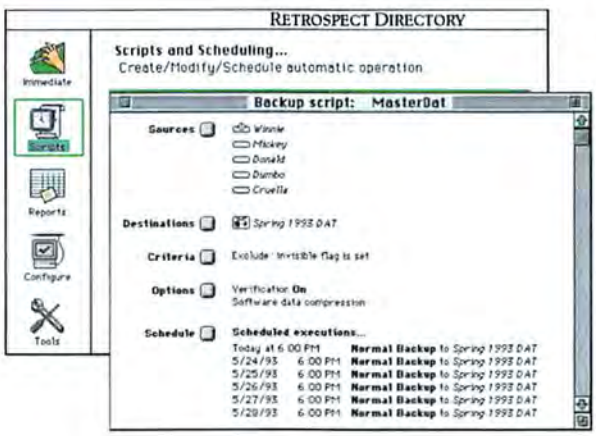


Figure 1: A backup system is like a diet or a golf grip — it works only if it's something you're comfortable with and will *stick to.* An easy strategy: Use a program that automatically schedules backups for you, such as Dantz Development's Retrospect.

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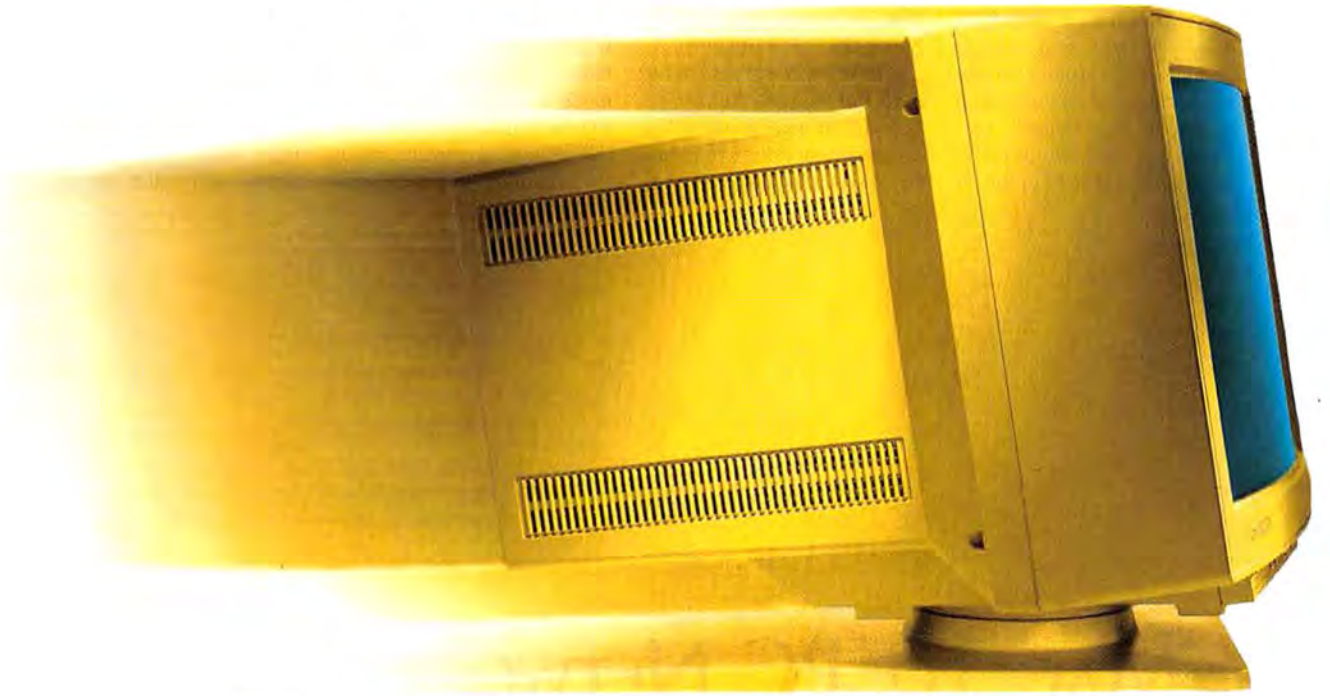

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CIRCLE 55 ON READER SERVICE CARD.

of silence." I think you're imagining things. In Help Folder, we frequently remind users to back up important files. My book *Dr. Macintosh, Second Edition: How to Become a Macintosh Power User* (Reading, Massachusetts: Addison-Wesley, 1992) includes an entire chapter on protecting your work.

In any event, I back up all five of my hard-disk volumes every night at 6 P.M. I use Dantz Development's wonderful Retrospect software to back up to a DAT tape drive. I've used this combination for almost two years.

Retrospect is the most flexible, powerful, and configurable backup program on the market. I use its timed-backup feature to automatically perform all of my backups daily, whether I'm around or not. If the computer is on (and it always is at 6 P.M.), the program backs up all five of my volumes automatically (see Figure 1).

Dantz has another program, DiskFit Pro, which is less expensive ($125) and relatively simple to use, but it doesn't support tape drives. Retrospect is more expensive ($249), supports every medium I know of — floppy disks; Flopticals; optical, Bernoulli, and SyQuest cartridges; and networks — and includes scripting, automatic launch and execution, and unlimited filtering of files. You can contact Dantz at 510-849-0293.

Andy: I more or less agree with Bob here — Retrospect is a lulu of a program — but the important thing to remember is that a backup system is like a diet or a golf grip: It works only if it's something you're comfortable with and will *stick to*. You can spend beaucoup bucks on backup software, tape and cartridge subsystems, and the like, but it's all useless unless the setup fits in well enough with your personal style that you won't consider it a major pain in the tokas to perform a backup. I back up my disks regularly, but I just use the Finder and CopyDoubler ($59.95), from Fifth Generation (800-873-4384 or 504-291-7221), to put important files onto an optical cartridge. Clearly this *seems* cumbersome, but it works for me; I just don't like having to go into backup mode and then having to run a slow, cumbersome program when I want to restore one or two old files. For additional security, one backup cartridge stays at home and one goes to my sister's house, 20 miles away.

And here's my last rant on this subject: If your medium is words, please don't overlook the printed page as a bulletproof backup medium. Paper doesn't crash or lock up or become corrupted. Many times the aforementioned tokas has been saved because I was able to find a hard-copy paper trail of something I wrote on an Apple II more than a decade ago stashed at the bottom of a box of papers in my closet.

The Styling Game

Q. I'm having trouble importing formatted or styled text into Microsoft Word 5.0 from FileMaker Pro, MacDraw, and other programs

MAC-TO-PC NETWORKING . . .
THE WAY IT'S SUPPOSED TO BE.

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via the Clipboard. When I paste the text into a Word document, all the formatting is mysteriously lost. Is there any way to get around this problem?

Lee K. Hoong
via the Internet

Andy: Congratulations, Lee; you've put your finger right on one of the biggest cryin' shames in computing: Styled text cannot be cut and pasted between applications without losing all that neat font and formatting information. And there's absolutely no good reason that this should be so.

Although Apple has a well-documented standard structure for styled text, few applications go to the trouble of converting their own unique styled-text formats to Apple's standard format. Instead, when text is copied or cut, the creating application throws it onto the Clipboard in its native format *as well as* in a text-only version minus the formatting (text and PICT are the only data formats the Clipboard supports). When you try to paste that data into a document that was created in another application, all you get is the cheesy-looking text-only version you wrote us about.

As for solutions, you *can* place the outgoing text into the Clipboard as a PICT graphic (if your application supports that feature). You do this in Word by selecting the section you want to copy and then holding down Command-Option-D to copy the text to the Clipboard. This renders styled text bulletproof but also, sadly, uneditable, so it probably isn't going to help you much.

Another approach is to use file translators, such as Apple's XTND translators (which come with many products), DataViz's MacLink-Plus/Translators, or Master-Soft's Word for Word/Mac. You can then open your File-Maker Pro or MacDraw file in Microsoft Word and cut and paste formatted text to your heart's content. (Even so, remember that file translators don't always retain all of your formatting.)

But don't give up hope. Apple *has* picked up the ball and has introduced a System 7 extension called Macintosh Easy Open, which, as its name suggests, makes it easier for users to open files in non-native applications. The good news is that Easy Open may very well solve your problem, Lee, if you're willing to wait for it to become part of system software.

In the developer's kit I got from Apple, there was an RTF (Rich Text Format) translator that worked just dandy for pasting stuff into Word. With no intervention on your part or on Word's, anything you cut or copy is converted automatically from RTF to standard styled text.

The problem is, Easy Open is not yet widely available, although it is built in to the translation packages MacLinkPlus/Translators and Word for Word/Mac and it should be part of the System file in the next major system-software release. So all you have to do is sit back and wait for Easy Open to trickle down to the rest of us.

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APS Q 240[2] Quantum LP240 mechanism	299	369
APS MX 245[2] Maxtor 7245 mechanism	279	349

Model	Internal	External
345MB - 540MB		
APS MX 345[2] Maxtor 7345 mechanism	$459	$529
APS F 520[5] Fujitsu M2624S mechanism	759	829
APS Q 525[2] Quantum Lps525 mechanism	699	769
APS MX 540[2] Maxtor MXT540 mechanism	899	969

Model	Internal	External
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APS MS 1.2G[5] Micropolis 2112 mechanism	$1299	$1369
APS F 1.2G[5] Fujitsu M2266 mechanism	1149	1249
APS Q 1225[5] Quantum 1225P mechanism	1149	1219
APS MX 1240[3] Maxtor MXT1240S mechanism	1349	1419
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APS MS 3.0G[5] Micropolis 1936 mechanism	2999	3099

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600MB Backup Tapes — $35, 10 pack $330	

All APS Tape Drives Include Retrospect by Dantz

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POWERBOOK DRIVES

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APS GO 120[1]	349	299	429†
APS GRS 160[1]	449	399	529†
APS T 213[1] Toshiba 2224 mechanism	549	499	629†
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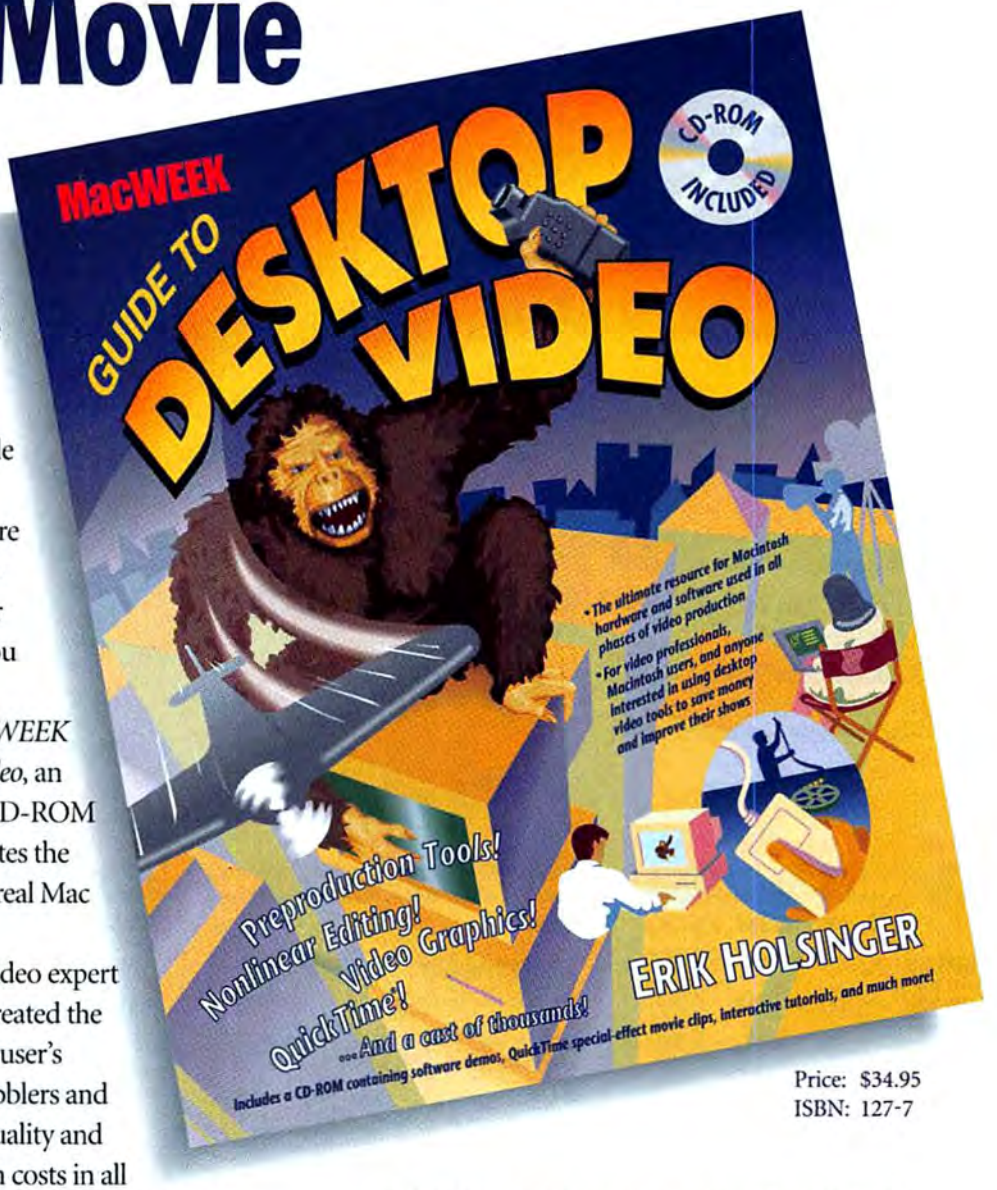

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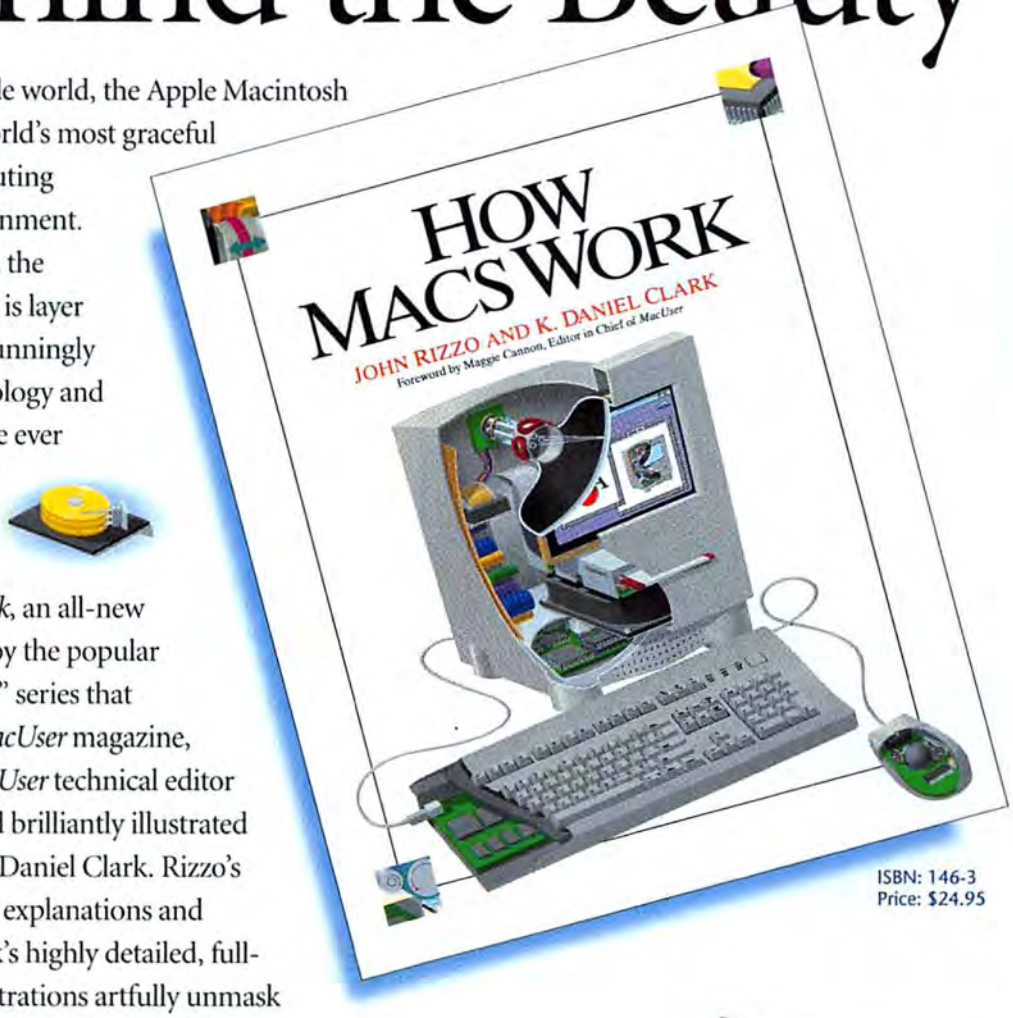
Meet the Brains Behind the Beauty

To the outside world, the Apple Macintosh presents the world's most graceful computing environment. But on the inside, the Mac is layer after layer of stunningly intricate technology and design. If you've ever wondered how it all fits together, read *How Macs Work*, an all-new book inspired by the popular "How It Works" series that appeared in *MacUser* magazine, written by *MacUser* technical editor John Rizzo, and brilliantly illustrated by K. Daniel Clark. Rizzo's lucid explanations and Clark's highly detailed, full-color illustrations artfully unmask and demystify the inner workings of the Macintosh. What happens to data on the way from memory to storage? How does the closely guarded Mac ROM chip give the Mac its unique look and feel? How do technologies mesh to form the Mac's built-in networking features? If you've ever wondered what makes a Mac a Mac, turn to *How Macs Work*.



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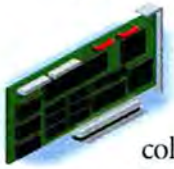

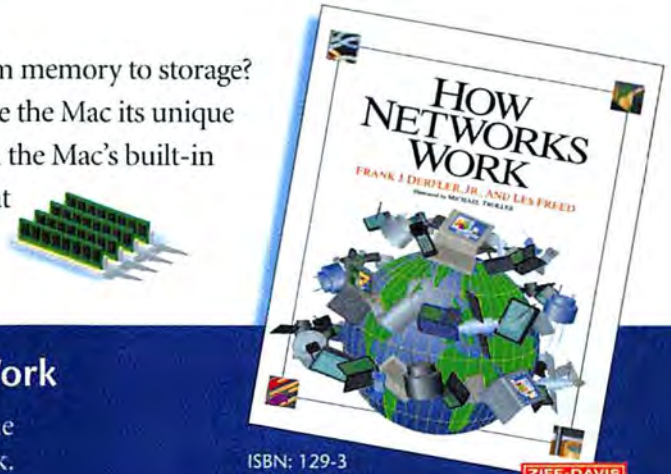

Also Available: How Networks Work

This dazzlingly illustrated masterpiece unravels the mysteries of the personal computer based network.

ISBN: 129-3
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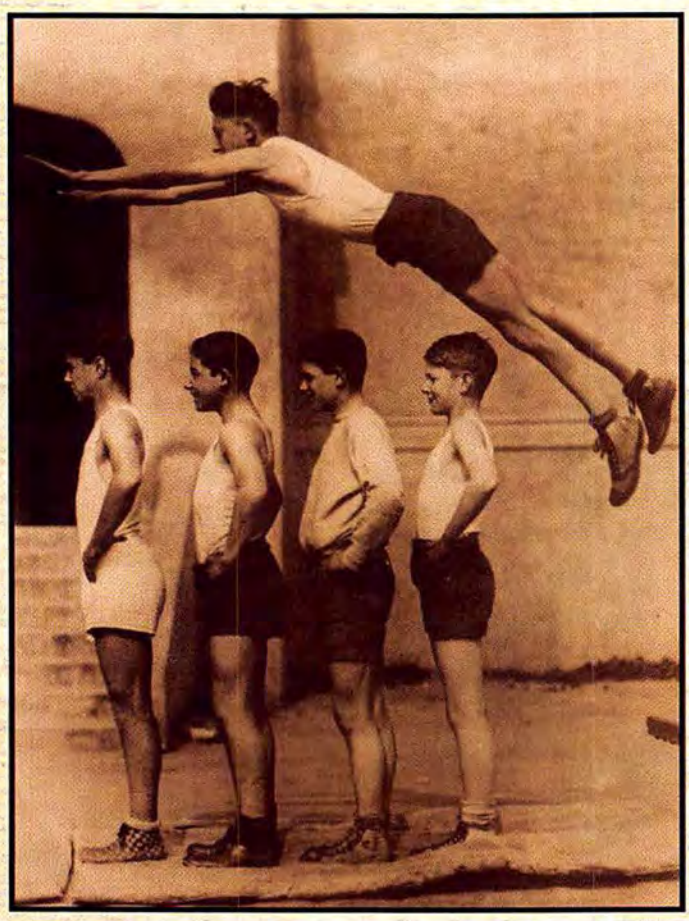

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MacUser APRIL 1993 4½ Mice

**The DiiMOCache 50MHz Accelerator design was formerly licensed to Logica Research, Inc. and marketed under the LogiCache™ brand name. In MacUser's April 1993 Accelerator Review, the DiiMO-designed accelerator received a 4 1/2 Mice rating out of 5 and was chosen as the Bottom Line Pick for the Mac IIsi and IIci. DiiMO Technologies offers a 30-day money back guarantee, a five year warranty and toll-free tech support on all products.

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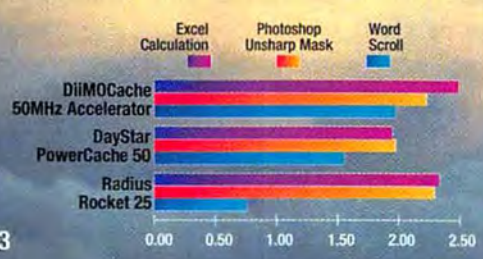

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CIRCLE 31 ON READER SERVICE CARD.

ZiffNet/Mac

On-Line Excursions

Just as you might be better prepared to enjoy a weekend camping trip if you take along a sleeping bag, flashlight, bag of snacks, and Nintendo Game Boy, your on-line excursions can be more productive, less stressful, and more fun if you take advantage of some useful tips and gadgets. So before you venture into the electronic frontier, pick up a few of these useful — if not essential — tools. They're all available in Zmac's Download & Support Forum.

First-time Zmac users would be well advised to read **The ZiffNet/Mac New Member Survival Guide** (filename NEWUSR.TXT, Library 7) before commencing their explorations. Another useful guide is the **ZiffNet/Mac Directory DA** (filename ZMACDA.BIN, Library 2), which provides a listing of ZiffNet/Mac and ZiffNet areas, along with navigation directions and prices. The **Zmac Download Library Index** (filename INDEX.TXT, Library 7) lists all the files available on Zmac. You can import this file into your own database or spreadsheet program, or you can use the specially created FileMaker Pro database shell (filename ZMCFMP.SIT) that's available in Library 5.

Your very first downloaded file should be the free universal file decompressor **StuffIt Expander** (filename STUFEX.SEA, Library 1). Most of the files available on ZiffNet/Mac or other on-line services are compressed to save downloaders time and money; StuffIt Expander is the application you need to open these packages once you've received them. Your second downloaded file should be **Disinfectant** (filename DISINF.SIT, Library 8), a free computer virus-detection and -removal application. Disinfectant is updated continually to combat new viruses as they appear.

Zmac Reviews

Easy View 2.22

$$$$

Easy View (filename EASYVW.SEA, Library 1) is an application that lets you easily browse through specially prepared text files, navigating the text via an outline of the file's contents. The text's author must format the text correctly for Easy View's outlining features to take effect. Structured text files of this type are becoming increasingly common on-line, and Easy View can interpret a wide variety of structured text types, including CompuServe Navigator archives and text files prepared in the popular Setext (structure-enhanced text) format. Although the present incarnation of Easy View is limited to two levels of structure and doesn't support styled text, it has enabled writers to give their work an unprecedented degree of organization without sacrificing the universal readability of plain text. Created by M. Akif Eyler, Easy View is free.

FlashWrite][1.1

$$$

FlashWrite][(filename FLASH2.SEA, Library 2) is a notepad-style text editor. Fast and user-friendly, it can be used for jotting down notes, storing text, or writing E-mail messages. Because it's a DA, it consumes minimal memory, and System 6 users can easily run it alongside a telecom program. FlashWrite][provides multiple notepad pages, each containing as much as 32K of text, and it includes text-import and -export abilities and a cross-page Find function. It doesn't, however, have a find-and-replace command or the ability to break lines at a certain length — telecom-oriented features that other DA text editors such as MiniWriter offer. Although being able to have multiple notes handy is a strong feature, FlashWrite][falls short of being the perfect quickie text editor. Written by prolific shareware author Andrew Welch, FlashWrite][is priced at $15.

Easy Reads

Here are some files you can read with Easy View (see the review on this page):

- Catch up on the top Mac news of 1992 and the first part of 1993 with the *MacWEEK* 1992 News Compilation and 1993 News Compilation (filenames MW92.SEA and MW931.SEA, Library 7).
- Find out all about computer-related health issues with the RSI Network Archives (filename RSINET.SEA, Library 7), which contains issues of Caroline Rose's newsletter for those suffering from repetitive-stress injuries.
- You'll find Mac news, views, and trivia in Adam Engst's electronic weekly newsletter, TidBITS (Library 7).

FREE! MONITOR YOUR MODEM

ZiffNet/Mac's free utility Serial of Champions has already helped thousands of telecom wonks find out how efficient their ZiffNet/Mac sessions are. Now a new and improved version makes its debut as this month's *MacUser* utility.

This new version artfully displays modem lights on your menu bar and lets you peek into the data stream to watch text as it's sent and received. It also supports Apple events and generates report files that you can exchange with your friends. As before, it monitors traffic through your Mac's serial port and uses that information to generate a bar-chart breakdown of how much time is spent sending and receiving data and how much on local and remote processing.

Serial of Champions was created by programmer Mike Throckmorton, author of ZiffNet/Mac exclusives such as Back2TheFolder. You can reach Mike on ZiffNet/Mac at 72511,410. Serial of Champions is available exclusively on ZiffNet/Mac and, under the membership fee, is available free for one month. Just GO ZMC:POWERTOOLS until September 25, 1993. After that, find the file SERIAL.SIT in Library 3 of the MacUser Forum (GO ZMC:MACUSER).

By Mark Simmons

Direct Line

MAIL ORDER SECTION

For many of you, mail-order is your primary means of purchasing Macintosh products and services. That's why MacUser has put together the following special section. Direct Line offers a convenient place to quickly find the products you need from the vendors you want to buy from. But before you shop by phone, look for the mail-order company that is best for you. Here are a few tips to help you get the most out of your buying experience.

How to Buy Mail Order Products

Research The Company

Well-established companies tend to be reliable, but if you're not sure how well established a company is, it pays to do a little research and ask a few questions.

Know What You Want

Know exactly what you want before you call. Magazines, on-line forums, and user groups are all good places to seek advice.

Check Compatibility

To avoid having to return merchandise, find out whether the product you're interested in is compatible with your system.

Pay With Credit

Whenever possible, use a credit card. Some credit-card companies do such things as double your warranty or give you a refund if you find a lower price elsewhere. If you have a problem, your credit-card company will deal with the mail-order company.

Confirm Prices

Confirm the price when you place your order, including delivery charges. Some companies will waive the delivery charge.

Delivery Methods

Ask about delivery methods — find out what carriers are used, how fast they are, and how much each one costs. Record delivery information.

Return Policies

Because you're buying sight unseen, make sure the company has a return policy you're comfortable with. Find out if you're responsible for paying shipping charges on returned goods and whether you'll be charged a restocking fee.

Check Packing Slips

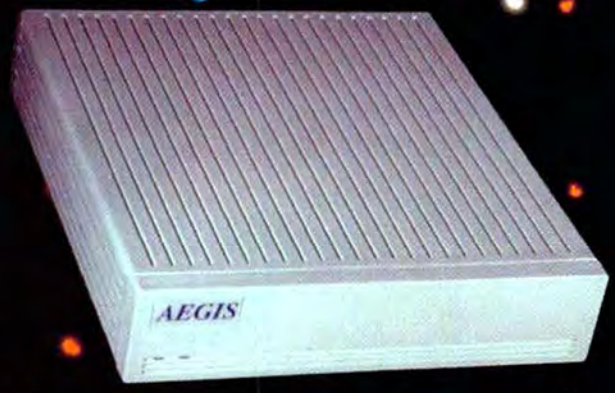
Before you use your new merchandise, make sure it's exactly what you ordered — the correct model or version number, for example. It's easier to return goods before they've been unpacked.

Repair/Replacement Services

If you're buying hardware, find out how the company handles repairs or replacements.

Technical Support

Technical support varies from company to company. Make sure you know what help is available.



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A540S	540MB SCSI 8.5ms	$769.00	$849.00	MAXTOR
A1240S	1.2GB SCSI 8.5ms	$1140.00	$1240.00	MAXTOR
A1050	1GB SCSI 10 ms	$1203.00	$1284.00	MICROPOLIS
A2217	1.7GB SCSI 10ms	$1609.00	$1730.00	MICROPOLIS
A2000	2.1GB SCSI 11.5ms	$2499.00	$2599.00	MICROPOLIS
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DT-1528	1340 Megs	4.1 ms	5.25 FH	
DT-1908	**1400 Megs**	**3.9 ms**	**5.25 FH**	◀◀
DT-1548	**1750 Megs**	**3.9 ms**	**5.25 FH**	◀
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Quantum							
85	ELS 85S	17	1800	24	$179	$249	
127	ELS 127S	17	1800	24	$199	$279	
170	ELS 170S	17	2000	24	$219	$299	
240	LPS 240S	16	2300	24	$299	$389	
Digital							
1.05GB	DSP-3105	9.5	2600	60	$999	$1,049	$1,099
Seagate							
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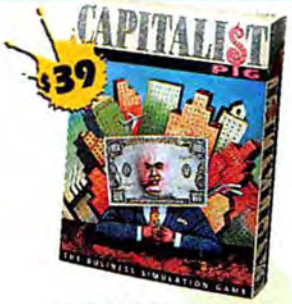

CAPITALIST PIG

Animated business simulation game challenges you to build and run your own business under authentic economic conditions. Experience the challenge of business, scandals, fires, and terrorists, as you battle for billions or bankruptcy. Make crucial business decisions, enjoy the results or suffer the conse-quences. Packed with fun and rave reviews from entrepreneurs of all ages. Item # PLU10

Cause 2.1 - Personal Programmer **$182**
Item # PLU11

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6000C (600 dpi)	Item TAM12	**$1028**
8000C (800 dpi)	Item TAM11	**$1198**

Dr Mac

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$164.

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MacP&L

Breeze through all your accounting tasks. Enter information once and MacP&L updates the various accounts automatically. MacP&L has all the tools a small business requires: general ledger, accounts receivable and payable, inventory management, payroll, check writing, invoicing, and more. With over 100 reports in the program, you have access to more than just accounting data – you've got sales, inventory, payroll, and other analyses at your fingertips. With the multi-user version, everyone in your office can use MacP&L at the same time. Even advanced features like project expense tracking and multiple checking accounts are available to those who need them.

Minimum Requirements: Mac Plus, 1MB RAM, System 6.0.4.

START ACCOUNTING

6719 MacP&L

6720 MacP&L Multiuser ..... $368.

$99.

NEW!

SuperPaint 3.5

Aldus gives you fantastic graphics tools at affordable prices. Aldus SuperPaint 3.5 combines the best of paint and draw packages into one program. The result is the most versatile graphics toolkit available. SuperPaint has won 15 major awards in the last six years because it provides more "graphics horsepower" for the money. You can create anything from the simplest business illustrations to sophisticated full-color art. SuperPaint 3.5's new features include Crop Mark, Magic Marker, templates, and pressure sensitive tools. SuperPaint now supports 1- through 32-bit color, full-color TIFF and EPS, and includes textures, gradients, AutoTrace, Bezier Editing, Masking, Color Balancing, Brightness & Contrast, and much more.

Minimum requirements: Mac SE, 2MB RAM, System 6.0.5, a hard drive.

Aldus Consumer Division

6493 SuperPaint 3.5 O

$149.

NEW!

ACT! for Macintosh 1.1

Go for greater success with ACT!. It's the best-selling contact manager and features an easy-to-use contact database, powerful activity scheduler, sophisticated report generator, and full-featured word processor. ACT! provides tremendous productivity benefits for anyone whose business activity centers on people and schedules. It keeps you in touch with your contacts with its autodialer and one-click mail merge. And you'll stay on top of your schedule with ACT!'s calendar reminders. You'll always know where to be and when to be there. With ACT!, you'll be able to manage even more contacts more efficiently. It's the proven way to find, keep and satisfy your customers.

Minimum requirements: Mac Plus, 2MB RAM with System 6.0.4, 3MB RAM under System 7.

Symantec Corporation

6491 ACT! 1.1 for Macintosh O

From $78.

Claris Upgrades

ClarisWorks offers you a single application where you can seamlessly combine text, graphics, spreadsheets, and charts all within the same page on the same screen. "If you already own ClarisWorks 1.0, the upgrade is well worth the price. If you're a new Mac owner, ClarisWorks is likely to be the only software you'll need for a long time to come." *MacUser*, Aug. '93.

FileMaker Pro gives you unrivaled power to manage, present, and share your information. Get started quickly with existing templates for invoicing, mailing lists, contact management, and more. Automate routine tasks, menu operations, and procedures with unique point-and-click script creation. An award-winning program!

Minimum requirements: ClarisWorks – Mac Plus, 2MB RAM, System 6.0.4.
FileMaker Pro – Mac Plus, 1MB RAM, System 6.0, 2MB RAM under System 7.

Claris

6276 ClarisWorks Upgrade ..... $78.

5556 FileMaker Pro Upgrade ..... $88.

MacUser Magazine

$36.

NEW!

Seize the Day: The Illustrated Personal Organizer

This address book, screen saver, daily planner, and personal daily journal meets your minimum daily requirements of information, entertainment, and wisdom. Discover the rich historical legacy of each day from the perspectives of different subjects, beliefs, and customs with the "This Day" option. And this day book is totally customizable. Low-cost "plug-ins" let you add daily journal exercises for dreaming, writing, self-improvement, and more. Or add "This Day" perspectives like literature and business. Adjacent to your calendar are the incredible "Living Worlds" artwork created by Mark Ferrari. These spectacular full-color images change constantly, 24-hours a day, sunrise to sunset, season after season. Let it help you escape from your day.

Minimum Requirements: Mac SE/30, 4MB RAM, System 6.0.7, a hard drive.

6764 Seize The Day: The Illustrated Personal Organizer for Mac O

6771 Seize The Day: The Illustrated Personal Organizer for Windows ..... $36.

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$428.

DuoMate 8

POWERBOOK RECOMMENDED

Turn your Duo into a high-performance desktop computer with the DuoMate 8 docking station. It connects directly to the Duo's rear-panel connector using PowerLatch technology. And it outperforms other Duo adapters on the market by using a 32-bit bus to deliver the fastest video performance. The DuoMate 8 has a full range of ports for a floppy drive controller, ADB, and power. Use the sound output port for external speakers. Your Duo's serial and modem ports remain fully accessible. And it supports multiple monitor resolutions and sizes ranging from 12" to 21" with 8-bit color. Or try the DuoMate 16sc. It adds a SCSI port and supports 16-bit color.

Minimum requirements: PowerBook Duo.

RasterOps

6843 DuoMate 8
6844 DuoMate 16sc ..... $548.

NEW!

$63.

NEW!

PowerBook Duo Battery

Absolute Batteries offer you the most affordable PowerBook power. They have internal protection against short circuiting and gold terminals for optimal contact. These are the finest quality cells available and have a full one-year protection warranty. Each has a two-hour average life before recharging is necessary. A Battery Conditioner for recharging is also available or get the 2400mAh Battery and Conditioner in the Combo Pack for only $101.

Absolute

6684 PB Duo Battery
6682 PB Battery (140-180) 2400mAh ..... $49.
6683 PB Battery (140-180) 2800mAh ..... $55.
6685 PB Battery Conditioner (140-180) ..... $68.
6686 Battery Combo Pack ..... $101.

$288.

GET FAXMANIA AND WORLDLINK FREE!

SupraFAXModem V.32bis MacPac

"The SupraFAXModem V.32bis is an excellent value," raves Tom Negrino of *Macworld*. It features 14,400 bps data and fax communications with up to 57,600 bps throughput using V.42bis data compression. The modem automatically negotiates the fastest connection, and sending a fax is as easy as printing. You can even delay transmission until times when long-distance rates are lower. The Silent Answer feature detects if an incoming call is fax or voice, and handles it appropriately. The MacPac includes cables, FaxMania, and WorldLink, FREE. FaxMania is a collection of fun cover sheets, and WorldLink lets you connect to the Internet.

Supra Corporation

4017 SupraFAXModem V.32bis MacPac O
5575 SupraFAXModem 144 PB O ..... $298.
6651 SupraFAXModem 144 LC O ..... $258.

$79.

NEW!

PowerMerge 2.0

If you use multiple Macs, PowerMerge makes sure you're working on the latest version of your files. It finds which files were modified and updates them on the other Macs. It also tracks deleted, renamed, and relocated files and makes the corresponding changes on the other Macs. PowerMerge saves you disk space by locating duplicate files, and makes online backup easy.

Minimum requirements: Mac Plus, 1MB RAM, System 6.0.4, 2MB RAM under System 7.

Leader Technologies

6814 PowerMerge 2.0 O

From $48.

Sony storage media

Sony's Double-Sided, High-Density 3.5" Floppy Disks feature full lifetime warranties and an exclusive magnetic particle formulation for unsurpassed performance. When you use a **Sony 3.5" Rewritable Optical Disk**, you get superior performance and reliability because the disks are precisely tuned to perform across all 1800-3600 rpm ISO standard drives.

Sony

3331 High-Density Bulk 50 Pack O ..... $49.
4478 3.5" MO Rewritable 128MB O ..... $48.

$769.

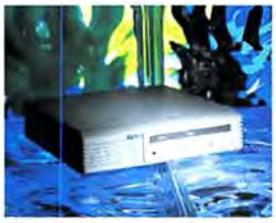
Bernoulli MacTransportable Multidisk 150

Enjoy all the benefits of a Bernoulli with the flexibility to read and write to disks of many capacities – 35MB, 65MB, 105MB, and 150MB. And the Multidisk 150 is downward compatible so it reads and writes to 90MB disks and reads 44MB disks. You get unlimited storage expandability, lock-away security, and transportability. The patented Bernoulli design resists head crashes and the sturdy disks can survive a drop of eight feet! This Bernoulli is internally terminated with a single external SCSI connector, so it must be installed as the last device on your SCSI chain.

IOMEGA

5609 Bernoulli MacTransportable Multidisk 150 O

$598.



MS 200 CD-ROM Drive

This multi-session drive provides blazing 200ms access time and delivers sustained data transfer rates of 330K per second. It reads data at two different speeds – one for audio and another for data. This dual-speed capability allows for greater performance reading CD-ROMs, while maintaining compatibility with audio CDs. The MS 200 has a 256K buffer for great performance. It supports ISO 9660, High Sierra, Apple Photo Access, Kodak PhotoCD, HFS, and Audio CD formats. And it includes PlayCD HyperCard-based software for playing audio CDs from the desktop. This drive comes in a sturdy metal chassis and is supported by a one-year warranty.

PLI

5729 CD-ROM MS 200 (Toshiba Mechanism)

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Microsoft Office

A complete software solution for your office! Microsoft Office includes the latest versions of Microsoft Word, Excel, PowerPoint, and Mail for over $1,000 less than if you purchased them separately. These programs were designed to work together, so you can swap data and graphics between them with ease. And once you're familiar with one program, you're well on your way to knowing them all.

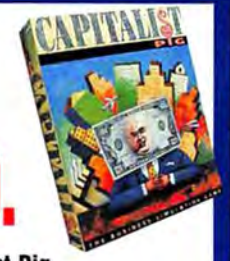
Minimum requirements: Mac Plus, 2MB RAM, System 6.0.5.

Microsoft

5645 Microsoft Office 3.0 O

Microsoft

$30.



Capitalist Pig

Build and run your own business under authentic economic conditions in this exciting simulation. Experience the challenge of business, scandals, fires, terrorists, and more as you battle for billions or bankruptcy. Packed with sound, animation, and fun, Capitalist Pig is a must-have game. You never knew business could be so much fun!

Minimum requirements: Mac Plus, 1MB RAM System 6.0.

Pluma

4640 Capitalist Pig

MAC'S PLACE EXCLUSIVE BUNDLE

$49.

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$90. if purchased seperately

Kaboom! 2.0/More Kaboom and Chameleon Bundle

Give your Mac more personality with an exclusive bundle at an unbeatable price. **Kaboom! 2.0** gives you 150 wacky sounds, from roosters crowing to tires screeching. Each one can be played when you start up your Mac, insert a disk, empty the trash, and more! You also get the new Kaboom! Factory sound editor. With **More Kaboom!** you get 100 more sounds, including dialogue from classic TV shows like *I Dream of Jeannie, Mr. Ed, Dragnet,* and *Bewitched*. And decorate your desktop with **Chameleon**, the ultimate desktop pattern utility. You get the finest patterns available and a full-featured editor. With this bundle, your Mac will never be dull.

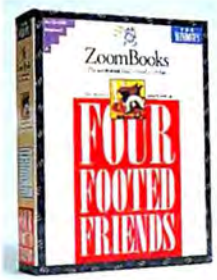
Minimum requirements: Any color Mac, 2MB RAM, System 7, a hard drive.

Nova/Logical Solutions

6445/5927 Kaboom! 2.0/More Kaboom and Chameleon Bundle

$36.

NEW! CD-ROM PRODUCT



Four Footed Friends

Four Footed Friends is an interactive storybook and more. This wonderful collection of colorful illustrations and rhymes is hosted by talking bookworm characters. The bookworms introduce children to the animals and guide them through this entertaining, classic tale. Kids explore just by pointing and clicking. Wendy the Word Worm teaches reading skills. Albert the Fact Worm teaches important facts and figures. And Pablo the Picture Worm helps children learn about colors and shapes while they create artistic effects. The highest quality animation, video, sound effects, original music, and humor will draw your children to this CD-ROM again and again. For ages 3 and up.

Minimum requirements: LC, 4MB RAM, System 6.0.7, CD-ROM drive, 256-color monitor.

T/Maker

6817 Four Footed Friends Mac CD-ROM

6818 Four Footed Friends Windows 3.5" diskette ..... $36.

T/Maker

$44.

MacFLY

Get fast-reaction control and the ultimate in realism for flight simulators and your favorite Macintosh games with the MacFLY Joystick. Customize the settings to your tastes with the included software. Two independent fire buttons with two modes provide double the functions. Your mouse stays active when you use the MacFLY; just move either device to automatically switch control.

Minimum requirements: Mac SE, 1MB RAM, System 6.0.4.

IZU Products

6458 MacFLY O

$99.

Tempo II Plus 3.0

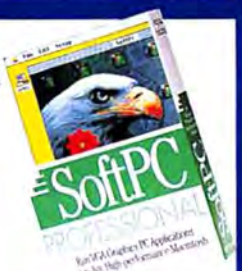
Automate your Mac with "intelligent" macros. Create hundreds of time-saving shortcuts, and simplify complex tasks. Tempo's "interactive" macros use conditional tests to determine how to format a document, when to back up your database, or which filters to apply in a "batch-process" task. Free phone dialer included!

Minimum requirements: Mac Plus, 1MB, System 6.0.2.

Affinity Microsystems Ltd.

6534 Tempo II Plus 3.0 O

$185.



SoftPC Professional

Do the PC one better by bringing PC applications to your Mac! There's no need to add hardware. With SoftPC, software does it all. SoftPC Professional 3.0 emulates VGA graphics giving you 256 colors and increased monitor resolutions to show crisp, realistic, and vibrant graphics. It emulates an 80286 processor and an Intel 80287 math coprocessor. Run protected-mode MS-DOS applications which have been written to utilize extended memory. MS-DOS 5.0 is pre-installed. And Microsoft CD-ROM extensions are also included, which means you can run PC CD-ROMs with your Mac CD-ROM drive. Plus, you can easily copy and paste text and graphics between PC and Mac applications.

Minimum requirements: SE/30, 8MB RAM, System 6.0, 6MB hard drive space.

Insignia Solutions

5925 SoftPC Professional

Insignia Solutions

$28.

Bridge 7.0

Bridge 7.0 is a complete bridge-playing program. You and your computer partner bid against two computer opponents and then play out the hand. Bidding is Standard American, five-card major and utilizes the Stayman and Blackwood conventions as well as weak or strong 2 bids. Many new features have been added to further refine this classic computer program.

Minimum requirements: Any Mac with 1MB RAM and an 800K drive.

Artworx

6545 Bridge 7.0

6543 Kaleidokubes ..... $12.

$48.

CD-ROM ToolKit

This utility replaces your CD-ROM drive's original software, transparently speeding up CD-ROM operations up to 1000 percent, improving compatibility, and allowing you to play audio CDs. There are no boards, cables, or cards to install. The CD-ROM ToolKit transparently caches CD-ROM information to your hard disk so mounting, folder opening, seeks, and searches happen instantly.

Minimum requirements: Mac Plus, 1MB RAM, System 6.0.4, CD-ROM drive.

FWB

5731 CD-ROM ToolKit

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QuickFLIX

QuickFLIX is the first inexpensive movie-making tool for Mac users. It makes the production of QuickTime movies more affordable. And it's got the power to build QuickTime movies for business presentations, educational uses, CD-ROMs, or just for fun. QuickFLIX is the personal movie making software for all Mac users. It's got all the software tools you need to produce your own movies including digitizing, editing, basic special effects, sound editing, titling, layering, and motion control. All in a familiar Macintosh interface. Don't doom another vacation's memories to a dusty collection of unedited VHS tapes. Get QuickFLIX.

Minimum requirements: Mac II, 3MB RAM, System 7, a hard disk.

VideoFusion

6784 QuickFLIX

VIDEOFUSION

$184.

DeBabelizer

This graphics processing toolbox will save you time, effort, and money. It translates from and to over 50 bit-mapped graphic file and animation formats for Mac, DOS, Windows, Silicon Graphics, Sun Microsystems, Amiga, and others. You can even edit images without the creating software. Batch processing and internal scripting functions save time by automating repetitive manipulation and editing tasks. Create QuickTime blue-screen effects with background removal features. DeBabelizer will also report and display differences between original and revised images. Jack Eastman, VP Engineering of Berkeley Systems (makers of After Dark) says, "DeBabelizer has the best cross platform graphics translation for serious graphics production. We couldn't produce our graphics without it."

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.7.

Equilibrium

6193 DeBabelizer

DE BABELIZER THE GRAPHICS PROCESSING TOOLBOX

$178.

FontChameleon

Get a library of over 200 popular text fonts and the ability to create literally millions of new ones. FontChameleon's revolutionary technology allows you to alter the preset designs by "blending" two fonts for a new design. Each font's X-height, condense/extend, and boldness can be altered with easy-to-use slider controls. Create Postscript Type 1 or TrueType fonts.

Minimum Requirements: Mac Plus, 2MB RAM, System 6.0.7, a hard disk.

Ares

6766 FontChameleon ○

$759.

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Alias Sketch! with Adobe Photoshop 2.5 or Adobe Illustrator 5.0

Imagine, a tool that "... extends your innate 2D drawing prowess into the third dimension almost without your knowing it" – Don Crabb, *Byte Magazine*. Alias Sketch! is a breakthrough product for illustrators, graphic designers, and other creative professionals. It lets you import 2D artwork from programs such as Illustrator, FreeHand, and Photoshop, and produce stunning 3D illustrations. Or draw freeform curves and shapes in 3D space using 2D techniques. Sketch! features perspective matching, lighting, photo-quality rendering, and more, and exports in PICT, TIFF, EPSF, and others. Buy now and get this August '93 *Macworld* Editors Choice Award product with your choice of Adobe Photoshop or Adobe Illustrator, absolutely FREE.

Minimum Requirements: Mac IIx, 8MB RAM, System 6.0.5, a hard drive.

Alias Research

6794 Alias Sketch! with Adobe Photoshop 2.5
6795 Alias Sketch! with Illustrator 5.0

Sketch!

$575.

NEW!

Macromedia Director 3.1

Competitive Upgrade

This award-winning multimedia application gives you the power to create engaging, interactive presentations complete with sound and QuickTime movies. Easily combine text, graphics, animation, sound, and video to create professional corporate presentations, information kiosks, and self-guided training programs. Owners of Supercard or Asymetrix Toolbox qualify for the competitive upgrade.

Minimum Requirements: Mac Plus, hard drive, System 6.0.7., 2MB RAM for B&W, 4MB RAM for color.

Macromedia

6722 Macromedia Director Comp. Upgrade
4354 Macromedia Director 3.1 ..... $798.

How to Order

- Call 1-800-276-0009 anywhere in the USA or Canada. Call 206-883-8312 for international orders.
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- All in-stock items ship same day, (barring system failure, etc.) to your doorstep, for just $3 (USA) via overnight service. Rural locations may require an additional day for delivery.
- Our $3 shipping charge includes insurance at no extra charge.
- When a partial order is shipped, we pay freight on additional shipments.
- Many products carry a money back guarantee (MBG).

- Defective software is replaced immediately with like items. Defective hardware items repaired or replaced at our discretion.
- We reserve the right to revoke money back guarantee privileges.

International Orders

- Call 206-883-8312 for our international sales line.
- Fax your order to 206-881-3090 for international orders.
- We ship throughout the free world.
- International orders will be charged full shipping rates plus insurance.

Mac's Place
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Redmond, WA 98052

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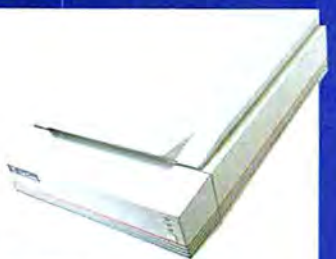
$1798.



Tamarack ArtiScan 12000C w/Photoshop 2.5

Scan art with remarkable accuracy. Tamarack ArtiScan gives you state-of-the-art resolution and impeccable color image quality. Art and technology unite in 1200 x 1200 dpi high-resolution, so your pictures, photos, and graphics are reproduced on-screen with spectacular accuracy. Photoshop 2.5 is included and a transparency option is available. Adobe Photoshop 2.5 is the world's leading photo design and production tool. Design and produce color and black-and-white images, right at your desk. Start from scratch or with any scanned image. Add or correct color, execute delicate retouching, import illustration files, create duotones, tritones, quadtones, and more. Then produce it with professional controls for four-color process proofing and separations.

Minimum requirements: Mac SE, 2MB RAM, System 6.0.4, hard disk.

Tamarack Technologies

6536 ArtiScan 12000C w/Photoshop 2.5

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Macintosh CPUs

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Quadra 950	
Macintosh IIvx	WorkGroup Servers

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PowerBook 160	PowerBook 165c
PowerBook Duo 210	PowerBook 180
PowerBook Duo 230	Apple DuoDock

CPU Accessories

ETC PowerGlide Extended Keyboard	$99
ETC PowerBook ADB Keypad	$75

Accelerators and More...

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AE TransWarp LC-vf 33	$527

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The Purple Bullet™ and Purple Bullet Expander™ from ETC Peripherals will turn any NuBus slot into an internal hard disk platform for 2.5" or 3.5" low profile drives. They even work with ETC Disk Tools DLE to double the capacity of ALL your hard drives!

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Purple Bullet	$79
Purple Bullet Expander	$12
Purple Bullet+ 80MB HD	$436
Purple Bullet+ 120MB HD	$499
Purple Bullet+ 213MB HD	$690

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Magnavox 14" Color Monitor
Apple Stylewriter II
Printer & Cable $2067
or LEASE for **$77[15] a month**[1]

Designer

Centris 650 w/fpu, 8MB RAM, 230MB Hard Drive
ETC PowerGlide Ext. Keyboard
Sigma 20" Trinitron Color Display System
Sigma ColorMax Turbo 24 bit Accelerated Video Card $6,183
or LEASE for **$176[22] a month**[1]

The Pro Package

Quadra 800 24MB RAM
520MB Hard Disk Drive
ETC PowerGlide Ext.Keyboard
Sigma 20" Trinitron Display System with Turbo 24 BitAccelerated Color $8199
or LEASE for **$239[09] a month**[2]

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Media

44 MB Syquest Cartidge	$63
88MB Syquest Cartidge	$99
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Quantum		
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525MB LPS	$699	$779
1050MB	$1099	$1159
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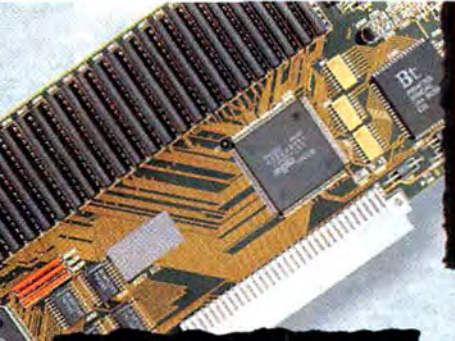

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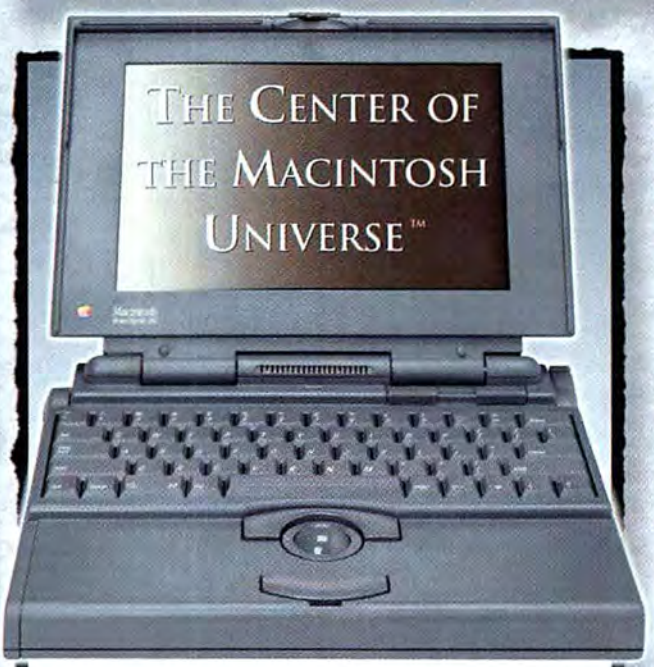

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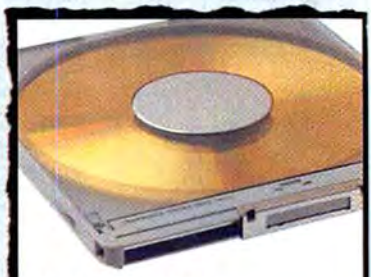

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Promodem 144i Internal for Powerbook 14.4/14.4SR Fax w/ V.42 & V.42 bis	$248
Promodem 144e ext 14.4/14.4 SR Fax w/ V.42 & V.42 bis	$248 SALE
Promodem 24e ext 24/96SR Fax w/ V.42 & V.42 bis	$128
Promodem Mini 2400 2400 BPS mini, data only	$79

ZOOM TELEPHONICS

All units come with Microphone LT & STF FAX Software	Price
Faxmodem PBK for Internal Powerbook 96/48 SR Fax w/2400 BPS Modem	$99
Faxmodem PKT Portable 96/48 SR Fax w/2400 BPS Modem	$109
Faxmodem FXV V42 bis/MNP5/2400 BPS, 96/96 SR Fax	$129
Faxmodem VFX V.32 V.32 bis, 14.4 data & fax, V.42 bis/MNP5	$258

Scanners

UMAX All Scanners includes free software

Model	Price
UC630 - Color w/free Photoshop v2.5	$1078
UC1260s - Color w/free Photoshop v2.5	$1848 SALE
UC840 - Color w/free Photoshop v2.5	$1248
Transparency Unit	$698
Auto Document feeder	$398
UG630 - Greyscale w/free Typereader OCR, OFOTO & Publish It	$848

Optical & DAT Drives

Includes one free disc (1 year Warranty)		
128 mb Panasonic Optical	39 ms	$838
128 mb Epson Optical	29 ms	$948
128 mb Fujitsu Optical	34 ms	$998 SALE
256 mb Most Optical	31 ms	$1498

All DAT Drives Include free 90m Tapesoftware	W/Retrospect	W/Retrospect Remote
WangTek 2.1 Gig DAT	$998	$1198
WangDat 5.0 Gig DAT	$1298	$1498

Memory

Model	70 NS	80 NS	Model	70 NS	80 NS
1x8	Call	Call	2x8	Call	Call
4x8	Call	Call	16x8	Call	Call

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Memory for LCIII, Centris 610, 650, Quadra 800

4mb Call	8mb Call	16mb Call

Hard Drives

CONNER

Unformatted Capacity	Access Time	Internal	External
3.5" Disk Drives (2 year Warranty)			
85 mb LPS	17 ms	$178	$238
170 mb LPS	12 ms	$208	$268
212 mb LPS	9 ms	$288	$348
540 mb	8.5 ms	$728	$788

QUANTUM

ELS Series (3.5" Low Profile and Low Power Drives)			
85 mb	17 ms	$174	$228
127 mb	17 ms	$188	$238
170 mb	17 ms	$198	$248
LPS Series (3.5" Low Profile and Low Power Drives)			
240 mb	10 ms	$278	$338 SALE
525 mb	10 ms	$648	$698
Prodrive Series (3.5" Half Height Drives)			
1.0 Gig	10 ms	$948	$998
1.2 Gig	10 ms	$1098	$1148
GO•Drive 2.5" Hard Drive (All Quantums - 2 year Warranty)			
160 mb	17 ms	$499	$599

TOSHIBA

3.5" & 2.5" Disk Drives (2 year Warranty)			
2.5" 213 mb	9 ms	$528	$628
3.5" 830 mb	12 ms	$1029	$1089
3.5" 1.2 Gig	12 ms	$1298	$1348

FUJITSU

3.5" & 5.25" Disk Drives (5 year Warranty, 3 year on 105mb)			
3.5" 105 mb	9 ms	$178	$228
3.5" 520 mb	9 ms	$698	$748
3.5" 1.1 Gig	8.5 ms	$1128	$1189
5.25" 2.4 Gig	11.5 ms	$2198	$2298

SEAGATE

3.5" Half Height Drives (1 and 5 year Warranties)			
1.2 Gig	10.5 ms	$998	$1048
2.4 Gig Baracuda		$2298	$2348 SALE
Wren and Elite Series (5.25" Full Height Drives)			
Wren 9 2.1 Gig	12.5 ms	$1528	$1628
Elite 1 1.6 Gig	11.5 ms	$1689	$1789
Elite 2 2.4 Gig	11 ms	$2098	$2198
Elite 3 3.4 Gig	11 ms	$2598	$2698

Media

Model	QTY 1	5PK	10PK	Model	QTY 1	5PK	10Pk
SyQ44 cart	$62	$60	$59	128mb OPT	$37	$35	$33
SyQ 88 cart	$95	$94	$93	256mb OPT	$79	$76	$73
SyQ 105 cart	$75	$74	$73	90mm DAT	$19	$17	$14

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Mac II, IIx	1MB 4MB	1x8-70ns 4x8-70ns	SIM18-CX SIM48-CX	$59 $169
LC III Centris 610, 650 Performa 450	4MB 8MB 16MB 32MB	1x32-70ns 2x32-70ns 4x32-70ns 8x32-70ns	SIM4-102432-70 SIM8-204832-70 SIM16-432-70 SIM32-832-70	$259 $435 $815 $2199
IIvx, IIvi Quadra 700, 900, 950 Performa 600	1MB 4MB 8MB 16MB	1x8-70ns 4x8-70ns 8x8-70ns 16x8-70ns	SIM18-70 SIM48-70 SIM88-70 SIM168-70	$59 $169 $469 $719
Quadra 800	4MB 8MB 16MB 32MB	1x32-60ns 2x32-60ns 4x32-60ns 8x32-60ns	SIM4-102432-60 SIM8-204832-60 SIM16-432-60 SIM32-832-60	$259 $435 $815 $2299
Mac IIfx	4MB 8MB 16MB	4x8-70ns fx 8x8-70ns fx 16x8-70ns fx	SIM48FX-70 SIM88FX-70 SIM168FX-70	$227 $469 $919

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8MB	PN N/A	$499	10MB	PN N/A	$655

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4MB	PN N/A	$315	6MB	PN N/A	$425
8MB	PN N/A	$609	10MB	PN N/A	$869

PowerBook Duo 210 and 230

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Capacity	Size	Access	Internal	External
520mb	3.5"	9ms	685	745
1.1gig	3.5"	8.5ms	1035	1095
2.4gig	5.25"	11.5ms	1895	1995

Seagate

Five Year Warranty

Capacity	Size	Access	Internal	External
283mb	3.5"	16ms	339	399*
344mb	3.5"	12ms	451	511
600mb	3.5"	10.5ms	889	949*
1.2gig	3.5"	9ms	995	1059
1.6gig	5.25"	15ms	1289	1348*
2.2gig	5.25"	12ms	1589	1689*
2.4gig	5.25"	11ms	1935	2035
2.5gig	3.5"	8ms	2229	2289
3.4gig	5.25"	10ms	2390	2490

Hitachi

Five Year Warranty

Capacity	Size	Access	Internal	External
1.2gig	3.5"	11.8ms	999	1049
1.6gig	3.5"	11.8ms	1499	1559
3.7gig	5.25"	12.8ms	2390	2490

Optical Drives

Includes One Cartridge

One Year Warranty

Capacity	Model	Access	Ext
128mb	Ricoh	30ms	855
128mb	Fujitsu	30ms	855
600mb	Ricoh Hyperspace	28ms	1859
1.0gig	Panasonic	90ms	2999

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One Yr Warranty on all others.

Capacity	Model	Media	Int	Ext
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500mb	Sankyo CP-525	DC6250	565	625
1.3 - 2gig	Archive 4320	4mm	939	999
1.3 - 8gig	ArchiveTurbo	4mm	1169	1229
1.3 - 2gig	Exabyte 4200	4mm	899	959
1.3 - 5gig	Exabyte 8205	8mm	1365	1425
1.3 - 10gig	Exabyte 8505	8mm	2059	2119

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90m	Tape	18	600mb Optical	165
112m	Tape	18	250mb Tape	35
			1.0gig Optical	179

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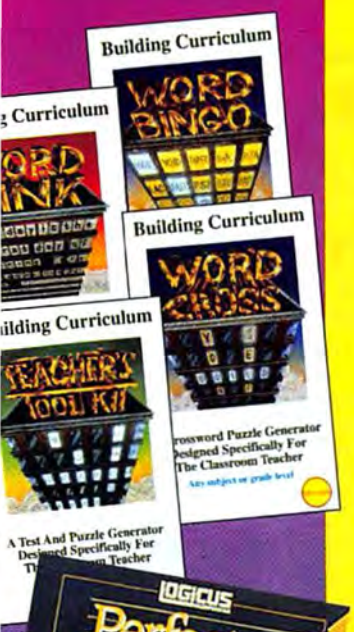

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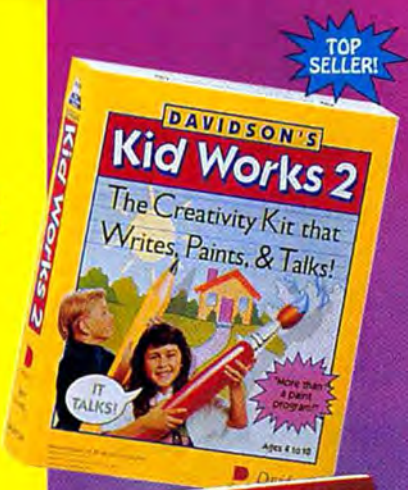

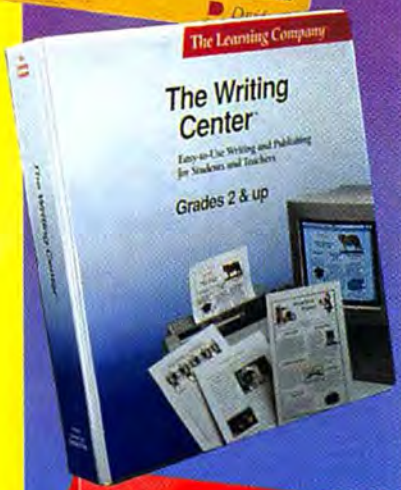

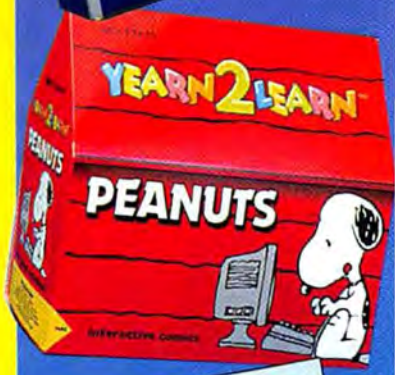

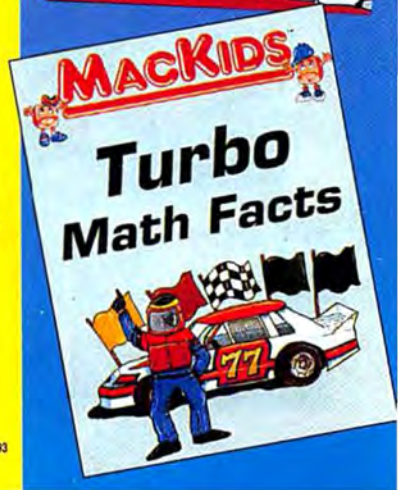

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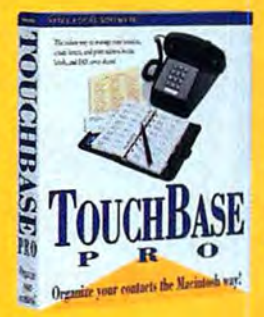
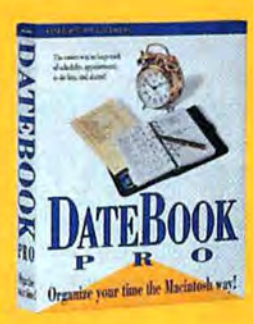
Also available: **TouchBase Pro DAT0104 $49.95 and DateBook Pro BUS0298 $49.95**





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EDU0490

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Publisher: Berkeley Systems
UTI0415

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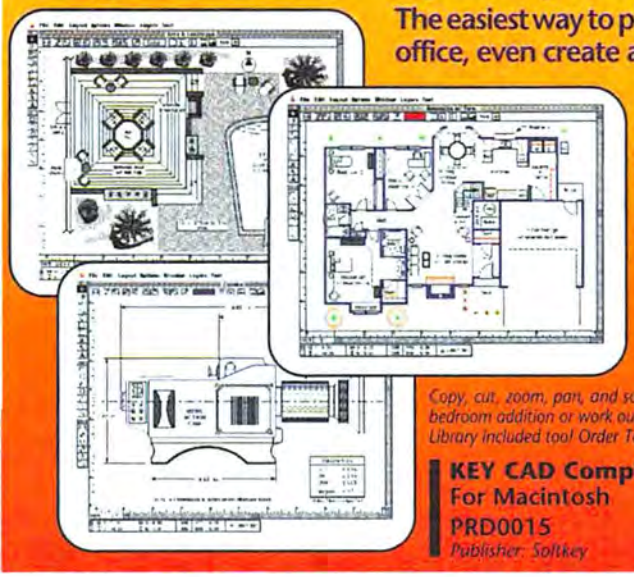

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DTP0062
Publisher: Postcraft International

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UTI0414 Publisher: ASD Software

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Also available: **Wiz Tools/FileGuard Bundle**
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FIN0116

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EDU0337

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EDU0336
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Publisher: Chariot Software

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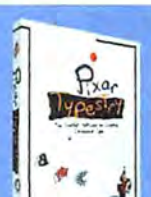

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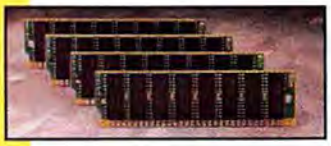

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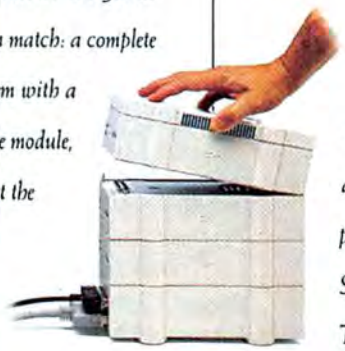

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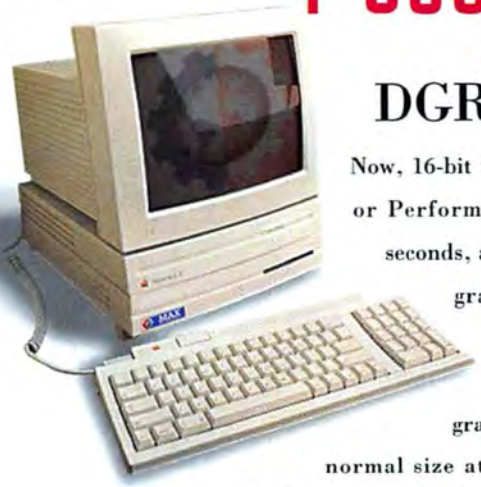

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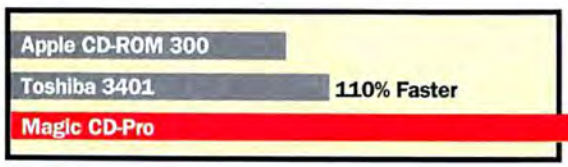

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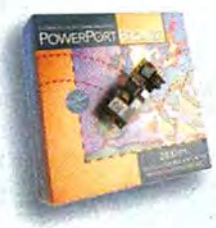

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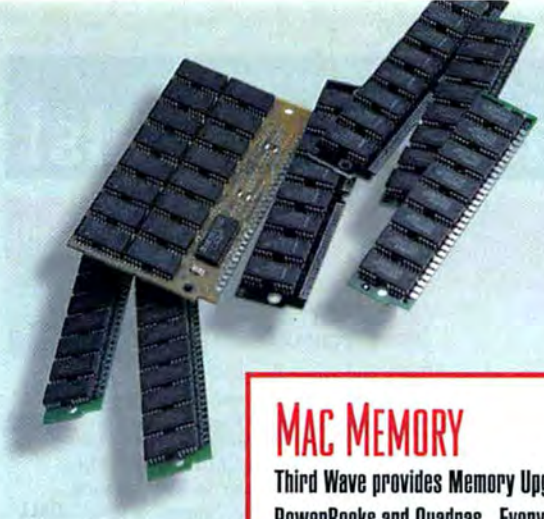

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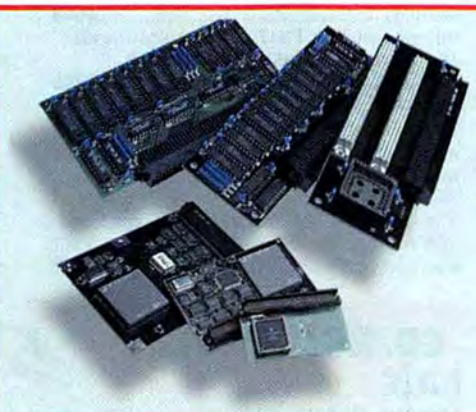

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219-222

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MACWORLD MW EDITORS' CHOICE

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MacWorld Mar. 93

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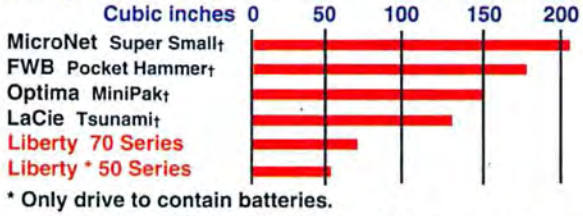

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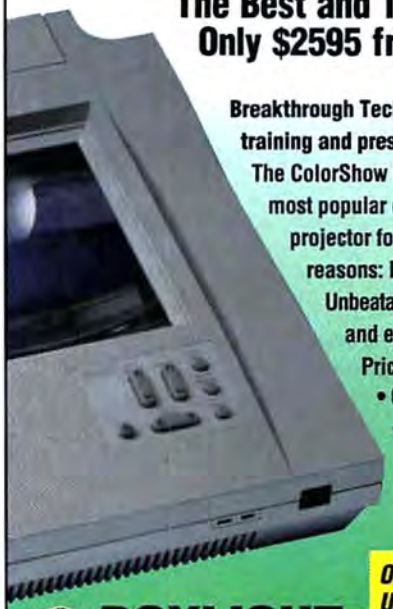

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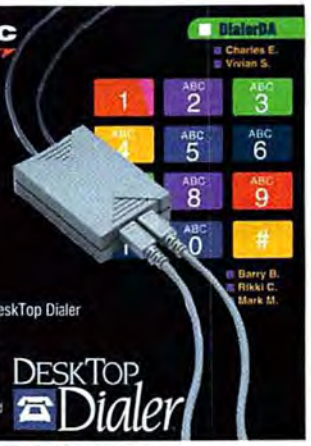

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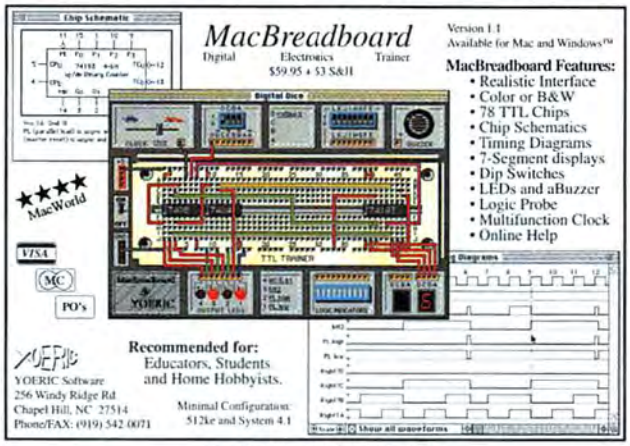

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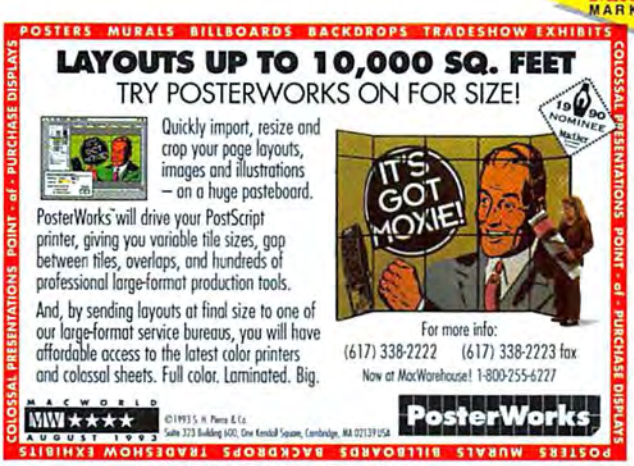

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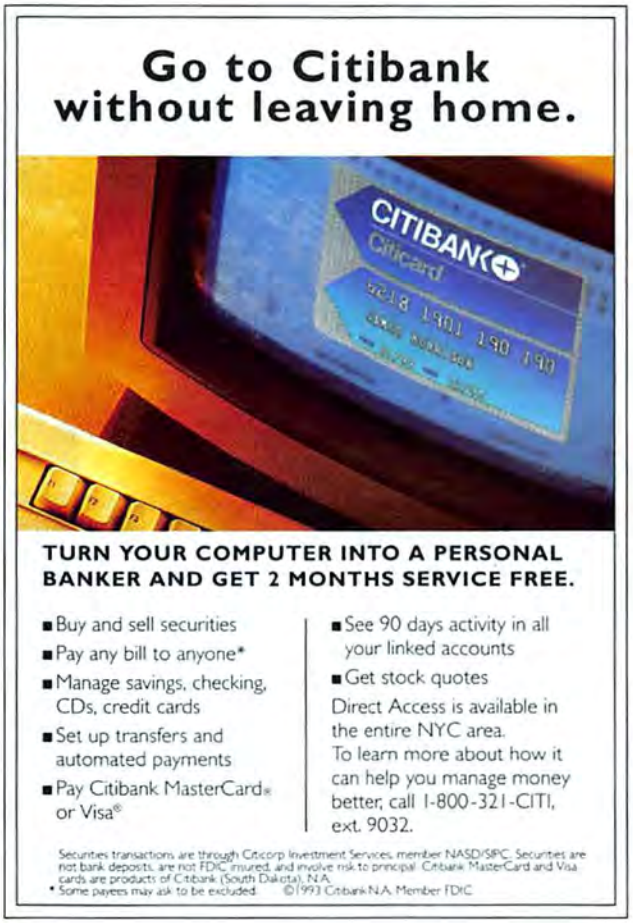

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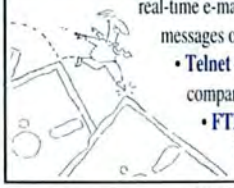

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Source: MacUser 1992 Study of Microcomputer Product Ownership and Buying Plans

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4x8 - 70NS	Call
4x8 - 80 FX	Call
4x8 - 80 II/IIx	Call
8x8 - 80NS	Call
16x8 - 80	Call

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Fujitsu drives carry a FIVE Year Warranty.

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2.0GIG	M2652	5.25"	FH	14ms	$2275	$2375
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212MB	CP30200 3.5"	LP	12ms	$359	$419
520MB	CP30540 3.5"	HH	10ms	$880	$939

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Go-drives have ONE Year Warranty

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127MB	ELS127	17ms	$249	$309
170MB	ELS170	17ms	$275	$339
240MB	LPS240	10ms	$355	$445
425MB	PRO425	9ms	$849	$919
525MB	LPS525	10ms	$895	$969
700MB	PRO700	10ms	$1179	$1239
1.0GIG	PRO1050	10ms	$1325	$1389
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Power Cache 40	$549	$629
Power Cache 50	$719	$849
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Universal FastCache		$169
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with math chip		$309
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4x8x70 II/IIx	170
16x8x80 (High profile)	715
16x8x70 (Low profile)	795
1x8x80fx	64
1x8x70fx	66
4x8x80fx	168
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PB160/180-10MB	655
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PB165C/180C-6MB	339
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IIvi,IIvx - 16MB SIMM	CALL	PowerBook - 165C- 4MB/6MB	$ 259.00/379.00
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SE/30,Quadra 700 - 16MB SIMM	CALL	PowerBook Duo 210,230 - 4MB/8MB	$ 179.00/359.00
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Source: MacUser 1992 Study of Microcomputer Product Ownership and Buying Plans

In the past 12 months, 8 in 10 MacUser subscribers purchased products by mail order; 91% of these purchased software through mail order.

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68882 33 MHz FPU	85.00
68882 50 MHz FPU	119.00
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33 MHz	635.00	925.00	1,065.00
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Quik30			
25 MHz	355.00	N/A	N/A
33 MHz	485.00	N/A	N/A

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127MB	ELS127	3.5 1"	17	$209	$269
170MB	ELS170	3.5 1"	17	$229	$289
240MB	LPS240	3.5 1"	10	$309	$369
525MB	LPS525	3.5 1"	10	$705	$765
700MB	PRO700	3.5 HH	10	$910	$970
1.0GB	PRO1050	3.5 HH	10	$1070	$1130
1.2GB	PRO1225	3.5 HH	10	$1160	$1220
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120MB	Go•Drive	2.5 19MM	17	$280**	$380
160MB	GRS	2.5 19MM	17	$360**	$460
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1.2GB	ST11200N	3.5 HH	10.5	$1125	$1185
2.1GB	ST42100N	5.25 FH	12.9	$1725	$1825
1.6GB	ST41600N	5.25 FH	11.5	$1799	$1899
2.4GB	ST42400N	5.25 FH	11	$2329	$2429
3.4GB	ST43400N	5.25 FH	11	$2949	$3049
• One year warranty					
MICROPOLIS					
660MB	1624	5.25 HH	14.5	$1235	$1295
1.0GB	2112	3.5 HH	10	$1335	$1395
2.0GB	1924	5.25 FH	10	$2695	$2795
• Five year warranty					
TOSHIBA					
213MB	MK224FB-S	2.5 19MM	12	$559**	$659
• One year warranty					

** Internal configuration for PowerBook computers only

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245MB	15ms	3600	Maxtor	2 Years	$260	$320
340MB	15ms	3600	Maxtor	2 Years	**$349**	**$409** Sale!
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540MB	8.5ms	6300	Maxtor	3 Years	$819	$879
540MB	10ms	5400	Conner	2 Years	$669	$729
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1050MB	10ms	4500	Quantum	5 Years	$929	$989
1050MB	10ms	5400	Micropolis	5 Years	$959	$1019
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2Gig	DAT	Hewlett Packard	12MB/min	$1029	$1049
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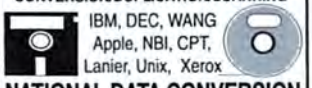

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The Apple Merger

Will the Mac die? Only if Apple merges with the wrong company.

The rumor was lighting up switchboards all over Silicon Valley. Apple Computer was ready to merge with another large company. The Apple board-of-directors meeting was in progress *now* to complete the deal. The deal turned out to be bogus, and the board meeting turned out to be just another squabble over the future of the company, with CEO John Sculley being kicked upstairs. The company was turned over to Michael Spindler — a Jobs hiree who used to run the show in Europe.

I guess the Apple board members weren't prepared to wait for the trillion-dollar Newton business to take off and restore the value of their large Apple stock holdings. In fact, it may have been his wacky notions about the Newton that sealed Sculley's fate. You watch: Within 12 months, he'll be off the board altogether and living back East, having occasional din-dins at the White House with Bill and Hillary.

Meanwhile, the notion that Apple might merge with another company is not dead yet. As of this writing, no merger is pending, but by the time you read this, there might very well be something in the works. In anticipation of such a merger, let's look at the candidates and what each one would mean, specifically to Mac users:

AT&T. We may as well start with these jokers, because they were original front-runners. Many Apple insiders said this company *will definitely* be the one to take over Apple. Quite frankly, this possibility is more nauseating than an Apple merger with IBM. Can you imagine the marketing decisions that would be made by the white whales at AT&T? Yuck. Of course, the idea was to put Apple together with NCR, which AT&T swallowed in a hostile takeover a couple of years ago. Now *there's* a paragon of marketing prowess (not!). Long-term effect for Mac users: stagnation.

IBM. This idea comes from reports that Sculley suggested to IBM that Big Blue might want to buy Apple. This was during the embarrassingly difficult head-hunting for a new IBM CEO (who *didn't* they offer that position to?). Although I suppose you could rationalize such a deal, it's too sickening to imagine. These two companies represent the yin and yang of computerdom. Mix them up, and you get a gray mess (for example, Taligent). Long-term effect for Mac users: death of the Mac.

Motorola. I dreamed this idea up, because it would be a good match. There would always be a good supply of chips, especially of PowerPCs, which are the key to Apple's real future. It would also seriously link Apple to the wild Motorola view of global communications. Long-term effect for Mac users: modernization at a faster clip. Chances of it happening: nil.

Sony. Apple's connection with Sony is apparent, and people imagine these two joining forces. Sony has been itching to be a success in the desktop-computing arena for more than a decade. Although Sony's managed to get a few of its inventions standardized (the 3.5-inch floppy disk, for one), it hasn't been able to promote Sony per se. This would be a great match technologically, but it would be a one-way deal. Sony's past efforts in desktop computing have been epitomized by bonehead marketing. Based on its past performance, all Sony can do is screw things up. Long-term effect for Mac users: disaster — the Mac would be dead within two years.

Japan, Inc. This could be one of any number of big Japanese companies, such as Mitsubishi, Panasonic, or NEC. Except for Toshiba in the laptop arena, Japanese companies have had little success in the American computer market, because they make most of their decisions in Tokyo. Forget it. Long-term effect on the users: the Mac would be dead in nine months.

Microsoft. Here's a lulu of an idea. This mind-boggling partnership would result in a reorientation in development for the Mac, with Microsoft eventually pushing out the Mac OS in favor of a Windows-like interface. Ugh. Long-term effect for Mac users: bafflement.

Compaq. I like this idea. You'd have two German CEOs speaking ÜberDeutsch in the boardroom and vowing to take over the market. This would be a better match than you might imagine. Both companies are used to the same sales orientation and marketing techniques, and both use the retail-channel approach to selling. Engineering is good in both groups. It would broaden the product lines of both companies. Long-term effect for Mac users: no change.

NeXT. Too late now! High concept but will never happen.

Conclusion: Apple is on its own — as it should be.

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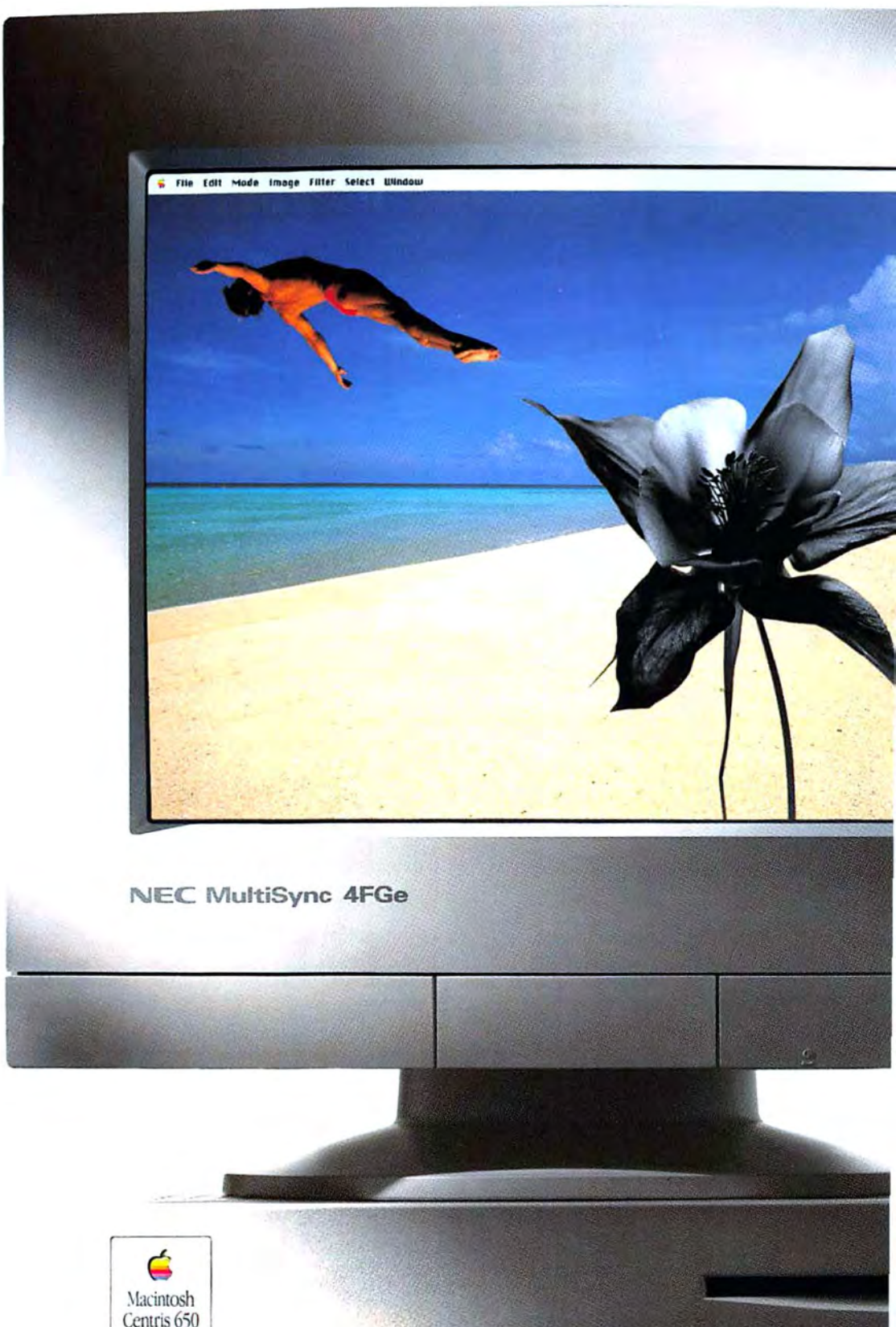

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