SNEAK PREVIEW

3 NEW MACS

Why the Performa systems are the easiest Macs to buy and use — ever!

PLUS

How to set up a complete Mac home office

DTP TOOLS

• 65 ways to get more out of QuarkXPress
• How to choose drawing software
• Which slide scanners are best
• Complete guide to over 160 products
Introducing Microsoft Excel - the sum total of seven years

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Excel 4.0. It’s years of success.

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Today's smartest spreadsheet wasn't born yesterday.
The newest thing about the new Performa Macs isn’t what’s inside — it’s where and how they’ll be sold.

There’s a new way to simplify your Mac — and it’s not from Apple.

Check out 65 ways to plug tailor-made features into QuarkXPress.

Are you getting the most from your home-office Mac?

DTP tools are more powerful and customizable and easier to use than ever before. Here’s how to pick the right ones.

With more than 100 XTensions and counting, QuarkXPress is the most customizable page-layout program currently available. We evaluate 65 commonly used XTensions and tell you where you can find them.

We take a close look at 11 drawing programs, including Illustrator 3.2, FreeHand 3.1, and Canvas 3.04, to give you our perspective on the state of the art in art.

We test six desktop color slide scanners to reveal that you can get drum-scanner quality for less than a tenth of drum-scanner cost — if you choose the right hardware.

For your DTP buying decisions: quick reviews of more than 160 software packages for desktop publishing.

Shopping for a faster modem? Price doesn’t necessarily predict performance in the world of V.32bis modems. We put 12 “Mac ready” high-speed modems through some real-world tests to see which ones come out on top.

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We test four removable hard drives that attempt to provide greater reliability and speed than removable-cartridge drives.
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MacUser called iTouch 1.1 "the best name and address DA for the Mac" (4/91 4.5 mice). Why? Because it seamlessly combines address storing, telephone dialing, note-taking, and envelope and label printing in the simplest to use format. Every feature is painstakingly designed to save you keystrokes and time. InTouch 2.0 adds reminders, sorting, fax cover sheets, address books and other new features making the "best" even better! And at $99.95 InTouch offers more than products twice the price. Unconditional 30-day guarantee. Ask about lightning fast InTouch network. Order toll-free.

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* Not recommended for PowerBook 166 due to slow printing speeds. Printing on other models varies, but generally about 2 minutes/full page of WYSIWYG output. Spooling software is included to provide continuous computer use during printing. All printers shown are IBM compatible without modification.

About MacUser

Glansnost Man

It seems like only yesterday: DOS was the cornerstone of an Evil Empire, bent on world domination, shackling brainwashed subjects to an inhumane system. But today, Sculley and Gates are having their pictures taken together and those brainwashed DOS users have become a market opportunity.

Apple's new openness toward Microsoft, Windows, DOS, and PCs is more than just political rhetoric. Apple has taken several steps to make it real:

• Releasing Macintosh PC Exchange, software that lets Macs recognize DOS-formatted disks.
• Designing VITAL, a scheme for integrating Macs into enterprisewide systems of Macs, PCs, and mainframes.
• Developing OCE, a cross-platform messaging system.
• Writing, through its software subsidiary, Claris, Windows versions of applications.
• Entering into a joint venture with IBM to develop a brand new operating system that will run on multiple platforms.

For John Rizzo, the author of our new "Mac to PC" column, this glansnost comes none too soon. As MacUser's technical editor for the past four years, John has learned every trick in the book for getting PCs and Macs to talk to one another. In fact, John wrote the book (MacUser Guide to Connectivity, Emeryville, California: Ziff-Davis Press, 1992; $27.95). Now he's looking ahead to a future when tricks won't be necessary to get Macs and PCs to communicate.

A great deal still needs to be done before that future becomes a reality. An infrastructure needs to be put in place, but it's getting closer. "It's now easier than ever to make Macs and PCs work together," John says. And in the near future, not only will it be easier to justify bringing a Mac into a DOS-oriented office but it also will be easier to use it once it's there.

John is quick to point out that he intends to treat platforms objectively in his new column, which, in addition to Mac-to-PC connectivity, will also cover UNIX and RISC platforms.

"I'm not a Mac bigot. Believe it or not, there are some things the PC is better suited for." For example, it may be possible to find DOS programs for highly specialized tasks when nothing Mac-based is available; also it's still a lot easier to program for DOS than for the Mac (or for Windows).

But expect John to maintain a healthy skepticism about the very idea of cross-platform products. "I hope to dispel some myths about cross-platform compatibility and point out when working across platforms is not the best solution to a problem. Sometimes using a separate product that connects platforms is the better way to go."

MacUser technical editor and connectivity columnist John Rizzo will be helping improve foreign relations with his detailed advice on how to get Macs and PCs talking to one another.
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CPU provides much more. Instant sleep and wake, LCD screen saver, keyboard shortcuts, cursor finder, mouseless menu control and over a dozen other enhancements make your PowerBook more effective.

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Circle 61 on reader service card.
Rob Wintler, of Los Angeles, wonders if he’s stumbled on a conspiracy in the software industry: “What exactly does ‘Lorem ipsum dolor sit amet’ (often seen in software ads) mean? It looks like Latin, but where did it come from? Did software companies sit down and say, ‘OK, we’re all going to use this Latin phrase in our ads.’?”

Relax, Rob: the use of pseudo-Latin phrases to flesh out dummy layouts predates the computer industry. (Strangely, for reasons known only to William Safire, it’s known as greeking.) Meaningless text is used, presumably, so you won’t be distracted by any actual content in the layout; we understand that software ads in the Vatican (and other Latin-speaking countries) use text from the speeches of Dan Quayle instead.

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.

The Newton Testament

I enjoy reading John Dvorak’s column every month and then saying how closed-minded the man usually is. Take, for example, Dvorak’s column on Apple’s forthcoming hand-held Newton devices (“I Sack Newton,” September ’92, page 394). Just because technology has advanced slowly for years doesn’t mean that it can’t suddenly move in leaps and bounds.

Apple is right to try something new and revolutionary — such as Newton. If it doesn’t catch on, store it in some closet until the time is right to try again.

And who’s to say that Newton won’t catch on? Once the gadgeteers start buying them and figuring out uses for them that even Apple hasn’t guessed, businesses will begin to purchase them as well. Prices will drop with the release of newer models, and the newer models will do even more than the previous ones. Soon the general public will be able to afford and really use the Newton.

Oh, and one other thing. Why did Dvorak use the word sorry in his column so many times? Perhaps he wanted to apologize in advance to the dozens of letter writers who’ll surely pop responses into his mailbox. Sorry, but you went too far this time, Dvorak.

David Peck
Silver Spring, MD

What, Me Wordy?

Your June article on choosing the right word processor (“Key Words,” Buyer’s Guide page 18) didn’t answer one question of vital

Dear Mr. Sculley...

The letters are still rolling in by the bagful in response to the question we posed in our June issue: “Which Mac model offers the best balance of price and performance?”

The LC garnered the most votes, but some readers favored other members of Apple’s low-end family.

Pamela Spratlen, of Guatemala City, Guatemala, bought a Classic II and couldn’t be happier. “I exchanged Microsoft Word and Excel for ClarisWorks, and it meets my needs perfectly. Maybe someday my computing needs will progress (devolve?) into a need for more power, color, speed, screen size, slots, and features galore. But for now, the Classic II meets all my needs and I learn something new almost every day.”

Henry A. Lavagnini, a ZiffNet/Mac respondent, prefers that old war-horse the SE/30. “It’s certainly far superior to the Classic II. The SE/30 has a 68030 processor, a built-in FPU, a PDS slot, eight SIMM slots, and replaceable ROM (sadly, an unused feature).”

Don O’Malley, of Santa Barbara, California, rallied behind the Mac Plus. “I have two monitors, 4 megabytes of RAM, an accelerator, two hard drives, and two printers — plus the potential for a modem and a CD-ROM drive. System 7 hums along nicely, and I can run any program I need in order to take care of my business and personal requirements. What more do I need?”

Don admitted that color would be a nice addition, but he can wait. “I’ll get color four years from now, when the current line of bigger, faster Macs becomes affordable because they are old and in the way, just like everyone considers the Plus to be.”

But Edio C. Solom, of Northfield, Minnesota, thinks the Plus is just dandy: “I haven’t read many letters from older Mac users such as myself, a retired 78-year-old. I’m happy as a clam with my Mac Plus and System 6 and have no interest in upgrading. I write more letters in a month than I used to write in a year. The congressmen can see my mail coming.”

There’s one cynic in every crowd, however. Jay Feinberg, of Cleveland, Ohio, doesn’t think any of the current Mac models offer a satisfactory balance of price and performance.

“Apple is out of touch with the rapidly declining prices for personal computers. An LC II 64/80 with a 13-inch Apple color monitor and extended keyboard costs about $2,500, but a 16-megahertz 386 PC with a 14-inch color monitor sells for less than $1,000. The situation is even more ridiculous when you look at accelerator boards. It makes no sense to overlay for a low-powered Mac and then pay another $1,000 to accelerate the machine to a respectable 33 megahertz.”

Jay currently has a Mac SE and wants to upgrade, but he said, “If Apple doesn’t make significant improvements in price/performance very soon, I will switch over to PCs with Windows.”

Speak Up:

Several readers have written lately to chastise MacUser for conspiring with Apple and the Mac industry in toasting unnecessary jargon — windoid, jaggles, WYSIWYG, and the like — on our readers. What jargon would you like to see banished from the Apple vocabulary?

Send your thoughts to Dear Mr. Sculley, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.
importance: How well do the program’s documents feed into QuarkXPress or PageMaker?

Many of us use word processors only to produce simple documents or envelopes. Whenever we want to do something fancy with text, we feed the document into a page-layout program, where control of columns, leading, graphics, drop caps, and so forth, is far easier and more precise. This means that most of us use Microsoft Word, although we don’t use 90 percent of its features, because it is the only word-processing program that converses fluently with the page-layout programs.

I’d love to use a simpler word processor, such as WriteNow, rather than a bloated behemoth such as Word. But WriteNow doesn’t work well with QuarkXPress, so I’m stuck.

Allan S. Hjerpe
Sevierville, TN

Why can’t someone produce a modular word-processing program so that each of us can buy just the features we need? I don’t need RAM-eating features such as tables, tables of contents, indexes, painting tools, and outliners. Those of us who write letters, poetry, or articles would like a simple word processor that provides quality typography. We need an editable kerning table for each typeface, and the kerning values that are built into typefaces should be used by the word-processing program.

We should be able to select (in units) the word spacing we prefer and have a choice of fixed spaces, such as em and en. We should be able to letterspace a line and to indicate automatic hanging indents and hanging punctuation.

These features, and many that are already available, should be available as options, just as power brakes and air bags are options when you buy a car.

It’s ridiculous that desktop publishers invest thousands of dollars in machines that are little better than a manual typewriter. With so many quality typefaces available, we should be able to send out a decent-looking letter.

Walt Abbott
Yarnell, AZ

Easy Does It

I find it amusing that a Mac magazine would look at an icon-based environment, namely Double Helix, and use the words “easier for beginners” several times in describing it (“Database Strategies: Relational Databases,” June ’92, Buyer’s Guide page 60).

If something is easy for beginners, it’s usually easier for normal users, power users, and even programmers. That’s why I use the Mac instead of a PC. That’s why I use Think C instead of MPW. And that’s why I use Double Helix instead of 4th Dimension.

With the Mac’s visual interface, I can learn an application once, not use it again for a year, and then pick it up again with little loss of capability. I can’t do that with a command-line interface such as DOS. I can’t do that with 4D’s procedural language, but I can do that with Double Helix.

Dan Kuchta
Brockport, NY

Not-So-Easy Publishing

I’d like to add a strong warning to your review of Publish It! Easy, which appeared in the June issue (page 81). I was unable to install the program and suspected INIT conflicts. Sure enough, Timeworks’ technical support told me the program has major conflicts with at least nine INITs, and the only solution is to get rid of them permanently. If you reinstall the INITs, problems can crop up and cause you to lose saved data.

I appreciate the honesty and straightforward responses of the Timeworks technical people but question why this problem has never, at least to my knowledge, been documented. When you expect a good product — based on a four-and-a-half-mouse rating — and are disappointed, it’s like getting a McDonald’s burger at The Four Seasons.

Thomas A. Huebner
Hillsdale, NY

It’s impossible to test every combination of INITs with a particular program. I had 15 INITs installed and encountered no problems with Publish It! Easy.

— GW

Addressing the Issues

I’m writing in regard to your address — 950 Tower Lane — and your ZIP code — 94404. It strikes me as strange that the Quadra line is the first Mac to go with a tower case and that the latest model number is 950. And your ZIP code has all those fours in it (as in Quad). Any coincidence here?

James E. Rodriguez
West Covina, CA
Fast cars. Bungee jumping. Triple chocolate cheesecake. Seems like all of life's really satisfying stuff comes laced with danger. Or at least cholesterol. • Our drawing program on the other hand, is an exception to the rule. • A peak experience that's actually good for you. • Good how? • Good by soup ing up your productivity. With Canvas, you won't need to hop around as you work, passing your piece from program to program to get things done. And you won't find yourself face to face with significant built in compromises, either. Because Canvas puts every tool and effect you'll need for just about any design job together in a single coherent package. It's all there. And it's all good. • How good? • Good enough to generate a slew of rave reviews and positive comparisons with programs costing much more. • And good enough to capture virtually every significant industry award there is. • From a MacUser Eddy for Best Drawing Program to a MacWeek Target for Best Business Graphics Program to the Infoworld Buyers Assurance Seal. • Canvas 3. No fat. No side effects. No shin splints. Just supreme drawing satisfaction.
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Letters

It’s a good thing for Apple’s future product plans that we moved our offices a few years ago from Marsh Drive. — JZ

Over the Top
In “How to Buy a Laser Printer” (September ’92, page 253), the author states that you can check the number of pages that have been printed by looking at the startup page. This is not always true.

Laser-printer page counters, like a car’s odometer, turn over after a few hundred thousand pages and are “cleared.” They also clear any time the laser printer’s logic board is replaced and possibly when the printer is serviced. Better to ask about the printer’s history and check the wear and tear on the rollers.

Walter Vose Jeffries West Topsham, VT

Color Control
Like an expectant father, I had been anxiously awaiting MacUser’s review of In Control (August ’92, page 61). You rewarded In Control with a great review. However, a color screen shot of In Control was reproduced in black and white; it looks a bit strange.

In the same issue, John C. DoRak’s column reminds us that style is as important as substance. On a black-and-white display, the buttons are simplified for a cleaner look so that In Control’s stylish looks are every bit as good as its powerful features.

Version 1.1 of In Control, which contains some printing and display enhancements as suggested in your review, is now available. Readers can contact us at 617-776-1110 for upgrade information.

David Chadwick, President
Attain Corp.
Somerville, MA

Display’s the Thing
Your August 92 review “Perfection for Pennies: Autosynchronous Monitors” (page 158) was very good. But it skipped over one significant issue for buyers: additional and maximum pixel dimensions when operating in a Mac environment. It is useful to know what other resolutions a monitor can support, given the various Mac II video cards that support multiple resolutions.

The article briefly alluded to this situation by noting that “Autosync can accommodate multiple resolutions . . . Most of the monitors we looked at can also display the popular 832 x 640-pixel resolution.” But it did not say which monitors were capable of supporting additional pixel resolutions/dimensions in a Mac II environment.

What’s the compatibility between the autosynchronous monitors you reviewed and the various third-party multiple-resolution video cards on the market today?

Scott Pector
Naperville, IL

You’ll find information on the compatibility among several third-party cards and various display timings and resolutions in Table 2 (“Compatible Monitors”) of the May ’92 lab report “Chasing Rainbows: Accelerated-Video Cards” (Buyer’s Guide page 16). — MF

Business Plans
In “How to Succeed with Business Software” (June 92, Buyer’s Guide page 4), you mention two commercial business-plan programs. There’s also a relatively new shareware offering called Business Plan Master, which enables users with word-processing and spreadsheet programs to write a complete business plan. It’s available through most of the normal shareware outlets, including CompuServe.

David A. Works via ZifNet/Mac

In Praise of MultiDisk
Has Steven Bobker ever used MultiDisk, the hard-disk soft partitioner he calls “the weak link” in ALSoft’s Power Utilities package (“Collective Bargains,” June ’92, page 217)?

I’ve used MultiDisk since early 1989 and haven’t had a single problem, despite several system upgrades (including System 7). It has never lost any data or failed to find a partition. MultiDisk allows partitions to be locked, encrypted, password-protected, set to auto-mount, and even resized. It can also create partitions over discontinuous blocks. MultiDisk is one of the best Mac utilities ever created and one of the best reasons to get Power Utilities.

Murray Sagal
Moose Jaw, SK

Canada

MultiDisk is a soft partitioner and thus can’t give you the performance advantages and other benefits (such as better data integrity) that hard partitions offer. The best soft partitioner, which happens to be MultiDisk, is not as good as any hard partitioner I’ve ever used. — SB

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---

*CIRCLE 201 ON READER SERVICE CARD.*
The Sound and the Fury

As a musician and MIDI evangelist, I was glad to see the three music-software reviews (Pro Tools [page 89] and SoundEdit Pro and AudioTrax [page 66]) in the September issue, but I was very disappointed after I read them.

Your evaluation of Pro Tools was far too optimistic. Although the concept is very exciting, the software is not only inordinately buggy but much of the user interface is also very badly thought-out.

The reviews of SoundEdit Pro and AudioTrax contained some factual errors. Although SoundEdit Pro can open high-fidelity 16-bit files, it can’t play them on any existing 16-bit hardware, so they come out sounding just like old-fashioned 8-bit, 22-kiloherertz files. Older versions of SoundEdit could do exactly the same thing. And the program’s performance is quirkier than the reviewer would have us believe — the sound skips and jumps unacceptably under numerous circumstances, not just the one he describes.

AudioTrax can play 64 — not just 16 — tracks at a time. I also disagree that 8-bit audio is “barely acceptable” for voice-overs — from the Mac’s speaker, yes, but with decent outboard speakers, it is more than acceptable not only for voice but also for sound effects and even background music.

Reviewing Audio Trax and SoundEdit Pro together was an excellent idea, because they complement each other very well, but your reviewer seemed to miss the point of this synergy and merely complained that AudioTrax doesn’t provide any effects. In my experience, they are highly complementary tools for creating low-budget audio for multimedia.

Paul D. Lehman
via ZiffNet/Mac

Check Mate

I have been using CheckFree (“Check It Out,” September ’92, page 29) for three years and have had no problems with it. This service has become a great tool for me. I travel extensively, and the ability to schedule payments ahead of time is wonderful.

Also, you should check out your math: The $9 charge for every 20 transactions works out to $3.20 when you subtract the savings on postage. Try to find an accountant who will write 20 checks for $3.20 a month! Perhaps Andy Ihnatko needs to spend less time watching the Disney Channel and more on research.

Kenneth O’Neill
Bedford, TX

C’mon, Andy. If CheckFree’s our biggest problem as Mac consumers, maybe we don’t need a consumer advocate.

Andy’s biggest hassle with CheckFree seems to be the cost; he must have a deal with the postal service to deliver his mail free. By the time you add in postage and the cost of a check (my wallet checks, for instance, cost $20 for 200), 20 checks cost $7.80. That’s only $1.20 less than what you describe as CheckFree’s “phenomenally slick service.” That’s if you write your checks by hand, which means you either waste a lot of time duplicating effort or you use your Mac as a hat rack.

Laser checks are even more expensive, and you have to buy envelopes for them, so you probably would come out ahead using CheckFree.

People who have had delayed posting of payments and other such problems probably didn’t follow CheckFree’s advice: During the first month or so, send your payments early and then check with the merchant to see when it gets posted and use that information to time your payments. If Andy feels compelled to send all his checks at the last minute, you probably aren’t paying him enough.

Leslie Marsh Harber
Houston, TX

Your points are (a) valid and (b) nearly identical to what I wrote in my column. CheckFree certainly isn’t Mac consumers’ biggest problem — it’s QuickTime-savvy word processors that require 32 mgs of memory and four Rocket cards just to get past the title screen. — Al
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The Winning Platform

Two of the hottest issues of this political season — change and the economy — should be part of your own desktop-policy platform.

Nowhere in the Constitution does it say a word about computers; your Macintosh is not endowed with an inalienable right to democratic representation. On the other hand, the person sitting in front of your Mac — that’s you — is going to find life, liberty, and the pursuit of reliable backups a whole lot simpler if you make sure that the unelected officials in charge of your computer network are implementing policies that have your best interests in mind.

And as in the presidential campaigns, the key issues are familiar themes: the need for change and improving the economy.

Loose Change

Several policy issues revolve around the issue of change. In most cases, users operate with what you might call a loose-change policy, both because change happens serendipitously and because nobody’s willing to spend more than loose change to tighten things up.

How do you decide when it’s time to make changes in your Mac system? When is it time to upgrade your CPU? Should you opt for the latest and greatest upgrade of your applications? When should you switch to a competing application?

In a group of any size, there’s bound to be some political friction. On one end of the political spectrum are the liberal technocrats, whose Macs are in a constant state of flux — and chaos — thanks to a steady diet of buggy new software and hardware. At the opposite end are the ultraconservative Luddites, who favor stable, tried, and true — but hopelessly antiquated — products such as the 128K Mac and MacWrite 1.0.

The network manager — or whoever the involuntarily elected official is for your workgroup — has to manage the political rivalry between the different user parties. The most common solution to the schism between liberals and conservatives is the libertarian approach: It’s your desktop; you control your own destiny.

But the libertarian approach fails on several counts. It fails to ensure that the conservative users will get the best possible use from an expensive investment. It fails to prevent wanna-be power users from getting in over their heads to the point where they’re losing data and overly taxing the technical-support crew. And it totally fails if your work requires collaborative input from all parties.

Going for the Gold

At MacUser, our solution is to use a “Golden” system and a folder of “Golden” applications. The Golden System folder contains the latest officially sanctioned version of the system, including all officially sanctioned extensions, fonts, INITS, and so on. Likewise, the Golden Application folder includes the latest officially sanctioned version of all officially sanctioned applications.

All production-oriented work is done with Golden software only. Only problems that arise from Golden software are officially troubleshooting by our tireless network manager, Stephan Somogyi, who also ensures that all software in the Golden folders is legit — that we have the appropriate site license for each new version of anything that goes into these folders. Nothing goes Golden until it’s been thoroughly tested for compatibility with the rest of the Golden network at MacUser and at the various service bureaus to which we transfer files.

Anyone on the network is free to install other applications or to run their system under alternative system software, but anything that’s headed off their desktop has to be Golden.

This isn’t a perfect solution. After Microsoft Word 5 was released — but before it had been certified Gold — many of our editors upgraded immediately. Before dropping files onto our production server, they diligently opened the documents and saved them from within Word 4, because Word 4 was the Golden version. Word thought those files were version 4 files. Unfortunately, PageMaker knew the difference between a native Word 4 file and a pseudo-Word 4 file, giving our Golden system a severe case of hiccups (until we finally upgraded the Golden system to accommodate Word 5).

In Case of Emergency

The network manager should also formulate and communicate contingency plans for crisis management: What happens when things go wrong? Does your software entitle you to technical support from its publisher? Should users make the phone call, or should they route it through the network manager? Do your users know the phone numbers? Do they know what kind of information they’ll need to give the tech-support person on the other end? Do they know their applications’ names, versions, and serial numbers?
The Information Economy

The catchphrase of the industrial revolution was, “Time is money,” but information is money in the postindustrial age. And unlike the raw materials of the industrial era — manpower and natural resources — information costs money only once. It can be used and duplicated without additional expense. But like the zillions of kilowatts of solar energy ceaselessly pounding the earth’s surface, it has yet to be harnessed efficiently.

Harnessing information takes place on both a personal level and an organizational level. On a personal level, one of the best examples of unhamstrung information is the pile of business cards in your desk drawer neatly bound up by a rubber band.

In Japan you can buy a small, dedicated business-card scanner and drop a stack of cards into it; using optical character recognition, the device stores all the information on a floppy. Until such devices are widely available (or until business cards routinely come with computer-readable magnetic stripes on them, like those of credit cards), the publishers of PIM (personal-information management) software have an opportunity to bolster their business by providing such a service for you.

The PIM publishers make the mistake of trying to sell you PIM software. You don’t buy PIM software because you like PIM software; you buy it because what you really want is data. But none of the software publishers are trying to sell you that. Instead of just selling you an empty database, they should bundle a ticket in with the software that entitles you to send them a shoe box of, say, 500 business cards and get them back on a floppy. Or they might include a coupon good for a discount when you call your local Kelly Temp service to scan or enter that shoe box of cards in your own office.

Organizations also need to change the way they manage the flow of information. Ask any flight attendant on any airline that serves Las Vegas and San Francisco about Comdex, and they’ll tell you that their airline should schedule extra flights that week. But that information never reaches the people in charge of scheduling flights.

The role of computers — and employees — isn’t to simply amass and store data. The goal should be to turn each user’s desktop into an information dashboard. That’s the key to making your Mac a winning platform.
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A print spooler is a print spooler is a print spooler: Right?

When it comes to printing in the background there are plenty of spoolers to choose from. So why have over 150,000 Mac users chosen SuperLaserSpool? Because it supports more printers than any other spooler? Or because it's the only one that supports Apple Image Writers and HP Laserjets, Deskjets, and DeskWriters? Is it because SuperLaserSpool is compatible with many more Macintosh configurations? Or because it's compatible with virtually every Mac application? Because only SuperLaserSpool can spool color PostScript files? Or because it spools everything and anything faster than any other spooler? Could it be our exclusive LaserQueue desk accessory that lets you preview and prioritize documents, re-route them to another printer, or print to several printers simultaneously? How about our vaunted 24-hour toll-free technical support? How about our one-year, money-back guarantee? How about picking up the phone? Dial 1-800-666-2904. It's the right thing to do.
No one wants to be slow. Throughout humanity's experience of selling things to itself, few phrases have caused consumers to whip out checkbooks and wallets faster than this one: "Ours is faster." It doesn't matter what you're trying to sell — cars, antacid tablets, sacks of wet peat moss — if you can somehow suggest that shoppers buying your product can go to bed half an hour earlier than those who bought Brand X, bang, you have a sale.

So when someone in a school yard tries to use that magic phrase on you, be afraid. Be very, very afraid. It's usually that most insidious of lies, the lie that has a nugget of truth hidden inside it somewhere. The key to evaluating speed claims is in recognizing what kind of speed the manufacturer is talking about and then deciding whether you can actually reap any benefit from it. I can think of at least three technologies where the fastermust-be-better argument tries to separate you from your sawbucks: modems, accelerators, and new CPUs. Let's look at them in the approximate order of the amount of money you could end up wasting.

Probably the most blatant speed-weasel ing is in advertisements for modems. With connect charges for some commercial online services running at $12.50 an hour and up, telecommunications is one area in which time truly is money. The money you spend for a faster modem will almost certainly be absorbed by the money you save on your monthly bill eventually, but be sure you're really buying a high-speed modem. If the modem features V.32 or V.32bis, it's the real McCoy. Those are two international standards for high-speed telecom, with V.32 offering speeds as high as 9,600 bps and V.32bis going all the way to 14.4 Kbps. If the ad reads "9,600 bps! $28!!" without mentioning these standards, though, hang on to your money. One popular dodge is to advertise a high-speed fax modem as being 9,600 bps, but the top speed applies only to fax transmission; as a standard data modem, it might give you a top speed of only 2,400 bps. The second weaselish technique is to advertise the phrase "9,600 bps!" in big letters and the word "throughput" in tiny type nearby. Don't be fooled by a modem that touts V.42bis data compression (unless it also features the V.32 or V.32bis modulation protocol), which theoretically can transmit four times as much data at 2,400 bps as an ordinary modem can; in reality the speed increase is anywhere from nothing to two times normal, and anyway, It Just Ain't the Real Thing.

Even if you do have the real thing, don't count on being able to use the higher speeds with commercial pay-as-you-play-on-line services. As of this writing, America Online offers only 2,400- bps access and CompuServe's access system makes any speed greater than 9,600 impossible. CompuServe also doubles its usual 2,400-bps hourly charges for 9,600- bps users. It's still a bargain — operate four times as fast for only twice as much — but if you spend most of your time idly reading messages as opposed to downloading files, you could actually wind up paying more every month.

With these modem-speed claims, it's a simple situation; you recognize a company's blatant attempts to flimflam you, so you avoid "em like glazed yams on Thanksgiving. When the subject is speed enhancements for your Mac, things get dicier. There's a bewildering array of speed enhancements for any Mac — you can pay anywhere from tens to thousands of dollars for them, and about all of them actually work to some extent.

The first thing a salesperson is likely to shove in your face — naturally, the most expensive of the lot — is an accelerator board. Whether you plug it in as an expansion board or clip it on as a daughterboard to an ancient Mac, it's a self-contained microprocessor that takes the place of whatever brain was originally installed in your computer. All too often, salespeople tout the speed of the new microprocessor as the sole sledgehammer proof that you'd be a complete fool to stick with your old hardware. There's a grain of truth to this. On a test bench, a 33-megahertz 68030 can work much faster than a 16-mega hertz model, but to paraphrase a Vulcan proverb, "CPU speed is only the start of enhanced performance, not the end." First of all, the speed of a CPU is only one component of The Big Picture; many other elements of your system can have a serious impact on your Mac's performance. Second, you've got to take into account what I call The Duhhh Factor.

The Duhhh Factor

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loads; otherwise, the Duhhh Factor will rob you of most of the benefits of the speed enhancement. For most of you, as you go about your business doing non-intensive word processing, database, spreadsheet, and all those other things you promised your boss, spouse, or both you'd do with your computer, the Mac spends more time waiting for you than you spend waiting for the Mac. Overall system performance of your Mac will shoot into the stratosphere if you upgrade to a 50-megahertz 68030, but that gain can be completely annihilated when you spend two seconds at the end of a sentence trying to figure out how you should finish the paragraph. Instead of waiting for you in 25-megahertz cycles, it's waiting for you in 50-megahertz cycles. Right here, trying for a good joke that never came, I would've wasted roughly $1,800 in upgrades.

A variant of the faster-processor sale is the different processor. The 68000 chip began the 68020, which fathered the 68030, and now we have the 68040. With new processors comes the usual rumbling chant of "More power! More power! More power!" Generally, though, greater speed isn't the primary benefit of the Latest CPU. For instance, adding a 68030 to your Mac II will probably speed things up, but the chip's true benefit will be your newfound ability to use 32-bit addressing and virtual memory under System 7.

Equally confusing to some is the prospect of a math coprocessor. Call it a floating-point unit, call it a 68882 chip — whatever its name, for those Macs that accept one, it'll be wonderfully cheap and powerful for a few people and only wonderfully cheap for everyone else. It's a processor dedicated to the task of deep math operations, performing floating-point arithmetic much faster than your CPU can and freeing it up to work on other things while the 68882 chugs at the answer. Unlike an accelerator board or a new processor, it doesn't uniformly enhance system performance. As you might guess, the benefits are striking if you're doing lots of math-intensive stuff — working with spreadsheet programs comes to mind, but don't forget that graphics programs such as Illustrator, FreeHand, and especially Photoshop do extensive number twiddling — but the speed increase will be almost negligible if you're chiefly a database search-and-retrieve type.

If you upgrade to a faster processor or a different processor entirely, add a cache card and a math coprocessor, then surely you'll have all the bases covered, won't you? Negatory. The benefits of all that stuff you bought can be completely offset by something as simple as having too little memory. Because most applications make up for low memory by keeping elements of themselves on your hard disk until needed, a Mac rocketed to Earth from the dying planet Krypton but containing only 4 megs of RAM is always in danger of having its doors blown off by a far less capable machine that has more memory. Always remember, then, that no matter how much you spend, no matter how much junk you install and how powerful your final system is, any speed increase is only hypothetical until you do your daily business with the upgrades installed. It's vitally important to try out a product with the exact same software you count on every day, working on the exact same documents with the same amount of RAM. You'll read all kinds of boasts in a product's literature — many drystones, that long for a sieve, so many MIPS — but these are just dry tests that may reveal nothing about how well the product performs in real life. Furthermore, a True to Life test may bring to light incompatibilities between the product and your software. It's a true bummer to get your Mac Classic back from the dealer after a permanent upgrade has been installed and then find that the only software you can run is the Finder and sometimes, maybe, the Calculator DA.

My Two Cents' Worth

The lesson to be learned from all this is that you should treat every speed claim with the utmost suspicion. Never pull out the checkbook or start reading off credit-card numbers until you've tested whatever it is with the software and files you use every day and, if applicable, on a hardware configuration similar to the one you use.

It's just as important to recognize that a gizmo that makes your Mac work faster won't necessarily make you work faster. You have to find out where the bottlenecks in your system are and crush them mercilessly. You can solve some problems by upgrading to a Quadra 950. You can solve others more cheaply by buying a dorm fridge for your office so you won't have to go downstairs to the kitchen every time you want a Coke.
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Networking

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This affordable, easy-to-install full-page display plugs directly into the SCSI port of your PowerBook, Classic, Classic II, SE or SE/30 computers. Its 15" full-page display features built in acceleration that lets you race through graphic displays. Choose between 72, 80 and 88dpi. Create a virtual two-page desktop to power through multiple page tasks. Sigma Designs #00571

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PLI 80MB 2.5" Totable Drive
Built for people on the move, PLI Totable drives offer 80 or 120MB of lightweight storage for the Macintosh PowerBook. Powered by AC outlet or an optional rechargeable battery pack, these rugged 2.5" drives support the PowerBook's power saving features. Totables are available in PowerBook gray and deliver whisper-quiet operation. Supported by PLI's renowned toll-FREE technical support, BBS and 30-day money back guarantee, you can't go wrong with the Totable Drive from PLI. PLI #05789

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$158
External Full-Cycle Battery Charger for PowerBooks 140/170
The Lind External Full-Cycle Charger not only charges the PowerBook 140/170 ni-cad battery but optimizes full performance and long life by giving you the option to discharge the battery completely before the charging cycle begins. Lind Electronic Design #05354

$198
PowerModem 24/96 SR Internal
The PowerModem is not only an internal send/receive fax modem, but it's also a 2400bps Hayes-compatible data modem. The Fax is Group III compatible, sends at a full 9600bps and receives transmissions at 4800bps. PSI #0494

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$798
PLI 120MB Totable Drive
Work More Productively

WordPerfect 2.1
The new WordPerfect 2.1 is System 7 Savvy! WordPerfect 2.1 also gives you full placement of graphics in your text and a color drawing program for modifying imported artwork without ever leaving the program.

ClarisWorks
Increase your office productivity. With ClarisWorks you can quickly create professional-looking documents that combine colorful graphics with a variety of page layout options, including multiple columns and linked text frames. ClarisWorks features interactive environments which provide seamless integration of tools.

Microsoft Excel 4.0
You've been hearing about it for years. Now take the next step and become an Excel user yourself. You'll enjoy all the ease of use and power that have made Microsoft Excel the leading spreadsheet for the Mac. Our Mac sales advisors are standing by.

Claris FileMaker Pro
Take control of your computer data! FileMaker Pro, the extended flat file manager from Claris, puts powerful file management at your fingertips—and you don't have to learn a complex database programming language. Claris FileMaker Pro Competitive Upgrade

Microsoft Word 5.0
Microsoft Word provides depth of function and ease-of-use like no other word processor on the market today. The all new version 5.0 makes it even easier to apply the full power of Word to the chores you do every day.

Claris FileMaker
Take control of your computer data! FileMaker Pro, the extended flat file manager from Claris, puts powerful file management at your fingertips—and you don't have to learn a complex database programming language. Claris #03478

Accountant, Inc. 3.0
Accountant, Inc. 3.0 is the fully integrated accounting system that's perfect for any type of business—retail, manufacturing, service or professional. It provides reports and performs analysis like no other software.

Lotus 1-2-3
This, the latest version of the industry-standard spreadsheet, has been completely redesigned and optimized for Macintosh. Now Lotus 1-2-3 is even more powerful and easy to use than ever! You'll find new innovative spreadsheet capabilities, such as in-cell editing, true 3D worksheets, 1-2-3 Classic Menu and much more.

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Aldus IntelliDraw
New from Aldus, IntelliDraw is an exciting new type of drawing program that gives you an easy new way to visually experiment, refine and draw your ideas. Full text and drawing options provide the flexibility you need. Aldus #05481

DesignCAD 2D/3D
DesignCAD is a revolutionary and professional computer-aided design and drafting package that provides complete 2D drafting and 3D modeling in one package. It's designed for engineering (mechanical, architectural & electrical), animation, desktop publishing and multimedia. DesignCAD, Inc. #04180

ADDmotion II
ADDMotion II's ease of use and price make animation and multimedia available to Mac enthusiasts and HyperCard users. Exports QuickTime movies and includes HyperCard 2.1. Motion Works #00194

PrimeTime CD
PrimeTime CD is a collection of media and clips for use with PROmotion and ADDmotion II. The CD includes a media browser containing over 100 actors (in both color and black-and-white), background props and over 120 sound clips covering business, education and entertainment. Motion Works #01038

PROmotion w/PrimeTime CD
With PROmotion's 24-bit color paint, animation and sound editor you can make QuickTime movies, storyboards and presentations quickly and easily—even if you can't draw. It's the perfect choice for business and artistic professionals. Includes extensive System 7 support, Sony Print to Video and PrimeTime CD-ROM. Motion Works #01039

Adobe Premiere 2.0
Produce attention-grabbing QuickTime video movies on your computer. Adobe Premiere is a simple yet powerful user interface for visually combining QuickTime video footage, audio recordings, animations, still images and graphics to create new QuickTime digital effects. Utilizes plug-in filters, including those for Photoshop. Adobe #05930

MacroMind Director 3.1
Winner of the MacUser Eddy Award; Info World's Buyer's Assurance Seal and MacWeek's Target Award, Director offers one of the most complete authoring environments for creating interactive presentations that can be controlled by the user or viewer. New version 3.1 has full QuickTime and System 7 support! Macromedia #01039

Expert Color Paint
The latest in professional, yet easy-to-use painting tools—at an incredible price. Expert Color Paint is a fully equipped desktop art studio that gives you true 32-bit color (that's 16.9 million colors and grayscale!), fully customized tools, virtual memory, multiple undo's and System 7 support. Want more? Included is a free clip art disk (a $24.95 value). Softsync, Inc. #06951

JAG
JAG is for anyone concerned with the look and visual impact of the images and animations they create. It's appropriate for use with all color paint packages, 24-bit photo retouching software, 2D animation and multimedia toolkits, and 3D modeling and rendering environments. JAG is perfectly suited to the needs of advertisers, animators, graphic designers, illustrators, multimedia producers and 3D enthusiasts alike. Raydream #04150

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$452

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QuickMail 2.5.1/10 User

With QuickMail 2.5.1, the days of missed messages, expensive overnight services and "while-you-were-out" slips are all over. It connects Mac and PC users on AppleTalk, NetWare, Banyan, 3Com, LAN Manager and other networks. CE Software #01689.

**NEW**

AppleShare Server 3.0

AppleShare Server 3.0 is the premier file sharing software for the Mac. This new version meets the security, performance and multitasking requirements of larger workgroups and departments. Apple Computer Corp. #05475.

$998

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 EtherMac Cards

EtherMac cards provide an Ethernet interface for any Macintosh with an expansion slot. They're available with up to three media connections on board: 10Base-T, thicknet and thinnet. They come standard with a 16K RAM buffer and support both the Apple Ethernet installer and automatic software installation under System 7. Farallon #05931.

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Please call for complete selection.

**NEW**

NetWare for Macintosh: 5-User

NetWare is the industry leader in complete connectivity solutions. Now you can get the power of Novell products like Novell NetWare at prices you won't find anywhere else. NetWare for Macintosh V3.01 enables Macintosh users on a NetWare V3.11 network to access NetWare file and print services and routing services via AppleTalk. Ovelo #11368.

$332

DaynaSTAR MiniHub

MiniHub is a non-intelligent hub for connecting network devices using twisted-pair (10Base-T) Ethernet wiring. With it you can communicate between various types of computers, printers and servers. Dayna Communications, Inc. #04911.

$238

DaynaPORT SCSI/Link

DaynaPORT SCSI/Link is a small Ethernet connector box with a compact, portable design, ideal for Macintosh PowerBooks and portables. Both 10Base-T and thin-Ethernet cable systems are supported. Dayna Communications, Inc. #05188.

$294

LanRover/L

Connect to your AppleTalk network over standard telephone lines! LanRover/L is a stand-alone communications server for Apple Computer's AppleTalk Remote Access which allows PowerBook users and users of desktop Macintoshes running AppleTalk Remote Access software to call and connect to an AppleTalk network.

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CIRCLE 208 ON READER SERVICE CARD.
**The Evolutionary War**

Consider the labyrinthodont of the Devonian age. This distant relative of today's garden toad had three eyes, a skull armored like a tank, and teeth that must have been designed by a committee (the effect was apparently very much like having a mouthful of brain coral). Laby had features of both land and aquatic animals and was as big as a horse. Over the course of time, the labyrinthodont, like so many of nature's bolder experiments, became extinct — the same fate that many people feel should befall computer software designed along the same principles.

A distressingly large number of application programs are like the labyrinthodont: neither fish nor fowl, feature-laden, and unfocused. We have word processors with spreadsheet features, spreadsheet programs that do word processing, database-management programs that do both, and integrated "works" programs that do a little of everything — badly. Of course, there are advantages in having all those capabilities bundled into one product, but there are also disadvantages, and it is possible to keep the former and lose the latter.

A new species of software — small, focused applications that do one thing and do it very well — could eventually supplant the multipurpose programs of today. But this new species faces some tough environmental challenges.

The chief advantage of integrated applications is that they are integrated: You don't have to leave the application or the document to do something different. Their chief disadvantage is that you wind up settling for less when you use one of these amphibians. A word processor sold as a feature of a spreadsheet program is simply not going to be the most highly evolved word processor that money can buy.

What needs to happen, many would argue, is for integrated applications to fade into extinction and be supplanted by tools that let users integrate capabilities of their choice. Instead of buying integrated applications, users would buy the individual applications they needed. These applications, purchased separately from different vendors, would function together as smoothly as the components of ClarisWorks or Microsoft Works or WhateverWorks. Current applications won't work together that way. We will need new kinds of applications: smaller, more focused applications that users will be able to integrate according to their own particular needs and working style.

Such applications will have to do what they do very well, because their vendors won't be able to sell them for the length of their features list. And they will have to be significantly less expensive than today's amphibians, because users will be buying more of them.

That's the model, and Bill Gates' vision of document-centered computing and the visions of Dave Winer at UserLand and the AppleScript people at Apple are all merely different strategies for implementing it. There is no argument about the goal: to give users control of the integration of small, focused software components.

Making it happen will require three things: support at the operating-system level for that kind of integration; tools that help users integrate the applications; and the small, focused applications themselves.

We've got the operating-system support in System 7, implemented as several levels of interapplication communication. This is solid and will only get better.

We've also got some integrating tools. UserLand Frontier broke the ground in this area by enabling users to script applications and tie several applications together via scripts. Although Frontier is too techie for most users, it and subsequent tools will evolve toward a more user-managed style of integration. AppleScript will play a big role in these developments. We will need tools ranging from serious scripting systems such as Frontier to completely invisible tools that users can drop into their System Folders and forget about. By this time next year, nearly all the pieces could well be in place.

What will still be missing from the equation are those small, focused applications themselves. Some niche products already fit the definition: word tools such as spelling checkers, for example. And there are examples of small, focused add-ons to existing products — Quick XTensions are a good example of how small programs can provide specific functions and be integrated into one work environment. But there does not currently exist such a thing as a small, focused word processor that can be invoked within another application. In the major software categories, featureitis is epidemic. We are still waiting for these applications.
With Symantec Anti-Virus for the Macintosh keeping watch, you can leap from disk to disk and file to file, fully protected.

Life on the Mac is a breeze when you use the best-selling, highest-rated virus detection, protection, and repair program. That’s because SAM 3.0 does more than stop every single Macintosh virus known today. It also seeks out any virus-like behavior—and stops it cold—before it has a chance to corrupt your data.

All, without lifting a finger. That’s because once installed, SAM keeps constant watch over your system. Giving you the freedom to dive into your work with reckless abandon.

Whose Fault Is It?

Don’t blame the application developers for the lack of these small, focused applications. Blame instead software retailers, computer magazines, and users like yourself.

The retailers? They’re not set up to sell small, focused applications. Their problem is shelf space.

Small, focused applications mean more applications. Fine with me, you say, and so do I. More applications mean more competition, more choice for users, and more opportunities for software developers. But in the computer store, the battle for shelf space is already bloody. A significant increase in the number of applications will completely break the system. These new applications will not survive in this hostile environment; to make it, they will require new channels of distribution, even new models of distribution.

Well, maybe not exactly new. Selling software through mail order is not a new idea, and mail order gets around the shelf-space problem: no shelves. Several software catalog companies are doing well today. Mail order has other advantages over store sales, if the mail-order companies can identify the customers. And there’s the rub. Stores can count on walk-in traffic, but mail-order firms are invisible unless they advertise or send catalogs to people whose addresses they get from lists. Are the lists good? And what about potential customers who don’t show up on lists?

One area in which the problem of finding the customers is not so great is development software. By a convenient coincidence, the software-development market has in recent years seen the advent of small, focused development tools—in small numbers now but threatening to proliferate wildly. These are not the small, focused applications I’ve been discussing and that are yet to come to the consumer market; rather they are the objects of object-oriented programming. The promise of object-oriented programming is component software, plug-in tools, rapid development from off-the-shelf parts. The question is, What shelf? Where do I as a software developer get these objects, or if I’ve got some objects I’d like to sell, where do I find customers for them?

One company making good on the promise is NeXT, which has arguably the best object-oriented development environment currently available on any computer and which now distributes a catalog of objects to its developer customers. The catalog includes more than 100 objects, from dozens of companies, that do such things as automatically feed market data into spreadsheet programs. This approach could well represent a significant change in how software is distributed in that particular market.

Catalogs and advertising-based mail order will certainly figure somehow into the future of small, focused applications. Other, more-innovative distribution plans may develop too. Pundit Esther Dyson regularly brings industry leaders together at her conferences to brainstorm about the distribution problem. And one developer and entrepreneur I talked with recently is approaching the distribution problem by redefining it: His company helps customers find the software they need. He currently works with large corporate customers who can buy lots of software, but he hints that it would not be impossible to set up a system wherein individual customers could search for exactly the software they need. A customer-driven market? Sounds subversive, doesn’t it?

But why blame magazines? Well, the problem is that we writers and editors and lab technicians are all set up to count, check off, and compare products on the basis of their features. There’s a lot more to reviewing software than simply tallying features and listing them in a huge table. Nevertheless, such lists are a common part of the current review process, and small, focused applications can’t help but look pretty lame when we evaluate them this way. The approaches we currently use in evaluating applications or even in covering them as news are simply not appropriate to this new kind of small, focused application.

Which leads to your part in all this. Currently, you ask the press for feature tables and you ask software vendors to add features to their products. But just as we need to be ready to review small, focused applications differently, you need to be ready to judge them fairly. And be ready to buy and use them. Small, focused applications will succeed only if users and the press recognize that they are not just failed labyrinths. In all the background noise of “revolutionary” developments in the computer industry, we must be prepared to recognize a genuine case of evolution when it appears.
Out of the blocks to number one in a scant six months. Few things this side of NASA have ever experienced this kind of blast-off.

Because nobody else has figured out how to combine word processing, graphics, spreadsheet, charting, database, and communications quite like ClarisWorks. No awkward modules, no hidden speed traps.

Simply, ClarisWorks has caught on so fast because it’s so easy to catch on to. All the tools you need are always right there. And because it doesn’t devour memory, ClarisWorks still leaves a PowerBook with room for volumes.

But don’t just take our word for it. “ClarisWorks is now the yardstick against which other integrated software programs will be measured,” lauds MacWeek. “A standout...a breakthrough in price and capability,” raves MacUser.

Of course, the best way to see why ClarisWorks soars above the rest is to strap yourself in at your authorized Claris dealer. And, if you buy ClarisWorks now, you’ll get Quicken, the world’s best selling personal and business financial software – free.

Just call us at 1-800-3-CLARIS.

Then get your hands on ClarisWorks. And blast through work.
The image is priceless.

The clear superiority of solid ink technology is becoming legend.

Vibrant, precision color is finally here, and with JOLT™ it's also finally affordable.

Perhaps more surprising is that the image above is even better than this ad can show you, because this magazine uses a liquid ink which bleeds when it hits the paper. Solid ink holds its shape for noticeably better resolution.

Not only did Dataproducts pioneer the development of solid ink technology, our JOLT is also $3000 less than the only other color solid ink Adobe® PostScript™ Level 2 printer on the market. It's the world's lowest priced color solid ink printer.

Even more impressive is JOLT's flexibility. Because of the non-dispersing nature of solid ink, it can not only print on plain paper, but on virtually any paper surface, giving you immense lati-

Claude Monet, Japanese Bridge at Giverny. 1900.
Fortunately, the printer isn't.

tude when creating documents, presentations, publications and color comps.

And because of its solid ink technology, JOLT prints more readable text, even at extremely small point sizes.

Finally, JOLT is also more economical since it doesn't require any kind of special paper.

Imagine. Now you can produce 16.7 million different hues with the precision and vibrancy of solid ink technology, all at a remarkably low price.

So see your Dataproducts dealer today for a JOLT demonstration or call 1-800-334-3174 for more information.

Then stop by and check out JOLT, because when it comes to color printing, seeing is believing.

Dataproducts®
The high performance printer people.

Dataproducts trademark of Dataproduction Corporation. All rights reserved. Adobe and PostScript are registered trademarks of Adobe Systems, Inc. Collection, 1983, Art Institute, All rights reserved. HP and PostScript are registered trademarks of Hewlett-Packard.
Graphing and charting capabilities

The graphing and charting capabilities of 1-2-3 make it the best Macintosh spreadsheet for presenting data, because, unlike Microsoft Excel, graphs and charts in 1-2-3 are in the same files as your worksheets. So you can make one-click graph type changes, pull objects across window boundaries to the worksheet, dynamically link chart titles to cell contents, and shrink charts to small icons on your worksheet.

Unified Work Environment

Our unique Unified Work Environment lets you manipulate data, text and graphics all in the same file with one set of menus and only one set of tools. Excel requires you to go into each worksheet file separately to manipulate each element.

In-Cell editing

Only 1-2-3 offers In-Cell editing so you can enter a formula directly into a cell for faster, easier editing.

True 3D capabilities

Only with the true 3D capabilities of 1-2-3 can you easily consolidate multiple spreadsheets into one file without having to link the files. 3D allows all spreadsheet functions to be performed through multiple worksheets just as they are performed down rows and across columns.

Database functionality

1-2-3 for Macintosh provides powerful internal database functionality, as well as superior and innovative built-in external data access to all major databases via DataLens.

Classic menu

1-2-3 is the clear choice for DOS spreadsheet users moving to Macintosh because only 1-2-3 offers the traditional Classic menu, which makes it easier for you to access familiar 1-2-3 commands and run macros already written for 1-2-3.

1-2-3 is easier to use than Excel. Prove it to yourself.

1-2-3 is not only the world's easiest-to-use Macintosh spreadsheet, it also provides superior technology and advanced spreadsheet functionality. Prove it to yourself. Buy a copy from your local dealer. Or call 1-800-TRADEUP, ext. 7044 for a free working model. Excel users be sure to ask about our special upgrade price.

Lotus 1-2-3 for Macintosh

*In Canada, call 1-800-GO-LOTUS. **Please have your credit card and product purchase ready when you call. © 1982 Lotus Development Corporation. All rights reserved. Lotus, 1-2-3 and DataLens are registered trademarks of Lotus Development Corporation. Classic is a registered trademark licensed to Lotus Development Corporation. Microsoft is a registered trademark of Microsoft Corporation. Mac and Macintosh are registered trademarks of Apple Computer, Inc. Adobe Type Manager and the ATM logo are registered trademarks in the United States of Adobe Systems, Inc. Incorporated.
Elephants and mice:
In September, we told you about little Quorum Software Systems, which had filed a preemptive lawsuit against Apple's intellectual-property gestapo to prevent Apple from suing it. Well, apparently the ruse worked. Apple has settled with Quorum and backed off from any threats against the smaller company. If only Microsoft had been so clever . . . .

By Russell Ito

News fit to print . . . from Compaq and QMS. Compaq's first network printers, the Pagemarq 15 ($3,999) and the Pagemarq 20 ($5,499), are 15- and 20-ppm models, respectively. They each use an AMD 29000 RISC chip, either 16 megahertz (the 15) or 20 megahertz with an additional 128K instruction cache (the 20). The printers are Adobe PostScript Level 2 units, with 4 megabytes of RAM expandable to 18 megabytes (the 15) or 20 megabytes (the 20). PCL 5 and automatic emulation switching are also supported. Resolution choices include 800 x 400 pixels, 400 x 400 pixels, or 300 x 300 pixels with Compaq's Print Enhancement Technology. The Fuji-Xerox engines in the Pagemarqs can handle paper as large as 11 x 17 inches, and the 20 can hold 1,500 sheets (the 15 holds 750). LocalTalk, parallel, and serial ports are standard, with Ethernet as an option. Other options include an internal fax modem. 800-345-1518 or 713-370-0670. QMS has two new printer models: the ColorScript 210 ($4,995) and the ColorScript 230 ($7,995). These 300-dpi, thermal-wax-transfer printers each use a 25-megahertz Intel 80960CA RISC chip and are QMS' first color printers to use the company's Crown architecture. The 230, which can print full-bleed prints as large as 11 x 17 inches, comes with 13 megabytes of RAM. The 210, which can print on pages as large as legal size, comes with 8 megabytes of RAM. Each printer is upgradable to 32 megabytes. The ColorScripts have QMS' emulations of Adobe PostScript Levels 1 and 2 plus HP GL, with automatic emulation switching. LocalTalk, parallel, and serial ports are standard, with optional Ethernet. Each printer has 65 fonts, including some display typefaces. QMS has also modified the Mitsubishi engine in the model 210 so it can print on plain paper. 800-523-2696 or 205-639-4400.

Up to Date . . .
Andrew Tobias' Managing Your Money 5.0 is the 1993 edition of Meca Software's personal-finance package. Enhancements include password protection, improved saving features, and Quicken 3.0 import. 800-288-6322 or 203-256-5000. $79.95.

Sketch! 1.5 is a significant upgrade to Alias Research's 3-D-illustration package. Expect faster screen redraws and rendering, direct import of FreeHand files, and the ability to cut holes in objects. 800-447-2542 or 416-362-9181. $995.

WealthBuilder 2.0 is a major upgrade to Reality Technologies' investment-planning package. New features include on-line investing support and more charts. 215-387-6055. $169.95.
Cardless Color Tricks for Quadras

Resolution and bit-depth switching on the fly, 24-bit color, and — look, ma, no card! Radius is now shipping its 20-inch PCD/20 PrecisionColor display in a configuration called the PCD/20S, which includes advanced imaging software optimized for a Quadra’s built-in video.

The PrecisionColor software, available separately as well as in the PCD/20S bundle, consists of three applications — Dynamic Desktop, Dynamic Color, and ImpressIt.

Dynamic Desktop, which is specifically for Quadras, lets Quadra users with PCD/20S displays switch among various resolutions, including 1,152 x 870 pixels in 8-bit color, 832 x 624 pixels in 24-bit color (for still images), and 640 x 480 pixels in 24-bit color (for video or animated presentations), on the fly, using internal video.

Dynamic Color lets PCD/20S users select color temperatures from 2,500 to 15,000 degrees Kelvin to simulate a variety of lighting conditions — a helpful feature if you’re designing materials to be used specifically in daylight or fluorescent light.

Action-Packed Presentations

Maybe you’ve thought about presenting something more lively than slide after slide of bulleted lists, but multimedia-presentation tools seem too daunting. Take heart: Macromedia’s Action! 1.0 for the Macintosh lets you add motion, sound, and interactivity to your presentations without performing complex frame manipulation.

Instead of frames, Action! uses scenes as its primary elements. A scene includes text and objects you draw or import. You describe object actions with the Action tool, add digitized sound with the Sound tool, and synchronize object motions and special effects on the Timeline. You can turn objects into buttons that you click on to go to other scenes, or you can use a VCR-like control panel to navigate within and among scenes.

In addition to tools, Action! has lots of scene-building blocks. The ClipMedia library provides premade graphics, sounds, and animations, and you also get ten families of scene templates in different styles — just substitute your own text or objects and watch the action.

If you import slides created in a package such as Persuasion or PowerPoint as a series of PICT files, Action! can automatically separate slide elements into objects to be animated. You can also import Excel charts, AIFF and SoundEdit sounds, PICS animations, and QuickTime movies. But don’t try importing from the Windows version — Action! presentations don’t run across platforms.


Now Up-to-Date Update

Like “modern” art movements, a program with up-to-date in its name had better not become old news. Living up to this implicit promise, Now Software is releasing version 2.0 of Now Up-to-Date (NUD), its personal and workgroup appointment scheduler, less than a year after the debut of version 1.0.

In the area of workgroup schedule sharing, version 2.0 provides improvements for mobile users and large organizations. For users who sometimes work disconnected from the NUD server, version 2.0 adds the ability to create and modify public events, not just private events, while you’re off-line. Other improvements for mobile users include multiple private-event categories and calendar compatibility with the Sharp Wizard.

Large organizations will benefit from the ability to connect simultaneously to multiple calendar servers and to view all events from one personal-calendar file.

In the personal-use area, NUD 2.0 has added integrated To Do lists, the AlarmsClock menu bar from the Now Utilities collection, WYSIWYG appointment-book printing, more text per event description, and — for obsessively up-to-date types — the ability to schedule events in one-minute increments.

Apple’s Kinder, Gentler Desktop

Yes, there are Mac users for whom the Finder can be confusing — or downright dangerous. Parents, teachers, and others who share Macs with young or novice users will appreciate the safeguards built in to At Ease, Apple’s new System 7 extension for protecting the Finder from those who don’t understand its power.

At Ease hides the Finder by covering it with a simple desktop that includes only a Documents folder and an Applications folder. Documents and applications are represented by large buttons, which users click on just once to open or launch them — and which can’t be moved, renamed, or deleted.

To escape from At Ease and go to the Finder, users must know the password specified by the computer’s primary user. The primary user also determines which applications appear in the At Ease Applications folder and can require At Ease users to save documents only to a floppy disk or to a remote file server.

At Ease comes with Mouse Practice, an application that teaches novices how to use a mouse. In the U.S., it also includes a year of toll-free telephone support for primary users who aren’t completely at ease with At Ease.

Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014; 800-776-2333 or 408-996-1010. $59.

Apple’s new At Ease application hides the Finder with a simpler desktop that prevents users from moving, renaming, and deleting files — a boon for parents and teachers.

Easy Image Editing from Caere

Now that low-cost color scanners and printers have removed some barriers to everyday use of computerized color images, it’s time to knock down one more barrier: the steep learning curve of most image-editing applications. Caere’s new Image Assistant program aims to simplify the entire process of capturing and using 24-bit color images while still providing high-end image-editing features.

The image-capture part of Image Assistant provides the one-step scanning you’d expect from the maker of OmniPage Direct. With an Apple, Epson, HP ScanJet, Microtek, Ricoh, or other TWAIN-compatible scanner, it can automatically detect images; determine if they’re line art, gray scale, or color; straighten and crop them; adjust brightness and contrast; set the appropriate resolution; and filter out background noise.

For working with images, Image Assistant provides two modes. In Assist mode, you get dialog boxes that show a range of results for adjusting a selected piece of your image. In Standard mode, you get a set of image-creation and -editing tools. Output controls range from the ultrahelpful (settings optimized for particular printers, demonstrative dialog boxes for fine-tuning) to the advanced (automatic or user-specified angles and ruling for four-color separations). And you can export to Windows; Caere is shipping a fully compatible Windows version of Image Assistant concurrently with the Mac version.

Caere Corp., 100 Cooper Court, Los Gatos, CA 95030; 408-395-7000. $495.

Apple Loses Appeal
SAN FRANCISCO, CA — Apple Computer may have created a time machine. In early August, U.S. District Judge Vaughn Walker rejected Apple’s request to reconsider his April ruling that essentially gutted Apple’s “look and feel” suit against Microsoft and HP. In the April decision, Walker ruled that most of the elements in Apple’s suit were covered under Apple’s prior agreement with Microsoft or were not protected under copyright at all. By rejecting Apple’s request, Walker returned the case to its mid-April status.

Recession in the Valley
SILICON VALLEY, CA — The recession continues to rumble through Silicon Valley. Symantec, after suffering a fiscal quarter that failed to match expectations, launched a restructuring that included laying off 10 percent of its work force — approximately 100 people. Meanwhile, Reference Software, maker of Grammatik Mac, has seen the grammar-checking market turn sour and has laid off 50 people, or 40 percent of its employees. And Apple may not be far behind: With aggressive pricing reducing its profit margin per unit, Apple is rumored to be considering another restructuring that may include 700 to 800 layoffs.

Apple Bans CFCs
CUPERTINO, CA — After junking its signature white box to be environmentally correct, Apple Computer has announced that it has eliminated the use of chlorofluorocarbons, or CFCs, in its worldwide manufacturing facilities a year ahead of schedule. Electronics manufacturers have used CFCs to clean circuit boards, but many manufacturers have now switched to water-based systems.

Claris Junks SmartForm
SANTA CLARA, CA — The much-heralded forms market has turned out to be a bust. Claris has decided to abandon its forms package, SmartForm Designer, following Adobe Systems, which dropped its TrueForm package last year. For those who still need forms, Claris is offering a special pricing deal on FileMaker Pro and Shana is offering the option of switching to its forms package, InFormed Designer.
There's now a 600 DPI, RISC-based, PostScript Level 2 laser printer under $3,000.

The new LZR 965 from Dataproducts gives you everything you want from a laser printer at a price that may startle you. This true 600 x 600 dpi, Adobe® PostScript® Level 2 laser printer gives you greatly enhanced gray scale capabilities for optimum detail in graphics and photographic images. Even 4-point type is made clean and easy to read. And since the RISC-based processor can provide fast, flawless delivery of higher resolution images your output can look like a masterpiece every time. In no time.

List Price  PPM  RISC Processor  Postscript Level 2  Resolution 600x600  Warranty
LZR 965     $2,995  9   Yes  Yes  Yes  2 years
IBM 4029-11A $3,995  10  No  No  Yes  1 year
Apple LaserWriter llg $4,999  8   No  Yes  No  1 year
QMS PS915R $5,495  8   No  No  Yes  1 year

Combine Mac and PC system compatibility and superior paper handling with a very small footprint and you'll begin to experience the whole picture.

You don't need a trained eye to see that the extraordinary image quality and technologically advanced features will make this printer a classic for years to come. Add the fact that it's easy to use and inexpensive to own and you'll know why the LZR 965 has everybody talking. For finer details, contact the Dataproducts dealer nearest you or call 800-334-3174.
Coming Home: The Performa Family

Forget about a chicken in every pot. Apple wants to put a Macintosh in every home, or at least in the 7 million or so that can afford one.

Politicians want to stand for family values. Apple Computer, with its new Performa series of consumer Macs, wants to stand for value for families. In each case, the public gets to decide the issue, whether it’s voting with ballots or with dollars.

You can vote for one of three candidates fielded by Apple. Available now are the Performa 200, which is physically identical to a Mac Classic II, and the Performa 400, which is basically an LC II. Slated for arrival in late October is the Performa 600, an entirely new Mac that is available with an optional built-in CD-ROM drive. Apple is planning to let retailers sell these machines in bundles that will include Apple printers (the StyleWriter or the Personal LaserWriter LS) and new low-cost monitors. For details on all the Performa hardware, see the “Inside the Performas” sidebar.

Despite their goofy name (face it, Performa sounds more like a new mini- van than a computer, but that’s probably the idea), these are real Macs. What can an American family expect if it brings home a Performa? In terms of hardware, there’s not a lot new on the lower-level machines. As already mentioned, the Performa 200 is an identical twin of the Classic II. With apologies to Putty Duke, the Performa 400 is an identical cousin of the LC II. And the Performa 600, which looks like no Mac you’ve ever seen before, has slightly superior performance to that of a LC II. The biggest innovations of the 600 are a slightly faster 68030 chip (32 megahertz versus the LC II’s 25 megahertz) and its optional built-in CD-ROM drive.

Apple’s Consumer Crusade

For Apple, the stakes are considerable. As part of its ongoing quest for more market share, the company is actively courting an estimated 7 million families — the ones who can afford to buy a home computer but so far have stubbornly resisted the temptation.

What can tempt them? Apple’s betting on competitive pricing (the Performas will have no official suggested retail price, but they are expected to sell for between $1,250 and $2,500 — about the same as or less than their regular Mac cousins). That might not sound like the deal of the century, but the Performas will also have bundled software (every Performa will come with, at minimum, one integrated package and, more commonly, a variety of software aimed at home users). The exact contents of each bundle will be decided by the retailers, though, so be sure to shop around to find the most attractively priced configuration that best fits your needs. In addition, Apple has tweaked the familiar Mac interface in an effort to make it slightly friendlier and has also added a new level of customer support.

Homework and Home Work

Apple expects that as home computers, Performas will be used primarily for work and education. The work part of the equation includes home-based businesses as well as the increasing number of people who want to bring their office work home with them. The educational component primarily means families who want to give their kids an educational leg up. Years ago that meant buying an encyclopedia set — today it means getting a $2,500 color computer with a built-in CD-ROM drive.

Where America Shops

To reach those 7 million home-computerless families, Apple has decided to take the Performas into the retail outlets where (relatively affluent) America shops. That means business-supply stores such as Office Club; consumer-electronics stores such as Silo and Circuit City; and, of course, Sears, which was the site.
of a successful pilot program.

When first-time computer buyers walk into Sears or Circuit City, the Macs they see sitting on the shelf next to the VCRs and portable stereos will have some subtle differences from previous Macs; these differences are meant to make them more instantly accessible to people who’ve never used a computer before.

Although the Mac has always enjoyed the reputation of an easy-to-use computer, Apple recognizes that — thanks to the similar and more pervasive Windows interface — it can no longer rest on its laurels. So the company has made some changes — changes designed to turn the Mac into an even-easier-to-use computer.

First, there’s Launcher, which has a few easy-to-launch icons that invoke user-specified applications. However, this launcher shouldn’t be confused with the more elaborate At Ease Finder shell that Apple recently announced (see New on the Menu in this issue). Thanks to Launcher, first-time users can take a Performa out of the box; plug it in; turn it on; and then launch, say, an integrated-application with a single click of the mouse button. Note: That’s a single click. Apple doesn’t even want to make these users master the double-click before they can get started.

Other changes are designed to eliminate common stumbling blocks for new users. For instance, the Finder now defaults to a mode in which when one application is selected, windows for all other applications (including the Finder) are automatically hidden. This should reduce the common confusion for new users who can see their word-processing document on-screen but are actually in the Finder.

And here’s another change Apple should have made years ago: A special Documents folder is automatically created and placed on the desktop as the

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**Table 1: Pros and Cons of Macintosh Performas**

<table>
<thead>
<tr>
<th></th>
<th>Pros</th>
<th>Cons</th>
<th>Ideal Users</th>
</tr>
</thead>
</table>
| Performa 200 | - Twice as fast as a Classic.  
- Least expensive Performa.  
- Compact and transportable. | - Slow 16-bit data path.  
- Small monochrome display.  
- No expansion slot.  
- No FPU for math-intensive operations. | - When bundled with an inexpensive printer, this monochrome Mac is ideal for newcomers to word processors, spreadsheet programs, and other home-business and family-finance software. |
| Performa 400 | - Twice as fast as a Classic.  
- Lowest-cost color Mac.  
- Optional Apple Ile card available. | - Slow 16-bit data path.  
- Limited to 8-bit color at 640 x 480 pixels.  
- No FPU for math-intensive operations. | - Low-cost color makes the Performa 400 the perfect entry-level family Mac for people who want to combine home-office, children’s education, and family-entertainment uses. |
| Performa 600 | - Three times as fast as a Classic.  
- Three NuBus slots.  
- Video upgradeable to 16-bit color at 640 x 480 pixels.  | - No RAM cache.  
- FPU costs extra. | - With speed comparable to that of the iMac, this 33-megahertz 68030 workhorse is hearty enough for those who need the power required for simple DTP. |
| Performa 600 CD | - Three times as fast as a Classic.  
- Three NuBus slots.  
- 16-bit color at 640 x 480 pixels.  
- High-performance CD-ROM drive.  
- Multisession Photo CD-compatible. | - No RAM cache.  
- FPU costs extra.  
- Most expensive Performa.  
- Dual-speed mode of CD-ROM drive has limited value. | - The addition of a high-performance CD-ROM drive, extra RAM, and 16-bit color makes this unit ideal for those who want an affordable multimedia-capable Mac. |
magnetic-field emissions.

The Performa 600 comes equipped with 4 megabytes of RAM, a 160-megabyte hard drive, and a 32-megahertz 68030 microprocessor. Its 512K of VRAM (video RAM) provides 8-bit color or gray scale on a standard 640 x 480-pixel monitor. With the addition of a second 512K VRAM SIMM, the Performa 600 can support 16-bit video. If you want 24-bit video, you can drop a 24-bit-video card into one of the Performa 600's three NuBus slots.

The Performa 600's most obvious difference from the other Performas is its AppleCD 3001 CD-ROM drive — Apple's first internal CD-ROM drive and the latest move in Apple's long-standing effort to popularize CD-ROM technology. The drive's Sony mechanism boasts a 295-millisecond access time, dual-speed operation for twice the throughput on most operations, full support for Kodak's Photo CD standard, and even a dust-protecting door that's labeled to let you know a CD-ROM caddy has been inserted. Despite the expected performance improvement of dual-speed operation, however, our testing on a similarly equipped drive, the NEC 74M, showed that only such read-intensive operations as QuickTime playback enjoy significant improvement.

In addition to the AppleCD 3001, the Performa 600 CD comes with 5 megabytes of RAM (4 megabytes on the motherboard and four 256K SIMMs) and 1 megabyte of VRAM, providing the 16-bit video necessary for quality QuickTime playback. As with the Performa 600, a 160-megabyte hard drive is your only choice. Both the Performa 600 and 600 CD include an Apple Extended Keyboard.

True to their advertising, all three Performas are powerful enough to serve effectively in the home or home office, but none — not even the top-of-the-line Performa 600 — has the power to endure the rigors of such demanding work as high-level desktop publishing, professional image retouching, or complex financial modeling.

— Rik Mysewski

default container for new documents, which means no more word-processing files accidentally accumulating in a user's word-processing-application folder.

Apple is also bundling a pair of simple backup programs, called Apple Backup/Apple Restore, that can back up data to floppy disks. Although they're basic, the duo should prove easy enough that beginners will be encouraged to make backups on their own.

Some changes are more cosmetic than substantive. The Performa 400 and 600 automatically boot in color. The number of Desktop Patterns has been increased and includes more-colorful patterns, although Thought I Could's Wallpaper utility is still better.

Bundles of Joy

As mentioned, every Performa will be bundled with, at minimum, one integrated application. Apple says the choice of application will be left up to the reseller, but the company is prepared to put Beagle Bros' BeagleWorks, Claris' ClarisWorks, or Symantec's GreatWorks on the machines. Notably absent for now is the forthcoming version of Microsoft Works.

Apple is also touting the Performa 600 CD as being the ideal machine for Kodak's Photo CD technology, which lets you digitally store photographs (ranging from holiday snapshots to insurance documentation, for example). You simply take your film to the developer, and instead of getting slides or prints on paper, you get a special CD-ROM that's capable of holding as many as 100 color photos. Apple will be bundling a sample Photo CD disc with every Performa 600 CD.

Apple's new CD-ROM drive is "multi-session capable," meaning that it can read discs that have had photographs stored on them over the course of two or more trips to the developer. Apple has also written special software that lets you browse through photos on-disc and see them on your monitor. You can even run a QuickTime slide show of your photos. For more-sophisticated users, these images can be manipulated and transformed by any graphics- or video-editing software that can read files in the Photo CD format.

Other software programs that may be included in Performa packages range from educational packages to games. The CD-ROM drive in the Performa 600 CD is going to make it possible to offer some truly exciting educational bundles. Apple's idea of good educational software includes innovative titles such as The Voyager Company's Mozart: String Quartet in C Major and Discs Knowledge Research's interactive Cinderella story. But because not all the Performas come with CD-ROM drives, expect to see more-traditional educational titles such as Broderbund's Where in the World Is Carmen Sandiego? and Great Wave Software's NumberMaze and WordMaze.

All the software in the world, though,
MACINTOSH PERFORMA

will be useless if customers can’t keep their systems running. In keeping with its recent efforts to provide more-responsive service and support, Apple will be providing free phone support for Performa owners for the duration of the computers’ one-year warranty. In addition, Apple has announced a new program, Apple Service, in which the company will send a technician on-site — making a house call, as it were — to diagnose and, if possible, fix problems. Because the Performas will be sold through retail outlets rather than through the computer dealers that have traditionally carried Macs, the added support will be welcome.

Will They Sell?
Will America’s consumers take the Performas to heart — or at least take them home? That probably depends more on Apple’s ability to sell the machines effectively in partnership with the Sears, the Office Clubs, and the Silos. The Performa 200 should be popular with people on tight budgets, such as students. The 400 may fit nicely into the niche already carved out by the LC II as the premier educational Mac and entry-level color machine. The Performa 600 CD, with its built-in CD-ROM, has the potential to dazzle buyers — thanks to the explosion of high-quality CD-ROM multimedia titles and Kodak’s Photo CD. Apple has already proven its ability to take a market segment by storm, with the success of its notebook computers. Do the Performas have what it takes? Only those 7 million households know for sure.
— James Bradbury

Table 2: Features of the Macintosh Performas

<table>
<thead>
<tr>
<th></th>
<th>Performa 200</th>
<th>Performa 400</th>
<th>Performa 600</th>
<th>Performa 600 CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>68030</td>
<td>68030</td>
<td>68030</td>
<td>68030</td>
</tr>
<tr>
<td>Floating-point unit</td>
<td>none</td>
<td>none</td>
<td>optional*</td>
<td>optional*</td>
</tr>
<tr>
<td>Data bus</td>
<td>16 bits</td>
<td>16 bits</td>
<td>32 bits</td>
<td>32 bits</td>
</tr>
<tr>
<td>Clock speed</td>
<td>16 MHz</td>
<td>16 MHz</td>
<td>32 MHz</td>
<td>32 MHz</td>
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<tr>
<td>RAM</td>
<td>4 MB</td>
<td>4 MB</td>
<td>4 MB</td>
<td>5 MB</td>
</tr>
<tr>
<td>SIMM slots</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maximum RAM</td>
<td>10 MB</td>
<td>10 MB</td>
<td>8 MB</td>
<td>8 MB</td>
</tr>
<tr>
<td>Video</td>
<td>9-inch internal CRT</td>
<td>internal VRAM controller</td>
<td>internal VRAM controller</td>
<td>internal VRAM controller</td>
</tr>
<tr>
<td>Standard on-board VRAM</td>
<td>NA</td>
<td>512K</td>
<td>512K</td>
<td>1 MB</td>
</tr>
<tr>
<td>Maximum on-board VRAM</td>
<td>NA</td>
<td>512K</td>
<td>1 MB</td>
<td>1 MB</td>
</tr>
<tr>
<td>Standard on-board bit depth</td>
<td>1 bit (512 x 342 pixels)</td>
<td>8 bits (640 x 480 pixels)</td>
<td>8 bits (640 x 480 pixels)</td>
<td>16 bits (640 x 480 pixels)</td>
</tr>
<tr>
<td>Maximum on-board bit depth</td>
<td>1 bit (512 x 342 pixels)</td>
<td>8 bits (640 x 480 pixels)</td>
<td>16 bits (640 x 480 pixels)</td>
<td>16 bits (640 x 480 pixels)</td>
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<tr>
<td>Storage</td>
<td>80 MB</td>
<td>80 MB</td>
<td>160 MB</td>
<td>160 MB</td>
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<td>Internal-storage expansion bay</td>
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<td>none</td>
<td>5.25-inch half-height</td>
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</tr>
<tr>
<td>Floppy-disk capacity</td>
<td>1.44 MB</td>
<td>1.44 MB</td>
<td>1.44 MB</td>
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<tr>
<td>CD-ROM drive acces time</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>295 ms</td>
</tr>
<tr>
<td>CD-ROM throughput</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>150 ~ 280K per second</td>
</tr>
<tr>
<td>Ports</td>
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<tr>
<td>ADB</td>
<td>single</td>
<td>single</td>
<td>dual</td>
<td>dual</td>
</tr>
<tr>
<td>Audio in</td>
<td>mono</td>
<td>mono</td>
<td>mono</td>
<td>mono</td>
</tr>
<tr>
<td>Audio out</td>
<td>mono</td>
<td>mono</td>
<td>mono*</td>
<td>mono*</td>
</tr>
<tr>
<td>Serial (modem)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>LocalTalk</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>EtherTalk</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ethernet</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Video</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>SCSI</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>External floppy drive</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Slots</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor-direct</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Accelerator</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>NuBus</td>
<td>none</td>
<td>none</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keyboard included</td>
<td>standard</td>
<td>standard</td>
<td>extended</td>
<td>extended</td>
</tr>
<tr>
<td>Size (L x W x H)</td>
<td>11.2 x 9.7 x 13.2 in.</td>
<td>15 x 12.2 x 3 in.</td>
<td>16.5 x 13 x 6 in.</td>
<td>16.5 x 13 x 6 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>17.1 lb</td>
<td>8.8 lb</td>
<td>25 lb</td>
<td>25 lb</td>
</tr>
<tr>
<td>Warranty</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
<tr>
<td>On-site (in-home) service</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
<tr>
<td>Toll-free technical support</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
</tbody>
</table>

*Estimates from an Apple spokesperson one month before product release.

1Available from third-party sources.

2CD-ROM sound output is stereo.
They wanted to bring color copying in-house. We've just opened the door.

Color documents were always of supreme importance to the people at this world-famous movie and publishing company. In fact, they spent thousands per month on outside color copying services. They wanted their own machine but no one had put together the kind of performance and support they needed. Then Tammy Johnson and the Xerox team introduced them to the Xerox 5775 Digital Color Copier.

They were all impressed by the color quality and speed of the Xerox 5775. And the numbers people were especially attracted to the low costs per copy and high reliability figures. Then the creative people got their hands on it.

They found the color touch screen so easy to use that it opened up a whole new world of creative possibilities.

And they were pleased to learn that soon they could fully network the Xerox 5775 to Macs and IBM PC-compatibles.

The only question that remained was service and support. Xerox had the answer. One person to call anytime for anything, direct Xerox service for all components and the Xerox Total Satisfaction Guarantee.

If you want to put the power of color to work in your business, open the door to Xerox. We'll put it together for you. For more information on the Xerox 5775, call 1-800-TEAM-XRX, ext. 702.
**DiVA VideoShop**

DiVA's QuickTime-editing software has innovative tools but suffers from poor sound handling.

As the second major entry into the QuickTime-editing arena, DiVA VideoShop locks horns with Adobe Premiere. VideoShop addresses a wide variety of video-editing needs but suffers from several major gaps in its feature set, including poor sound handling and a hamstrung HyperCard implementation.

**HyperCard Core**

In addition to facilities for recording, cataloging, editing, and outputting QuickTime movies, VideoShop provides tools for integrating movies with still images and sound files. Because VideoShop is a HyperCard-based application, its major selling point is its support for HyperCard as an inexpensive and easy-to-use multimedia authoring system (the HyperCard application is included with the program). To exploit all of VideoShop's features, you must be using System 7.

VideoShop's file-management hierarchy resembles that of the Finder. The difference is that VideoShop's Finder automatically filters out everything except QuickTime movies, sound files, and PICT documents. If you have a 13-inch screen, you may want to consider upgrading to a larger monitor, because smaller screens tend to fill up with overlapping folder windows.

VideoShop's tools for organizing, cataloging, and searching for QuickTime clips are top-notch. The program even lets you attach notes and keywords to files. Another unique feature is the micon, an animated icon that represents a QuickTime movie. This feature is so useful for identifying movie files that we would like to see it included as a standard option in every QuickTime tool.

If you have a QuickTime-video frame grabber and the appropriate VDIG driver, you can record QuickTime movies directly from within VideoShop (to find out if your digitizer board has the appropriate driver, check with DiVA or the hardware vendor). The quality and frame rate of video that's been captured from within VideoShop is quite good, and the feature worked flawlessly with SuperMac's VideoSpigot.

**Making Movies**

You begin editing and splicing QuickTime movies by dragging them from their respective folders into VideoShop's time-line-based Sequencer. The Sequencer displays movie elements in either Storyboard View or Time View. In Storyboard View, you can organize the various elements of your movie, including micons, stills, and audio files. Here, movies are represented by a single frame. In Time View, however, you can view the individual movie frames within a sequence. Time View is the program's main editing environment for cutting, copying, and pasting QuickTime movies, sound files, and still images.

VideoShop provides tools for creating a variety of special effects. You can, for example, superimpose a still image or a QuickTime movie on another movie file and use color keying to make the color of the foreground image or movie transparent so the background movie shows through. Unlike Premiere, however, VideoShop doesn't support alpha channels for multitransparency effects.

VideoShop's selection of transition effects is sufficient although not as robust as Premiere's. What it lacks in number, it makes up for in quality, however. Besides standard effects such as wipes and barn doors, the package includes some unusual transitions, the most striking of which is the cross-zoom effect.

When you create transitions, the effects are rendered immediately at full size and saved as separate QuickTime movies. Missing is a graphical representation of transitions as they relate to the QuickTime movie footage they accompany — you view rendered transitions as separate movies only. This approach can be confusing, especially when you're working with movies that contain many transition effects.

One outstanding feature that you'll find only in VideoShop lets you combine multiple QuickTime movies and output them as one frame. You can stretch, distort, and resize the movies,
and you can drag them into any position of the output frame, so you can create picture-in-a-picture effects, miniature QuickTime-video walls, and other complex multiple-document composites.

The VideoShop package includes the Image Bank CD-ROM, a collection of several hundred business-oriented QuickTime movie clips.

Audio Idiosyncrasies

Although DiVA has done many things right with VideoShop, the package is marred by two serious defects. First and foremost is the lack of production-oriented audio tools. VideoShop recognizes SND and IFF files but not the more widely used SoundEdit files.

Even more disappointing is the software’s inability to fade an audio file in and out to accompany a transition between two movies. Instead, VideoShop slows down the playback speed of the two movies to allow the audio to play in its entirety without overlapping the movies, an interesting but misguided solution that can adversely affect audio and video synchronization within QuickTime files.

Although it’s true that you can change the volume of an entire sound file or selections of a sound file with VideoShop, using this technique to create smooth fades is frustrating at best. Moreover, VideoShop provides no facilities for adding sound effects (such as reverberation) to imported sound files.

Because audio is an integral part of most QuickTime movies grabbed from video sources, VideoShop’s lack of audio tools severely limits its practicality. Even though you can use a separate program, such as SoundEdit Pro, to edit and manipulate audio files, it’s difficult to reintegrate and synchronize the results with the corresponding movie file.

Another significant drawback is VideoShop’s incomplete HyperCard support. Although you can add a QuickTime movie created in VideoShop to a HyperCard stack simply by dragging the movie onto a card, playing the movie from within HyperCard is not as simple as it should be. The underlying HyperCard script that’s inserted into the target stack assumes that VideoShop will always be present when you’re running the stack or that a VideoShop run-time engine is present on the disk with the HyperCard stack. If you distribute the stack without satisfying these requirements, the inserted QuickTime movie won’t play.

DiVA makes a run-time engine available, but you must call the company to request it. Moreover, depending on the application, the company may charge you a licensing fee. According to DiVA, this strategy is likely to change with the next release, which will include a run-time engine. VideoShop’s documentation also suffers from many gaps. For example, missing are entries for two crucial topics — file formats and sound. In general, the manual is light on detail.

The Bottom Line

VideoShop’s outstanding features are its tools for capturing, organizing, and searching for QuickTime clips. Also, the program’s ability to visually organize and overlay multiple QuickTime documents (including PICT images with embedded QuickTime movies) is unique and powerful, letting users create a variety of sophisticated composite effects. However, the program’s inability to do audio fades during movie transitions, coupled with its imperfect HyperCard support, are reason enough to wait for the next version, which hopefully will tie up these loose ends.

— David Biedny
MacTools 2.0

Central Point's data-protection utilities roll disk repair, backup tools, and network-ready virus protection into one blockbuster package.

After striking out with its first iteration of MacTools, Central Point Software has stepped up to the plate once again with the latest version of its disk-utilities package for the Mac. MacTools 2.0 is a complete rewrite of the original software that features an exceptionally consistent interface, antiviral software, and a wide range of useful backup options, all of which combine to make it the most full-featured disk-utility package available.

Data Recovery
The core of any disk-repair package is its data-recovery facility. MacTools' DiskFix repairs damaged volume directories in place, and when directories are irrevocably damaged, it attempts to salvage any recoverable files. Although we found DiskFix exemplary in its thoroughness at analyzing disks and identifying trouble spots, we encountered several problems. To start, DiskFix's thorough volume checking exacts a performance price — DiskFix's scans are so slow that some users may be discouraged from performing regular preventive scans. A second problem involved a corrupted preference file that made DiskFix launch and then suddenly quit (Central Point promised to have this problem fixed by the time this review appears).

Overall, however, we found DiskFix to be a quite competent disk-repair utility. A key aspect of data protection is the ability to recover accidentally deleted files. MacTools' Undelete feature uses a variety of techniques to accomplish this task. To perform its operations, it uses information stored by Mirror, a control panel that maintains a backup of volume directories. Mirror also takes note of the physical location of deleted files on a disk. With Mirror active, Undelete can recover files almost instantaneously.

In addition, MacTools makes two other options available for recovering deleted files. One uses signatures, or distinctive code patterns, to find files of a particular type. Many Mac files, such as those created with QuarkXPress and MORE, are marked by recurring patterns that are unaffected by the files' contents. Undelete comes with an extensive list of signatures for a variety of common file types that enable it to perform searches. In addition, Undelete can create new signatures based on other file types it finds. To add a new signature, you simply select a file and Undelete scans the disk for all files of that type. If it uncovers a pattern, it creates the new signature; if it can't find a pattern, it will notify you accordingly.

Another common problem occurs when the contents of files become corrupted. MacTools is the only disk-repair package that attempts to repair damaged Microsoft Excel 2.2 and 3.0 files, which are particularly prone to corruption, as well as damaged Microsoft Word files. The program's FileFix feature is for copying undamaged data, which usually includes macros and formulas, from a corrupted spreadsheet file to a new document.

Virus Protection
In addition to disk-analysis and data-recovery tools, MacTools provides antiviral software in the form of a control panel and an application. MacTools' implementation is particularly well suited to network environments. To ensure that all network users are adequately protected, administrators can prevent users from disabling certain functions (floppy-disk scanning is an especially popular candidate) by locking the settings on the control panel prior to distribution.

As with most commercial antiviral software, users can reconfigure MacTools' facility to recognize and fix new viruses with the help of signature files, which contain information that allows the software to detect and fix infected files. You can load new signature files from within the MacTools Anti-Virus application or use a novel feature that's extremely useful for network environments: The user can select a file server's folder in the Anti-Virus control panel to check for new signature files each time the server is mounted; the software automatically installs any new signature files placed into that folder.
Rounding out the MacTools collection are a backup module and two disk utilities. The full-featured Backup application lets you back up your data to floppies, other volumes, an Apple 40-megabyte tape drive, or a WangDAT 1300 or WangDAT 2600 DAT drive. Once you’ve selected the backup media and the volumes, folders, and files you want to back up, you can opt for a full, incremental, or differential backup. You can also enable compression, encryption, or even virus scanning prior to backup. After specifying your backup settings, you can save them in a setup file for later use. With the Scheduler extension, you can schedule backups to occur at specific times.

Optimizer and DiskEdit are the MacTools disk utilities. An optimizer lets you access files quickly by consolidating them and moving them to the beginning of a volume. MacTools’ Optimizer goes one step further by letting you specify the order in which file types are placed on a volume after optimization. The DiskEdit utility lets you examine a volume’s data at the byte level.

One of MacTools’ chief strengths is the consistent user interface it provides throughout all of its modules. The interface is so well engineered and consistent that it virtually eliminates the distinctions among modules, so MacTools operates more as a single software entity than as a modular application. In addition, the package makes efficient use of features by sharing them among modules. For example, both the data-recovery and the backup modules use the virus-scanning facilities and the Scheduler extension is used by both the disk analyzer and the backup facility.

The Bottom Line

MacTools 2.0 is the most comprehensive collection of disk-repair utilities currently available. Combining data-recovery, antivirus, and backup software in one package, it’s an impressive value. In addition, the thoroughness of its disk-analysis and -repair utility is exemplary and the software is particularly well suited to network environments.

On close inspection, however, we uncovered a few imperfections that may give single users a rough ride. Disk scans are painstakingly slow, and we encountered a problem with a corrupted preference file. We hope that these rough edges will be sanded off MacTools 2.0 by the time this review appears.

It was also disconcerting to find that at least two versions of MacTools 2.0 (discernible only by their modification dates and file sizes) existed at the time of this review. Central Point’s current policy is to perform “silent” revisions without changing version numbers or informing users. Only by complaining about specific problems to Central Point’s technical support can users receive the latest revision. According to the company, this policy will be dropped in the near future.

Overall, we found that MacTools’ strengths make it a valuable tool for experienced users charged with the task of regularly recovering damaged disks. For those users — who are likely to maintain a full arsenal comprising every available recovery package — MacTools is a powerful addition. Less experienced users who are looking to buy a single data-protection package will also do well to consider MacTools. Combining versatility with an exceptionally well-designed and consistent interface for all of its modules, MacTools is a solid addition to any software library.

— Stephan Somogyi

MacTools 2.0

Published by: Central Point Software, 15220 N.W. Greenbrier Parkway, Suite 200, Beaverton, OR 97006; 503-690-8090.

Version: 2.0.

List Price: $149.
Bank Street Writer

Scholastic Software’s classroom writing tool gets high marks as an instructional aid but flunks as a page-layout program for students.

Bank Street Writer combines word-processing and page-layout tools in a program designed primarily for classroom use. Although the program's instructional tools and word processor are likely to chalk up points with students and teachers alike, the page-layout aspect of the program may well end up with a dunce's cap.

Teacher's Pet

Bank Street Writer succeeds both as a word processor for students and as an instructional aid for teachers who use computers in the classroom. The package provides several tools that let teachers create tests and tutorials for presentation on the Mac. Most notable among these tools are three hypertext-like buttons — students can click on one button to open test notes, on another to play sounds, and on a third to launch a Bank Street Writer document.

According to Scholastic Software, an upcoming version of Bank Street Writer will also include a button for playing QuickTime movies.

Another of Bank Street Writer’s instructional-aid features is frozen text, which can’t be edited or deleted. This feature is ideal for presenting instructions and questions on worksheets and tests. A related option allows you to specify entire files as read-only.

Bank Street Writer's standard word-processing features include all the essentials for text editing and formatting plus a few extras. You can, for example, add frame borders around selected paragraphs, and the program provides limited options for running text around graphics. It also provides a spelling checker and a thesaurus.

Unfortunately, the second module of the program, page layout, is not nearly as successful. Overall, it’s probably too difficult for young students to master and too limited in functionality for more-advanced students.

Bank Street Writer’s page-layout features function independently from the word processor. To create a layout, you must first open a layout file and then place blocks on pages, just as you would with a program such as PageMaker. You can choose from eight predesigned layouts, or you can design your own. Layouts can comprise any number of pages, and each page can have a different design. When the layout is complete, you can begin to assign Bank Street Writer text files to each block as well as create links to snake text through several blocks.

Bank Street Writer lets you create fairly sophisticated newspaper-style layouts, but given its educational focus, the program makes the layout process much too cumbersome. To begin with, it lacks a command for automatically generating a selected number of columns. Furthermore, the program can’t directly import any graphics file. If you want to incorporate a graphic in a page layout, you must first paste the graphic into a Bank Street Writer text file and then assign it to a block in the layout module. This process is not only inconvenient but it also makes it difficult to correctly position the graphic within a block. In addition, if you have multiple blocks on a page, the program doesn’t provide a way for you to control the way in which text flows among linked blocks — it must always flow first from left to right and then from top to bottom. Finally, there’s no way to view completed layouts, except in Preview mode. This is problematic, because you can’t edit text in Preview mode; instead, you must return to the original document file to make your changes.

Bank Street Writer’s main competition as a word processor for students is The Writing Center, from The Learning Company. The two programs’ word-processing tools are generally on a par, but The Writing Center lacks Bank Street Writer’s buttons and frozen text, and it doesn’t provide as wide a range of page-layout features. The page-layout tools it does provide, however, are far more effective and simpler to use than Bank Street Writer’s.

The Bottom Line

As an instructional aid, Bank Street Writer gets high marks. For elementary- or secondary-school teachers looking for a classroom tool that will let them present tests and worksheets on the Mac, Bank Street Writer is a good choice. The program can also double as a solid word processor for students, although its page-layout module is a disappointment.

— Ted Landau

Get Info

Bank Street Writer

Published by: Scholastic Software, 2931 E. McCarty Street, P.O. Box 7502, Jefferson City, MO 65102; 800-541-5513.
Version: 1.0.2.
List Price: $129.95.
**PERSONAL-INFORMATION MANAGERS**

**DateBook**

*After Hours' personal-appointment scheduler features an innovative link to TouchBASE.*

If you view time management as more of a science than a chore, the latest entry into the calendar-software arena may suit your taste. After Hours’ DateBook combines appointment-scheduling, reminder, and to-do-list features. Unlike Now Software’s Now Up-to-Date (see review, July ’92, page 76), which handles workgroup scheduling over a network as well as personal appointments, DateBook is primarily a single-user tool. What sets it apart from other calendar software is its attention to detail and its innovative link to After Hours’ TouchBASE address-book manager.

**Make a Date**

As a DateBook user, you’ll spend most of your time entering events in your calendar and keeping a to-do list. The program opens to the current calendar month, although you can opt for a daily, weekly, or yearly view as well as a list view of all your events and to-do items. A handy icon palette lets you switch easily among the different views of your schedule. To enter an event, you simply click on the appropriate date on the calendar, click on the New button, and fill in start and end times and event information in an entry screen. DateBook can handle event durations in one-minute intervals.

The entry screen is a good indicator of DateBook’s talents for tracking detail. In addition to a summary field, a notes field lets you jot down notes about each event. You can assign events to a particular group (business or personal, for example) as well as to categories (lunch or presentation, for example). You can set reminders, both visual and audio, and recurring events and to-do items.

To enter to-do items, you click on the To Do button in the entry screen and it changes to present Priority and Carry Forward settings for the to-do items you enter. As you complete items and check them off, a percent-complete bar in the Day View shows how close you are to completing the tasks assigned for a particular day.

Although DateBook’s interface is not as elegantly simple as that of Now Up-to-Date, it’s well-crafted and manages to convey a lot of scheduling information without seeming cluttered or daunting. If you’ve really turned time management into a science, you can get DateBook to display the activities you’ve scheduled for a day or week in Gantt-chart format. The program offers numerous other ways for customizing how it organizes and presents scheduling information. For example, you can add icons (such as birthday cakes and menorahs) and multiday banners to calendars and set priority levels for your to-do items.

DateBook’s navigation tools are top-notch. You can move quickly to a date six months in the future simply by clicking on the program’s Date Selector and scrolling through a list of months. When you have the month you want, DateBook displays the corresponding calendar and you can move the cursor to the day you’re searching for.

Another strength is DateBook’s link to TouchBASE. This feature is an implementation of IAC (interapplication communication) and, as such, requires System 7. The link lets you search your TouchBASE files, view selected records, copy records into the DateBook description field, and dial phone numbers—all from within DateBook. You can also do the reverse and send dates and notes pertaining to your contacts from DateBook to the TouchBASE notes field.

Rounding out DateBook’s list of features is a wide range of printing options (including formats for DayTimer, Filofax, and DayRunner), a handy hot-key feature that lets you view and enter events and to-do items into a miniature window without launching the application, and good use of keyboard command equivalents. Version 1.5 features a file-sharing option that lets users on a network share calendars.

DateBook’s one serious limitation is its inability to handle overlapping events, although After Hours has promised this feature in an upcoming release.

**The Bottom Line**

DateBook goes to great lengths to meet the needs of the most fastidious schedule keepers while maintaining easy access to basic tools for those who simply want an electronic version of their paper calendars. DateBook’s IAC-based link to the TouchBASE address-book manager is a standout, and the program’s calendar-navigation tools are first-rate. The only important missing ingredient is the ability to handle overlapping events. For those who don’t require the workgroup scheduling features of Now Up-to-Date and are searching for an easy-to-use calendar program with a slew of time-management features, DateBook is an excellent choice.

— Susan Janus

**Get Info**

**DateBook**

★★★★

Published by: After Hours Software, Tri Center Plaza, 5990 Sepulveda Blvd., Van Nuys, CA 91411; 818-780-2220.

Version: 1.5.

List Price: $125.
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already blew it?

**MAXA Corporation ... 30 day MBG**
8692 *Snooper 2.0 Hardware & Software Kit—Sad Mac? Diagnose from your Desktop with Snooper. Check out your hardware with over 60 tests. Rate your Mac performance. A must for your Utilities folder... $149.

**Buena Vista Software**
1711 *Heaven and Earth—Enjoy 4 spell-binding entertainment experiences in one. Animated cards, illusions, pendulums, and a pilgrimage all bring you to a fuller experience than the usual game, puzzle or toy... $29.

**Pliuna, Inc.**
8704 *Cause or 8712* Net Effect .... ea. $185.

**Symantec ... 30 day MBG**
5176 *Symantec AntiVirus for Mac (SAM) ... 64.
6748 * Norton Utilities for Mac 2.0 ... 95.
5921 * THINK Pascal 165: 2698 * THINK C ... 195.
9957 * THINK Reference 1.0 ... 68.

**LEARN & PLAY**
FOREIGN LANGUAGES, TRAINING, GAMES

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6858 *Sprout! 1.0 (veggie garden planner) ... 39.

**Learning Company ... 30 day MBG**
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3607 *Super Solvers: Midnight Rescue! ... 34.
3281 *The Writing Center 1.0 ... 51.

*** Leister Productions ... 30 day MBG**
7126 *Reunion 3.0 ... 115.

**Microsoft ... 30 day MBG**
2658 *Flight Simulator 4.0 (CP) ... 42.

**Multimedia Library ... 30 day MBG**

*** Nordic Software ... 30 day MBG**
8257 *Preschool Pack - Color 2.0 ... 34.
7470 *Jungle Quest 30. 7537 *Kolor Klips 37.

*** Penton Overseas ... 30 day MBG**
*VocabuLearn-evo Levels I & II (Span., Fren., Germ., Ita., Russ., Japan., & Heb.) ea. ea. 35.

*** Learning Company ... 30 day MBG**
2679 *Reader Rabbit 3.0 (CP) (ages 4-7) ... 34.
3637 *Super Solvers: Midnight Rescue! ... 34.
3281 *The Writing Center 1.0 ... 51.

**D & L Software ... 30 day MBG**
5204 *D & LSoft Power Utilities 1.0.3—Seven performance enhancing utilities for a faster, safer & smarter Mac. Features Dial!Express II for intelligent disk optimization & Master Juggler for easy font suitcase & applications mgmt. $62.

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Our techies can talk

★ Freesoft ... 30 day MBG
6115 ★ White Knight 11—11 award winning communications program that supports XMODEM, YMODEM, ZMODEM, Kermit, & CompuServe Error Correcting protocols. Includes Okyco 1.0. Geared to all levels of experience .... $85.

★ Personal Training Sys. ... 60 day MBG
8695 ★ Capitalist Pig ... 34.

★ Que Software ... 30 day MBG
9743 ★ Typing Tutor V ... 29.
Sierra On-Line
2412 ★ Rise of the Dragon ... 34.
3552 ★ Leisure Suit Larry V or 7396 Red Baron 39.

★ SoftStream ... 30 day MBG
4489 ★ Galactic Frontiers 38.
3472 ★ Family Cards (Solitaire, Runaway, War) 49. Software Toolworks
4619 ★ Mavis Beacon Typing 1.3 (CP) ... 32.

★ Spectrum Holobyte ... 30 day MBG
4835 ★ Tetris 1.3. 26. 3017 Wadtris 1.0 ... 27.
3459 ★ Falcon 2.22 or 6111 Vette 1.0 ... ea. 33.

★ Strategic Studies ... 30 day MBG
3287 ★ Warlords (empires at war) ... 34. StudyWare
★ ACT: GMAT, GRE or SAT Prep ... ea. 29.
8098 ★ SAT Prep ... 35.

★ Toyogo ... 30 day MBG
7624 ★ NEMESIS Go Master 5.0 ... 38.
7623 ★ NEMESIS Go Master Deluxe 5.0 ... 99. Velocity
2934 ★ Spectre ... 34. 2934 ★ LAN 3-Pak, 57.

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7013 ★ Voice Navigator SW w/Header Mike ... 325.
7014 ★ Voice Navigator SW w/Desktop Mike ... 325.

Coda Music Systems
8188 ★ MusicProse ... 189. 5604 ★ Finale ... 549.

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4598 ★ MicRecorder Sound System PRO ... 239.
5067 ★ MacroMind Director 3.1 ... 799.
2246 ★ MacroMind Three-D 2.0.2 ... 999. NEC
4252 ★ MultiSync 3FX ... 659.

Passport Designs
8250 ★ Encore ... 379.

PCTV
2244 ★ System 7 Video . 9. 2245 w/Lor’s Book 25, Radius
Full line available.
1738 ★ Color Pivot LE ... 699.
1736 ★ Precision Color Display/20S ... 2689.

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9784 ★ RasterOps 24SX ... 649. 8944 24STV ... 759.
8039 ★ Paintboard Li ... 929.
7895 ★ 24MX ... 1249. 7702 24MX TV ... 1799.
8392 ★ Sweet 16 Color Monitor ... 1349.
7699 ★ Sweet 16 Video System ... 1999.
7703 ★ Sweet 16 Live Video System ... 2599.

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6944 ★ Power Portrait (platinum) ... 769.

Software Toolworks
5201 ★ The Miracle (piano teacher) ... 349.

Sound Source
9972 ★ Star Trek CIC TV (AudioCipe) Vol. 1.0.
9888 ★ Star Trek: Orig. TV (AudioCipe) Vol. 2.0.
1759 ★ AudioCipes 2001 w/Hal the computer ... 35.

★ SuperMac Technology ... 30 day MBG
4122 ★ VideoSpigot LC or 4114 VideoSpigot II ... 389.
4164 ★ VideoSpigot (for NuBus) ... 439.
7676 ★ VideoSpigot Pro. 1399. 3691 Pro sis 1299.
7679 ★ Spigot & Sound (NuBus) ... 779.
7679 ★ Spigot & Sound (NuBus) ... 1499.
7677 ★ 17" SuperMatch Multimode ... 1149.
7675 ★ 20-T SuperMatch Multimode Trinitron ... 2999.
1805 ★ 20" SuperMatch Color Display ... 1599.
5000 ★ 20" Dual-Mode Trinitron ... 2699.
4720 ★ 21" Platinum Two Display ... 1099.
1877 ★ Spectrum ALC or 2089 SRS ... 89. 453.
2330 ★ Spectrum 9842 PDC or 2231 PDCs ... ea. 899.

★ Lotus Development ... 30 day MBG
5606 ★ Lotus 1-2-3 for Mac—Takes full advantage of the Mac. Directly manipulate and format all data, text, and graphics. Offers true SD workssheets & Excel & 1-2-3 file compatibility $329.
5604 ★ 1-2-3 Competitive Upgrade ... 35.

Hayes
5970 ★ OPTIMA Modem for Mac—Cost effective V.32/40000 bps standalone modem. V.42, V.42bis & MNP 5, throughput to 38,400 bps. Incl. free Smartcom for Mac software & Mac to modem cable. Macworld World Class Winner! $389.
5971 ★ OPTIMA 24 Modem for Mac ... 145.

★ METATOUCH: DiscrySys. ... 60 day MBG
6823 ★ Best of MIDI Connection ... 32.
3563 ★ Backpack Set 1 or 3679 Set 2 ... ea. 45.

★ Multimedia Library ... 30 day MBG
7313 ★ Sound Series V.1-Music for Multimedia ... 105.

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6536 ★ Image Gallery (1400 line art) ... 246.
6577 ★ CD-R-37 CD-ROM Portable Drive ... 389.
6826 ★ General Reference CD-ROM Bundle ... 529.
6582 ★ CD-ROM Driver ... 579.

Software Toolworks
3915 ★ Grolier Encyclopedia (CD-ROM) ... 249.

COMMUNICATIONS
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7101 ★ AppleTalk Remote Access ... 159.
7102 ★ AppleShare 3.0 ... 999.

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3862 ★ QuadraLink (with AE Shadow) ... 255.

★ Argosy Software ... 30 day MBG
7872 ★ Software Bridge/Mac 2.0.1 ... 99.

★ CE Software ... 60 day MBG
6066 ★ QuickMail (5 user) 249. 8597 (10) 375.
1589 ★ QuickMail (50) 1549. 2580 (100) 2059.

★ Rockefeller Systems ... 30 day MBG
2198 ★ More After Dark (M.A.D.) ... 23.
2196 ★ After Dark & M.A.D. Bundle ... 39.

★ Berkeley Systems ... 30 day MBG
2198 ★ More After Dark (M.A.D.) ... 23.
2196 ★ After Dark & M.A.D. Bundle ... 39.
FINANCIAL MANAGEMENT

M.Y.O.B. 3.0

This small-business accounting system gets even more intuitive and easier to use.

Ideally, an accounting package should embody all the esoteric rules of traditional double-entry accounting without sacrificing accessibility to users who have little or no knowledge of bookkeeping. Teleware's M.Y.O.B. comes closer to meeting those criteria than any other accounting package. Enhancements to the latest version add to the package's ease of use and versatility.

M.Y.O.B., however, can't be all things to all accountants. Because it doesn't do payroll automatically and it isn't multi-user, it's well suited only to the needs of small businesses.

Multifaceted

M.Y.O.B. integrates general ledger, accounts receivable, accounts payable, checkbook management, inventory management, job costing, and contact management. Contact management is an unusual accounting-software component, but we found it a natural, because the program's database is already set up to store customer names, addresses, and phone numbers. M.Y.O.B. even dials phone numbers through a modem and keeps track of sales contacts.

M.Y.O.B. has always been a paradigm for ease of use in an accounting package, but with version 3.0, Teleware has added even more convenient features. To make M.Y.O.B. easier to set up for users who want to import data from spreadsheet, database, and other programs, Teleware has added the ability to import charts of accounts (with opening balances), customers, vendors, employees, and personal contacts in tab- and comma-delimited files. M.Y.O.B.'s ability to import sales, purchases, and general journal transactions is unique among inexpensive accounting programs.

Another new feature comes in handy when you're writing checks, making deposits, and applying or making payments: Version 3.0 calculates the total amount automatically when you fill in individual items and amounts. This feature eliminates math errors and unbalanced transactions.

Version 3.0 supports two wildcard characters for more-powerful search capabilities — you can use a question mark to represent an unspecified character and an asterisk to represent a string of unspecified characters. The wildcard feature gives you control over which customers, vendors, items, or employees are included or excluded from reports.

Additional enhancements to the program's reporting abilities include new report types. You can create summary and detail sales reports by salesperson, by sales tax collected, and by receivables or payables due for a particular date. Version 3.0 can also produce comparative reports for any number of periods you specify. The reports can include balance sheets, profit-and-loss statements, customer dollar sales, salesperson dollar sales, item dollar sales, item quantity sales, and item cost of sales.

In Good Form

Last but not least, version 3.0 sports more-flexible forms options. For printing, you can choose the type of invoice — item, service, packing slip, or shipping label — you want to print. M.Y.O.B. has always let you customize invoices, purchase orders, and checks, but version 3.0 applies this flexibility to packing slips and shipping labels as well. In addition, the program can print back-order invoices and purchase orders.

Old Standbys

M.Y.O.B. is rich with features, but the key to its appeal is its disarmingly simple interface. Its home screen operates much like the System 6 Control Panel. Buttons represent the program's seven main command centers: General Ledger, Checkbook, Sales & Receivables, Purchases & Payables, Inventory, Card File, and Administration. When you click on a command center, M.Y.O.B. displays all of its functions in flowchart format.

The Bottom Line

With version 3.0, Teleware has enhanced M.Y.O.B.'s flexibility and ease of use. The program eliminates much of the pain and agony of keeping your books up-to-date, but you still need to understand the basic principles of double-entry accounting to set up and use the program properly. Still, if you run a small business and don't require payroll or multiuser capabilities, M.Y.O.B. should be at the top of your purchase-order list.

— Darryl Lewis

Get Info

M.Y.O.B. 3.0

Published by: Teleware, Inc.
300 Roundhill Drive, Rockaway, NJ 07866; 201-586-2200.
Version: 3.0.
List Price: $249.
### Input/Output Keyboards, Mice, Trackballs, Printers & Scanners

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**Zoom Telephonics 30 Day MBG**

5555 **FaxModem VFX V.32bis/V.32bis** send/receive Fax at a breakthrough price! 50 percent faster than 9600 bps with 14,400 bps uncompressed data and fax...

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RAM your Mac to System 7 specs and beyond. At the lowest prices around. All SUMMs come with a full 2-year warranty, plus a free installation manual and video. We also have 2 MB, 4 MB, and 6 MB PowerBook modules. So kick your Mac into overdrive and create huge spreadsheets and complex graphics with power to spare.

1101 4 MB SUMM (60ns)... $34.
8316 4 MB SUMMs (60ns, set of 2)... $67.
9437 2 MB SUMMs (for IIsi II LC)
7437 4 MB SUMMs (60ns)... $119.
7600 4 MB SUMMs (60ns, set of 4)... $469.
16 MB SUMMs (for Quadra, set of 4)... $99.
5909 (4 MB)... 199.
5901 (6 MB)... 279.

**Curtis Manufacturing 30 Day MBG**

8046 MVP Mouse (MVP-1)... 89.
8930 WACOM1E 126. 2384 with QuicKeys 149.
8601 Switchboard (modular keyboard)... 159.
1144 Exerex 30 Day MBG
1407 SoftWord... 78.
3429 BetterWriter... 39. 8297 | Network... 89.
2499 PowerPrint 1.2. 94. 2890 | Network... 169.
2694 Hewlett-Packard | 479.
6514 HP B/W DeskWriter (w/care)...
2964 HP Color DeskWriter C (w/color cartridge)... 799.
9973 HP LaserJet III (requires kit)... 1099.
6754 HP LaserJet III (requires kit)... 1599.

**Kensington 30 Day MBG**

2547 Turbo Mouse 4.0 ADB... 107.
6974 Mac Pro Plus Keyboard... 139.
Kraft Systems 7519

**Logitech 30 Day MBG**

1671 MouseMan... 39. 1672 TrackMan... 89.
5008 ScanMan Model 32 G-Scanner... 259.
7112 OTCOMAN w/Digital Darkroom... 639.

**MicroSpeed 30 Day MBG**

2807 MicroTRAC ADB (for SE & II family)... 57.
6621 MacTRAC ADB 2.0 (SE & II family)... 75.

**Microtek 30 Day MBG**

1978 Scanner... 1985 6000S... 1399.

**Apple 30 Day MBG**

1486 MacSpeaker... 1499... 169.
**Mouse Systems 30 Day MBG**
5720 Little Mouse or 3001... Plus eff. 48.
9471 Mouse... 74.

**NEC**

5377 SilentWriter Model 95... 1439.
**Orange Micro 30 Day MBG**
8431 Grappler II-Pen... 102. 3692 | Lisp... 115.
4862 Sophisticated Circuits... 30 Day MBG
8509 PowerKey 2.01... 75. 8008 | Remote... 32.

**Thunderware**

4984 LightningScan 400... 359. 3107 Pro 256. 489.

**UPGRADES & DRIVES**

| **SIMMs** with free video & manual |
| **RAM** your Mac to System 7 specs and beyond. At the lowest prices around. All SIMMs come with a full 2-year warranty, plus a free installation manual and video. We also have 2 MB, 4 MB, and 6 MB PowerBook modules. So kick your Mac into overdrive and create huge spreadsheets and complex graphics with power to spare. |

1101 4 MB SIMMs (60ns)... $34.
8316 4 MB SIMMs (60ns, set of 2)... $67.
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7437 4 MB SIMMs (60ns)... $119.
7600 4 MB SIMMs (60ns, set of 4)... $469.
16 MB SIMMs (for Quadra, set of 4)... $99.
5909 (4 MB)... 199.
5901 (6 MB)... 279.

**Applied Engineering 30 Day MBG**

8361 1.44 MB High Density Drive... 229.
**Toll-free support!**

**Media**

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**Accessories**

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<tr>
<td>Moustrek Pad Low Friction (9&quot; x 11&quot;&quot;)</td>
<td>$2693</td>
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</table>

**Logix Technology**

5525 Quickel Xra 4943YY - Send and receive faxes at 9600 bps. Add 2400 bps modem communication and throughput to 9600 with V.42bis. Great styling, lighted icons, cables and lifetime warranty. $149.

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All other areas: Please call 603-446-4444 or FAX 603-446-7791 for information.
Dear MacConnection,

Recently I purchased four 1 MB SIMMs to upgrade my SE/30 from 5 to 8 MB of RAM. You are to be commended on your clear and concise instructions. The booklet SIMM Installation for the Macintosh is very good, but the instructional video SIMM Installation: The Inside Story is excellent. It provided crucial tips not found in the written literature (e.g., techniques for the removal of the power cord, things to do to avoid bumping the video card, etc.). Thank you for taking the time to prepare instructions for a simple process that could become a nightmare without the proper guidance.

Sincerely,

Marvyn E. Steele, Ph.D.
Richmond, VA

"This could become a nightmare."
In a world with self-cleaning ovens, seat belts that automatically strap you in, and toothbrushes that inform you when to replace them, it shouldn't come as a shock to find a desktop-publishing program that lays out an entire publication for you. Enhancements to the latest version of Personal Press, which include automatic copy fitting, System 7 smarts, and a host of automated commands called Aldus Additions, make page layout even closer to automatic. We did, however, find the new version a bit rough around the edges.

**Expert Advice**

Personal Press' AutoCreate feature is even smarter in version 2.0 than it used to be. As in the previous version, when you open an AutoCreate template, you can select text and graphic boxes on the preview screen and indicate which stories and artwork you want to place in them. Personal Press then retrieves your source files and formats them accordingly. The key AutoCreate enhancement in version 2.0 is the addition of a kind of DTP expert system that closely tracks the information requirements of your document. If you're using one of the program's 53 templates, for example, Personal Press prompts you for cleanup details as it compiles your publication. It remembers things you might forget, such as captions, pull quotes, "continued from" lines, date, and volume number. (Alas, if you modify the template or use your own, Personal Press loses this extra level of intelligence.) Once you've answered all its questions, Personal Press delivers a fully formatted newsletter that's ready to print.

At this point, you can make modifications and the program will behave like a conventional page-layout program. In fact, you don't have to use AutoCreate templates at all — as a stand-alone page-layout program, Personal Press is quite serviceable.

Other conveniences of the new version include the ability to enter text at any magnification, a forced-justification option, and the ability to add additional pages automatically to accommodate long stories. Also new is automatic copy fitting. If you have a story that doesn't quite fill the space you've laid out for it, you can click on the Filled-Text box and select Copy Fit from the Text menu and Personal Press will adjust character size as well as line and paragraph spacing to make the story fit the allotted space.

Version 2.0 includes a Personal Press-specific version of Aldus Additions. Accessed through their own palette, Additions are automated commands that add a variety of functions. Many serve as handy shortcuts for menu items; others, such as Bullets and Drop Caps, are unique to the Additions palette. Despite the similarity in their names, Additions designed for PageMaker cannot be used by Personal Press and vice versa.

You still can't open more than one document at a time in Personal Press, and you can't group objects. In addition, some of the new Additions suffer from molasses-in-January syndrome: Captioning a graphic with an Aldus Addition took 45 seconds, after a 60-second wait to prepare the dialog box. Not all Additions are so slow, and even the graphic-captioning Addition isn't slow all the time, which leads us to conclude that perhaps the program's occasional sluggishness is more a symptom of quirky software than an inherent problem with Additions.

Other problems lend credence to our theory. Personal Press crashed several times when we tried to use a modified AutoCreate template, and the cursor occasionally froze as we were using some Additions. Moreover, screen redraws sometimes came out dirty — with stray black streaks — when we modified text characteristics. The program's size is also problematic. For a low-end program, Personal Press was weighty enough in its first iteration — 780K — but version 2.0 requires 1,500K of RAM.

Version 2.0 supports System 7 features, including Balloon Help, subscribe (but not publish), TrueType, and virtual memory. You can place QuickTime movies in Personal Press documents, but the playback controls are sparse.

**The Bottom Line**

As a low-end entrant in the page-layout market, Personal Press lacks customizable H&J tables, high-end color handling, and professional-level kerning and tracking controls. For novice users who don't require such sophisticated features, however, Personal Press' central innovation — an intelligent AutoCreate template — offers an exciting prospect. The only drawbacks to this smart page-layout program are the annoying bugs that crop up here and there — we hope to see them squelched in the next upgrade.

— Shelley Cryan

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### Get Info

**Personal Press 2.0**

**Published by:** Aldus Corp., 411 First Avenue S., Seattle, WA 98104; 206-628-5739.

**Version:** 2.0.

**List Price:** $199.
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OmniPage Direct and ScanJet Ilp

Caere's OmniPage Direct teamed with HP's budget scanner takes OCR mainstream.

If you thought OCR was too complicated or time-consuming to justify the required hardware and software investment, think again. Caere and Hewlett-Packard have pooled their considerable talents to come up with an ideal OCR package. Caere's new OmniPage Direct software teamed with HP's aggressively priced ScanJet Ilp gray-scale scanner offers users a level of ease of use and convenience never before available for OCR. You can scan text directly into your target applications with OmniPage Direct, and to make the process even smoother, you can fine-tune HP's scanner so that text recognition is practically automatic.

OmniPage Direct

As its moniker implies, OmniPage Direct is designed to be used directly from within an application without opening a separate OCR program. Once installed, it appears as an Apple-menu item. To scan text into a word-processing or page-layout document, you simply open the document, locate the insertion point to specify where you want the text placed, choose Direct from the Apple menu, and let it rip. The Direct software temporarily takes over from the underlying application, scans and recognizes the text, copies it to the Clipboard, returns to the application, and places the text into the open document.

As promised, Direct makes OCR quicker and easier than ever before. Moreover, it can automatically detect landscape or portrait orientation as well as spot dot-matrix text. Coupled with the HP ScanJet Ilp, it makes use of HP's AccuPage technology to automatically adjust the contrast and brightness level for OCR on every region of a page, so you get impressive text-recognition results even with documents that pair tinted and white backgrounds on the same page. Interestingly, because AccuPage is actually a set of routines that HP has licensed to Caere, the technology resides in the Direct OCR software, not in the scanner.

In addition to the ScanJet Ilp, OmniPage Direct works with a wide variety of other scanners, including those from Microtek, Abaton, and Apple. For those makes of scanners, Caere relies on its own technology, dubbed AnyPage, to set brightness levels automatically on different page areas.

To quantify the speed you gain by using Direct versus a separate, full-blown OCR package is difficult, because in addition to recognition performance, you must also figure in the time you save by eliminating the process of converting or importing text into the target application. We found that there was little difference in the recognition speed of Direct as compared with its full-featured sibling, OmniPage Professional. Overall, the process definitely took less time with Direct and was significantly more convenient.

According to Caere, Direct is destined to replace OmniPage 3.0, the company's entry-level product. Compared with OmniPage Professional, Direct lacks only these features: a spelling checker, deferred scanning, a graphics editor, and the ability to learn new characters or symbols. These omissions are fairly insignificant, however, when you consider that using the spelling checker of the word processor or desktop-publishing program you're scanning text into is often easier than using the OCR spelling checker anyway. Moreover, for image scanning, the ScanJet Ilp supplies a quite serviceable graphics-scanning and -editing program.

HP includes a trial version of OmniPage Direct with the ScanJet Ilp. The trial version comes with reduced documentation, works 20 times, and then dies. After that, you can resuscitate it by calling a toll-free number and paying $300. If you don't purchase the scanner, you face a list price of $595 for Direct. Clearly, the ScanJet Ilp/Direct combination is the way to go for everyday, low-end OCR.

Direct requires at least a Mac II-class machine, 4 megabytes of RAM, and System 7. It should work with any application that supports the Command-V shortcut for Paste (that's just about every one). In many applications, Direct can preserve font and style information.

HP ScanJet Ilp

Preeminent among the ScanJet Ilp's features is its low list price: $1,095. That's not bad for a 300-dpi, 256-level gray-scale flatbed scanner that includes both image-scanning and -editing software.

Physically, the scanner resembles a more compact version of HP's venerable
ScanJet Plus, which it’s destined to replace. The HP seems as solid as its predecessor, with one exception — its flimsy cover, which kept snapping off.

Unlike the ScanJet Plus, the ScanJet HP doesn’t require an interface box. Installation is a snap, and the scanner’s appetite for system resources is modest — 2 megabytes of RAM, a hard disk, and System 6.0.5 or later. The bundled DeskScan II software is also straightforward. The scan quality is generally excellent, especially when you use HP’s auto-exposure feature for optimizing brightness and contrast.

The DeskScan software lets you calibrate the scanner to your individual printer. To do so, you first generate a special test page, print it, and then scan it. DeskScan compares what the test page is supposed to look like with the printed version and calibrates the scan settings accordingly. Unfortunately, this advanced feature is severely undercut by the scanner’s poor documentation, which refers you to on-line help for a more complete explanation. However, the on-line explanation is incomplete and scattered over several nonsequential screens.

In addition, the image-scanning software bundled with the HP, Zedcor’s DeskPaint, is completely undocumented. Currently, DeskPaint is one of the few applications that supports the TWAIN specification, which lets you acquire text or images from one application directly into another. DeskPaint’s TWAIN support lets you scan images directly from within the application without first having to save them as separate files. By early next year, many other applications, including Aldus PageMaker, are expected to support TWAIN as well.

All in all, aside from its poor documentation and misbehaving cover, the ScanJet HP gives you a lot of scanner for the price. An optional sheet feeder is available for $395.

**The Bottom Line**

The combined package of OmniPage Direct and the HP ScanJet HP offers an extremely affordable and convenient way to take the OCR plunge. By teaming impressively easy-to-use and accurate OCR software with an excellent grayscale scanner, HP and Caere may have come up with the right formula for making OCR mainstream.

— Dave Valuulis

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**Get Info**

**HP ScanJet HP**

Manufactured by: Hewlett-Packard, P.O. Box 58059, MS-511L, Santa Clara, CA 95051; 800-752-0900 or 408-725-8900.

List Price: $1,095; sheet feeder, $395.

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**OmniPage Direct**

Published by: Caere Corp., 100 Cooper Court, Los Gatos, CA 95030; 408-395-7000.

Version: 1.0.

List Price: $595 ($300 when purchased with the HP ScanJet HP or Apple OneScanner).
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JAG and Smoothie

These two anti-aliasing utilities render on-screen images crisp and clear.

Two anti-aliasing utilities promise to improve your image — your on-screen image, that is — for graphics, Mac-based presentations, and animations. Ray Dream’s JAG is a bare-bones utility that targets bit-mapped images and animation files. Pierce Software’s Smoothie is a more fully featured application that smooths vector and PostScript images and throws in a slide-show feature to boot.

JAG

JAG (short for Jaggy Are Gone) is currently the only utility that can anti-alias bit-mapped images and animations. Using JAG is a snap. You simply open a PICT or PICS file from within the program and choose the Anti-alias menu command, and JAG goes quickly about its work. Within seconds (on a Quadra), you have a smoother image.

JAG can also work with vector and PostScript images that have been converted to PICT images, although it’s not as good as Smoothie at improving these file types.

In production environments, you can set JAG up to batch-process images. A convenient dialog box lets you load PICT or PICS files from any volume for unattended anti-aliasing. JAG’s Batch Queue window keeps you informed as to which files have been processed and which are still waiting in line. The program displays the time that each file was loaded and completed. Especially handy for smoothing large PICS animations is JAG’s ability to go about its business in the background.

When JAG has taken the edges off your images, you have several file-saving options, including 8-bit (system or adaptive palette) or 24-bit color; dithered; and NTSC legal values, which are useful for images destined for videotape. JAG produces excellent 8-bit dithered images from 24-bit-color bit maps, thereby reducing the original file size by as much as a third.

JAG’s preferences let you control the anti-aliasing process. For example, you can exclude pixel-thin lines and lone points from the process, and you can adjust the threshold value. By lowering this value, you get smoother results.

Although Ray Dream strongly recommends that you leave the threshold value at 32, don’t feel that you have to take the warning seriously — we got good results by fiddling with the number. You should, however, stay away from extreme values — they can definitely cause undesirable results.

JAG is an especially useful tool for 3-D animation, because it allows you to turn off anti-aliasing in 3-D packages such as StrataVision 3d or Infini-D, thereby significantly reducing rendering time. Once images have been rendered, JAG can take over and smooth them.

Smoothie

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Smoothie

Smoothie’s forte is creating anti-aliased screen bit maps from PICT files that began life as vector or PostScript images. That makes Smoothie ideal for handling graphics created with drawing programs, but it can’t handle bit maps created in painting programs, as can JAG. Most vector-based drawing programs, including Canvas and MacDraw Pro, can export files in PICT format or as PICT editions with publish-and-subscribe. Smoothie can even improve images created with presentation packages such as Persuasion and PowerPoint.

Smoothie works its magic on-screen in much the same way that PostScript improves print quality. It rasterizes PICT images at double their resolution and then samples them back to the desired output size. As a result, your screen image looks LaserWriter-smooth rather than ImageWriter-jagged.

Unlike JAG, Smoothie is more than a simple utility. It’s a System 7 application that supports publish-and-subscribe, Apple’s new QuickTime extension, and a slide-show feature that lets you give presentations from directly within the program.

After processing images (Smoothie also supports batch processing), the program can output files in one of these three formats: Scrapbook, QuickTime movie, or Smoothie Slideshow. Smoothie Slideshow is a double-clickable application that can run through a series of slides automatically or allow you to control slide display with the mouse.

Although Slideshow lacks special effects such as transitions, it provides top-notch, crisp images for both on-screen text and graphics. We noticed a distinct improvement (especially in type quality) even with slides created with powerful presentation programs. For future releases, Pierce Software is working on a slide editor that will let you organize your slides after they’ve been anti-aliased.

Smoothie’s QuickTime support provides other benefits for the Slideshow application. The QuickTime extension comes with several built-in compressors (including JPEG) that Smoothie can take advantage of. The compressors can shrink bit-mapped images to a tenth of their original size without sacrificing the overall image quality.

The Bottom Line

Although Adobe Photoshop filters and plug-ins provide similar image-enhancement capabilities to those offered by JAG and Smoothie, at $99.95 and $149, respectively, JAG and Smoothie will have comparatively greater appeal to the budget-conscious. Each can improve the quality of on-screen images, although their strengths differ, depending on how you use them.

If you use a drawing program or frequently prepare slides for on-screen presentations, you can get absolutely the best image quality with Smoothie. JAG, on the other hand, is your best choice for animation files (especially the 3-D variety) as well as for graphics created with low-end painting programs that lack good anti-aliasing tools (a vanishing breed, we’ve noticed).

— Sean Safrreed
ANIMATION

PROmotion

Motion Works' animation program teams simple tools and powerful interactive features.

Animation tools for the Mac used to be hard to come by, but now there's such a variety that the hard part is choosing among them. The latest entry in the field is PROmotion, unlike its predecessor, AddMotion. PROmotion is not a HyperCard application. With its ease of use for controlling animation elements as well as for creating interactive animations, PROmotion is a good choice for novices. Sophisticated users won't be disappointed, though — PROmotion has some unusual tricks up its sleeve that you won't find in other Mac animation programs.

Path-Based Animation

PROmotion is a path-based animation package that includes a basic painting program, sound-recording tools, and options for programming interactive animations. A CD-ROM of sample animation files, actors, and props is bundled with the package.

Actors and props are PROmotion's basic animation components. Props are static PICT backgrounds, and actors are imported PICS animations (missing is the ability to import QuickTime movies) or objects created with PROmotion's painting tools. You place actors along paths to determine their on-screen movement. To create paths, you place points on the screen and the program automatically connects them; to edit paths, you can reverse their direction, automatically smooth them, and add or delete points.

One frustrating omission is the ability to redistribute points along a path to build acceleration and deceleration into an animation — a feature included in most path-based animation programs. However, PROmotion does include an onion-skin feature, which lets you see the previous or next frame with respect to the current frame — an important aid for cel animators. The program can also generate in-between frames for rotations, resizes, and color fades.

PROmotion’s solid set of sound tools, which directly support the MacRecorder digitizer and the built-in recorders of sound-capable Macs, lets you edit sounds and create a variety of effects.

As you create and import elements for your animation, you can choose from several methods for controlling their behavior. The TimeLine selectively displays each element of an animation file plotted over time. By selecting and dragging indicator bars for each actor, you can shorten or lengthen the amount of time the actor appears in the animation. The TimeLine, with its indicator bars, provides a good overview of the interaction and timing of all animation elements. The Cell Sequencer lets you rearrange the order of playback of the cells that make up an actor, independent of the actor's placement on the TimeLine. Overall, PROmotion gives you excellent control over each component of an animation file.

Another strength is PROmotion's straightforward interface for creating interactivity. It's one of the best we've seen. For those who've been perplexed by scripting languages such as Lingo (the native Macromedia Director programming language), PROmotion offers a much simpler alternative. To specify a response to a condition, you simply select the appropriate option from a popup menu. For example, in response to a click on any actor or prop, you can opt to have the animation branch to another frame; send a message to HyperCard, Control Tower, or Frontier; pause; load another animation; or change the frame rate. By sending messages to Frontier and Control Tower, you can have your animation control several external programs and devices. To do so, however, you must be proficient in programming within those scripting environments.

PROmotion is the first animation program out of the gate to support Apple events. In addition to sending Apple events to Frontier, PROmotion can also receive events from external sources, making it an ideal tool for users interested in triggering animated sequences as part of a larger multimedia presentation. PROmotion responds to the core Apple events as well as to several events specific to the program.

For output, PROmotion's Print-to-
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CIRCLE 183 ON READER SERVICE CARD.
Global Village Communication has just made communicating from your PowerBook even easier, with the release of two new high-speed internal fax modems. The company's previous PowerBook modem, the PowerPort V.32, performed well but required a dongle, an external device for connecting a modem to the phone line. If you left on a trip without your dongle or misplaced it, you couldn't use the modem. Global Village's new PowerPort/Silver and PowerPort/Gold modems are both completely internal (as is the PowerPort/Bronze — the Gold and Silver models' lower-speed sibling), so you can plug a phone line directly into the PowerBook, plus the PowerPort/Gold gives you extra speed.

The PowerPort/Silver is functionally identical to the PowerPort V.32. It's capable of 9,600-bps raw-data throughput, using the V.32 high-speed-modem communications standard. It also supports V.42 and MNP Class 4 error-correction protocols as well as the V.42bis and MNP Class 5 data-compression protocols. The PowerPort/Silver uses V.29 Group 3 fax, the fax protocol used by virtually every fax machine in the world for sending and receiving; V.29 allows fax throughput as high as 9,600 bps.

The PowerPort/Gold does everything the PowerPort/Silver does, but it has faster communications rates. The additional speed comes from support for the V.32bis standard, which allows raw-data throughput as high as 14.4 Kbps.

These speeds make both modems well suited for use with AppleTalk Remote Access (ARA); 9,600 bps is the lowest modem speed that makes ARA usable, and 14.4 Kbps comes close to feeling like LocalTalk. Each modem works flawlessly with ARA if the phone lines are of decent quality, and each also works well with E-mail and on-line services.

The PowerPort control panel that comes with each modem lets you set preferences such as the modem's speaker volume and whether you want the PowerPort to be able to receive faxes. The latter preference, when used with the PowerBook's "Wake Up on Modem Ring" feature, lets you use your PowerBook as an unattended fax receiver — just plug it in to a phone line.

Sending a fax with either modem is easy: Hold down the Option key while selecting the File menu in any application; the Print-menu option then changes to Fax so you can fax the document.

For fax management, the Fax Center DA lets you edit an address book of fax numbers, view received faxes or those to be sent, schedule faxes, and perform other standard functions. You can also defer fax transmission to send faxes when it's most convenient for you.

Anyone who needs high-speed modem connections from their PowerBook will be well served by either of these modems. If you need the highest possible bandwidth, take advantage of the PowerPort/Gold's 50-percent-greater throughput; otherwise, you can choose the more economical PowerPort/Silver.

Global Village Communication, Inc., 685 E. Middlefield Road, Building B, Mountain View, CA 94043; 800-736-4821 or 415-390-8200. PowerPort/Silver, $595; PowerPort/Gold, $795.

— Stephan Somogyi

Spelunx and the Caves of Mr. Seudo

If you've never played Yodel Toasters or climbed a Pigtoad tree, it's high time you tried Spelunx and the Caves of Mr. Seudo, a Brøderbund release for — yes, it's true — kids of all ages.

Spelunx is the latest production from the Cyan team of Robyn and Rand Miller, who created The Manhole and Cosmic Osmo. Like their earlier efforts, Spelunx is not a game but rather a "noncompetitive exploration environment." There are no points to score, no levels to attain, and no ways to "die." The whole idea is to explore and to learn along the way.

Kids can play with Spelunx and not realize they're learning about biology, astronomy, music, chemistry, and so forth, because they're busy having fun. They can mutate wacky trees by splicing genes with the Tree Gene-orator, for example, or they can use Cartesian coordinates to find planets with the P. Seudo Scope and make them spin.

All these activities occur in Prof. Alexander Spelunx's caverns, a set of rooms and tunnels filled with references to famous children's books as well as to more-obscure items (would you believe a MacWEEK mug?). You can click on virtually everything in the caves, with highly unpredictable results.

Like previous Cyan productions, Spelunx is HyperCard-based but with a welcome new twist: MacroMind Director files are integrated within the stack. By combining black-and-white HyperCard graphics with colorful Director inserts, the Millers have created an unusual look and kept the space requirements for the program relatively modest; Spelunx fits on five 800K disks, rather than requiring a CD-ROM. And because the color portions are limited, you can still run Spelunx effectively on a Mac with a black-and-white monitor.

Although the program's resource needs are carefully contained, its entertainment capabilities are boundless. There's even a secret room with an ingenuous entrance that lets you keep modifying the caves with new tunnels and rooms of your own — making Spelunx a game that grows but doesn't grow old.

Broderbund Software, 500 Redwood Blvd., Novato, CA 94948; 800-521-6263 or 415-382-4400. $49.95.

— Ken Gruberman

Z-Nix Cordless Super Mouse

Remote-control pointing devices have always worked better in theory than in practice: Sure, they free you from getting tangled in a cord, but you have to keep changing the batteries. Z-Nix's new infrared Cordless Super Mouse is different — it's rechargeable.

The Super Mouse comes in two pieces: the mouse, which transmits the signal, and the base, which doubles as a receiver and a recharge. The mouse has rounded edges and fits easily in your hand. The leftmost of its two buttons has a recessed resting place for a right-hand's index finger — leaving leftovers out in the cold. Even so, this design is good, because it helps to avoid an accidental click of the second button (an important consideration if you want to assign a special key sequence to that button).
An LED on the front of the mouse transmits movement and clicks to the base receiver, which hooks up to your Mac’s ADB port with a 6-foot cord. The recharge gets its power from the ADB port, which means that the Mac must be on to recharge the NiCad batteries. A second battery fits into a charging terminal on the bottom of the base, so you can keep a fully charged spare handy.

Z-Nix’s MouShaper software is uninspired but has the minimum necessary features. It lets you adjust mouse tracking (the distance the mouse travels across the pad to move the cursor across the screen) and double-clicking speed (the time within which two clicks will launch a document in the Finder). It also lets you define a click of the second button to represent an action other than that produced by a normal click (for example, it can represent a double-click or a keyboard command equivalent).

Although it doesn’t have the most sophisticated software available, the Super Mouse fits the bill nicely for presentations. You can use it from a distance (Z-Nix says 6 feet, but we had a decent response at 16 feet) and pass it around a table, plus you don’t have to worry about your batteries dying. Despite its bias against left-handed users, the Super Mouse is the best choice among the remote mice available for the Mac.

Z-Nix Co., Inc., 211 Erie Street, Pomona, CA 91768; 714-629-8050. $99.

— Ben Templin

Transparent Language

Transparent Language is a program that polyglot wannabees everywhere should celebrate. If you’re a foreign traveler, an international businessperson, or a beginning language student bored with memorization and drills or if you just want to read a language you used to know, this program is for you. Newly available in Mac format, Transparent Language offers stories and poems in German, French, Spanish, and Latin and makes it easy for you to read them.

The program comes on a single 800K floppy that includes three stories in the language of your choice. There’s also a voice tape cassette, to help you with pronunciation, and a brief users’ guide.

To use the program, you double-click on a story icon contained in one of the language folders. To the right and across the bottom of the text window appear five optional-view windows called Comments, Word Meaning, Phrase Meaning, Notes, and Sentence or Clause Meaning. As you select any item in the text, detailed information appears in these windows to help you understand the selection as well as the grammatical context that interests you.

By scrolling, tabbing, or using the arrow keys to move through the text, you read at your own speed, clicking on words you want to understand and scanning the optional windows for information. When you stop reading, use the Set Bookmark feature to mark your place. Find Bookmark returns you to that place, with the windows configured as you left them.

The program comes with a catalog of moderately priced titles and listening tapes. Titles are still too few in number — about ten per language — and mostly consist of classic short stories and fables, with some poetry and contemporary work. At press time, however, the company was busy translating longer works, customizing language-learning approaches for businesses, making current magazine articles available by subscription, and developing practical English texts for Spanish speakers in ESL (English as a second language) programs.

By giving users an easy way to read interesting foreign-language works at their own pace, Transparent Language has revolutionized computer-based language learning. With the company’s ambitious plans to expand its titles, Transparent Language may revolutionize foreign-language literacy rates as well.

Transparent Language, Inc., 9 Ash Street, P.O. Box 575, Hollis, NH 03049; 800-752-1767 or 603-465-2230. French, German, or Spanish package, $139 each; Latin, $129.

— Marilyn Bancel

Prince of Persia

Prince of Persia is a challenging arcade game with extraordinarily realistic animation from a programmer who studied reels of Hollywood sword fights to put you at the helm of the sword.

As the prince, you must rescue the sultan’s imprisoned daughter by traversing the dangerous corridors of a dozen dungeon levels — fighting guards, grabbing magical objects, jumping over spikes, leaping across chasms, climbing ladders, drinking potions, crawling under gates, and hanging by your fingertips.

You start the game with a fixed number of strength units. Every time you get hurt — by falling, being stabbed, and so on — you lose one unit of strength or, in some cases, are killed outright. When your strength disappears, you die. You have an unlimited number of lives, and you’re reborn on the same level on which you died. Because figuring out how to advance to the next level can take several real-time hours, the program’s ability to save games in progress so that you can pick up where you left off is helpful.

You control your movements, using specific keys on the keyboard. You can’t customize which keys do what, but the setup you’re given is logical. Getting accustomed to the controls takes time but eventually rewards the effort (although your on-screen persona doesn’t always respond instantly). Using a joystick would be easier, but that option is currently available only for the IBM and Tandy versions of the game. (By the time you read this, however, Advanced Gravis should have released the Mouse-Stick II joystick, which the company claims can be used even with games designed for keyboard control only.)

Prince of Persia runs in monochrome or 8-bit color and requires at least a Mac Plus with 2 megabytes of memory (more under System 7). It also requires a hard drive with roughly 1 megabyte of free space. The disk isn’t copy-protected, but you must look up a specific character in the manual before you start.

The game is challenging to mind and body. Winning requires marathon sessions of dedicated play, keen hand-eye coordination, and the willingness to take leaps of faith — literally.

Although you can try to improve your score, it’s doubtful you’ll want to play the game over again after rescuing the princess. Nonetheless, by that time, you’ll certainly have gotten your money’s worth plus a great deal of entertainment.

Broderbund Software, 500 Redwood Blvd., Novato, CA 94948; 800-521-6263 or 415-382-4400. Version 1.0. $49.95.

— Owen W. Linnmayer
MacFlow 3.7
Flowchart Design and Development

Lay it all out for them—the process, the procedures, the relationships. Business works best when everything is clear, and there is no better way to make things clear than a detailed flowchart.

The best way to create flowcharts is MacFlow—the highest-rated flowcharting program. Neither drawing programs nor pencil and paper can create flowcharts as easily as MacFlow. And no program is simpler to learn or use. Graphically organize complex processes, projects, and structures—minutes after opening the package.

Simply drag pre-drawn symbols onto a page and connect with curved or straight lines. Place text in symbols and on lines, as well as in freestanding notes. Change the chart as desired; lines stretch and stay attached to symbols. Even create stand-alone flowcharts that can be freely distributed to any Macintosh user (and any Windows user with an optional viewer). MacFlow is also System 7-savvy, letting you publish your charts and subscribe to text. Translate to and from text in ASCII and RTF formats as well as outlines created in Acta 7 and MORE.

MacFlow actually enhances your thought process because the interface is so simple and intuitive, nothing stands between your ideas and a presentation-quality flowchart. In fact, you’ll find just creating flowcharts keeps your thoughts organized and helps you get a handle on any task.

Show them you’re serious—get MacFlow today.

MacSchedule 3.0
Project Planning and Tracking

Lay it all out for them—the plan, the people, the cost. Give them a path to follow and a way to track progress. Successful projects need a roadmap, and nothing can beat a simple yet comprehensive project schedule.

The best way to create quick, presentation-quality project schedules is MacSchedule. The Gantt-chart interface lets you create schedules, with integrated financial data, minutes after you open the application—unlike complex project management software. And MacSchedule is as easy to learn as it is to use.

MacSchedule automatically creates and manages a project calendar. Just enter task names, then indicate timing with a click and drag of the mouse. Status tracking is also easy—just click on a task bar to show progress.

MacSchedule helps track a project from initial estimates to current status by automatically developing calendarized cost estimates and reporting cost and schedule variances in an Earned Value summary. MacSchedule is also System 7-savvy, letting you publish your schedules and data as well as subscribe to data from other programs. Place schedules in documents for proposals and reports or print schedules as slides, overheads, or wallcharts.

With MacSchedule’s graphic feedback, you can tell at a glance where your project is and where it’s headed. It’s the perfect tool for any manager. Show them your plans for success—get MacSchedule today.
Get the message? For power, ease-of-use and flexibility, no E-mail communicates better than QuickMail® no matter what the environment—large or small, Macintosh® or DOS. In fact, QuickMail recently received PC Week’s 1992 Analyst’s Choice and Macworld® 1992 Editors’ Choice awards. And once you begin to employ all the advantages of QuickMail, we’re sure you’ll agree — no other E-mail system makes such a positive impact on your business.

Call 1-800-523-7638, Dept. CE25, for your copy of the QuickMail White Paper. In it, we offer a detailed view of QuickMail, and an examination of the issues concerning enterprise-wide E-mail today — as well as tomorrow. CE Software. Improving your environment is our business.”
### Conner Drives

<table>
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<td>C 120 MB</td>
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For two years Conner has been one of Apple's largest hard drive suppliers!

### Fujitsu Drives

<table>
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<td>520 MB</td>
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<td>$1098</td>
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<td>$1398</td>
<td>$1498</td>
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<td>1.2 GB</td>
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<td>$1688</td>
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<tr>
<td>2.06 GB</td>
<td>5.26&quot; 11.5ms, Syr. warr, (5400RPM &amp; Fast SCSI)</td>
<td>$2698</td>
<td>$2798</td>
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### Optical Drives

- **NuDesign 3.5" 128mb Optical**...
  - $1298
- **Ricoh 600mb Optical**...
  - $2198

- **Toshiba CD ROM**
  - Toshiba 3301...
    - $538
  - Includes driver CD carrier and cables
  - 32ms access time
  - MacWorld and Mac Users' Highest Rated!

- **Toshiba 3.5" 830mb**
  - Toshiba 830mb 3.5"...
    - $1388
    - $1488
  - Includes driver CD carrier and cables
  - 12.5ms Average Seek Time
  - 5MB cache
  - SCSI 2

- **SyQuest 44MB & 88MB Removables**
  - 44MB Removable...
    - $448.00
  - 88MB Removable...
    - $598.00
  - 19ms Access time
  - Both Drives include Cartridge
  - Dual AC Outlets, 40 Watt power supply
  - SCSI Select and 2 Year Warranty

### Maxtor Drives

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<td>5.25&quot;</td>
<td>$1898</td>
<td>$1998</td>
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### DAT Tape Backup

- **NuDesign Dat 2.1 Gig Capability**...
  - $1298
- **ArDat 2.1 Gig Capability**...
  - $1398
- **WangDat 2.1 Gig Capability**...
  - $1498

- Up to 10 mb per minute backup time
- Includes SoftBackup II for Fast network and unattended backup capabilities

- **NuDesign Dat 2.1 Gig Capability** With SoftBackup...
  - $1198
- **NuDesign Dat 2.1 Gig Capability** With Retrospect...
  - $1298

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- Our best buy ever on DAT!
- Up to 10 mb per minute backup time
- Available with a complete version of Retrospect for Fast Network and unattended backup capabilities.

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Technical Service and Order Tracking call: 312-664-6225
Sony Trinitron 19" Color System

- 8 Bit with RasterOps 8XL $1798.00
- 24 Bit with RasterOps PaintBoard $2598.00

SONY 19" Trinitron Color 1798.00

Sony Trinitron 19" Color System

- The SONY 19" Trinitron is one of our best buys ever! True Trinitron color at a great price!
- Includes 8-bit or 24-bit Video board and cable
- 2-page display supports all Mac IIsi, the SI, SE-30, and the LC

Sampo 20"

- Mono System $598.00
- Grey Scale System $898.00

- The Sampo is a high-quality dual-page display without the high cost!
- Includes 1-bit or 8-bit Video board and cable
- 2-page display supports all Mac IIsi’s, the SI, SE-30, SE and the LC

NuDesign Full Page Grey Scale $398.00

- Plug compatible with SI, Cl and Quadra (16 levels of Grey)
- Available with 1-bit interface card for all Mac IIsi’s, SE-30, SE and LC $488.00
- *20" Monitor manufactured by Sampo for Apollo/HP

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- Includes Adobe Photoshop

- Sharp JX-320 With Photoshop $1598.00
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- Includes Adobe Photoshop

60 East Chestnut - 145, Chicago, IL 60611

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Hours: 8:30-8:00 CST, Saturday 10:00-4:00
Technical Service and Order Tracking (8:30-5:00) :312-664-8225
At the dawn of the desktop-publishing era, your choice of tools was simple: a Mac Plus, a 20-megabyte hard drive, PageMaker 1.0, and a LaserWriter Plus. Today, the tools available to do the work have necessarily increased in number as well as in complexity.

In this month’s DTP Buyer’s Guide, we’ve gathered comparative reports on complicated, feature-rich software (drawing programs) and on essential hardware tools (slide scanners). The world of page layout is represented by our first-ever roundup of 65 QuarkXPress extension programs. We’ve also included a special Graphics and Design edition of our MiniFinders directory — featuring thumbnail reviews and ratings of more than 160 products. And to get things started, we’ve included a comprehensive overview of the latest and greatest products for desktop publishing. It’s got everything you need to make the smart choices for your own DTP tools.
Our goal at NEC is the complete integration of computers and communications. The Silentwriter Model 95fx is just one of many innovative products that help us to realize this goal. For example, we not only developed the first notebook computer with a built-in phone and fax, we make satellite dishes capable of sending data worldwide.

Once upon a time, all faxes looked the same. Bad. But with the Silentwriter® Model 95fx multifunction printer/fax, nothing gets lost in the transmission. Imagine PostScript™ language-quality faxes from your printer. It’s no fairy tale. Now you can send and receive documents in all their original glory. You’ll see beautiful fonts and graphics with none of the dirt and glitches, the jaggies and imperfections, that can turn a wonderful story into a tragedy. Why send a facsimile when you can send an original? Get the NEC Silentwriter Model 95fx multifunction printer/fax and live happily ever after.

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Desktop Publishing: The State

Do you have the right tools for the job?

Here's an up-to-the-minute look at products and technologies at the leading edge of the DTP revolution.

BY AILEEN ABERNATHY

Desktop publishing, circa 1992, is a robust, rapidly maturing industry. True, we're still waiting for refinements in color management and trapping, but for most users, the tools and quality are right here, right now. The question is no longer, Is it available? but Which one should I buy? To help you make the right decisions, here's a quick overview of the state of the art. (For further information on DTP products, see MiniFinders in this Buyer's Guide.)

Page Design

The first question most budding desktop publishers ask is: Which page-layout program should I buy? If you automatically answered PageMaker or QuarkXPress, you're seeing the trees instead of the forest. These are the best-known, best-selling programs, but that doesn't mean they are the "best" choice for every user. The current lineup also includes programs specifically designed for low-end, long-document, or design-intensive work.

You should make a buying decision based on your needs, not on popularity or peer pressure. Read reviews, talk to users, and test-drive the candidates. Then ask yourself some real-world questions:

What kinds of publications will I be doing?
If your needs are modest — reports, newsletters, and fliers with spot colors — Aldus' Personal Press or Timeworks' Publish It! Easy is a good (and inexpensive) choice. If you're producing technical documents or books, PageMaker and FrameMaker have the strongest features. Frame
Technology's FrameMaker, in particular, supplies such niceties as automatic figure numbering, cross-referencing, and a fine table editor.

If you do design-intensive work with only a few pages, such as advertising or brochures, consider Multi-Ad Services' Multi-Ad Creator or Eastman Kodak's Renaissance, which offer specialized graphics features. Finally, if you are producing four-color magazines or a variety of publications with differing demands, weigh the merits of PageMaker, QuarkXPress, and Manhattan Graphics' Ready,Set,Go! All three provide robust feature sets, including the ability to do color separations.

**Which features are mission-critical?** If your publication work demands specific features — such as color separations, footnotes, indexes, or database publishing — use these requirements to quickly narrow the field. If your publications make heavy use of tables, for example, only two programs can create them with a minimum of hassle: FrameMaker and QuarkXPress (through third-party XTensions).

**How will I output my documents?** If your final pages will be printed on an inkjet or laser printer, any of the programs will do the trick. If you plan to send pages to a service bureau for output, however, be advised that PageMaker and QuarkXPress are the service-bureau standards and some operators won't take files from other programs (unless you save them as Post-Script files).

**Do I need cross-platform compatibility?** If you need to exchange files with PC users, then PageMaker and FrameMaker are the only real choices. The Windows version of QuarkXPress has been repeatedly delayed (and will require a shakeout period once it ships), and the Mac version of Ventura Software's Ventura Publisher is on life support. For users of UNIX workstations, only FrameMaker supports those platforms.

**Do I want to customize the program?** If you want to tailor a program to your specific needs, get one that provides hooks for plug-in modules and/or a user-scripting language. (Plug-in technology allows third parties to write specialized software whose features can be seamlessly integrated with the main program.) PageMaker's Additions technology supports plug-in modules and a user-scripting language, although at press time, few third-party Additions were available. The undisputed king of modular programming is QuarkXPress, with nearly 100 XTensions available and more appearing monthly (see "XPress Yourself" in this Buyer's Guide). Personal Press, Publish It! Easy, and Ready,Set,Go! also have plug-in hooks, but the only modules released to date are bundled with the programs. (Ready,Set,Go! also has a scripting language.)

**Fonts**

By 1991, the number of PostScript Type 1 fonts had passed 3,000, a tidal wave that drowned TrueType on the Mac. Although TrueType fonts come with new Macs, you should switch to Type 1 versions if you're doing serious desktop
Desktop Publishing

publishing — most service bureaus, for example, use only Type 1 fonts.

Getting and using fonts is easier than ever. Nearly a dozen companies have unlockable-font CD-ROMs, which let you have entire font libraries at your fingertips without having to pay for them all at once. If you’d like to beef up the Adobe fonts in your PostScript printer, check out Sonnet Technologies’ FontCards, a family of font cartridges for the LaserWriter IINTX, QMS-PS series, and Texas Instruments’ microLaser printers. Sonnet can also make custom cartridges containing the Adobe fonts of your choice.

The flood of fonts isn’t limited to traditional text and display faces. Need a picture of a telephone or train? Instead of importing a graphic, simply type the image as a font character, using PictureFonts, a delightful collection of pictures, ornaments, and borders from FontHaus. Want a snazzy 3-D look for your corporate logo? Both Typestrify, from Pixar; and Strata-Type 3d, from Strata, can turn font characters into rendered 3-D images. Has glasnost expanded your business to Poland or points east? Casady & Greene’s Eastern European Library and Glasnost Cyrillic Library can help you communicate.

If you still can’t find the font you need, you can always make your own. FontMonger, from Ares Software, is a nifty utility that lets you convert TrueType fonts into Type 1 format (or vice versa). You can also use FontMonger to make custom fonts with fractions, small caps, EPS images, or characters from different fonts — all for $99.95.

On a grander scale, Adobe’s Multiple Master fonts let you generate — on the fly — thousands of typographically correct weights and widths from a single typeface. This revolutionary format holds great promise, especially in the areas of copyfitting and document portability. The first two faces. Myriad and Minion, appeared this year.

Graphics

Text without art is pretty dull, but as we all know, one of the Mac’s strengths is visual gymnastics. This is well illustrated by the current crop of drawing programs, which can do everything but hand springs (see “True Perspective: Drawing Programs,” in this Buyer’s Guide).

But the bit-mapped beat is where the real action is. Digital photography is jumping, thanks to advances in scanning technology and image-editing software. Desktop scanners barely existed five years ago; today you can pick up an excellent 24-bit-color flatbed unit, such as the Hewlett-Packard ScanJet IIc, for around $1,500. Need higher quality than a flatbed scanner can supply? Invest in a slide scanner, where the primary issue is not so much image quality as throughput speed (see “Sliding into High Gear: Desktop Slide Scanners,” in this Buyer’s Guide).

Before long, however, you may not need a scanner at all. Why? Picture this: You drop off a roll of 35mm film for developing and request a set of prints on paper — and on CD. That’s just what Kodak’s new Photo CD system promises, at mass-market prices of $20 for 24 exposures. Each digital photograph is stored on-disc in five resolutions, including a high-resolution compressed image for photographic-quality work. Kodak recently released Photo CD Access, a utility that lets you open, edit, and export the images. In the very near future, several Mac applications, including Adobe’s Photoshop, EFI’s Cachet, and Renaissance, will provide direct support for the Photo CD format. Apple also says that Photo CD support will be integrated into a future version of QuickTime.

If you’d rather not display your artistic talents (or lack thereof), there’s no shortage of photography CDs, the latest wrinkle in electronic clip art. One good choice is the PhotoDisc series, from 21st Century Media. Each of the three CD-ROM volumes — Business and Industry, People and Lifestyles, and Backgrounds and Textures — contains 100 to 400 high-resolution, 24-bit stock photos. The most stunning artwork I’ve seen recently, though, is Artbeats’ new Marble & Granite collection. These high-resolution, full-page backgrounds and frames are beautifully rendered and can also be used for presentations and 3-D texture mapping. For those who use laser printers, Artbeats has a special version of the package that contains 10-percent-gray-scale images optimized for 300-dpi output.
It's About Speed. It's About Resolution.

Finally. You have a choice. High resolution. PostScript compatible printers that deliver speed and flexibility like you've never seen.

It's about Speed. Both printers provide 8 MB RAM (expandable to 16 MB), an AMD 29000 RISC processor and Xante's Advanced Memory Management to break through the bottlenecks typically found on PostScript printers.

It's about Resolution. There is no substitute for true 600 x 600 dpi. Both printers provide high quality, consistent output without the side effects of artificial smoothing. Your scanned and other gray scale images will dramatically improve with Xante's Advanced Gray Scale Technology-you'll get 850 x 850 dpi equivalent gray scales.

It's about Flexibility. In addition to the standard 35 fonts, Xante's Virtual Disk Technology enables you to load and reload up to 30 of your download fonts permanently on the printer. If you need to store more than 30 fonts, you can attach a disk to the SCSI interface.

There are no substitutes for true 600 x 600 dpi. Both printers provide high quality, consistent output without the side effects of artificial smoothing. Your scanned and other gray scale images will dramatically improve with Xante's Advanced Gray Scale Technology—you'll get 850 x 850 dpi equivalent gray scales.

It's About Time. Finally. Everything you need in a printer, at a price you can afford, and with the purchase protection you deserve. Compare our printers to any other printer and we think you'll agree.

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Desktop Publishing

Obviously, all these multimegabyte graphics require some serious storage space. When it comes to transporting huge files, removable SyQuest and Bernoulli cartridges are showing their age, faring poorly when compared with speedy, durable 3.5-inch optical cartridges and removable hard drives (see “Removable Hard Drives,” in this issue). And if you don’t already have one, add a CD-ROM drive to your 1993 budget. As you’ve seen, CD-ROMs are now the standard delivery media for fonts and graphics. If you want to use Photo CD, be sure to get a drive that supports the XA standard.

**Color Concerns**

Color is everywhere in modern desktop publishing, even for those whose final output is still black-and-white. Yet, amazingly, there’s still no way to ensure consistent color as an image travels from scanner to monitor to printer. That should change in 1993, however. Three companies — Apple, Kodak, and EFI (Electronics for Imaging) — are readying separate strategies for system-level color control. Each promises to provide a reliable means of specifying color as it moves through the production chain, guaranteeing that the mauve you see on-screen is identical to the purple that appears on paper.

EFI’s EfiColor is the first CMS (color-management system) to reach market, albeit in a limited fashion. EfiColor is presently available only in Cachet, EFI’s impressive color-editing package, and in the company’s Fiery ColorLaser controllers for Canon, Xerox, and Kodak color copiers. But EFI is licensing EfiColor to other companies and has promised a Photoshop plug-in and QuarkXPress XTension as access points for EfiColor “real soon.”

If you work with color photographs, you really should get Cachet. This amazing package lets anyone make reliable color corrections to scanned photos on an uncalibrated monitor, without any training or color knowledge. The process is quick and painless: You simply match the screen appearance of a scanned photo to that of an already-corrected reference image. Cachet currently supports nine output devices, with more to come.

Kodak actually has two color-management systems. The first, ColorSense, is a user application that should be out in December. The second, Precision CMS, is a developer-level approach. RasterOps, Radius, and SuperMac have all licensed Precision, but only RasterOps has announced a product. The RasterOps CorrectColor Management System ($2,399) consists of the color-management software, the CorrectColor Calibrator (an optical-sensor system for calibrating monitors), and Photoshop plug-ins for color-correcting images.

The most significant player in color management, however, may be Apple, which has announced that its ColorSync system extension will be out by year’s end. Few details were available at press time, but Apple claims that existing applications will be able to take advantage of ColorSync’s color-management capabilities, without upgrades. If ColorSync turns out to be a less robust solution than those offered by EFI and Kodak, that’s OK. ColorSync will allow third-party solutions to plug seamlessly in to its architecture, so that you can use the CMS you like best.

**Print!**

No matter what technologies and skills you use up front, in desktop publishing, the printed page is the only thing that really counts. If you’re producing final pages from a desktop laser printer, seriously consider a 600-dpi model. These new-generation printers cost around $4,000 — the same as a 300-dpi laser printer two years ago — and offer “good enough” output quality for newsletters and similar jobs that formerly would have been sent to a service bureau.

Once again, however, color is where the advances in output technology really shine. Prices for desktop color printers have dropped dramatically, and some units provide good enough quality to be used reliably as proofing devices. Look closely at the current crop of thermal-wax-transfer printers, which run about $5,000 apiece, but if you have room in your budget, reserve judgment until you see the output from a dye-sublimation printer. This hot technology is pricey (as always with something new) but produces continuous-tone images that are very close to photographic quality. At press time, the best buy was Tektronix’s Phaser 5650, a RISC-based device that lists for $9,995.

If you don’t need professional-quality output and your job is a small one (say, 500 copies), you could use a color copier, such as Canon’s Color Laser
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CIRCLE 224 ON READER SERVICE CARD.
Desktop Publishing

Copier, as a short-run press. EFI's Fiery ColorLaser controller, for example, lets you (or a service bureau) drive the copier from a Mac, printing as many as seven pages per minute at 400 dpi.

Finally, the quality of desktop color separations produced by programs such as Aldus' PrePrint 1.5 has improved to the point where the separations receive grudging approval even from hardened skeptics. Separating complex pages in bit-map-hating programs such as QuarkXPress is much easier, thanks to growing support for Quark's DCS (Desktop Color Separation) technology and Photoshop's CMYK TIFF format. And advancements in imagesetter screen-angle technology have greatly reduced problems with moiré patterns in printed digital halftones.

The biggest hurdle remaining on the track to high-quality color from the desktop is trapping. QuarkXPress 3.1 provides some trapping controls, but no company yet offers a foolproof solution. Until one does, keep in mind that trapping is a complex skill; it's much easier and cheaper to let your print shop manually trap images than it is to deal with electronic trapping gone wrong. Aldus, however, recently announced the acquisition of RipPrep, a PC-based trapping program for EPS files that shows promise.

Another prepress technology, imposition, is also making the move to the desktop. Again, Aldus is a front-runner. Its new PressWise package is getting high marks from users for its elegant interface and powerful features for creating page signatures. PressWise may pose a serious threat to Ultimate Technographics' Impostrip, which is better established but more expensive, clumsier to use, and hardware copy-protected. At least two companies—DK&A and XTend—are working on imposition XTensions for QuarkXPress.

Many naysayers, particularly those in the printing industry, claim that prepress operations such as trapping and imposition are best left to printing professionals. Desktop solutions, they say, will compromise quality and productivity. Although it's too early to say who's right, remember one thing: They said that about digital type and color in the beginning too.

Now that she's shared (almost) everything she knows about DTP, senior editor Aileen Abernathy is embarking on a free-lance writing career.
36 — We test and evaluate eight new color printers based on four compelling technologies: inkjet, thermal-wax transfer, phase change, and continuous tone.

"Graphics Tablets: Drawing the Line," April '92, page 98 — An evaluation of the uses and features of six graphics tablets. Also includes an explanation and a diagram of how the tablets work.

"Practically Perfect Printing: High-Resolution Post-Script Printers," February '92, page 172 — We test and evaluate ten high-resolution printers based on such features as output, speed, and price.

"Capturing Color: 24-Bit Scanners," December '91, page 152 — Nine 24-bit color flatbed scanners are put through their paces by our labs, which compares scanning methods, resolution, and preview features. Also included are five steps to better scans.

"The Affordable Rainbow: Color Inkjet Printers," October '91, page 140 — We test four color inkjet printers. An explanation of the inkjet printing process is also included.

"Is It Time for CD-ROM?" June '91, page 150 — An evaluation of 16 CD-ROM drives, on the basis of speed, access time, and throughput.


"Too Big to Fit on a Floppy?" February '91, page 232 — A discussion of strategies, including the use of compression utilities, for alleviating headaches that come from having large DTP files.

"Beyond the Laser Printer," January '91, page 197 — An examination of the advantages and disadvantages of owning your own imagesetter. Includes a directory of imagesetter vendors and valuable information on how to choose a service bureau.

Software

"The Third Dimension," September '92, page 114 — We review and evaluate fourteen 3-D drawing programs. A feature-comparison table and a chart that shows which programs suit your experience level are included.

"Plugging In to Photoshop," September '92, page 203 — A close examination of the different plug-in modules available for Photoshop. Also includes a directory of plug-in vendors.

"Publishing Your Data," February '92, page 120 — A look at different approaches to database publishing. Also includes a product directory.

"Page Elements with Style," January '92, page 159 — Tips on using your existing page-layout program to create works of art.


"Designing for Fax," May '91, page 201 — A collection of tips for jazzing up fax images.

"Painting Programs: The Fine Art of 32-Bit Color," March '91, page 134 — Four full-color painting programs are tested and rated. The differences between 32-bit painting programs, photo-retouching programs, and object-oriented drawing programs are explained and the uses for each are discussed.

"Clip Artistry," November '90 page 168 — A guide on how to choose, edit, and use clip art. Also includes capsule reviews of popular clip-art packages.

Type

"Flexible Fonts," October '92, page 205 — A look at Adobe's revolutionary Multiple Master technology and the first products based on it.

"Fonts on Demand," May '92, page 165 — An evaluation of the usefulness and cost of the new unlockable-font CD-ROMs. Includes a directory of discount font sources.


"Dueling Font Standards," October '91, page 165 — A comparison of Apple's new font standard, TrueType, with the reigning standard, Adobe PostScript Type 1. The advantages of each are discussed.

Other


"Graphics Glossary," April '92, page 165 — Definitions and explanations of all the terms you need to know to understand DTP — or at least sound like you do!


— Amanda Michael
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<td>Adobe Systems</td>
<td>1585 Charleston Road</td>
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<td>Eastman Kodak Co.</td>
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<td>Aldus Corp.</td>
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<td>Ventura Software</td>
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The Power of Imaging Is Yours.
Modularity is a hot concept — just ask Apple. But long before system extensions, PageMaker Additions, and Photoshop plug-ins became the rage, a little company called Quark announced that its page-design program, QuarkXPress, would provide hooks for plug-in modules called XTensions.

Quark founder Tim Gill realized that he couldn’t cram every desirable feature into QuarkXPress without unacceptable trade-offs in size, speed, cost, and complexity. So in 1989, he unveiled the XTensions technology, an open architecture that lets third parties write specialized software that can be integrated seamlessly with QuarkXPress.

Few programs let you express yourself like QuarkXPress. Here are 65 XTensions, each under $500, that let you customize QuarkXPress to your heart’s content.

BY PHILIP BISHOP AND AILEEN ABERNATHY
Developers and users responded enthusiastically, and the flexibility provided by XTensions was a major factor in the phenomenal success of QuarkXPress 3.0. Users appreciated the ability to add just the features they wanted to QuarkXPress without being burdened with others they'd never need. Developers liked the ability to take an off-the-shelf product — QuarkXPress — and customize it to meet the specialized needs of a niche market. QuarkXPress' extensibility also enabled it to penetrate high-end publishing.

Today nearly 100 XTensions are shipping — and those are just the ones available commercially. Dozens of proprietary XTensions exist, created by individuals and businesses ranging from a Tennessee Sunday school to Dow Jones.

XTensions run the gamut from the sublime to the ridiculous, from the elegant MasterMenus to frivolous freebies such as a/iCu, a pair of eyeballs that follows the cursor around the screen. Prices range from free to the dizzying heights of vertical markets — at $4,995. Ad Director, from Managing Editor Software, is almost six times the price of QuarkXPress. Some XTensions improve upon QuarkXPress' interface; XStyle (see Figure 1), for example, adds useful style palettes. Other XTensions supply features missing from the core program, such as tables and indexes. Still others are proprietary add-ons that enable QuarkXPress to work with high-end prepress systems, including those from Scitex and Linotype-Hell.

Clearly, there are too many XTensions to cover in a single article, and more appear each month. In this overview, we'll look at 65 general-interest XTensions that cost less than $500 each. Previously, we've covered the growing group of publication-management tools, which includes QuarkCopyDesk and QuarkDispatch (see "Workgroup Publishing," February '92, page 211). Future articles will address products in evolving categories such as page imposition, which has to do with arranging book pages for printing.

**An Xacting Science**

Each XTension is a separate miniprogram that has direct access to the internal code of QuarkXPress. To install an XTension, you place it in the folder containing the QuarkXPress application. When you launch QuarkXPress, it loads all available XTensions. Instead of being sequenced in a separate menu, à la PageMaker's Additions, XTensions

---

**Fair XChange**

If you're in the market for an XTension or three, chances are you'll get it from XChange, a San Francisco company formed in 1991 by entrepreneurs William Buckingham and Will Whitaker.

XChange is a one-stop resource for users and XTension developers. During product development, XChange offers assistance with interface design, documentation, and packaging. Once an XTension is ready to ship, XChange handles the marketing, distribution, and technical support. XChange is active on several on-line services, particularly CompuServe, where it has a section in the DTP Vendor Forum (GO DTPVEN).

The company produces a quarterly catalog of XTensions and also sponsors the XTension of the Month Club. For $99 per year ($149 overseas), club members receive a free XTension plus an informative newsletter each month.
are integrated throughout the QuarkXPress interface. XTensions can appear anywhere — as floating palettes or menu items or simply in the background.

But there’s a drawback to this dexterity. An XTension’s greatest strength — its bonding with QuarkXPress’ core code — is also its greatest weakness. XTensions are prone to break with each QuarkXPress upgrade (several were incompatible with version 3.1), so they must be continually retested and upgraded. PageMaker’s Additions, on the other hand, don’t have direct access to the program’s core code, which limits their functionality. Additions can’t be implemented as floating palettes, for example, or run in the background — but they don’t run the risk of breaking with each PageMaker revision either.

If you don’t want to use a particular XTension, you simply move it into another folder so QuarkXPress can’t find it. Tired of shuffling XTensions among folders? Get XTension Manager, from DK&A. Hold down the Option key as QuarkXPress launches, and XTension Manager presents you with a list of available XTensions; you choose which ones to load. You can also save groups of XTensions as sets. Select a set, and only those XTensions will load. We hope that in future versions of XTension Manager, we will be able to turn XTensions on and off while QuarkXPress is in use and to open XTensions located in other folders.

**Free and Easy**

Before delving into the plethora of commercial XTensions, you should snag two collections of free add-on modules, one each from Quark and XChange. XChange distributes all the XTensions in this article; its Sampler Disk contains eight XTensions of varying usefulness (see the “Fair XChange” sidebar). Of greater interest are the 11 modules from Quark itself, all of which are valuable additions to QuarkXPress.

**QuarkFreebies 3.1.** The best-known free XTension, QuarkFreebies has two modules: FeaturesPlus and NetworkConnection. FeaturesPlus contains six conveniences from previous versions — Fraction/Price Preferences, Make Fraction, Make Price, Remove Manual Kerning, Word Space Tracking, and Value Converter. Windows brings any QuarkXPress document to the front when more than one document is open. Alternate Em Spaces provides a workaround for one of Quark’s quirks — its unorthodox definition of em spaces as the width of two zeroes. When you select the alternative method, em spaces will be defined according to the traditional system of measurement, in which an em space is the same size as the width of an m in that particular size and font.

QuarkFreebies’ other XTension, NetworkConnection, allows you to...
exchange messages, pictures, and text files with other QuarkXPress users over a network.

Bob. This oddly named XTension and its offspring (see next item) offer an eclectic array of features. You can quickly move to any page in a document by using the pop-up icons in Go to Page. Line Check searches documents for typographic peccadilloes such as loose lines and widows. But Bob’s coolest component is Color Drag. Simply click on any color swatch in the Colors palette; drag it to the line, frame, or box background you want to color; and let go to color the element. Too bad it doesn’t work on text.

Son of Bob. Among the half-dozen features in this sequel, Convert Quotes automatically converts straight quotes to curly ones as you type. Control-V lets you quickly change the page-view scale by typing Control-V plus the desired viewing size. Best of all is Super Math, which adds multiplication and division capabilities to any numeric-entry field (addition and subtraction are already available).

Keep an eye out for Bobzilla, the third in this wacky series. Preliminary peeks revealed a starburst tool and a souped-up step-and-repeat command.

Cool Blends. QuarkXPress 3.1 lets you create linear blends as backgrounds for picture and text boxes. Cool Blends (see Figure 3) supplies five blend types, including circular and midlinear ones.

Color Sets. Not an XTension per se, the Color Sets data file adds three more Pantone color-matching systems — Process Color, ProSim, and Uncoated — to QuarkXPress’ lineup.

PM Import. One of the most-requested (and hyped) XTensions, PM Import converts PageMaker 4.0 and 4.2 files into QuarkXPress 3.1 documents. The XTension can’t import certain PageMaker features, including style sheets, tracking data, rotated text, and indexes. And PM Import has other weirdnesses: In our tests, page elements were occasionally missing or placed on top of one another or on different pages than in the original PageMaker document. Despite the cleanup required, however, using PM Import is much faster than re-creating PageMaker files from scratch in QuarkXPress.

WP Filter. This one-trick pony imports files created in WordPerfect (version 2.0 and later) into QuarkXPress 3.1.

Plug-In XTension. Combine the Plug-In XTension with the right Photoshop plug-in module, and you can scan a photo directly into QuarkXPress. The Plug-In XTension accesses all Photoshop “acquire” plugins, including those for driving scanners and video-digitizing systems and for decompressing JPEG images. It doesn’t support special-effects plugins such as Aldus Gallery Effects.

Multiple Masters Utilities. QuarkXPress is one of the first applications to offer special support for Adobe’s Multiple Master font technology (see “Flexible Fonts,” October ’92, page 205). The XTension can automatically generate missing instances (style variations) of a Multiple Master font, and it gives you access to Adobe’s Font Creator utility from inside QuarkXPress.

Calibration. Using the Calibration XTension and a densitometer, you can adjust the calibration curves in your printer files to compensate for the bleeding of halftone dots, thus avoiding color shifts in screen tints during printing.

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you send files to a service bureau for output, keep an eye out for the Prepare for Service Bureau XTension (it hadn’t been released yet at press time). It copies a QuarkXPress document and associated graphics (but not fonts) into a single folder and produces a text file that lists output requirements, including all the fonts and graphics used in the document. A second feature, Trap Preferences, automatically embeds your trapping values in the document.

All the free XTensions, from Quark as well as from XChange, are available individually from on-line services and some user groups. If you prefer, you can get each set on-disk from the companies for a $25 handling fee.

If you need more power than the free XTensions provide, it’s time to explore the commercial modules.

Managing QuarkXPress

A Lowly Apprentice Production offers a trio of useful XTensions for fine-tuning QuarkXPress’ interface. Default Settings lets you customize the appearance of windows, palettes, and dialog boxes; set the display resolution for imported TIFF images; and specify default units of measurement for items such as leading, text inset, and trapping. You can name and save sets of default values and switch among them at will. The aforementioned pair of watchful eyeballs, a/iCu, comes with this XTension. LayerManager (see Figure 2) is a handy palette for navigating quickly through a document’s layers, sparing you from constantly accessing the Bring to Front and Send to Back menu commands. You can even assign objects to specific layers. ViewIT lets you arrange document windows just the way you want them — overlapping, neatly tiled, whatever. You can also hide windows and have each document remember its window size and position the next time it’s opened.

The most prolific XTensions developer, hands down, is Jacques Viker, of Vision’s Edge. If you have a small monitor, you will appreciate his Navigator XT (see Figure 2), which lets you jump to any point on a page merely by clicking on that spot in a thumbnail view. The Missing Link alters the behavior of QuarkXPress’ link and unlink tools. You can join two chains of text-containing boxes, splicing one into the other at any point. Even better, you can duplicate a text box in the middle of a chain; it becomes a stand-alone unit containing the text in the original box and can be moved at will.

But the cream of the crop is MasterMenus, which lets you access any QuarkXPress menu items (except XTensions) from a floating palette. The palette’s contents are added to and subtracted from through a dialog box, where you also can abbreviate menu names so they fit in a minimum of space. Never again will you waste time and energy hunting through menus for frequently used commands. (A tip of the hat to Clik’X, the free XTension on which MasterMenus is based.)

The Gatherer (see Figure 4), from Managing Editor Software, does just what its name says: It automatically rounds up text and graphic files from specified folders anywhere on your network and lists them in a palette, ready for you to place directly onto a page. You don’t have to create a box first. Just select an item, drag out a box, and specify the parameters you want. Gatherer does the rest. This could be the hot XTension of 1992.

FileManager, from CompuSense, is another nifty XTension. It has three key features. First, it lets you build a library of frequently used page set-ups. Second, it lets you add a header that shows a document’s status (such as whether it’s a draft or final version) and lists its name, author, and last revision. You can search for documents based on these fields and then open, print, move, or delete them.

Third, it can round up all files needed for outputting the document, including graphics and fonts, and place them in a single folder. In this respect, FileManager is similar to Magpie, which we will discuss later.

Just Your Type

QuarkXPress has powerful typographic features; even so, it doesn’t address every nuance of text handling and typography. CompuSense licensed Circle Noetic Services’ hyphenation code and created Dashes, an XTension that provides high-quality hyphenation in 20 languages, including Swedish and Swahili. You can insert or remove discretionary hyphens and build an exception dictionary, which can be imported and exported as a text file.

QuarkXPress has a spelling checker, but CompuSense’s Spellbound adds a few twists. You can have as many as five auxiliary dictionaries open — and editable — simultaneously, detect capitalization errors, use an exception dictionary for enforcing in-house spelling styles, and check the spelling in eight languages besides English. Its
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dictionaries support the full Mac character set, including ligatures, accented characters, and dashes. Need a thesaurus? Vision's Edge based its Thesaurus Rex XTension, which has a database of 220,000 synonyms, on Microlytics' Word Finder.

In text that suffers from unsightly line endings, Kytek's SeXT kills off widows. Its modus operandi: adjusting the tracking according to user-defined specifications—in increments as small as 1/20,000 cm! For more-serious copy-fitting problems, CopySet, from Vision's Edge, creates a temporary text box (colored a hard-to-miss magenta) that shows you how much copy you must dispatch. But that's only the beginning. CopySet also lists all your stories in a floating palette and tells you how many characters, lines, or inches you need to cut for each. Finally, click on the XTension's Trim button, and it automatically shrinks or expands a text box (or chain) to fit its contents.

If you have to fit copy into a box—no matter what—try VJ (vertical justification), from the French company Trias. It force-fits text into a box, altering the point size, leading, tracking, and horizontal scaling as needed (you set the limits).

Alias, a popular XTension from the French company Reseaux, lets you do search-and-replace operations on text within a document or as it's being imported. You can insert typographic niceties such as curly quotes and em dashes, for example, and filter control characters out of downloaded files. Kytek's CursorPos (see Figure 2) is a tiny floating palette that tells you precisely where the I-beam pointer is, with x,y coordinates. You can measure from the edge of the page, margin, or text box—useful for checking baseline alignments throughout a document.

QuarkXPress can skew graphics but not text. At least three XTensions, the best of which is TeXT Tools, from Vision's Edge, can put a tilt in your type. TeXT Tools skew text as much as 90 degrees forward or backward; skewed text is fully editable. TeXT Tools has two other neat features: It can convert ranges of text to lowercase or small capitals, and it can export all the stories in a QuarkXPress document to a single text file.

Kerning Palette (see Figure 2), from Clearface, lets you adjust a font's kerning pairs in true context—just click on a problematic pair and open the XTension. Kerning Palette opens the relevant font file and displays the kerning value for the chosen letter pair. Change the value, and the text is automatically updated. You can store the altered kerning data in the font itself (in which case it can be used by other applications) or in QuarkXPress' Preferences file. For those who are frustrated by QuarkXPress' inability to kern pairs that contain the space-band character (space between words), Monotype's Agency Fit includes an XTension that lets you kern space bands in a selected story or range or throughout a QuarkXPress document. Volume 1 of Agency Fit also supplies kerning and tracking data for 65 PostScript fonts; Volume 2 provides data for another 250 fonts.

Baseview Products' QXEdit is akin to PageMaker's story editor: It lets you edit chunks of text in a separate, non-WYSIWYG window, using an eye-saving font size of your choice. QXEdit displays style attributes such as bold and italic, but it doesn't show line and column breaks. QXEdit is no speed demon, but for substantial text changes, it's a big improvement over continually waiting for QuarkXPress to reflow pages.

Want a quick way to copy and paste specifications? CopySpecs, from Frank Kubin, works like an on-the-fly style sheet. You can copy text attributes such as font, size, and tracking from one piece of text and simultaneously apply them to one or more selected areas of text, even within the same paragraph. Mediamic's Mimic (see Figure 2) duplicates the specs of an entire text or graphics box, including colors, box sizes, text styles, and line-by-line formatting.

Graphically Speaking

QuarkXPress' library feature provides a great way to store graphics and page elements, but to place items
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in a library, you must drag or paste them individually into the library palette. AutoLib, from Vision's Edge, simplifies this chore, allowing you to create entire libraries quickly. Just gather the desired graphics into a folder and select Create Library. AutoLib creates a new library and automatically places all the graphics in it.

XSize (see Figure 5), from the German developer Schnittstelle, lets you size and crop images in a special dialog box before you import them. With Picture Scale, from Integrated Software, you can scale images or their boxes in user-defined increments, proportionally or not. A second feature lets you quickly size a picture box to fit a graphic (or vice versa).

Need to import a graphic in an alien format? Equilibrium's GraphXChange imports graphics in more than 20 bitmapped formats not normally supported by QuarkXPress, including EPS and TIFF files from the PC, raw RGB, CompuServe's GIF, Lotus' PIC, Targa's TGA, WordPerfect's WPG, Pixar's RIB, and the native file format for Photoshop.

Whether their format is native to the program you're reusing or not, graphics can make screen redraws and printing painfully slow. Picture Tools, yet another XTension from Vision's Edge, speeds things up by letting you control the greeking and printing of individual pictures. Keyboard command equivalents allow you to greek or ungreek all pictures globally, and a special dialog box lets you suppress the printing of any or all pictures. Like Picture Scale, this XTension lets you resize a picture box to fit a graphic.

A pair of clever add-ons that aren't XTensions are Electronic Border Tape and EBT Too, from ShadeTree Marketing. These collections of bitmapped frames (100 per package), which can be applied to any rectangular text or picture box, range from simple and elegant to fancy and flashy. Each package comes with FrameMover, a utility that moves frames in and out of a QuarkXPress Preferences file.

Designer Pages

Setting up a publication grid by pulling out guides from the QuarkXPress ruler is time-consuming and requires a lot of fiddling around. With J. Michael Marriner's Grid Layout, however, you merely type in the number of rows and columns, and the entire grid appears, in your choice of eight colors. You can specify as many as 36 x 36 rows and columns (including gutters) on a single page or across a spread.

Some XTensions contribute a single, often invaluable, design nicety. NudgeIT, from A Lowly Apprentice Production, lets you navigate text or move boxes or their contents in user-determined increments, as opposed to QuarkXPress' 1-point and .1-point defaults. With Resize XT, from Vision's Edge, you can quickly scale a line or group of boxes — and their contents — between 20 percent and 400 percent. Scale down a chain of text boxes, for example, and the point size, leading, and so forth will be appropriately reduced.

Need a drop shadow or starburst? Integrated Software offers XTensions for both. Shadow creates a drop shadow of any color and offset behind a text or picture box. Starburst makes star-shaped polygons; you determine the number of spikes and their length to get the desired effect.

Vision's Edge offers two simple but handy color-related XTensions (see Figure 6). ColorChange lets you search and replace specific colors and shade percentages in pictures (including PICT and TIFF images), frames, box backgrounds, and lines. Color Usage displays a list of the colors that are used in a document's internal elements, including the shade, page number, and separation status. When you click on an entry, you get a color swatch along with its RGB and CMYK values.

For a few dollars more, CompuSense's ColorManager combines and refines many features of ColorChange and Color Usage. You can selectively change colors and tints (except in PICT and TIFF images), view each color's separation status (spot or process), and set the screen angles. ColorManager displays a list of the colors used within a document, and even better, it shows the colors used in your EPS graphics. If an EPS color isn't defined in QuarkXPress, the XTension can add the definition to the color palette — a necessity for correct output.

If you regularly produce catalogs, directories, or other publications that use information from databases or spreadsheets, Em Software's Xdata is a must-have XTension. It is a sophisticated database-publishing tool that lets you automate the formatting of ASCII text files imported in tab- or comma-delimited format. Xdata performs its magic by using a prototype document, which you build with its powerful scripting language to indicate the placement and appearance of text. Version 2.0 adds the ability to...
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import graphics and to automatically generate headers and footers across a page or spread.

**Missing Links**

Aldus built indexing and table-of-contents generation in to PageMaker; Quark deemed them auxiliary features and left it to outside companies to fill the void. Virginia Systems offers Sonar Bookends and Sonar TOC, which work on ASCII text files exported from QuarkXPress. Sonar Bookends creates an index consisting of either all words in a file or just those on a list you supply. Sonar TOC, which requires Sonar Bookends, generates a table of contents based on words you’ve previously marked in QuarkXPress. When you’re finished, Bookends and TOC files can be used as is or can be imported back into QuarkXPress for further formatting.

Future Publishing’s InDeXTension creates indexes within QuarkXPress, eliminating the need to export text files. You mark the desired words and phrases, and InDeXTension generates the index, which can be formatted and, if desired, merged with other indexes from other documents.

Another area in which QuarkXPress comes up empty is tables. Tableworks (see Figure 7), from Npath Software, is the tool of choice. It has all the features you need to create tables of any size and complexity, including full access to QuarkXPress’ typographic and formatting tools. It provides headers and footers; templates; anchored and multipage tables; auto-configuration of cells to fit imported data; and support for straddle cells, rotation, and all graphic types. Tableworks has a tutorial, and despite the program’s complexity, you’ll be creating tables within minutes of installation. For those who don’t need all those features, Tableworks ShortCut offers a more basic feature set.

**Output-Oriented**

Only one thing is more frustrating than not being able to print a document, and that’s not knowing why it won’t print. PinPointXT, from the Cheshire Group, reports on PostScript printing problems, showing you what was processing prior to the error, the error type, and exact page location where the error occurred. Armed with this information, you look up the error in the provided dictionary, which explains the problem and offers advice about how to fix it. Some of PinPointXT’s explanations may be a bit too technical for the average user, however.

Are the folks on your network tired of having their Macs tied up while QuarkXPress documents print? QSpool, from Baseview Products, is a multiuser print spooler that frees up their computers in seconds. When a document is ready for output, you copy it to a designated folder (preferably on a file server); QSpool automatically opens, prints, and then deletes the file from the spooler folder.

Printer’s Spreads, from Corder Associates, provides a quick and easy way to reorder QuarkXPress pages so that they print correctly in the two-page spreads used for saddle-stitched (stapled) publications. If you have a 12-page document, for example, Printer’s Spreads will reorder the pages so that page 12 matches up with page 1, page 2 with page 11, and so on. Printers and imagesetters that support 11-x-17-inch paper or film (the width of two letter-sized pages) are becoming more common, and this XTension should be a real boon for simple publications such as manuals, newsletters, and small catalogs.

For those who work with color, PrePress Technologies offers SpectreSeps QX, which plugs QuarkXPress’ most gaping hole: its inability to separate continuous-tone images (color TIFF and PICT). The XTension separates entire documents and lets you correct image colors and adjust all output and press parameters. PrePress Technologies additionally markets SpectreScan QX, which allows you to operate color scanners from within QuarkXPress and lets you color-correct captured images.

**At Your Service (Bureau)**

Preparing files for output at a service bureau can be a real hassle. First you must make a complete list of all the document’s elements — fonts, graphics, and output parameters. Then you have to gather all the necessary files, making sure not to forget anything. There’s no shortage of XTensions to help you through the process; here are our favorites:

QuarkPrint is an upscale version of Quark’s free Prepare for Service Bureau XTension. Although it was not yet shipping at press time, it will print or save a list of all the fonts, graphics,
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colors, H&J and trapping specifications, and style sheets in a document, even if the document isn’t open. You can save and apply printer settings, specify custom screen angles, and adjust for dot gain. But QuarkPrint’s best feature may be its ability to print nonsequential pages and to print just a specified area of a page.

Your best bet for service-bureau preparation is a little bird called Magpie (see Figure 8), which recently flew in from Show-Ads Group, an Australian developer. Magpie combines features of ColorManager, FileManager, and other service-bureau utilities into a single XTension. It compiles a list of the fonts, graphics, and colors in a document, and it flags problems such as missing fonts or outdated images. Magpie can also gather the required files — the document, graphics, and fonts — and place them in a single folder (on a removable cartridge, if you like) for speedy transport to a service bureau or for archival purposes. No more forgetting an important EPS file or that pesky Zapf Dingbats font. If the DiskDoubler INIT is installed, Magpie will automatically compress the files as it collects them. All this, and Magpie is the least expensive XTension of the bunch — except, of course, for Quark’s freebie Prepare for Service Bureau.

Still can’t find the XTension you need? There are numerous XTension developers who will be happy to fashion one for you — for a price, of course. You can reach them by calling Quark or XChange or by visiting CompuServe’s DTP Forum (GO DTPFORUM), a popular watering hole for XTensioners.

Philip Bishop uses a mess of XTensions to produce his bimonthly journal, CD-ROM Macintosh. Senior editor Aileen Abernathy is frequently over-XTended.

Directory

XChange distributes all the XTensions mentioned in this article. Products listed as free are also available from on-line services such as ZifNet/Mac, CompuServe, America Online, and AppleLink.

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When the first drawing programs appeared for the Mac, you were limited to what you could portray with imaginative use of text, simple geometric shapes and polygons, fill patterns, and lines. But as the Mac has grown more powerful and sophisticated, so have its drawing programs. The current crop of software still excels at working with simple shapes, but you'll also find tools for creating complicated drawings, from elaborate floor plans to technical illustrations and charts.

Of course, no single drawing program can be the best for every conceivable use, although some of these software Swiss-army knives have more blades than others. This month, we'll examine Illustrator 3.2, from Adobe; FreeHand 3.1, IntelliDraw 1.0, and SuperPaint 3.0, from Aldus; Canvas 3.04 and UltraPaint 1.05, from Deneba; MacDraw Pro 1.5, from Claris; CA-Cricket Draw III, from Computer Associates; Dreams 1.1, from Innovative Data Design; DeskDraw 3.08, from Zedcor; and Michael's Draw 1.0, from Event One. [At press time, Deneba had

Do you want a drawing program that's easy to use or one that's more feature-packed than a 747? We assess some rising stars and old favorites, so you can choose what you need to get that picture in your head onto your screen.

BY ERIC TAUB
Drawing Programs

just announced ArtWORKS ($149), which the company describes as the next generation of UltraPaint. —Ed.

In this article, we'll also look at the various tasks these drawing programs are designed to accomplish, to help you pinpoint which package or combination of packages can best meet your particular needs.

Simple Drawing

If your needs are limited to simple drawings, such as pictures with some boxed text, or lines and arrows (say, in an organizational chart), or some slightly enhanced type, you might do well with DeskDraw, a simple, inexpensive package that's reminiscent of early versions of MacDraw. The new integrated programs, such as ClarisWorks, also have drawing modules that are adequate for this sort of work. (So do some word processors, although Microsoft Word 5.0's drawing capability is so feeble that you wonder why Microsoft even bothered to include it in the program.)

All the drawing programs reviewed here provide a full complement of basic shapes and lines with arrows, although Illustrator doesn't automatically add arrows for you. Similarly, all the programs have large selections of fill patterns (except, again, Illustrator — Adobe assumes you'd rather create your own). All (except — you guessed it — Illustrator) can also, on command, align and, in most cases, distribute objects, so you can make your drawing neat and tidy with a minimum amount of clicking and dragging.

Complicated Drawing

Complicated drawings, such as very large organizational charts, floor plans, and technical illustrations, are composed of many little pieces, and dragging on the wrong piece at the wrong time can quickly lead to disaster. Fortunately, some programs go to great lengths to keep you from being overwhelmed, using layers, styles, object libraries, and smart alignment to make drawing easier.

Layers. It's impossible to overrate the importance of layers. In multi-layered documents, you can hide some layers or all the layers except the one that contains the objects you want to work with. The fewer objects on-screen at one time, the less likely you'll be to accidentally click on the wrong shape. Moreover, the fewer objects on-screen at any time, the faster your Macintosh can redraw the screen after each change (sluggish screen updating is a problem with every Mac drawing program).

Figure 1: Canvas' Smart Mouse (top) is programmable and has far more options than IntelliDraw's simpler Auto Align function (bottom). Notice that Canvas is indicating that the corner of the rectangle is touching the edge of the ellipse; IntelliDraw is confined to recognizing alignment with corners, midpoints, and polygon points.

Figure 2: Move or resize any element of this IntelliDraw org chart, and every other element is automatically moved or resized to compensate.
You can also shuffle layers up and down, tint or "gray out" certain layers, or make some layers visible but nonprinting, depending on the program's capabilities. Canvas and FreeHand have the most-complete and best-designed layering options, and Canvas, Dreams, FreeHand, MacDraw Pro, Michael's Draw, and UltraPaint all have extensive layering capabilities. UltraPaint allows you to combine multiple drawing and painting layers in a document, which you can use to create some interesting effects.

SuperPaint, with its single drawing layer and single painting layer, offers little in the way of layering. Illustrator gives you the option of selecting and hiding elements, but the only way you can view them subsequently is to "unhide" every element you've hidden—not the most elegant or time-saving solution.

**Styles.** Just as style sheets can be a tremendous time-saver in word processors or page-layout programs, styles can make it vastly easier to change and update drawings. Changing a style definition is much less work than painting and clicking through a document, selecting and changing individual objects.

Of all the programs considered here, only FreeHand and, to a lesser degree, IntelliDraw have true styles. FreeHand lets you define both a line and a fill as part of a style. In Illustrator, you must define fills and lines separately, but the program automatically updates your drawing if you change the style definition. Because you define the line and fill separately, if you want to change both the line and the fill for a certain class of objects, you have to change one attribute and then the other, rather than do both of them in one operation.

All the other programs are either somewhat or extremely feeble when it comes to styles. With CA-Cricket Draw III, Dreams, and Illustrator, you can define custom colors that get updated wherever they’re used whenever you change the color definition.

With the other programs, once you’ve applied an attribute to an object, there’s no automatic, global way of changing that attribute, although Canvas and MacDraw Pro have semiawkward mechanisms that let you select every object that uses a particular attribute, so you can change them all in one fell swoop.

**Object Libraries.** If your complicated drawing is a floor plan, you’ll probably want to plop down identical pieces of furniture in multiple locations. The easiest way to do that is to use an object library. Canvas, Dreams, Illustrator, and MacDraw Pro let you create libraries of objects. You can you’ve created and positioned the objects in question. Some programs, though, go a step further and let you align objects as you draw them.

Canvas’ Smart Mouse and IntelliDraw’s Auto Align snap objects to the cursor to other objects as you draw or move objects (see Figure 1). With Canvas, as you move objects, their edges automatically jump to align with other objects that are already in your drawing.

IntelliDraw’s alignment options aren’t as exhaustive as Canvas’, but they offer an extremely important enhancement: You can tell IntelliDraw to remember and preserve the last

![Figure 3: Here’s a letter S converted to an editable outline in, from left to right, Illustrator, FreeHand, Canvas, and IntelliDraw. Unlike the other programs in this figure, which convert the type into paths with Bézier control points, IntelliDraw uses “smoothed polygon” points, which make it almost impossible to do more than the simplest modifications.](image-url)
Drawing Programs

line connecting him to his boss will follow suit (see Figure 2).

Dreams has a Snap to Object command that snaps the cursor to the corner or to another predefined point on a nearby object when you're dragging or creating new objects. Although this command is useful, it pales in comparison with the capabilities of Canvas and IntelliDraw.

**Measuring Objects**
Canvas, Dreams, IntelliDraw, and MacDraw Pro let you display measurement lines and set up custom measurement scales so that if you say that 1 inch equals 5 feet, a 2-inch line's measurement will appear as 10 feet. In these four programs, if you group measurement lines with the object being measured, the measurements will be automatically updated whenever you resize a measured object. IntelliDraw also lets you resize measured objects by changing the value in the measurement line.

By creating links between numbers and objects in IntelliDraw, you can have a number anywhere in a document reflect a measurement of any object, making it easy to create tables

<table>
<thead>
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<th>Table 1: Pros and Cons of Drawing Programs</th>
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Drawing Programs

of object dimensions that update as you change the measured objects.
Except for MacDraw, these programs' auto-alignment features make it easy to create measurement lines that align to objects you want to measure. Canvas' Smart Mouse offers the greatest control over what snaps where; Dreams' Snap to Object command gives you the least control.

**Fancy Type**

At one time, drawing programs were typographically unsophisticated. Today, most of them can use type with fractional character widths, and more importantly, they can use kerning-pair information that might be built in to a font file and specify leading in absolute point values (rather than just single- or double-spacing).

Canvas, FreeHand, and Illustrator have the most-sophisticated type control. With its many keyboard shortcuts for tracking, kerning, resizing, and scaling type, Illustrator allows you to fly through fine-tuning your type, even when it's set on an ellipse or other shape. Canvas also has keyboard command equivalents, but editing text on a path is clumsy. FreeHand's type

<table>
<thead>
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Drawing Programs

controls rival Illustrator’s, but its lack of keyboard command equivalents and clumsy text-editing windows make fine-tuning type a huge chore, because changes to kerning and tracking show up in the drawing but not in the text-editing window.

Fancier Type

For designing logos, fliers, or just about anything that uses display type, fancy type effects are essential. Only Canvas, Illustrator, IntelliDraw, and Michael’s Draw let you flow text into irregularly shaped objects, and only the first two programs let you run text around other objects, although you can achieve similar results with IntelliDraw’s object-combination functions. In Illustrator, text runarounds react automatically when you move any component element; in Canvas, you must reissue the runaround command each time you move an element.

Canvas, CA-Cricket Draw III, FreeHand, Illustrator, and Michael’s Draw let you bind text to a path, and they offer various justification and alignment options. But in Canvas you have to unbind and rebind the text whenever you want to change its path, and in CA-Cricket Draw, text on a path appears “geeked” on-screen. FreeHand not only lets you bind type to a path but it also lets you skew type vertically and horizontally.

FreeHand has many custom type effects, including zoom text and multiline outlines and inlines. These features alone make FreeHand a good choice for creating type-based logos. Illustrator also lets you set strokes and fills for text. Most others programs require text to be a solid color; although it can be a different color for each character.

You can achieve even more-elaborate type effects in Canvas, FreeHand, Illustrator, and IntelliDraw by converting type into editable outlines (see Figure 3). (All the programs can do this for Adobe Type 1 fonts or TrueType, except for Illustrator, which, not surprisingly, passes on converting TrueType.) Once you’ve done this, you can modify the outline of any character, use special graduated or tiled fills on the text, or use the text as a mask. Canvas, FreeHand, and Illustrator convert type into easy-to-edit Bézier curves. IntelliDraw, on the other hand, converts type into polygons with numerous on- and off-path control points that are difficult to edit properly.

SuperPaint can’t convert type into outlines, but the program almost makes up for this by letting you apply extremely elaborate graduated fills to text. The graduated blends, which follow the shape of each character, look spectacular, and you can still edit the text.

Fancy Illustrations

Sometimes you’ll want a program that lets you create the fanciest illustrations possible. Most of these programs include certain special tricks for creating fancy illustrations, although each program handles the tricks somewhat differently.

First, unless you’ll always be happy with nothing but rectangles and ellipses, you need to be able to draw complex paths quickly and cleanly. In other words, you need a Bézier-curvedrawing tool, which usually shows up as a pen in the program’s tool palette. Illustrator has a no-frills pen tool that is the most responsive — especially for skilled users. FreeHand has a pen that behaves similarly to Illustrator’s, but it also has tools for creating curve, corner, and connector points. Most FreeHand users just stick to the pen, however.

CA-Cricket Draw III and Canvas have better-designed pen tools than either Illustrator or FreeHand do, with easier controls for turning curve points into cusps, for example. MacDraw Pro, Michael’s Draw, and UltraPaint have tolerable Bézier tools. Dreams’ tool is weaker. With SuperPaint you have to use a freehand-drawing tool to create Bézier paths, which may or may not turn out the way you want them. In IntelliDraw you have to use the polygon tool to draw complex paths; its awkward combinations of Bézier and polygon control points makes drawing accurately almost impossible.

Fills

Another fancy effect to look for is automatic graduated fills. CA-Cricket Draw III, Canvas, FreeHand, IntelliDraw, MacDraw Pro, and SuperPaint all have variations on this theme. SuperPaint’s fills are the most flexible. You can set multiple colors for any blend and apply a blend easily across multiple selected objects — even editable text. IntelliDraw also lets you set multiple colors for blends, but it has fewer varieties of blends. MacDraw Pro allows as many as four
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colors. CA-Cricket Draw III usually has only two colors, but you can specify that a blend’s transition be based on page coordinates rather than simply on the object you’re filling. Canvas offers a wide variety of fills but allows only two colors — start and finish — for each.

When you rotate objects in CA-Cricket Draw III and FreeHand, graduated fills rotate along with them. In Canvas, IntelliDraw, MacDraw Pro, and SuperPaint, they don’t.

FreeHand, IntelliDraw, and Illustrator also let you convert any selected objects into tiled fills, which repeat over and over as they fill an object. Among the three programs, IntelliDraw’s editable Tiled Groups are the best designed and the easiest to modify.

**Masks and Holes**

There are numerous approaches to having objects act as masks or as holes in other objects. Illustrator’s masks are effective but awkward — the masked-out parts can dramatically clutter up a drawing (especially if the objects being masked are a blend of many objects that create a smooth graduated fill). FreeHand’s Paste Inside command gives less cluttered results, but if you want to edit the masked objects, you have to cut them out of their masks, paste them into the drawing, edit them, cut them again, and then repaste them into the masking shapes.

Canvas approaches masking by letting you make the topmost object in a group a cookie cutter for slicing off bits of objects below it. But this slicing is permanent, so you’re in trouble if you need to change the shape of the mask later. CA-Cricket Draw III and IntelliDraw also take this approach, but if you choose, you can retain the original object in case you need to make modifications later. Dreams’ tools let you slice and combine objects, but the emphasis is more on modifying shapes than on creating masking effects.

FreeHand and Illustrator also have special commands for creating compound paths, in which one object acts as a hole punched in another. With Canvas’ Slice command, you can’t create real compound shapes but you can make fake ones, in which one side of the object is broken by overlapping sides. CA-Cricket Draw’s Hole Punch command and IntelliDraw’s Subtraction Group work similarly, letting you make editable holes in objects.

The fancier drawing programs also let you blend one or more objects into each other, creating multiple transitional intermediate objects. (This is the only way you can create graduated fills in Illustrator.) FreeHand and Illustrator can blend only two objects at a time; Canvas and IntelliDraw can blend multiple objects in one operation. If you change one of the defining objects in Illustrator or Canvas, you must delete the old intermediate objects and do the blend again. FreeHand and IntelliDraw automatically regenerate intermediate objects whenever you change any of the objects that define the blends.

**Other Swiss-Army Blades**

Each program has its own special features, but we have room to mention only a few highlights.

CA-Cricket Draw III is the only program to offer automatic drop shadows for any object, including lines and text (see Figure 4). Canvas’ many plug-in tools, for creating cubes, spirals, grids, and more, are especially handy, as is its ability to tint objects for quick transparency effects.

IntelliDraw’s Symmetrigon tool, which creates complicated symmetrical objects, is also noteworthy. Its ability to link the defining points of numerous polygons lets you make drastic changes to the appearance of even the most complex illustrations quickly.

FreeHand’s pen tool is especially neat. It works with a pressure-sensitive stylus and tablet, and the width of the shapes you create varies with the amount of pressure you apply.

Michael’s Draw has perhaps the most unusual feature of any of these programs: You can create scripts for Michael’s Draw that combine the contents of a drawing’s layers, using special addition and subtraction filters (similar to those used to create special effects in image-retouching programs such as Adobe Photoshop) and so produce high-resolution bit-mapped PICT or EPS files. Unfortunately, the implementation of this feature is so peculiar and the documentation so sketchy that you would probably need to spend

---

**Figure 5:** With its spreadsheet-like function for entering or importing numbers and its custom chart styles, Illustrator makes it a snap to create elaborate graphs and charts (right). IntelliDraw makes you do a bit more of the work yourself, but lets you dynamically link numbers in your drawing to values in an external spreadsheet file (left).
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days playing with the scripting before you could figure out how to make it work.

Canvas and MacDraw Pro both support QuickTime, so you can place QuickTime movies anywhere on a layer and have a movie play as a part of a presentation. Both programs support the inclusion of sound memos as well.

Although IntelliDraw doesn’t support QuickTime or sounds, it does let you create simple animations that can be triggered by on-screen buttons, so you can make simple interactive documents and presentations.

The Bottom Line

For those who can buy only one program, Canvas is a great jack-of-all-trades, but its occasional clumsiness (manual updating of text on paths or text with runarounds, lack of styles, feature overload) makes it less than ideal for some specialized needs.

IntelliDraw, with its amazing automatic links, is ideal for structured drawing, graphing, or charting, but its clumsy drawing tools make it a poor choice for creative artwork. For that type of work, SuperPaint might be worth buying for nothing more than its ability to produce spectacular filled objects, which you can then export as EPS files to other programs that offer niceties such as real pen tools.

FreeHand’s layering and styles make it great for structured or complex drawings, but you might long for a Smart Mouse or Auto Align function and might wish you could lose those wretched text-entry windows. But FreeHand’s many useful type and graphical bells and whistles make it ideal for logo creation and other artistic endeavors.

At first, Illustrator seems outclassed. Although it offers automatic graphing and superb control of type and text flow, its lack of layers and any sort of alignment command and its non-editable preview mode make creating complicated drawings in Illustrator more of a chore than it is with most of its competitors. But Illustrator’s pen tool has the most responsive feel of any on the market, and Illustrator remains an ideal package if you simply want to draw elegantly with your mouse and Mac.

Eric Taub is a New York-based freelance writer specializing in graphics and desktop publishing.

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**Table 2: Drawing Programs**

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One Scan Reveals Why UMAX Is The Critic's Choice.

The UMAX UC1200 ranks highest...sharp images, with a wide range of color. The UMAX UC630 tops the chart...provides a professional-quality image and supports it with a strong all-around showing.

—PC Computing, June 1992

The UMAX UC1200 is the fastest (with) highest resolution and color fidelity. The UMAX UC630 is an excellent scanning engine...it's fast and exhibits no registration problems.

—MacWEEK, June 8, 1992

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CIRCLE 145 ON READER SERVICE CARD.
Sliding into High Gear:
Desktop Slide Scanners

Want total control of your color images? Without relying on a service bureau?
We test six scanners that bring professional color to your desktop.

BY BRUCE FRASER

Color-image scanning is part of the desktop publisher’s stock in trade, and the price of color flatbed scanners has dropped significantly in the past few years. But there’s a limit to the quality that flatbed scanners can produce, particularly if the end result is four-color-process printing — and even more so if the final image is sent to a high-resolution film recorder and output as a transparency for professional processing. If your scans are suffering from blown-out highlights or plugged-up shadows, you’ve run into the limitations of flatbed scanners. What are the alternatives if you want to move up?

High-end color trade shops use drum scanners costing upward — sometimes way upward — of $100,000, and they must be kept constantly busy to pay for themselves. These drum scanners are not only beyond the budget of most desktop publishers, but they also demand specialized skills on the part of the operator. Fortunately, there’s a middle ground: slide or transparency scanners.
Transparency scanners scan transmissive images, viewed by passing light through them rather than by bouncing light off them, as with prints. Some handle only the common 35mm-slide format; the more costly multi-format scanners can also scan 2.25-x-2.25-inch and 4-x-5-inch transparencies.

For this month's report, we tested four 35mm-slide scanners: the Barneyesian CIS-3515, Leaf Systems Leafscan 35, Microtek ScanMaker 1850S, and Nikon LS-3510AF. We also looked at two multi-format transparency scanners: the Barneyesian CIS-4520RS and the Leaf Systems Leafscan 45.

All the scanners we tested use a CCD (charge-coupled device) array to record the light that passes through the slide or transparency. They accomplish this in three passes, one for red, one for green, and one for blue. Although each of these scanners exhibits strengths and weaknesses, they all provide color-image scans that a flatbed scanner would be hard-pressed to match.

What Is It About Slides?

Slides have a wider dynamic range — they have more gradations from shadow to highlight — than prints do. This means that you can produce images that contain more detail in the shadows and more texture in the highlights with a scan from a slide than with a scan from a print.

Some flatbed scanners have optional transparency-scanning attachments. However, flatbeds are designed to scan prints, not the relatively tiny area of a 35mm slide. In general, transparency scanners are capable of much higher resolution than are flatbeds, which fall in the 300- to 1,200-dpi (dot per inch) range. The lowest-resolution slide scanner we looked at, the Barneyesian CIS-3515, scans at resolutions as high as 1,000 pixels; the highest-resolution transparency scanner we tested, the LeafSystems Leafscan 45, can scan at a maximum of 5,080 pixels.

The resolution of a transparency-scanner engine is expressed as the total number of pixels generated along the short side of the scanned image. When you scan a 35mm slide, which has a short side measuring approximately 1 inch, the resolution in pixels is equal to the number of dpi. Multi-format scanners render larger originals at the same number of pixels along the short side, resulting in scans with a lower dpi for those images. When you increase the output size, you decrease the number of pixels per inch in the image by the same factor: A 1,000-dpi scan enlarged to twice its size yields 500 dpi, for example. Thus, your scanner's resolution sets limits on the size of the printed output.

Typically you'll need 1.5 to 2 times as many pixels per inch in the final, sized image as the line-screen frequency you use to print it with. For example, a 300-dpi flatbed scanner will let you print an image with a 150-line screen at the same size as the original or perhaps a little larger. But it won't produce enough pixels to let you blow the image up to double or triple its size. Using a slide scanner with 3,300-pixel or greater resolution, you can take an image from a 35mm

Beat of the Drum

Scans produced by the best of the current crop of transparency scanners approach the quality of those produced by high-end — and very expensive — drum scanners. Quality differences are as likely to be due to the ability of the operator as to inequities in the hardware. But there are things that drum scanners do and transparency scanners don’t that have a huge impact on throughput.

Most drum scanners perform two vital functions on the fly: sharpening (a digital simulation of improving the focus) and conversion of the color image data from the scanner’s native RGB (red, green, blue) color space to the CMYK (cyan, magenta, yellow, black) color space used for four-color-process printing.

An experienced drum-scanner operator can produce at least 20 sharpened CMYK scans in an eight-hour work shift, and many routinely produce a much higher number.

The scanners we tested produced an unsharpened RGB image, which then has to be sharpened and converted to CMYK on the Mac. When we prepared our tabloid-sized scans — 56 megabytes in RGB form — for output, we found that, even using a Quadra 700 with 20 megabytes of RAM and a fairly fast hard drive, the images took at least 2 minutes to open, about half an hour to sharpen (using Photoshop’s Unsharp Masking filter), another 15 or so minutes to convert from RGB to CMYK, and about 5 minutes to save as DCS-format EPS files. (Desktop Color Separation format provides five separate Encapsulated PostScript files for cyan, magenta, yellow, and black and a composite.)
slide all the way up to tabloid size (11 x 17 inches, or approximately 11 times the size of the original) on output with a 150-line screen (see Figure 1).

**Drumming Takes Practice**

Slide scanners are less expensive and easier to use than are drum scanners. With the latter, the original art is taped to a drum that rotates under the scanning elements, and the art must be aligned to the drum at precisely the correct angle. If the transparency is mounted in an oil bath, which is standard practice, the operator must ensure that there are no air bubbles in the oil. Both these skills can be learned only with practice.

Lower-priced “desktop” drum scanners are beginning to appear on the market, but they’re still expensive, and they require a skilled operator. With a trained staff, drum scanners, at least the full-sized models, offer major productivity advantages (see the “Beat of the Drum” sidebar).

**How ’Bout Them RAMs?**

If you decide to invest in a slide scanner, you need to consider some costs in addition to the purchase price. We assume you’re starting with a 24-bit-color Mac, running System 6.0.5 or later, and that you have Adobe Photoshop installed on your hard disk. (Note: Some of these scanners work with earlier system-software versions; see Table 1 for details.) The two lower-resolution scanners, the Barneyescan CIS•3515 and the Microtek ScanMaker 1850S, work with a minimum of 4 megabytes of RAM, but only barely. The others require at least 8 megabytes.

If you intend to use the full resolution of these scanners, you’ll create some very large files — a tabloid-sized scan from the Leaf Systems Leafscan 45 weighs in at a hefty 56 megabytes in its RGB (red, green, blue) form and at more than 70 megabytes once it has been converted to CMYK (cyan, magenta, yellow, black) for color separations — so you’ll need mass storage and plenty of it. For a dedicated scanning workstation, a Quadra 950 with 128 megabytes of RAM and one or more gigabyte (1,024-megabyte) drives is an entirely reasonable platform. You can get by with much less, but everything will take longer.

**Smooth Setup**

We found that setting up the scanners was in general fairly straightforward. The Barneyescan CIS•3515 uses a proprietary NuBus board and system extension, neither of which caused any problems. The Microtek ScanMaker 1850S is a SCSI device with two SCSI ports, no termination, and an external switch for the SCSI ID; connecting it to the Mac is no more difficult than connecting a hard drive. The Nikon LS-3510AF has a SCSI-2 (the new version of SCSI, with 51 pins arranged in a much smaller connector than the original SCSI cable) and a GPIB (general-purpose interface bus) interface. We tested it with the SCSI-2 interface, using the cables supplied with the scanner. The only potential problem we could see was the lack of readily available SCSI-2 terminators — we used an external hard drive and put the scanner in the middle of the chain.

The Barneyescan CIS•4520RS uses a nonstandard SCSI connector with a T-cable adapter that has two 50-pin ports. Changing the SCSI ID is somewhat convoluted process — it involves connecting a serial cable between the Mac’s modem port and the serial port on the scanner and then using a telecommunications program to send instructions to the scanner. The manual points out with commendable understatement that it’s usually easier to change the SCSI ID of one of the other devices in the chain in the case...
of conflicts. In fairness to Barney scan, this same serial connection can be used to update the scanner's internal software; most other scanners require a ROM upgrade.

The remaining scanners, the Leaf Systems Leafscan 35 and 45, also have both SCSI-2 and GPIB interfaces. We used the GPIB interface, because Leaf Systems hadn't yet lined up a supplier for SCSI-2 cables. The current GPIB system extension is self-configuring, at least when the scanner is the only GPIB device present.

All the scanners include an Adobe Photoshop plug-in — a software module that allows you to scan from within Photoshop. Installing the software for each scanner is simple: Insert one floppy disk, and drag the plug-in icon into your Photoshop folder (more on the software in a moment).

The final step before making scans is to calibrate the scanner — that is, to compensate for variations in the light source, filters, and CCDs. The Microtek ScanMaker 1850S is self-calibrating. The Leaf Systems Leafscan 35 and 45 and the Nikon LS-3510AF require users to click on a button but don't require the use of a calibration target. Both Barney scan scanners require users to click on a button and insert a special calibration target — a slide for the CIS•351S and a machined metal plate for the CIS•4520RS. We found that the Barney scan scanners took longer to calibrate than the other scanners did and that the CIS•351S needed frequent recalibration. We were concerned about the durability of the CIS•3515's calibration slide. Barney scan will replace the slide if it gets damaged, but that may be small comfort if you're up against a critical deadline.

Overall, the quality of these scanners' Photoshop plug-ins is much higher than those of flatbed-scanner plug-ins. The slide-scanner plug-ins offer much more control over the scan, and they also have better auto-exposure tools, so it's actually easier to get good scans. Most of the slide scanners capture more information than a 24-bit-color Mac can store — they capture 36 or even 48 bits of color information per pixel (12 or 16 bits per color), so the controls let you modify the tonal curve of the scan and thereby optimize the way the 36 or 48 bits of color information are sampled down to 24 bits (see the "Colorful Bits" sidebar).

Prescan

Each scanner performs a prescan and then lets you make adjustments based on the prescan image: All the models we tested provide for cropping, output-resolution control, exposure control, and gamma adjustment.
Most flatbed color scanners capture 24-bit color — 8 bits each of red, green, and blue information. Some of the slide scanners we looked at capture 36- or even 48-bit color (12 or 16 bits per color). Because Apple’s QuickDraw imaging scheme uses 24-bit color, these scans must be sampled down to 8 bits per color before the Mac can read them. So why scan more bits?

An 8-bit scan contains 256 shades each of red, green, and blue. But scanners have a different response to light and shade — a different Gamma curve — than does the human eye or a printing press. You can use Gamma correction to bring out more gradations in the shadow, but if you change the Gamma too much, the midtones and highlights become posterized, showing obvious jumps between shades rather than a smooth progression.

With 12 or 16 bits per color available, you can optimize the way the data is sampled down to 8 bits. The scanner performs a prescan that lets you adjust the Gamma before the scan. The data that reaches your Mac contains only 8 bits per color, but the way the tonal information has been spread across those 8 bits allows you to preserve detail in both highlights and shadows without compromising the midtones.

The Barney scan CIS•3515 and CIS•4520RS give a gray-scale preview, whereas all the other scanners give color previews. Only the Microtek ScanMaker 1850S and the Nikon LS•3510AF offer zooming in the preview so that you can check fine detail or set the cropping frame accurately. Leaf Systems’ scanning software has a resizable window that gives the Leaf Systems LeafScan 35 and 45 a larger preview image than the other scanners offer.

The scanners provide a variety of controls for setting the exposure automatically. The Leaf Systems LeafScan 35 and 45, Microtek ScanMaker 1850S, and Nikon LS•3510AF let you select an area of the image upon which to base the exposure settings. The Leaf Systems LeafScan 35 and 45 and the Microtek ScanMaker 1850S allow you to set a white point and black point. Barney scan’s QuickScan software relies on the white-point/black-point method but with a twist. Where other software provides a tool that you use to click on the lightest point of the preview image to set the white point and on the darkest point to set the black point, QuickScan gives you interactive help in doing so. When you move the white-point cursor across the image, all the pixels that are lighter than the one under the cursor appear red; move the cursor until no more red points show, unless you deliberately want to “blow out” some of the highlights. Likewise, with the black-point cursor, you move the cursor until almost all the image is red — you set the black point at the darkest point at which you want detail in the image. This technique is very easy to master and goes some way toward compensating for the Barney scan’s lack of a color preview.

Auto-focus is available on all the scanners except for the Barney scan CIS•3515, which has a cumbersome focus method that involves watching numbers flash by on-screen as you turn a thumb wheel on the scanner. The highest number is supposed to produce the best focus possible.

The Nikon LS•3510AF’s manual-focus routine lets you select an area of the prescan, which then appears blown up in the prescan window. You move the lens in its smallest possible increments and view the effect on the image on-screen. We were able to substantially improve the focus over that returned by the auto-focus, so much so that the 3.1755-pixel Nikon scanner actually resolved detail as fine as did the 5.080-pixel Leaf Systems LeafScan 45 and substantially better than the 4.000-pixel Leaf Systems LeafScan 35.

It’s About Time

In our speed tests, the Nikon LS•3510AF turned in the fastest time, taking a little more than a minute and a half to scan a 35mm slide at 1,000 pixels. The Barney scan CIS•3515 was next, at a little less than two minutes. The Leaf Systems LeafScan 35 and 45

On the Horizon

Several scanners appeared too late to be included in this round of testing. One, the mira•35, from Santos Technology, promises to heat up the action at the lower end of the price scale. This $2,695 SCSI-based slide scanner scans both positive and negative 35mm transparencies at resolutions as high as 2,700 pixels and captures 10 bits of information per color. With a small footprint of 7 x 11 x 4.5 inches, the mira•35 features auto-focus; automatic-exposure settings based on a prescan; and scanning times of less than three minutes for a full-frame, full-resolution scan. Santos Technology, Inc., 385 Van Ness Avenue, Suite 1604, Torrance, CA 90201; 310-320-8888.

Optical focusing is the unique feature offered by the Macsc 35, a 2,167-pixel 35mm slide scanner from Hasselblad Electronic Imaging AB, a subsidiary of Swedish camera maker Victor Hasselblad A.B. The Macsc 35 has film holders for mounted and unmounted slides and includes a special glass plate for gel mounting — particularly useful with scratched film. An external optical tube threading into the film holder in such a way that its plane of focus is the same as the scanner’s. To focus the scanner, you adjust the film plane via a screw on the film holder while viewing the slide through the optical tube. Once you’ve adjusted the focus, you place the film holder on the scanner. Hasselblad claims that this focusing method, when combined with the scanner’s high-quality Carl Zeiss optics, results in ultra-sharp scans. The $1,400 Macsc 35 captures 12 bits of information per color and features a GPIB interface. For information, contact Victor Hasselblad, Inc., 10 Madison Road, Fairfield, NJ 07004; 201-227-7320.

Imaging giant Eastman Kodak recently introduced the RFS 2035, a 10-bit-per-color, 2,000-pixel 35mm scanner that produces a full-resolution, 18-megabyte scan in less than two minutes or a 1,000-dpi, 4.5-megabyte scan in approximately 33 seconds. The SCSI-based RFS 2035 will be sold by Kodak electronic-imaging dealers and value-added resellers for $7,995. Eastman Kodak, 343 State Street, Rochester, NY 14650; 800-242-2424 or 716-724-8898, ext. 77.
How We Tested

To test the six transparency scanners, we connected each to a Quadra 700 with 20 megabytes of RAM, a PLI Seagate ST-4180N 1-gigabyte hard drive, a 13-inch AppleColor High-Resolution RGB monitor driven by a SuperMac Thunder/24 video board, and SuperMac's SuperMatch monitor calibration package. We used Adobe Photoshop 2.0.1 to save the scanned images as Photoshop files (each scanner came with a Photoshop plug-in).

For our speed tests, we scanned a 35mm slide at 1,000 pixels. We scanned the image three times on each scanner and found each scanner's times to be quite consistent. To test color quality, we scanned an industry-standard Kodak Q-60 color reference target, which contains swatches of saturated color at different hues. We took RGB values for the color swatches in the target and converted them to CIELAB values. (CIE color spaces are an internationally accepted method of objectively describing color.) We plotted the results as CIE a*b* gamut plots to give us an accurate picture of the scanners' relative gamuts.

To check for noise (artifacts not in the original image) and drift (inconsistency from scan to scan), we scanned the same image with identical settings twice, ten minutes apart, and then subtracted one image from the other, using Photoshop's Subtract command. None of the scanners exhibited significant problems in these areas. We also scanned an Air Force Resolution Target, a slide containing progressively finer line pairs, to check the scanners' resolving power and focus.

Finally, we scanned a challenging real-world image (see Figure E) at several resolutions, depending on the capabilities of the scanner, and output the results to 3M Matchprints. An expert jury, which included the photographer of the image, evaluated the results.

Focus
Can you read the lettering on the tire-pressure gauge and on the cuff of the glove?

Metallic Highlights
Can the scanner reproduce this highlight without blowing out the detail on the crank arm?

Shadow Detail
The underside of the shoe produces a challenging shadow pattern.

Saturated Reds
The challenge was to reproduce the ridges in the bottle and the wrinkles in the gloves.

Neutral Background
The pale-gray textured background tests the scanner's ability to render neutral tones.

Flesh Tones
How well does the scanner represent deceptively simple skin colors?

Figure E: Our photographer created a veritable cornucopia of stumbling blocks to put our scanners through their paces.
and the Microtek ScanMaker 1850S each took between three and four minutes. The Leaf Systems scanners allow you to set the exposure controls to get a faster scan at the expense of some quality, if speed is absolutely critical.

The Barnesyscan CIS•4520RS took more than nine minutes to scan the image. Once you’ve set the exposure, however, the rest of the scanning takes place entirely in the scanner. Barnesyscan’s software calls this scanning in the background, but a more accurate description would be scanning offline — the Mac isn’t involved in the process at all. This makes it possible for an operator to work on one image while scanning another, so the total throughput can easily equal that of the other scanners.

**Image Quality**

Although a quick scan is a convenient scan, speed is not as important as the quality of the scanned image. We examined the scanners’ color performance in two ways: First, we scanned a Kodak Q60 color target to determine the color gamut, the range of possible colors, of each scanner. Then we scanned a challenging real-world image, created especially for this test, and printed the results as 3M Matchprints, a prepress proofing standard (see the “How We Tested” sidebar and Figure 2 for details).

The Microtek ScanMaker 1850S had the widest gamut, but it was also noticeably uneven: Some hues, particularly the dark blues, were shifted toward the purple. The saturated colors were very saturated, but the scan had extremely high contrast, with little detail in the midtones. Postprocessing corrected this, but only at the expense of losing detail in the shadows and highlights. We feel that the Microtek ScanMaker 1850S is of only limited usefulness for prepress work, although in fairness, it’s unreasonable to expect...
Slide Scanners

a $2,000 scanner to equal the performance of units costing several times as much.

The Barneyscan CIS•3515's gamut showed a slight bias toward the reds, with orange hues considerably shifted toward the red. It delivered respectable performance in the real-world image test but showed deficiencies in shadow detail. Its relatively low resolution also limits the final output size — enlarging the 35mm original much beyond 5 x 7 inches produced visible pixels in the printed image.

The Nikon LS-3510AF had a rather narrow but well-balanced gamut, and the real-world images were quite impressive. Shadow detail was a problem here too, though. On the plus side, it did the best of all the scanners on flesh tones, produced a very sharp scan when we used manual focus, and had high enough resolution to take the image all the way to full-bleed tabloid size. Still, we had expected something more from a 12-bit-per-color scanner in its price range.

The Barneyscan CIS•4520RS had the narrowest gamut of all the scanners, but it was very well balanced. In the real-world image test, it reproduced the most accurate color of all the scanners, and although the images looked suspect on the screen, with obvious noise in the shadow areas, the printed output was excellent.

Barneyscan's thorough understanding of the print process is further demonstrated in its Color Access separation software, included with the scanner. It produces far better separations than those made with Adobe Photoshop. The Color Access separations produced a lighter black plate, resulting in better shadow detail, and handled saturated reds much better than Photoshop. As a print scanner, the CIS•4520RS' main limitation is its relatively low 2,000-pixel resolution, which effectively limits the output size to 8 x 10 inches. The scanner's limited gamut also makes it less than ideal for those who want to send the images out to a film recorder to make chromalines — the dynamic range of the scanner engine just isn't sufficient.

The Leaf Systems Leafscan 35 and 45 clearly have the best scanning engines. They have virtually identical color gamuts, wide and well balanced, a fact reflected in the high quality of the real-world images they produced in our tests. They captured more shadow detail than any of the other scanners we tested. In fact, each Leaf Systems scanner captured more color information than Photoshop could comfortably handle — the strong reds in the gloves and the water bottle of our test image came out as flat, textureless blobs in the Photoshop separations (see Figure 3). When we ran the same images through Barneyscan's Color Access software, the results were much better — the Leaf Systems Leafscan 35's and 45's images were the best of all, and the scanners' high resolution made it possible to enlarge a 35mm slide to full-bleed tabloid size comfortably.

The only drawbacks of the Leaf Systems Leafscan 35 and 45 are their lack of a visual focusing mechanism, which would almost certainly produce sharper scans than any auto-focus algorithm, and the need for top-quality separation software. Photoshop, although an excellent image-editing tool, just doesn't cut it as a separation utility at this quality level.

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Figure 3: We produced two sets of color separations — one in Adobe Photoshop, another with Barneyscan's Color Access separation utility — from the same scan. Barneyscan's software handled the saturated red in the gloves much better, reproducing wrinkle detail that was invisible in the Photoshop separations.
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Accentuate the Negative

To test each scanner's capabilities fully, we also scanned a color negative of the test image. The Microtek ScanMaker 1850S makes no provision for scanning negatives, and even though Barney scan's software supports negative scans, strip-film holders were not provided with our test units. (Customers who purchase the CIS•4520RS today should receive a strip-film holder.) The Leaf Systems Leafscan 35 and 45 and the Nikon LS-3510AF arrived with the necessary film holders, and their software supports negative scanning, so we scanned negatives on these three units.

Although the results weren't stellar on any of the scanners, the 16-bit-per-color Leaf Systems Leafscan scanners did a much better job of stripping away the orange mask of the negative than did the 12-bit-per-color Nikon scanner. All three scans had an obvious cyan cast but one that was correctable. After correction, however, the Nikon LS-3510AF scan was washed out in comparison with the Leaf Systems Leafscans', which still had a good tonal range, with detail in both shadows and highlights. If you need to scan negatives, the Leaf Systems Leafscan scanners are the best choice. For the best results, though, we recommend investing a few dollars in making a positive — you'll get a much better scan with less work.

Point-and-Click

Today's desktop publishers have many color-input choices, from inexpensive flatbed scanners to professional drum scanners costing much more than $100,000. Slide scanners occupy a large chunk of the middle ground, with models ranging from a little more than $2,000 to a little less than $30,000. If you need to scan 30 or more images a day, a high-end drum scanner — whether your own or one at the neighborhood service bureau — may be in order. But for lower-volume work, a slide scanner can provide comparable quality at a fraction of the cost. And it's almost as simple as point-and-click.

Each of the slide scanners we tested has its uses. The only one we would not recommend is the Barney Scan CIS•3515, not because it's egregiously bad but because it's outdated. Slide-scanning technology has advanced since this scanner first appeared. You'll find our opinions on which scanner is best suited to which job in "The Bottom Line."

Bruce Fraser is a MacUser contributing editor who scans slides with verve and finesse.
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MOST MEMORY (10MB RAM)
Spectra*Star Q10 comes with 6MB of high speed RAM which can be easily expanded to a hefty 10MB.

Get dazzling prints, spectacular overhead transparencies and full color T-shirt transfers from your Spectra*Star.

The Spectra*Star Q10 delivers the best available combination of high quality output, speed and unsurpassed features at the lowest price of any comparable color printer. Spectra*Star gives you everything you need.

Call for sample output or a demo 800 223-0999
(Or fax us at 510/524-9954)

SPECTRA*STAR™
## Slide Scanners

### Table 1: Features of Slide Scanners

<table>
<thead>
<tr>
<th>Feature</th>
<th>Barneyscan CIS+3815</th>
<th>Barneyscan CIS+4520RS</th>
<th>Leaf Systems Leafscan 35</th>
<th>Leaf Systems Leafscan 45</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List price</strong></td>
<td>$4,495</td>
<td>$29,995</td>
<td>$9,995</td>
<td>$14,995</td>
</tr>
<tr>
<td><strong>Street price</strong></td>
<td>$4,163</td>
<td>$28,080</td>
<td>$9,732</td>
<td>not known*</td>
</tr>
<tr>
<td><strong>Pros</strong></td>
<td>Good image quality.</td>
<td>Excellent prepress</td>
<td>Excellent film-output</td>
<td>Excellent film-output</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access separation</td>
<td>detail and color. Best</td>
<td>detail and color. Best</td>
</tr>
<tr>
<td></td>
<td></td>
<td>software bundled.</td>
<td>hardware.</td>
<td>hardware.</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td>Needs frequent</td>
<td>Big and fairly</td>
<td>No manual focus.</td>
<td>Big. No manual focus.</td>
</tr>
<tr>
<td></td>
<td>recalibration. No</td>
<td>expensive. No manual</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FCC certification.</td>
<td>focus. No FCC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. system version, RAM</td>
<td>6.0, 5, 4 MB</td>
<td>6.0, 8 MB</td>
<td>6.0, 8 MB</td>
<td>6.0, 8 MB</td>
</tr>
<tr>
<td>Resolution</td>
<td>1,000 pixels</td>
<td>2,000 pixels</td>
<td>4,000 pixels</td>
<td>4,080 pixels</td>
</tr>
<tr>
<td>Bits per pixel</td>
<td>24 bits</td>
<td>36 bits</td>
<td>48 bits</td>
<td>48 bits</td>
</tr>
<tr>
<td>Calibration method</td>
<td>manual with target</td>
<td>manual with target</td>
<td>manual</td>
<td>manual</td>
</tr>
<tr>
<td>Focus method</td>
<td>manual</td>
<td>auto</td>
<td>auto</td>
<td>auto</td>
</tr>
<tr>
<td>Interaces</td>
<td>proprietary NuBus</td>
<td>SCSI</td>
<td>GPIB, SCSI-2</td>
<td>GPIB, SCSI-2</td>
</tr>
<tr>
<td>Negative scan</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Film formats</td>
<td>35mm</td>
<td>35mm, 2.25-x-2.25-inch, 6-x-7cm, 4-x-5-inch</td>
<td>35mm</td>
<td>35mm, 2.25-x-2.25-inch, 4-x-5-inch</td>
</tr>
<tr>
<td>Film holders</td>
<td>mounted</td>
<td>mounted, unmounted, rotation, strip film¹</td>
<td>mounted, strip film</td>
<td>mounted, unmounted, rotation, strip film</td>
</tr>
<tr>
<td><strong>Preprocessing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photoshop plug-in</td>
<td>QuickScan</td>
<td>QuickScan</td>
<td>MacLeafScan 2.0</td>
<td>MacLeafScan 2.0</td>
</tr>
<tr>
<td>Color preview</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input-resolution control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preview zoom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UL listing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCC certification</td>
<td>none</td>
<td>none</td>
<td>Class A</td>
<td>Class A</td>
</tr>
<tr>
<td>Warranty</td>
<td>90 days</td>
<td>1 year</td>
<td>90 days</td>
<td>90 days</td>
</tr>
<tr>
<td>Power consumption</td>
<td>100 watts</td>
<td>150 watts</td>
<td>200 watts</td>
<td>200 watts</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>7.75 x 8.75 x 15.5 in.</td>
<td>29 x 23 x 12.5 in.</td>
<td>14 x 10 x 19 in.</td>
<td>16 x 16 x 29 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>21 lb</td>
<td>75 lb</td>
<td>30 lb</td>
<td>75 lb</td>
</tr>
<tr>
<td><strong>Company</strong></td>
<td>Barneyscan</td>
<td>Barneyscan</td>
<td>Leaf Systems, Inc.</td>
<td>Leaf Systems, Inc.</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 14467</td>
<td>P.O. Box 14467</td>
<td>250 Turnpike Rd.</td>
<td>250 Turnpike Rd.</td>
</tr>
<tr>
<td></td>
<td>Oakland, CA 94614</td>
<td>Oakland, CA 94614</td>
<td>Southborough, MA 01772</td>
<td>Southborough, MA 01772</td>
</tr>
<tr>
<td></td>
<td>800-426-5674</td>
<td>800-426-5674</td>
<td>508-460-8300</td>
<td>508-460-8300</td>
</tr>
<tr>
<td></td>
<td>510-562-2480</td>
<td>510-562-2480</td>
<td>508-460-8304 (fax)</td>
<td>508-460-8304 (fax)</td>
</tr>
<tr>
<td></td>
<td>510-562-6451 (fax)</td>
<td>510-562-6451 (fax)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The list price dropped as we went to press; the street price was not available yet.

¹Our test unit did not include a strip-film holder.
The legendary Nikon 15-35 film scanner brings images into your computer at over 3000dpi. More importantly, built-in-logic controls focus and color balance for negatives or transparencies to provide consistent repeatable results. Nikon precision engineered optics set the LS-3510AF apart from other desktop scanners. Making a great scanner is just not good enough for today’s imaging needs. That’s why Nikon has built a complete system to go beyond basic image input.

For starters, Nikon offers an automated bulk feeder for the LS-3510AF. This accessory can scan up to 300 images unattended! Plus Nikon now offers Nikon Image Access, image storage and management software. This powerful combination is unmatched in the industry.

With natural color rendition, high speed, and high resolution, the CP-30000 digital thermal printer is a perfect companion to the LS-3510AF scanner. The Nikon CP-30000 saves on per print costs since it uses affordable 5X7* media. Color, black & white, or transparency media are available for a variety of applications. Plug-in software that allows for precise color calibration is included.

Beyond Nikon’s already complete options, we at Ken Hansen Photographic have engineered our own additions to the Nikon Scanner. Our custom adaptors allow you to utilize medium format strip films for the highest possible image quality. Our view camera retrofit kits enable your photographer to give you full perspective control, while using low cost medium format films.

Don’t miss Nikon’s Macintosh Image Management Seminar on Saturday November 7th at Apple’s New York Market Center. Fax us the lower portion of this ad along with your address for free admission and additional product information.

Ken Hansen Photographic
920 Broadway, NY, NY, 10010 Phone: (212) 673-7536 Fax: (212) 473-0690

CIRCLE 121 ON READER SERVICE CARD.
### Table 1: Features of Slide Scanners, continued

<table>
<thead>
<tr>
<th>Microtek ScanMaker 18S0S</th>
<th>Nikon LS-3510AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>List price: $2,199</td>
<td>Street price: $1,663</td>
</tr>
<tr>
<td>Cons: Not up to prepress quality. No manual focus.</td>
<td>User-unfriendly software.</td>
</tr>
</tbody>
</table>

### Table 1 Criteria

- **List price** — The vendor's suggested retail price for the scanner in its standard configuration.
- **Street price** — The average price of the scanner at dealers or through mail order across the U.S. in August of 1992.
- **Min. system version, RAM** — The earliest Mac system-software version with which the scanner can operate and the minimum amount of on-board RAM, in megabytes, that is required for processing images in the CPU.
- **Resolution** — The resolution of the scanner engine, in pixels.
- **Bits per pixel** — The number of bits of color information used to describe each pixel. Divide this number by 3 to determine bits per color (red, green, and blue).
- **Calibration method** — Whether the scanner's calibration method is automatic (no user action is necessary), manual (the user must click on a button), or manual with target (the user must click on a button and insert a target).
- **Focus method** — Whether the scanner provides automatic focus of the scanner lens, allows users to focus manually, or offers users both options.
- **Interfaces** — The ports on the scanner for connecting it to computers, hard drives, or other peripherals.
- **Negative scan** — Whether the scanning software accommodates scanned negatives.
- **Film formats** — The sizes of slides or transparencies the scanner can accommodate.
- **Film holders** — The types of transparency media — mounted, unmounted, rotation, strip-film — the scanner accommodates at input.
- **Photoshop plug-in** — The Photoshop plug-in supplied with the scanner.
- **Color preview** — Does the scanner provide a color preview?
- **Input-resolution control** — Can the user adjust the scanner's resolution at input?
- **Preview zoom** — Does the software provide zooming to view details in the prescan?
Volume Two is the second book in Agfa’s educational series on color prepress. Containing all new information, Volume Two is identical in approach to its highly successful companion book, An Introduction to Digital Color Prepress (now over 250,000 copies in print in six languages.)

Filled with comparative halftone images, illustrations, and charts, the new book is 32 pages of the latest information on scanners, color correction, calibration, file formats, screen angles, proofing systems, data compression, and much more.

Available now for $10.00, plus $2.50 shipping and handling. For a limited time, we’ll include a copy of Introduction to Digital Color Prepress (third edition) for just $4.00 additional.

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P.O. Box 7917
Mt. Prospect, IL 60056-7917
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Whether you want a bigger screen, a better screen, or a more affordable screen, there's a Lapis® display product that's perfect for you. Choose a Lapis display board for your new Macintosh® computer, and you'll find your options in monitors have suddenly multiplied. Choose Lapis to upgrade your older system, and you'll be very pleased by all of the unexpected possibilities. No matter what kind of monitor you want to use with your Mac®, Lapis gives you more choices than any other display company.

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We have display products for every Mac.

With over 50 products, Lapis extends the display compatibility of all Macintosh computers. In addition to Lapis’ own line of low-cost, high-quality monitors, Lapis boards let you use your Macintosh with displays from virtually all manufacturers including Apple, E-Machines, Ikegami, NEC, Radius, RasterOps, Sampo, Samsung, Seiko, Sony, and SuperMac.

<table>
<thead>
<tr>
<th>Monitor Type</th>
<th>Color</th>
<th>Gray Scale</th>
<th>Monochrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macintosh Computer Type</td>
<td>19'-21'</td>
<td>16'-17'</td>
<td>Apple 12</td>
</tr>
<tr>
<td>Classic &amp; Plus (in black &amp; white)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>SE (in black &amp; white)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>LC &amp; LCD</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>SE/30 &amp; SE/40</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Quadras and II-family</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>PowerBooks &amp; Classic II</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

*Supported by Lapis board  ➤ Supported by Lapis PowerBase (external adapter)

Lapis Technologies Inc.
1100 Marina Village Parkway • Alameda, California
800-435-2747 • 510-768-1600

Circle 124 on reader service card.
M
iniFinders is a comprehensive directory of current Macintosh hardware and software products that have been reviewed and rated in MacUser. For this special Graphics & Design edition, we have selected only graphic-arts products of general interest and in several subcategories.

Our rating system awards from one (worst) to five (best) mice, based on each product’s overall value within its category. As the state of the art changes, we continually reevaluate each product’s rating. More-detailed information can be found in the issue cited in parentheses near the end of each MiniFinder entry. MacUser Editor’s Choice Award winners are indicated with an *, as well as on our CompuServe online service, where you’ll also find get additional product information directly from vendors by circling the MiniFinder number [MF#] indicated for each product on our Reader Service card.

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MINIFINDERS

MICE RATINGS

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Also im ports Typ e I fo nt s . Good each product on our Reader Service card. Choice Award winners are indicated with an *, as with our CompuServe online service, where you’ll also get additional product information directly from vendors by circling the MiniFinder number [MF#] indicated for each product on our Reader Service card.

PRESENTATIONS

CAD

CLIP ART

DRAWING

FONTS & TYPOGRAPHY

MODELING & ANIMATION

PAGE LAYOUT

PAINTING & IMAGE EDITING

PRESENTATIONS

Graphi cs & Design

BannerMania 

BannerMania is a specialty graphics program that lets you print banners, bumper stickers, signs, posters, and T-shirt designs. Includes 19 custom outline fonts that scale and print at any size. Also imports Type 1 fonts. Good use of ImageWriter's limited color capabilities. Offers variety of special effects for text manipulation, including the awesome Transmogrify command. Limited graphics import/export capabilities. Excellent manual. Version 1.0 reviewed. Requires LaserWriter or ImageWriter II, $59.95. Broderbund Software, Inc., 500 Redwood Blvd., P.O. Box 6125, Novato, CA 94948, 800-521-6263 or 415-382-4400. (Oct '91) [MF#601]

CameraMan 

CameraMan captures screens and on-screen actions and saves the resulting graphics as a QuickTime sequence, a PICS animation, or a series of PICT files. Captures 8-bit and 4-bit color as well as black-and-white images. Maximum 8-bit color capture speed is generally better than 4.5 frames per second even on the fastest Mac II series machines. Can capture an entire screen or a designated selected area. Doesn't record sound, so QuickTime movies require a separate program to mix in digital audio. Version 1.0 reviewed. Requires QuickTime. $149. Vision Software, 3160 De La Cruz Blvd., Ste. 104, Santa Clara, CA 95054, 408-748-8411. (Sept '92) [MF#602]

Capture

Capture is a reliable screen-capture utility. It can capture full or partial screens either to the Clipboard or to a PICT file. Supports 8-bit and 32-bit color. Capture may have to be renamed on your Mac to avoid INIT conflicts. Version 2.0 reviewed. Version 4.0 shipping. Requires Mac Plus or later and System 6.03 or later. $129.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301, 805-991-6540. (Jan '90) [MF#603]

Cheshire

Cheshire is an INIT that lets you copy and paste tab-delimited tables into simple charts, which can be placed in a document. Many chart types are possible, typeface styles can be varied, and the charts can be modified if placed into drawing programs such as MacDraw II or DeskDraw. The only programs from which this handy utility can extract data are MacWrite II, Word, MacDraw II, and PageMaker. Version 1.0 reviewed. Requires Mac Plus or later, $125. Abbott Systems, 62 Mountain Rd., Pleasantville, NY 10570. 800-552-9157 or 914-747-4171. (Feb '91) [MF#604]

DeskPaint and DeskDraw

DeskPaint and DeskDraw are reasonably full-featured, 24-bit color painting and drawing programs in DA form. Flexible calibration options for vertical and horizontal rulers. Printer resolution can reach 4,000 dpi. DeskPaint has enough color controls and image-manipulation functions to satisfy any user, except professional electronic artists. Version 3.03 reviewed. Version 3.08 shipping. Requires Mac Plus or later, at least 2 MB of RAM for color work, and a hard drive. $199.95. Zedcor, 4500 E. Speedway, Ste. 22, Tucson, AZ 85712, 520-482-4667 or 602-881-8101. (Mar '91) [MF#605]

Image Analyst

This image-processing program lets you identify and analyze any element of an image. Measurements and statistics can be automatically or interactively generated from THF or PICT files or from captured video. Manual is well illustrated but poorly written. Easy to learn. No programming necessary. Version 2.1 reviewed. Requires 68030 CPU or higher, System 6.03 or later, and at least 8 MB of RAM. $2,000. Automatix, 755 Middlesex Turnpike, Billerica, MA 01821. 508-667-7900. (July '90) [MF#606]

Image Grabber

Image Grabber is an excellent DA screen-capture program. Can capture pull-down menus and convert 8- and 24-bit-color screens to 2-bit black-and-white files, saving huge amounts of memory. It has both real-time and delay modes. Captures in MacPaint and PICT formats. Version 2.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later and System 6.03 or later. $49; site licenses available. Sabastian Software, P.O. Box 70726, Bellevue, WA 98007. 206-861-4602. (May '90) [MF#607]

Mariah

Formerly called PictureBase, Mariah is a powerful graphics librarian. Can store paint-and-PICT formatted items and attach keywords for later search and retrieval. Users of discontinued Consultant program from Solutions, Inc., can also upgrade to Mariah. Version 1.2 PictureBase reviewed. Version 1.1, $149. Mariah shipping. Requires Mac Plus or later and System 6.05 or later. $149; upgrade from PictureBase, $49; upgrade from Curator, $69. Symmetry Software Corp., 6806 E. Palm Rd., Ste. 110, Scottsdale, AZ 85258, 800-624-2485 or 602-998-9106, (Sept '87) ★ 56 Eddy [MF#608]

MultiClip

MultiClip is a much improved version of an already good product. It lets you have as many Clipboards as your hard disk space allows, which makes many graphics and page-layout applications easier to use. New features simplify finding an image quickly. Version 2.0 reviewed. Version 2.1ce shipping. Requires Mac Plus or later. $149. Olduvai Corp., 7520 Redwood Blvd., Ste. A, South Miami, FL 33143, 800-822-0772 or 305-665-4665. (Oct '90) [MF#609]

Oloto

Oloto is one-step gray-scale scanning software that is an absolute joy to use. Powerful, intuitive interface autoates the scanning process. Provides excellent image quality and works with scanners from many manufacturers.

MICE RATINGS

For more information, circle the MiniFinder number [MF#] on the Reader Service card.

MacUser November 1992

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Aperture 3.01 shipping. Requires Mac Plus or later and System 6.05 or later.

Ashlar Vellum 3D 3D. Vellum 3D is a highly accurate 3-D CAD program.

AutocAD 3.01. Already a popular CAD program in the PC and UNIX market, AutocAD's latest Mac version sports an interface significantly improved over earlier attempts.

AutoCAD 2D/3D 3D. DesignCAD 2D/3D is a capable 2-D drafting program that supports 3-D solid modeling and surface rendering. It has a few rough edges. Point-orientation method of drawing takes some getting used to. Overwhelming screens with long menus and huge palettes. Version 1.0 reviewed: 3D 3.01 shipping. Requires Mac Plus or later and System 6.05 or later.

Smarcraf and The Clipper II. Smarcraft and The Clipper II are two useful DA utilities for graphics work. Smarcraft is a major enhancement to the standard Clipper II. The Clipper II offers a transparent Clipboard window that lets you resize or crop a graphic to the area in which it will be pasted. Version 1.0 reviewed.

Ashlar Vellum 3D. Ashlar Vellum is a powerful 2-D CAD package for architectural and mechanical drafting. Smart-curve information is now snapped to a measured position relative to a designated point on an object. Alows complete control of line tools, resizeable geometric shapes, and text. Version 0.91 reviewed.

SnapCut. SnapCut is a DA/INIT utility that lets you capture full or partial screen images. Differs from similar products in that captured window remains on-screen within a fixed window, which you can use as you work. All or part of a screen, window, dialog box, or even a portion of a graphics file can be captured as a color or a black-and-white image. Supports PICT or paint formats. No way to scale or crop captured images or to save them as startup screens, but these features are available in other paint applications. Version 3.0 reviewed.

PrePrint 5.0. Intended as a sophisticated color-separting utility, for MacPageMaker documents, PrePrint is similar in general function to Adobe Separator. PrePrint handles color TIFFS and EPS files with few problems. Color can be unpredictable with PICT images. Version 1.0 reviewed. Version 1.5 Requires Mac SE or later with at least 2 MB of RAM and a hard drive. $495, upgrade, $30.

MidFinder 11. VideoQuill's sole purpose is to produce high-quality PICT or TIFF format video or multimedia presentations. Particularly nice effects such as blends and transparencies. Uses fonts only in its own format and can't convert Type 1. Version 2.1. Requires Mac SE or later with at least 2 MB of RAM and a hard drive. $695, with Font Supplement, $695. Wildflower Software, 21 W 1711 Coronet Rd., Lombard, IL 60148, 708-916-9360. (Sept '91) [MF#618]

Ashlar Vellum 3D 3D. Ashlar Vellum 3D is a highly accurate 3-D CAD program. Version 0.91 reviewed.

AutoCAD 3.01 shipping. Requires Mac Plus or later and a hard drive. $1,995. Ashlar, Inc., 1290 Oakmeal Pky., Ste. 218, Sunnyvale, CA 94086. 408-774-1800. (Dec '91) [MF#618]

AutoCAD 3.01 shipping. Requires Mac Plus or later and System 6.05 or later. A high-capacity hard-drive. Qualia, Inc., 101 Fifty-seventh Street, New York, NY 10022. 212-383-1244. (Oct '92) [MF#623]

DesignCAD 2D/3D 3D. DesignCAD 2D/3D is a capable 2-D drafting program that supports 3-D solid modeling and surface rendering. It has a few rough edges. Point-orientation method of drawing takes some getting used to. Overwhelming screens with long menus and huge palettes. Version 1.0 reviewed: 3D 3.01 shipping. Requires Mac Plus or later and System 6.05 or later.

Smarcraf, Inc., One Appleway West, OK 74165. 918-274-1880. (Nov '90) [MF#621]

DynaPerspective 3D 3D. Presentation was the strength in earlier versions of this 3-D CAD program. Necessary drafting capabilities have now been added, its rendering tweaked, and its interface improved. You can use up to 16 drafting layers. DynaPerspective's limitation is its method for measuring

MICE R AT I G S

For more information, circle the MiniFinder number [MF#] on the Reader Service card.

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HOW TO CHANGE PLANES USING ONLY ONE FINGER.

• Or, for that matter, a lot of other things. In fact, with Aldus' IntelliDraw™ — for Macintosh and Windows — whatever you draw can easily be changed with a couple clicks of the mouse. (Not to mention how easy it is to draw in the first place.)

It's all thanks to IntelliDraw's 43 new, totally unique, powerful features. Like, for example, the Symmetrigon™ and the Connectigon™.

With the Symmetrigon you simply draw one side of an object and the other side (or sides) are drawn automatically. On other programs, you'd have to draw each side one step at a time.

As for the Connectigon, it lets you change dimensions and perspective almost instantly (see the plane illustrations, here). Again, using other drawing packages, such modifications would be laborious at best.

And of course, that's only two of the 43. With IntelliDraw, you also get to take advantage of things like alignment guidelines and alignment frames (which automatically align and maintain spacing of multiple objects even if you decide to rearrange, add, or subtract objects in your drawing), master objects (which save a ton of time by letting you change multiple cloned objects simply by changing the one master item), and, as they say, much, much more.

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relative distances. A powerful, versatile tool and a great value. Screen Printing and Renter Man, Version 2.01 reviewed. Version 2.31 shipping. Requires Mac II series with at least 2 MB of RAM. Conv Unix, Unix and Adobe Illustrator CS4, hard drive recommended. $9495. Dynaware USA, Inc., 950 Tower Ln., Ste. 1150, Foster City, CA 94040. 415-349-6242 or 415-349-5700. (Dec '90) * 90 Eddy [MF#624]

LANDesign ttttt
LANDesign is a versatile land surveying software that simulates the way surveyors worked before wheels had Mac software to help them. All standard COGO (coordinate geometry) features are supported, and all objects can be named with both character identifiers and labels. This intelligent program is easy to use. Version 1.11 reviewed. Version 1.18 shipping. Requires Mac Plus or later; hard drive recommended. $9595. Export Module, $300; Data Collector Module, $550; CompuScans Inc., 113 McCabe Crescent, Thornhill, Ontario L4J 2S6 Canada. 416-738-4601. (Sept '89) [MF#587]

MiniCad ttttttt
With a fast and logical interface, MiniCad has a Pascal-like macro language, an internal database, 2-D and 3-D graphics, a linked spreadsheet, and a low price. Has a MacDraw-like feel, but it may have the best 3-D capabilities among low-cost CAD programs. Good documentation. Graphsoft's tech support is helpful. A HyperCard tutorial is available. Sold separately. Version 3.0 shipping. Requires Mac Plus or later. $1,995. Computerized Graphics, Inc., 113 McCabe Crescent, Thornhill, Ontario L4J 2S6 Canada. 416-738-4601. (Sept '89) [MF#587]

PowerDraw tttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttt
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- Varityper
- VT-400 Tabletop Printer with 70 fonts and 40 Megasbyte font drive $5,495
- VT-600 Tabletop Printer with 35 fonts and 20 Megasbyte font drive 9,995

Scanners

Microtek
- ScanMaker 1850 $1,849
- UC-630 (300x600 dpi) $1,389
- UC-1205S (600x1200 dpi) 3,495
- UMAX Transparency option 739

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RasterOps
- Sweet 16 $1,299
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MacGraphics is a collection of bitmaps, designed for use in graphics design and desktop publishing. It contains a variety of images, including landscapes, portraits, and abstract designs. The images are available in different formats and are suitable for various uses, such as web design, print design, and multimedia projects.

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Mac Plus or later and System 6.0.3 or later, $149.99. Event One, 222 Del Nido Pkwy., Suite 400, Novato, CA 94946, 415-282-4656, (Jan '92) [MF#6690]

Relational Object

Relational Object (formerly called Procfile) is a programming language with a difference. It performs relational drawing, in which each point's position depends on the locations of other points. If you move a point, the rest of the drawing reacts correspondingly. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later. (Oct '90) [MF#6694]

Streamline

Streamline is a dedicated PostScript auto-trace package. Can quickly print-ready traces with little tweaking. Retains original scanned images' black-and-white values. Final touch-ups can be performed exquisitely in Illustrator or a similar program. Continuous-tone photos aren't usually worth the trouble. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later and System 4.2 or later; 2 MB of RAM recommended. $195. Adobe Systems, 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039, 800-833-6687 or 415-961-4400. (Nov '89) [MF#6662]

Fonts & Typography

ASCII Chart

ASCII Chart is a DA that shows all 256 characters for a font. Fonts can be easily changed with the Font menu. Can display characters at 72 points. Quickly finds hidden families, keystrokes, and hex equivalents. Doesn't print. Version 2.0 reviewed. Version 4.2 shipping. Shareware, $10; available from on-line services such as ZiffNet/Mac. Jon Wind. (Oct '90) [MF#6663]

ATM (Adobe Type Manager)

Adobe Type Manager is a must-have utility that creates PostScript type fonts at any size on-screen and when printed on QuickDraw printers such as Apple's ImageWriter II. Not quite perfect (has some problems with Microsoft Word and smaller point sizes), but performance on 68000-based Macs. Version 1.01 reviewed. Version 2.0 shipping. Requires Mac Plus or later and System 4 or later. $99.50. Adobe Systems, 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039, 800-833-6687 or 415-961-4400. Feb '90 * 89 Eddy [MF#6664]

Classic Textures

Classic Textures is an advanced implementation of TeX, a popular standard among code-based typesetting systems. It can be used extensively for complex long-document publishing, especially in the legal profession and with large databases. Handles mathematical typesetting well. Good for people trained on mainframes in the early days. Steep learning curve. Version 1.0 reviewed. Version 1.5 shipping. Requires Mac Plus or later with at least 2 MB of RAM. $655; education-discount price, $495. Blue Sky Research, 534 W. Third Ave., Portland, OR 97204, 800-622-8398 or 503-222-9571. (Apr '88) [MF#6665]

Evolution

Evolution is an easy-to-use conversion utility for translating fonts among Type 1, Type 3, and EPS formats. Doesn't produce AFM (Adobe Font Metrics) files, and fonts are not unhinted. Evolution controls help with difficult conversions, and Evolution can output character sets as printer fonts. Version 1.02 reviewed. Version 2.0 shipping. Requires Mac Plus or later, System 4.2 or later, and System 6.0.3 or later. $495. Altsys Corp., 269 W. Renner Rd., Richardson, TX 75080, 214-680-2000. (Nov '90) [MF#6669]

FontSlicer II

FontSlicer II creates high-quality screen fonts of any downloadable or scorable fonts. Supports TrueType fonts, 1312 fonts, and 96 points. Excellent utility for producing large font sizes with true WYSIWYG. Version 1.7 reviewed. Version 2.0 shipping. Requires Mac Plus or later, System 3.5 or later, and a PostScript printer. $99.50. American Microelectronics, 1611 Headway Cir., Bldg. 3, Austin, TX 78754, 512-339-0001. (Apr '89) [MF#6706]

FontStudio

FontStudio provides a fully integrated environment on the Mac. If you want a font-production system, FontStudio might be irresistible, because of its ability to store character parts in a library, its excellent bit-map editor, and its strong kerning-pairs interface. Supports Adobe Type 1, Bitstream, Fontographer, Letrastudio, and TrueType fonts. Provides automatic and manual hinting plus automatic interpolation between two existing fonts. Letrastudio is a font designer's tool. Requires Adobe Type Manager, TrueType, or a built-in rasterizer to display outline characters during design process. Can import Illustrator 1, 2, or 3's outlines as templates. Interface is dense, precise, and sometimes confusing. Version 2.0 reviewed. Requires Mac Plus or later and a hard drive, $595. Letrascript USA, Inc., 40 Eisenhower Dr., Paramus, NJ 07652, 800-873-9071 or 201-854-6100. (Oct '92) * 88 Eddy [MF#6674]

LetrTuck

LetrTuck is a kerning utility that lets you add, delete, or modify the kern pairs for any installed screen font in the System file, Font/DA Mover suitcases, or QuarkXPress documents. Version 1.04 reviewed. Requires LetrTuck Plus shipping. $99. EDCO Services, 12410 N. Dale Mabry Hwy., Tampa, FL 33612, 813-962-5900 or 813-962-7800. (June '89) [MF#6675]

Letterforms

Letterforms is a set of fonts and figures that leads you into exciting typographic explorations. Includes a limited version of MacPaint. Requires Mac Plus or later, $39.95. W. H. Freeman & Co., 1 Madison Ave., New York, NY 10010. 212-576-9400. (Mar '90) [MF#6767]

MacType Sampler and Type Listing

MacType Sampler and Type Listing is a classic art director's type book that has samples of all PostScript laser fonts. The material is searchable on disk, but screen-resolution is not a substitute for a printout. One list of Type Sampler is the more valuable part of this package. Requires Mac Plus or later. Type Listing reviewed. Requires Mac Plus or later and one year of printed updates, $80. MacTypography, 326-D N. Stone Street Ave., Rockville, MD 20850.
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You don’t need a photo lab to get output like this. A Phaser™ II SD color printer by Tektronix will do just fine. It’s the only dye sublimation printer that gives you detailed, photorealistic images with crisp, clean text—that’s TekColor Photofine technology. But you also get PostScript™ Level 2 and TekColor PS to match and adjust colors. Plus Pantone certification, networkability, a 24MHz RISC processor for speedy output, a $9995 price tag and a print cost of about $2 per page. All in one little machine. So much for that hut in the middle of the parking lot. Call the leader in color printers at 1-800-835-6100 Dept. 25A for a free output sample. Or call (503) 682-7450, ask for Document 1222 and we’ll send information by fax.

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MINI FINDERS

301-424-3942. (Apr '90) [MF# 678]

Metamorphosis Professional

Metamorphosis Professional is a utility that converts fonts among PostScript, TrueType, and TrueType formats on the Mac. It can also produce PostScript fonts for the PC and NeXT platforms, TrueType fonts for the PC, and Fontographer databases. It can access PostScript fonts located in printer ROM and save them on your hard disk. Also, it can export EPS and PICT outlines of font characters. Elegant interface is powerful yet flexible. Can't create bit maps for TrueType-to-Type 1 conversions and can't convert Adobe Expert series. Version 2.01 reviewed. Version 2.03 shipping. Requires Mac Plus or later and System 6.02 or later; hard drive recommended. $149. Aliasys Corp., 269 W. Renner Rd., Richardson, TX 75080. 214-680-2660. (Dec '91) [MF#678]

Publishing Packs

Publishing Packs bundles three Adobe typefaces that work well together for specific publishing projects. The packages offer substantial savings over purchasing the typefaces individually, and the documentation has useful information on characteristic. Requires Mac Plus or later. Publishing Pack 1 (Newsletters), $395; Publishing Pack 2 (Forms and Publication Pack 3 (Presentations), $475; Adobe Systems, 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039. 800-833-6678 or 415-961-4400. (Feb '91) [MF#679]

SPECular

SPECular is a flexible type-sampling utility that prints a variety of handsome specimen sheets. Shows typefaces in one- and two-page layouts. Incomplete documentation. Version 1.1.6 released in 1.2 shipping. $79.95. Omega Systems, P.O. Box 7633, Chico, CA 95927. 916-894-6351. (Dec '91) [MF# 680]

TypoBook

This simple type-sampling program includes four layouts: a specimen page, a key-cap table, a complete character set, and line showings. The latter prints a two-line sample of each selected font. Provides a fast, easy way to compare installed fonts. No fail but offers lots of information about fonts and typography. Good support. Version 2.2 reviewed. Version 2.26 shipping. Requires Mac Plus or later with System 6 or later. $219.95. Broderbund Software, Inc., 500 Redwood Blvd., P.O. Box 6125, Novato, CA 94947. 415-661-6256 or 415-898-4400. (Oct '92) ★ ★ ★ ★ ★ Eddy [MF# 684]

World Class Fonts

World Class Fonts! is a bit-mapped type-sampling utility that provides three useful utilities, all the Mac's Knife fonts, and a lot more. Eight separate volumes are available. $89.95 per volume. Dublic-Click Software, Inc., 2252 Styles St., Woodland Hills, CA 91367. 800-266-9525 or 818-888-2068. (Oct '86) [MF#685]

MODELING & ANIMATION

ADDMotion

ADDMotion is an extension to the HyperCard 2.0 development environment that greatly enhances its power as a tool for animation. Animations are created using TimeLines (an editing window) and the MediaController palette (resembl a VCR), with cells, actors, props, and object paths. Provides its own color-painting and sound tools. All but sample files are included and can be distributed royalty-free. Not for beginners, includes HyperCard. Version reviewed. Shipping. Requires Mac Plus or later with at least 2 MB of RAM, System 6.07 or later, and a hard drive; at least 4 MB of RAM required for color work. $149. Motion Works, Inc., 1020 Mainland St., Vancouver, British Columbia V6B 2T4 Canada. 604-685-9975. (Feb '92) [MF#686]

Alias Sketch!

This high-end 3-D-modeling and rendering program has several unusual features: supports powerful NURBS modeling, many options for complex objects and vertex editing, and model-perspective control against scanned backgrounds. $1,495. Requires Mac II or later, 32-bit QuickDraw, at least 8 MB of RAM, and a hard drive. $995. Alias Research, Inc., 110 Richmond St. E., Toronto, Ontario M5C 1P1 Canada. 416-447-3542 or 416-326-9612. (Sept '92) [MF# 687]

Animation Works

This suite of powerful, affordable software tools simplifies the creation of simple animation. Can save animations as stand-alone sequences playable with included Movie Player application. Sequences are likewise playab le by HyperCard stacks, using XCMD also included in this package. Mac equipped with RGB/NTSC conversion hardware and print-to-video software can output Animation Works movies to videotape. Version 1.0 reviewed. Requires 8-bit or higher video display system. $199.95. Gold Disk, Inc., P.O. Box 789, Streetsville, Mississauga, Ontario L5M 2C2 Canada. 416-602-4000. (Nov '91) ★ ★ ★ ★ Eddy [MF#688]

ElectricImage Animation System

This high-end 3-D modeling program offers expert control of a variety of choices. Experience speed and quality, control of type fonts and texture mapping, and alpha-channel support. Animation features are weak. Includes Mr. Font, a powerful text-editing program. Has wide variety of text options. Uses hardware copy-protection. Inadequate documentation. Version 1.0 reviewed. Version 1.5 shipping. Requires 68020 CPU or higher, a math coprocessor, at least 4 MB of RAM, 32-bit QuickDraw, at least 8 MB of RAM, and a hard drive. $7,945. Electric Image Inc., 100 Townsend Blvd., Ste. 300, Pasadena, CA 91105. 818-577-1627. (Sept '92) [MF#689]

FilmMaker

FilmMaker is a powerful animation tool that includes five separate applications: Mark, Animate, Color, Sound, and Present. It is limited to the animation process, so the original graphic images that become sequential frames in FilmMaker must be created in a separate program. The program is import and export adept at importing PICT, EPS, or files. The program is not specified for precisely registered frame anim ating, and some frames are incomplete and awkward. Version 2.01 reviewed. Requires Mac II or series with 5 MB of RAM, a hard drive, and 32-bit QuickDraw. $995. Electric Image Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103. 415-442-0200. (Apr '91) ★ ★ ★ Eddy [MF#690]

Infini-

Infini-D packs modeling, rendering, and animation features into an easy-to-use 3-D-design package. Offers true 3-D modeling, transparency, free-form objects, ray tracing, SMPTEmodebone animation, and multilayer surfaces. Well-integrated interface allows multiple views and light sources plus easy object editing. Rendering quality and speed are below average. D. H. Laughlin, Director of Model ing tools. Sophisticated use of fractals creates realistic, randomly generated terrain. Surface maps can combine color, bump, transparency, and other effects. Animation can be exported to other programs. Backburner option distributes render ing among networked Macs. Good documentation. Version 1.12 reviewed. Version 2.0 shipping. Requires 68020 CPU or higher, a math coprocessor, at least 4 MB of RAM, 32-bit QuickDraw, and a hard drive. $995; Backburner, $395 (group discount available). Specular International, P.O. Box 888, Amherst, MA 01004. 413-549-7600. (Sept '92) [MF#691]

Life Forms

Originally developed for dance choreography. Life Forms is a 3-D human-figure animation program. Doesn't show fine details such as fingers and faces. Can simulate character's movements as PICStreamtimescquate specifiers. To create lifelike shaded human figures, scripts must be exported to Swivel 3D Professional for

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72 Buyer's Guide November 1992 MacUser
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**MINIFINDERS**

**Manipulation.** Version 1.0 reviewed. Requires Mac Plus or later with RAM and System 6 or later. $495. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103, 415-442-0200. (Sept '92) [MF#699]

**MacRenderMan.**

MacRenderMan generates photorealistic color images from files containing models and saves them in RIB (RenderMan Interface Bytestream) format. Programs supporting RIB format include Macromedia Time-Draft Station 3d and Swivel 3D Professional. Spools RIB files into a folder and processes the background under MultiFinder. Supports true color and includes features such as transparency, surface textures, multiple light sources, natural or artificial light, ray tracing, and fog. Has efficient software, hardware, and a hard drive. Bundled with Showplace, the 3-D modeling program of Claris. Requires Mac II series or higher with at least 4 MB of RAM, 32-bit QuickDraw, and a hard drive. $895. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103, 415-442-0200. (Dec '91) *91 Eddy [MF#696]

**Presenter Professional.**

This powerful, high-end 3-D modeling program offers a full set of object tools and rendering capabilities. Adequate animation capabilities, supports RenderMan RIB standard and alpha channels. Includes spline-based rendering, ray tracing, and the ability to calculate object volume and surface area. Digital Clay features use vertex editing to easily modify surface geometry of complex objects. VIDI Express hardware acceleration option significantly reduces rendering times. Requires Mac II series or higher. Requires 68020 CPU or higher with math coprocessor, System 6.05 or later, 32-bit QuickDraw, at least 8 MB of RAM, and a hard drive. $495. VIDI, Inc., 16309 Doubleglove St., La Puente, CA 91744, 510-918-6854. (Sept '92) [MF#697]

**Ray Dream Designer.**

This midrange 3-D design program offers fast ray tracing of models and support for alpha channels but no animation capabilities. Awkward interface and creation of multiple files hinders basic selection. ray traced renderings show detailed reflective surfaces, shadows, and transparency effects. Has good PICT and texture mapping. Useful Preview mode. Resulting 24-bit PICT files are close to photorealistic. Image-rendering process can run in the background. May be inadequate for modeling convoluted surfaces or complex objects with exact surface definition. DreamNet option distributed rendering among networked Macs. Requires Mac II series or higher with at least 8 MB of RAM, and a hard drive. $7,495. AT&T Graphics Software Labs, 3520 Commerce Crossing, Sunnyvale, CA 94086, 408-442-3714-844-4364. (Sept '92) [MF#695]

**ModelShop II.**

ModelShop II is a powerful 3-D modeling package. Extensive feature list includes support for unlimited drawing layers, Bézier curve fitting, wall text, precise measurements, shaded rendering, and multiple light sources and animation. Flexible, straightforward interface offers good selection of drawing tools plus easy control of viewpoint and mouse-operated workthrough. Supports DRAF and Claris CAD file formats. Animation options include creation of stand-along, self-running demos and animation on screen. Version 1.2 reviewed. Version 1.5 shipped. Requires Mac II series or higher with at least 4 MB of RAM, 32-bit QuickDraw, and a hard drive. $895. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103, 415-442-0200. (Dec '91) *91 Eddy [MF#697]

**Sculpt 3D.**

Sculpt 3D offers excellent render quality and control for 3-D modeling tools. Provides absolute-vertex and polygonal-face control of objects. Can model objects with extremely complex geometry. Light and animation features provided by Sculpt 3-D. Interface is difficult to learn and navigate. Hardware-acceleration options available. Contains a direct view mode and window. Has hardware copy protection, weak documentation. Version 2.1 reviewed. Requires 68020 CPU or higher with math coprocessor. System 6.05 or later, 32-bit QuickDraw, at least 8 MB of RAM, and a hard drive. $2,500. Byte by Byte Corp., 9442-A Capital of Texas Hwy., N., Ste. 650, Austin, TX 78750, 512-795-0150. (Sept '92) [MF#699]

**Plotshow.**

Plotshow is an easy-to-use composite-program that arranges, manipulates, and illuminates existing 3-D objects imported as RenderMan RIB files. Lacks modeling and animation tools. Includes some basic selection tools and attribute and shape files. When used with MacRenderMan, provides show but lacks powerful photorealistic rendering. Excellent tutorial videotape. Works well with 3-D modeling programs that have limited rendering capabilities, such as SwivelMan. Version 1.11 reviewed. Requires Mac II series or higher with at least 8 MB of RAM, a hard drive, and a color display system. Bundled with MacRenderMan. CD-ROM version, $495. Pixar, Inc., 1001 W. Cutting Blvd., Richmond, CA 94804, 510-436-4000. (Sept '92) *92 Eddy [MF#701]

**StrataVision 3D.**

This modeling and visualization tool creates complex, photorealistic 3-D drawings. Rendering and screen-redraw times have been reduced with this version. Rendering can take hours, but it can be done in the background. Proprietary RenderMan is used but may be prohibitively slow. Networked Macs using optional RenderPro application can dramatically reduce rendering times. Includes limited use of Bézier splines for editable, smoothly curved objects. Many texture and shape libraries are available. High-speed display hardware accelerations adds many image-control features and creates an almost unlimited upgrade path. Supports PICS format and QuickTime. Version 2.5 reviewed. Requires 68020 CPU or higher with math coprocessor, at least 4 MB of available RAM, and a high-capacity hard drive. $995. RenderPro, S980 (group discounts available). 7 Strata, Inc., 2 W. St. George Blvd., Ancestor Sq., Ste. 2100, St. Louis, MO 63144, 314-7282 or 801-628-5218. (Sept '92) *91 Eddy [MF#702]

**Super 3D.**

Super 3D is a capable object-oriented drawing program with basic 3-D modeling features. Easy to use, but lacks professional-level tools. Has three solid-rendering modes that can be combined to create an object-oriented 2-D snapshot in PICT or EPS formats. Vertex-level editing gives precise control over every facet of an object. Easy to make global changes. Limited support for shaded rendering or animation. Version 2.5 reviewed. Requires Mac Plus or later. System 6.02 or later, and a hard drive. Requires Mac II series or higher for color work. $495. Aldus Corp., 411 First Ave., Seattle, WA 98104, 206-333-2536 or 206-626-2320. (Sept '92) [MF#702]

**Swivel 3D Professional.**

Swivel 3D Professional is a color-based modeling program that speedsily forms solids. Casts shadows onto other objects and can project color graphics onto solids. Objects can be manipulated as joined objects without accidental dismantling. Can tween-animate objects or fly through scenes and save frames for playback. Easy-to-use interface. Missing some professional tools, such as true spline-based editing and adequate links to RenderMan RIB format. Version 2.0 reviewed. Requires Mac II series or higher with at least 5 MB of RAM, System 6.05 or later, a hard drive, and a color display system. Swivel, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103, 415-442-0200. (Sept '92) *92 Eddy [MF#702]

**SwivelMan.**

SwivelMan is a 3-D modeling package that combines features of Super 3D and SwivelMan. Includes enhanced support for the RenderMan RIB standard. Excellent control of hierarchical object links and
October 22, 1991

Dearest Ellen:

If there is anything better than being loved by you...it is loving you.

And you are so easy to love. You've brought such wonder into my life and have touched my heart with your love.

I just want you to know, my darling, that it feels so good being in love with you and I want to love you for a very long time.

You are a wonderful woman and I love you dearly. If I'm dreaming, please don't wake me up—I don't want this to end.

Monogamously yours,
MINIINDERS

motion axes. Phong rendering mode is fast. Built-in animation and interactive capabilities are not rate, but controls for texture-map attributes are weak. Works well with Pixar’s MacRenderMan and with a more powerful 3-D animation program. Lacks true spline-based modeling tools. Can output files in RenderMan RIB, PICT, EPS, DXF, and PKS formats. Requires Mac II or higher with at least 5 MB of RAM, System 6.05 or later, a hard drive, and a color display system. $895. Macomedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103. 415-442-0200. (Sept ’90) [MF# 708]

Upfront $$$

This 3-D architectural-sketching tool is intended for conceptual design. Draws and manipulates 3-D objects in a nonperspective view, not merely as wireframe outlines. Complex interface is poorly designed, and common tasks such as moving and printing require numerous steps. Lacks several essential tools and features. Can’t import DXF files. Supports use of PICT and scanned-image files as backgrounds while drawing. Good control of solar lighting, but lacks other light sources. Export files in PICT, Illustrator, DXF, or EPS formats. Version 1.01 reviewed. Requires Mac II series and a hard drive. $895. Atlas Research, Inc., 110 Richmond St. E., Toronto, Ontario M5C 1P1 Canada. 800-447-2542 or 416-362-9181. (Dec ’91) [MF# 706]

Virtus WalkThrough $$$$$

Virtus WalkThrough is a powerful modeling and visualization package that makes virtual-reality concepts available to ordinary desktop users through two-dimensional views of an imaginary building or other object: 2-D Design, which lets you create and precisely customize a model, and 3-D WalkView, which offers a real-time, rendered color perspective through which you navigate in any direction. Lacks import/export capabilities needed for serious CAD. Compact data files. Version 1.03 reviewed. Version 1.11 shipping. Requires Mac Plus or later with at least 2 MB of RAM and a hard drive; color requires Mac II series or higher and at least 4 MB of RAM. $495. Virtus Corp., 117 Industrial Ave., Ste. J, Fremont Ave., Fremont, CA 94539. 415-885-2917 or 415-345-5900. (Sept ’90) [MF# 707]

PAGE LAYOUT

CopyFlow $$$$


DataShaper $$$$$

DataShaper is a PageMaker text tool that automatically adapts tab-and-comma-delimited data files into a formatted text as they are placed into a page layout. Requires careful planning and time-consuming programming of special code, but saves considerable time compared with preparing imported text manually. Works well for publishing large, frequently updated databases in custom layouts. Allows creation of multiple filters, each with its own name and function, and providing different views of the data. Requires 1.2 or later of PageMaker. Version 1.2 reviewed. Requires PageMaker 4.0 or later. $179.95. Elseware Corp., 3201 Fremont Ave. N., Seattle, WA 98105. 206-632-3300. (Oct ’91) [MF#709]

Fast Forms $$$$$

Fast Forms is a modest, inexpensive forms-design program intended primarily for low-end users. Its manual is a joy to read. Imports and exports comma- and tab-delimited files. Can create fields to match scanned images of preexisting forms. The FastForms Filter feature lets you fill out forms without needing the original program. Can’t import EPS graphics. Version 2.0 reviewed. Requires Mac Plus or later and System 6.03 or later. $1,799.95; Minisystem, $409.5. Elseware Corp., 2929 Campus Dr. San Mateo, CA 94403. 800-851-2917 or 415-345-5900. (Sept ’90) [MF# 707]

FlexForm Business Templates $$$$$

FlexForm Business Templates are two volumes of prepackaged business forms. Includes SmartForm Assistant. Volume I contains stockkeeping, production, sales, billing, and collection forms. Volume II has purchasing, receiving, accounting, disbursing, and personal business forms. Version 1.0 reviewed. Version 1.1 shipping. Requires Mac Plus or later and a hard drive. $89.95 per volume, direct, Formula, Inc., 1160 Industrial Ave., Ste. J, Petah-Tikwa, Israel 04952, 707-763-9944. (Jan ’90) [MF# 711]

FrameMaker $$$$$

FrameMaker is a powerful desktop program for long-document and technical publishing. Provides sophisticated control over paragraph formats and cross-referencing. Its spelling checker works well and quickly. Table formatting is substantially improved over previous versions. Imports EPS (UNIX), PS, DFX, and Sun raster files. Supports multiple conditional text-variations of a source document. Advances its own document database, adapting the basic document structure according to special user-defined formatting tags. Supports Desktop Color Separation (DCS) graphics, although somewhat slow. Version 3.0 reviewed. Requires Mac II series or higher with at least 4 MB of RAM, System 6.03 or later, and a hard drive. $795. Frame Technology, 1010 Rincon Cir., San Jose, CA 95131. 408-433-3311. (Feb ’92) *’91 Eddie (MF#712)

Informed Designer $$$$$

Informed Designer is a complex and comprehensive forms-design program intended primarily for desktop publishing. Requires Mac Plus or later and Mac System 6.03 or later and a hard drive. $295. Information Designer, $195; other linked software components available. Shanah Corp., Advanced Technology Ctr., 9560 20th Ave., Ste. 105, Edmonton, Alberta T6N 1G1 Canada, 403-463-3330. (Sept ’90) [MF# 713]

Interleaf Publisher $$$$$

Interleaf Publisher is a speedy multiuser layout system for producing large, complicated documents. Simple, powerful, yet suffers from poor font management. Planned revision, Interleaf 5, will consist of six products dealing with specific job categories: Interleaf Professional Writer, Interleaf Engineer, Interleaf Illustrator, Interleaf Production, Interleaf Academic, and Interleaf Passport. Version 3.5 reviewed. Version 3.6.2 shipping. Requires Mac II series with 5 MB of RAM and a hard drive. $995. Interleaf, Inc., Prospect Place, 9 Hillsdale Ave., Waltham, MA 02154. 508-456-5323 or 617-290-0710. (Apr ’89) [MF# 714]

Multi-Ad Creator $$$$$

Multi-Ad Creator is a powerful tool that lets you create high-quality single-page ads for PostScript output. It is easy to use and nearly foolproof. Each kind of graphic file and most word-processor files can be imported. If you create ads and don’t need all-purpose page-layout program, get Multi-Ad Creator. Version 2.1 reviewed. Version 3.0 shipping. Requires Mac Plus or later with at least 4 MB of RAM and a hard drive. $895, Multi-Ad Services, Inc., 1720 W. Dettweiller Dr., Peoria, IL 61615. 800-447-1935 or 309-692-1530. (June ’90) [MF# 716]

PageMaker $$$$$

PageMaker is a powerful and popular page-layout application. Can deal with multiple columns, multiple page sizes, and many page styles. Versatile and well adapted to efficient long-document processing. Now includes Aldus PageMill, a simple, powerful user-friendly program for creating precise, high-resolution color separations. Has built-in controls for word processing, complex typogrophy, graphics, System 7 publish-and-subscribe indexing, and table editing. Has IAC hot links to graphics created with FreeHand and ColorStudio. Features interruptible screen redraw, a real-time saver. New Control Palette offers exact positioning and dimensioning of selected objects. Supports the Additions, which extend feature set and allow custom scripting. Version 4.2 reviewed. Requires Mac Plus or later, at least 2 MB of RAM, and a hard drive. $795. Aldus Corp., 411 First Ave. S., Seattle WA 98104. 800-333-2358 or 206-628-2320. (July ’92) *’91 Eddie (MF#718)

PDCI! (Page Designs Quick!) $$$$$

PDCI! (Page Designs Quick!) and PDCI! 5 (Page Designs Quick! 5) are PageMaker templates designed exclusively for newsletter and newspaper publishing. The sets contain many layouts: 60 three-column, 60 four-column, and 225 tabloid-sized, five-column. The templates’ quality is excellent, but they lack art. You can modify all layouts from within PageMaker. Version 1 reviewed. Requires PageMaker 3.0 or later. PDCI!, $59.95; PDCI! 5, $59.95. PDCI!, Inc., 19311 S. Topanga Canyon Blvd., Ste. 307, Woodland Hills, CA 91367. 818-340-8165. (Aug ’90) [MF# 718]

Personal PageMaker $$$$$

Personal PageMaker is a budget page-layout program with lots of good features, including basic word processing. Has style-sheet support, plus frame support, including spot-color cutouts. AutoCreate feature simplifies design and production of templates. Easy to use,
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Publish! Easy is a budget DTP application with many innovative features, including a slide-show option and built-in file:///database module. Menus and dialog boxes are uncrowded and simple to use. Easy importing of text and graphics. Can do process color-separations. Has a small disk and memory requirements, vertical text justification, and five levels of undo. Lacks real style sheets. Has an on-line dictionary and a thesaurus. Great for novels or folks with limited DTP requirements. Documentation is adequate but doesn’t cover database features very well. Network-ready version available. Version 2.18 reviewed. Version 3.0 shipping. Requires Mac Plus or later and System 6.0.3 or later. Unlimited. Vizware, Inc., 625 Academy Dr., Northbrook, IL 60062. 800-323-7744 or 708-559-1300. (June ’92) ★★★ Eddy [MF#727]

QuarkXPress $$$

QuarkXPress is a high-end, professional page-layout program that now has a greatly simplified interface. No longer does one need to rotate any object or group in increments as fine as .001 degree. Several documents can be open simultaneously. Lets you create multiple retroactive master pages per document. Features excellent, precise typography and color controls well suited for high-end prepress work. Now includes built-in custom formatting data within a document, instead of requiring separate, easily forgotten Data file. Can color-separate CMYK TIFF and Stellos CT files, but not RGB, TIFF, or PIC files. Workspace surrounding the page can be saved as pasteboard storage. Version 3.1 reviewed. Requires Mac Plus or later with at least 2 MB of RAM and a hard drive. $895. Quark, Inc., 1800 Grant Ave., Des Moines, IA 50303. 800-788-7835 or 515-684-8888. (July ’92) ★★★ Eddy [MF#721]

RagTime $$$

RagTime combines word-processing, page-layout, graphics, and spreadsheet capabilities. It has a wide array of charts, hyphenation dictionaries in 14 languages, and a page-description processor that can check spelling in 8 languages. Linked spreadsheets within the same document or other documents update automatically. Offers 80 functions, and you can add external functions from existing data in SQL databases. It also has page-layout functions such as the ability to flow text around frames and to adjust color and type. Its number-crunching capabilities are minimal. Version 3.04 reviewed. Version 3.1 shipping. Requires Mac Plus or later and at least 2 MB of RAM. System 6.0.2 or later, and a hard drive. $999. MacVONK, Inc., 940 Sixth Ave., S.W., Ste. 1100, Calgary, AB T2P 3T1, Canada. 403-232-6545, (June ’90) ★★★★★ Eddy [MF#722] Ready.Set.Go! $$$

Ready.Set.Go! inherits the name of the venerable and popular page-layout application but is based on the high-end DesignStudio package. More than just a beefed-up version of DesignStudio, the result is a completely new product with improved layout-management features, and its handling of text, graphics, and color separations is good. Performance-wise it needs to be faster. A totally new manual would be helpful. Version 1.0 (DesignStudio) reviewed. Version 5.0 shipping. Requires Mac SE/30 with a hard drive or Mac II series. $395. Manhattan Graphics Corp., 250 E. Hartsdale Ave., Ste. 23, Hartsdale, NY 10530. 800-572-6533 or 914-720-6408. (June ’90) ★★★★★ Eddy [MF#723]

Springboard Publisher II $$$

Springboard Publisher II is a low-end, very basic, template-based DTP kit. Its easy-to-use interface allows full text entry. Text and graphics editing only in Actual Size view. Black-and-white painting tools only. Can’t color correct. Version 2.0 reviewed. Requires Mac Plus or later with at least 2 MB of RAM and a hard drive. $99. Springboard Software Corp., 201 Brookridge, MA 02139. 800-826-0706 or 617-494-1200. (July ’91) ★ Eddy [MF#724] Ventura Publisher

Macintosh Edition $$$

The Mac version of Ventura Publisher, the venerable PC page-layout program, still feels like a PC product, despite its considerable strength in technical and long-document publishing. Even if you’re willing to forgive its clumsy adaptation to the Mac interface, Ventura still has two major features: First, it leaves all imported text and graphics files separate from the Ventura document, which lets you customize any file’s look but requires constant tracking of the other linked files; second, typeface management is unavailable for Mac when you’re using Ventura (the Mac version of Ventura Publisher). Version 3.0 reviewed. Version 3.01 shipping. Requires at least 3 MB of available RAM and a hard drive. $795. Ventura Software, 15175 Innovation Dr., San Diego, CA 92128. 800-822-8221 or 619-673-0172. (May ’91) ★★★★★ Eddy [MF#725] Painting & Image Editing

Aldus Gallery Effects $$$

Aldus Gallery Effects consists of a variety of images and text that can be used with Digital Darkroom, Superpaint, and most programs that accept Photoshop plug-ins. The package includes a new feature that simply controls brightness, contrast, and limited color-correction. Filters transform scanned images by simulating brush strokes, watercolors, charcoal, soft paint, poster, fresco, poster edges, rough-surface caquelure, reflective chrome, and high-contrast photographic. Version 1.0 reviewed. Requires at least 2 MB of RAM and with System 6.0.5 or later. $99. Aldus Corp., 411 First Ave., S., Seattle, WA 98104. 800-333-2538 or 206-628-2320. (Apr ’92) ★★★ Eddy [MF#726]

Amazing Paint $$$

A sense of fun pervades this black-and-white painting program, which also has an attractive price tag. Extensive special-effects features include list and many clever tools make the program useful for graphics pros and Tidders alike. Has glossy text functions and flexible print options. Allows multiple levels of undo. Supports ATM and TrueType. Poor documentation. Version 1.0 reviewed. Version 1.03 shipping. Requires Mac Plus or later and System 6.04 or later; hard drive recommended. $99.95. CE Imports standard 100 Commercial Ind., P.O. Box 65580, West Des Moines, IA 50265. 800-523-7635 or 515-224-1995. (Oct ’91) ★★★★★ Eddy [MF#727]

Color II $$$

This affordable 24-bit paint program offers surprising strength in image processing. Delivers basic color-image-enhancement features for users who don’t need the high-end power of packages like ColorStudio or Photoshop. Flexible, easy-to-use interface allows for customizable graphics tools and plug-ins from other programs. Exceeds at constructing complex selections, and can remember a document’s look in a file’s level for use when that image is reopened. Supports PICT, TIFF/Mac or TIFF/PC, PostScript, Paint, Photoshop, and FreeHand/PCD. Version 1.0 reviewed. Version 1.0 shipping. Requires Mac II series or higher with at least 2 MB of RAM, System 6.0.5 or later, and 32-bit QuickDraw; 24-bit color display system recommended. $299.95. Timeworks, Inc., 625 Academy Dr., Northbrook, Illinois 60062. 800-515-4079 or 708-559-1300. (Apr ’92) ★★★★★ Eddy [MF#728]

Color MacCheese $$$

Color MacCheese is an inexpensive, full-color painting program that simply controls brightness, contrast, and color-correction. Requires Mac Plus or later and with least 2 MB of RAM and 24-bit color display system. $49. ColorIt!, 175 Innovation Dr., Northbrook, Illinois 60062. 800-515-4079 or 708-559-1300. (Apr ’92) ★★★★★ Eddy [MF#729]

ColorStudio $$$

ColorStudio is complex and difficult to learn than Adobe’s Photoshop. ColorStudio offers an unbeatable set of tools for professionals interested in image manipulation and high-end output. For electronic prepress work where scanned photos, computer-generated graphics, or other artwork must look their best, ColorStudio lets you control color calibration, film separations, amazing special effects, and a wide range of image-editing tools. The Shapes Annex package (bundled with ColorStudio) adds an editable PostScript drawing layer. Version 1.1 reviewed. Version 1.0 shipped. Requires Mac II series or higher with System 6.03 or later, 32-bit QuickDraw, at least 4 MB of RAM, and at 24-bit color display system. $795. Fractal Design Corp., 335 Spreckles Dr., Ste. F, Aptos, CA 95003. 408-688-8800 or 408-688-5300. (May ’91) ★★★★★ Eddy [MF#730]

Comic People, Volume 2: Kid Stuff $$$


Comic Strip Factory, The $$$

The Comic Strip Factory is an assembly program for creating comic strips. Includes a database of 1944 characters, 260 backgrounds, and various ethnic backgrounds. Also well as backgrounds for panels. Good text editing in balloons. Can import and export in MacPaint format. Version 1.0 reviewed.
Crystal Paint


Version 1.02 shipping. Requires Mac Plus or later. $49.95. Great Wave Software, 3353-Scotts Valley Dr., Ste. E, Scotts Valley, CA 95066. 408-438-1990. (Feb '88) [MF#737]

Digital Darkroom

If you don't need the color capabilities of more-expensive photo-manipulation programs, then Digital Darkroom is for you. Strictly for black-and-white or high-resolution gray-scale images, although images can be colorized for use in other programs. This program does not include professional photo layouts. Uncluttered interface and a wide variety of painting and selection tools. Version 2.0 reviewed.

Requires Mac Plus or later with at least 2 MB of RAM and a hard drive, or SE/30 or Mac II series or higher; requires gray-scale or color display system. $399. Aldus Corp., 411 First Ave., S., Seattle, WA 98104, 800-333-2535 or 206-628-2320. (June '91) ★ 88 Eddy [MF#734]

Easy Color Paint

Easy Color Paint is a low-cost 8-bit (256-color) painting program. Supports color QuickDraw printers and WACOM pressure-sensing digitizing tablets. Allows user-editable colors, patterns, and color blending. Offers gradient fills, simulated pressure-sensitive customized interface configurations. Good performance. Poor manual. Version 2.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later. $6.03 or later. $59.95. MECC, 6160 Summit Dr. N., Minneapolis, MN 55430. 800-687-6222 or 612-569-1500. (Nov '91) ★ 88 Eddy [MF#735]

Enhance

Enhance is an affordable, 8-bit, gray-scale image processor. Has many of the sophisticated graphics tools of a first-class photo-retouching program. Blends image processing with high-level graphic-artist-friendly user interface, including text, and shape-drawing tools. Can open TIFF, PICT, MacPaint, or EPS files. Has its own virtual-mem-ory system, dealing with very large images. Tool palette is easily customizable. Provides filters, masks, anti-aliasing, and anti-driving effects. New filters can be created and saved to disk. Lacks Josef Albers's control over color. Enhance is simple to use. Version 2.0 reviewed. Requires Mac Plus or later. $449.95. Josef Albers Systems, 1585 Charles Rd., P.O. Box 7900, Mountain View, CA 94039. 800-833-6687 or 415-561-4400. (Aug '91) ★ 91 Eddy [MF#736]

MacPaint

MacPaint, the original black-and-white pixel-pusher, hasn't completely lost its shine after all these years. Now supports multiple windows, design templates, and a magic eraser for corrections. Thanks to free-rotation and advanced image-distortion capabilities. A good starter package for kids, and essential for anyone who needs basic doodling capability. Version 2.0 reviewed. Requires Mac Plus or later; hard drive recommended. $299. Sharp, Santa Clara, CA 95052. 408-727-8227. (July '88) ★ 85, 87 Eddy [MF#737]

Painter

This powerful color-painting program imitates the behavior of natural media such as chalk, crayons, felt-tipped pens, airbrushes, and watercolors. Easy-to-use interface and a plenty of screen area. Optional features allow extremely sophisticated control over brush marks, transparency, and size-controlled text of canvases. Paper surfaces. Provides adjustable color dispersion and blending, masking, and anti-aliasing. Supports Wacom pressure-sensitive digitizing stylus and tablet. Version 1.0 reviewed. Version 1.1 shipping. Requires 68020 CPU or higher. System 6.03 or later, 32-bit file support. $375. MicroFrontier, Inc., 3401 101st St., Ste. E, Des Moines, IA 50322. 800-388-8109 or 515-270-8762. (March '88) [MF#736]

ImageStudios

ImageStudios puts a complete black-and-white or gray-scale photo-retouching tab on the Mac desktop. Easy-to-use brushes let you modify digits in 256 gray levels. If you never work on color images, ImageStudios may be all you need for professional photo manipulation. Version 1.0 reviewed. Version 1.7 shipping. Requires Mac Plus or later and a high drive, grayscale work requires 8-bit video card and a compatible monitor. $250. Fractal Design Corp., 335 Spreckels Dr., Ste. F, Aptos, CA 95003. 408-688-8800 or 408-688-5300. (Feb '92) ★ 91 Eddy [MF#740]

Photoshop

Photoshop is a professional, 24-bit photo-retouching program that combines powerful image-editing tools with an intimidating, fast, and easy to use. Flexible file-conversion options can import and export images and from popular graphics file formats for Mac and DOS machines. Comes with many useful special-effects filters for customizing images. Allows on-screen CMYK, CMYK, CMYK, and color control of color separations, UCR (undercolor removal), and GCR (gray-component replacement). Works with EPS and rasterize EPS for incorporation into continuous-tone images. Supports PostScript Level 2 Version 2.0 reviewed. Version 2.0.1 shipping. Requires Mac II series or higher, at least 4 MB of RAM, a hard drive (minimum of 200 MB recommended) and a color monitor. $995. Adobe Systems, 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039. 800-777-9875 or 415-561-4400. (Sept '89) ★ 88 Eddy [MF#747]

PixelPaint

PixelPaint is a straightforward 256-color (8-bit) painting program with excellent user interface, practical tools, and special effects. Works with many file formats. Four-color-separation capability is built in. Includes ShadowMap utility with excellent 8-bit imaging for ShadowMap and Howtek color scanners. Version 2.0 reviewed. Version 2.1 shipping. Requires Mac II series with color video card and 2 MB of RAM. System 6.03 or later, color monitor, and a hard drive. $249. SuperMac Technology, 485 Potters Ave., Sunnyvale, CA 94086. 303-334-3005 or 408-245-2202. (Oct '89) ★ 89 Eddy [MF#741]

PixelPaint Proffix

PixelPaint Professional significantly improved interface allows multiple open documents and floating palettes. Offers extensive support for CMYK color separations and provides an independent PostScript layer. Includes several color-blending and manipulating tools as well as anti-aliasing capabilities. A serious, powerful tool for electronic artists. Excellent documentation. Version 2.0 reviewed. Version 2.01 shipping. Requires Mac with at least 4 MB of RAM, System 6.05 or later, and a hard drive; 24-bit color recommended. $799. SuperMac Technology, 485 Potters Ave., Sunnyvale, CA 94086. 303-334-3005 or 408-245-2202. (Oct '91) ★ 74 Eddy [MF#744]

Studio/1

Studio/1 is an excellent black-and-white painting program that also has impressive, professional photo-manipulation capabilities. It has an uncluttered animation surface, painting tools with 300-dpi capabilities, a HyperCard playback editing (XCMD). Version 1.0 reviewed. Requires Mac Plus or later; hard drive recommended. $79. Electronic Arts, 1450 Fashion Island Blvd., San Mateo, CA 94404. 800-245-4525 or 415-571-7171. (Sept '89) [MF#745]

Studio/8

Studio/8 is a professional 8-bit (256-color) painting application for the Mac II. Has a superior tool set, an elegant interface, and excellent performance. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac II or LC and a hard drive, and at least 2 MB of RAM, $295. SuperMac Technology, 485 Potters Ave., Sunnyvale, CA 94086. 303-334-3005 or 408-245-2202. (Jan '90) ★ 88 Eddy [MF#747]

Studio/32

Studio/32 is this excellent color-painting program is provides many special tools and effects, including, airbrush, gradients and blends, smudge, and anti-aliasing. A PostScript text layer layout is perfectly usable. The PostScript text layer is perfectly usable and as sharp as the available printer resolution will allow. Its anti-aliasing effects include: spidery perspective; free rotation; resizing/stretching; transparency; and the "magic wand" tool which selects only certain pixels within an adjustable color range. Despite its power, Studio/32 is exceptionally easy to use. Version 1.0 reviewed. Version 2.0 shipping. Requires 24-bit color display system, at least 5 MB of RAM, and a hard drive. $695. Electronic Arts, 1450 Fashion Island Blvd., San Mateo, CA 94404. 800-245-4525 or 415-571-7171. (Jan '90) ★ 88 Eddy [MF#747]

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SuperPaint is a combination painting/drawing program that includes features such as plug-in tools, auto-trace, Bézier curves, support for resolutions exceeding 300 dpi, and 24-bit color support. It supports color control, text effects, fills, gradients, and import capabilities. It can save custom palettes for future use, and lets you define colors using RGB, HSV, or CMYK models. Interface is less cluttered and easier to use than in previous versions. Has impressive collection of special-effects tools. Supports Plug-ins, EPS, TIFF, PICT, startup-screen, and SuperPaint 1.0 formats. Version 3.0 reviewed. Requires Mac Plus or later with System 6.05 or later, a hard drive; 24-bit color display system and minimum 4 MB of RAM recommended for editing/drawing program. Version 6.05 or higher, and a hard drive: $495. Olduvai Corp., 411 First Ave., Seattle, WA 98104, 1-800-333-2358 or 206-628-2350. (Apr '92) *87 Edition [MF746]

Train your applications without programming. Authorize Professional lets you blend sound and animation. By stringing together icons that represent various program components, you create logical, editable sequences. The program records sound controls, limited but useful database functions, and basic calculation and graphing features. You can use many existing XCMDs and XFCNds written for HyperCard and Macromedia Director. Generates detailed printed reports. Supports many video output controllers. Version 1.6 reviewed. Version 1.7 shipping. Requires Mac Plus or later; Mac II with a minimum of 4 MB of RAM recommended for color work. $8,000; for educational users, $9,995. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103, 415-442-0200. (Dec '91) *90 Edition [MF751]

Macromedia Director

Macromedia Director is unequaled for its combination of interactivity with animated playback of color images and sound. The program's in-memory routines in Director's scripting language, you can develop interactive animations and also control peripheral devices such as CD-ROM drives, VCRs, and videodisc players. One problem is that its excellent painting-layer tools create bit-mapped images online (except text), so a separate drawing layer would help. Anyone familiar with HyperTalk scripting or similar programming should have no problem with Director. Version 2 reviewed. Version 3.0 shipping. Requires Mac Plus or later with at least 2 MB of RAM, 4 MB of hard drive, $995. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103. (Mar '91) *89 Edition [MF755]

Magic

Magic is a precise animated-presentation tool that produces near professional-looking results without requiring professional-level skills. Uses MacDraw-like tools to draw paths for animated objects. Integrates graphics, text, sound, and QuickTime movies. Creation of interactive presentations does not require scripting. Lacks high-end features found in the MacroMind Director package. Version 1.1 reviewed. Requires Macintosh Plus or later with at least 4 MB of RAM, System 6.07 or later, a hard drive, and color display system. $395. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103, 415-442-0200. (Aug '92) [MF756]

Cinematon

Cinematon is an easy-to-use, Mac-based animation tool. It doesn't require you to build on-screen presentations for use in business and education. Not as powerful and feature-rich as programs such as Macromedia Director. Imports and plays existing Aldus Persuasion and Microsoft PowerPoint files. Includes a variety of design templates, including backgrounds and borders. AutoMotion feature combines templates with your customized animations. Has good implementation of sound and music. Imports PICT, PICs, and QuickTime files. Includes CinePlayer playback utility plus many sample animations and XCMDs for use in HyperCard. Version 1.0 reviewed. Requires Mac Plus or later and a hard drive; Mac II series recommended (with at least 4 MB of RAM and a color display system). $495. Vivid Corp., 651 Kendall Ave., Palo Alto, CA 94306, 415-442-2411, (July '92) [MF758]

Macromedia Accelerator

Macromedia Accelerator compiles Macromedia Director movies to make them run more efficiently. Version 1.0 reviewed. Version 3.0 shipping. Requires Macromedia Director 3.0, Mac Plus or later with at least 2 MB of RAM, System 6.05 or higher, and a hard drive. $195; upgrade from Version 1.0 (VideoWorks Accelerator). $50. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103, 415-442-0200. (Dec '91) [MF757]

MediaTracks

MediaTracks (formerly called ScreenRecorder) is a utility for recording your on-screen Macintosh activities. Ideal for presentation and tutorial materials. Requires Macintosh Director template; "tapes" can include sounds recorded with applications such as MacRecorder and can be a fixed length or loop. Recordings can be installed into HyperCard stacks for easier distribution. Version 1.0 reviewed. Requires Mac Plus or later, System 6.03 or higher, and a hard drive. $495. Farallon Computing, Inc., 2000 Powell St., Suite 600, Emeryville, CA 94608, 510-596-9000. (Dec '90) [MF758]

MORE

More outlines can be instantly transformed into presentations. Dedicated templates are provided, and users can also design their own. There is a wide choice of customizable labeling schemes. Systems ship in two versions, 1.0 and 2.0. Version 2.0 reviewed. Version 3.1 shipping. Requires Mac Plus or later, System 6.0 or later, and a hard drive: $395. Syntactic Corp., 12010 Torre Ave, Cupertino, CA 95014, 800-441-7234 or 408-235-9600. (Oct '90) *86 Edition [MF759]

Persuasion

Persuasion is a powerful, comprehensive desktop presentation program. Template-design and output capabilities are excellent. Many predesigned templates are included. Lacks a cropping tool, text kerning, and ability to rotate text or graphics. On-screen slide shows are handled well. Can import and display QuickTime movies and EPS or PICT graphics. Publish-and-subscribe capability makes presentations persuable images in other applications. With some limitations, Mac and Windows versions of Persuasion share predesigned templates. Includes display-only Persuasion Player application for distribution with finished presentations. Version 2.1 reviewed. Requires Mac Plus or later with at least 2 MB of RAM, System 6.05 or later, and a hard drive. $495. Aldus Corp., 411 First Ave., Seattle, WA 98104, 1-800-333-2358 or 206-626-2350, (Aug '92) *88 Edition [MF760]

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ZMAC UTILITY

Aliases are icons that act as pointers to files that are stored elsewhere on your hard disk. If you throw a file away, however, its alias remains on your disk, so potentially your desktop can become littered with dozens of unattached aliases. That problem spawned Alias Assassin, a MacUser utility that deleted unattached aliases. Alias Assassin has been imitated by at least a dozen programs, but programmer Bill Monk has developed the next generation of alias utilities — AutoAssassin. AutoAssassin kills aliases when you discover that the link to the original file has been lost. If an alias can’t find a file, AutoAssassin gives you a standard file dialog box that lets you kill the alias or reattach it to its lost parent. Unlike other alias tools, AutoAssassin is a system extension, which means it’s integrated seamlessly into your system. AutoAssassin is available exclusively on ZiffNet/Mac and is available without download charges for one month by typing GO ZMC:POWERTOOLS. After October 25, 1992, find the file AUTOAS.CPT in the Download & Support Forum (GO ZMC:DOWNTech).

By Ben Templin

V.32bis and Counting . . .

After working for several months on the modem lab report that appears in this issue, MacUser associate editor Steve Lipson (72511,177) has this advice for potential modem buyers: "If you do a lot of work on-line or are telecommuting, it’s a good idea to get a V.32bis modem. Unlike previous introductions of new standards, V.32bis modems are available at low prices — the least expensive unit we tested was $399." Find out more about modems (including the lowdown on the upcoming V.fast standard) from Lipson on-line in the MacUser Forum from October 12 to 16.

Free (and Nearly Free) Files

Here’s a sampling of files recently uploaded to ZiffNet/Mac’s Download & Support Forum (GO ZMC:DOWNTech). The filename and library are in parentheses. The list was compiled by Gregory Wasson.

Academic DataManager (ACADAT-.CPT, Library 6) is a HyperCard stack that lets you store and manage bibliographic entries. You can export the entries, and the stack formats them according to the Manual for Writers, by Kate Turabian. You have to apply italics, because the files are exported as pure text. Requires HyperCard 2.0 or later. Shareware, $25.

Business Plan laMaster (BIZPLA.CPT, Library 5) makes it easy for you to write a complete business plan. Most of the work is already done for you — all you have to do is select the text you want from preformatted templates. Enter your projections, and the spreadsheets generate full financial reports and analysis (income statement, balance sheet, cash flow, ratios, and so on). Requires Microsoft Excel and Word. Shareware, $34.

Carpetbag (CARPET.CPT, Library 3) is a control panel that makes resources such as fonts, sounds, and FileKeys available to the system without having them installed in the System Folder. It’s not as powerful as the commercial programs Suitcase or Masterjuggler, but it’s much more affordable. Includes LaserPath, a System 7-only extension that lets you keep fonts in a folder other than the Extensions folder. Shareware, $5.

Key Tools (KEYTOO.CPT, Library 3) is a control panel that offers a small subset of the features found in macro programs such as QuickKeys. Features include button selection and date typing. Shareware, $15.

Mac Bzone (MACBZO.CPT, Library 1) is a 3-D tank battle that’s very much like Spectre (but without network support) and extremely well done. Requires at least System 6.0.7 and a 68020 Mac with 68881 FPU combination. Shareware, $10.

Retriever Lite (RETRIE.CPT, Library 2) is a DA freeware version of the commercial database program, with a spreadsheet-like interface. You can create fields as well as sort, mark, and find records. It’s simple and sweet. Great for maintaining lists, addresses, and so on. Freeware.

StuffIt Lite (SITLITE.SEA, Library 1) is the latest upgrade to the shareware version of the commercial compression-and-archiving program. This upgrade is easy to use, and because it’s Apple-events-aware, there’s potential for scripting. Several features are disabled until you pay the $25 registration fee.

MacUser November 1992 175
Bargain Speedsters: V.32bis Modems

High speed doesn’t have to mean high prices. Today’s superspeed modems leave their predecessors in the dust and have prices anyone can afford.

BY STEPHEN SATCHELL AND STEFAN B. LIPSON

The competition is relentless. When modems transmitted data at a leisurely 300 bps (bits per second), 1,200 bps seemed unattainable. And when 1,200 bps became the standard, 2,400 bps seemed equally out of reach. Now that 9,600 bps is the norm, modems that transmit data at 14,400 bps have appeared. For those who communicate via modem, these new speedsters can save time and money.

A 14.4-Kbps (kilobit per second) modem (short for modulator/demodulator) translates, or modulates, your computer’s digital data into an analog signal, which it then transmits as a series of audible tones over phone lines — and it does so at a rate faster than any other nonproprietary transmission rate commercially available. A receiving 14.4-Kbps modem then translates the signal — demodulates it — back into digital data, which the receiving computer can understand. The trick is to send and receive data quickly and accurately to free up your phone and save you valuable time.
V.32bis Modems

Figure 1: Faster Than Fast

<table>
<thead>
<tr>
<th>Overall Speed</th>
<th>Text File</th>
</tr>
</thead>
<tbody>
<tr>
<td>UDS Motorola V.3229</td>
<td>Faster</td>
</tr>
<tr>
<td>Image TWINCOM 14.4/DF</td>
<td>Faster</td>
</tr>
<tr>
<td>Supra FAXModem V.32bis</td>
<td>Faster</td>
</tr>
<tr>
<td>Zoom FaxModem V.32bis</td>
<td>Faster</td>
</tr>
<tr>
<td>PSI Integration COMstation Five</td>
<td>Faster</td>
</tr>
<tr>
<td>Logico QuickXela M14.4XV Fax</td>
<td>Faster</td>
</tr>
<tr>
<td>ZyXEL USA U-1496E</td>
<td>Faster</td>
</tr>
<tr>
<td>Practical Peripherals PM14400FXSA</td>
<td>Faster</td>
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<tr>
<td>Teleglobe DA3214</td>
<td>Faster</td>
</tr>
<tr>
<td>Digicon ScoutPlus</td>
<td>Faster</td>
</tr>
<tr>
<td>Hayes ULTRA 144</td>
<td>Faster</td>
</tr>
<tr>
<td>Rusal-Datacom RMD 3222</td>
<td>Faster</td>
</tr>
</tbody>
</table>

Figure 1: Overall speed on clean, or unimpacted, lines is a combination of a modem's ability to compress data effectively and to transmit it efficiently. We ran a series of tests to calculate the throughput of pairs of each of the 12 modems evaluated in this report.

Overall Speed:
Modem transmission speed is measured in bps. Using built-in compression, a modem can achieve throughput rates significantly higher than 14.4 Kbps. Although the modem transmits data at 14.4 Kbps, the more the file can be compressed, the greater the throughput.

We gave all of the tests equal weight when we calculated the overall score. Although the UDS Motorola V.3229 came out on top by just a hair, the next six modems performed nearly as well. Most of the modems that we tested performed well on our simulated clean lines, although the Rusal-Datacom RMD 3222 performed significantly worse than the other modems. All of the results in the above charts are shown relative to that of the UDS Motorola V.3229.

But this speed and precision is possible only if the modems on each end of the communications link speak the same language. One way they can do so is for them to adhere to a suite of standards defined by the CCITT (Comité Consultatif Internationale de Télégraphie et Téléphonie), the international standards body for telephone communications. This alphabet soup of standards — V.22bis, V.32, and V.32bis, for example — defines important features of a given modem. For instance, V.32 (pronounced ve-dot-32) indicates that a modem can transmit data at 9,600 bps. V.32bis indicates that the modem can transmit at 14.4 Kbps. Other CCITT standards indicate data compression (V.42bis), error control (V.42), and fax (V.17), to name a few.

To find the fastest and most reliable of the new crop of V.32bis 14.4-Kbps modems, we tested 12 "Mac ready" models — modems that ship with a serial cable that lets you connect them right out of the box to your Mac. With the exception of the Rusal-Datacom RMD 3222, the Teleglobe DA3214, and the UDS Motorola V.3229, each costs less than $1,000 — and some of the best cost the least.

We tested each modem under ideal conditions (see Figure 1) as well as under adverse ones (see Figure 2). To accurately assess modem performance, we used several phone-line simulators and impairment generators to create clean as well as noisy phone lines (see the "How We Tested" sidebar) as we measured modem throughput, the rate at which each
Motorola V.3229, which was assigned a score of 1.0.

**Text File:**
When we transmitted a multipage text document between two identical modems, the Image TWINCOM 14.4/DF and Supra FAXModem V.32bis tied for first, barely beating the UDS Motorola V.3229. Text files are significantly compressible.

**Line-Art File:**
When we transmitted a TIFF file - a highly compressible format — the UDS Motorola V.3229 took top honors, followed by the Zoom FaxModem V.32bis. The Racal-Datacom RMD 3222 again performed weakly, even when transmitting a highly compressible file on an ideal line.

**Previously Compressed File:**
We used a previously compressed file to limit the effect of the modem's built-in compression. The Image TWINCOM 14.4/DF, the Supra FAXModem V.32bis, and the ZyXEL USA U-1496E essentially tied with the UDS Motorola V.3229 in this test.

V.32bis modems can offer as much as a 500-percent improvement over 2,400-bps modems. Need a translation? If you spend more than a couple of hours a week communicating online with a BBS (bulletin-board service) or a home office or transmitting large files to or from a V.32bis-compatible service bureau, you can save a lot of dough with a 14.4-Kbps modem — if your 14.4-Kbps modem is connecting with another 14.4-Kbps modem. A fast modem at each end of the phone line can reduce your connect charges and your phone charges and free up the line for other users.

Telecommuters and on-the-road executives who use a V.32bis modem with AppleTalk Remote Access (ARA) — Apple’s outstanding communications program for System 7 users — (see the ‘5 Tips for AppleTalk Remote Access’ sidebar) will notice yet another benefit: The response to remote-system requests is noticeably faster than with a slower modem. It takes less time to sift through E-mail, navigate a hard disk, paint icons for the files in each folder, and read files
## Figure 2: When the Going Gets Tough

<table>
<thead>
<tr>
<th>Rural Line</th>
<th>Cross-Country Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>UDS</td>
<td>Fast&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Motorola V.3229</td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td></td>
</tr>
<tr>
<td>TWINCOM 14.4/DF</td>
<td></td>
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<tr>
<td>Supra</td>
<td></td>
</tr>
<tr>
<td>FaxModem V.32bis</td>
<td></td>
</tr>
<tr>
<td>Zoom</td>
<td></td>
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<tr>
<td>FaxModem V.32bis</td>
<td></td>
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<tr>
<td>PSI Integration</td>
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<tr>
<td>COMstation Five</td>
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<tr>
<td>LogiCode</td>
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<tr>
<td>Quicktel Xebra M14.4XV Fax</td>
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<tr>
<td>ZoXEL</td>
<td></td>
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<tr>
<td>USA U-1496E</td>
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<tr>
<td>Practical Peripherals</td>
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<td>Digicom</td>
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<td>ScoutPlus</td>
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<td>Hayes</td>
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<tr>
<td>ULTRA 144</td>
<td></td>
</tr>
<tr>
<td>Rusal-Datacom RMD 3222</td>
<td></td>
</tr>
</tbody>
</table>

### Figure 2: To fully evaluate modem performance, we used sophisticated test gear to simulate line impairments typically found on a terrestrial, or cross-country, line and a long subscriber loop, or rural line. These tests were performed with previously compressed files only.

#### Rural Line:
The Image TWINCOM 14.4/DF, Zoom FaxModem V.32bis, PSI Integration COMstation Five, and LogiCode Quicktel Xebra M14.4XV Fax couldn't break through the impaired lines to establish a connection. The UDS Motorola V.3229 performed admirably, easily establishing a connection, even when it was presented with lines more impaired than the ones we used in this test.

#### Cross-Country Line:
Although the level of impairment in the cross-country-line simulation is somewhat lower than that in the rural-line simulation, neither the PSI Integration COMstation Five nor the Teleglobe DA3214 could connect. The cross-country lines suffered from phase jitter (an unwanted shift in frequency) and echo (an unwanted repetition of the analog signal).

from and write them to the remote location's hard disk.

A company that has two or more LANs (local-area networks) linked by a modem pair and a phone line (a WAN, or wide-area network) should also use a high-speed modem to link the LANs.

### Why Not to Buy
Keep in mind that V.32bis modems are not for everyone. Commercial information services such as America Online, AppleLink, CompuServe, and GEnie don't support V.32bis — yet — so a high-flying modem will have its digital wings clipped: You'll send and receive data at no more than the 9,600-bps top speed that most services offer.

The lack of 14.4-Kbps support from on-line services isn't the only reason to just say no to modem upgrades. Many businesses that already have modems in place ask why they should upgrade when the 9,600-bps modem they have is sufficient. They shouldn't upgrade. If the average weekly time you spend on-line can be measured in minutes, not hours, a 9,600-bps modem is more than adequate.

For those who want to provide high-speed-modem access to several people in their office but find the cost of multiple modems and phone lines prohibitive, using a networked Shiva NetModem/E may be a cost-effective way to upgrade to 14.4 Kbps (see the "Not Just the Party Line" sidebar).
Before You Buy

To get the most out of a V.32bis modem, you should do some groundwork before you buy. A few minutes spent up front can save hours of headaches later.

Ideally, you should dedicate a telephone line to each V.32bis modem you plan to install. One or more phones attached to a single line can distort and impair the signal on the line, even when the receiver is "hung up." An impaired line of this sort can make your V.32bis modem drop to a slower speed—fallback—and transmit data at a slower rate of 12,000, 9,600, 7,200, or 4,800 bps. Cordless telephones can be a particular nuisance, because the radio-frequency energy they generate may give your modem cause for pause.

Software is a critical part of modem communications, so make sure your software is up to the job. Of the modems we reviewed, the Hayes ULTRA 144, Racal-Datacom RMD 3222, Teleglobe DA3214, and UDS Motorola V.3229 lack Mac communications software. Although several well-known communication programs are commercially available—FreeSoft's White Knight, Software Ventures' MicroPhone II, and the shareware gem ZTerm, for example—be sure your version is current; older versions can't take full advantage of your V.32bis modem's potential, because they don't support the Mac's faster serial speeds.

Getting Down to V.32bis-ness

Your V.32bis modem will offer you excellent performance, providing that you use a cable that accommodates flow control (also called hardware handshaking). Flow control ensures that your modem doesn't receive more data in one end than it can pump out of the other. For example, your Mac may unwittingly send excessive data to the modem's buffer (a limited amount of memory in the modem) before the modem has a chance to transmit the data. Without flow control to regulate this data flow, information in the buffer can be overwritten.

How We Tested

To assess the performance of our crop of Mac-ready, 14.4-Kbps modems, we enlisted the help of ZD Labs, Ziff-Davis' premier product-testing facility, in Foster City, California. The ZD Labs staff designed and implemented a test suite, using a Compaq DeskPro 386/ 33L computer equipped with Hayes ESP serial-port boards. To mimic real-world conditions faced by modems in day-to-day use, pairs of identical modems were connected through a PTT (Processing Telecomm Technologies) Telephone Network Simulator. The simulator consists of a PTT 5101 Central Office Simulator, a pair of 5151 Advanced Impairment Generators, and a 5200 Wire Simulator with subscriber-wire ("local loop") cards installed. Professional YAM ("yet another modem" protocol) 17.28/ 9,600, and the program GETZ, written by ZD Labs, received the file and recorded the transfer time. This configuration let us simulate any and all transmission scenarios—from very clean to very noisy lines.

Our benchmark tests included a data-compression test, a compatibility test, a clean-line test, and an impaired-line test. We first downloaded and uploaded several files between two identical modems, using normal unimpaired-line conditions. We then transferred a single file at 14.4 Kbps, 9,600 bps, and 2,400 bps between the modem and a Codex 3260 modem configured to simulate a V.32bis (14.4 Kbps), a V.32 (9,600 bps), and a V.22bis (2,400 bps) modem. Finally, we transferred previously compressed file over the normal unimpaired-line connection, a bad land-based long-distance (cross-country) connection, a slightly better satellite-based long-distance connection, and a long-distance connection with a long subscriber loop (to simulate a rural line). For good measure, we also checked compatibility under the long-subscriber-loop condition at 14.4 Kbps and at 9,600 and 2,400 bps.

To test the V.42bis compression algorithm of each modem, we used four files ranging from incompressible to highly compressible. To ensure statistically significant results, we created files large enough so that the modem's data pump transmitted a minimum of one million data bits no matter how compressible the file.
than 182 November 1992

Figure 3: Modem-compression

separately on your hard drive.

little smaller than a VHS tape — so it’s easy to find a home for it. Because of its small size, it’s also a good candidate for PowerBook users or to be loa­ner modems for work-at-homes. The Racial-Datacom RMD 3222, in comparison, is a monster, with a bigger footprint than your office telephone — about 10.0 x 9.6 x 2.7 inches. The Logicode Quicktel Xebra M14.4XV Fax modem’s unusual sloping design and unique indicator lights would make it right at home on the bridge of the starship Enterprise. The rest of the modems are pretty much the size and shape of, well, modems.

The Tele­globe DA3214 and the UDS Motorola V.3229 have internal power supplies; the rest have external power bricks — cables with an attached power supply or transformer. The Image TWINCOM 14.4/DF, Logicode Quicktel Xebra M14.4XV Fax, Tele­globe DA3214, and UDS Motorola V.3229 modems have the brick toward the center of the cable, so it doesn’t interfere with other power cables leading to the wall outlet or surge bar. The plug-in power brick that comes with the Digicom ScoutPlus, the Hayes ULTRA 144, and the ZyXEL USA U-1496E, which has a three-prong plug molded into it, does get in the way. Most power strips have the grounding pin facing down, so the brick either covers two outlets or dangles over the power-strip switch — a nuisance.

Manual Labor

The manuals we received with these modems ranged from sterling exam­ples of what a manual should be to documentation that could scare away even the most intrepid modem ma­ven. Although most users simply plug a modem in and get on-line, others want to set certain parameters (such as compression parameters) to suit their own needs; to be useful, a mod­em manual should offer practical and easy-to-understand information on all aspects of modem use.

Kudos to the technical writers and manual designers of the Practical Per­ipherals PM14400FXSA, the PSI Integration COMstation Five, and the Supra FAXModem V.32bis. They’ve created manuals that are understand­able by novices and informative for experts. The Practical Peripherals

(60x401) 

Not Just the Party Line

Buy­ing one or two modems isn’t so bad, but buying high-quality, high-speed modems for everyone in an office can cost you some serious dollars — especially if you consider the monthly charge you’ll have to pay for any extra phone lines.

Enter the $1,699 Shiva NetModem/E. This full-service V.32bis modem with V.42 error control and V.42bis data com­pression satisfies a slew of tele­com­muting needs. It has a built-in Ethernet port for direct connection to your Ethernet network, so everyone on the network can share a single NetModem/E — and you need only a single phone line.

Once the modem has been installed, you access it simply by selecting it in the Chooser, just as you would a printer or a file server. As a shared resource, the NetModem/E lets everyone on a network who has the password use it. The NetModem/E also allows remote users with a modem to dial in to the

Figure 3: The Big Squeeze

<table>
<thead>
<tr>
<th>Software</th>
<th>Percentage of original size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldus Persuasion</td>
<td>25%</td>
</tr>
<tr>
<td>Microsoft Excel</td>
<td>50%</td>
</tr>
<tr>
<td>Microsoft Word</td>
<td>75%</td>
</tr>
<tr>
<td>Aldus PageMaker</td>
<td>100%</td>
</tr>
<tr>
<td>Adobe Photoshop</td>
<td></td>
</tr>
<tr>
<td>Aladdin Systems Stufflt Deluxe</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: Modem-compression results depend on the nature of the file being compressed. Text files, for example, can be compressed significantly — to less than 50 percent of their original size — whereas complex image files can be compressed less. Here we show the sizes of various file types after modem-based compression. Previously compressed files, such as the Stufflt Deluxe file, gain little from modem-based compression.

Ready, Get Set Up, Go!

We found physical installation of the modems a snap. Just plug the power cable in to an outlet, connect the supplied RJ-11 cable between the modem and your phone line, connect the serial cable to the modem port on your Mac, find a suitable spot on your desk for the modem, and install communications software — either provided with the modem or purchased separately — on your hard drive.

Where on your desk to put the modem? The Supra FAXModem V.32bis is the smallest modem we tested — smaller than a VHS tape — so it’s easy to find a home for it. Because of

ScoutPlus, the Hayes ULTRA 144, and the ZyXEL USA U-1496E, which has a three-prong plug molded into it, does get in the way. Most power strips have the grounding pin facing down, so the brick either covers two outlets or dangles over the power-strip switch — a nuisance.
PM14400FXSA includes a Rolodex card containing the company’s technical-support number — by far the best quick-reference card of the modems we tested. The PSI Integration COMStation Five caters specifically to Mac users: The documentation is presented in a way that helps novices get started using the product and then, at their leisure, delve deeper into the COMStation Five’s more advanced features. The Supra FAXModem V.32bis is also Macintosh-oriented and easy for novices to use, although its manual is a notch below that of the PSI Integration COMStation Five in organization.

On the other end of the spectrum, watch beginners recoil in horror as they try to wade through the Racial-Datacom RMD 3222’s manual. Our guess is that it was written by modem engineers for modem engineers, preferably ones with years and years of modern experience. The UDS Motorola V.329’s manual is a bit better, but its sheer size and the number of options described may dull your intellectual appetite.

The rest of the manuals are less imposing and don’t come up to the standards set by the top three manuals. The manuals provided with the Hayes ULTRA 144 and the Zoom FaxModem V.32bis are suitable for beginners. Those for the Digicom ScoutPlus, the Image TWINCOM 14.4/DF, and the Teleglobe DA3214 can be easily understood by users with previous modem experience, but those for the ZyXEL USA U-1496E and the Logicode Quicktel Xeba M14.4XV Fax should be reserved for guru-level communicators — beginners and intermediate users will find them tough sledding.

### Bells, Whistles, and Fuzzy Dice

Modern makers distinguish their products from the competition by offering a wide range of features. Five modems — the Image TWINCOM 14.4/DF, Supra FAXModem V.32bis, PSI Integration COMStation Five, Zoom FaxModem V.32bis, and ZyXEL USA U-1496E — offer 14.4-Kbps (V.17) fax capabilities. The Digicom ScoutPlus, Logicode Quicktel Xeba M14.4XV Fax, and Practical Peripherals PM14400FXSA modems offer slower 9.600-bps fax transmission and reception.

All the fax-equipped modems come with fax software that lets you send and receive fax files. The Logicode Quicktel Xeba M14.4XV Fax, Supra FAXModem V.32bis, Zoom FaxModem V.32bis, and ZyXEL USA U-1496E come with FXStf, from Stf Technologies; the Digicom ScoutPlus, Image TWINCOM 14.4/DF, Practical Peripherals PM14400FXSA, and Zoom FaxModem V.32bis come bundled with Quick Link II, from Smith Micro. PSI Integration is the only modem maker in this group to

#### 5 Tips for AppleTalk Remote Access

When some people hear the word telecommunications, they think trouble. AppleTalk Remote Access (ARA) is no trouble at all, provided you follow a few simple rules. ARA lets you easily connect with another modem-equipped Mac and gain access to files, folders, and network resources to which you have been granted access.

1. **Get a CCL file from the vendor.** Besides ARA itself (either purchased separately or bundled with PowerBooks), you need a suitable modem, a CCL (connection control language) script for the modem, the correct serial cable, and good telephone lines. If you are purchasing a modem and you expect to use ARA, be sure to contact the modem vendor to find out where (or when) you can get the CCL file. Remember, no CCL file, no ARA.

2. **Write your own CCL script.** If you can’t shake a CCL file loose from the modem vendor and if you aren’t intimidated by a little high-level scripting, you may choose to “roll your own” CCL file. To do so, you’ll need the AppleTalk Remote Access Modem Toolkit, available from APDA (Apple Programmer’s and Developer’s Association).

3. **Avoid the wrong hotels.** Your plane was late and you arrived at the hotel late, but you’re uplifted, because you know that you can, from your très élégante hotel room, still use ARA to get on-line with your office Mac. Then why can’t you connect? Simple: Some hotels — even some upscale inns — have low-grade phone switches that make high-speed telecommunication a nightmare. Unfortunately, there’s no real cure for this, except to learn which hotels have good phone systems and which don’t.

4. **Grant access to others.** When configuring users and groups for ARA, it’s a good idea to set up several backup users with varying degrees of access. If an emergency arises and you must give someone else limited on-line access to your machine, you can do so without revealing your password.

5. **Double-check your modem.** If you’re having trouble connecting, don’t immediately blame ARA — you may have forgotten to tell your office modem that you were planning to drop in. Don’t forget to set your office modem for auto-answer before leaving for a telecommuting weekend. If you don’t set it to auto-answer mode, your office modem won’t answer your incoming call and you’ll be stuck without the advantages of remote computing.
include its own fax software, COm- 
station FAX.

All the modems we tested also fea-
ture error control and data compres-
sion. Early modem didn’t bother to 
check whether the data at the receiv-
ing end was the same as the data that 
was transmitted. To address this prob-
lem, Microcom built error control in 
to its line of modems in 1983. Thus 
was born MNP (Microcom Networking 
Protocol).

With MNP 4 error control, the 
modem checks transmitted data for 
errors and then retransmits the bad 
data. In 1985, Microcom introduced 
MNP 5, a method of real-time data 
compression, followed soon after by 
MNP 7, a more efficient compression 
scheme.

The CCITT has since defined its 
own standards for error detection and 
data compression, referred to as V.42 
and V.42bis, respectively (to better 
understand the benefits of compres-
sion, see the “Making More of 14.4” 
sidebar).

Down and Dirty
The mettle of a modem is measured 
by its ability to move data through 
telephone connections of varying qual-
ity. Although your modem may estab-
lish a connection on a line that is 
free of noise, line impairments — noise 
and signal variations that degrade 
the quality of a connection — are not 
uncommon.

Our impairment testing simulated a 
wide range of possible connections, 
from the very best to the very worst. 
Most of the modems passed data eas-
ily over our unimpaired connections 
(see Figure 1), but a few couldn’t con-
nect over impaired lines (see Figure 
2). Of particular concern was the poor 
performance some of the modems ex-
hibited on a long-subscriber-loop con-
nection, a simulation of a long-dis-
tance, rural phone connection. The Image TWINCOM 14.4/DF, Logi-
code Quicktel Xeba M14.4XV Fax, 
PSI Integration COMStation Five, and 
Zoom FaxModem V.32bis were un-
able to establish a connection on the

simulated rural lines, because of at-
tenuation distortion, a warping of the 
signal amplitude.

In our tests simulating impaired 
transmission lines, neither the PSI 
Integration COMStation Five nor the 
Teleglobe DA3214 could pass data 
across the line, because of phase jitter 
(an unwanted shift in frequency) and 
echo (an unwanted repetition of the 
analog signal).

Three of the modems performed 
well in all our test cases: The Practical 
Peripheral’s PM14400FXSA, the 
Supra FAXModem V.32bis, and the 
UDS Motorola V.3229 combine a 
robust data pump — the chip set or com-
ponents that “pumps” data through the 
modem — with good data compres-
sion and error control. The Supra 
FAXModem V.32bis and the UDS 
Motorola V.3229 in particular were 
very fast.

Lights, Modems, Action!
Everybody loves flashing lights, 
particularly when those lights help take 
the mystery out of modems. For con-
nection and transmission, modem us-
ers have come to expect LED or LCD 
devices that provide status informa-
tion such as Transmit Data, Receive 
Data, Line in Use, Auto-Answer En-
abled, and Carrier Present (connection 
established).

The Supra FAXModem V.32bis has 
a small three-character LED display 
with easy-to-understand mnemonics 
such as OK and FX for fax. The Prac-
tical Peripherals PM14400FXSA 
offers the best display: flashing mes-
gages such as “Connect at 14.4/Qual-
ity High/Compression V.42bis” tell 
you exactly what’s what. Instead of 
an LED-and-letter display, the 
Logicode Quicktel Xeba M14.4XV 
Fax has a set of esthetically pleasing 
— although nonstandard — illumi-
nated icons.

The Rea!-Datacom RMD 3222, the 
Teleglobe DA3214, and the UDS 
Motorola V.3229 offer another plus 
— front-panel setup and testing. These 
three modems use a menu selection 
scheme with an LCD display to let

Figure B: Serial of Champions, a free utility downloadable from ZiffNet/Mac, provides vital stats on your modem’s performance.
Making More of 14.4

How can a V.32bis modem transmit data at as much as four times its rated speed of 14.4 Kbps? The transmitting modem compresses a file to one-fourth its size before it sends it, and the receiving modem restores the file to its original size. This requires close communication between modems and Macs.

Computer data, whether in a spreadsheet, word-processing document, or image file or even in an application file itself, has certain recognizable patterns. A compression algorithm such as the Ziv-Lempel variant, used in V.42bis modems, takes advantage of the patterns that recur within a file. The compression algorithms look for all the possible duplications and reduce each duplicated occurrence to a single code.

Because the modem is compressing the data and then sending it at 14.4 Kbps, the data-flow rate into the modem must be significantly higher than 14.4 Kbps so that enough data is available for compression.

If the data is already compressed and the modem’s compression algorithms can’t make it any smaller, flow-control communications between the modem and its Mac prevent the modem from drowning in data by constraining the flow when the modem’s buffer is full. Flow control then increases the flow of data to the modem when the modem is ready for more.

The Mac sends data to the transmitting modem at 38.4 or 57.6 Kbps. The modem holds excess data in a buffer as it compresses data.

The transmitting modem checks the line and establishes a connection with the receiving modem.

If the receiving Mac can’t keep up with the flow of data from the receiving modem, it signals the modem, via a hardware-handshaking cable, to reduce the flow.

The receiving modem decompresses the data and sends it to the receiving Mac at 38.4 or 57.6 Kbps.

Compressed data is transmitted over the phone lines. If the line is impaired, the modem experiences fallback, a drop in transmission speed to compensate for line impairments.

The Mac sends data to the transmitting modem at 38.4 or 57.6 Kbps. The modem holds excess data in a buffer as it compresses data.

If the modem can’t keep up with the flow of data from the Mac, it signals the Mac to reduce the flow via a flow-control, or hardware-handshaking, cable.

If the modem can’t keep up with the flow of data from the receiving modem, it signals the transmitting modem, via a hardware-handshaking cable, to reduce the flow.

you configure the modem and perform a variety of self-tests to guarantee that the modem is working the way you expect it to.

When You’re Down and Troubled

When you need a helping hand, you rely on your modem vendor’s technical-support service. To evaluate the kind of technical support you can expect to get in your hour of need, we made calls to each vendor — without identifying ourselves — and asked for help in getting ARA to work with the company’s modem.

We wanted to learn if the modem vendors would respond promptly and with the correct information. First, they needed to know the Macintosh well enough to be aware of ARA. They also needed to know that ARA requires a CCL (connection control language) file, a short script that enables the modem to work with ARA. Finally, they needed to tell us where we could get a CCL file. The responses to our inquiries ranged from excellent to Teleglobe’s near-complete ignorance of the Mac.

The PSI Integration COMstation Five came with a CCL file on its fax-software disk — although not where the tech-support person said we’d find it. To its credit, PSI Integration was the only vendor to include a CCL file with its modem.

Hayes’ technical support got us the correct information as fast as our V.32bis modem could download it. Hayes’ phone-menu system got us to the appropriate tech-support representative in seconds. He provided us with the correct answers and gave us a toll-free BBS number for obtaining Hayes’ CCL file. The Supra tech-support representative was almost as good, pointing us to AppleLink and CompuServe for Supra’s CCL file. The Logicode representative sent us a CCL file in the mail.
Then there was the “What’s a Mac?” crowd. The technical-support representatives at Digicom, Image, Racal-Datacom, and Teleglobe gave us no useful information, saying that they didn’t know about ARA or Mac systems. The representative at UDS Motorola even went so far as to say, “Our modem doesn’t work with AppleTalk Remote Access” — any modem can work with ARA, as long as the proper CCL file is present.

In between the best and the worst were the representatives at Practical Peripherals and ZyXEL USA, who didn’t have a CCL script when we called but promised to send one as soon as it became available.

And finally, there was Zoom. We were persistent, calling more than 50 times over several days with only a busy signal to show for it. When we finally got through, the Zoom representative didn’t have a CCL file and didn’t know when one would become available.

### The Final Connection

If you spend more than a few hours communicating via modem each week, investing in a V.32bis 14.4-Kbps modem is certain to save you time and money. With list prices starting at $399, many of these modems are surprisingly affordable — and when you compare price with quality, you’ll discover that more money doesn’t necessarily mean a better modem. The lowest-priced modem, the Supra FAXModem V.32bis, is one of

<table>
<thead>
<tr>
<th>On the Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who better to benefit from the speed of a V.32bis modem than an on-the-go PowerBooked executive? And what better way to achieve total portability than with an internal PowerBook modem that need not be plugged in to a phone line?</td>
</tr>
<tr>
<td>Applied Engineering is promising this ultimate in convenience — and more — with a new line of personal portable communications products for wireless and standard telephone connections.</td>
</tr>
<tr>
<td>The first Applied Engineering product is a battery-operated communications interface that lets you plug your cellular phone in to any modem. The second communications product offers caller-ID answering-machine functions and provides ambient noise-reduction, all in an external case with a cable that plugs in to an internal unit, or in an external case for desktop use.</td>
</tr>
<tr>
<td>Finally, at the top of the Applied Engineering line is a fully functional cellular phone and V.32bis cellular modem that either fits neatly inside a floppy-drive-sized desktop case or inside the floppy-drive bay of your PowerBook 140, 145, or 170 or in an external case for desktop use.</td>
</tr>
<tr>
<td>Toward January, all telephone-capable Applied Engineering products will ship with Norris Communications’ EarPhone, an ingenious one-piece microphone/speaker combination that fits inside your ear. As you speak, the EarPhone picks up sound vibrations directly from your skull (through bone conduction) rather than from the air, thus eliminating interference from ambient noise. Applied Engineering’s top-of-the-line cellular unit for the PowerBook will include a wireless EarPhone, Prices were not set at press time, but don’t expect any of the products to be cheap — neither were the now-ubiquitous cellular phones when they first appeared. Applied Engineering, 3210 Belindal, Dallas, TX 75234; 800-554-6227 or 214-241-0055.</td>
</tr>
</tbody>
</table>

| The V.32bis standard will soon be facing a new challenger, a gadget named V.fast. V.fast promises transmission rates of 24 to 28 Kbps, the fastest analog transmission rate possible. Although the V.fast standard has yet to be ratified by the CCITT, expect to see manufacturers jump on the supercharged bandwagon when the CCITT gives thumbs up, possibly early in 1993. |

Further down the phone line, you can expect to see the world of analog communications — including modems — vanish when ISDN (Integrated Services Digital Network) appears. The bandwidth of basic ISDN — 64 Kbps — dwarfs that of present-day analog phone lines. ISDN represents a digital link between a sending and a receiving computer, with no A/D (analog/digital) or D/A (digital/analog) conversion. At present, all analog communications must suffer four such conversions during transmission between two modems; from digital to analog at the transmitting computer; from analog to digital at the local telephone switch; from digital to analog at the receiving telephone switch; and finally, from analog to digital at the receiving modem. ISDN precludes all this by sending a digital signal from one location to another. Although basic ISDN service can run over standard twisted-pair phone lines, additional hardware, software, and reconfiguration charges will not make ISDN cheap or imminent. But when twisted-pair phone lines are replaced by fiber-optic cable and when those cables lead to every home and desktop, you can expect transmission rates to go through the roof and dramatic changes to occur in the quantity and quality of information available to all.
Modem vendors continue to offer more speed for less money. A 14.4-Kbps V.32bis modem is 50 percent faster than the V.32 9,600-bps modems that appeared just two years ago. Even more amazing is that advances in digital-signal-processing technology make the new V.32bis modems far less expensive than early V.32 modems—although prices for V.32 modems are now dropping.

What surprised us is that price proved to be a poor predictor of performance. Our top honors for best V.32bis Mac-ready modem are split between the Practical Peripherals PM14400FXSA ($579 list, $420 street) and the Supra FAXModem V.32bis ($399 direct), each of which moved data well over poor telephone connections in our tests. The surprise is that the Supra FAXModem V.32bis is the least expensive modem in the group.

The UDS Motorola V.3229 ($1,145 list, $890 street) is the most expensive modem of the bunch, but the extra money buys you the best possible data transfer under all conditions. Although you might put the Supra FAXModem V.32bis or the Practical Peripherals PM14400FXSA on your desk, the UDS Motorola V.3229 is the modem to go into the phone closet with your servers—it’s so reliable that you can set it and forget it.

the top performers; it also boasts good documentation, V.17 fax, and technical support (including on-line support), and it’s tiny to boot—one very nice value.

Granted, V.32bis modems, like the V.32 9,600-bps modems before them, will be surpassed in the future—developments such as V.fast and ISDN promise ever higher speeds (see the “On the Horizon” sidebar).

But if you need speed right now and don’t want to be left behind, a 14.4-Kbps modem will let you keep pace in the world of telecommunications—without putting a huge dent in your budget.

Stephen Satchell is a telecommunications expert who is presently knee-deep in international modems at 2D Labs. Stefan B. Upson is a MacUser associate editor.

Table 1 Criteria

<table>
<thead>
<tr>
<th>List price</th>
<th>The manufacturer’s suggested retail price.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street price</td>
<td>The average actual price charged by a sample of dealers around the U.S. in July 1992.</td>
</tr>
<tr>
<td>Standards supported</td>
<td>The communications standards the modem supports.</td>
</tr>
<tr>
<td>Bell 103</td>
<td>A standard for a transmission speed of 300 bps.</td>
</tr>
<tr>
<td>Group 3 fax</td>
<td>The CCITT standard for fax data compression.</td>
</tr>
<tr>
<td>V.17 fax</td>
<td>The CCITT standard for sending fax documents at 14.4 Kbps (kilobits per second).</td>
</tr>
<tr>
<td>MNP 5</td>
<td>The Microcom modem-to-modem data-compression scheme still used by many modems on BBS and information services.</td>
</tr>
<tr>
<td>V.42</td>
<td>The CCITT standard for error control.</td>
</tr>
<tr>
<td>V.42bis</td>
<td>The CCITT standard for data compression.</td>
</tr>
<tr>
<td>Fax capabilities</td>
<td>Can the modem send and/or receive facsimile transmissions?</td>
</tr>
<tr>
<td>Software included</td>
<td>Telecommunications and/or fax software bundled with the modem.</td>
</tr>
<tr>
<td>Error control</td>
<td>The verification scheme the modem uses to ensure accurate data transmission.</td>
</tr>
<tr>
<td>Data compression</td>
<td>The scheme the modem uses to reduce file sizes based on recurring patterns in the file.</td>
</tr>
<tr>
<td>Indicator lights</td>
<td>The number of LED or LCD indicators and the length of any character display (excluding a power indicator).</td>
</tr>
<tr>
<td>Data-pump manufacturer</td>
<td>The manufacturer of the data-pump chip set and its algorithms.</td>
</tr>
</tbody>
</table>
But Wait, There’s More... A Directory

The 12 modems we tested for this report come equipped with a Mac-ready cable — you can hook them up and get online almost as soon as you open the box. However, dozens of other V.32bis modems are available today or will be soon.

Remember, if you buy a modem, be sure to ask your dealer for a Mac-to-modem serial cable that supports flow control, also known as hardware handshaking — without it, your 14.4-Kbps speedster will never achieve its full potential.

<table>
<thead>
<tr>
<th>Company</th>
<th>Address</th>
<th>Phone Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T/Paradine</td>
<td>8545 126th Avenue N. P.O. Box 2826 Largo, FL 34649</td>
<td>800-482-3333 813-530-2000 813-530-3103 (fax) Comspan 3010, $1,195 Comspan 3820, $995 Comspan 3830, $795</td>
</tr>
<tr>
<td>Cardinal Technologies, Inc.</td>
<td>1827 Freedom Road Lancaster, PA 17601</td>
<td>800-233-0187 717-293-3000 717-293-3055 (fax) 14400V32bis, $449</td>
</tr>
<tr>
<td>CXR Telcom</td>
<td>521 Charcot Avenue San Jose, CA 95131</td>
<td>800-537-5762 408-435-8520 408-435-1276 (fax) 1445-AMD2, $885 1445-FX1, $925 1445-FX2, $955 1445-FXDI, $995 1445-FXD2, $925 1445-FXD1, $955</td>
</tr>
<tr>
<td>Digicon Systems, Inc.</td>
<td>199 Topaz Street Milpitas, CA 95035</td>
<td>800-833-8900 408-262-1277 408-262-1390 (fax) ScoutPlus, $545 9624EX+, $1,095 9624LE+, $995</td>
</tr>
<tr>
<td>E-Tech Research, Inc.</td>
<td>3526 Ryder Street Santa Clara, CA 95051</td>
<td>800-328-6538 408-730-1388 408-730-2488 (fax) P1496MX, $575</td>
</tr>
<tr>
<td>FastCom Communications Corp.</td>
<td>45472-3 Holiday Drive Sterling, VA 20166</td>
<td>800-521-2496 703-318-7750 703-787-4626 (fax) FDX 9642 T, $1,199 FDX 9642 TRM, $1,199 FDX 9642 TS, $1,299</td>
</tr>
<tr>
<td>Forariva Communications</td>
<td>9160 S. 300 West Suite 6 Sandy, UT</td>
<td>800-367-8251 801-561-8000 801-561-8777 (fax) SATA14400, $995</td>
</tr>
<tr>
<td>Galaxy Networks, Inc.</td>
<td>9348 De Solo Avenue Chatsworth, CA 91311</td>
<td>818-989-7851 818-998-1758 (fax) Gemini V.32B Superquad, $995</td>
</tr>
<tr>
<td>General DataComm, Inc.</td>
<td>1679 Straits Turnpike Middlebury, CT 06762</td>
<td>800-777-4005 203-574-1116 203-758-8057 (fax) GDC 914, $795 GDC 914ADR, $1,145</td>
</tr>
<tr>
<td>Global Village Communication, Inc.</td>
<td>665 E. Middledorf Road Building B Mountain View, CA 94043</td>
<td>800-735-4821 415-390-8262 (fax) PowerPort/Gold, $795</td>
</tr>
<tr>
<td>GVC Technologies, Inc.</td>
<td>376 Lafayette Road Building B Sparta, NJ 07871</td>
<td>800-269-4821 201-579-3630 201-579-2702 (fax) FM144/144V, $399 SM144V, $659</td>
</tr>
<tr>
<td>Hayes Microcomputer Products, Inc.</td>
<td>5835 Pechterree Corners E. Norcooss, GA 30092</td>
<td>404-840-9200 OPTIMA 144, $479 ULTRA 144, $999</td>
</tr>
<tr>
<td>Image Communications</td>
<td>8 Caesar Place Moonachie, NJ 07074</td>
<td>800-666-2496 201-935-8880 201-935-6546 (fax) TWINCOM 14.4DF, $549</td>
</tr>
<tr>
<td>Intel Corp.</td>
<td>5200 N. E. Elam Young Parkway Hillsboro, OR 97124</td>
<td>800-538-3373 503-629-7354 503-639-7580 (fax) 14.4EX, $549 SatiiFAXion4000, $549</td>
</tr>
<tr>
<td>Lightning Communications</td>
<td>36 Argonaut Suite 150 Aliso Viejo, CA 92650</td>
<td>800-433-4420 714-457-8001 714-457-8004 (fax) LightCom 144FB, $399</td>
</tr>
<tr>
<td>Logicode Technology, Inc.</td>
<td>1817 De Haviland Drive Newbury Park, CA 91320</td>
<td>805-499-4443 805-499-8586 (fax) QuickFax Xtra M14.4XY Fax, $589</td>
</tr>
<tr>
<td>MacProducts USA</td>
<td>608 W. 22nd Street Austin, TX 78705</td>
<td>800-622-8721 512-472-8881 512-499-0888 (fax) Magic VX V.32bis, $259 Magic VFX V.32bis, $289</td>
</tr>
<tr>
<td>Motorola Codex</td>
<td>20 Cabot Blvd. Mansfield, MA 02048</td>
<td>800-426-1212 508-261-4000 508-337-8014 (fax) Codex 3220, $795</td>
</tr>
<tr>
<td>MultiTech Systems</td>
<td>2209 Woodlake Drive Mounds View, MN 55112</td>
<td>612-765-3550 612-765-9874 (fax) 1432BL Multimodem-IV, $999 MT1432BA-Mac, $999 MT1432MU-Mac (socket modem), $899</td>
</tr>
<tr>
<td>NEC America, Inc.</td>
<td>Data and Video Communications Systems Division 110 Rict Robles San Jose, CA 95134</td>
<td>800-222-4632 408-433-1277 408-433-1239 (fax) N9935EPLUS, $1,199 N9935ES, $1,449</td>
</tr>
<tr>
<td>Octocem Systems, Inc.</td>
<td>One Executive Drive Chelmsford, MA 01824</td>
<td>508-441-2181 508-441-9060 (fax) 8196A, $995 8396LA, $1,195</td>
</tr>
<tr>
<td>Penril DataComm Networks</td>
<td>1300 Quince Orchard Blvd. Gaithersburg, MD 20878</td>
<td>800-473-6745 301-921-8600 301-921-8576 (fax) 2432-01, $705 2432-01, $995 2533-01, $1,095</td>
</tr>
<tr>
<td>PerfectData Corp.</td>
<td>1825 Surveyor Avenue Simi Valley, CA 93063</td>
<td>805-581-4000 805-622-5788 (fax) PDC 144, $995 PDC 144/Secure, $1,048</td>
</tr>
<tr>
<td>Practical Peripherals</td>
<td>375 Conejo Ridge Avenue Thousand Oaks, CA 91361</td>
<td>800-442-4774 805-497-4774 805-374-7200 (fax) PM1400FXS, $579</td>
</tr>
<tr>
<td>Prometheus Products, Inc.</td>
<td>9524 S.W. Tuatina-Shriver Road Tuatina, OR 97062</td>
<td>503-477-3473 503-632-6600 503-691-5157 (fax) Ultima Home Office, $649</td>
</tr>
</tbody>
</table>
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Breaks the price barrier for 19" Trinitron color monitors.

<table>
<thead>
<tr>
<th>CPU</th>
<th>Video</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac II, IIX, IIC, Ilfx, SE/30 Mac II, IIX, IIC, IIC, Quadra 700 &amp; Quadra 950 Quadra 700 &amp; Quadra 950</td>
<td>8-bit system 24-bit system (accelerated) On-board video</td>
<td>$2195 2695 1895</td>
</tr>
</tbody>
</table>

*iix solution retains PDS slot for the RealTech cache card.

A monitor for every budget! Call 1-800-364-USER, and we'll help you with peripherals to complete your system.

RealTech Full-Page Displays

<table>
<thead>
<tr>
<th>CPU</th>
<th>Monitor</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac II, IIX, IIX, IIC, SE, SE/30, LCII Mac II family, SE/30, IIX, LCII Mac IISi, IIC, Quadras</td>
<td>Mono GS 256 GS 16</td>
<td>$579 $879 449</td>
</tr>
</tbody>
</table>

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$7825
Lease: $214/mo.
Quadra 700
RealTech 19"
24-bit Trinitron System, 210 Mb Hard Drive, Apple Extended Keyboard

$2195
Lease: $60/mo.
Mac LCII 4/80 Sony 8-bit Trinitron System, MacPro Plus Keyboard

$3139
Lease: $86/mo.
Mac Ilsi 14" 8-bit Trinitron System, 5 Mb RAM, 103 Mb Hard Drive, MacPro Plus Keyboard

$4239
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Mac Ilsi 14" Seiko 8-bit Trinitron System, 5 Mb RAM, 210 Mb Hard Drive, MacPro Plus Keyboard

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HOW REALTECH STACKS UP

PERSONAL LASER PRINTERS

<table>
<thead>
<tr>
<th>RealTech Laser</th>
<th>QMS-PS 410</th>
<th>NewGen Turbo PS/300P</th>
<th>GCC BLP II</th>
<th>HP LaserJet IIIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>$1595</td>
<td>$1500</td>
<td>$1695</td>
<td>$1799</td>
</tr>
<tr>
<td>Pros</td>
<td>PostScript Level 2</td>
<td>PostScript Level 1</td>
<td>Clone</td>
<td>PostScript Level 1</td>
</tr>
<tr>
<td>Weitek RISC processor</td>
<td>Weitek RISC processor</td>
<td>Motorola 68020</td>
<td>Motorola 66000</td>
<td>Motorola 68000</td>
</tr>
<tr>
<td>9 ppm</td>
<td>4 ppm</td>
<td>4 ppm</td>
<td>4 ppm</td>
<td>4 ppm</td>
</tr>
<tr>
<td>300 dpi</td>
<td>300 dpi</td>
<td>300 dpi</td>
<td>300 dpi</td>
<td>300 dpi</td>
</tr>
<tr>
<td>SCSI port</td>
<td>—</td>
<td>—</td>
<td>SCSI port</td>
<td>—</td>
</tr>
<tr>
<td>2 mb RAM (10)</td>
<td>2 mb (6)</td>
<td>2 mb (16)</td>
<td>2 mb (4)</td>
<td>2 mb (4)</td>
</tr>
<tr>
<td>Optional 2nd paper tray</td>
<td>Optional 2nd paper tray</td>
<td>Optional 2nd paper tray</td>
<td>Optional 2nd paper tray</td>
<td>—</td>
</tr>
<tr>
<td>Cons</td>
<td>Only available from HARDWARE THAT FITS 1-800-384-USER</td>
<td>No SCSI port</td>
<td>Low-quality</td>
<td>Insufficient standard RAM for some complex graphics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No SCSI port</td>
<td>Mediocre</td>
<td>RAM for some complex graphics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low-quality</td>
<td>Image quality</td>
<td>Slow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-sheet paper tray</td>
<td>—</td>
<td>No SCSI port</td>
</tr>
</tbody>
</table>

See MacUser, September 1992 for complete information about the performance of these printers.

610 South Frazier
Conroe, Texas 77301
The ONLY 11x17 PRINTER WITH TRUE ADOBE POSTSCRIPT LEVEL 2 FOR UNDER $3,500!

- High-speed printing (15 ppm, letter size)
- 8 ppm (tabloid size)
- 2 paper trays included!
- SCSI port
- Full page 11x17 printing!

AGAINST THE COMPETITION

11x17 PRINTERS/HIGH-SPEED PRINTERS

<table>
<thead>
<tr>
<th></th>
<th>RealTech Laser 400</th>
<th>QMS 960 Hammerhead</th>
<th>QMS 2220</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong></td>
<td>$3195</td>
<td>$4595</td>
<td>$6795</td>
</tr>
<tr>
<td><strong>Pros</strong></td>
<td>PostScript Level 2</td>
<td>PostScript clone</td>
<td>PostScript Level 1</td>
</tr>
<tr>
<td></td>
<td>WideTek RISC processor</td>
<td>Intel 80386 processor</td>
<td>Motorola 68020 processor</td>
</tr>
<tr>
<td></td>
<td>15 ppm 8.5x11</td>
<td>8 ppm 8.5x11</td>
<td>22 ppm 8.5 x 11</td>
</tr>
<tr>
<td></td>
<td>8 ppm 11x17</td>
<td>4 ppm 11x17</td>
<td>11 ppm 11x17</td>
</tr>
<tr>
<td></td>
<td>300 or 400 dpi</td>
<td>600 dpi</td>
<td>300 dpi</td>
</tr>
<tr>
<td></td>
<td>SCSI port</td>
<td>SCSI port</td>
<td>SCSI port</td>
</tr>
<tr>
<td></td>
<td>4 mb RAM (16)</td>
<td>12 mb RAM (32)</td>
<td>4 mb RAM</td>
</tr>
<tr>
<td></td>
<td>2 paper trays</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td>Only available through HARDWARE THAT FITS 1-800-364-USER</td>
<td>Not true Adobe PostScript Slow for complex graphics</td>
<td>Expensive Limited to 300 dpi</td>
</tr>
</tbody>
</table>

...be forewarned: PostScript-clone printers still have a long way to go before they can rival true Adobe PostScript printers.**

The ideal networking printer. The RealTech Laser’s (and Laser 400’s) three interface ports (AppleTalk, RS-422, IBM PC-parallel, and RS-232-C) can be used simultaneously. They can be assigned either PostScript® or LaserJet II emulation, making it the ideal network printer. It switches automatically between interfaces and their assigned emulations, and spools files on a real-time basis. A Hewlett Packard LaserJet Series II emulation allows use with non-PostScript applications software.

Prints full-page 11x17 documents: No more tiling to get the full image area, or taping letter-size pages together! The RealTech Laser 400 is the optimum tabloid printer.

SCSI port. The standard configuration includes a SCSI port and 2 Mb of RAM upgradeable to 10 Mb (RealTech Laser) or 4 Mb of RAM upgradeable to 16 (RealTech Laser 400).

Money-back guarantee. Our famous 30-day money-back guarantee backs these products. If you’re not completely satisfied, we’ll refund your purchase price, minus consumables.

TECH SUPPORT:
1-800-364-MACS

FAX ORDERING:
1-409-539-4141

LEASING INFORMATION:
1-800-364-LESS
CALL: 1-409-760-2400

VISA | MasterCard

HOURS:
8 am-7 pm CST
Toll-free in the U.S. & Canada, too!
Texas Instruments

Texas Instruments MicroLaser Plus.

$1249
Lease price: $34/month

- 300 dpi, HP LaserJetSeries II emulation standard. 1.5 Mb RAM. 9 pgs./minute; 17 resident fonts; 3,000 pgs./month duty cycle.
- Optional accessories: 2nd paper tray, separate envelope tray.

Ti MicroLaser Plus 35.......... $1349
Lease: $37/mo.
Ti MicroLaser Turbo.......... $1595
Lease: $44/mo.

NEC Silentwriter Model 95

Micro-fine toner and NEC's patented "Sharp Edge" technology gives you sharp, black print quality.

- 300 dpi laser printer prints 6 ppm. 2 Mb RAM. Motorola 68000 processor, expandable to 5 Mb. Built-in envelope feeder and 250-sheet tray; feed or print consecutively or alternately. Resident language: Adobe PostScript Level 2.
- Automatic emulation switching. Optional second paper tray available.

$1469
Lease price: $40/month

RasterOps

CorrectPrint 300

Photographic-quality proofs for less than $2 a page!

- The highest-quality color available in desktop color proofing technology. The RasterOps CorrectPrint 300 uses a four color (CMYK) dye-sublimation thermal printing process at 300 dots per inch. The result is a continuous-tone print that resembles photographic-quality output.
- The CorrectPrint 300 prints on special sheet-fed paper or transparencies, not on rolls. For best output, special coated paper is required. It uses a RISC controller with JPEG decompression capability. The CorrectPrint 300 comes with 0Mb RAM, 12 Mb RAM is required, and it is upgradeable to 36 Mb RAM.
- It's Adobe PostScript language compatible, and includes three interfaces as standard: AppleTalk, Ethernet, RS-232C; plus a SCSI port, allowing users to share the CorrectPrint among Macs, PCs, workstations, or a network. 35 resident fonts.

$7395
Lease price: $203/month

Seiko Instruments

Personal ColorPoint PS

High-quality color! 300 dpi color thermal printer uses 16 MHz RISC processor. 6 Mb RAM standard, upgradable to 10 or 22 Mb. Adobe PostScript language compatible. Download, process and print images simultaneously; it has multiple frame buffers. Includes three standard interfaces plus a SCSI port, allowing users to share it on a network. 39 resident fonts.

$4495
Lease price: $123/mo.
High-speed thermal printer produces edge-to-edge comps on 11x17 or smaller paper...

Prints on BOTH sides of thermal or plain laser paper!*

- PANTONE® color simulations
- 300 dpi
- 10 Mb of RAM
- SCSI port
- Largest "live" image area of any cut-sheet printer

* The RealTech Color 350 uses state-of-the-art thermal technology, which allows you to print on both sides of thermal paper, or on both sides of high-quality, smooth finish plain laser paper. (Use thermal paper or clay-coated paper for optimum output quality and consistency.) Call for more information.

Where else would you find such a high-quality, affordable color printer?

1-800-364-USER

Toll-free ordering in the U.S. and Canada, too!

Hours: 8 am-7 pm Central Standard Time

30-DAY MONEY-BACK GUARANTEE. Before returning merchandise, we must ask that you call our Customer Service Dept., toll-free to receive a returned merchandise authorization number (RMA). This number must be included with any products you return. No C.O.D. returns, please. Thank you for your cooperation.

All prices subject to change without notice.

RealTech and the RealTech logo are trademarks of MBN. All other trademarks used in Hardware That Fits ads are the properties of their respective owners. Hardware That Fits is located at 110 N. Frazier, Corsicana, TX 77415.
For 13 years Applied Engineering has sold and installed more products for Apple computers than any other company except Apple. After selling over one million units...they're simply the best in the business!

1.44 Plus Super Drive (for Mac Plus, SE and MacIi). No SWIM upgrade needed!...279
TransWarp NuBus 68040-25MHz ...1679
TransWarp SE 68030-25MHz (with 25MHz 68802)...799

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Top performance in one easy upgrade!

RADIUS
Dramatically improves the performance of your Mac! The Radius Rocket 33 increases original Mac II processing speed by up to 8 times! For Mac II, IIx, IIcx & IIIc: includes integrated math coprocessor and 8 SIMM slots for up to 128 Mb of DRAM.

Rocket 25i
$1239
Rocket 25
$1649
Rocket 33
$2069

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External Hard Drives
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$389
Q10S
$199
Q42S
$799
T425Mb
$1085

PLI (Peripheral Land)

Infinity Turbo 44...579
Infinity Turbo 88...699
21 MB Floptical/Quad Ext...469
21 MB Floptical/Quad Int...409
128 MB Optical...1649
1 Gig Max Optical...1539
4 Gig DAT w/Retrospect...1729
4G DAT w/CD-ROM Drive...599
240 MB Mini/Array Ext...1659
480 MB Mini/Array Ext...2599
1 Gig Mini/Array Ext...4399

NEWER TECHNOLOGY

Significant productivity enhancements.
Quadra 900/Overdrive. Increases processor speed by 25% to 33MHz......119
Quadra 700/Overdrive. Increases processor speed from 25 to 30MHz...259
SCS-II DART-0 MB System. Solid state; access time~1ms.; transfer rates up to 12 MBytes. Uses 1 MB, 4 MB, or 16 MB SIMMS. Built-in battery backup...2949
Image Magic DSP (Digital Signal Processor) Accelerates Adobe Photoshop filters by 200 to 964%. Image Magic NuBus...769
Image Magic FX/PDS...699
Image Magic Quadra/PDS...699
fx/Overdrive II. Accelerates 40MHz 68030 to 30MHz for a 25% increase in speed...3249
fx/Powerstation II w/16 Mb. Increases processor speed by 25% and memory-intensive functions by 80%...999

WACOM TABLETS

Standard 12 x 12......689
Electrostatic 12 x 12...739
Standard 12 x 18......1029
Standard 6 x 9......489
Choice of stylus or 4-button cursor. Please specify.

HARDWARE THAT FITS

30 DAY MONEY-BACK GUARANTEE*
Before returning merchandise, you must receive a returned merchandise authorization number (RMA), which must be included with any products you return. No C.O.D. returns, please. Thank you for your cooperation. ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. *Sorry, exchanges only on PowerBooks.
Apple Macintosh® PowerBook™ 170
25 MHz 68030 microprocessor, 8 Mb of RAM, Backlit 640 x 400 active matrix display, 80 Mb hard drive, 1.44 floppy drive. Call for more information. (Modem not included.)
PowerBook 170 8/80 ............ 4079
PowerBook 170 8/80 with 14" Trinitron monitor ............ 5369

Macintosh® PowerBook. The right choice for people on the move.

Apple Macintosh® PowerBook™ 145
25 MHz 68030 Motorola microprocessor, 4 or 8 Mb of RAM, Backlit 640 x 400 SuperTwist display, 80 Mb hard drive, 1.44 floppy drive.
PowerBook 145 4/80 ............ 2440
PowerBook 145 8/80 ............ 2729

Notebook Cases
Case A is made of genuine leather. Cases B and C are specially designed of 1000 denier cordura nylon fabric and high-density foam for maximum computer protection.
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Optional 15" Display
$879
A complete system. Requires no video card!
Quality, flicker-free images at a price that lets you experience the convenience of large screen viewing. 15" portrait display has 870 x 640 resolution, 90 dpi. Vertical refresh rate of 75 Hz; flat CRT, anti-glare screen. One-year warranty. (Works with PowerBooks and other desktop Macs.)
15" Monitor & SCSI Station ............ 879
Lease price: $24/month

"With our 15" monitor and SCSI station, you can turn any PowerBook into a desktop Mac...

...SO WHY TRANSFER DATA BACK AND FORTH WHEN YOU HAVE THE OPTION OF USING THE POWERBOOK AS YOUR PORTABLE AND YOUR DESKTOP COMPUTER?"

It's ready to go — all you have to do is connect our monitor and SCSI station to your PowerBook for the convenience of full-screen viewing!

Keith Provencher
President, Hardware That Fits

1-800-364-USER
CIRCLE 199 ON READER SERVICE CARD.
## Table 1: Features of V.32bis Modems

<table>
<thead>
<tr>
<th>Modem</th>
<th>List Price</th>
<th>Street Price</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digicom ScoutPlus</td>
<td>$545</td>
<td>$500</td>
<td>Well engineered.</td>
<td>No flow-control cable.</td>
</tr>
<tr>
<td>Hayes ULTRA 144</td>
<td>$999</td>
<td>$725</td>
<td>Excellent technical support.</td>
<td>Poor technical support.</td>
</tr>
<tr>
<td>Logicom Quicktel</td>
<td>$589</td>
<td>$435</td>
<td>Good technical support.</td>
<td></td>
</tr>
</tbody>
</table>

### Features

<table>
<thead>
<tr>
<th>Standards supported</th>
<th>Fax capabilities</th>
<th>Software included</th>
<th>Error control</th>
<th>Data compression</th>
<th>Indicator lights</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 3 fax, MNP 5, V.42, V.42bis</td>
<td>yes</td>
<td>Quick Link II</td>
<td>V.42</td>
<td>MNP 5, V.42bis</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Bell 103, MNP 5, V.42, V.42bis</td>
<td>no</td>
<td>Smartcom EZ (PC only)</td>
<td>V.42</td>
<td>MNP 5, V.42bis</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Bell 103, Group 3 fax, V.17, MNP 5, V.42, V.42bis</td>
<td>yes</td>
<td>Quick Link II 2.02</td>
<td>V.42</td>
<td>MNP 5, V.42bis</td>
<td>8 (icons)</td>
<td></td>
</tr>
<tr>
<td>Bell 103, Group 3 fax, MNP 5, V.42, V.42bis</td>
<td>yes</td>
<td>FAXtel 2.0.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Other

- Data-pump manufacturer: Digicom, Phyton, Rockwell
- Dimensions (L x W x H): 9.0 x 6.6 x 1.8 in., 9.6 x 5.6 x 1.5 in., 9.2 x 5.6 x 1.8 in., 7.2 x 6.0 x 2.0 in.
- Warranty: 5 years, 2 years, 2 years, 5 years
- Hayes Microcomputer Products, Inc., 5835 Peachtree Corners E., Norcross, GA 30092, 404-840-9200
- Image Communications, 6 Caesar Pl., Moonachie, NJ 07074, 800-666-2490, 201-935-8880, 201-935-6548 (fax)
- Logicom Technology, Inc., 1817 De Haviland Dr., Newbury Park, CA 91320, 805-499-4443, 805-499-3588 (fax)
- Rockwell

### Directory, continued

<table>
<thead>
<tr>
<th>PSI Integration</th>
<th>QuickComm Co.</th>
<th>Racial-Datacom</th>
<th>Shiva Corp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>851 E. Hamilton Avenue</td>
<td>2290 Ringwood Avenue</td>
<td>1601 N. Harrison Parkway</td>
<td>One Cambridge Center</td>
</tr>
<tr>
<td>Campbell, CA 95008</td>
<td>Suite K</td>
<td>Sunnyvale, FL 33323</td>
<td>Cambridge, MA 02142</td>
</tr>
<tr>
<td>800-622-1722</td>
<td>San Jose, CA 95131</td>
<td>800-722-2555</td>
<td>800-458-3550</td>
</tr>
<tr>
<td>408-559-8544</td>
<td>800-551-6166</td>
<td>305-846-1691</td>
<td>617-252-6300</td>
</tr>
<tr>
<td>408-855-8548 (fax)</td>
<td>408-966-9145</td>
<td>305-846-0510 (fax)</td>
<td>617-252-6852 (fax)</td>
</tr>
<tr>
<td>COMStation Five, $799</td>
<td>SpiritIV-32bis, $342</td>
<td>ALM 3223, $1,145</td>
<td>NetModem/E, $1,699</td>
</tr>
<tr>
<td>PowerModem III, $799</td>
<td></td>
<td>ALM 3239, $1,795</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>RMD 3222, $1,145</td>
<td></td>
</tr>
</tbody>
</table>

---

**V.32bis Modems**

Directory, continued
3.5" ERASABLES JOIN THE INDUSTRY'S BIGGEST OPTICAL LINE-UP.

If you find hard drives too limiting, tape too cumbersome and removables too small, we have the answers. Because nobody can show you more ways to add the speed and flexibility of optical storage to your system or network.

Our newest optical drive, the 3.5" LF-3000/LF-3004 erasable makes big storage a small task indeed. Our 1 gigabyte erasable opticals are the answer for overburdened file servers and Desktop Publishing applications. Our WORM drives are the perfect answer for mass storage where permanence and audit trails are required. And our jukebox options give larger networks 50 gigabytes of room between changes. Of course, every Panasonic® optical storage product is equally happy in DOS, OS/2, Macintosh, UNIX® and other environments.

So, since nobody else offers the advantages of direct-overwrite technology, or a broader line of optical products, or greater optical storage capacity, you should be talking to nobody else but Panasonic.

You can reach us toll-free at: 1-800-742-8086.
## Table 1: Features of V.32bis Modems, continued

<table>
<thead>
<tr>
<th>Modem Type</th>
<th>Practical Peripherals PM1440FXSA</th>
<th>PSI Integration CMstation Five</th>
<th>Racal-Datacom RMD 3222</th>
<th>Supra FAXModem V.32bis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List price</strong></td>
<td>$579</td>
<td>$799</td>
<td>$1,145</td>
<td>$399</td>
</tr>
<tr>
<td><strong>Street price</strong></td>
<td>$420</td>
<td>$540</td>
<td>$825</td>
<td>$399</td>
</tr>
<tr>
<td><strong>Pros</strong></td>
<td>Inexpensive, Excellent display, Lifetime warranty, Good performance on impaired lines.</td>
<td>Superior documentation, Well engineered, CCL file for AppleTalk Remote Access included.</td>
<td>Good LCD display.</td>
<td>Inexpensive, Small, CCL file available on BBS. Excellent display. Good performance on impaired lines.</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td>Expensive, Poor technical support, Poor performance. Documentation not for beginners.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Standards supported</strong></td>
<td>Bell 103, Group 3 fax, MNP 5, V.42, V.42bis</td>
<td>Bell 103, Group 3 fax, V.17 fax, MNP 5, V.42, V.42bis</td>
<td>Bell 103, MNP 5, V.42, V.42bis</td>
<td>Bell 103, Group 3 fax, V.17 fax, MNP 5, V.42, V.42bis</td>
</tr>
<tr>
<td><strong>Fax capabilities</strong></td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Software included</strong></td>
<td>Quick Link II 1.0.1</td>
<td>COMstation FAX 2.2</td>
<td>none</td>
<td>FAXstf 2.2, MicroPhone</td>
</tr>
<tr>
<td><strong>Error control</strong></td>
<td>V.42</td>
<td>V.42</td>
<td>V.42</td>
<td>V.42</td>
</tr>
<tr>
<td><strong>Data compression</strong></td>
<td>MNP 5, V.42bis</td>
<td>MNP 5, V.42bis</td>
<td>MNP 5, V.42bis</td>
<td>MNP 5, V.42bis</td>
</tr>
<tr>
<td><strong>Indicantor lights</strong></td>
<td>10 + 14-character LCD</td>
<td>10</td>
<td>12</td>
<td>4 + 3-character LED</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data-pump manufacturer</strong></td>
<td>AT&amp;T</td>
<td>Rockwell</td>
<td>TI/proprietary</td>
<td>Rockwell</td>
</tr>
<tr>
<td><strong>Dimensions (L x W x H)</strong></td>
<td>10.4 x 3.1 x 5.2 in.</td>
<td>8.5 x 2.1 x 5.5 in.</td>
<td>10.0 x 9.6 x 2.7 in.</td>
<td>6.8 x 4.7 x 1.3 in.</td>
</tr>
<tr>
<td><strong>Warranty</strong></td>
<td>lifetime 5 years*</td>
<td></td>
<td>2 years</td>
<td>5 years</td>
</tr>
</tbody>
</table>

*You must send in the registration card to receive the full warranty.

---

**Directory, continued**

**Supra Corp.**
7101 Supra Drive S.W.
Albany, OR 97321
800-944-9772
503-967-2400
800-967-2400 (fax)
FAX Modem V.32bis, $399

**Telebit Corp.**
1315 Chesapeake Terrace
Sunnyvale, CA 94089
800-850-3348
408-734-4333
408-734-3333 (fax)
T2500 (PEP), $949
72000, $949
WorldBlazer (PEP), $1,099

**Teleglobe, Inc.**
40 High Street
North Andover, MA 01849
800-909-3225
508-681-0600
508-681-0660 (fax)
DA3214, $1,095

**UDS Motorola**
5000 Bradford Drive
Huntsville, AL 35805
800-451-2368
205-430-8000
205-830-5657 (fax)
V.32bis, $1,145
Dynamite Comes in a Small Package...

Never before has so much power & technology been packed into a SupraFAXModem! The SupraFAXModem V.32bis combines a potent mix of fax and data features — for explosive results! Maximum fax potential is achieved with Group 3 fax machine compatibility at up to 14,400 bps and Class 1 & 2 software compatibility. With raw data speeds from 300 to 14,400 bps, and up to 57,600 bps with V.42bis compression, it blasts data over telephone lines. Plus its revolutionary display gives you 25 different status reports! For just a little more, you can add caller ID and voice capabilities later this year. All this for a dynamite price! In addition to the $399.95 stand-alone version (without cables and software), the Macintosh package combines the SupraFAXModem V.32bis, cables, and FAXst™, MicroPhone™ 1.6, and CompuServe Information Manager™ software for $479.95.

9600 bps Version $299.95

Supra Corporation

1-800-944-8772

* Low-cost, user-installable Voice & Caller ID upgrades available Q3 '92 • All trademarks belong to their respective companies.

Circle 87 on Reader Service Card.
Table 1: Features of V.32bis Modems, continued

<table>
<thead>
<tr>
<th>Modem</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teleglobe DA3214</td>
<td>Front-panel self-test. Well engineered</td>
<td>Expensive. Poor technical support. One-year warranty.</td>
</tr>
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<td>UDS Motorola</td>
<td>Rockwell</td>
<td>ZyXEL USA</td>
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<tr>
<td></td>
<td>40 High St. North Andover, MA 01810</td>
<td>5000 Bradford Dr. Huntsville, AL 35805</td>
<td>207 South St. Boston, MA 02111</td>
<td>4920 E. La Palma Ave. Anaheim, CA 92807</td>
</tr>
<tr>
<td></td>
<td>800-928-3225</td>
<td>800-451-2369</td>
<td>800-666-6191</td>
<td>800-255-4101</td>
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<td></td>
<td>508-681-0600</td>
<td>205-430-8000</td>
<td>617-423-1072</td>
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<td>508-681-0660 (fax)</td>
<td>205-839-6657 (fax)</td>
<td>617-423-9231 (fax)</td>
<td>714-693-8811 (fax)</td>
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Directory, continued

U.S. Robotics, Inc.
8100 N. McCormick Blvd.
Skokie, IL 60076
800-385-5877
708-982-5001
708-982-5235 (fax)
Sportster 14.4 FAX, 5549
Sportster 14.4 Mac & FAX, $599

Western DataCom Co., Inc.
959 Bassett Road
Westlake, OH 44145
800-262-3311
216-835-1510
216-835-9146 (fax)
658 Quadra Pump, $2.495

Zoom Telephonics
207 South Street
Boston, MA 02111
800-666-6191
617-423-1072
617-423-9231 (fax)
FaxModem V.32bis, $449

ZyXEL USA
4920 E. La Palma Avenue
Anaheim, CA 92807
800-255-4101
714-693-9080
714-693-8811 (fax)
U-1496 $799
U-1496E, $469

206 November 1992 MacUser
To Create a Powerful Presentation, You Need a Great Producer.

The Final Word in Media Integration Software

History has seen some pretty spectacular presentations. But you can't count on thunder and lightning to get your point across. Passport Producer™ is media integration software for the Macintosh® that mere mortals can use to create anything from screaming music videos to awe-inspiring business presentations. Passport Producer will inspire and convey your message in a way they'll never forget. Passport Producer seamlessly synchronizes QuickTime® movies, animations, graphics, sound and music into one file by serving as the master control for your entire production. With Passport Producer, you integrate media elements on a visual “cue sheet” based on rock-solid SMPTE time code that permits frame-accurate “cue” placement.

By linking to most popular multimedia software, you can easily import and edit standard file types. When you need to edit your content, simply double click on the cue, and Producer will automatically open the editor of your choice. Play back your presentation on your customized stage. It's that fast and simple. You'll knock their sandals off with a multimedia spectacle as memorable as the parting of the Red Sea...and your reputation will be forever etched in stone. For your copy of Passport Producer, call Passport for the dealer nearest you.

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Circle 233 on Reader Service Card.
Backup.
For people who don't.
Everyone who uses a Macintosh ought to back up regularly. But most people don't back up at all.

In fact, if the people in your company are like those at most other companies, about the only way you're going to get regular backups out of them is to do it without them.

Guess what?
Now you can.
Now you can set up fully automatic, unattended backups for every Mac in the house.

Not to mention every DOS and Windows-based PC and Novell network server.

What's more, you can easily customize the nature and timing of each one to suit your requirements.

And transform a simple, effective company-wide backup policy from fantasy into fact.

All you need is Fastback Plus.

The Macintosh version of the world's most popular backup software is also the Mac world's most flexible backup software.

If automated, unattended backups aren't your style, you can still enjoy unprecedented convenience with our Express Menu, which lets you perform a full backup with a couple of clicks of your mouse.

Along with being System 7 savvy—which means you get to enjoy Balloon Help and other wonderful things—Version 2.6 lets you back up to just about anything you can think of, from floppies and hard disks to direct access and streaming tape drives and any HFS device.

It also lets you back up in the background while you're using an application or two in the foreground.

It even formats floppies on the fly, so you don't have to bother.

And it comes complete with our unique Macro Editor.

What, you ask, makes our Macro Editor unique?

It uses plain English commands. Which means you can actually use it.

Using the Mac version of Fastback Plus is a lot like using the DOS version, the Windows version and the Network version—same look, same functionality. Same backups, even.

That's right. You can actually restore a Mac file directly onto a PC, and vice versa.

Nobody else can do that.
But then, nobody else can back up 1MB per minute on a Mac.

No other DOS, Windows or Network backup program can run fast enough to see our tail lights.

And no other backup software is backed up by our vaunted 24-hour toll-free technical support. And our one-year money-back guarantee.

There's more. So pick up the phone. Dial 1-800-666-2904.
And tell everyone to stand back.
CPU Accelerators

Fast 68040 Accelerators

Now any member of the Mac II family can run as fast as a Quadra 950.

What do accountants, graphic designers, and service-bureau managers have in common? Although they perform different jobs, they could all use more time. But because you can’t squeeze more hours into a day, the next-best solution is to squeeze more hours into your Mac — when you increase your Mac’s speed, you increase its productivity.

If you own a Mac II, IIX, IIXx, IIc, IIx, or IIsi, Apple has left you without an upgrade path to Quadra 950 performance. In our June ’92 report “Blasting Off: CPU Accelerators,” we looked at a dozen ways to accelerate Macs that were based on the 40- or 50-megahertz Motorola 68030 or the 25-megahertz Motorola 68040. Each method could speed a Macintosh to then-unheard-of levels, but the definition of fast keeps changing, and with the introduction of Motorola’s 33-megahertz 68040 chip and the new Quadra 950, fast just got faster. This month we look at five accelerators based on Motorola’s new chip that can give your old Mac II new life and two new cache cards that can boost your Quadra into the stratosphere.

We tested a motherboard upgrade, the Apple Quadra 950 Upgrade, for the Quadra 900. This upgrade turns a Quadra 900 into a 950, and Apple even supplies two stickers you can put on the Quadra case to prove it.

We tested three of the accelerators — the Applied Engineering TransWarp 040, the Impulse Performance/040, and the Radius Rocket 33 — in a Mac IIc. These accelerators are designed for the full Mac II family, although Radius does not recommend using the Rocket 33 in an IIsi, because of the IIsi’s limited power supply, and the Radius software we tested didn’t support the IIfx.

The Fusion Data TokaMac II FX 33 is designed solely for the IIfx and includes more than just a fast processor. It also provides a 128K CPU cache and a high-speed buffered NuBus controller for enhanced performance. The TokaMac II FX 33 uses both the PDS (processor-direct slot) and the NuBus slot of the IIfx.

And finally, we tested two DayStar FastCache Quadra cards, one for the Quadra 700 and 900 and one that works in the Quadra 700, 900, and 950 — inexpensive 128K cache cards, not processor-based accelerators.

Not for Everyone

Power is seductive, but before you rush out to buy a 68040-based accelerator, remember that some software is still incompatible with this high-speed microprocessor. To get around this...

In June ’92, we told you how to speed up your Mac. Today’s Macs can be even faster.
each accelerator (except the Apple Quadra 950 Upgrade) includes software that automatically switches cache modes to allow you to run older non-68040-compatible applications (a free control-panel utility for switching 68040-compatibility modes, CacheOut, is available in Library 3 of the ZiffNet/Mac Download & Support Forum). The various modes are copy-back (fastest), write-through (slower but more compatible), and off (most compatible).

Although the Fusion Data TokaMac II FX 33 doesn’t have a write-through mode, it can disable the 68040 processor without rebooting. The Applied Engineering TransWarp 040, the Impulse Performance/040, and the Radius Rocket 33 require that you reboot to completely disable them.

Installing most of the accelerators is straightforward — simply place it in the appropriate slot and install the software. Each NuBus accelerator comes with SIMM slots that accept as much as 128 megabytes of RAM; 4 megabytes of RAM is left on the motherboard for rebooting the accelerator and — if your Mac is so equipped — for running the on-board video. Only the Fusion Data TokaMac II FX 33 requires a manufacturer’s installation — Fusion Data must replace a PAL (programmable addressable logic) chip on the IIfx motherboard — safe, simple, reversible surgery.

Radius provides the best documentation. The manuals from

---

### Table 1: Pros and Cons

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<th>Applied Engineering TransWarp 040</th>
<th>DayStar FastCache Quadra 700/900</th>
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<td>16-bit-color support on two-page color displays.</td>
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<td><strong>Cons</strong></td>
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<td>Mac II installation requires 68851 PMMU.</td>
<td>Incomplete documentation.</td>
<td>Incomplete documentation.</td>
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<td>Faster video circuitry requires faster VRAM SIMMs.</td>
<td>Incompatible with parity RAM. Once launched, always enabled.</td>
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<td>DayStar Digital</td>
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<td>3210 Beltline</td>
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<td>Cupertino, CA 95014</td>
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<td>404-967-3018 (fax)</td>
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Figure 2: Faster Than the Fastest

![Figure 2](image)

**Figure 2:** No matter how fast your Mac, you can always use more speed. We compared the speed of five new accelerators and two Quadra cache cards installed in appropriate Macs with that of the Quadra 700 and 900 (which have identical performance) by recalculating a complex spreadsheet in Excel 3.0a, previewing an Illustrator 3.0.1 image, and manipulating a file in Photoshop 2.0.1.
Applied Engineering and Impulse Technology don't adequately discuss RAM configuration and installation — novice buyers, beware. The manuals from DayStar and Fusion Data were not current with the company's new products; representatives from each company assured us that new manuals are on the way. When installing any NuBus accelerator in a IIx, you should know that IIx SIMMs are different from the standard Mac II-style SIMMs.

The Radius Rocket 33 is the only accelerator we tested that supports parity RAM, a requirement for some government-contract applications. The Radius Rocket 33 is also the only accelerator that has FCC Class B certification for residential use; the Apple Quadra 950 Upgrade is also FCC Class B-compliant.

To test how the raw power of these accelerators helps speed day-to-day chores, we ran a suite of application-based tests: an Excel 3.0a spreadsheet recalculation, an Illustrator 3.0.1 preview, and a Photoshop 2.0.1 manipulation. All the tests were designed to run within the 20 megabytes of RAM installed with each product to eliminate disk performance as a factor in testing.

The Fusion Data TokaMac II FX 33 increased the performance of a stock IIfx by nearly 125 percent and beat the Quadra 950 in overall performance by almost 10 percent. The Applied Engineering TransWarp 040, the Impulse Performance/040, and the Radius Rocket 33 each accelerated a IIfx by more than 180 percent. The Apple Quadra 950 Upgrade accelerated a Quadra 900 by about 30 percent, and the two inexpensive DayStar FastCache Quadra cards accelerated the Quadra 900 and the Quadra 950 by more than 10 percent.

The Bottom Line
If your yearly financial model takes a bit too long to calculate on your IIfx; if your aging Mac II, IIfx, IICl, or IIsi can't preview your Illustrator files fast enough; or if your Quadra 900 — which seemed so fast mere months ago — needs help when rendering a complex image, you may find that a 33-megahertz 68040-based accelerator or a Quadra cache card provides the oomph you're looking for.

If your NuBus Mac has a healthy power supply, we recommend the Radius Rocket 33: It's fast, has the best manuals, supports parity RAM for government use, and is FCC Class B-compliant. If you own a IIfx, buy the Fusion Data TokaMac II FX 33: It outperforms a Quadra 950. And if you already own a Quadra, you're cheating yourself if you don't buy a DayStar FastCache Quadra: Equip your Quadra 950 (or a Quadra 900 with an Apple 950 Logic Board Upgrade) with a FastCache Quadra 950, and you'll have the fastest Mac possible. For now.

— Jeff Pittelkau

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<tr>
<td>8902 Business Park Dr.</td>
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<tr>
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</tr>
<tr>
<td>1710 Fortune Dr.</td>
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<tr>
<td>San Jose, CA 95131</td>
</tr>
<tr>
<td>800-227-2795</td>
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<tr>
<td>408-434-1010</td>
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<td>408-434-0770 (fx)</td>
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</table>

212 November 1992 MacUser
Mirror Introduces Desktop Performance For Your Powerbook...

With Mirror's exciting new peripherals, your PowerBook can function just like a desktop machine, with a high resolution monitor and plenty of storage.

The Mirror PowerVision, an internal video board for the PowerBook 140 or 170, works with a variety of standard monitors, including our NEW 14-inch Color Display and 15-inch Gray-scale Display. With 0, 2 or 4 MB of on-board RAM, the PowerVision's pass-thru connector lets you use existing RAM, and our installation video makes setup a snap (professional installation also available).

The Mirror ViewPort is a 15-inch monochrome display with a built-in SCSI video controller and QuickDraw acceleration for performance rivaling internal video boards. Ideal for PowerBooks, the ViewPort brings big screen power to any Mac with a SCSI port. (continued)
...And A Line Of Powerhouse

The NEW Mirror 14-inch Color Display is the latest version of our best selling color monitor. Designed to work with the built-in video of your Mac LC, IIsi, IICi, or Quadra—or with Mirror's PowerVision video board for PowerBooks; this display features razor-sharp focus and brilliant color and it's still only $399!*

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Whatever your need, whatever Macintosh model you use, Mirror has high performance peripherals to match.

Our complete line of storage systems can handle any task. From our critically acclaimed hard drives and CD-ROM, to our high performance 128 MB Optical Drive...
and DAT Tape Drives, Mirror offers the capacities, speed, features and prices you want.

Once you've used a Mirror high-resolution display, you'll wonder how you ever lived without it. Our monochrome full-page and two-page displays deliver bright, sharp screen images for word processing, spreadsheets, database management and publishing.

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All Mirror products are backed by our famous 30-day, "love it or return it" policy, and the best customer support in the business. Call today to see for yourself.
Removable Hard Drives

Four portable storage systems offer speed and convenience, but only one delivers.

You’ve been using removable-cartridge drives for years, attracted by their portability. Convenience has its costs, though — sluggish speed, questionable data integrity, and limited per-disk capacity. But there is a storage product that offers the speed and peace of mind of a fixed hard drive as well as the convenience of a cartridge drive: a removable hard drive. Whereas a cartridge drive swaps only a data-carrying disk, a removable hard drive can swap a cartridge — or module — that contains a complete hard-drive mechanism inside a safely sealed unit. The entire unit is designed to be inserted into a docking bay that contains a power supply and a SCSI port.

Module capacities range from 50 megabytes to 1.3 gigabytes. We tested popular midrange models from four vendors. The La Cie Express Drive 240, the Mega Drive Mercury 240, and the Saturea Academy 240Z/ro contain Quantum’s new 240-megabyte hard-disk assembly, and the ETC DataPort 210 contains a Quantum 210-megabyte mechanism. The Saturea Academy 240Z/ro and the ETC DataPort 210 use compatible docking bays and modules; the La Cie Express Drive 240 and the Mega Drive Mercury 240 each use a proprietary design.

Setting up a removable hard drive is slightly more complex than simply cabling an external drive, but fortunately, each drive’s documentation thoroughly covers installation and formatting. Finding information in the Mega Drive Mercury 240’s manual is a little difficult, because it lacks an index.

Many features that are taken for granted with removable-cartridge drives are missing from some of these systems. For example, when we rebooted each unit with the docking station empty and then inserted the module, only the La Cie Express Drive 240 and the Mega Drive Mercury 240 automatically mounted (and remounted after ejection). The Mega Drive Mercury 240 requires you to use the company’s Steadfast driver on one of your drives. The ETC DataPort 210 and the Saturea Academy 240Z/ro each required either formatting software or SCSI Probe (a shareware utility, available from ZiffNet/Mac’s Download & Support Forum) to mount — a real inconvenience. The La Cie Express Drive 240 has an ejection motor that’s similar to ones used in VCRs, which adds convenience and eliminates the possibility of accidental removal, but more moving parts in a unit means that more things can go wrong.

The Mega Drive Mercury 240, which lacks an ejection motor, can be operated without the module’s being locked into the docking station — a disaster waiting to happen. Although you can lock the module manually,
it can be accidentally removed while data is being written to the drive, potentially corrupting the file or even the entire disk.

To ascertain if you pay in performance for the convenience of a removable hard drive, we ran each assembly through the same battery of tests we used in our most recent report on comparable external hard drives (see "Sizable Storage: 200-Megabyte Hard Drives," April '92, page 108) — a 4th Dimension-database sort; a DiskTop copy; a Finder copy; and a Photoshop open, rotate, and save. We calculated the total time each drive took to complete the tests and compared these results with those of the Dynatek HDA 234, one of the fastest drives in our April report.

The results proved the Quantum 240-based drives to be faster than our reference drive, the Dynatek HDA 234, which uses a Hewlett-Packard C2233 mechanism. Not surprisingly, the ETC DataPort 210, with its older Quantum mechanism, finished last.

After we had tested speed, we examined the design and construction of each drive. The ETC and Sature cases are not much more than modified external-hard-drive cases; the La Cie and Mega Drive units are specifically designed to be removable hard drives. Between the La Cie and Mega Drive drives, there were only minor differences in construction features — the La Cie unit scored extra points for its locking ejection system.

The Bottom Line

The La Cie Express Drive 240 is well designed and well built, comes with a two-year warranty, and is easy to use. If you've been waiting for a removable storage product that's not only fast and convenient but will also let you sleep at night, secure in the knowledge that your data is safe, we recommend the La Cie Express Drive 240.

— Mark Frost

### Table 1: Pros and Cons

<table>
<thead>
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<th>ETC DataPort 210</th>
<th>La Cie Express Drive 240</th>
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Figure 2: The La Cie Express Drive 240, the Mega Drive Mercury 240, and the Sature Academy 240Z/ro use the new Quantum 240, the fastest mechanism with this capacity we've ever tested. Our tests showed that the inexpensive ETC DataPort 210, with its older Quantum 210 LS mechanism, was much slower than the other units, although only slightly slower than the Dynatek HDA 234, one of the fastest drives in our April '92 report on 200-megabyte hard drives. (Average total test times are shown in minutes and seconds at the beginning of each bar.)
Great Moments In Connectivity.

In 1975, the world looked on in awe as the Soyuz and Apollo space capsules broke down traditional barriers and joined together in space.

The link-up was hailed as a marvel of technology. Today's technological marvels come in smaller packages. Introducing PathFinder from Dayna, the first AppleTalk router to break the $1,000 price barrier. As well as bringing glasnost to the Ethernet and LocalTalk sides of your network.

PathFinder has connectors for LocalTalk and all Ethernet cable systems, from thick and thin Ethernet to 10BASE-T. It supports AppleShare and NetWare for Macintosh, the most popular Macintosh network operating systems, as well as any other AppleTalk-based communications software. All for the remarkably low price of $899.

But the biggest breakthrough is PathFinder's amazing ease of use. For small networks, PathFinder is ready to plug and play right out of the box. On larger networks, it can be configured to suit any need. And unique to PathFinder is an "Automatic" setting that combines LocalTalk and Ethernet segments automatically into one seamless network.

Trust the connectivity experts at Dayna to make a product this good, so easy to use and so affordable.

If you're used to routers that sell at prices that are out of this world and require a rocket scientist to set up and maintain, it's time you hooked up with Dayna. Call (801) 531-0600 extension 351 today and ask about connecting with PathFinder.
Mail call: Frustrated that when you dial in to QuickMail via AppleTalk Remote Access (ARA), you have to manually make the ARA connection first? Not if you have ARA-Link QM, from Netstrategy (416-345-8985). ARA-Link QM ($129.95 for a five-pack) lets you make a one-click QuickMail-over-ARA connection, using the standard QuickMail interface. ♦ Meanwhile, version 3.1 of Microsoft Mail for AppleTalk Networks offers several new remote-access features of its own: Servers can now call each other via modem to exchange messages, and users can access their mail remotely and compose and store messages locally. Upgrades from 3.0 to 3.1 cost $99 per server and are free for client Macs. ♦ By the way, CE Software, publisher of QuickMail, has bought InBox, Sitka’s competing E-mail package, solely to kill it. Call CE at 515-224-1995 for upgrade details.

Talkin’ routers: I guess DOS machines are good for something. Talking Router, from Talking Networks (510-549-8368), is a $700 software router that runs on 80386 and 80486 PCs and provides AppleTalk and basic IP routing and tunneling for as many as four LocalTalk or Ethernet connections. The companion TransInternet Mapper, bundled with the router software, lets users personalize their views of network services so that, even on large internets, they see only those printers and servers they’re interested in, not endless lists of devices they couldn’t care less about. ♦ XBR Communications offers a variety of hardware and software products for those who need WAN (wide-area network) routing. XBR Gate/25 is an X.25 NuBus card (with bundled Comm Toolbox software) capable of data rates as high as 384 Kbps. TheLink, an eight-channel WAN router, supports modem, X.25, ISDN, and other dial-up WAN connections. And Router for Macintosh supports synchronous point-to-point and X.25 links. Each software product works in conjunction with Apple’s AppleTalk Internet Router, which is bundled with TheLink. Call XBR (514-489-1001) for pricing. ♦ Dayna’s latest offering is the PathFinder, a no-frills LocalTalk-to-Ethernet router that retails for $899. According to Dayna (801-531-0600), it’s easy to install and configure. That would be a first in the router market.

Alarming news: NetWORKS is a network-monitoring and alarm utility from Caravelle Networks (613-596-2802) that can notify network managers of abnormal network conditions. Version 2.0 ($995) adds the ability to send alarm messages via QuickMail or Microsoft Mail or to a pager. It also provides expanded information about the condition of network devices — for example, warnings that a file server is low on disk space.
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So call 1-800-995-7760 for details. Because for those special Ethernet occasions, there's only one place to shop. Farallon.
Battling for the UNIX Crown

Version 2.0 of trim young contender MachTen battles Apple’s beefed-up A/UX 3.0 for the title of Best UNIX on the Mac.

By Ian Bacon

Apple UNIX has been around for almost ten years, if you count the version on the ill-fated Lisa, but it had no competition until 1991. At that point, A/UX, Apple’s Mac version of the multiuser, multitasking operating system, had reached version 2.0—a great improvement over the bare-bones A/UX 1.0. It had all the features UNIX users expect and allowed use of the Finder, but it also had some performance and stability problems and wasn’t System 7-compatible. In addition, A/UX 2.0 was a resource hog: It easily filled an 80-megabyte drive and required a Mac with a 68030 processor or a 68020 with a PMMU (paged-memory-management unit).

Enter MachTen 1.0, from Tenon Internsystems. Where A/UX was fat, MachTen was lean, running on any Mac and filling less than half of a 40-megabyte drive, after installation. Where A/UX was based on original AT&T code and technology, some of which is now 20 years old, MachTen used Carnegie-Mellon’s streamlined UNIX kernel called Mach, which brought object-based, multi-threaded processing to the game. MachTen had some problems similar to those of A/UX 2.0, however, and it lacked System 7 support, a development system, and a means of running X Window System (abbreviated as X Window or X) software.

In April 1992, Apple released A/UX 3.0, which was still based on AT&T UNIX (System V, Release 2) but with 4.3BSD (Berkeley Software Distribution) enhancements. A/UX 3.0 promised integration with System 7, faster performance, and a cure to all the old problems. In May, MachTen 2.0 hit the streets. It was also integrated with System 7 but based on the 4.3BSD Reno version of UNIX with a Mach kernel. How does the upstart contender stack up against the old champ? Over a period of several months, we observed the two in action. This is their story.

Getting Started

Whatever else Apple did to A/UX, version 3.0 is still a resource hog. It no longer fits on an 80-megabyte drive (120 megabytes is the minimum size, and Apple recommends 160 megabytes), and it requires 8 megabytes of RAM plus a 68030 processor. In contrast, MachTen 2.0 needs only a 40-megabyte hard drive and 4 megabytes of RAM—and you can still install it on any Macintosh, including a PowerBook. In practice, however, you need a lot more than 4 megabytes of memory to do anything useful with MachTen, and it is very slow on low-end machines.

Buying and Installing A/UX. A/UX 3.0 comes on a single CD-ROM (priced at $709, or $245 to upgrade from version 2.0), which includes the standard UNIX features: basic UNIX, text processing, networking, the X Window, and a complete software-development environment. The standard package includes system-administration documentation, most of which is detailed and complete. Two
Who's Running the Operating System?

A/UX and MachTen are different in many ways. They employ different versions of UNIX, but their most significant difference is in how they interact with the Mac operating system.

When booted, each product puts UNIX code into memory, but they put the code in different places. A/UX inserts itself at the lowest level, between the hardware and the Mac OS Toolbox (see Figure A), whereas MachTen leaves the connections between the Toolbox and the hardware in place and runs between the Mac OS and any applications or UNIX utilities (see Figure B). In other words, A/UX makes UNIX the core operating system and runs the Mac OS as a UNIX application, whereas MachTen keeps the Mac OS in place and extends it to run UNIX applications. (The Mac OS for MachTen 2.0 can be either System 7 or System 6 with MultiFinder; A/UX 3.0 works with System 7 only.)

Because UNIX is its core operating system, A/UX is faster than MachTen at performing operations that use UNIX shell commands. Similarly, because MachTen keeps the Mac OS intact, it’s faster than A/UX at performing operations that use the Mac Finder and slower than A/UX at shell operations; to find out how much slower, see Figure 1.

The basic package includes the Mach kernel, the file system, networking and other utilities, serial-communications tools, and text processing. It costs $395 (with free upgrades for registered users). X Window support comes in the X Client package (the X libraries), for $75, and the X Server package, for $200. The software-development system costs an additional $395 and includes documentation. The basic MachTen package doesn’t include standard UNIX documentation, which costs $175 extra. The documentation included with the package (mostly reprints of UNIX papers from AT&T) is poor, with specific system-administration tasks receiving only cursory coverage.

With MachTen, repartitioning is not necessary, because it uses the Mac’s file system directly. Installation is a two-step process: First, you run the Installer to load compressed archives onto a hard disk, and then you launch MachTen and answer some questions about the network configuration, after which MachTen expands your archives. If you’re upgrading from a previous version, be aware that old MachTen directories will be deleted and overwritten. Also, launching MachTen is difficult if you have QuickMail — our Mac Illcx crashed repeatedly until we removed the QuickMail extension. After the installation was complete, both QuickMail and MachTen ran correctly.

Getting Down to Work

UNIX provides a character-based, command-driven user interface called a shell. Running a session requires you to perform several steps before you can do any useful work:

Logging in or Breaking in? Because
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PLATFORMS

Figure 1: Fast Finder or Speedy Shell?

Deleting a hierarchy of folders

<table>
<thead>
<tr>
<th>Platform</th>
<th>Operation Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/UX Finder</td>
<td>100%</td>
</tr>
<tr>
<td>A/UX Shell</td>
<td>100%</td>
</tr>
<tr>
<td>MachTen Finder</td>
<td>70%</td>
</tr>
<tr>
<td>MachTen Shell</td>
<td>70%</td>
</tr>
</tbody>
</table>

Shell operations are much slower with MachTen than with A/UX, because MachTen uses UNIX as its core operating system.

Copying a hierarchy of folders

<table>
<thead>
<tr>
<th>Platform</th>
<th>Operation Time</th>
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</thead>
<tbody>
<tr>
<td>A/UX Finder</td>
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<td>70%</td>
</tr>
<tr>
<td>MachTen Shell</td>
<td>70%</td>
</tr>
</tbody>
</table>

Finder operations are slower with A/UX than with MachTen, because A/UX uses UNIX as its core operating system and runs the Mac OS as an application.

UNIX is a multiuser system, password-protected entry is important for ensuring the security of your files. Both MachTen and A/UX include encryption utilities that scramble your password as you enter it so onlookers can’t read it — although with MachTen, we had to wonder why Tenon bothered.

To start using UNIX, you first need to enter your account name and password. With A/UX, the log-in screen is modal and can’t be cleared away until you pass the password test; if you fail, you are locked out of the system. With MachTen, the log-in screen is a standard Macintosh window that can be resized, moved, or hidden — making it easy for anyone to get to the unprotected password file and edit it to gain superuser powers. The only case in which MachTen affords any protection is when someone attempts to log in over a network and can’t get at the desktop. Even then, unauthorized access would be simple to obtain with Tintuktu or a similar package.

Collecting Shells. Three shells are commonly used as command-line interfaces to UNIX: the Bourne shell, which system administrators use; the C shell, favored by most users; and the Korn shell, preferred by programmers. A/UX provides robust implementations of the latest versions of all three. MachTen supplies only the Bourne and C shells, and its implementation of the Bourne shell is rather ancient — it does not, for example, have in-line procedures, a capability for step-by-step program execution that system administrators find very useful.

Like version 2.0, A/UX 3.0 supplements its shells with the Commando utility. Commandos provide a Finder interface to many UNIX utilities, letting users specify commands with buttons and pop-up menus. Each Commando comes with detailed instructions to guide users through the necessary steps. Even experienced UNIX users will probably find this capability quite helpful from time to time.
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Call 800-422-7777, extension 453, for the name of your nearest GCC dealer, or to order directly from GCC. Because these days, there's no better value than the BLP Elite.
What's Taking So Long? Most of the work you do under UNIX uses the hordes of utilities and tools that come standard with all versions of the operating system. The same tools are available with both A/UX and MachTen, and their functionality is essentially identical in each case. Their performance is significantly different, however. Utilities that require disk access (such as moving, copying, deleting, and reading from or writing to files) take much less time under A/UX (see Figure 1). Text search, comparison, grammar-checking, and spell-checking tools are typically two to three times as fast under A/UX.

Of course, you'd expect such UNIX utilities to take less time under A/UX, given how its architecture differs from MachTen's (see the "Who's Running the Operating System?" sidebar). A/UX makes UNIX the core operating system of the Mac, with the Mac OS running as an application under UNIX. MachTen, on the other hand, keeps the Mac OS as the core, so naturally its UNIX utilities take longer.

Using the Mac Finder under A/UX, however, takes longer than using it under MachTen, because A/UX has to translate Mac Toolbox calls into UNIX-system calls. With MachTen, Finder operations, such as dragging a file to copy it, take only a little longer than they do on a Mac that doesn't have MachTen installed. As Figure 1 shows, however, Finder operations under A/UX take about twice as long as they normally would.

MachTen also has an advantage in the file-system arena. A/UX requires that Mac and UNIX partitions be present; although the Finder can see both, the shell can see only the UNIX partition. You can't access AppleShare servers or other users' shared Macs from an A/UX shell, nor can you read, write, delete, copy, or move files between Mac and UNIX partitions.

You also can't access files on floppies from the shell.

MachTen has no problems with such tasks, because it uses the Mac's file system directly. You can mount AppleShare volumes directly onto the UNIX file system, and you can access any files on AppleShare volumes from the shell. Similarly, floppies you insert into the drive mount automatically, and you can reach them via the shell or the Finder. For users on mixed networks, this advantage can be significant.

Developing Software. The A/UX 3.0 distribution includes C and FORTRAN compilers as well as BASIC and SNOBOL interpreters. Also included is the complete UNIX developers' workbench: an incremental make utility (for compiling only the changed portions of an application), lexical and syntactical analyzers, libraries for creating pure and hybrid UNIX and Mac utilities, X Window and networking libraries, a configuration-management package, and the UNIX compiler for compilers. We ported a 10,000-line public-domain package to A/UX in the time that it took to download the code and run the make procedure.

In MachTen, Tenon provides a C development environment based on the Free Software Foundation's GNU-C compiler, and make is available as a separate package at extra cost. Libraries for development of pure UNIX applications are currently available, with hybrid Mac/UNIX libraries promised. Libraries to take advantage of the Mach kernel's multi-threaded tasking are also promised for later, X Window, Motif, and network libraries are available now.

With the general slowness of shell-based operations in MachTen, compiling programs can be painful. Additionally, Tenon chose not to implement virtual memory in this version (it's standard in A/UX), which adds to the frustration when you're trying to run the compiler. The compiler won't run with 4 megabytes of RAM, even with 8 megabytes, "insufficient memory" errors can occur. Tenon claims that System 7's virtual memory will overcome this problem, but we were never able to successfully demonstrate this claim.

Talking to the World

Connectivity is a major issue with UNIX. Its serial and TCP/IP (Transmission Control Protocol/Internet Protocol) networking utilities accustom users to
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Reviewers agree. FolderBolt is top-notch security from Kent Marsh Ltd., the experts in the Mac security field since there was a Mac security field.

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Table 1: Which UNIX Should You Nix?

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<tr>
<td><strong>Company</strong></td>
<td>Apple Computer, Inc. 20525 Marnani Ave. Cupertino, CA 95014 800-776-2333 408-995-1010</td>
<td>Tenon Inter systems 1123 Chapala St. Santa Barbara, CA 93101 800-662-2410 805-966-6953</td>
</tr>
</tbody>
</table>

*Some manuals cost extra.
†X support, development system, and standard UNIX manuals cost extra.
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Specifications and pricing based on respective manufacturer’s quotation 9/24/92.
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3. It's powerful.
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It also uses much less disk space than A/UX does and integrates smoothly with the standard Mac file system, a feature that by itself makes MachTen worth its price. Its ability to use AppleTalk for UNIX networking operations makes it well suited to small organizations that have an established Mac network. For outfits with a mixture of Ethernet and AppleTalk networks, it can provide an inexpensive gateway between the two. Still, MachTen isn’t quite ready to take on the champ. The slowness of its UNIX side can be annoying, and its networking is buggy. In addition, its implementation of UNIX security is seriously flawed. A complete MachTen system also costs more than an A/UX system if you don’t include hardware requirements. For educational institutions and students with an investment in low-end Mac hardware, however, it provides a useful way to climb into the UNIX ring.

Like the stereotypical UNIX user, Ian Bacon is myopic, but he can type with more than two fingers and he often wears shoes instead of sandals.

**On the Horizon**

The Apple/IBM alliance is likely to bring some changes to the UNIX arena. Machines based on the PowerPC RISC chip that the two companies expect to produce will feature a version of UNIX called PowerOpen (awaited with mixed feelings by those of us unfortunate enough to have crossed paths with AIX, IBM’s version of UNIX). PowerOpen will be based on the Mach kernel, with a System V, Release 4, UNIX layered on top of it. Rather than run the Mac OS as an application, as A/UX does, PowerOpen is expected to integrate the Finder interface at the lowest levels of the operating system. PowerOpen will also be able to run AIX applications, which number in the thousands.

Tenon will probably upgrade MachTen to version 3.0 of the Mach kernel and add the latest — also the last — release of BSD (Berkeley Software Distribution) UNIX, 4.4, which contains no AT&T code. However, MachTen’s changes could be upstaged by a new product: Carnegie-Mellon University, the creator of the Mach kernel, plans to release a package called MacMach toward the end of the year. Expected to come in source-code form on CD-ROM, MacMach will provide everything that MachTen does, except that Finder integration may cost extra and won’t include source code (it’s Apple’s proprietary code). The price of the package is expected to be around $100, but don’t jump for joy yet — you won’t be able to get MacMach unless you have an AT&T System V source-code license, which you probably don’t have (and can’t afford) unless you’re buying for a university or a large organization.

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CIRCLE 153 ON READER SERVICE CARD.
Reading Foreign Floppies

Our new “platform correct” columnist tells you what products help you feed DOS floppies to Macs — and vice versa.

By John Rizzo

Mac and DOS software vendors are adopting a new attitude these days: I call it platform correctness (or PC for short — not to be confused with the abbreviation for personal computer). Platform-correct vendors such as Microsoft, Claris, and Novell paint glowing pictures of Macs and Intel-based machines coexisting in harmony, using the same software, data, and networks. Even Apple, which began a tough Windows-bashing ad campaign this summer, is publicly encouraging Mac developers to create software for Microsoft Windows as well. John Sculley went so far as to hold a press conference with Apple archenemy Bill Gates, with as much hoopla as John and Yoko calling for world peace from a hotel bed. The problem with the platform-correct spiel is that it’s about as realistic as saying, “Hey, isn’t it great that we all speak Esperanto now?”

I’m not saying the Mac can’t communicate with other platforms. I just wrote a book that demonstrates how the Mac is the best-connected desktop machine around (The MacUser Guide to Connectivity, Emeryville, CA: Ziff-Davis Press, 1992). The problem is that exchanging information among platforms isn’t as easy as it should be. Finding what works for your situation can be tough, because it’s rare that a single product will solve all your connectivity problems — despite the optimistic claims of the platform-correct crowd.

During the many months I spent researching and testing for my book, I came across scores of ways to build bridges between the Mac and the PC. Each month, I’ll reveal some of those ways — as well as some of the newest developments in making Macs and PCs work together — in this column. And as the platform-correct vision becomes more of a reality, I’ll also share some tips on connecting to other platforms further afield.

Getting Down to Basics

Sculley and Gates can talk about open database cross-platform connectivity being the future; I’ll start with something a little more practical and relevant to the rest of us.

The most common task people want to accomplish in Mac-to-PC connectivity is the sharing of files. This process is becoming easier, with software vendors enabling users to move files between the Mac and the PC version of a program and with Mac software supporting file formats that PC software can read. File translators take care of most of the remaining problems of getting Mac and PC applications to recognize each other’s files. Yet multiphatform software doesn’t do anything about the problem of actually moving the files between a Mac and a PC. The simplest, cheapest, and still the most versatile method of transferring files between Macs and PCs is the plain old low-tech floppy disk.

People who believe floppy disks will soon disappear probably also believe in the paperless office. Even if every Mac and PC in the world were connected to a giant Novell wide-area
network, we'd still need the convenience and low cost of floppy disks.

When you're sharing floppy disks with PC users, it doesn't matter whether the PCs are running DOS or Windows. Windows isn't an operating system but rather a front-end user interface that sits on top of DOS. So what's good for DOS is good for Windows, as far as transferring files to a Mac is concerned. This situation may change when Microsoft releases Windows NT, which will be an entirely new operating system — Microsoft promises backward compatibility for Windows and DOS products, but I wouldn't bet that the current Mac-to-PC file-transfer products will continue to work. For now, though, we can treat DOS and Windows files as the same for file-transfer purposes.

Hardware How-to

Mac as well as PCs can use those familiar 3.5-inch disks (although some PCs still use 5.25-inch floppies). Mac disks come in 800K and 1.44-megabyte sizes, and PC disks generally come in 720K and 1.44-megabyte sizes. The main distinction between Mac floppies and PC floppy is in how they're formatted; data is stored differently on the two types.

The good news is that the Mac's floppy drive can read floppies formatted on PCs. Since 1989, most Mac models have shipped with an internal 3.5-inch floppy drive — Apple modestly calls it the SuperDrive — that can read from and write to 3.5-inch 720K and 1.44-megabyte PC floppies. You can also buy external SuperDrives from Apple and similar drives from other vendors as well as drives that can read 5.25-inch DOS floppies. I recommend the DaynaFILE drive ($399), from Dayna (801-531-0600), which is easier to set up and use than Apple's.

The bad news is that the Finder doesn't recognize PC floppies. Put one in your Mac's SuperDrive, and your Mac asks if you want to initialize it. You can use the rather clumsy Apple File Exchange utility that comes with the software to access the PC disk, but it's a lot more convenient to mount the PC floppy on your desktop.

Fortunately, you can do just that by adding a small file to your System Folder. DOS Mounter ($89.95), from Dayna, and AccessPC ($99.95), from Insignia (415-694-7600), let you click and drag files between a Mac hard disk and a PC floppy just as you do with a Mac floppy. They also let you mount SyQuest, Bernoulli, and erasable optical cartridges that have been formatted on a PC.

Another feature of these products is extension mapping, which lets you double-click on a DOS file and have it open in a Mac application. Extension mapping looks at the characters after the dot in a DOS filename and assigns invisible four-letter Mac Creator and Type codes to the file. The Creator code Designates the application, such as Microsoft Word, that will launch when you double-click on the file, and the Type code designates the file format, such as text, PICT, or WKS.

This year Apple introduced a similar product with its Macintosh PC Exchange ($79), but I'd say it's too little too late. Macintosh PC Exchange works only with Apple SuperDrives and not with third-party external drives or any type of removable-carridge drive. It doesn't even work with Apple's own 5.25-inch floppy drive. In addition, it requires System 7, whereas DOS Mounter and AccessPC work with both System 6 and System 7. Macintosh PC Exchange's limitations are puzzling when you consider that Apple is delivering some of the strongest platform-correct rhetoric in the industry. It's also strange that Apple waited almost four years after releasing the SuperDrive to release Macintosh PC Exchange. Apple will eventually build this function into the system software, although it could have — and should have — done so long ago.

Heretical Advice

This may be a first for MacUser — perhaps even heresy — but I'm now going to recommend some PC products. That's because reading PC disks on your Mac is just one side of the story. If you're a creator of information rather than a recipient, you may want to enable the PCs in your organization to read Mac floppies. You can do this with inexpensive add-on software or hardware or sometimes both.

MatchMaker ($149), from Micro-Solutions Computer Products (815-756-3411), consists of software and an add-in card that let you connect Mac external floppy drives to a PC. When you run MatchMaker's MAC.COM program, the Mac floppy drive becomes the M drive on the PC. To access it, a PC user adds an M to the beginning of standard DOS commands. MDIR presents a list of folders, or directories in PC lingo, MCOPY copies a Mac file, and so on. MatchMaker displays the entire Mac filename, which can be as long as 32 characters. Without MatchMaker, when Mac files are copied to a DOS volume, their filenames are truncated to follow that annoying DOS filenaming convention: eight characters followed by a three-character extension.

If you don't happen to have extra Mac floppy drives to donate to your PCs, you can use the Deluxe Option Board ($179), from Central Point Software (503-690-8090), an add-in controller board that lets a PC drive read Mac disks when you run the included Macintosh Control software. When you exit from the program, the drive reverts to using the original PC controller board. Unfortunately, several drives — such as models from Mitsubishi and Panasonic — don't work with the Deluxe Option Board, so before you buy it, check with Central Point to make sure it will work with your drive. Both MatchMaker and the Deluxe Option Board can read the standard 800K Mac floppy but not the newer 1.44-megabyte ones.

Two software-only products — Mac-in-DOS ($199 for the DOS version, $249 for the Windows version), from Pacific Micro (415-948-6200), and Mac-to-DOS 3.0 ($179), from PLI (510-657-2211) — can use only 1.44-megabyte floppies. One drawback to using these products is that you can access the Mac disks only from within the software. Of the two, Mac-to-DOS has some advantages and is the better buy. For one thing, it has a basic text editor that lets you write directly to ASCII files on the Mac disk. Also, it can read from, write to, and format Mac SyQuest, Bernoulli, and erasable optical cartridges, particularly useful features for moving large graphics files across platforms. When you have to move such large files, the small size of a floppy disk makes it more useful as a coaster than as a file-transport medium.

Are We PC Yet?

Sharing floppies is a solid first step toward bridging the Mac/PC gap. But don't believe everything the big software vendors say — you may still have to use file translators (the subject of a future column). Still, with the low cost and convenience of floppies, there is no reason that swapping them with PC users shouldn't be as common as having SuperDrives in your office.
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Cost-effective upgrades are quick and simple thanks to Outbound's unique modular design.
Does the world really need another Talking Moose? The Moose's custodian, Baseline Publishing (901-682-9676), is betting that I Like Icon will be the next must-have stupid Mac trick. The program not only provides tools for creating your own custom file icons (no big deal there) but also lets you turn an icon into a QuickTime movie — complete with soundtrack. At least you don't have to wait for the entire animation to complete before a file launches — animation stops when you double-click on the icon. $69.95.

**By James Bradbury**

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**Dark stars:** Ever wonder how toasters learned to fly? Erfert Fenton's *Art of Darkness* (Berkeley, California: Peachpit Press, 1992) not only has a wonderful title but also details all the wacky modules that have been written for Berkeley Systems' After Dark screen saver. The book comes with a disk of exclusive new After Dark modules, from Berkeley Systems, including ProtoToasters (the original demo of Flying Toasters). 510-548-5991. $19.95.

**Performa fodder:** Apple Computer's new Performa 600 CD Macs and their built-in CD-ROM drives won't be starving for discs, based on the number of new multimedia titles appearing. Here are two to keep an eye out for: Sanctuary Woods Multimedia's *The Awesome Adventures of Victor Vector and Yondo: The Vampire's Coffin* is the first in a series of adventure-story games for kids (Yondo's a dog). VV and Y has a comic-book illustration style, which isn't surprising, because the artist, Ken Steacy, has previously drawn *Superman and Spiderman.* 604-380-7582. $59.95.

* From CD-ROM stalwart The Voyager Company, there's *From Alice to Ocean*, a $29.95 CD-ROM by photographer Rick Smolan (best known for the *A Day in the Life of...* series) and Robyn Davidson. The disc chronicles Davidson's trek on foot across the Australian outback. Apple was impressed enough that at press time, it was considering bundling *From Alice to Ocean* with its new CD-ROM-equipped Macs. 310-451-1383.

**The final frontier:** If you're ready to boldly go where no Mac has gone before, there's never been a better time. Start off with a copy of Berkeley Systems' *Star Trek: The Screen Saver*, a set of Trek-inspired After Dark modules. 510-540-5535. $59.95. * Serious Trekkies may already know about Sound Source Unlimited's *Star Trek AudioClips* packages, which let you assign popular sounds from all over the Federation to your Mac's system beeps. Four volumes are available: two from the original show ($59.95 each) and two from "Star Trek: The Next Generation" ($69.95 each). But did you know that you can also now get AudioClips for *2001: A Space Odyssey* ($69.95) and *Star Wars* (price to be set)? All of these are fully licensed and legal, unlike clips that you might download from bulletin boards or record yourself. 805-494-9996. * Finally, no Mac Trek fan would want to be without an official Star Trek (regular or Next Generation) mousepad. They're $16.95 each, from Paradigm Concepts. 800-466-3957.  

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MacUser November 1992
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Home Sweet Office

Thanks to PowerBooks and low-cost Macs, more people than ever are now taking work home — or working exclusively at home. Here's how to make working at home work for you.

By Steven Bobker

Virtually all computer users have an office at home. In the case of a rapidly increasing number of us, our home is our primary work place. For many others, a home office is a necessary part of their job. Even casual Mac users, those people who use their Macs for correspondence, recipes, and bill paying, frequently have an area that could be considered a home office.

A home office is a good idea for anyone who has a computer. The office space protects the computer and other equipment while creating an environment that lets you make the most of your tools. The dining-room table can be OK for casual use, but a dedicated work space is always much better.

A home office doesn’t have to be a separate room, although that’s best. It can be a space along a wall, a niche, or as in some of the more innovative installations I’ve seen, a large closet. There are three defining rules: It must be used exclusively for work (if not, amongst other losses, you lose any tax breaks), you must be able to secure at least some of the area (a lockable drawer or a file cabinet is sometimes sufficient), and you must be able to control the environment (noise, light, ventilation, temperature, and so on) in the area. These are pretty loose rules, and that’s good, because work can be defined in a very wide manner.

The most important thing you need in order to make your home office a productivity center is self-discipline. It’s all too easy not to work enough. I have two neat signs I had made, positioned on my bulletin board where I see them every time I look up. The more important one, especially for free-lancers whose home office is their only office, says, “No work, no money.” Yes, that’s obvious, but all home workers forget it at times.

The second sign appears to be a statement of the freedom of the home office. It says, “Deadlines amuse me.” Deadlines are actually very serious matters, and meeting them can be difficult for home-office workers; in larger offices, supervisors and other people are available to do the reminding.

At home, you need a non-human-based reminder system. The signs are part 1 of my system. They’re a constant reminder to myself that the temptations of the home can overwhelm the requirements of the job at hand.

Part 2 is a good on-screen reminder system, and many programs offer such features. I use AlarmsClock, which was a module of Now Software’s Now Utilities (through version 3). Version 4 doesn’t have it, but it’s available as part of Now Up-to-Date, an excellent scheduling program.

Other good reminder programs are Visionary Software’s First Things First and the $20 shareware program Remember 2.3.2 (it’s available in Library 2 of ZiffNet/Mac’s Download & Support Forum; the filename is REMDA.SEA).

Computers are the most important hardware in an office, so take good care of them.
Get a backup tape or optical-disc drive, and use it faithfully. I use an Archive Python DAT drive, from APS (800-233-7550). I use it often, at least daily and sometimes every hour or so. It's proven to be utterly reliable, and the tapes are inexpensive.

If you live in an area where electricity tends to be unreliable, get a good-sized (at least 300 watts) uninterruptible-power supply. These devices instantly detect power failures and step in before your computer shuts down. They consist mostly of batteries, making them relatively big and heavy. The batteries can power your computer long enough for you to save all open files and do an orderly and safe shutdown. Although the units aren't cheap (good ones cost hundreds of dollars), after you've made one or two saves, they've paid for themselves.

Don't forget to insure your computers and software. Homeowner and renter policies typically offer a computer-equipment rider for a modest additional premium. There are two major drawbacks. The first is that the maximum rider is often limited to $5,000 or $10,000, which isn't much, especially when you add in the value of your software. The second problem is that you may not qualify if your home office is your primary work place. In that case, you'll have to purchase far more expensive commercial-office insurance. An option in both situations is to get a supplemental policy from a computer-specialty insurer such as Safeware (800-848-3469 or 614-262-0559). In any event, your hardware and software should be insured.

Home offices require at least two phone lines. Your regular household line can serve as the first, especially if your home office is not your primary place of business. The second line serves a multitude of purposes and is primarily for the use of your modem and fax machine. You'll find that the most important use of a second line is that it allows you to use your modem at the same time as you are talking on the phone.

Your home office needs a stand-alone fax machine and possibly a copier. Don't be taken in by the claims of vendors of cheap fax machines that they can also act as copiers — the output you'll get is that flimsy, fade-prone fax paper.

Your home office needs a stand-alone fax machine and possibly a copier.

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modem, the results are spectacularly good. Your odds of connecting to such a fax modem are increasing daily but are still low. That'll change in a year or two, though. This year, for the first time, fax modems are expected to outsell stand-alone fax machines. A good stand-alone fax machine costs less than $500 these days. If you want a plain-paper fax machine, the least expensive is HP's adaptation of the DeskWriter (alas, it can't also be used as a printer) at $1,399. The consumables (ink and paper) cost is roughly equivalent to the cost of the cheaper thermal-fax-paper rolls for stand-alone machines. For more on how to buy fax modems, see Shopping List in this issue.

You can buy office supplies locally, but consider Reliable, a nationwide mail-order company. The company ships your order on the same day it's placed for next-day delivery anywhere in the country, charges 99 cents per order for shipping (for orders costing $25 or more), and has great prices. Reliable is great to deal with and will readily put even the smallest accounts on terms. It's an amazing company. Call 800-735-4000 or 312-666-1800 for a catalog.

The table your equipment sits on, the chair you sit on, and the lighting all have an effect on your productivity. Although you can work on a plywood sheet supported by sawhorses, you'll do much better with specialized tables and chairs. The best tables are the fully adjustable Mac-Tables, sold by ScanCo (800-722-6263 or 206-481-5434). ScanCo also offers a nice rolling storage unit and a decent chair. I've bought several of the desks and storage units, and they've held up extraordinarily well while providing great work surfaces.

The best chairs are the ergonomic office chairs sold by BackSaver Products (800-251-2225 or 508-429-5940). Prices of the chairs start at an expensive $695 and go up to $995 for the high-back leather version. They have every possible adjustment and have to be sat in to be believed. It's not just simply comfort — that'd put you to sleep. These chairs provide the proper support and positioning that allows you to work at high efficiency for long stretches. The BackChair that I use is probably the most important item in my office.

The best lighting is either fluorescent or halogen. Each is cooler and more energy efficient than incandescent lighting. No matter what kind of lighting you get, be sure to include shades and fixtures that have as much control as possible. Glare is a serious enemy of computer users. A good, albeit somewhat expensive, source of high-quality fixtures and odd bulbs is Levenger, a mail-order company. You can reach the company at 800-362-0880 or 407-276-2436.

Particularly good for low-cost lighting upgrades are the special halogen-retrofit bulbs sold by Levenger, Brookstone, and others. For less than $10 per fixture, they can convert an ordinary lamp into an excellent halogen lamp.

Pick of the Month

Another month and some more great books. If you're a PowerBook user, you owe it to yourself to read Rich Wolfson's The PowerBook Companion (Menlo Park, California: Addison-Wesley, 1992; 0-201-60884-7; $24.94). It's a superb compendium of tricks, tips, and product advice. Not all the advice is sanctioned by Apple, but all of it is sound. As long as you pay attention to the book's safety precautions, there's no risk — and much to be gained — by following the instructions on upgrading and adding memory on your own. This is one of the best
THE RASTEROPS CORRECTPRINT 300.
ITS OUTPUT IS YOUR INCOME.

THE $8,999* RASTEROPS CORRECTPRINT 300.
The RasterOps CorrectPrint 300 is the truly affordable photorealistic color printer that's as good as gold.
It saves you time and money because you no longer have to send out for color prints. And its beautiful, high-resolution output helps you sell your ideas more successfully.
Whether you use the RasterOps CorrectPrint 300 for presentation overheads, layouts, comps or image retouching, its output will ensure your ideas don't go flat on paper. This high quality color printer is 300 dpi PostScript* language compatible and network ready.
The RasterOps CorrectPrint 300. Things have never looked so good for your business! Call 1.800.SAY.COLOR for the dealer nearest you.

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ONE YEAR EXTENDED WARRANTY!

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Poster Layout

Image Retouching

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Presentation Overhead

THE ART & SCIENCE OF COLOR™

*Memory expansion is required. ©1991 RasterOps Corporation. All brand names and products are trademarks or registered trademarks of their respective holders. PostScript is a trademark of Adobe Systems Incorporated which may be registered in certain jurisdictions.
** Suggested end price. *** Three color ribbon, letter size paper.
Snooper Kit

- Snooper provides truly comprehensive system diagnostic capabilities—everything from power supply and system clock, to the serial, modem and ADB ports are covered. Snooper detects hardware problems and sources of intermittent failures. It performs over 60 major component tests, prints the results, and logs errors. It also does benchmark testing and reports on system configurations to allow technicians to find and fix problems quickly. Includes a Nullus card to check errors even when the screen displays a "Sad Mac.

Publisher: MAXA UTM277

$159

Vocabulare or PICTURE IT!*

- Vocabulare® now available in three levels and Compact Disc. Expand your vocabulary base with thousands of new words and phrases! Vocabulare/e $33ea. Compact Disc $69ea. Full line available.

Publisher: Penton Overseas

$42 ea.

Universal SoftPC 2.5

- Universal SoftPC is the best-selling PC simulation Software for the Macintosh. Includes a basic DIP/AT including all the standard PC features. Universal SoftPC is a software solution designed for running off-the-shelf and customized MS-DOS programs on the Macintosh. COM0108 $195.

Publisher: Insignia Solutions

$299*

Word Finder Plus

- Word Finder Plus helps you find the best words to express your thoughts. Since it's a DBL, it works with almost any Mac application—just not word processors, but also spreadsheets, database managers, page layout programs, and graphics applications. Designed for the modern business user and writer. Word Finder Plus contains over one million synonyms, yet occupies only 250K of disk space. It is handy for creating headlines that fit the space and capture the reader's attention. It helps find the right word or phrase for any text label in a drawing.

Publisher: Microlytics SP0101

$4.5

Optima TM 96 or Optima TM 24*

- Optima TM 96 or Optima TM 24 for the Macintosh. High-speed, high-performance 9600 and 2400 bps modems. Provide the latest error-control and data compression technology for maximum data throughput. In addition to V.32, V.42 data compression, Optima 96 provides 9600 bps throughput and Optima 24 provides 2400 bps throughput. Optima models operate on either modem. Available with or without a modem. Optima 96 $399.

Publisher: Hayes OPTIMA 96 MODE077

$149.

Stickybear's Reading Room

- Stickybear's Reading Room makes reading fun for kids from four to eight. This bilingual learning application lets kids switch between English and Spanish at any time. Reading Room uses many sound effects, stimulating graphics, and verbal reinforcement to entertain and stimulate children as they learn. For example, in the Word Hop game, a special toy cannot "hop" pictures into words, then back into pictures. In the Sentence Builder game, Reading Room reinforces and builds reading ability by animating the sentences kids create. The Word match game asks kids to match pictures with words, and rewards them with sound effects, graphics, and clearly spoken reinforcement. The Word Find game features hundreds of engaging animations.

Publisher: Optimum Resource EDU0055

$35
Encore 2.5 or MusicTime*

Special Offer, FREE Text with purchase of either Encore or MusicTime. 3 Encore lets you play, compose, edit, and print publisher-quality sheet music. Transcribe MIDI files or play music in from your MIDI keyboard. Includes Passport's 'Frets' guitar chord foot and Passport's TrueType music font. Version MUS9004 is $79.95.

MusicTime allows you to play, compose, record, and print out music with your Mac. Records music as you play or create MIDI files and displays it in standard musical notation. Publisher: Passport Designs MUS0105.

$169*

Aldus SuperPaint or Aldus Gallery Effects*

Aldus SuperPaint 3.0

Free time winner of MacWorld magazine's World Class Award. It's a SuperPaint computer program that allows you to enhance drawings, and image enhancement, and includes text in a bit color, textures, gradients, and EPS graphics. GR0012 $135.

Aldus Gallery Effects (1991 MacUser's Editors Choice Award for Best Visual Resource). Aldus Gallery Effects automatically transforms grayscale and color bitmap images into stunning, sophisticated art, with its master effects including graphic Pen, Watercolor, and Oilbrush. Works directly within programs like SuperPaint and Photoshop, or as an application or filter. Publisher: Aldus GR0027

$129*

AutoDoubler

AutoDoubler is the easiest way to increase your hard disk capacity. It works in the background to automatically keep your hard disk compressed. It's lightning fast and completely transparent, so it won't interrupt your work. In fact, AutoDoubler's new patent pending technology lets your Macintosh use files and applications while they are still compressed! It's fully compatible with almost all applications, disk accessories, and system extensions. UTO025 is $49.

DiskDoubler 3.7

DiskDoubler gives you total control of file compression archiving for modern transfer, compressed backups, self-extracting files, and fast copying of files. AutoDoubler and DiskDoubler combined give you the ultimate in speed, convenience, and control. System 7 Save! Publisher: Salient UTO179

$49
Alarming Events

- Make your Mac wear your beeper! Alarming Events™ is the personal appointments and schedule manager that not only keeps your schedule, but keeps you ahead of it. Specify the advance warning you need, and your Mac will beep, whistle, flash, or bark as you prefer. View a day, week, or month at a time — you decide! Print your schedule, or just parts of it, when you’re on the move. Keep as many appointment books as you need, and store them on your server for convenient group access. You can even create a “to do” list that can follow you from day to day. It’s true time management with all the bells and whistles! BUS0135

$84

Effects Specialist or Layouts*

- Effects Specialist - Fire-Up Your Fonts! Don’t settle for bland fonts. Get 120 spectacular effects, modifiable 1,000’s of ways! Easily transformed from Postscript, bmp, or True Type fonts. Export as EPS or PICT. Use with any DTP, drawing, WP or paint program. Kerning, color steps and lots more! Powerful, easy to use. TPT0902 $99. Layouts - Punch up your Creativity! Postscript’s award-winning Layouts; professionally-designed page-layout templates for PageMaker. A fascinating variety of camera-ready B&W and color designs; 55 Brochures, 14 Newsletters, 32 Business cards, 38 Letterheads, 48 Envelopes and 2 business-reply cards. Customize with your own copy, fonts, and graphics. Output to any printer. All templates have crop, registration, and fold/score marks. Publisher: Postscript International TPT0063

$75*

Sprout!

- Sprout! is a complete computer planning tool for vegetable gardeners. Its unique planting tool snap to correct row and plant spacing and automatically fills in plant symbols, producing a graphic, scalable garden plan. In addition, Sprout contains a fully editable database of vegetables for 7 climate regions containing planting and harvesting times, yields, soil PH, growing tips, and other information. Standard test and drawing tools are included allowing users to create their own vegetable symbols and customize garden designs. Sprout prints out garden layouts, calendars, shopping lists, and reports. Publisher: Abracadata GRU0399

$45

Sprout! 1.1 was named “best name and address database” for the Mac® by MacUser Magazine; 4814 (4.5 Mac rating). New Sprout! 1.1 is even better. Version 2.0 adds an integrated reminder program, sorting, list view, phone books, fax cover sheets and much more. Sprout! stores unlimited names, addresses, phone numbers and notes. The reminder program will notify you about important meetings or phone calls — it will even find the contact’s number and dial it automatically. Sort your contacts into groups for easy printing of address books, mailing labels or envelopes. Store contact with the lightning fast Sprout! address book. Publisher: Advanced Software

Also available: DocumComp TPT0081 $99, and Sprout 2.0 Network Pack TPT0210 $109.

InTouch 2.0

- InTouch 2.0 is even better. Version 2.0 adds an integrated reminder program, sorting, list view, phone books, fax cover sheets and much more. InTouch stores unlimited names, addresses, phone numbers and notes. The reminder program will notify you about important meetings or phone calls — it will even find the contact’s number and dial it automatically. Sort your contacts into groups for easy printing of address books, mailing labels or envelopes. Store contact with the lightning fast InTouch address book. Publisher: Advanced Software

InTouch 2.0 Network Pack TPT0210 $109

$59

InTouch 2.0

FileGuard

- It’s about as much software-based security as you can get in one package!” MacUser, March 1992. Protect your hard drive from unauthorized access (including security bypass with a system diskette), copying and erasure; applications and folders (including System Folder); from unauthorized access, deletion, and/or illegal copying. Protect your desktop from alterations by unauthorized user. Keep an eye on System usage with FileGuard’s Users Log which continuously tracks user/group activity. Spaces 7.0 Compatible. Publisher: ASD Software

Single

UT0155

$139

DateBook 2.0 or Grail Quest*

- DateBook 2.0 stores information about personal and business contacts. Automatically capitalizes words and formats phone numbers. It has fields for storing alternative phone numbers, and you can customize the fields. DateBook prints envelopes and mailing labels, including postbar codes, plus many other useful features. DAT0076

Publisher: After Hours Software

Datebook BUS0222

$79 ea.

Bridge 6.0 or Grail Quest*

- Bridge 6.0 supplies three players and uses Standard Americans 5-card Major (designed with Newman and Blackwood conventions. The program keeps score, deals openings hands at your request and more. ENTT035 $29.

Grail Quest uses the Mac’s sounds and graphics to put you inside the world of King Arthur’s England. Best of all, its well-crafted plot and authentic settings are based on authentic tales of time by Geoffrey of Monmouth and Sir Thomas Malory. Publisher: Artwork

Grail Quest ENTT0262

$19*
MacEK 2.0

- MacEK can save you of computer failure BEFORE it happens. EK monitors over 250 aspects of your system logging and notifying results each time you reboot. EK features advanced chips that are not available in Authorized Apple Technical assistance until now. Using EK's Reactor to continuously reboot simulates several days of heavy use to quickly diagnose intermittent failures. EK can automatically run at startup or shutdown making sure you are the first to know if your computer has failed a test or slowed down.

Publisher: MicroMat UTH0265

$99

MacPrint 1.3

- Use a Macintosh with non-Apple printers. Print Mac applications on HP LaserJet, Deskjet or compatible printers including all Series IIs, IIIs and the Deskjet 500. Print text and graphics at the printer's maximum resolution. Does not require PostScript. Cable is included.

Publisher: Insight Development

$95

Virtus WalkThrough 1.11

- The latest version of this award winning 3-D drawing program provides everything you need to quickly capture and explore your ideas in 3-D. Multiple windows and extensive drawing aids provide an interactive environment for editing and viewing your ideas. Interactive 3-D presentations, QuickTime® and PICT animated roots and perspective pictures delighted our audience. Enhances viewport of 3-D DXF, PICT, EPS, CGM and MacDraw, and exports of 3-D DXF, 2-D DXF, GlareEOD, MacDraw, PICT and EPS. Winner of MacUser Breakthrough Product of the Year Award 1990.

Publisher: Virtus Corporation GRA0178

$309

Infini-D 2.0

- Create dazzling images with the power of Infini-D's Three-dimensional environment. The easy-to-use Infini-D now in an awesome second generation! Infini-D 1.0 was the package that brought 3D graphics to the rest of us. Infini-D 2.0 combines this friendly interface with stuning 3D power. Infini-D's incredible new shade and renderer now can render scenes up to 500 faster. Instant conversion of EPS files into 3D objects. Infini-D's awesome metamorphosis capabilities, precise PICT mapping, control, and extensive QuickTime support make Infini-D 2.0 the 3D package of choice for graphic artists and multimedia professionals.

Publisher: Specular International GRA0303

$645

MacPrint Professional

- DeltaGraph Professional is an easy-to-use, yet comprehensive presentation charting solution, presenting 8 different chart types and 80 styles, as well as full slide show capabilities. From standard pie, bar and line charts, to ternary, spider and bubble charts. DeltaGraph Professional covers the full spectrum of business and scientific charting needs. The product features complete formatting control, extensive data importing and pre-formatted chart templates and clip art library. DeltaGraph's slide mode module enables users to customize presentations with 52 different transitions and to create run-time versions for playback with MacDraw. Special offer- October 1, through January 31, 1993 get a Texas Instruments 68 scientific calculator FREE! (551 value) included in the box.

Publisher: Delmic

$199

Font Fun House

- Font Fun House is a fully scalable CD-ROM with hundreds of fonts for use on Macintosh and IBM compatible computer. The disc contains shareware and freeware fonts in TrueType or Type One PostScript (ATM) formats. Also includes the Macintosh screen font libraries of both Adobe and Meta, fonts. They can be used to see the fonts available and get a feel for how the fonts look. Over 1/2 of the fonts on the disc are FREEWARE!

Publisher: Wayzata Technology

$35

ClickArt Bitmapped Portfolios

- The ClickArt® series is a collection of high-quality computer art for enhancing all types of deskiple documents. The bitmap graphic collection includes eight different palettes, each containing hundreds of images. With so many images to choose from, you'll always be able to find the right image to add excitement and style to your overheads, newsletters, flyers, menus, and other publications. And if you want to add a touch of humor, you'll find the perfect image in the three cartoon portfolios from award-winning cartoonist Paul Frank! The ClickArt® bitmapped collection includes: Business Cartoons, Christian Images, Events & Holiday Cartoons, Personal Graphics, Business Images, Holidays, Newsletter Cartoons and Publications.

Publisher: T/Maker

$39.99
POWER USER SIMMS ONLY $39*

A Power User Memory Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable overnight service will have your Kit in your hands tomorrow!

MORt BRAIN POWER FOR YOUR MAC

Never again will you have to quit your word processor just to answer a question about a spreadsheet. Install extra memory and you can leave a letter open while you refer to last month’s sales figures.

You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

PLUG IN INSTALLATION

Adding memory doesn’t require technicians in lab coats. You’ll find installation at home easy when you follow our FREE** step-by-step installation video instructions. Just open your Mac, slide out the main circuit board and plug in your SIMMs.

WHAT DO I NEED?

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs — (2 @ $39 ea.)

The chart explains exactly what you need to achieve the desired level of performance.

To open your Mac Plus, SE, and Classics you’ll need a specially designed tool — it’s available from us as part of a handy tool kit for just $9.95.

WHAT YOU NEED TO KNOW

Memory chips come factory-installed in plug-in cards, called SIMMs (Single Inline Memory Modules). Each one megabyte SIMMs card holds eight bits quality.

<table>
<thead>
<tr>
<th>Memory Upgrade</th>
<th>Required SIMMs</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Megabyte Mac Plus or SE</td>
<td>1 M1MB, 1 M1MB</td>
</tr>
<tr>
<td>2-Megabyte Classic II or LC</td>
<td>1 M1MB, 1 M1MB</td>
</tr>
<tr>
<td>8-Megabyte Classic II or LC</td>
<td>1 M1MB, 1 M1MB</td>
</tr>
<tr>
<td>4-Megabyte Mac II, III, IV, HCI, IIC or SE/30</td>
<td>2 M1MB, 4 M1MB</td>
</tr>
<tr>
<td>1-Megabyte Mac II</td>
<td>1 M1MB, 1 M1MB</td>
</tr>
<tr>
<td>8-Megabyte Mac II, III, IV, HCI, IIC or SE/30</td>
<td>2 M1MB, 4 M1MB</td>
</tr>
</tbody>
</table>

SPEED

Do you need 80, 100 or 120 Nanosecond (ns) chips? Nanoseconds are billions of a second, so an 80 ns chip responds faster than a 100ns chip. The original Mac used relatively slow 150ns memory chips. The 68020 processor needs 120ns (or faster) chip, and the 68030 Mac like the speedier model.

OVERNIGHT DELIVERY

Install a MacWarehouse Expansion Kit and working with your Mac will never be the same! Call us now. We’ll help you select just the right Memory Upgrade, and we’ll ship it overnight for just $3.

MacWAREHOUSE

1-800-255-6227

Overnight Delivery Only $3.00!

Call 24 hours a day, 7 days a week

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MACWAREHOUSE

30-DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your Power User Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return this product, postage paid, in its original condition, with the original packaging and documentation.

ONE YEAR WARRANTY

MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.

*SIMM prices vary. Call for latest information. **Limited offer. Free video with purchase of 2 or more SIMMs.

CIRCLE 156 ON READER SERVICE CARD.
computer books of the year.

Nearly as good and a lot more fun is *Cool Mac Sounds*, by Craig O'Donnell (Carmel, Indiana: Hayden, 1992, 0-672-48523-0; $19.95). This book details the whys and wherefores of all aspects of sound (clips and voices — not music) on your Mac. It has decent sections on MIDI and other high-quality sound, but most of this book mixes practical and fun uses of short sounds. It’s greatly enhanced by an included disk called *The Cool Sounds*.

This high-density disk (you need a SuperDrive to use it) holds more than 2.2 uncompressed megabytes of sound players, editors, and neat sounds — including the infamous MacPuke. No other product can help you add the sound dimension to your computer better or more easily.

**An Initial Easter Egg**

System 7 is just riddled with small and usually cute Easter eggs. François Grieu, of Paris, France, has found what might well be the oddest of the bunch.

When System 7 was being created, substantial revisions were made to HFS (Hierarchical File System, which holds all your data in an organized but reasonably easy-to-use way. The creators of this latest version, it seems, wanted to sign their work.

To see their signatures, do the following. Insert any disk, and rename it to KMEG JJ KS (you must be exact — eight capital letters and two spaces, with no leading or trailing spaces). Next, eject the disk, using Command-E, so you leave a grayed-out image of it on the desktop. In many cases, the Mac will immediately request that you reinsert the disk. Take a good look at that request dialog box; it’s not quite normal. If the request dialog box doesn’t appear immediately, you can force it to appear by double-clicking on the grayed-out icon of KMEG JJ KS.

The question for this month’s Easter-egg quiz is, Who are DNF and KSCT? For extra credit, what does the name of the disk mean? 🎨

Once upon a time, Steven Bobker edited *MacUser*. These days, he runs the *MacUser* Forum on ZiffNet/Mac and searches the world for Easter eggs. You can reach him on ZiffNet/Mac at 72511,45.
Finally, a computer information service you can’t outgrow.
No matter how hard you try.

No matter what you’re into, you can get more out of CompuServe.
You can range widely over a list of services that will help you, entertain you, teach you, and challenge you. Or delve deeply into your favorite topics, learning (or even teaching) more, meeting experts, and making friends with people who share your interests.
CompuServe lets you do everything from keeping in touch with our communication services, to getting advice from online hardware and software experts. It’s the one computer information service you won’t outgrow.
But you will have a good time trying.

For a low one-time membership fee and $7.95 a month, you can use our most popular services as often as you like: news, sports, weather, shopping, reference materials, our electronic mail service of up to 60 messages a month, and more. Plus, there’s a whole universe of other, extended options available at nominal additional charges. Your first month on CompuServe will be free, and we’ll give you a $25 usage credit to explore our extended services.
To buy a CompuServe Membership Kit, see your computer dealer. For more information, or to order direct, call 800 848-8199 (614 457-0802 for international inquiries).

CompuServe®
The information service you won’t outgrow.
How to be neat, precise and organized.

Without becoming one of those obnoxious people who are neat, precise and organized.
Now Up-to-Date lets you schedule appointments and To Do’s instantly — just click on the date you want and enter your information. Calendars can be viewed by day, multi-day, week, month or year, and can be customized in a myriad of fonts, styles and colors. You can even share schedules and events with your associates over a network or via modem.

The To Do list lets you schedule tasks for certain due dates or simply for whenever you get around to them. It also allows you to prioritize tasks and automatically forwards them on to the next day’s To Do list until each task is completed.

As well as displaying the current time in the menu bar, AlarmsClock automatically alerts you and your associates of upcoming meetings, To Do’s and other events (including recurring events). Even when you’re not running Now Up-to-Date.

Calendars can be printed in all the major appointment book sizes and formats, each in a wide variety of views and styles. You can even print out wall charts up to 34" x 44".

**Step 1.** Load Now Up-to-Date 2.0, the software that lets you schedule events, set reminders, manage To Do lists, print calendars and keep your associates informed, allowing you to become amazingly organized without becoming obnoxious.

**Step 2.** Notice how incredibly simple Now Up-to-Date is to use. Totally customizable. 100% non-fascist. Lets you display calendars and events any way you want them. Just click on a date, enter the info, bang, you’re done.

Want to change it to a different date? Drag it there. That’s it. Want it to show up on the first Thursday of every month until the year 2035? Click once. You’ve got it.

**Step 3.** Think to yourself, “Wow, calendar software that’s actually faster and easier than the old pen and appointment book approach. Amazing.” Hey, we like the way you think.

**Step 4.** Read all the details up there in the captions that we couldn’t fit down here. Thanks.

**Step 5.** If you’re on a network, share events on your calendar with the other folks on your network. They’ll no doubt return the favor, sharing meeting dates and whatnot with you. You say you’re not on a network? That’s okay, Now Up-to-Date works fine all by itself. Plus, you won’t have to go to all those other people’s boring meetings.

**Step 6.** Fly to Zimbabwe. Okay, now bring up your calendar on your PowerBook. Good. Now completely discombobulate the thing. Change it all around. Great. Now connect to your office via modem. Presto! All your calendars automatically update themselves.

**Step 7.** Pick up Now Up-to-Date 2.0. Or, for more info, give us a call at 1-800-237-3611.

**Step 8.** Quit goofing off reading software ads and get back to work. You’ve got a lot of stuff to do.
Kensington introduces two new products for PowerBook® computers.

**Kensington NoteBook KeyPad**
Want to add full keyboard performance to your PowerBook? Want to enter numbers fast and accurately?

The Kensington NoteBook KeyPad is the answer.
Features include a calculator-style layout, mathematical function keys and an oversized Enter key. All keys are full-size. We even added the “5 Dot Home Key” for touch users.

What’s more, 15 additional Function keys help reduce keystrokes and enable VAX/mainframe communication.

The Kensington NoteBook KeyPad has a small footprint, weighs just under 9 oz., plugs into any ADB port and is System 7 compatible.

**Kensington NoteBook Traveler™**
Here’s a traveling case that is rugged, yet light-weight. Stylish, yet functional. Best of all, the NoteBook Traveler is designed just for the PowerBook.

Features include an outer shell of 1000-denier high density nylon, water-resistant coating, padded computer compartment, rivet-reinforced padded handle, removable shoulder strap, reinforced webbing and a self-repairing zipper.

The Deluxe version includes an additional full length 11” x 14” zippered compartment for papers and manuals, numerous pockets for spare battery/disk storage, plus a quick access outside pocket.

**Always, a part of your system.**
As one of the first Apple Developers, Kensington works closely with Apple to insure quality and compatibility in both function and design.

For more information, call 800-535-4242.
Outside the US, 415-572-2700. For information by fax, call 800-535-4242 and enter 82.
Managing Power

By Henry Bortman

Don't believe what Apple tells you about PowerBook battery life; two to three hours under normal usage. Yeah, right. I'm lucky if I get an hour and a half.

I've read all the tips and hints about how to squeeze an extra minute or two out of my batteries. Turn the screen brightness down as much as you can stand to. Check. When I'm not plugged in, I turn the brightness down as far as it will go without turning it off. I even got a copy of Backlight Control, a freeware utility from Ricardo Batista at Apple that turns the backlight off when it's not in use and turns it back on as soon as you move the mouse.

Don't let the hard disk spin needlessly. Check. I set the drive to spin down after about two minutes of being idle. Of course, whenever it spins down, the next thing I do causes it to spin up again. Especially when I'm using Microsoft Word. Anything you do in Microsoft Word makes an idle drive spin up. Pressing a cursor-control key — the kind of thing people have been known to do occasionally when word processing — makes the drive spin up in Word.

Put the CPU to sleep when you're not working. Check. It's always napping — sometimes I get envious. And then, every time it wakes up, I have to wait while it spins up the hard drive (don't ask me why; half the time, I'm not trying to do anything that requires the hard drive), turns on AppleTalk (never mind that I might not even be plugged in to a network), and who knows what else. All this, naturally, drains the battery, stealing precious minutes from my productive life.

But does any of this do any good? I suppose so. But it sure doesn't get me two to three hours per battery. It probably gets me up from 45 minutes to an hour and a quarter. I've considered the possibility that my batteries are just lemons. Other people seem to get more life out of their batteries. (At least they claim to. I'm not sure they're any more reliable as sources than Apple's marketing department.)

And then — this really annoys me — every time my battery runs down, I have to shut down my PowerBook, change the battery, and restart the machine, which, of course, means a bunch of disk-drive churning just to get the system booted. And then, if I had some elaborate set of applications and documents open, I have to go back and re-create my work environment from scratch. More disk-drive churning. All of which means that before I can even get back to work, I've lost several minutes' worth of charge. Can someone please tell me why Apple could afford to stick a tiny backup battery, which keeps the contents of RAM intact while you change primary batteries, into the PowerBook 100 but was too cheap to stick one into the 140 (not to mention the new 145) and the 170?

Battery Management

Fortunately, there are some new utility packages for the PowerBook that alleviate some of these problems: the $99 Connectix PowerBook

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Utilities (CPU), from Connectix (415-571-5100); the $99 Guy's Utilities for Macintosh — PowerBook Edition (GUM-P), from After Hours (818-780-2220); and PowerBoost, from Baseline (901-682-9676). (The price of PowerBoost was not set as we went to press but is expected to be less than $150.)

At press time, only CPU was shipping; GUM-P and PowerBoost were in the late-alpha/early-beta-testing stage. Although they should be shipping by the time you read this, their interfaces and even their features may be different in the shipping versions than in the versions I saw. A fourth company, ALSoft, was reportedly working on a PowerBook utility package but wasn't quite ready to lift the veil of secrecy in time for me to include it in this article. (I guess you'll have to read about it in MacWEEK.)

All three of these utilities provide varying degrees of control over power-management factors such as backlighting control, hard-drive spin-down, and CPU sleep. CPU and PowerBoost provide two sets of controls, one for when your PowerBook is running off your battery and needs to be more energy-efficient and a separate set for when your PowerBook is plugged in to an AC outlet and you don't need to be so cautious.

Having two sets of controls is handy. Apple provides only one set, which is usually configured so that the PowerBook uses as little energy as possible when it's running off the battery. But when you've got your PowerBook plugged in to AC power, it's annoying to have the CPU go to sleep or the hard drive spin down unnecessarily all the time.

GUM-P's Battery Saver module is even more elaborate than CPU's and PowerBoost's battery savers. It has three basic settings: Battery, Low Battery, and AC. In addition, it lets you customize settings for specific applications. For example, if you are using an application you know can fit entirely in RAM and won't require the use of the hard drive except for when you save your documents, you can set the time until the hard drive spins down to the shortest interval, saving yourself a little battery life.

CPU lets you create different sets of controls too, but for different working conditions — such as in the office or on an airplane — rather than for different applications. And it lets you store many such sets, each for a different user, which is useful if several people share a PowerBook. You can call up any of these configurations on the fly.

None of the three products, however,
provides software controls that let you set the brightness on the PowerBook’s backlight. Because Apple engineers have cautioned users that turning down their backlights to the minimum acceptable setting is the most effective way to reduce battery power drain, this lack of brightness control seems a curious omission. Sure, you can still control the brightness manually. But I would prefer to see a full set of battery-management controls all in one place.

Another feature missing from all three products is integrated support for switching between the 16- and 25-megahertz modes on the PowerBooks 145 and 170. CPU has a menu-bar indicator that tells you, among other useful things, which mode you are currently operating in, but it doesn’t give you any way to switch. Because the slower clock speed uses significantly less power than the faster one, I run at 16 megahertz when I’m using the battery and at 25 megahertz when I’m plugged in to AC power. I’d like to see a dialog box pop up whenever I change from battery to AC (or vice versa), asking me if I want to switch to the appropriate clock speed. (Making this switch, unlike changing minutes-to-sleep or minutes-to-drive-spin-down, requires a system re-start, but I’d still like to be prompted automatically and given the option.)

**File Synchronization**

GUM-P and PowerBoost each offer file synchronization; CPU doesn’t (for more on file synchronization, see Mobile Mac, October ’92, page 261). Many people who use PowerBooks also use a desktop machine. A problem that arises when they move files back and forth between two machines is that different versions of the files are created in the two locations. Such a situation can be deadly. File synchronization simplifies the process of maintaining identical copies of traveling files on both machines.

GUM-P’s InSych module is a particularly elegant implementation of this function. Most file-synchronization utilities require that you organize your file structure to group files and folders that you want synchronized. InSych takes a different approach: It creates a folder on the desktop of your PowerBook into which you can place aliases of files and folders you want synchronized with those on another machine. InSych then synchronizes the selected files and folders while leaving them in their original locations.

**Turn On, Tune In, Lock Out**

Each program offers various other functions as well: security. AppleTalk controls, alternative cursors, menu-bar displays showing remaining battery life, and so on.

Security prevents unauthorized users from restarting or waking up your PowerBook unless they have a password. CPU offers an alternative form of security as well: It lets you install a screen image and select a specific pixel that a user must click on to power up. The AppleTalk controls are designed to do two things: reduce the wait at wake-up time associated with reconnecting to AppleTalk and

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reduce the amount of energy expended by the system when it is maintaining an AppleTalk connection. GUM-P appears to have the most extensive AppleTalk-management function. Alternative cursors, such as fat I-beam text cursors, make it easier to see where your cursor is on the screen. CPU also provides a special cursor to indicate when your hard drive is spinning up or down.

And as for menu-bar displays that show remaining battery life, the only one I'd seen at press time was CPU's. The basic idea is to give you a more realistic assessment than does Apple's Battery DA of how much juice, and therefore time, you have left in your battery. It doesn't take much of an effort to outdo Apple here. But all three PowerBook-utility companies claim to have "intelligent" algorithms — some call them "semi-intelligent" — that watch how you use your PowerBook and accordingly adjust their assessments of how long you can expect to keep working before the dreaded Good Night message graces your screen. I'm only somewhat comforted by CPU's confirmation of what I had suspected all along: that even when my battery is fully charged, I can expect only an hour and a half of PowerBook use before I have to shut down and switch batteries. And I still think it's exaggerating.

As with all software categories, these publishers will no doubt rush to include in their 1.1 releases the features that their competitors put into their initial offerings. But although these products will certainly improve with time, they will probably not do what I want any time soon. So, for the record, here is my fantasy of what a PowerBook utility should do.

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To start with, when I'm in my office, I want to leave my drive spun up. I want my backlight all the way up. I want a full set of my favorite control panels and extensions, I want to run at 25 megahertz. I don't care about a RAM disk, and I want to have my favorite AppleShare volumes mounted on my desktop and my favorite printer chosen as the default. If, however, I'm on an airplane, I want the backlight down to minimum (but not off), I want the hard drive to spin down quickly, I
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d don’t want AppleTalk on at all, I want a minimum set of control panels and extensions. I want to run at 16 megalertz, and I want a RAM disk loaded with Word and Excel. You get the idea. Now, is that too much to ask?

Mobile Hack
Several freeware and shareware hacks are available that perform functions similar to the ones included in the commercial packages I’ve described. Many of them — CellMate, SpinD, SafeSleep, and others — were listed in “This Month on ZifNet/Mac,” September ’92, page 287. One of my favorite PowerBook hacks, however, has nothing to do with the issues discussed in this column. It’s called PowerBook Pixels (it’s available on ZifNet/Mac in the Download and Support Forum, filename PBPIXL.CPT). It comprises two utilities, Darker! and PixelShootout, which are designed to get Apple to replace the active-matrix screen on your PowerBook 170 if you have even

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Pixel Shootout is more nefarious: It’s a system extension that randomly and permanently turns off five pixels to make them appear dead, so that you can fool a dealer into believing that you are due a replacement screen.

one dead pixel (Apple’s policy is to replace the screen only if five or more pixels are dead). Darker! blacks out your screen to let you see how many bad pixels you actually have.

Pixel Shootout is more nefarious: It’s a system extension that randomly and permanently turns off five pixels to make them appear dead, so that you can fool a dealer into believing that you are due a replacement screen. Because the extension permanently alters your system, the only way to bring the dead pixels back to life is to reinstall your system software from scratch. Of course, a savvy dealer need only boot the PowerBook from a floppy disk to determine whether or not the pixels are playing possum.

Now, don’t get the idea that I’m recommending using Pixel Shootout. I’m just letting you know what’s out there. But it’s a sad commentary on the dead-pixel roulette that Apple forces on PowerBook 170 purchasers that someone has gone to this much trouble to circumvent the official policy.

If you’ve got a favorite PowerBook hack, give me a call at MacUser.

Henry Hartman is MacUser’s technical director.


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Fax Modems

Confused about modem specs? You're not alone. A modem's data-transfer rate is given in bps, or bits per second. You can also tell a modem's speed by the CCITT (Comité Consultatif International de Télégraphie et Téléphonie) standards it supports. The bottom line is to look for a modem that's capable of fast data transmission, preferably with a data-transmission rate of 14.4 Kbps (the CCITT's V.32bis rating) and V.42bis data compression and V.42 error control; for fax transmissions, look for the CCITT V.17 rating (14.4 Kbps) for both sending and receiving. At today's prices, it doesn't pay to go below 9,600 bps for either data or fax transmissions.

Although few fax machines operate at 14.4 Kbps now, it's still worth buying a high-speed fax modem — within a year, more machines will operate at the higher speed, and in the meantime, your modem's software will automatically slow the transmission speed down to match older devices.

Read the description of what the modem does very carefully — ads can be very misleading. Fax modems may have different speeds for fax and data transmissions, but this information is seldom clearly explained. For example, a modem that can send a fax at 9,600 bps may transmit data at only 2,400 bps, or the modem may have a fax sending speed of 9,600 bps and a fax receiving speed of only 4,800 bps.

If you'll be using AppleTalk Remote Access (ARA) — and if you're seriously thinking of telecommuting, ARA is essential — you need a modem capable of data transmission at 9,600 bps; 14.4 Kbps is even better.

ARA lets you connect to your office network, using a modem. You then have access to servers, printers, and desktop Macs that have been made available via System 7's file-sharing capabilities. If you'll be using ARA, make sure the modem has a CCL (connection control language) file for ARA — not all do. A CCL file contains the sequence of commands that the software needs to establish connection with the modem at the other end.

Send-only fax modems are slightly less expensive than modems that can also receive faxes, but unless you already have a fax machine and know that you will never want to use your modem to receive faxes, you may as well pay a little extra for the ability to receive them too.

If you'll be faxing from your PowerBook, an internal modem is a must. Although an internal modem is more expensive than most external models, the ease of use of a built-in fax modem makes it well worth the extra cost.

Another benefit is that you don't have to carry around a printer: Simply dial a fax machine, and let it print out your files.

A fax modem receives a fax as a graphic, not as editable text. To convert the fax to text, you must scan it, using OCR (optical character recognition) software. This process will become easier with forthcoming OCR fax software from Calera and Stf Technologies that will automatically convert faxes to editable text.

Look for products that use enveloping, a technique that lets you place several fax-formatted files in an envelope to be sent as a single fax transmission.

For good-quality text when sending faxes, make sure you have ATM installed or use a non-PostScript rasterizer such as Freedom of Press.

If possible, test a few fax modems (using documents that combine text and graphics) before making a buying decision. Modems differ widely in the quality of the graphics they produce, and testing is the only way to be sure you're getting the best.

For the ultimate in convenience, you can get fax modems that can manage your voice mail. The modem digitizes phone messages and stores them on your Mac's hard drive.

By Victoria von Biel
If you're getting too much attention, MacTools 2.0 can help. It protects and repairs data automatically, so you don't have to.

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By Victoria von Biel

**Palette-able:** Move over HAND-Off II (and DiskTools, Tiles, HAM, On Cue, and Now Utilities), there’s yet another file launcher on the market. Square One, from PBM (as in Please Buy My) Software, arranges your frequently used applications and related documents into a palette that you can place anywhere on your screen. Written by TouchBASE author Jud Spencer, Square One’s best feature is the speed with which you can get it running. It scans your hard disk for all applications (or all documents created by a particular application), so all you have to do is select the files you want to add to the palette. After you’ve configured the program, go to About Square One on the Apple menu — the credits read like an *Oscar-acceptance speech* and contain some pretty good restaurant picks. 415-508-1536. $59.

**Makin’ copies:** Talking about fixing the Finder, there are now a couple of products that replace the Finder’s copy function, making copying files a lot easier and faster. CopyDoubler, from Fifth Generation Systems, is a neat little utility that copies twice as fast as the Finder and also makes emptying the Trash a breeze (it lets you trash locked files). At the moment, it’s packaged with the compression program AutoDoubler 2.0 (which Fifth Generation recently bought from Salient), but look for a stand-alone version soon. 800-873-4384 or 504-291-7221. $99.95. * CSG Technologies’ CopyRight ($49) lets you copy files and folders in the background and still do such things as launch applications and delete files. Even better, you can simultaneously copy several files to different destinations. CopyRight Pro ($79) lets you copy files and folders at designated times, for backup. 800-366-4622 or 412-471-7170.

**Power play:** PowerBooks are great, but the battery’s a joke, right? Recognizing a good opportunity when it sees one, Battery Technology has produced the MC-170, a replacement for Apple’s battery pack that you can use with the PowerBook 140 and 170 and that gives you a little more operating time before you get that “You are now running on reserve power” message. Battery Technology claims that the MC-170 lasts 25-percent longer than Apple’s battery pack. The MC-170 also has a hard-plastic cover for the contacts, which helps keep the plates from getting dirty. 213-725-3517. $89.95.
A few months ago, PC owners were alerted to the imminent arrival of the Michelangelo virus, which threatened to trash electronic files. On that occasion, Mac users could rest easy, because Michelangelo struck only IBM PCs and clones. Macs aren't always immune from viruses, however. On Friday, November 13, 1992, the INIT 1984 virus was scheduled to strike. INIT 1984 is similar to the Michelangelo virus in that it can change the names and attributes of files and folders and ultimately destroy them. As its name implies, the INIT 1984 virus infects only system extensions; it spreads from extension to extension at startup.

A computer virus is a deliberately planted program or part of a program that invades a host computer. In most cases, the code has been altered and you don't realize your Mac has been infected until it's too late. A Mac can "catch" a virus from an infected floppy disk, a file downloaded from an online service or BBS (bulletin-board service), or an infected file transferred over a network. In some cases — although this is very rare — a virus can be spread from one infected machine to another. A Mac can also be infected by a Trojan horse, a deliberately planted program or part of a program that invades a host computer. In most cases, the code has been altered and you don't realize your Mac has been infected until it's too late. A Mac can "catch" a virus from an infected floppy disk, a file downloaded from an online service or BBS (bulletin-board service), or an infected file transferred over a network. In some cases — although this is very rare — a virus can be spread from one infected machine to another.

Install Virus-Detection Software

The best insurance against viruses is to install a virus-detection and protection utility. These extensions scan your system either automatically or at user-specified times. They alert you to the presence of a virus and eradicate it if possible. Several antiviral utilities are available. Of the commercial products, the major players are SAM ($99; upgrades, $12), from Symantec (408-253-9600); Virox ($69.95; upgrades, $15; annual subscription, $75), from Microcom (919-490-1277); and Anti-Virus, which is part of MacTools 2.0 ($149), from Central Point Software (503-690-8090). Some of the freeware and shareware utilities that are available from online services and user groups include Disinfectant (free), GateKeeper (free), VirusBlockade (shareware, $70), and VirusDetective (shareware, $40). Each of these programs can detect and eradicate the most common viruses, and they're upgraded immediately as new viruses appear.

Beware of BBSs

Large online services (CompuServe and America Online, for example) generally screen for viruses and Trojan horses, but that doesn't let you off the hook. Viruses can slip through the safety net, and on small BBSs, they may never be detected. Always treat downloaded files as potentially infected: Scan them with a virus-detection utility before you use them.

Online services can help you fight viruses, however. MacUser's online service, ZiffNet/Mac, includes a library of antiviral utilities in its Download & Support Forum.

Check Your System Software

Apple designed System 7 to make it immune to two of the most bothersome viruses: WDEF and CDEF, which affect the invisible Desktop files. If you're still running System 6 or earlier, your Mac is vulnerable to these infections. System 7 is vulnerable to other viruses.
commercial software product can be a carrier.

The idea of having your computer's files destroyed is frightening, but in fact viruses seldom strike (see the "Suspicious Behavior" sidebar for more-likely culprits when your Mac acts up). Nonetheless, it makes sense to protect your computer from viruses, and if you take precautions such as the ones described below, you can almost guarantee that you'll stay virus-free.

Michele Hasson is a MacUser assistant editor.

**Protect Your Disks**

You can avoid spreading viruses from your hard disk to your application master disks by always write-protecting them before they're used. Write-protecting a disk means that it can't be changed, written to, or erased. To write-protect a disk, simply push up the little plastic tab in the upper right corner of the disk so that you can see through the hole. You can protect applications on your hard disk by locking them in the Get Info box (highlight the application's icon and then press Command-I).

---

**Suspicious Behavior**

What exactly does a virus do to your Mac? It can produce a strange message — the CODE 252 virus flashed the following message on infected users' screens: "You are infected with a virus. Ha, Ha, Ha. Now erasing all disks. Ha, Ha, Ha." Actually, it didn't erase any files, but it sure scared a lot of people.

Viruses may also delete files for no apparent reason — the recently discovered T4-A and T4-B viruses damage applications and System files by attempting to change the startup code and by overwriting portions of the file with viral code. The most frequent symptom, however, is unexplained bombing or crashing — viruses often hog memory, which then causes your Mac to crash. But if your Mac starts crashing, just remember that viruses are pretty uncommon. Before you panic, try the following methods to discover the real cause:

**Run antiviral software regularly.**

If your Mac has a virus, you'll probably find and eradicate it this way. You'll also rest easier. Just make sure you have the latest version of the antiviral software installed.

**Turn off all extensions and control panels.**

You can do this by holding down the Shift key when you restart. If this solves your problem, you may have an extension conflict or a corrupted extension or control panel. Reinstalling new copies of these files may solve the problem.

**Reinstall applications.**

If an application has been causing problems, it may be corrupted. Try reinstalling it from the original write-protected master disks.

**Reinstall system software.**

If you're still having problems, it may be that your Mac's System file is corrupted. Try reinstalling the system software from the original write-protected master disks.
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Can We Talk?

Controlling your computer by voice command isn’t a sci-fi fantasy anymore. Voice Navigator lets you do it today, and Apple’s Casper technology promises to let you do it better, faster, and more elegantly tomorrow.

By Bob LeVitus

One of my favorite movie scenes is in Star Trek IV: The Voyage Home, when Scotty starts talking to the computer and some guy says, “Use the mouse.” So Scotty picks up the mouse and talks into it, as if it were a microphone. I’m in love with the concept. I have seen the future of computing, and its name is voice recognition.

Controlling your computer by voice will someday be as commonplace as using a mouse is today. And believe me, you’re going to like saying, “Launch PageMaker: new: OK: text tool!” a lot better than reaching for the mouse, finding and launching PageMaker, choosing New from the File menu, clicking on the OK button in the Page Setup dialog box, and clicking on the text tool in the tool palette. When it works, voice control is the greatest thing since sliced bread.

Therein lies the rub — today’s voice-recognition technology is good, but so far it isn’t good enough to use every day. At least it’s not good enough for me to use every day. Fortunately, it looks like I’ll get what I’ve been waiting for in the next year or two, when Apple introduces its Casper technology. (For a preview of Casper, check out Jon Zilber’s column on page 21 of the May ’92 issue.)

Talk to Me

I wanted to control my Mac with voice commands so badly that I was the first on my block to get Voice Navigator II (Articulate Systems, 600 W. Cummings Park, Suite 4500, Woburn, MA 01801; 617-935-5656; $699), a hardware/software combination that lets you control your Mac with spoken commands.

It had about the highest “wow” factor of any peripheral I’d ever used. Every Mac user who saw mine wanted one. Unfortunately, although it gave good demo, I found that it had four shortcomings that, taken together, were more than I could bear.

First, the software was clumsy and unintuitive. I found myself spending more time debugging scripts and training it to recognize my voice commands than getting work done. I was always tweaking something — changing macros or training (or more often, retraining) it to recognize specific words — which brings us to its next fault.

Second, Voice Navigator II is speaker-dependent, which means it can recognize only those words you train it to recognize. And although the training process was relatively painless, I was annoyed by having to train the darn thing every time I wanted it to recognize a new word. Even after training, it often took two or three tries before a command “took.”

To make matters worse, its accuracy plummeted if I didn’t pronounce the word with the same inflection I used during the training (of course, you can train it to recognize multiple inflections). It also had trouble recognizing words when I happened to have a stuffy nose or my lips were not the right distance from the microphone.

Third, the Voice Navigator II hardware was
The System 7 File: Improved Drag-and-Drop

System 7’s drag-and-drop feature lets you launch applications merely by dragging a file over the icon of the application you want to open it with, but it can quickly clutter your desktop with icons of frequently used applications. Here’s a workaround: Make a new folder, and store aliases of your favorite applications in it. Set the view to Small Icon so you get more icons into less space. If you don’t use this folder too often, put it into the Apple Menu Items folder and open it only when you need it. Thanks to Nate Gasser, who submitted this tip via CompuServe.

Considering that all you have to do to open a file is double-click on it, you may be wondering what all the drag-and-drop fuss is about. Remember that with drag-and-drop, you can drop a document onto the icon of any application that can open it, not just the one that created it. That can be very handy for opening TeachText files with your favorite word-processing program or opening screen dumps created with Command-Shift-3 in your favorite graphics program.

It’s time once again for the Beating the System “hot tip” contest. Submit your favorite System 7 tips, either by mail or by modem, to ZiffNet/Mac’s MacUser Forum (please include your name and address). If your tip is used in my upcoming hot-tips article, you’ll not only receive notoriety and fame but you’ll also get a spiffy (and rare!) “I Beat the System” T-shirt.
means look up mom’s phone number and dial it. And because Casper — as system software — will be fully integrated with the Mac and all of its peripherals, it will let you do things such as control other devices with your voice. In one Casper demo, an Apple engineer commanded,

As voice-recognition technology advances, appliance control may become commonplace. Think of how nice it will be to say, “Oven on, four hundred degrees,” whenever you hunger for a frozen pizza.

“Program my VCR,” and a virtual VCR control panel instantly appeared on-screen. Another voice command, “Record channel 5 tonight from 5 to 7 p.m.,” was all it took to program the VCR.

What’s It Good For?

My favorite use for voice control is relatively mundane — I like using it to reduce my mouse-dependence when I’m working. For example, I do a lot of page-layout work (I typeset all my books), so I run PageMaker on a 20-inch accelerated SuperMac monitor system. With a large monitor, using the mouse almost always entails moving the cursor from one end of the monitor to the other; with voice control, I keep my fingers on the keyboard, where they should be. There’s nothing like using voice commands to switch tools in palettes, change views, and apply styles. Saying “text tool, pointer tool, 200 percent, style, subhead” beats the heck out of reaching for the mouse or even memorizing keyboard shortcuts. When you’re concentrating deeply, even these minor things can break your focus.

And, of course, with voice control, standard Mac functions such as cut, copy, paste, scroll, and quit are only a voice command away.

My friend Robert Wiggins uses Voice Navigator II to review CompuServe Navigator sessions from his easy chair (kind of a Navigator navigator). He switches to a large font, sits in a comfortable chair halfway across the room, and reads through a session’s worth of messages by screaming “Next!” or “Previous!” at his Mac.

As the technology advances, you’ll be able to do even more. Soon you’ll be able to enter data by voice. Just think how easy entering a list of phone numbers will be when you have to do is say the numbers out loud and watch them appear on-screen. Entering numbers and formulas into a spreadsheet will be a breeze. To create a column of numbers and then add them, you’ll just say, “128, next cell, 256, next cell, 384, next cell, sum.” The sum, 768, will magically appear in the last cell.

How could you not love it?

Appliance control, like the Casper VCR demo I described earlier, may become commonplace too. Think of how nice it will be to say, “Oven on, four hundred degrees,” whenever you hunger for a frozen pizza.

And don’t forget information retrieval. You’ll be able to call your Macintosh on the phone and ask it to read all your new E-mail messages. (Of course, this will require speech synthesis, meaning that your Mac will be able to speak in a “natural” voice — like MacInTalk but better — as well as voice recognition, but that’s coming too.)

Taking it a step further, you could ask your Mac, “What’s my checking-account balance?” and have it reply, “Negative two hundred twelve dollars and thirty two cents.” Or imagine learning a foreign language by saying a word in English and having your Mac translate it into Spanish, type it on-screen, and pronounce it for you at the same time.

Speech recognition is here today, if you’ve got the patience for it. Although the Articulate Systems products have their shortcomings, they do work. If you’re fascinated by the concept of talking to your Mac and you don’t mind investing a bit of time to get it working just right, by all means, check them out.

If you’re not that interested or don’t want to invest the time or money, wait for Casper. Although nobody will give a timetable, I’d be surprised if we didn’t see this technology appear — maybe as a drop-in module (such as QuickTime), maybe as part of a future revision of System 7, maybe built in to the hardware of future Macs — in 1994 or sooner.
Where will your Mac be five years from today?

Sharing shelf space with your old 8-tracks and bowling trophies isn’t likely what you had in mind for your Mac when you bought it. That’s why TechWorks offers so many options in Macintosh upgrades and performance enhancements.

TechWorks understands your need to stay up-to-date with technology. Whether you want additional memory to run more powerful applications or the increased speed an accelerator offers, TechWorks provides easy, cost-effective solutions for every Macintosh model.

TechWorks Memory Upgrade Kits let you take advantage of System 7, run more applications at once, install more fonts and INITs, utilize print spooling, and get your PowerBook powered up, without spending a fortune. TechWorks Accelerator Cards, FPUs, Video and Cache Cards gear up your Mac to run full throttle, zipping through spreadsheets, full-color graphics, database sorts, sound editing—the possibilities are endless. TechWorks backs all enhancement products with a Lifetime Warranty, Toll-Free Support, 30-Day Money Back Guarantee and a 24-Hour Replacement Policy.

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<th>68030 Accelerators</th>
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At the August 1987 Macworld Expo in Boston, Apple hit a stand-up triple by previewing HyperCard and two hot new Macs. One was the Mac II, and it was very successful. But the big hit for Apple's bottom line was the SE, thousands of which are still in use in offices and homes. Here's how to get a few more innings from your faithful old SE.

By Don Crabb

With the SE, Apple modernized the compact Macintosh. It came with 1 megabyte of RAM; an 8-megahertz 68000 CPU; a choice of two 800K floppy-disk drives or one floppy drive and one 20-, 40-, or 80-megabyte hard-disk drive; an internal PDS (processor-direct slot) for expansion; and the same I/O ports as those on the Mac Plus. Unfortunately, the fan in early SEs made lots of noise for very little cooling. Your Apple dealer should be able to get you a replacement fan, which used to be free but now costs about $22 plus labor if you don't want to install it yourself.

The next step is to beef up the RAM. The logic boards of older SEs must be physically altered to accommodate more memory, but once you've snipped your resistors or pulled your jumpers, you can pop in four 1-megabyte SIMMs to replace the 256K SIMMs currently in the four SIMM slots.

If you want more than 4 megabytes of RAM—not to mention more speed—install either an Apple SE/30 logic-board upgrade to replace the existing SE board or a third-party 68030 accelerator board that takes control of the existing 68000 CPU.

The SE/30 logic board gives you a faster CPU plus eight SIMM slots that can hold as much as 128 megabytes of RAM (with Connectix's MODE32 installed). You also get a more efficient board design, newer ROMs, and the ability to add a SuperDrive floppy drive and a color monitor. This solution is not cheap, however: The after-installation cost is about $1,100. The street price of a Classic II 4/40 is less than $1,200 and an LC II 4/40 costs around $1,350, so this upgrade is too pricey.

A more economical solution is to get a third-party 68030 accelerator upgrade from such vendors as Applied Engineering, DayStarDigital, Extreme Systems, Fusion Data Systems, MicroMac, NewLife, Nyv, or Total Systems. Depending on the speed and features of the board, prices can range from about $300 to more than $1,200, but think twice about paying more than $700. Look for accelerators that have SIMM sockets, so you can add more RAM and if your software requires it, a math coprocessor or FPU (floating-point unit). Some accelerator boards also include full-page- or double-page-display video controllers, so you can add a large-format monochrome monitor.

Finally, don't forget to factor in the cost of extra RAM to the cost of the accelerator (at press time that was about $125 for four 1-megabyte SIMMs or $475 for four 4-megabyte SIMMs) plus the installation cost, which should be less than $80—or free.

### Table 1: Recommended Upgrades for the Mac SE

<table>
<thead>
<tr>
<th>Upgrade</th>
<th>Pros</th>
<th>Cons</th>
<th>Approximate Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement fan</td>
<td>Quieter. Sucks less dirt into machine.</td>
<td>None.</td>
<td>$22 (plus labor, if needed)</td>
</tr>
<tr>
<td>4 megabytes of RAM</td>
<td>Speed. Can use multiple applications and System 7.</td>
<td>None.</td>
<td>$125</td>
</tr>
<tr>
<td>SE/30 logic board</td>
<td>Speed. SE/30 ROMs.</td>
<td>Installation best left to pros. Expensive.</td>
<td>$1,100</td>
</tr>
<tr>
<td>68030 accelerator board</td>
<td>Speed.</td>
<td>Tricky installation. Probably doesn't include new ROMs.</td>
<td>$300 and up</td>
</tr>
<tr>
<td>8 to 128 megabytes of RAM (for SE/30 board or third-party accelerator)</td>
<td>Speed. Can use multiple applications.</td>
<td>Need to have SE/30 logic board or third-party accelerator installed.</td>
<td>$250 and up</td>
</tr>
<tr>
<td>External SCSI hard drive</td>
<td>More storage.</td>
<td>None.</td>
<td>$400 and up</td>
</tr>
<tr>
<td>Total price of minimal upgrades</td>
<td></td>
<td></td>
<td>$850 and up</td>
</tr>
<tr>
<td>Street price of a new Mac Classic II 4/40</td>
<td></td>
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<td>$1,200</td>
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THE NEW COLORSTREAM/DS DYE-SUB PRINTER MAKES HANDLING FUTURE UPGRADES OR MIXED HARDWARE ENVIRONMENTS AS EASY AS INSERTING A ROM CARD.

A photo-quality dye-sub printer shouldn't just be state-of-the-art today; it should be able to stay state-of-the-art tomorrow. Which is why we've developed the new Shinko CHC-S466 ColorStream/DS. Designed with enormous memory capacity (up to 38 Megabytes of RAM), the ColorStream/DS can outpace any printer in its price range. And the prints? With 16.7 million colors available at every pixel, dazzling 300 DPI resolution and a full 8.5" x 11" printing area, the ColorStream/DS produces images that are astonishingly vivid, crisp and true. But we've also built the ColorStream/DS to fit beautifully into the future. Its two Function Card slots let you take full advantage of innovations like Pipeline's PowerPage® 24-bit PostScript®-compatible interpreter—or accommodate other future font and emulation upgrades—by simply inserting a new ROM card. And as for hardware compatibility, the ColorStream/DS knows virtually no limits. Equipped with printer ports for AppleTalk, Centronics, RS-232 and SCSI interfaces, it continuously scans all ports for incoming print jobs and switches itself to the proper emulation mode—automatically. The new ColorStream/DS. For the future of color printing in a printer you can own...right now.

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CIRCLE 210 ON READER SERVICE CARD.
You don’t have to carry around a printer to print from your PowerBook if it has a fax modem. Dial a fax machine, and let it print out your files.

To make an exact copy of a formula in an Excel spreadsheet, create another cell without using absolute references, erase the equal sign at the beginning of the source cell’s formula, and then copy and paste to the new cell. Now put the equal sign back in both the new cell and the source cell.

When making overhead transparencies on a LaserWriter, hand-feed the transparencies but do not specify manual feed. This method automatically slip-sheets the transparencies with plain paper from your paper tray.

If you use more than one mode for one of the older LaserWriters or LaserWriter Phases, buy a 40-cent knob (part #274-403) from Radio Shack. It fits the mode switch with its clamp and makes it easier to change modes. It’s easier than reaching around to the back and fumbling with the tiny mode switch.

Serif fonts — the ones, such as New York, Times, and Palatino, with little feet on the letters — are easier to read in blocks of text than are sans serif (footless) fonts such as Helvetica, Geneva, and Avant Garde. A rule of thumb is to use sans serif fonts for headlines and punchy pieces of text and to use serif fonts for body text.

ImageWriter platen sometimes get slick and glassy with age. The fix is a container of typewriter-platen-and-type cleaner, which costs less than $2 a bottle. Get it from a stationery store.

The Control key lets you type the Command symbol, a check mark, the Apple symbol, and a diamond by pressing Control-Q, -R, -T, and -S, respectively. You won’t see the symbols unless you’re using the Chicago font, however. Select Chicago, and press the Control-key combination for the symbol you want. To see what these symbols look like without typing them, open the KeyCaps DA, select Chicago, and press the Control key.

If you need an address-book program, get a structured program that has separate blocks for each field (first name, last name, city, and so on). That way, if you find a better address-book program, you will be able to export your old address book into the new program. Any structured address-book program can import your old fields into its equivalent fields.

Do you get a single open-quote mark instead of an apostrophe for a beginning missing letter in phrases such as go get em? A quick way to get it right is to type the first character, an apostrophe mark, and then the first character of the word again. Now delete the first letter. Like this: Type em, and then delete the first e.

Can you move a row in a Word table? Sure can — just select Outline from the View menu in Word 5 (or Outlining from the Document menu in Word 4), and then click and drag the box to the left of the row you want to move. Drag the row to wherever you want it, and then select Normal, which is also on the View menu (Word 4 users should select Outlining again), to return to your table with the row in its new position.

To have more than one alias of an item in System 7, always use the original item to make aliases. Aliases made from aliases can lose their connection to the real thing if any alias in a chain is trashed.

A tip from Mike Quiner, of Corvallis, Oregon: If your LaserWriter jams cassette-fed paper at the very start of the path (the paper winds around the roller at the back but doesn’t go any farther), use alcohol on a cotton swab to clean the three hard rubber rollers you see when you spring the back flap down. There are three more rollers underneath, which you can barely see when you take out the paper tray and spring the back flap down. These should be cleaned too but are hard to reach.

Holding down the Command key in a MacDraw Pro dialog box reveals all the keyboard command equivalents for that dialog box.

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**Reader Tip of the Month: Retrospect**

If you've tried backing up with Dantz's Retrospect under System 7, you may have noticed that documents don’t always open when you double-click on them and that some files lose their icons on the desktop. Unfortunately, the combination of file sharing and Retrospect can sometimes corrupt desktop files. Rebuilding the desktop fixes the problem, but who wants to rebuild the desktop after every backup? An easier fix is to turn off file sharing in the Sharing Setup control panel before backing up.

Cory Bridgson
Santa Clara, CA

[You can modify the Retrospect $ All Files selector so that it selects all files for backup except the Desktop DB, Desktop DF, AppleShare PDS, and VM Storage files. For details on how to do this, contact Dantz Development’s technical support at 510-849-0372. Retrospect Tech Note No. 18 covers the procedure — Ed.]
Reader Tips

**PowerBook**

If you open your favorite applications from your PowerBook's hard drive but save your documents to a floppy disk, you can extend the life of the PowerBook's battery charge, because the drive doesn’t spin up every time you save a document to a floppy.

If your application has a “Keep Application in Memory” setting, make sure it’s turned on.

Shane Trent
Raleigh, NC

**Virtual Memory**

System 7’s virtual memory can be very slow, even with a fast hard-disk drive. Here’s how to make it more bearable: Use a disk formatter to create several partitions on your hard disk. Make one of these partitions large enough to hold the contents of virtual memory and 1 or 2 megabytes more. Then, in the Memory control panel, specify that this partition is where virtual memory is to be stored.

This technique dramatically improves the speed of virtual-memory access, because the drive has to search a smaller physical area of the disk to find the virtual memory.

Justin English
Bloomington, IN

**Canvas 3.0**

When you are editing objects created with Canvas’ Bézier or polygon tools, you can’t place a point by typing the x,y coordinates. But there is a workaround:

Select the point (or points) you want to move, and use the arrow keys to move what you’ve selected either horizontally or vertically. It will move by only one pixel in the direction of the arrow key each time you press the key, so you can place the point extremely accurately, especially at a highly magnified size such as 16x or 32x.

Philip White
Kodak, TN

**Claris Resolve**

Here are some tips on how to edit Claris Resolve cell contents from the keyboard: After you’ve selected the cell to edit, hold down the Option key while selecting one of the arrow keys, and your cursor will jump directly to the entry bar. To move one word at a time, hold down the Option and Command keys while using the arrow keys. Hold down the Shift key as well to select text instead of merely moving the cursor.

Fred Roberts
Seattle, WA

**Finder (System 7)**

Sometimes when you decompress a file, its custom icon is replaced by a generic application icon. You can fix this easily enough by rebuilding your desktop (hold down the Command and Option keys as you restart), but I’ve found a quicker solution:

- Open the Get Info window for the file (Command-I), and click on the icon in the upper left corner to select it. Copy the icon, paste it, and then cut it. In most cases, the original icon will then appear.

David G. Perkins
Schaumburg, IL

---

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—Pam Downie
Ann Arbor, MI

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For more information about our timesaving software support, call The Cobb Group’s Customer Relations Department at 1-800-223-8720.
Bob: Last July, Andy said that he didn’t know of anyone who could recycle old floppy disks. Several readers wrote to tell us about Covenant Recycling Services (P.O. Box 2530, Del Mar, CA 92014; 619-792-6975). Not only does Covenant recycle your used floppy disks but it also donates 50 percent of its proceeds to youth-oriented charities such as Partners for Disabled Youth, The Special Olympics, and the March of Dimes Birth Defects Foundation. If you’ve got a bunch of old floppies lying around, why not give Covenant a call?

Andy: Of course, if they’re perfectly good disks, it’s still probably a better idea to donate them to your local school or public library. If not, then better to turn them into cash for the needy than food for the seagulls.

Shady Characters

Q: In the review of Microsoft Word 5.0 in the April ’92 issue (page 50), there’s something that really bothers me. Whenever I shade bordered text (whether outline or shadow style), the letters themselves are shaded as well. Yet the screen shot in the review shows a portion of bordered text (in shadow format) with a shaded background and unshaded letters. I’ve tried the customer-support line (which isn’t toll-free) and hung up after waiting forever for an answer that never came. Please tell me the secret.

Ferdinand Tiu
Chico, CA

Bob: I consider myself somewhat of an expert on Microsoft Word — I spend at least two or three hours a day with it and usually more. So when I couldn’t re-create the screen shot that accompanied the Word 5.0 review, I took it as a personal challenge. After hours of trial and error and several conversations with the reviewer, we realized that it was the version of ATM (Adobe Type Manager) he was using — version 3.0 — that let the outline text display properly. If you use ATM 2.0.3 or don’t use ATM at all, the text appears filled in (see Figure 1).

Now before you go off half-cocked and holler at Adobe for forgetting to send you an upgrade notice, ATM 3.0 is available only with Adobe’s new Multiple Master fonts — special typefaces that let you generate a wide variety of fonts from one typeface, expanding, condensing, and optically sizing the type any way you like. If you’re not using Multiple Master fonts, you don’t need version 3.0 and

If you have a good product and want to broaden its appeal into as-yet-uncontacted markets, produce a smaller, cuter, simpler version. If you’re making money from “Jeopardy,” you can make even more with “Jeopardy Junior.” “Looney Toons” begat “Tiny Toon Adventures,” and Alien begat Aliens and, finally, Alien 3. So we here present our smaller, cuter, simpler version of Help Folder. If you have a small, cute, simple question to ask, by all means speed our retirement to the Cayman Islands by sending it on in. To protect you from having a claim on a percentage of our profits, we’ll say that your question was sent in by America’s favorite chemical addictive.

Q: I’m curious about a series of error messages I get at startup. After installing a bunch of new extensions and control panels in System 7, whenever I start up, I get to the Finder and am presented four times with the message “System Extension: This file adds functionality to your Macintosh. To add this file’s functionality to your Macintosh, place the file in the Extensions folder and restart the computer.” What’s wrong?

Polyethylene glycol
A stabilizing agent

Andy: It sounds as though you inadvertently copied four Extensions into the Startup Items folder instead of into the System Folder. Everything in the Startup Items folder (documents, applications, sounds, doughnuts, whatever) is opened by the Finder after it loads in, and the blur you mentioned is exactly what you get when you try to open an extension. Move the extensions to their proper places, and that should clear things up. Whenever some wackiness in the Startup procedure takes place after the Finder loads in, check the Startup Items folder.

I still have plenty of room left over to tell you how to make a tactical HUD (heads-up display) for your car, just like the ones in F-16 fighter jets, with nothing but a common word processor and a laser printer. If there’s a set of directions you have to refer to on a car trip, type up the info in big Helvetica Black 7, whenever possible, formatted to print in Landscape 7, whenever you’ve finished, print it out with the Flip Horizontal option in the Page Setup dialog box enabled. (If you have a dark-colored car, turn on Invert Image too.) When you fold the sheet in half and toss it onto your dashboard way down toward the windshield, the page will be reflected in the glass, forming a transparent image that hovers wraithlike over your hood. It lets you keep your eyes on the road and makes you feel a little like Tom Cruise.
Three companies have come out with numeric keypads for the PowerBook: Kensington has a product called the Notebook Keypad. Sophisticated Circuits has the PowerPad, and a Canadian company called Plusware is hawking its Plusware Numeric Keypad. Yes, they’re handy and they let you access function keys, but each one costs around $140. So let’s roll up our sleeves and find another solution—namely: Get a copy of Dave Kreindler’s free PowerBook numeric keypad layout file, available from ZiffNet/Mac (filename PBKEY.CPT). It’s also in the Power Book: Kensington prints sheets of “let’s you access function keys, but each one costs around $140. So let’s roll up our sleeves and find another solution—namely: Get a copy of Dave Kreindler’s free PowerBook numeric keypad layout file, available from ZiffNet/Mac (filename PBKEY.CPT) as well as other on-line services and user groups.

Just pop this file into your System Folder, and you’ll be able to switch to a numeric-keyboard layout simply by selecting the file’s name in the Keyboard control panel. Dave’s keyboard layout is identical to the standard QWERTY layout (a Dvorak version is available too), but when you hold down the Control and Option keys, you get a numeric keypad centered around the K key. All you have to do is remember that the 8 key now gives you =, U is 7, the space bar is 0, and so on.

Keyboard layouts are one of the many nitpicks of System 7. They’re special files that can be used to redefine the layout of the keyboard in helpful ways (see Figure 2). For example, some people prefer the Dvorak keyboard layout to the standard QWERTY one (they’re much the same, except that when you type with the Dvorak layout, you’re paid 11 times more money); other folks like to remap the period key so that they get a period even if they’re typing in all uppercase letters (so typing things like R.I.P. is less of an ordeal). All these effects and many more can be achieved with custom keyboard layouts.

Creating your own layout is straightforward. Working on a copy of your System file (just in case anything goes wrong), open it with ResEdit and add a new KCHR resource by selecting the KCHR resource and then going to the Resource menu and choosing Create New Resource (or press Command-K). ResEdit presents you with a blank keyboard layout and a map of all the available symbols, which you can then drag onto the keyboard layout like Scramble tiles. Give the layout a name (in the Resource Info dialog box), save your work, and—once you’ve replaced your System file with the copy you’ve just fiddled around with—you’re done.

Finally, KCHR resources are yet another ripe avenue for office mayhem. Next time someone brags about his touch-typing skills, you can replace all the vowels in his keyboard layout with $s. The effect is especially memorable if he’s one of those typists who doesn’t look up until he’s been typing for half an hour straight.

Similar SIMMs?

Q. I’ve seen a lot of articles and ads about SIMMs. Is there a difference in quality among any of the products offered? I’ve seen ads in which 4-mega-byte, 80-nanosecond SIMMs for a Mac 128i vary in price from $147 to $250. Because all these ads are for reputable mail-order firms, it makes me wonder why there is such a discrepancy in price.

Siegmund Stern
Philadelphia, PA

Bob: For the most part, SIMMs (single-in-line memory modules) are SIMMs, but there are things to consider in addition to price. If you’re installing this kind of RAM yourself, find out whether the SIMMs you’re buying come with good installation instructions and what tools you’ll need to complete the installation. For those buying RAM for a PowerBook, for example, the special Torx tool needed to open the case can be very hard to find.

Another consideration is technical support. Does the company provide it? And if so, is it any good? Try calling tech support before you place your order. Ask the technician a question or two to get a feel for the quality of that vendor’s support services. Last but not least, you should consider the warranty and the vendor’s reputation.

Figure 1: If you shade bordered text in Word 5.0, the letters themselves are shaded as well (above)—unless you have ATM 3.0 installed, in which case the characters remain unshaded (below).

Figure 2: Using ResEdit (background) you can create personalized keyboard layouts. The Keyboard control panel (foreground) lets you choose among any keyboard layouts you’ve installed in your System Folder.
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Doing the Defrag
Q. I’m interested in getting a hard-disk optimizer. I was about to buy Norton Utilities for its Speed Disk utility when I read ALSoft’s “Peter Norton Won’t Like This Ad” ad for DiskExpress II. The ad had a side-by-side comparison of DiskExpress II, Speed Disk, and MacTools’ defragmenter and seemed to suggest (of course) that DiskExpress would totally blow away the other two in terms of how long it took to defragment a disk and how fast the disk performed afterward. Is DiskExpress II really the best?

Megan Oberlatt
Tewksbury, MA

Andy: Peter Norton won’t like this answer, and I don’t think ALSoft will be too keen on it either. The thing is, I think disk optimizers are a waste of time. For the uninformined, an optimizer (or defragmenter) is a disk utility that purports to speed up your hard drive by putting as many apps and docs as possible in single uninterrupted blocks. See, on a freshly formatted hard disk, all the free space exists in one long, uninter rupted stretch of empty real estate. As the months go by, however, and you install and delete files, your hard disk becomes a cratered landscape of occupied and free blocks. You may have 20 megabytes of free space, but if you were to look at where all that free space actually, physically is on the disk, you’d see it’s a megabyte here, another 2 megabytes over there, and maybe a whole slew of 400K patches hither and yon. When you then install a 6-megabyte application, it doesn’t go splat into one tidy section of the disk but is chopped up to fit into whatever patches of the disk are currently available. As you might guess, an application can be read off the disk more quickly when it’s in one big block than when it’s scattered around in tiny pieces. A disk optimizer takes your whole hard disk apart, file by file, and rebuilds it so that as many of the files as possible sit in continuous, uninterrupted, ever-so-quick-to-access blocks of hard-disk space.

Me: I don’t like optimizers at all. As has been thoroughly proven in many sci-fi flicks featuring teleporters, humans, and insects, absolutely miserable results are possible if something goes wrong before or during the putting-everything-back-together stage. Granted, every optimizer makes a big point about its safety features and all the manuals strongly stress the absolute need to do a complete backup before optimizing, but it still seems like a lot to go through — especially when you consider the results.

I tested the fastest optimizer of the three you mentioned on an 85-megabyte drive that hadn’t been reformatted in five years, and it sped things up by only about 8 percent. Optimizing is useful if you have a truly Godzilla-like database sitting on a volume with heavy file traffic, but for most folks, optimizing won’t significantly improve performance.

By the way, you can defragment your disk manually. Just do a complete backup, reformat your hard disk, and then copy your files back onto it. The most-often-used stuff goes on first, to seize as much uninterrupted real estate as possible. This way, you get performance about as good as that a commercial utility gives you (although with disgustingly greater effort), and you also get the opportunity to rethink the way you organize your data. Every time I do this, I use a better disk format, decide whether I should change the number and sizes of my partitions, reorganize my folders, and so on. I also take the opportunity to reinstall my system software from

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### Easy Access

**Q.** What the heck are Easy Access and Responder? I see these icons on my startup screen but can’t find any explanation for them.

**Steve Kimball**

Houston, TX

**Bob:** Easy Access is an extension from Apple that provides two features — Sticky Keys and Mouse Keys. Both are aimed at people who have difficulty typing with both hands or manipulating the mouse. Sticky Keys lets you type combination keystrokes consisting of a modifier key (Shift, Command, Option, or Control) and another key but without having to press the keys simultaneously. To use Sticky Keys, press the Shift key five times without moving the mouse and then press the key combination you want to use. Pressing a modifier key one time sets it; pressing it twice locks it. To turn Sticky Keys off, press the Shift key five more times without moving the mouse.

Mouse Keys lets you bypass the mouse and move the cursor and click and drag, using the numeric keypad on the right side of the extended keyboard. To turn Mouse Keys on, press Command-Shift-Clear. The 1, 2, 3, 4, 6, 7, 8, and 9 keys move the cursor, and the 5 key serves as the mouse button — press it once to click and twice to double-click. To turn Mouse Keys off, press Command-Shift-Clear again.

Easy Access doesn’t use much RAM and rarely causes problems, but if it bothers you, trash it. If you decide that you want it back, reinstall it from the appropriate system disk.

Responder is an extension that’s used by network administrators to gather information about networked Macs. Ask your network administrator if you need it. If you’re not on a network, you don’t need it — go ahead and trash it.

**Andy:** Easy Access is one of those wicked-neat extensions that helps even those who don’t physically need it. For one, it gives every application the equivalent of a “nudge” command. If you need to move a graphic element exactly one pixel straight up, just turn Easy Access on and press the up arrow once. Much easier than trying to squeeze fine motor control out of your mousing hand, especially if you ingest as much caffeine and sugar as I do. Second, Easy Access protects you from system errors that freeze your mouse. If the keyboard’s still active, Easy Access will leave you with enough fundamental mousing ability to calmly and politely save your work, quit your applications, and restart your Mac.
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<td>42MB Quantum ELS NEW!</td>
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<td>$269</td>
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<tr>
<td>80MB Qntm 2/½” for Powerbook</td>
<td>$449</td>
<td>PocketDrive</td>
</tr>
<tr>
<td>85MB Quantum ELS NEW!</td>
<td>$299</td>
<td>$399</td>
</tr>
<tr>
<td>120MB Quantum</td>
<td>$399</td>
<td>$499</td>
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<tr>
<td>120MB Qntm 2/½” for Powerbook</td>
<td>$599</td>
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<tr>
<td>170MB Quantum ELS NEW!</td>
<td>$479</td>
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<td>240MB Quantum LPS</td>
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<td>425MB Quantum Maui</td>
<td>$1019</td>
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<tr>
<td>650MB Seagate</td>
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<tr>
<td>1.2GB Seagate</td>
<td>$1749</td>
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<tr>
<td>1.6GB Seagate</td>
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**Magic Performance upgrades for the Mac LC, Ilsi, Iici, Classic II, SCSI**

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**Magic Memory**

Each Magic Memory Upgrade is backed by the Magic Lifetime Guarantee. Magic SIMMs are made of the highest quality components and designed specifically for your hardware.

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**Macintosh RAM**

- 1MB SIMMs: Starting at $26
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- 4MB SIMMs: $99
- 8MB SIMMs: $199
- 16MB SIMMs: $499
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CIRCLE 112 ON READER SERVICE CARD.
### Quantum

<table>
<thead>
<tr>
<th>Unformatted Capacity</th>
<th>Model</th>
<th>Product Description</th>
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### ClubMac Optical Drives

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<td>CMO-3600</td>
<td>Ricoh</td>
<td>594/652mb</td>
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<td>CMO-5030E2</td>
<td>Ricoh</td>
<td>594/652mb</td>
<td>5.25&quot; Full HT</td>
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<td>512/1042 bytes/sec</td>
<td>S99</td>
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</table>
**NEW Lower Prices**

<table>
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<tr>
<th>PowerCache (Mac LC, SE/30, II, IIx, Iicx, Ilti, Ilti)</th>
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<td>33 MHz PowerCache</td>
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<td>50 MHz PowerCache with 68826</td>
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**Cache Cards** (Mac IIx model includes DualPort Adapter)

- FastCache IIx | $299
- FastCache IIx with 68822 | $299
- Fastcache IIx with 68826 | $299
- FastCache 040 (128K cache for 7600/9000) | $265

**Expansion Boards for Mac LC & Ilti**

- PowerMath LC | $115
- Equalizer LC (virtual memory upgrade) | $179
- Equalizer LC (includes 68822 match chip) | $249

**Macintosh Memory**

- PowerBook 140/170
  - 2MB Memory Module | $117
  - 4MB Memory Module | $195
  - 8MB Memory Module | $245
- Quadra 950
  - 16MB Module | $499
  - 256 VRAM | $35

**Modems**

- SupraFAXmodem | $359
- 14,400 baud FAX/MODEM V.32bis, V.42bis w/ microph & faxSTF & cables | $359
- VIVA Fax Modem | $359
- 14,400 baud, FAX/MODEM, V.32bis, V.42bis w/ Quicklink II & cables | $359
- Telebit Worldblazer (T-3000) | $669
- 14,400 baud, 19,200 baud using PEP, V.32bis, V.42bis | $359

**Global Village (for PowerBooks)**

- ComStation (2400/48 SFI fax modem) | $159
- PowerPort Bounce (2400 SFI fax modem) | $215
- ComStation (4,140 SFI fax modem) | $15
- PowerPort Silver (6,906 SFI fax modem) | $435
- Power modem (2400/48 SFI fax modem) | $199
- PowerPort Gold (14,400 SFI fax modem) | $59
- Power modem (10-42 (2400 SFI fax modem V.25bis, MNP-10) | $249
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Quantum

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<table>
<thead>
<tr>
<th>INTERNAL</th>
<th>EXTERNAL</th>
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<td>$599</td>
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<tr>
<td>425MB</td>
<td>$899</td>
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</table>

SyQuest Drives are the recipient of Macuser Magazine's prestigious Editor's Choice Award.

SyQuest Drives

All MacLand Removable Hard Drives come with our own installation and reference manual, DiskMaster Plus™ formatting utility software, cables, and a one-year warranty. Cartridge not included.

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1MB 80ns $35
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4MB 80ns $119
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## Business Card

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<th>HARDWARE/DISK DRIVES</th>
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<td><strong>33 Mhz PowerCache</strong> $225.95</td>
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<td><strong>50 Mhz PowerCache w/ FPU</strong> $1369.95</td>
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MacUser November 1992 361
The Game of the Name

A rose by any other name would smell as sweet — but wouldn’t you really rather drive a Butt-Kicker?

It’s time to face the fact: The Mac is at the end of its life cycle. It’s become a dead-end platform, just as the Apple II became a dead-end platform in 1984, when the Mac was introduced.

The newest same-old Macs now on sale at Sears prove that the end is near. The basic Macintosh is almost nine years old. If you count the Lisa as part of its evolution, then it’s nearly a decade old. This is old for an architecture that hasn’t changed much except for the addition of a needed bus and some multitasking capability.

Sure the chips are faster, but Motorola has been unable to keep up the torrid pace set by Intel, and we’ll never see a 68060, that’s for sure! So even the CPU bus hit a dead end, as Apple moves to RISC and a new design.

The only big question left is, What will Apple call its next-generation computer? The Mac III? Will it drop the Mac moniker altogether — or just leave the Mac to languish like the Apple II? I suspect it will languish as die-hard Mac owners moan and groan as old Apple II users used to do.

Although I’m sure Apple is consulting with naming experts, those guys do not have the collective brainpower of the Mac user community. I have a few ideas that may trigger some of your own. Be sure to send your ideas to John Sculley.

Name Your Poison

Naming conventions generally fall into five broad categories: vegetable, animal, mineral, mathematical, and conceptual.

The name Apple itself comes from the vegetable category. This category broadly refers to any nonmobile life-form, except for syrops: The Macintosh, the Pineapple, the Fern. I’d include Mushrooms and Fungi in this category too. The Pinecone II might be a good name for a computer. Or the Seaweed. How about the Yucca or the Onion computer? I like the Cactus computer — get the point? But I suspect that Apple may just name the next machine after still another breed of apple fruit, such as the Roma, the Gravenstein, or the Golden Delicious. How about the Winesap or the Crab Apple?

Onward to the animal category. Car makers once used this one to excess: Falcon, Mustang, Bronco, Cougar, Panther, Stingray. The computer makers haven’t done much to exploit these possibilities, although this category has a lot of potential names: the Buffalo, Canary, Pig, Dog, Cockroach, Blowfish, Horsely. I think the Apple Corp would be a good name. Or how about a radical new name such as the Apple Boneless Chicken computer?

Mineral is the next category. Rock, Dust, Sand, Saltwater, Cardboard, Pyrites, Gold, Silver, Hydrogen. Here the possibilities are endless, especially if we think in terms of macros such as the Socket or the Crock of Crap. Now I guarantee that if Apple names its next computer the Apple Crock of Crap, it would get all the free publicity it would ever need. Every newspaper and magazine would analyze the idea to death, wondering why a great marketing company like Apple would do such a thing.

“Looking for a new computer? Buy an Apple Crock of Crap!”

Copycats would follow with screwball names for their machines too. Seactical references would be in vogue as we’d see the Compaq Pile o’ Dung and the IBM Bat Guano/2.

The mathematical names come next. They are usually just alphanumeric designations such as the new Mac 200 and 400 machines. German car companies seem preoccupied with alphanumerics as the accepted way to name cars: 750i, 300D, 190E, 325i, 911, 914, 939, and so on, and so on. Some car makers like to use a formula such as the 2+2 sports car. Why they don’t just call it a 4 mystifies me.

Finally, there’s the high concept. A name such as the I-Can’t-Believe-It’s-A-Girdle girdle falls into this category. Concept names for a computer might be the Sunset, the High Jump, the Dream Boat. More-complex concepts such as the Pie in the Face or the Rotten Glass of Swill add new dimensions to this category. Apple could, for example, call its computer the Butt a Gut Laughing computer. What about being descriptive with a name such as the Ooey-GUI computer? I think a macho name such as the Butt-Kicker would be perfect for a computer.

“Falling behind in your work? Spreadsheets taking forever to recalc? Try a Butt-Kicker, from Apple!!”

Very cool name, if you ask me. Whatever Sculley and company do, let’s hope Apple is not going to use a code name, as it did with the Macintosh. We could wind up with the Apple Pink! Or the Pinkintosh? I think not. Get those suggestions in fast!
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