MANY PEOPLE STRIVE FOR PERFECT.
WOULD YOU SETTLE FOR PERFECTIONIST

Everything in your life may not always come together. But on your Macintosh, it’s another story. Because now there’s a family of leading, full-featured programs for the Mac that truly work together like one.

New Microsoft Office 4.2.

Think of Office as programs that look alike. Programs that act alike. Programs that work so closely together, you’ll feel like you’re using just one.

An example? Let’s say you want to change a sales chart that’s part of a report to your boss. Go ahead. Simply click on your chart and instantly your Microsoft Excel spreadsheet tools appear. Without ever leaving Microsoft Word.

Talk about being connected. The fact is, the walls are down. You’re now free to combine words, numbers and pictures with ease. Without leaving your document.

Better yet, no matter what you’re working on, you’re working smart. Thanks to IntelliSense technology, built-in intelligence that senses what you want to do, then helps you do it.

Behind Office, you’ll find even more smarts: Microsoft’s unlimited product support. It’s available at no service charge. Just call.

But first, call (800) 709-3787, Department YP4, to locate a retailer near you. They’ll help you learn all about the new Microsoft Office Standard 4.2, in versions for both Macintosh and Power Macintosh.

So give us a ring. Then give your Macintosh something that most people spend a lifetime searching for.
Engineers are, generally speaking, very discriminating. Which is just one of the critical factors we took into account when designing the newest line of MultiSync monitors. NEC is proud to introduce the MultiSync XP Series.

Featuring superior screen performance, they're the first series available with Microsoft Plug and Play compatibility, eliminating your configuration headaches while optimizing performance. Our On-Screen Manager, OSM, gives you control of everything from screen geometry to color temperature. We're also the first to offer ACCESS.bus technology in monitors, the industry standard for connecting peripherals.

You can now simplify cabling by connecting ACCESS.bus compatible peripherals through the monitor itself.

On-Screen Manager, OSM, gives you optimum command of color, plus power management, resolution switching (for Macintosh), and image control. For details, call 1-800-NEC-INFO.

SEE, HEAR AND FEEL THE DIFFERENCE™.
Features

90 Portable Presenters
BY JOANNA PEARLSTEIN Are you nervous about that big presentation? Get the hardware right first—Macworld Lab picks the clear winners from 11 LCD panels and projectors.

96 Panic on the Podium
BY DAVID POGUE Pointers on steering clear of the pitfalls for a smooth-running presentation.

108 What's the Best Portable?
BY WENDY SHARP We rate Duos against PowerBooks to pick the best portable of all—and find it might not be what you'd expect.

114 Desktop Trapping
BY DEKE MCCLELLAND The hows and whys of desktop trapping—plus, which page-layout program does the better job.

122 Companywide Online Services
BY MARTHA STRIZICH Can your business benefit from its own private online information service? Three all-in-one communication systems compared.

News

33 MacBulletin

34 News Clock-tripled Power Mac • SPSS statistics for Mac • RAID 5 SledgeHammer, and more

40 Power Mac News PC in a Power Mac • Apple, IBM close in on standard • Power Mac upgrade for Performas, LCs, and more

45 New Products
Opinion

19 State of the Mac
BY ADRIAN MELLO A level-headed look at Apple.

25 Letters

159 The Desktop Critic
BY DAVID POGUE How to get your Mac on TV.

163 The Iconoclast
BY STEVEN LEVY Cloning around with the Mac OS.

167 Conspicuous Consumer
BY DEBORAH BRANSCUM From trash to treasure: recycling Macs.

256 Wise Guy
BY GUY KAWASHI Hard-won objective lessons.

Networks

146 News Ethernet switches from Tribe, Lantronix • X servers coming to Power Mac • ISDN modems, and more.

149 PowerBook Notes
BY CARY LEE Wide-area wireless communications.

Buyers' Tools

171 Editors' Choice
Top picks from our comparative articles.

175 Star Ratings
Hardware and software reviews at a glance.

187 Streetwise Shopper
Hardware and software bargains: discounts, bundles, upgrades.

At Work

132 News Now Contact goes multiuser • Business-management essentials • Essbase for Mac, and more

135 Working Smart
BY JIM HEID Techniques for a faster Finder.

141 Quick Tips
BY LON POOLE Tips, tricks, and shortcuts.

Graphics

128 News Photo-realistic color for less • Calibrated desktop color • Fonts for fall, and more

130 Expert Graphics
BY CATHY ABES Graphics professionals share their secrets.

Reviews

52 Adobe Photoshop 3.0
Imaging-editing program

54 Microsoft Excel 5.0
Spreadsheet

55 QuarkXPress 3.31
Power Mac update

56 Primera Pro
Thermal-wax and dye-sublimation printer

59 QuickMail 3.0
Electronic mail

61 Claris Organizer
Personal information manager

63 Microsoft Works 4.0
Integrated software

65 Now Utilities 5.0
Utilities collection

71 Cal 3.0
Calculator and calendar

73 InfoDepot 2.0
Project-planning software

75 ClarisDraw 1.0
Draw program

77 Blueprint 5.0
2-D CAD software

79 Marcel Polo 3.0
Document imaging and management

73 Wiz Tools for PowerBook 1.2.2
PowerBook utilities

75 Perce Print Tools 1.0
QuickDraw GX print utilities

75 TypeTwister 1.0
Type styler

77 BLAST Professional
Telecom software

78 FastPace Instant Contact 1.0
Contact manager

78 Launch Pad 1.0
Desktop for kids

83 Vivace
Music study system

83 Bird Brain 2.0
Database for bird-watchers

85 Practica Musica 3.0
Music-teaching software

85 Aquazone 1.0
Aquarium-simulation software

87 Amazing Animation
Animation for children

87 ScriptWizard 1.0
AppleScript editor
There is nothing like the feeling of losing your data. There is nothing like booting up to find that your twenty-page conference report has burned to a crisp. Or watching a month’s worth of virus-infected spreadsheets go up in smoke right before your eyes.

When it happens, a rush of job-security panic begins in your legs and rapidly bolts all the way up to your cerebellum. And the impact of losing all of your hard work affects you in a way you’ll certainly never forget.

Data loss. It’s one fiery disaster that makes for an awfully bad day.

**Proactive Protection For Your Macintosh.**

This being the way things are, at Symantec we subscribe to the theory that the best way to deal with a disaster is, well, to prevent it in the first place. Which is the very reason for our newly updated Norton Utilities® and SAM®. In a word, they’re proactive. But to put it more poetically, this improved data-protection software actually sniffs out fires without so much as the stirring of your mouse.

**New Norton Utilities Detects Damage Before Disasters Happen.**

For starters, look at our new Norton Utilities 3.1. We’ve taken the industry’s most powerful data recovery and repair program and improved it to where it’s almost invisible. So that now you can virtually load it and forget it.

**New Norton And Fires Even Before You**

- The enhanced Filesaver feature proactively and consistently works to maintain your system at premium health by scanning in the background for early signs of trouble. This new agent-oriented technology is a Norton exclusive that personally reminds you when it’s time to do basic data maintenance such as backing up or optimizing. In terms you can easily understand. It also automatically monitors your data for up to 500 deleted files so they can be easily recovered.

Once a problem has been detected, Norton Disk Doctor takes over. Improved Disk Doctor recommends a solution and then executes it on your command. It now hunts down, diagnoses, and repairs problems in more areas of the disk than any other software.

* Prices may vary. Shipping, handling and tax extra. This offer not good with other promotional offers. Residents not eligible. Offer expires 12/31/94. Symantec, Norton Utilities and SAM are U.S.
The enhanced Speed Disk's unique customization feature lets you defragment everything from a whole volume to a selected file. And Norton Utilities 3.1 now also includes enhanced backup. Which creates self-extracting and self-restoring backups of your data. This improved capability makes it even easier for you to restore data during emergency situations. And our backup now also supports tape drives.

NEW SAM PROVIDES THE BEST PROTECTION AGAINST VIRUSES.

However, that's just the half of this proactive pair. We've also fully redesigned SAM 4.0 to provide the most complete and most effective virus protection, detection, and elimination of known and unknown viruses. So that what could turn your entire system into a towering inferno never even becomes a spark.

One of SAM's exclusive features is automatic virus updating. Through your modem, SAM automatically dials the Symantec BBS daily, weekly, or according to any schedule you tell it to follow.

It then downloads the latest virus antidotes and updates your virus definition files. So you now no longer have to mess with manual updating. This assures you have the greatest level of protection against new viruses as they are discovered.

The new SAM also scans for and destroys viruses in more types of compressed files than any other antivirus software can. SAM covers DiskDoubler, Compact Pro, Stuffit, and Now Compress. This ensures your ability to detect and eliminate a virus in any compressed file.

And for all of you who have a healthy appreciation for speed, the improved SAM is also the faster SAM. The 4.0 version scans for viruses significantly faster than its predecessor. Which makes virus protection more seamless and less disruptive to your work flow.

Want more? Okay, SAM is also the only virus protection software that allows you to create a custom decontamination disk specific to your machine. This lets you reboot your Mac easily should your system crash from a virus.

The 4.0 version also simplifies the user interface by combining SAM Intercept and Virus Clinic into one easy-to-use component. This advancement allows you to configure more expert options from one convenient location.

POWER MAC NATIVE.

While these new versions will protect your original Mac, they are also Power Mac native. So those of you with a Power Macintosh can take full advantage of the increased processing power. Ultimately, that means accelerated scanning speed, greater productivity, along with even more transparent protection.

What it shakes out into is that improved Norton 3.1 and SAM 4.0 now provide your Mac with the ultimate available levels of proactive protection against data loss. It's all rather amazing.

Then again, maybe all of these advancements are not so amazing. After all, Symantec is, of course, the proven industry leader when it comes to Mac data repair and recovery and virus protection.

So, pick up the entirely new versions of Norton Utilities and SAM. And then, if you smell something burning at the office, you'll know it's either yesterday's coffee or that guy two cubes upwind who's trying to put out his fiery data disaster. That you well know could have been prevented in the first place.

CALL 1-800-628-4777.

To keep data loss from casting a glow on the office landscape, call 1-800-628-4777, ext. 9FF2.

If you own Norton Utilities and SAM, you can order upgrades for $39.95 and $29.95 respectively. Or you can purchase the new versions at your software store.
anytime. anywhere. any printer.

Now you can print from your Macintosh to over 1,000 PC-compatible printers.

Sharing PC Printers on a network! On the road with your PowerBook? At home using an old PC printer? PowerPrint's cable-and-software package gives you instant access to just about any laser, dot matrix, color, or last wide-carriage printer.

PowerPrint costs less than $150.
And includes features like built-in spoiling, scaling, and custom paper sizes. It's compatible with TrueType and Adobe TypeManager fonts.

Available in Network versions.
PowerPrint/LT™ for LocalTalk networks.
PowerPrint/NW™ for Novell NetWare printing services.

Call 800-330-6833 for information, or contact your dealer.
If you’re using PhoneNET...
You’re already wired for Ethernet.

Silver Streak™ delivers blazing Ethernet speed, 44 times faster than LocalTalk™—without rewiring!

With Silver Streak, your PhoneNET network is ready for an Ethernet upgrade without rewiring. Silver Streak is the ONLY Ethernet solution that uses ordinary flat telephone cord—exactly the same used by PhoneNET.

Install in Minutes! Simply unplug your PhoneNET connectors and replace them with Silver Streak Interface Cards or Connectors. It couldn’t be easier to get Ethernet speed because Silver Streak uses the exact same telephone cord. And there’s a Silver Streak solution for every Macintosh® including Power Macs®, PowerBooks® and Classics®.

Flexible Solutions! With Silver Streak you can connect up to 30 nodes at distances up to 600 feet. And if you use Tut Systems’ Single UTP hubs, you can use the wire already in your walls to construct larger, star networks without spending money to rewire your building.

Also Works with 10BaseT! Use the Silver Streak 10BaseT converter to daisy chain up to 30 nodes from a single 10BaseT port. If you’ve already got Ethernet installed, Silver Streak lets you easily multiply your investment in structured wiring.

Guaranteed—You’ll Get the Speed You Need.

INTRODUCTORY SPECIAL!
50% OFF New Silver Streak Print Connector—LocalTalk™ to Ethernet Converter! Call 1-800-684-0935 for details and the resellers nearest you. Offer expires 12/31/94.

Tut Systems, Inc. • 2446 Estand Way • Pleasant Hill, CA 94523 • (510) 682-6510
© 1994 Tut Systems, Inc. Silver Streak is a trademark of Tut Systems, Inc. All other brand and product names are trademarks or registered trademarks of their respective owners.
PowerTable ergonomics. The other key to productivity.

Your Mac got up to speed. Did you? Using a more powerful computer means new tasks that take more time! Now comfort becomes a real issue. Unlike most other computer tables in its price range, PowerTable's many features include adjustable keyboard surfaces, which reduce fatigue. Call today for a free catalog.

Table from $299.

Cabinets from $169.

PowerTable®
More quality for your money.

800-722-6263

ScanCo
P.O. Box 3217, Redmond, WA 98073-3217. (206) 481-6434

PowerTable design is patent pending. PowerTable is a trademark of Scandinavian Computer Furniture, Inc.

Call 910-299-4843 or Fax 910-852-2067 • in Canada 204-453-8111

Circle 12 on reader service card
Samsung.
Mac’s new point of view.

It’s about how you work on your Mac. Attitude. Satisfaction. Pride.
Samsung designed the SyncMaster™ GL Series to be an extension of your creativity.

Whether you design on a Quadra workstation, create multimedia presentations on a Power Macintosh or need external video for your PowerBook, the SyncMaster GL Series will improve the way you view your work.

With true 24-bit color, multiple on-the-fly resolutions and on-board color control, you can easily concentrate on what you’re doing—not on what’s running it.

Think about how you work on your Mac. Samsung did. And came up with a whole new point of view.

Now available at MacMall. To order direct call 1-800-222-2808.

**Circle 198 on reader service card**
“The Best Mac Desk Ever.”

- Ergonomic
- Fully Adjustable
- Strong
- Guaranteed
- VAR Inquiries
- Welcome

Free Catalog! 800.688.2446

Phone 503.690.1400 | FAX 503.690.1423 | Europe 011.41.62.631026 | Japan 011.81.3.3583.0436

POWERBOOK® 500 SOLUTIONS

With the high energy demands of the 500 series, runtimes are always shorter than you would like. Mobile-Mac users constantly need more power. VST Power Systems, Inc. offers award-winning products to keep your POWERBOOK UNPLUGGED™.

CHARGER 500

VST’s CHARGER 500 is the first external charger compatible with PowerBook 500 Intelligent Batteries. CHARGER 500 fully charges two batteries in under one hour, getting your PowerBook running sooner so you can work longer. The charger implements all required Apple EMM protocols for Smart-Charging, and monitors state of charge, charge rate, and temperature parameters. CHARGER 500 is available alone, or bundled with an Apple AC Adapter.

PBTOOLS™ 2.0

PBTOOLS version 2.0 is the first software package to include Apple’s new Control Strip and Modules. It is compatible with all PowerBook models. PBTOOLS helps conserve power with user definable screen, CPU, and drive timeouts, providing longer runtimes. Version 2.0 features new PBTOOLS Control Strip modules, including Switch-A-Roo, a module designed to switch all your screens between two states.

• NEW PRODUCT - VST Auto Adapter 300 $99.95
VST Power Systems • 1620 Sudbury Road • Concord, MA 01742
(508) 287-4600 fax (508) 287-4068

Circle 73 on reader service card
With A Little Imagination, You Can Use DOS And Windows Files.

Apple is handling MacLinkPlus with the new Powerbooks because of its ability to translate files. Maybe you should consider buying MacLinkPlus for your Macintosh?

With MacLinkPlus, You Can Use Them On Your Mac.

A lot of products will let you move PC files onto your Mac. But only MacLinkPlus will let you actually use them with formatting and graphics intact. Across platforms. Across applications. Just double-click on virtually any word processing, graphics, spreadsheet or database file and MacLinkPlus will automatically convert it into your favorite Mac application. And, with a simple drag and drop, MacLinkPlus will also convert your Mac files into DOS and Windows formats. After all, there are many things you can do with PC files. But wouldn't you really rather use them for what they were intended with MacLinkPlus?

Call 800-780-1466 For More Information.
Ask about multi-packs, site licenses and our Windows version.

THE DATABRIDGE SPECIALISTS

Call 800-780-1466 For More Information.
Ask about multi-packs, site licenses and our Windows version.
AnthroCarts!

AnthroCarts will knock your socks off! Imagine how great it'll be when you find the perfect furniture for your equipment — just the right size, tough as nails construction and dozens of accessories. And you'll find our service so real and responsive, you'll get a kick out of ordering direct!

Call for our free catalog today!

Incredibly Strong.

Lifetime Warranty.

 lots of choices.

800-325-3841
6:00 AM to 6:00 PM PST, M-F
10450 SW Man hasset Drive
Tualatin, OR 97062
Fax: (800)325-0045

NEW
AdjustaCart!

GSA contract no. GS00F-5040A. Available for CEM applications. Prices from $159.00. Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.
New!
La Cie Joule Portable.™
The Only Hard Drive
Without Compromises.

La Cie has done it again.
The best just keeps getting
better. In our competitive trials
it's the smallest, lightest, quietest,
most portable full-size drive.
There are no compromises.
Joule Portable has all the features:
Quickset™ adapters for easy plug
and play, La Cie Term™ switch-
able, digital active SCSI termination
for a clean signal, front facing power switch and
activity lights for operating convenience, dual
connectors for daisy chaining your drives and
other peripherals, Silverlining™ disk management
software and unsurpassed value. Performing
alone, or plugged into the Joule Modular system
there is nothing better than the Joule Portable.

FREE
with purchase:
Silverlining 5.6
$99 value
Now
SCSI Manager
4.3 compliant!

"[Joule] makes efficient use of desktop space, reduces cable
clutter and allows easy expansion or reconfiguration."

To order call toll free:

800-999-1312

MacUser
Dec. 1994
**The Joule Advantages**

"La Cie's new stackable design for storage devices offers several benefits over standard external case designs." MacWeek – October 1994

---

**Joule Portable**

The Joule Portable features high performance hard drives from Quantum for advanced drive technology. Modules with mounts are also a snap to install in a single, vertically interlocked system.

---

**Available in Zero Footprint Case Only.**

---

**3.5" ZERO FOOTPRINT CASE HARD DRIVES**

**Quantum**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Internal with Bracket</th>
<th>Joule Portable</th>
<th>Module with Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>170MB</td>
<td>$149</td>
<td>$219</td>
<td>$219</td>
</tr>
<tr>
<td>256MB</td>
<td>$169</td>
<td>$239</td>
<td>$239</td>
</tr>
<tr>
<td>340MB</td>
<td>$199</td>
<td>$289</td>
<td>$289</td>
</tr>
<tr>
<td>514MB</td>
<td>$259</td>
<td>$329</td>
<td>$329</td>
</tr>
<tr>
<td>730MB</td>
<td>$309</td>
<td>$379</td>
<td>$379</td>
</tr>
<tr>
<td>1080MB</td>
<td>$599</td>
<td>$669</td>
<td>$669</td>
</tr>
<tr>
<td>1337MB</td>
<td>$999</td>
<td>$1069</td>
<td>$1069</td>
</tr>
<tr>
<td>1400MB</td>
<td>$809</td>
<td>$879</td>
<td>$879</td>
</tr>
<tr>
<td>2100MB</td>
<td>$1129</td>
<td>$1199</td>
<td>$1199</td>
</tr>
<tr>
<td>2148MB</td>
<td>$1199</td>
<td>$1269</td>
<td>$1269</td>
</tr>
<tr>
<td>4300MB</td>
<td>$2499</td>
<td>$2569</td>
<td>$2569</td>
</tr>
</tbody>
</table>

---

**REMOVABLE DRIVES**

- **Fujitsu Optical**
  - 230MB: $729 + FREE 3.5" Cartridge: $799
  - 600MB: $729 + FREE 3.5" Cartridge: $789
  - 8.0GB: $1149 + FREE 3.5" Cartridge: $1199

- **SyQuest**
  - 105MB: $299 + FREE SyQuest Cartridge: $369
  - 270MB: $459 + FREE SyQuest Cartridge: $499
  - 340MB: $369 + FREE SyQuest Cartridge: $429
  - 200MB: $439 + FREE SyQuest Cartridge: $499

- **Tape**
  - 800MB: $729 + FREE DAT Tape: $789

**REMOVABLE CARTRIDGES**

- 44MB SyQuest $69
- 105MB SyQuest $79
- 200MB SyQuest $89
- 230MB Optical $49

---

**SILVERLINING 5.6**

**REMOVABLE DRIVES**

- **SyQuest**
  - 270MB: $459
  - 200MB: $439

---

**Unplug**

---

**or grow.**

---

**30 Day Money Back Guarantee**

---

**To order call toll free:**

800-999-1312

---

Joule offers a base for future cable-free expansion and modularity. Joule bases can operate alone or support up to 6 additional drive modules.

JOULE ADVANTAGES:
- Simple, easy installation.
- Advanced drive technology.
- Easy SCSI ID switching.
- Digital active SCSI termination.
- Built-in path to storage expansion.
- Surge protected universal power supply.
- Silverlining Hard Disk Management.
- Up-front power switch and status LED's.
- Replaces cluttered desktop.

3.5" HARD DRIVES
- Quantum - 2 or 5 Year Warranty
  340MB $339
  540MB $379
  730MB $429
  1080MB $719
  1337MB $1119
  1400MB $929

REMOVABLE DRIVES
- Fujitsu Optical*
  230MB $849
  * Includes 1 FREE 3.5" Cartridge

REMOVABLE DRIVES
- SyQuest*
  105MB $419
  270MB $549
  * Includes 1 FREE Cartridge

JOULE BASE
- Without Drive $199

SILVERSCANNER III
BETTER THAN EVER...
All new design. Gorgeous color. Fine image detail. Excellent tonal range. Get production quality output from an inexpensive flat-bed scanner with Silverscanner III. Easy for beginners, yet with all the powerful control the advanced user craves.

PACKAGE 1
Silverscanner III with Color It! & Read-It OCR Pro. $1499
SAVE $100

PACKAGE 2
Silverscanner III with Photoshop & Read-It OCR Pro.
Transparency Adapter $799
Sheet Feeder Attachment $499

JOULE RAID
Configured with levels RAID-0, RAID-1, RAID-4, and RAID-5.
2.0GB $1899
2.8GB $2499
4.2GB $2999
8.4GB $4999
16.8GB $8999

Circle 52 on reader service card
"...It works like a coloring book for baby gods: not too complicated but potently powerful. **Pixar Typestrey 2** is a winner."

Kenneth Grey  
Desktop Video World

Everybody loves Pixar Typestrey 2...

"T2 has no equal in 3D type programs. It has the deepest animation features, the lushest quality, the best interface, world-class documentation and technical support."

Kenneth Grey – Desktop Video World

“What Pixar has here is a character generator that leaves most stand-alone character generators in the dust heap of history.”

Neal Weinstock – Post

"Typestrey offers a spectacular range of surface, shadow, and lighting possibilities, and it includes a library of editable Looks, bump and environmental maps — that will knock your socks off."

Lynda Weinman & Jack Biello – Publish

Pixar Typestrey 2 turns fonts and Adobe Illustrator designs into production quality 3D images. Pick from lots of impressive appearances and special effects to make stunning still images or professional animations. It's really easy and way too much fun.

...You’ll love it too!

Accelerated for Power Macintosh
The Mac's Eleventh Hour?
Is Apple poised for success?

As the new year approaches, there are a lot of rumors surrounding Apple. Will Apple be purchased? Who will buy it? Will Apple get a big infusion of cash from IBM, Motorola, or some other company? Who will license the Macintosh Operating System? Does the next version of Windows mean big trouble for the Mac? It's time for a reality check.

Although Apple is doing quite well, in the last couple of years it has suffered some setbacks in market share and developer support. These events, coupled with the success of Windows, have revived doubts about the Mac's long-term prospects. These same doubts resurface every time confidence in Apple dips, despite the fact that the Mac platform has been around for nearly 11 years. Could it be that this is Apple's eleventh hour? But what if, instead of heading toward extinction, the Mac is poised for brilliant success?

The Rumor Mill
First let's deal with the rumors. Some of these say Apple will be acquired by a large company such as IBM, Motorola, or AT&T. A more believable rumor is that a company like IBM or Motorola might buy an equity share of Apple, possibly to help pay for new development.

Who knows, maybe I'm wrong and one of these rumors will come true. However, I'll go out on a limb and say that they won't, at least not during this round of the rumor mill. This kind of rumor arises in the presence of three conditions: (1) when Apple's stock appears to be undervalued, (2) when Apple is undergoing a major transition, and (3) when a new version of Microsoft Windows is noisily rumbling toward the market. Every so often, rumors about the imminent purchase of Apple surface, but they have yet to come true.

The simple reason these rumors haven't panned out should be obvious—Apple is a healthy and successful company. Let's start with the financial picture. Apple is much stronger than many analysts have guessed, as demonstrated by its remarkably good fourth-quarter financial results. Sales are up 16 percent, to $2.5 billion, from the same quarter a year ago. Profits for the quarter (which ended on September 30) have increased by more than 40 times, to $115 million. Annual revenues are up 16 percent, to $9.2 billion, and annual profits are up 258 percent. The company has also cut costs while maintaining strong cash reserves. Hardly the profile of a company in trouble.

If Apple's financial strength isn't enough to convince you of its survival, you should ask how Apple is doing with its customers and products. The answer is, extremely well. Not only does Apple have one of the best-recognized brand names worldwide, but its customers' loyalty is twice as strong as any other PC vendor's. Many Macs now have price/performance ratios as good as or better than those of comparably equipped PCs. Apple is now much quicker to market with new technology and products than before. Apple has successfully expanded its distribution and also seems to have fewer inventory problems. Overall, Apple is more customer-oriented and provides products that users want, at attractive prices. It continues to field a long stream of hit products, including the Centris/Quadra 605 and 630, new PowerBooks, and the Power Macs, all just in the last year. The company has also responded to customers' demands by opening the Mac platform by supporting solutions that let users run Windows software, and by working with Novell on servers.

I'm not trying to say that Apple has never made a mistake or doesn't face any risks. Apple still has some big challenges ahead. Ultimately, the Mac's long-term success will depend on Apple's ability to convince more customers and business partners that it is a rock-solid alternative to Windows. To do this, Apple must gain market share until it has enough critical mass to vanish any shadows of doubt about its long-term prospects. This will probably occur at about 25 percent market share—an ambitious goal that is probably about five years away. For now, Apple can provide a boost of confidence by making a noticeable gain in share. That will inspire developers to provide the innovation the Mac needs to distinguish itself as an alternative.

Fear of Windows
As always, each new version of Windows brings the millennial fear of the Mac's extinction. (With computers, the millennium happens every two years.) It's hard to know what to call the next version of Windows. Until summer it was called Chicago, then briefly Windows 4.0. When it became clear that Chicago would fail to meet its ardently promised ship date, Microsoft exercised the fine art of marketing euphemism: the company proudly heralded its failure by relabeling the product Microsoft Windows 95. Microsoft now promises that it will arrive in mid-1995. Does this mean Microsoft is already anticipating the need for an upgrade—perhaps Windows 96—six months after it asks users to shell out for the marvelous new system?

Whatever it is called, this next version of Windows is a clear improvement over...
Keep the Flame Alive

The lamp of freedom and the light of learning can take many forms.

Your company’s used computers, laser printers, modems, and other surplus equipment can help empower young minds in America, and advance the development of emerging democracies around the world.

The East West Foundation takes your surplus or used equipment and distributes it to American schools and charities and to democratic and educational institutions in Eastern Europe, Africa, Asia, the Commonwealth of Independent States, and Latin America—wherever it can make a difference. And it does make a difference.

Donating used or overstock computer equipment to the East West Foundation can make a difference to you, too—at the bottom line. Because all donations are tax-deductible. And all types of computer equipment are welcome.

To arrange for a donation or for more information, please call:

EastWestFoundation
49 Temple Place
Boston, MA 02111
(617) 542-1234
Fax (617) 542-3333

A Not-For-Profit Corporation
Imagine a disk drive with the performance to keep up with your Mac.

Today's Macs generate amazing graphics and multimedia images. But they consume incredible amounts of storage in the process. That's the real world. Fortunately, Conner has a new line of fast and reliable storage solutions created especially for even the newest Mac powerhouses.

Now you can upgrade to Conner quality and performance with our new Disk•Stor® internal and external disk drives and disk arrays. Owners of high-performance Mac systems will find the capacity and performance they need in pre-formatted 1 GB and 2 GB drives. And Disk•Stor® arrays offer up to 4 GB of wide open space for more advanced applications.

Disk•Stor® drives come with the hardware, software, and documentation you need for quick and easy installation. And each disk drive is backed by a two-year warranty and toll-free technical support. Plus, they're from Conner, the choice of leading computer manufacturers worldwide for high quality and reliable storage products.

So call 1-800-6-CONNER® or one of our authorized Apple distributors and ask about the powerful new Mac upgrades from Conner. See how Conner is making high-performance Mac storage a reality.

Conner makes it a Reality.
Introducing Macintosh System 7.5. It can up

Drag-and-Drop printing.
Avoid lines when working on your network. You can print documents simply by using icons on your desktop. To print a file, just drag it onto a printer icon. To change printers, just drop the file onto a different printer icon.

Macintosh PC Exchange:
It's built in, so now you can easily share documents with DOS and Windows users, view the contents of DOS disks as if they came from another Mac, and open and edit files even when you don't have the applications they were created in.

Enhanced desktop.
Faster and easier access to items in your Apple menu. Track and retrieve your most recently used applications, documents and servers more quickly. Create convenient, on-screen notes with new electronic Stickies.

EMPLOYEE EVALUATION

NAME: Chris Wolfe DATE PREPARED: 9-8-94

TITLE: Product Manager

DEPARTMENT: Account Management

OVERALL PERFORMANCE:
X Outstanding □ commendable □ satisfactory □ needs improvement

COMMENTS:
Chris has become an indispensable member of the account team. He has demonstrated a high level of motivation and enthusiasm for the job. Perhaps the most compelling evidence of this can be found in his ability to work independently, where he picks up new tasks easily with little need for supervision or instruction. He consistently recognizes and works around obstacles to maintain productivity. Consequently, he often completes assignments ahead of schedule. At a time when collaboration is more critical than ever, Chris has also proven to be an excellent team player. He works effectively with coworkers on projects where teamwork is essential, and can easily motivate and inspire others to achieve. When delegating tasks, his thoughts are well organized and his ideas clearly articulated — an indication of his excellent communication skills. His projects are all distinguished by an attention to detail. His conclusions are always sound and logical. And he excels in time management, effectively compiling and analyzing information. He always manages to work efficiently, setting an example for effort throughout the company. Promotion and appropriate compensation are recommended at this time.

Employee's Signature

Evaluator's Signature

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Stickies and "The power is in your hands" are registered trademarks of Apple Computer, Inc. Application, Mac, the Mac logo, Macintosh PC Exchange and Stickies are trademarks of Apple Computer, Inc.
Today, everybody keeps telling you to work smarter, not harder. Wouldn't it be nice if someone finally told you how? Introducing Macintosh System 7.5. The latest, greatest version of the Macintosh operating system. A series of more than 50 refinements, enhancements and improvements that will do more than simply change the way your Macintosh personal computer works—they'll change the way you work. Making you more productive than ever.

For starters, Macintosh System 7.5 enables you to collaborate with others much more effectively.

It speeds up repetitive tasks, makes it possible to send and receive mail from a variety of sources through a single mailbox, lets you swap files with PCs and allows you to open Macintosh, DOS and Windows documents—even when you don't have the applications used to create them.

When it's time to print, you can do so quickly by using simple icons right on your desktop.

You can even teach yourself how to use your Mac and new applications with the Apple Guide, as it literally walks you through procedures, step by step.

Ultimately, it's all about giving you more of everything you buy a Macintosh for in the first place. More power. More performance. More simplicity. More Macintosh.

For the name and location of an authorized Apple software reseller near you, call 800-538-9696, ext. 250.

Because with the new power of Macintosh, there's really no telling how far you'll be able to go.

'The power to be your best.'
Five Hour Free Trial!*

Dial By Modem 1-800-365-4636, Press return until you get a prompt
At Username, enter JOINDELPHI. At Password, Enter MWJ95

Delphi Internet™ offers you full access to the Internet and now you can explore this incredible resource with no risk. You get 5 hours of evening and weekend access to try it out for free!

Use Delphi Internet’s mail gateway to exchange messages with over 30 million people at universities, companies, and other online services such as CompuServe® and MCI Mail®. Download programs and files from all over the world using FTP or connect in real-time to other networks using Telnet. You can also meet people on the Internet. Internet Relay Chat lets you “talk” with people all over the world and Usenet News is the world’s largest bulletin board with over 20,000 topics!

To help you find the information you want, you’ll have direct access to powerful search utilities such as Gopher, Hytelnet and WAIS. If you aren’t familiar with these terms, don’t worry; Delphi Internet has expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 850 local access numbers are available across the country. Explore Delphi Internet today. You’ll be amazed by what you discover.

Question? Call 1-800-695-4005. Send e-mail to INFO@delphi.com

Circle 173 on reader service card
Graphics Card Combat

We feel that the opinions rendered in Macworld's round-up of five 24-bit accelerated graphics cards are inconsistent with the test results, and that a reevaluation of the star rating for the Mirror Tornado 24-bit graphics accelerator board is warranted (Reviews, October 1994).

According to your real-world performance testing, the Mirror Tornado board performed "slower than the competition at some tasks and equally fast at others." According to the accompanying chart (on page 59), each of the five boards tested would qualify for this statement in at least one of the areas measured. Macworld has traditionally considered the price/performance ratio as an important factor when evaluating hardware. In fact, your "highest recommendation" card earns such an accolade in part due to its "relatively modest price." How can you consider this board's price, which is more than twice that of the Tornado board, to be "relatively modest"?

Your author noted a Power Mac incompatibility concerning bit-depth settings. Tornado's inability to maintain bit-depth settings is caused only by the Monitors control panel version 7.1.2. Users experiencing this problem are advised to upgrade to version 7.3.2 or later of the Monitors control panel to correct the incompatibility.

Finally, the Tornado card and only one other card tested have available DSP upgrades. While we understand that DSP was not to be an integral part of the review, it seems neglectful not to at least mention its availability.

Michael Wachholz
Marketing Manager, Mirror Technologies
Edina, Minnesota

Although the Mirror Tornado board was slightly slower in the graphics tests—ranking either last or second to last by a relatively small margin—it was nearly three times slower than the fastest board in our tests of business applications, such as Microsoft Word and Excel, running on 680X0 machines (as published in "Video-Performance Index" in the table "24-Bit Cards: How Fast Are They?"). The bit-depth problem arose when using the board with the Monitors control panel 7.1.3, the version that shipped with Power Macs at the time. In conversations with Mirror during our testing, the company never mentioned the Monitors control panel fix. Despite the newness of the Power Macs, the Tornado was the only board that failed this test.

The highly rated SuperMac board to which you refer retails for $1399. However, since SuperMac sells its products through normal resale channels, the street price is several hundred dollars less. Mirror sells its products direct, so the street price is $699.

The boards we tested made by Mirror, SuperMac, RasterOps, and Radius (not shipping at the time of the review) all have DSP upgrade options, but that fact would not have altered our conclusions, as a DSP chip would have had no effect on the tests performed.—Ed.

In your recent review "Five Graphics Cards," Deke McClelland tested the cards' relative performance in real-world usage. Because the installed base of Adobe Photoshop users is significantly large, I was perplexed that this application was not included in your test suite. Photoshop shop is well known as being one of the single most important applications for graphics professionals.

Dee Craven
Vice President of Marketing, Radius
San Jose, California

Macworld Lab did not include Photoshop in our benchmark table because it would have been redundant—the suite of applications that we tested covers the range of functions that graphics accelerators speed up. Spot tests of graphic accelerators with Photoshop confirm this.—Ed.

Bloat ed versus Feature-Rich

Regarding Jim Heid's preview of Word 6 in the September 1994 issue (Working Smart), as my office's longtime unofficial Word (3, 4, and 5) expert I would be happy if Microsoft would just slow down. There is such a thing as too many choices. When our office moved up to Word 5, I spent as much time explaining new features (to coworkers who had no need for them) as I did playing Maelstrom, and that's a lot of time. After a couple of years, most of us still have no use for many of the fancy functions of Word 5. Is there a law of diminishing neat-stuff returns? OK, I'll take The Spike. Can I buy just that part?

Frank Lang
Pasadena, California

May be your magazine's name should be changed to MacWord. For how many more years will readers have to contend with massive editorial genuflection toward that inelegantly named Goliath of a word processor, Microsoft Word? Many of the features that Jim Heid played up in his preview are already available in WordPerfect, including drag and drop, toll-free technical support, tool bars, and native Power Mac code. If that isn’t enough to convince Macworld, then continues...
FREE Quicken

When You Get IN CONTROL!

Get IN CONTROL™ 3.0 Calendar & Organizer, and the all-new Quicken® 5.0—the world's #1 rated finance software—is yours FREE!

Much more than an ordinary calendar, IN CONTROL is the award-winning planner and organizer that offers:

- Calendars
- Project Planning & Organizing
- To-Do List Management
- FileMaker® Pro Integration
- Contact Management Linking
- And More!

IN CONTROL plus Quicken. The total solution to managing your career, your life and your finances!

ORDER TODAY! 1-800-784-7388

Only $84.95 Ask for extension 9000

Seamless Integration between the Action Outline™ and full-featured Calendars lets you plan, organize and manage the way you want.

Macworld MacWEEK

© 1994 Attain Corporation. Shipping and handling extra. All products are trademarks or registered trademarks of their respective holders.

LETTERS

CORRECTIONS

- Contrary to the November 1994 Quick Tips item “Modems on Digital Phone Lines,” a telephone-bandset jack is not digital; it is always analog. As stated, you can use an adapter such as Global Village Communication’s GlobalSwitch to connect a modem to the phone line at the bandset jack even if the line is at a wall jack is digital.
- In “Big Screen Close-up” (November 1994), the street price of $2400 for SuperMac Technology’s PrestView 21 Display System should have been $3000. We printed a street price of $2400, which one vendor did offer for a limited time, but it was hardly available at that price from a dozen sources.
- In the December 1994 feature “Inside 3-D Modeling,” the icon indicating that Macromedia’s MacroModel 1.1 is Power Macintosh-native software was inadvertently omitted from the table, “3-D Modeling” compared, MacroModel has been native since April 1994.
- The “PCI Power Mac Preview” story was written by Galen Gruman with Cameron Cratty (News, December 1994).
- The correct price for Pacso Scientific’s Mac65 is $697 (New Products, December 1994).
- Mirror Technologies’ fax number is 612/332-5709 (New Products, November 1994).
- The correct name for John Schlack’s fractal shareware program is Color Fractal Generator (Power Mac News, November 1994).
- Use 800/304-5414 to inquire about The AVO Company’s PowerDoor (New Products, December 1994).

maybe you should remind yourselves of exactly which company foisted Windows on the world. Maybe then you can reevaluate your editorial devotion to a bloated, sluggish, word processing dinosaur.

Joe Clark
Toronto, Ontario, Canada

Next Up: MacReceptionist?

In August 1994’s Working Smart column, Jim Heid says that “it’s impractical and expensive to dedicate a Mac as a simple answering machine or telephone.” High Tide Software’s products turn even a Mac SE into a virtual telephone receptionist with unlimited nested mailboxes, pager forwarding, message forwarding, automatic fax receive, and optional fax on demand. Even if a brand-new Macintosh had to be purchased to run the system, many businesses would save the equivalent cost in employee expenses in a single month.

Josh Maddox
High Tide Software
Berkeley, California

Working Smart provides a monthly overview of issues in a given productivity-enhancing area of computing. Macworld intends no slight to High Tide or other relevant companies that are not covered—it is not the purpose of Working Smart to cover every product, nor, due to space constraints, would it be possible.—Ed.

A Model of Business

Two errors marred Charles Seiter’s October 1994 review of our business-process modeling package, Extend+BPR 3.0.

Mr. Seiter stated that the need to gather business data is an obstacle to the effective use of Extend. These factors are not requirements for using Extend; they are requirements of the reengineering process itself. Gathering data for a research project be considered an obstacle to using Microsoft Word?
The second error is more pronounced. The review implied twice that users must be familiar with C or Pascal and understand data structures to use Extend+BPR. This is simply not true. None of the models in the BPR manual is programming.

Bob Diamond
President, Imagine That
San Jose, California

For a research project in Microsoft Word, our readers know they’ll have to do lots of data collection; in contrast, most people don’t know that the act of buying Extend+BPR represents about 2 percent of the total business-modeling process.

It’s true that Extend users don’t have to know how to program specifically in C or Pascal, but if you are unfamiliar with IF/ELSE statements (typically encountered in programming practice of some sort), you’ll use Extend at a much lower and less useful level.—Charles Seiter

Serving Up ARA

I can’t believe that you didn’t use 28.8-Kbps modems in your tests of ARA servers (“Remote Access Arrives,” October 1994). If you had, you would have noticed that most, if not all, of the ARA servers have a maximum throughput of 56 Kbps per port. You may not think this is a problem, since 28.8 Kbps is less...
BACKUP ON CD!

Recordable CD Backup System

TAPE IS OUT.
- Tape is slow
- No random access
- One-year shelf life
- Too many different formats
- Reliable?

OPTICAL IS IN.
- Recordable CD is fast
- Random access
- Five-year shelf life
- CD-ROM standard format
- Very reliable

The CD has replaced the tape cassette in the music industry. And Recordable CDs are well on their way to replacing tape in the computer industry.

Introducing the new Pinnacle RCD-1000™ - the best way to backup your data. Our Recordable CD System comes complete with backup software for $1995. Each Recordable CD holds up to 680 Megabytes of fast random access data. RCD media is reliable with a five-year shelf life guaranteed. And inexpensive, only $29 per disk or 4 cents per Megabyte. The Pinnacle RCD-1000™ is ideal for data archival, as well as creating and testing multimedia titles, even making your own music CD of custom tunes. The RCD is the best way to backup data since RCD media can be played back on most CD-ROM drives.

The new Pinnacle RCD-1000™ is a double speed multisession recorder and player. It supports ISO 9660, MAC HFS and CD Red Book audio recording standards. The RCD-1000™ is equipped with a big 1 MB cache buffer that will ensure compatibility with most hard disk drive systems.

The RCD-1000™ system comes complete with Pinnacle's easy-to-use software program and backup utility for MAC. Simply drag and drop files from your source disk to your RCD application and in minutes you've mastered your own compact disk - from data backups to new information creations.

TO REACH THE PINNACLE CALL: 800-553-7070

Tel: 714-727-3300  Fax: 714-789-3150
Circle 115 on reader service card
than 56 Kbps, but you’ve forgotten data compression by the modem.

With data compression, a 14.4-Kbps modem can achieve a maximum theoretical throughput of 57.6 Kbps; a 28.8-Kbps modem can, theoretically, achieve throughput of up to 230 Kbps. But that throughput is wasted if the port on the ARA server can only handle 56 Kbps.

Jay Harper  
Brooklyn, New York

It’s true that most ARA server ports are limited to 57.6 Kbps, but that’s because, currently, the Macintosh’s serial port also tops out at 57.6 Kbps. No matter how fast the modem, a remote Macintosh can’t send data faster than 57.6 Kbps through a modem connected to its serial port.

Also, modem-compression statistics are usually irrelevant when dealing with ARA, as the ARA modem scripts generally turn off hardware-based data compression and verification. The ARA software handles compression and error correction internally, and produces a far more stable data stream than a modem could.—Ed.

Dreaming of the Net

I’M NOT CURRENTLY A NET USER—I’M more taken by the cyberpunk mythology of the infohabsn than really tempted to log on. But like your poll respondents, I strongly believe the greatest potential value of this technology is easy two-way communications between citizens, knowledge centers, and government (“DreamNet,” October 1994). Configuring the net as a souped-up pay-per-view venue would be a tremendous waste and will surely fail in the short run. Interactive video networks will have to capture 35 percent of the current video market and charge $40 to $55 per month to turn a profit? Not bloody likely. Unemployment may be down, but so are buying power, benefits, vacation time, and public services. So while we’re all working away like busy little bees, it takes more of our income to cover life’s necessities. Expensive, high-tech television does not qualify.

Geoff Briggs  
Seattle, Washington

Letters should be sent to Letters, Macworld, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically to CompuServe (70370,702), MCI Mail (294-8078), America Online (Macworld), eWorld (Macworld), AppleLink (Macworld), or via the Internet (letters@macworld.com). Include return address and daytime phone number. Due to the high volume of mail received, we can’t respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld.
The new NEC Silentwriter 640 is you. And you. And you.

Our new personal Mac® laser printer lets you say exactly the way you want to say it.

That's because the Silentwriter 640 is a true laser printer with 300 dpi resolution, our patented Sharp Edge Technology and Microfine toner, for crisper characters and richer, darker blacks.

And because it has 17 resident Adobe® Type 1 fonts, 35 professional TrueType® fonts and built-in TrueType and Type 1 rasterizers.

Plus, Adobe PostScript® Level 2.

An AppleTalk® interface. And a 2-year limited warranty. All for about $800. Interested? Call 1-800-NEC-INFO. For details via fax, 1-800-366-0476, #79640.

Thank you. And you. And you.

Circle 14 on reader service card
The detail of EPSON’s 4800 dpi scanner really stands out.
When it comes to detail, the new EPSON ES-1200C is in a class by itself. It's the only personal scanner with 4800 dpi and 30-bit color internal scanning for crisp, clear image reproduction.

To ensure the best results with any image you scan, the ES-1200C provides one and three pass scanning, and standard parallel and SCSI ports allow you to connect simultaneously to a Mac and a PC—an EPSON exclusive. All this means the ES-1200C gives you more power than anything else in its price range.

The ES-1200C Pro for Mac. The highest detail of any personal scanner.

The ES-1200C Pro includes top-ranked Adobe Photoshop, Kai's Power Tools, ScanTastic plug-in module & desk accessory and a SCSI cable. There's also a PC version.

<table>
<thead>
<tr>
<th>Feature</th>
<th>EPSON ES-1200C Pro</th>
<th>HP Scanjet NCX</th>
<th>Microtek II HR</th>
<th>Umax UC1200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical Resolution</td>
<td>600</td>
<td>400</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Max Resolution</td>
<td>4800</td>
<td>1600</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>Bits Per Pixel</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>One &amp; Three Pass</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Dual Connectivity</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

To see what a difference the details can make, visit your local authorized dealer or call 1-800-BUY-EPSON.
STATISTICA/w™ (for Windows) Complete Statistical System with thousands of on-screen customizable, presentation-quality graphs fully integrated with all procedures. Complete Windows 3.1 support, DDE, OLE, TT-fonts, multiple toolbars, right mouse button support. Unlimited numbers of data-, results-, and graph-windows. Inter-window integration: data, results, and graphs can be treated as objects and converted onto one another in a number of ways. The largest selection of statistics and graphs in a single system; comprehensive implementations of: Exploratory techniques; multivariate tables with headers (presentation-quality reports); nonparametrics; distribution fitting; multiple regression; general nonlinear estimation; stepwise logit/probit; general ANOVA/MANOVA; stepwise discriminant analysis; log-linear analysis; factor analysis; cluster analysis; multivariate scaling; canonical correlation; item analysis/reliability; survival analysis; time series modeling; forecasting; lag analysis; quality control; process analysis; experimental design (with Taguchi); and much more. Manuals with comprehensive introductions to each procedure and examples. Hypertext-based Stats Advisor expert system. Extensive data management facilities (spreadsheet with long formulas, block operations, advanced clipboard support, DDE hot links, relational merge, data verification, powerful programming language). Batch command language and macros also supported, "turn-key system" options. All output displayed in Scrollsheets™ (dynamic, customizable, presentation-quality tables with toolbars, pop-up windows, and instant 2D, 3D and multiple graphs). Extremely large analysis designs (e.g., correlation matrices up to 32,000x32,000, unlimited ANOVA designs). Megafile Manager with up to 32,000 variables (8 Mb) per record. Unlimited size of files; extended ("quadruple") precision; unmatched speed; exchanges data and graphs and all other applications via DDE or an extensive selection of file import/export facilities. Hundreds of types of graphs, including categorized multiple 2D and 3D graphs, matrix plots, icons, and unique multivariate (e.g., 4D) graphs. Facilities to custom design new graphs and add them permanently to menu. On-screen graph customization with advanced drawing tools, interactive stretching and resizing of complex objects, interactive embedding of graphs and artwork, special effects, icons, maps, multi-graphics management, page layout control for slides and printouts; unmatched speed of graph redraw. Interactive rotation, perspective and cross-sections of all 3D and 4D graphs. Extensive selection of tools for graphical exploration of data: fitting, smoothing, overlaying, spectral planes, projections, layered compressions, marked subsets. Price $995.

Quick STATISTICA/w™ (for Windows) A comprehensive selection of basic statistics and the full graphics capabilities of STATISTICA/w™. Price $495.

STATISTICA/dos™ (for DOS) A STATISTICA/w™-compatible data analysis system. Price $795.


Domestic sh/h $10 per product; 14-day money back guarantee.
Apple Q4 Earnings Shine  Surprising industry analysts, Apple Computer reported $2.49 billion in revenues from the fourth fiscal quarter of 1994, a 16 percent increase over the fourth quarter last year and the highest quarterly revenues in company history. Net income for the quarter was $114.7 million, up from $2.7 million during the same quarter a year ago. Apple said it shipped more than 250,000 Power Macs in the fourth quarter, for a total of more than 600,000 shipped in the seven months since introduction.

Microsoft Engulfs Intuit  Microsoft is merging with Intuit, maker of the market-leading personal-financial software, Quicken. Microsoft will likely dominate another market segment and gain access to the financial-transaction and banking industries. The Justice Department has announced that it will look into the matter. To clear the way for the Intuit acquisition, Microsoft is selling Microsoft Money to Novell. Microsoft has also acquired NextBase, maker of the Automap map-generation program.

Technögginn Battery Problems  Technögginn has asked customers to stop using its PowerPlate batteries for the PowerBook because of acid leakage. The company says it no longer produces PowerPlates and that it cannot pay for a recall or refund program. VST, which uses the same battery cells, continues to produce batteries and reports no significant problems. Battery supplier Portable Energy Products (PEP), which makes the cells used by both Technögginn and VST, denies Technögginn's claims and reports no unusual leakage problems. Technögginn, 513/321-1777.

From FreeHand to Illustrator  Future versions of Aldus FreeHand and Adobe Illustrator—both due by summer 1995—will let users easily open and edit files created in the other program. FreeHand will be revised to support Adobe's Portable Document Format (PDF), the document interchange format at the heart of Adobe Acrobat, and Illustrator will be revised to export editable PDF files (it now imports them). 415/961-4400.

The FreeHand Shuffle Continues  In other FreeHand news, Macromedia plans to acquire Altsys Corporation. If Macromedia shareholders approve in mid-January, Altsys will become Macromedia's Digital Arts Group. As for FreeHand—the illustration package Altsys developed for Aldus—Altsys is slated to gain the publishing and distribution rights to that program on January 1, 1995. Once existing retail inventories are depleted, the program will ship under its new name: Macromedia FreeHand. Macromedia will also offer Altsys's Fontographer type-creation program.

Apple Drops/Add PowerBooks  Apple is phasing out all PowerBooks and Duos with active matrix gray-scale LCD screens. The two models affected are the PowerBook 540, which is likely to be out of stock by the time you read this, and the Duo 280, which should be out of stock by Christmas. Apple also added a new configuration, a PowerBook 520c with 12MB of RAM, a 320MB hard drive, and a modem for $3949. Another new configuration, a PowerBook 540c with 12MB of RAM, a 500MB hard drive, and modem, goes for $5899 and replaces the only current 540c model.

Apple Reduces Prices for Servers  Apple's servers now cost 6 to 11 percent less. The eight PowerPC 601-based Workgroup Server models now range from $2809 (formerly $3159) for the Workgroup Server 6150 with 8MB/500MB/CD to $9519 (formerly $10,269) for the Workgroup Server 9150 with 16MB/two 1GB drives/DAT/CD/AppleShare. Apple also stopped making the 68040-based Workgroup Server 60 and Workgroup Server 80 models. 408/862-3385.
Apple Pushes Power Mac to 110MHz

Apple has introduced its fastest Power Macintosh yet, the 8100/110, which is the first Mac to use clock-tripling technology. The CPU chip runs at 110MHz, three times the motherboard's 36.7MHz speed. Earlier Power Macs used clock-doubling technology, in which the CPU runs at twice the motherboard speed. Apple expects the Power Mac 8100/110 to be the fastest Power Mac available until late spring, the earliest time the first Power Macs to use the PCI bus might begin shipping. Apple also says the 8100/110's motherboard can support even faster CPU chips, but IBM Microelectronics was unable to deliver a sufficient quantity of CPUs that run at speeds of 120MHz or faster. But faster versions may be possible later.

The 8100/110 does not replace the 8100/80 or 8100/80AV; both are still shipping. The 8100/110 comes in just one configuration: 16MB of RAM (8MB on the motherboard and two 4MB SIMMs preinstalled, which leaves six SIMM slots open for a maximum of 264MB), a 256K cache SIMM, a video card with 2MB of video RAM (expandable to 4MB), a doublespeed CD-ROM drive, and a 2GB hard drive. No AV version is available. Apple estimates the price for the 8100/110 to be about $6379, excluding the monitor and keyboard.

The 8100/110 requires System 7.5 and a new system enabler (both included); the other Power Macs require 7.1.2 or later and need no enabler. In multiuser setups that use one master system disk, Apple recommends using the 8100/110's system software, since both the 8100/110 and other Power Macs are compatible with it.

Otherwise, the Power Mac 8100/110 has the same features as the 8100/80.

Specially Designed CPU
The 8100/110 contains a new variant of the PowerPC 601 CPU that uses 0.5-micron (a micron is a millionth of a meter) circuits. That's even skinnier than the circuits in...
Adobe Adds Zip to OpenDoc

THE NEXT OS STANDARD?

While analysts and the general business press mistakenly argue over whether Apple is already buried or merely moribund, OpenDoc, one of the company's several saving graces, is slowly readying for blastoff. The latest fuel for the document-centered component-software architecture: Adobe has joined Component Integration Laboratories (CI Labs), the OpenDoc consortium, as a full sponsor, and Lotus is also a recent member. Joining Apple, IBM, and WordPerfect (the Novell Applications Group), the two new members add significant momentum to the initiative.

Adobe chairman and CEO John Warnock said the company will create companion OpenDoc parts for the display and printing of documents in the content formats of Adobe Illustrator, Photoshop, and Premiere. Adobe decided to support CI Labs in part because OpenDoc is non-proprietary, he added.

In several of its applications, Lotus has already built in Bento (named for the Japanese word for box lunch), a portable object storage library and format used for exchanging various data types, including multimedia and compound documents. (See “OpenDoc and OLE 2.0,” Macworld, November 1994.) Lotus was one of several developers of Bento, along with Apple, which has licensed it to CI Labs for use in OpenDoc. Current Lotus applications that use Bento include 1-2-3, Improv, and Lotus Notes VIP.

Apple hopes to release its Mac version of OpenDoc in late 1995. IBM and WordPerfect are the developers of the OS/2 and Windows versions, respectively.—T.M.

SPSS Commits to Macintosh

COMPLETE PRODUCT LINE

SPSS has been a leading vendor of statistical software for mainframes and minicomputers for more than a decade, and now the company has made a major commitment to completely revamping its entire Macintosh product line. While SPSS has previously offered a Mac version with a giant feature set, the software has been so command-line driven and text oriented that SPSS users felt like the Macintosh was serving as a dumb terminal for its own RAM.

That's all changing this December, as SPSS roars back into the Mac data-analysis marketplace with its living-color, button-driven, real-Mac SPSS 6.1—a leap of three version numbers from its current offering. The Base package ($695), which is compatible with Windows and Unix versions, offers more than 60 statistical procedures (with several different functions in each procedure), 50 chart types, and complete data-management and spreadsheets interface facilities.

Add-on modules ($395) to the Base package will include Advanced Statistics (mostly advanced regression tests), Trends (time-series forecasting), Professional Statistics (includes cluster and factor analysis), Tables, and Categories. When it ships, the full SPSS 6.1 suite will be the most complete statistics system available for the Macintosh.

The software will become available first in versions for 68040-based Macintoshes. Versions for Power Mac machines should follow in a few months, according to SPSS.—CHARLES SEITER

In Brief

SoftWindows for Quadras

Insignia Solutions is shipping a version of SoftWindows, its Windows-emulation software, designed for 68040-based Macs. The company recommends 16MB of RAM and, to run Windows and DOS, at least 23MB of free disk space. DOS and standard-mode Windows applications run roughly as fast as on a 25MHz 80386SX, according to Insignia, but they cannot run enhanced-mode Windows applications. The software supports PC CD-ROMs, serial-port emulation, printing, and networks. It lists for $499, and there are upgrades from Insignia's SoftPC. 415/694-7600.

PBS Online Starting Up

The Public Broadcasting Service is providing affiliate stations with the opportunity to join PBS Online, a nationwide bulletin board system made up of local stations joined by FirstClass servers. In preparation, PBS has licensed 1,000,000 copies of the FirstClass client software. Individual viewers will dial up their local PBS station's bulletin board for a mix of program-oriented content and local events. It won't cost users anything to connect to PBS Online, which PBS plans to have up and running in a few months. Contact your local PBS station for details on its participation.

Gold Prices Fall

Global Village is now shipping the Teleport Gold II, a $155 version of its popular, premium-priced 14.4-Kbps fax modem. The scaled-down Teleport Gold II is smaller than its full-size sibling and minus the OCR, but still sports Global Village's own fax software, GlobalFax, as well as 2Term, America Online, and aRA and online-service scripts. A similar version—sans 2Term and America Online—is bundled with Apple's new Performa 6100s. OCR software is available separately for $49. 415/390-8200.
FWB Deploys RAID 5

SUPPORTS HOT SWAPPING

How long could you afford to be without your data if your server array went down? For readers with answers in the microsecond range, FWB has a fault-tolerant, RAID 5 array with a backup drive and power supply. The SledgeHammer FT contains six SCSI-2 Wide drives—five are used as data drives, while the sixth is on standby as an automatic spare.

In the event of a drive failure, the array automatically and transparently rebuilds the data from the failed drive on the spare drive, without any system downtime. Similarly, if a power supply or fan fails, the SledgeHammer FT automatically switches over to a backup and notifies the system administrator over the network. All drives, both power supplies, and two of the four fans are hot-swappable.

The SledgeHammer FT array comes in 6.8GB ($28,999), 8.2GB ($26,499), and 16.4GB ($54,999) configurations, all with a DDS-2 DAT (up to 16GB per tape) drive built in. The arrays feature average access times as fast as 2ms, and sustained data-transfer rates up to 15 MBps in RAID 5 mode. FWB includes a SCSI JackHammer (a SCSI-2 NuBus card), SledgeHammer FT ToolKit array setup and monitoring software, and Dantz's Retro¬spect Remote backup software. FWB, 415/474-8035.

—Cameron Crotty

Double-Duty Power Pump

HEAVYWEIGHT CONTENDER

So you popped for an Apple 601 Power Mac upgrade card for your Quadra, but the new 110MHz Power Macintosh 8100/110 (see "Apple Pushes Power Mac to 110MHz," News, this issue) is making you drool as you poke along at a measly 50MHz or 66MHz? Newer Technology has announced the Power Pump, a hardware package that accelerates both the 68040 processor on the Quadra 700, 900, or 950 motherboard and the PowerPC 601 chip on Apple's upgrade card.

The Power Pump's Controller Card resides in the NuBus slot partially blocked by the Apple upgrade card, while the Clock Driver Card sits in the ROM socket. The Controller Card receives the speed setting from the Power Pump control panel, and the CPU setting (PowerPC or 680X0) from Apple's PowerPC Upgrade Card control panel. Via an infrared beam, the Controller Card sends the speed and CPU setting to the Clock Driver Card, where it is stored in nonvolatile memory for the next restart. The Power Pump control-panel software can independently adjust the speed of the 68040 and PPC 601 chips. The Pump can accelerate 25MHz 040 chips to 30MHz, and PPC 601 chips to 80MHz.

Readers should note that these specs are the manufacturer's estimates—individual chips' tolerance for acceleration varies.

The package should list for around $530, and is expected to be available by the time you read this. Newer Technology, 316/685-4904.

—Cameron Crotty

Retooling MacTools

USER-ASSISTED DISK DIAGNOSIS

Central Point (a division of Symantec) has a tip for users who know that something's wrong with their data but aren't quite sure what it is. The QuickAssist and Smart-Tips features of MacTools Pro 4.0 help users diagnose hard disk problems based on symptoms the users identify. Once the problem has been narrowed down, MacTools Pro automatically takes corrective action (if it can), or suggests other system problems the user might check (if it can't).

AutoCheck has also been enhanced in version 4.0 with an AutoRepair utility; the software now automatically fixes most of the problems it finds, without requiring a system reboot or even user involvement. Other changes in the MacTools Pro 4.0 package include the ability to create a recovery disk on the Mac's built-in RAM disk, a faster Optimizer utility, and completely Power Mac native versions of Optimizer, TrashBack, and the MacTools Clinic. MacTools Pro 4.0 is currently available for $149.95 and includes both 680X0 and native PowerMac code. MacTools 3.0 users can upgrade for $49.95. Symantec, 503/690-8088.——Cameron Crotty

Petite Portable Printer

ONE POUND, LASER QUALITY

Citizen America says it has introduced the smallest laser-quality printer in the world. The 1-pound PN60 produces monochrome and color output using thermal-fusion technology. About the size and shape of a compact...
umbrella, the QuickDraw-based PN60 can print 2 monochrome pages per minute at 360 dpi and 1 color page every 2 minutes.

Expected to begin shipping in mid-November, the PN60 has a suggested list price of $429. On-the-road options include a $79 half-pound battery and a $59 adapter for a car's cigarette lighter. The printer supports TrueType and Adobe PostScript Level 1 fonts and has five built-in fonts. Pages are hand-fed through the printer, and users can print on plain paper, en
apes, and transparencies. Toner ink is supplied in tiny cartridges that cost $8.99 for 2 and print 30 to 40 pages each. Color cartridges are $13.99 for 2 and print 4 to 7 copies per cartridge. Citizen America, 310/453-0614.

—JOANNA PEARLSTEIN

Mosaic Goes
Commercial

WWW BROWSERS
HIT MARKET

Following the wave of commercial
organizations trying to capitalize on the last free
space, the Internet, several companies have licensed
Mosaic from the National Center for Supercomputing
Applications (NCSA) at the University of Illinois at Champa
gin-Urbana. While the free version of NCSA Mosaic is
available on the Internet and online services, augmented
commercial Macintosh ver-
sions are now becoming avail-
able from Mosaic Communications Corporation (MCC) and Spyglass.

MCC has announced
Mosaic NetScape Network Navigator, a commercial re-
write of Mosaic by one of its
originators. Netscape lets
users work with documents while downloading them and
provides support for encryption
and the JPEG file format.

MCC has also announced
the Mosaic NetSite Communica-
tions Server, which is aimed
at users setting up or main-
taining their own World Wide
Web site. The server will first
be released on the Unix plat-
form; a Macintosh server
product is expected in 1995.

NetScape will be offered for a
nominal price with the server,
which is $5000.

Spyglass's
Enhanced
NCSA Mosaic for Macintosh
Release 1.0 requires less mem-
ory than its freeware sibling,
supports multiple windows,
and has online help. The Spyglass
product is available in 680X0
and native Power Macintosh
versions. Spyglass is not selling
the product directly; it's avail-
able in bundles from a number
of third-party companies,
including FTP Software
(508/685-4000) and O'Reilly

Mosaic Communications, 415/
254-2601; Spyglass, 217/355-
6000. —JOANNA PEARLSTEIN

In Brief

The Disability Connection

U.S. Robotics and Megahertz
Holding Corporation have
announced that they are merging.
The companies said the
reason for the move was to
combine U.S. Robotics' strength
in desktop and data-center
communications with Mega-
Herz's experience in mobile
communications and related
areas. At press time the
merger effort still needed to
be approved by stockholders
and federal regulators.

Comm Firms Merge

V.34 PCMCIA Modems

In related news, U.S. Robotics
has begun shipping four
datamods that can fit into
PCMCIA 2.1 slots. Two
Sportster (single-user) models
are available in V.32 or V.34
versions and list for $259 and
$499, respectively. Two Courier
(network capable) models also
come in V.32 and V.34 versions,
at $499 and $575, respectively.
800/342-5877.

Recordable CD Price Drop

Pinnacle Micro recently slashed
the price of its RCD-1000
Recordable CD Backup System
by about a third from $2995 to
$1995. The double-speed drive
can back up a network server
or other system, or it can be used
to create multimedia CD-ROM
discs as well as audio and video
CDs. The recordable drive comes
with software that lets it work
with Macintoshes or Windows
machines, in formats including
ISO 9660, HFS, CD-DA, and
CD-I. Blank CD discs list for $29.
714/789-3000.

BUGS & TURKEYS

After Dark 3.0 users have reported crashes when running Norton Utilities' FileSaver, BestWare's M.Y.O.B., or certain After Dark minmodules when After Dark's password protection is turned on. Berkeley Systems expects a fix, called version 3.0a, to be available in late November. Registered users should be able to call to request the new version from Berkeley Systems or download it from most online services and the Internet. Berkeley Systems, 510/540-5535.

Symantec Antivirus for Macintosh (SAM) 4.0 doesn't remember when users tell it to ignore a suspicious item like a preference file or extension. SAM also fails to scan a floppy disk when the application is open and the disk is inserted into the drive. A Symantec representative says version 4.0.1, scheduled at press time to be released soon, will fix these problems. The company will mail the new version to users who request it. Symantec, 503/334-6034.

Apple recommends that Power Mac users turn on virtual memory for maximum performance. But Frame Technology's FrameMaker for Power Macintosh crashes when users import Microsoft Word files into the application and virtual memory is turned on. Frame promises a fix in the next version but won't say when it will be available or how much it will cost. In the meantime, users can either turn off virtual memory when using filters, or call Frame's technical support to learn how to edit the application's data fork. Frame Technology, 408/975-6466.

Macworld will send you a Bug Report T-shirt if you are the first to inform us of a serious, reproducible bug that we report in this column, or a Turkey Shoot T-shirt if we shoot your turkey in this space. See How To Contact Macworld.
"POWER MAC 8100/110" continued

The 8100/110's CPU is also the first CPU that includes an integrated heat pump. Fast chips become hotter than slower chips, so system designers using faster chips need to ensure better airflow and sometimes install cooling fans. For example, early Pentium CPUs suffered from excess heat and required a complete redesign of PC motherboards. Apple has avoided such a redesign by working with IBM to add what are essentially two wires to the CPU. These wires connect to a heat sink outside the CPU, transferring the heat directly away from the CPU in a pump-like action. Other CPUs let the heat dissipate at its own pace through the silicon die (the part that contains the circuitry) to the surrounding case and heat sink.

NuBus Flaws Fixed

Apple is aiming the Power Mac 8100/110 at professional publishers and multimedia authors. One common request of such users has been that Apple fix the earlier Power Macs' NuBus control chip, called the Bart chip, to allow burst-mode data transfer between NuBus cards, the way multiple-card products do in video editing. This mode allows fast communication of large amounts of data. Apple has added this capability to the 8100/110 and fixed some of the bus-timing errors that make other Power Macs slower than the Quadra 840AV for certain data transfers used in RAID systems and video editing.

The company has also fixed a bug in the ROM that previously limited the number of slots you could add through a third-party expansion chassis such as those made by Second Wave. (The Power Mac 8100 has three NuBus slots.) Apple says this support for more slots (called superslot addressing) should increase data-transfer rates for several high-speed cards, since the cards use the higher-bandwidth data structure that superslot addressing provides, even if there is no expansion chassis present.

However, Apple does not currently have plans to incorporate either the Bart or ROM fixes into the other Power Macs. Furthermore, there is no 8100/110 upgrade board, so 8100/80 owners faced with the NuBus problems cannot presently buy an upgrade board to fix the problem and increase system speed.

How the 8100/110 Stacks Up

The Power Mac 8100/110 is also about 21 percent faster than an 8100/80. That speed gain is less than what you might expect, based on the speed difference of 38 percent between a 110MHz CPU and an 80MHz CPU. The reason is that CPU performance is not the only factor in overall system performance. One significant factor is that the Power Mac 8100/110's motherboard runs at 36.7MHz, compared with the 8100/80's 40MHz. In both Power Macs, the CPU makes calculations faster than the motherboard can handle them, which introduces some time lag as the CPU pauses to let the motherboard catch up. The lag between the 8100/110's 110MHz CPU and 36.7MHz motherboard is greater than the lag between the 8100/80's 80MHz CPU and 40MHz motherboard, which reduces the actual speedup the 110MHz CPU offers. The video system is the same on both 8100 models, which also moderates the 8100/110's overall performance.

Galen Gruman
Introducing a printer for those who have ideas bigger than this page.

The HP DesignJet 650C/PS printer. Large-format at a small price.

$8,995*

Go on. Give yourself room to think. With the HP DesignJet 650C/PS, you can now print in sizes up to 2' by 9' (up to 3' by 9' with our larger model**). Right in your office. Right away. No tiling. No hang-ups. No problem. Just clean, inkjet output with PANTONE®-licensed colors. Adobe® PostScript® Level 2 software and a built-in RIP are included. For an output sample, call 1-800-354-7622, Ext. 8277.

*Price subject to change. Check with resellers or manufacturers for current pricing.

**Larger model includes HP DesignJet 1050C/PS.
IBM, Apple Move to Joint Platform

NEW POWERPC COMPUTER STANDARD IN THE WORKS

After years of conflicting signals about how closely the two personal computer giants would really collaborate, IBM and Apple signed an agreement on November 7 to develop a converged PowerPC platform standard that can run a variety of operating systems, including the Mac OS.

The two companies have abandoned efforts to port configurations on which IBM has based its first PowerPC computers. IBM expects to release PreP systems in the spring, running Windows NT and IBM's AIX variant of Unix.

"For the current PreP boxes, we have planned to support AIX, OS/2, Windows NT, and Solaris," says Gary Griffiths, director of business development for IBM's Power Personal Systems division. "On a converged platform we would hope to also support System 7.5, and NetWare if Novell is ready [in its current development efforts] to be on the platform by then."

"We believe DOS and Windows will run fine, [including] Windows 95, build machines based on the converged-platform standard would come up with their own licensing schemes for bundling operating systems. Griffiths predicts that IBM will ship systems with a CD-ROM containing encrypted versions of all the operating systems that the company produces or licenses.

IBM developed PreP, which closely resembles the standard PC architecture, as a guide for builders of PowerPC-based clones. Those companies can use PreP to build clones with off-the-shelf chip sets and adapters. PreP had been considered a critical tool for PowerPC computers to win market share from Intel-based machines. The failure to convince Apple to adopt the PreP standard put a huge dent in that strategy.

"The biggest problem with PowerPC in the marketplace is, 'What hardware should I be using, and what operating system can I use on it?','" says Linley Gwennap, editor-in-chief of Microprocessor Report, a respected newsletter that follows the chip industry. A converged-platform standard could eliminate that problem, he adds.

In some cases a PC based on the converged platform would look like a PC, in some cases like a Macintosh, and in some cases it would support components designed for either PCs or Macs, such as choice of keyboard types.

But don't look for Apple and IBM to comarket systems. "Comarketing is probably not something that makes a lot of sense from a practical perspective, and I suspect it would run into a lot of problems in the Justice Department, also," according to Griffiths.

"In some cases a PC based on the converged platform would look like a PC, in some cases like a Macintosh, and in some cases it would support components designed for either PCs or Macs, such as choice of keyboard types. But don't look for Apple and IBM to comarket systems. "Comarketing is probably not something that makes a lot of sense from a practical perspective, and I suspect it would run into a lot of problems in the Justice Department, also," according to Griffiths. Continues on page 42.
Apple computer managers conceded at a recent conference that the Mac's built-in audio is better than that of a typical PC. The company's new SoundBlaster audio card, which includes 16-bit sound, will be available in March 1995 for $699.

The card will work with most Macintoshes and PCs that support Sound Blaster's extended audio specifications (EAX) and will also be compatible with Apple's QuickDraw 3D graphics software.

Apple's new PC coprocessor card adds a 486DX2-based system to a Power Mac 6100. It includes PC network and multimedia support.

**Apple, DayStar Ship Upgrade**

**POWER MAC CARD FOR 040 LCs, PERFORMAS**

Apple and DayStar Digital both planned to begin shipments in mid-November of a card that converts an 040-based LC or Performa into a Power Macintosh. The jointly developed card will cost $599. Apple will call the card the Power Macintosh Upgrade Card for Entry-Level Macintosh, while DayStar will call it the PowerCard 601.

First announced in August 1994, the upgrade card works at 66MHz in a Quadra, LC, or Performa 630; LC 575; or Performa 570-series Mac. It works at 50MHz in a Quadra 605, LC 475, or Performa 470-series Mac. These Macs—often dubbed the LC 040—use the LC III-style Processor Direct Slot and have a 140 processor. Macworld Lab tests of a prerelease unit show that the upgrade card’s performance at 66MHz is comparable to a Power Mac 7100/66 (see the benchmark chart “What PowerPC Offers Entry-Level Macs”).

To convert 040-based Macs that use a Quadra PDS (the Centris and all non-AV Quadras but the 605 and 630) to Power Macs, you would use Apple's $699 Power Macintosh Upgrade Card, which has been shipping since March 1994. There is no Power Mac card for AV Quadras.

Like the Apple upgrade card for 040s, DayStar’s new upgrade card for the LC 040s does not plug into the PDS. That’s because the LC III-style PDS is too slow to handle the high-speed transfer needed to take advantage of the PowerPC CPU. The new upgrade card plugs into the 040s’ CPU socket, bypassing the PDS and its data-throughput bottleneck.

Apple requires that a dealer install the upgrade card it sells for the LC 040s. DayStar includes instructions for user installation. The cards are identical—DayStar designed the hardware and Apple designed the software. The only other difference between the two companies’ packages is the warranty: Apple offers its standard one-year warranty, while DayStar offers a three-year warranty. Apple, 408/996-1010; DayStar, 404/967-2077.

**What PowerPC Offers Entry-Level Macs**

<table>
<thead>
<tr>
<th></th>
<th>Overall Score</th>
<th>CPU-Intensive</th>
<th>FPU-Intensive</th>
<th>Disk-Intensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Mac 6100</td>
<td>2.7</td>
<td>2.5</td>
<td>3.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Quadra 630 w/ Power Mac upgrade*</td>
<td>2.1</td>
<td>2.0</td>
<td>2.9</td>
<td>1.1</td>
</tr>
<tr>
<td>Power Mac 7100</td>
<td>2.3</td>
<td>2.2</td>
<td>2.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Centris 650</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Centris 650</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

* Pre-release with performance of shipping unit may vary slightly.

**BEHIND OUR TESTS**

See the chart “How the 8100/110 Stack Up” in News, in this issue, for test details.

-Macworld Lab testing supervised by Danny Lee and Mark Hurlow

**CENTRIS 1.0, QUADRA 1.2, POWER MAC 2.1**

Centris 650 (Centris 650 = 1.0), Quadra 630 (Quadra 630 = 1.2), Power Mac 7100/66 (Power Mac 7100/66 = 2.1), Centris 570 (Centris 570 = 1.0), Power Mac 7100/110 (Power Mac 7100/110 = 2.3), Centris 650 (Centris 650 = 1.0), Power Mac 7100/66 (Power Mac 7100/66 = 2.3), Centris 570 (Centris 570 = 1.0).

**CENTRIS 2.7, QUADRA 2.0, POWER MAC 2.2**

Centris 650 (Centris 650 = 1.0), Quadra 630 (Quadra 630 = 1.2), Power Mac 7100/66 (Power Mac 7100/66 = 2.2), Centris 570 (Centris 570 = 1.0), Power Mac 7100/110 (Power Mac 7100/110 = 2.2), Centris 650 (Centris 650 = 1.0), Power Mac 7100/66 (Power Mac 7100/66 = 2.2), Centris 570 (Centris 570 = 1.0).

**CENTRIS 1.5, QUADRA 1.1, POWER MAC 1.3**

Centris 650 (Centris 650 = 1.0), Quadra 630 (Quadra 630 = 1.2), Power Mac 7100/66 (Power Mac 7100/66 = 1.3), Centris 570 (Centris 570 = 1.0), Power Mac 7100/110 (Power Mac 7100/110 = 1.3), Centris 650 (Centris 650 = 1.0), Power Mac 7100/66 (Power Mac 7100/66 = 1.3), Centris 570 (Centris 570 = 1.0).
“Joint Platform” continued

The converged standard is based on “a single motherboard that will handle all of the operating systems,” he says. Any of the PowerPC software written for any of those operating systems today will be 100 percent binary-compatible on the converged platform. It will operate on converged-platform products — without recompiling — when they hit the street in 1996. The converged platform will make the Mac and PowerPC market large enough to attract developers who now largely ignore alternatives (such as the Mac and OS/2) to DOS and Windows, says Gable.

Problems with PreP
IBM and Apple are creating the new platform standard to address the insurmountable barriers to porting the Mac OS to PreP, Gable says. The only similarities between a Power Mac and PreP-based machines, Gable notes, are memory SIMMs and the PowerPC CPU itself. Disparities invisible to users, such as those within hardware memory registers, create “a pretty puzzling challenge to bring System 7 over there.” Only the SCSI and IDE bus standards, and Ethernet — all of which have been implemented fully on one or more current Macs — would have been relatively easy to port because they are fully supported by PreP.

“Overall, you’re looking at a product that would [have taken] a long time to create; then you’d be looking at inevitable incompatibilities,” Gable says. Apple concluded that even if the job could be done, it would result in an inferior Mac — a marketing nightmare for what was imagined as a primary engine for the Mac clone market.

“The turning point was when IBM decided that they could make big changes in PreP,” Gable reveals. “The new design includes ASICS [application-specific integrated circuits] and hardware registers that are a combination of Macintosh and PreP [components]. Supporting this platform is similar to supporting a new Macintosh — there’s a lot of software work to do, but it’s the kind of work Apple’s done in the past. To Apple, this machine will look very much like a new Power Mac.”

Concerns about implementing future technologies did not contribute to the decision to abandon PreP, however. Firewire (a high-speed serial interconnect standard that could eventually replace SCSI and other innovations will plug into the Peripheral Component Interconnect (PCI) bus, which both PreP and the next generation of Power Macs support. And the next major revision of the Mac OS, code-named Copland and due for release in about a year, should be easier to port to a PC platform, Gable adds.

But the converged standard will run “today’s software as well as tomorrow’s,” according to Gable. Griffiths says that the biggest incompatibility problem — the memory map and memory subsystem — will be corrected on the converged platform.

Apple’s work with the PCI bus and its adoption of PClCIA for the 500-series PowerBooks should ease many of the I/O challenges of porting System 7.5 to the converged-platform specification.

Licensing Effects
Contrary to earlier statements, Apple now says it will consider any company as a possible licensee, including the top six PC makers.

“Any company that builds a machine based on the common hardware platform can license the Mac OS if they like,” Gable says. “It creates a base for completely open licensing . . . No company wants to stand up and say that they are licensing yet, though it’s pretty obvious that some will.” He expects licensing announcements to follow on the heels of the platform-standard announcement.

“We’re not going to make any announcement regarding Mac clones, though that’s something on the table both ways — bilateral licensing,” says Griffiths, indicating that Apple might want to license OS/2 or AIX for its servers. If IBM does license the Mac OS, “It would be a straight per-copy deal; it wouldn’t be a matter of making investments in the technology,” Griffiths adds.

Martin Reynolds, director of technology assessment at Computer Intelligence Corp., is skeptical about the long-range potential of the converged-platform standard. “The enterprise is very heavily dominated by Intel-Microsoft machines. A Pentium machine is going to be $2500. My bet is that an IBM/Apple machine is going to be significantly more expensive because the only reason for IBM to do this is to make a higher profit on the [PowerPC] systems.”

“If they succeed in establishing a common platform and licensing it to other companies, then you can expect those other companies to sell at low prices to gain market share,” Reynolds adds.

Griffiths discounts the rumors, caused by speculation about the converged-platform agreement, that IBM would buy or invest in Apple. “All these stories of IBM’s funding huge sums of money are completely unfounded. This is a deal where essentially no money is changing hands.”

However successful Apple and IBM are in licensing the Mac OS and the converged platform, the agreement means that Apple will continue to capture its own fate, even as it abandons a strict go-it-alone strategy.

—Charles Piller
YOUR ONE-STOP GRAPHICS SHOP

CANVAS Does it All!

- Newsletters and Flyers
- Logos and Advertising Design
- Floor Plans, Architectural & Technical Drawings
- Floor Plans, Architectural & Technical Drawings
- On-Screen Presentations and Slides
- Retouch, Color or Trace Scanned Images
- Color Separations
- Spectacular Special Effects

"With CANVAS™, 10,000 clip art images, 2,000 fonts and Power Mac™ acceleration, you’ll always finish first."

THE EASY-TO-USE DRAWING PROGRAM FOR BUSINESS, DESIGN, TECNICAL ILLUSTRATION AND MORE!

Canvas gives you the power to complete any graphics project without bouncing around between half a dozen applications. With its award-winning, intuitive interface, Canvas lets you draw, layout, paint, present, apply a multitude of sophisticated special effects - and take your work all the way to finished film.

EXCLUSIVE NEW CD-ROM JUMP STARTS YOUR CREATIVITY

Canvas comes with a premium CD jam-packed with 10,000 clip art images ready-made for your newsletters, signs, sales presentations and diagrams. These fully editable images make a perfect starting point for any graphics project! You also get over 2,000 professional TrueType™ text, display and novelty fonts — more than any other package at any price!

SO WHAT ARE YOU WAITING FOR?

Run today to your favorite software retailer or call us and get your hands on the best graphics software buy around.

"... the best object-oriented drawing program money can buy."
- MacWEEK

"... this multi-purpose drawing and painting application is power-packed."
- Computer Pictures

"... when it comes to text-handling, Canvas' features rival those of Illustrator."
- MacUser

$269
Full Retail Price

$149.50
Competitive Upgrade Price

CANVAS INCLUDES
- Unlimited Free Technical Support
- 60-Day, Risk-Free Money-Back Guarantee
- CD-ROM with 10,000 clip art images
- & 2,000 TrueType Fonts

COMPETITIVE UPGRADE
- Simply show us proof of ownership of any Macintosh graphics program and shop nearly $200 off Canvas' already low $269 price! Call today...

1-800-733-6322

Circle 57 on reader service card
Now the only thing you have to do with your hands is click on a button. Because there's new mPOWER™ for the Macintosh®. Multimedia presentation software with the simplest, most logical push-button interface you've ever seen.

Sure, you can do the usual text, backgrounds and charts. But how about a full-blown interactive multimedia extravaganza, using clips and images from VCRs, laserdisc players, CD-ROMs and video cameras? And how about doing that without wading through manuals, menus and timelines?

The only thing as easy as using mPOWER is getting our demo. So pick up the phone.

**INTRODUCING mPOWER. MULTIMEDIA PRESENTATIONS AT THE TOUCH OF A BUTTON.**

Call for a CD-ROM demo disk. It's free.
So what's to lose? 1-800-921-9493.

(HEY, if you're already sold, why wait? Call now and buy it direct for just $295.)
HARDWARE

CD5654

Dynatek's entry into the quad-speed CD-ROM drive market sports a 256K buffer and an average seek time of 125ms. The CD5654 is a coddy-loading, external drive, and ships with an audio-CD software utility. $599. Dynatek Automation Systems, 902/832-3000; fax 902/832-3010.

CTX 2085GM

This 20-inch multifrequency color display is CTX International's most recent addition to the company's line of Energy Star-compliant Green Monitors. The 2085GM features a 0.28mm dot pitch and a maximum resolution of 1600 by 1280 dpi at a 60Hz vertical refresh rate. The monitor has digital controls and comes with 15 factory presets—users can create and save 10 additional settings. $1695. CTX International, 909/595-6146, 800/888-2012; fax 909/595-6293.

DAT Autoloader

EasyCoder 501

This thermal printer prints bar codes on labels, tags, and tickets. The EasyCoder features 300-dpi resolution and can print text, bar codes, and graphics at up to 8 inches per second on stock up to 4.7 inches wide. The printer plugs into the serial port, comes with Macintosh printer-driver software, and is also available with a numeric keypad on the front panel (501E) or with a full alphanumeric keypad (501SA). $2955; 501E $2955; 501SA $3295. DataDesigns, 210/697-0780; fax 210/697-9429.

MicroRouter 900i

With an Ethernet-to-IP router like this one, you could use the Internet as your wide area network. On the IP side, this router supports leased-line, switched-line, and ISDN connections, as well as modem connections over a standard phone line. On the Ethernet side, the MicroRouter 900i has a single port with autoswitching AUI (thin Ethernet), BNC (thin Ethernet), and RJ-45 (10BaseT) connectors. The router ships with compatible Macintosh management software; the 900i can also be managed via Telnet. $995. Compatible Systems Corp., 303/444-9532, 800/396-0283; fax 303/444-9959.

MiniMaster

MiniMasters

Polaris Drive

Polaris Drives

This line of high-capacity, SCSI-2 hard drives starts at 1GB with the P1000, which features a 9.5ms average access time and a 3.9-MBps sustained data-transfer rate. The P4000 is a 4GB drive with an 8MB average access time and a 4.5-MBps sustained data-transfer rate. Finally, the P9000 is a 9GB drive with an 11.5ms average access time and a 4.6-MBps sustained data-transfer rate. All drives ship with Microtech's DiskForce formatting utility. P1000 $941; P4000 $3499; P9000 $5399. Microtech International, 203/468-6223, 800/626-4276; fax 203/468-6466.

RCD-1000

A CD-ROM recorder, this SCSI device features a 1MB cache buffer and a doub-
**New Products**

**The Best of Both Worlds**

Processor upgrades from DayStar

Currently there are two worlds out there, Macintosh and Power Macintosh. Only DayStar makes a family of processor upgrade cards that give you the best of both. DayStar upgrades save you time and money compared to purchasing a new Power Macintosh.

Universal Turbo 040™ and PowerCache™

68K upgrades for the Macintosh Classic, LC, Performa, Centris and II series.

These two low-cost processor upgrades are the only no-risk option available because they make your Mac at least 2 to 3 times faster while maintaining 100% compatibility with the software you already own. And they let you upgrade to PowerPC later, so you can go faster now!

PowerPro™ 601 and PowerCard™ 601 — NEW!

PowerPC upgrades for the Quadra, LC, Performa and Centris series.

The promise of PowerPC has finally arrived, and there are hundreds of native PowerPC applications available. DayStar and Apple designed the PowerPro 601 and the new PowerCard 601 to give you all the speed and the same compatibility as Apple's Power Macintosh computers. And, unlike a new Power Macintosh, DayStar's upgrade cards offer the best of both worlds because they let you run your Macintosh either as a PowerPC or 68K based Macintosh.

**NEW Low Prices**

**Special Upgrade Promotions**

Call 800-962-2077 for your local DayStar Reseller

Get FaxBack Document #8205 for details

5559 Atlanta Highway, Flowery Branch, GA, USA 30542
(404) 867-2077, Fax: (404) 867-3018, Faxback (800) 438-0370

Circle 7 on reader service card

**Software**

**AfterImage**

Based on GoSA's AfterEffects package, this animation, laying, and special-effects software has most of the functions of AfterEffects but is intended for graphic artists and CD-ROM developers who don't require broadcast-quality output. With AfterImage, users can layer stills and QuickTime movies and enhance them with special effects. MMJ min. memory; requires Mac II, System 7; some effects require an FPU. $595. GoSA, a Division of Aldus Corp., 206/628-4526; fax 206/233-7735.

**CD Directory**

Remember which disc that great picture was on? Are you sure? Could you find it in under five minutes? With CD Directory, you can catalog your discs and search by file name, kind and label, without mounting any of the volumes. When you find a file, double-click on it and the software tells you where the file is located and on which disc. Requires System 7. $59.95. Insight Solutions, 415/335-7105, 800/688-7677; fax 415/335-7105.

**Cropping XT**

This QuarkXPress XTension automatically adds crop and registration marks to documents. Users can set the size and offset of the marks and choose which marks will be printed, including a color bar, CMYK bar, gray-scale calibration bar, targets, and a CMYK tag. Requires QuarkXPress 3.2. S49. Vision's Edge, 904/886-4573, 800/983-6337; fax 904/386-2594.

**Eat My Photons**

A self-proclaimed shoot-'em-up, Eat My Photons is designed for folks who want to jump into a game and blow things up. The game features ground and space battles, both fought from a first-person perspective. In either case, you must destroy the deadly drones that are converging on your home base, while enemy fighters try to pound you into smithereens. 4MB min. memory; requires Mac II, color, System 7. $59.95. Eccentric Software, 206/628-2687, 800/436-6758; fax 206/628-2681.

**File Genie**

When you finally get it together, this search utility will help you remember where you put it. File Genie can perform several simultaneous file searches on multiple criteria; users can search by standard file characteristics, and they can search the contents of text files. The software displays found files as it searches, along with complete path information for each one. Once you've found a file, you can open it with the appropriate application or display the file from within File Genie. Requires System 7. $49. Duet Development Corp., 408/559-3383; 800/383-8546; fax 408/559-7117.

**KID'S WORLD**

**Kids World**

You're not supposed to play with your food, so why not play with your screen saver instead? You (or your kids) start with a standard PICT as a background (several are supplied) and then use stamp tools to place people, animals, plants, buildings, and other objects in a scene. Once the screen has been populated to your artistic satisfaction, click the Go button, and the placed characters become animated, moving around and interacting with each other. Scenes can be saved as UnderWare or After Dark screen-saver modules. Requires Mac LC, System 7. $59.95. Bit Jugglers, 415/968-3908; fax 415/968-3398.

**LaserSeps Pro**

You can use this Photoshop export filter to create process-color separations without halftone screens. LaserSeps Pro uses a stochastic screening algorithm to reduce moiré patterns, rosettes, and registries.

**PHOTONS**

A self-proclaimed shoot-'em-up, Eat My Photons is designed for folks who want to jump into a game and blow things up. The game features ground and space battles, both fought from a first-person perspective. In either case, you must destroy the deadly drones that are converging on your home base, while enemy fighters try to pound you into smithereens. 4MB min. memory; requires Mac II, color, System 7. $59.95. Eccentric Software, 206/628-2687, 800/436-6758; fax 206/628-2681.

**File Genie**

When you finally get it together, this search utility will help you remember where you put it. File Genie can perform several simultaneous file searches on multiple criteria; users can search by standard file characteristics, and they can search the contents of text files. The software displays found files as it searches, along with complete path information for each one. Once you've found a file, you can open it with the appropriate application or display the file from within File Genie. Requires System 7. $49. Duet Development Corp., 408/559-3383; 800/383-8546; fax 408/559-7117.

**KID'S WORLD**

**Kids World**

You're not supposed to play with your food, so why not play with your screen saver instead? You (or your kids) start with a standard PICT as a background (several are supplied) and then use stamp tools to place people, animals, plants, buildings, and other objects in a scene. Once the screen has been populated to your artistic satisfaction, click the Go button, and the placed characters become animated, moving around and interacting with each other. Scenes can be saved as UnderWare or After Dark screen-saver modules. Requires Mac LC, System 7. $59.95. Bit Jugglers, 415/968-3908; fax 415/968-3398.

**LaserSeps Pro**

You can use this Photoshop export filter to create process-color separations without halftone screens. LaserSeps Pro uses a stochastic screening algorithm to reduce moiré patterns, rosettes, and registries.

**PHOTONS**

A self-proclaimed shoot-'em-up, Eat My Photons is designed for folks who want to jump into a game and blow things up. The game features ground and space battles, both fought from a first-person perspective. In either case, you must destroy the deadly drones that are converging on your home base, while enemy fighters try to pound you into smithereens. 4MB min. memory; requires Mac II, color, System 7. $59.95. Eccentric Software, 206/628-2687, 800/436-6758; fax 206/628-2681.
Enlarge more than your next business presentation.

< New Z SERIES Panels
The all-new nVIEW Z SERIES LCD computer/video projection panels are the thinnest, most portable available—as light as 4.3 pounds. All the latest technology.

You are looking at a person who is definitely on a roll—who is in that rare zone beyond the nth degree of satisfaction, about to burst with inner self-confident pride. And rightly so. He has just given his presentation of a lifetime.

The entire meeting was dazzled with the enlarged computer data and graphics projected on the large screen directly from the presenter’s own laptop. And awed with his linked control of multiple sources that allowed him instantly switch from bright giant video, to laser disc, and back again to high-contrast computer output. As he added an impromptu comment to the screen, you could hear an excitement of success murmur through the room.

Impressive. Very impressive. Our proud presenter had the newest, brightest, easiest, fastest, lightest, thinnest LCD computer projection panel—from nVIEW. And that’s all that needs to be said.

Being in that rare zone of bursting with confidence doesn’t have to be rare for you anymore.

Call your local authorized nVIEW dealer for a no-obligation demonstration immediately.

< New Improved Luminator
The nVIEW Luminator* LCD projector is now lighter, with 30% improved high-contrast color—and now shows-off images on a 15 foot diagonal screen. A real workhorse.

$200 A/V shopping spree rebate!
Now and only through January 31, 1995, you will receive a $200 rebate, direct from nVIEW, toward accessories purchased in addition to the Z SERIES LCD computer/video projection panel and new improved Luminator* LCD projector (when purchased together from dealer stock). Simply mail in your completed warranty card, along with a copy of your sales receipt dated no later than January 31, 1995, showing the purchase of an nVIEW Z SERIES LCD computer/video projection panel, new improved Luminator* LCD projector, and all items accessories of at least $200. These items must be received at nVIEW no later than 14 days after purchase date. Mail to: nVIEW Corporation, Rebate Offer, 860 Omni Boulevard, Newport News, Virginia 23602

For the nVIEW dealer nearest you, call 1-800-736-8439

nVIEW
Computer Projection
Circle 117 on reader service card
**New Products**

**PartialPrints**

Need to proof just part of a complex page in QuarkXPress? With this XTension, you can print a specified area of a page, saving time because Quark doesn’t have to image the rest of the page; users can save the area as a PICT or EPS graphic file. PartialPrints can also print out just the text you select. Requires QuarkXPress 3.2. $59. Vision's Edge, 904/386-4573, 800/983-6337; fax 904/386-2594.

**PegLeg**

Board your very own Macintosh Battalion Blaster and what else? blast your way through hordes of colorful and noisy bad guys. You get a top-down view of your ship as you carom around the screen like a billiard ball, grabbing power-ups and dodging bouncing drones. 3MB min. memory; requires 8-bit color. $39.95. Changeling Software, 203/623-1963, 800/762-1963; fax 203/654-1661.

**Personal Backup**

Elephants never forget, but you can bet that someday your Macintosh will. This utility runs in the background, backing up your files to a specified volume, even across a network. Personal Backup can handle incremental and multigeneration backups, as well as simple file synchronization. You can schedule your backups to occur at certain times, and the package includes a keystroke recorder, which copies your keystrokes into a daily file for last-ditch recovery. Requires System 7. $59.95. SunStar Publishing, 203/785-8111, 800/660-4480; fax 203/785-8001.

**Rhythm—It’s Easy**

When you plug this music software into your Macintosh, you get a practice partner that can play either half of the 139 duets contained in the accompanying workbook. The exercises focus on rhythm, covering everything from whole notes and half notes to syncopation in compound meter. The software can shift keys to accommodate different instruments and can play back either through the Macintosh's internal speaker or through an external MIDI device. Requires System 7 to play through Mac speaker. $59.95. Longs of Newport, 714/640-5664; fax 714/759-9065.

**Special Delivery 2.0**

If you’re running a nationwide business, here’s a utility to save you from the simple mistake of calling a client at 5 a.m. Just type in the name of a city recognized by the U.S. Postal Service, and ZipQuest Pro returns the zip code, area code, time zone, local time, and even the approximate distance from your home base. Information updates are available twice yearly. $49.95; single update $24.95; one-year subscription $39.90. Montage Software Systems, 203/834-1144, 800/266-6824; fax 203/762-9601.

**The Daedalus Encounter**

Talk about having a bad day: you are a...
The pack that kept you organized in the ’70s.

Contents: 8-track tape, a comb (for when you had hair), mood ring, diary book, your dream journal, chew ring binder, chewing gum, your coolest puka shell necklace.

The pack that will keep you organized in the ’90s.

The Newton Power Organizer Pack contains a Newton external fax/modem, Notion: The Newton List Manager, ExpensePlus and a travel case — all free when you buy a Newton by December 31.

Buy a Newton MessagePad 110 now and you’ll also receive the Newton Power Organizer Pack — absolutely free. It includes a Newton external fax/modem. Notion: The Newton List Manager; a program that offers a huge selection of templates for creating and managing all sorts of lists — from meeting agendas to vacation itineraries. You’ll get ExpensePlus, which organizes your expenses and lets you fax, print and transfer them to your PC or Mac. You’ll even get a travel case for taking your Newton out on the road. To get your Newton Power Organizer Pack, visit any Newton dealer today. But hurry, this offer expires December 31. You may be able to survive without pet rocks and feathered hair. But you don’t want to manage your life without the most advanced organizing tool of all: Newton.

Free Newton Power Organizer Pack when you buy a Newton through December 31.

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo and Newton are registered trademarks of Apple Computer Inc. The Newton logo, Notion and Newton List Manager are trademarks of Apple Computer Inc. ExpensePlus is a trademark of Start & More Inc. Notion is a trademark of Tabula Inc.
former navigator from the Interstellar War whose body was destroyed during battle. Luckily, your brain has been salvaged and placed in a mechanical probe. But you are trapped with your old comrades, Ali and Zack (played by Tia Carrere and Christian Bach, respectively), in an alien vessel on a collision course with the sun, and you are the only person who can save them. This interactive adventure is played out by live actors over digitized backgrounds; and puzzles, decision points, and multiple endings are featured. $79.95. Mechadeus. 415/243-B785; fax 415/243-8630.

Electronic Arts: ID Atlas
A good atlas can make the world your oyster—this one starts with a 3-D, photo-realistic representation of the third planet from the sun (a.k.a. Earth), based on satellite data and statistics. The reference is divided into three parts: the Environmental World, the Physical World, and the Political World. Users can see charts and graphs of the data, and the Atlas also includes video and photographs of events and places on our fair planet. $79.95. Electronic Arts, 415/571-7171, 800/245-4525; fax 415/570-5137.

Elmro11ir Arts 30 Ari as Infopedia

Page Overtures Two
This disc contains 100 high-resolution (266-dpi), full-page, photographic background textures in JPEG (PICT) format. Each image is in 24-bit color, and the collection includes screen-resolution versions of the images for placement or for use in multimedia projects. $129. Form and Function, 415/664-4010; fax 415/664-4030.

Video Producer: A Video Production Lab
Intended for anyone who wants to increase their “video literacy,” this instructional disc teaches the basic skills of video production in five areas. The camera section covers both aesthetics and skills such as framing shots and focusing. In the lighting section, students learn how to balance and manipulate lights. The audio section explains how to place music and records. The editing section teaches principles of continuity and how to make a story line flow, while the process section covers pre- and postproduction logistics and issues. 4MB min. memory; requires Mac II, System 7, 13-inch color monitor. double-speed CD-ROM drive. $99.95. Wadsworth Publishing, 415/595-2350; no fax.
Fractal Design Painter: Dazzling Digital Art
If a picture is worth a thousand words, make sure yours says exactly what you mean. Author Marvin Bryan leads readers through every aspect of Fractal Design Painter, covering the drawing and painting tools, brushes, paper textures, special effects, and filters. Readers also learn about editing photographs and converting black-and-white art into color. 352 pages. $29.95. Windcrest/MacGraw-Hill, 714/623-2940, 800/333-4442; fax 714/522-3913.

The Mac Bathroom Reader
Author Owen Linzmayer takes Macintosh enthusiasts on a trip through the anecdotes, myths, and embarrassing quotes that make up the history of the computer for the rest of us. Along the way, readers will discover how Steve Jobs actually tried to kill the Mac project, how Jobs tried to sell Apple (and how Young-Pickard, Atari, and Commodore turned him down), and why the 1984 commercial almost never aired. 306 pages. $12.99. Sybex, 510/523-8233, 800/227-2346; fax 510/523-8273.

Macintosh Slick Tricks
There is no simple shortcut to becoming a power user, but in this book, computer consultant and author Maria Langer offers readers the benefits of her Macintosh experience. Macintosh Slick Tricks covers timesaving and performance-enhancing techniques from using virtual memory to managing fonts and creating macros, with plenty of keyboard shortcuts and application tips along the way. 288 pages. $16. Random House Electronic Publishing, 212/573-2600, 800/733-3000; fax 212/572-4997.

Protect Your Macintosh
Whether your Macintosh stands on its own or is part of a network, this book tells you how to protect it without resorting to barbed wire and guard towers. Author Bruce Schneider teaches readers how to deal with physical security, virus protection, software integrity, and disaster recovery. The book includes a list of product sources and the author’s opinions on which products are best and why. 336 pages. $23.95. Peachpit Press, 510/548-4393, 800/283-9444; fax 510/548-5991.

Upgrading & Repairing Macs
Written for intermediate to advanced users with varying degrees of experience, Upgrading & Repairing Macs provides tips and tricks to help the reader save time and money in selecting and maintaining a Macintosh. The book is divided into six main parts; three sections detail capabilities and upgrade options for Macintosh CPUs and system software, peripherals, and networking/communications products. The other three sections cover preventive maintenance, troubleshooting, and repairing. The book was written by a team of professionals, with Steven Bobb serving as the technical advisor. 1012 pages. $34.99. Que, 317/591-3500, 800/428-5331; fax 317/581-3550.

To have your product considered for inclusion in New Products, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number to New Products Editor, Macworld, 501 Second St., San Francisco, CA 94107. Macworld reserves the right to edit all product announcements.
Adobe Photoshop 3.0

Image-Editing Program

PROS: Can preview most filters and all channel operations; layers provide three levels of masking options; Color Range command lets you adjust the selected area dynamically; can preview CMYK colors without leaving RGB mode; Filter Factory allows you to program custom filters. CONS: No JPEG compression for native format; excruciatingly slow to open Photo CD images; requires a fast machine equipped with 16MB of RAM.


LIST PRICE: $895.

FEW APPLICATIONS HAVE ruled the software market as absolutely and as freely as Photoshop. For years, the program was so thoroughly indomitable that one was tempted to take pity on the competition, no matter how incapable. But the sad fact was that more-expensive programs were less powerful, and less-expensive programs were more difficult to use. Photoshop was simply the best.

But Photoshop's iron rule—while it is not yet on the ebb—may be in peril. A handful of new and imminent image-editing packages, including HSC's Live Picture and Fauve's xRes, now threaten Photoshop's domination. Fortunately, Adobe is aware of the threat, and the company has responded with what is certainly the product's most dynamic upgrade. Photoshop 3.0 both broadens its range of capabilities and simplifies the work environment in ways that will actually change how you work.

Try before You Apply

I am going to buck the tide a little and suggest that version 3.0's most important enhancement is its generous supply of previewing options. Considering that the program did not even allow you to preview an image until version 2.5.1, the sheer abundance of filter and compositing previews may surprise longtime users. First on the preview parade are filters. The most commonly used filters provide two helpful previews, one inside the dialog box and one outside. You can zoom and scroll the preview inside the dialog box using the standard magnifying glass and hand tools. But you can also see how an effect will look when applied to the selected area in the image window, thus taking into account such factors in the image—such as background layers and inactive channels. Though some filtering effects may take too long to make full-size previewing practical—obviously a fast machine and lots of RAM help to speed the process along—there's nothing like it for discovering the inner workings of a complicated filter and testing out variations. If you've always stuck with tried-and-true values when using Unsharp Mask, for example, get ready to invent new ways to apply the filter and recognize new situations in which to use it.

You can also preview channel operations in the main image window. Previously the exclusive domain of experienced professionals and folks who had lots of free time to experiment, channel operations are now available to any user. Better yet, the new version lets you apply many channel operations in tandem. For example, the old Blend and Composite operations—which, respectively, changed image opacity and permitted masking—can now be combined with overlay modes such as Multiply and Screen.
The Layer behind the Mask

If previews allow you to better exploit Photoshop’s existing functions, layers permit you to try new things. Although layers inside a bitmapped program are by no means a new invention——Fractal Design Painter X2, Pixel Resources’ PixelPaint Pro 3, Specular’s Collage, and Live Picture all beat Photoshop to the punch——Adobe’s implementation of layers is at once powerful and daunting. Key to layers is the concept of the transparency. Though every layer is as large as the entire image, not all pixels are opaque. Some are translucent and others are flat-out transparent, enabling you to see through to the background layer. In most cases, the rearmost layer is fully opaque. However, you can create a document filled solely with partially transparent layers to serve as a holding cell. (You cannot import a layer into a separate application, such as QuarkXPress or Adobe Illustrator, with transparency intact. You still have to create transparent areas using clipping paths.)

The upshot of this transparency is that every layer acts like a permanently floating selection, complete with anti-aliased or feathered edges. You can draw in the layer to activate new pixels without harming the underlying layers, and you can even smear or blur pixels from one layer into pixels in another. At any time, you can call upon a layer’s transparency to mask the layer, meaning that you can limit yourself to changing the colors of opaque pixels only. To reveal underlying layers, you can, of course, erase pixels, but you can also refrain from damaging the layer by creating a layer-specific mask.

Once you come to terms with these techniques——see, I told you it was daunting——you can combine layers into what Adobe calls clipping groups, in which the bottom layer in the group masks the layers above it. Three possible masks for parent layers to serve as a holding cell.

Select, Filter, and Composite

I selected an area of color inside the pumpkin’s face using the Color Range command (top). Then I clicked with the eyedropper tool (highlighted) to specify a base color for the selection. After sending the selection to its own layer, I applied a custom filter created with the Filter Factory to rotate and distort the selected colors (middle). Finally, I composited the layered image with the underlying original pumpkin using the new Overlay option (bottom). All of these steps employ functions new to Photoshop 3.0.

With one exception, Photoshop’s selection tools have always been the hallmark by which other image editors are judged. The bad news is that the magic wand tool in version 3.0 is as rudimentary as ever. The good news is that Adobe has added a Color Range command that builds directly on the tool’s capabilities. Like the magic wand, Color Range allows you to click, shift-click, and select to define base colors for your selection. Unlike the magic wand, however, Color Range lets you adjust its sensitivity to dynamically modify the size of the selection. Also, the degree of selection changes depending on a color’s relationship to the base color, much like a smart feathering option. While I wish this functionality were built into a tool instead of a command, it is nonetheless extremely useful and will no doubt become a hit among intermediate and expert users.

Another feature of the Color Range command (and possibly one of the reasons it’s a command instead of a tool) is its ability to select all pixels that are outside the CMYK gamut. This selection capability allows you to adjust the pixels’ hue and saturation manually instead of relying on Photoshop’s automated corrections. The program also supplies a special sponge tool that you can use for small saturation touch-ups. As an added bonus, Photoshop 3.0 can now preview colors in the CMYK color space while you continue to work inside the RGB mode—an ideal solution for monitoring your progress without permanently sacrificing color data.

I’d be hard put to name my favorite feature in Photoshop 3.0, but I had the most fun with the Filter Factory. Included only on the CD-ROM, this plug-in allows you to program your own filters by applying functions, variables, and operators to the contents of each color channel in an RGB image. You can even manipulate alpha channels and layer transparencies. Though the mere fact that the Filter Factory requires programming will dissuade most users even fair-weather programmers like me will find the vocabulary very compact and manageable. You can make your filters customizable, provide sliders bars for use on a multipulate, and export the finished product in a fully functioning plug-in filter. Granted, the programming fields need scroll bars, and the slider values ought to reflect the user-specified range (they always run from 0 to 255 no matter how you interpret the data). But for a throwaway that Adobe barely advertises and hides away on the CD-ROM, it’s a real treat.

While there’s more to like about continues
Microsoft Excel 5.0

**Spreadsheet**

**PROS:** New power features include Pivot Tables and Trendlines; Tip Wizard and Function Wizard.

**CONS:** Egregious resource hog. **COMPANY:** Microsoft Corporation (206/882-9080).

**COMPANY’S ESTIMATED PRICE:** $399.

**VERSIP 5 OF EXCEL IS**

**HERE AT LAST!** Fork over your money, clean the old files off your hard drive, find a quiet hour or so for installation, and start exploring.

Excel 5, like Microsoft Word, is the product of a design philosophy explained over the years by Microsoft chief software architect Charles Simonyi. The philosophy, crudely paraphrased, is, "We find out what features people want and we program them. We don’t optimize or fine-tune unless absolutely necessary, since that takes too long and the chip makers will take care of our performance problems eventually. CPUs get faster and memory gets cheaper, and we want to get products out the door now."

Thus, Microsoft is producing software with stunningly rich feature sets and jaw-dropping resource requirements. The Power Macintosh version of Excel takes nearly 30MB of hard drive space, and needs 4MB of RAM to run comfortably (there’s not much point running a program on a RISC processor and forcing the hardware of tomorrow, but it may need the hardware of tomorrow). Pivot tables are powerful and nicely implemented. You can take any table of data in which piece of information are arranged by categories—for example, sales data by Region, by Month, by Product—and make a table in which categories are either row or column labels that you can switch simply by dragging them across the table.

Trendlines are also a shortcut to analytical power. If you select a set of points in an Excel chart (just click on the points), you can pick Trendline from the Insert menu. This gives you options from plain linear regression to data smoothing to complicated curve-fitting—almost the whole range of possible statistical analyses is packaged here as a set of convenient dialog-box options.

The old Excel macro language is still recognized, somewhat, but Excel macros are now automatically recorded in Micro-

---

**How Fast is Excel 5.0?**

<table>
<thead>
<tr>
<th>Test</th>
<th>Excel 5.0 (all applications native to their respective platforms)</th>
<th>Excel 4.0 (in emulated mode on the Power Mac)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wide Test</strong></td>
<td><strong>Fastest</strong></td>
<td><strong>Slowest</strong></td>
</tr>
<tr>
<td><strong>First Time</strong></td>
<td><strong>First Time</strong></td>
<td><strong>First Time</strong></td>
</tr>
<tr>
<td><strong>Power Mac 7100/80</strong></td>
<td><strong>7100/66</strong></td>
<td><strong>7100/66</strong></td>
</tr>
<tr>
<td><strong>Macintosh 750</strong></td>
<td><strong>750/66</strong></td>
<td><strong>750/66</strong></td>
</tr>
<tr>
<td><strong>Power Mac 7100/80</strong></td>
<td><strong>7100/66</strong></td>
<td><strong>7100/66</strong></td>
</tr>
<tr>
<td><strong>Macintosh 750</strong></td>
<td><strong>750/66</strong></td>
<td><strong>750/66</strong></td>
</tr>
</tbody>
</table>

The Macworld Lab and PC World Test Center collaborated to measure Excel’s performance. We used a 97K file for the FPU test and an 89K file for the Integer test. We configured the computers as follows: Centris 650: 256MB of RAM, 25MHz PowerPC, 16-bit video (640 x 480), 16MB of RAM, and standard System 7.1. -PC World Test Center testing supervised by Susan Silvius; Macworld Lab testing supervised by Lauren Black.

---

The pros of Photoshop 3.0 far outweigh the cons, however, particularly in light of all the minor additions I’ve neglected to mention. For example, print-media photographers can now attach captions, credits, copyrights, and other information to their images. You can drag and drop selections between open images, all but eliminating any need for the ploky Copy and Paste commands. New overlay modes merge Multiply and Screen to increase your range of compositing options.

If you’re looking for some basic fixes, you can finally change the cursor to reflect the brush size, and you can access differently sized, shaped, and softened erasers. And though Photoshop’s method for assigning custom keyboard equivalents remains clumsy, convenience functions abound. You can access all tools and toolbox controls from the keyboard, option-click on a channel name to convert it to a selection outline, and select the contents of a layer by pressing `ae`, option-T, just to name a few. So while not perfect, Photoshop 3.0 is easily the most aggressive upgrade to date, a fact I think we can safely lay at the feet of the competition.—DEKE MCCLELLAND
soft's Visual Basic. Version 5 can run version 4 macros, as long as the macros don't look for functions or menu items that have changed. I've run dozens of shareware Excel 4 templates and macros under version 5 with no trouble, but developers with more ambitious programs report loads of problems. Ultimately, developers working with Excel will probably just rewrite their work in Visual Basic. A Visual Basic macro is easy to edit, and the language allows you to write clear programming statements. Because applications in Visual Basic are automatically cross-platform to Windows, and because writing in Visual Basic inside Excel lets you concentrate on functional details and leave the interface details to the environment, you can expect technical- and financial-application add-ins for Excel 5 over the next year.

Finally, the other important new power feature is simply that the default file for Excel 5 is the Workbook, a set of grouped worksheets (you decide the number of worksheets per Workbook). This greatly simplifies constructing three-dimensional data tables (which can also be used in pivot tables) and makes it much easier to organize projects.

The Wizards in this version of Excel are necessities rather than conveniences. The Tip Wizard, a chatty little backseat driver at the top of the screen, points out features you could have used, based on your last selections. The Function Wizard now provides, in effect, a tutorial on functions and the arguments you must enter for the correct results. ToolTips, a sort of balloon help that explains the functions of the vast array of buttons, is available if you pause the cursor over a particular button. Since the feature scope of Excel 5 now fits awkwardly in the traditional Mac dialog box, formatting and settings dialog boxes sport tabs (like the ones on file folders), which group options into easy-to-reach sections.

The shipping version of Excel 5 (compared with the many beta versions) shows acceptable recalce times on 680X0 Macs—the times on a Quadra 610 are remarkably similar to the recall times for the same worksheet, for Excel 2.2 on a IIcx (I've been doing this a long time). The Power Mac version on a 6100 with 24MB of RAM performed seven to eight times as fast as the 680X0 version on a Quadra 610. At present, the recalc speed champion on the Power Mac is the spreadsheet in ClarisWorks' Power Mac version, 2.1, which lacks many of Excel's features, but which nonetheless represents a real alternative to Excel, especially for users who bought the standard configuration of 8MB of RAM. In Microsoft’s view, tweaking recalc times in seconds is not the issue—getting better-looking reports and better data analysis on a timescale of days is what’s important. The main performance complaint arises from sheer bulk—on older machines with slow hard drives, Excel 5's bigger size means start-up times are annoyingly slow.

**Why So Big?**

Microsoft is testing the philosophical proposition that the only way to make software better is to add features, not to simplify. For example, look at the in-cell editing capabilities (“rich cell editing” in Microsoft-speak). Not only can you resize individual cells to fit any text, but you can edit the text in cells character by character. Each text-containing cell in Excel 5 is for all practical purposes now the equivalent of a page in the original MacWrite—you could use Excel as your word processor for small tasks! Capabilities like this expand code size.

Another reason Excel 5 is big is that many capabilities are implemented inefficiently. The Analysis Tool Pak Add-In, which offers a modest set of statistical routines that work inside Excel, takes 729K as a separate module. In contrast, the stand-alone statistics application DataDesk manages to fit a huge range of capabilities, including rotating 3-D graphs, notebooks, and dozens of advanced functions, into 900K. The Tool Pak routines would take about 60K in the hands of DataDesk’s programmers. Besides this, there’s a terrifying level of redundancy. I counted seven different ways (functions, menu commands, add-in features) to perform the same linear regression analysis.

**The Last Word**

Excel 5 is a relentlessly complete tool kit for analyzing numbers. That means it's huge, but recalc performance on midrange and low-end machines is acceptable. Nonetheless, it’s the fanciest spreadsheet and the choice for serious business work.—CHARLES SEITER
PrimeraPro

Thermal-Wax and Dye-Sublimation Printer

PROS: Excellent output for its price range.
CONS: Extremely slow for photo-realistic output; relatively high cost of consumables.
COMPANY: Fargo Electronics (612/941-9470).
LIST PRICE: $1895.

FARGO ELECTRONICS' PRIMERA was the first inexpensive, personal color printer to support both dye-sublimation and thermal-wax printing, but its output was mediocre and it took forever to print. The new PrimeraPro is a vast improvement over its predecessor. It's still slow, but now the printout is worth waiting for.

Like the earlier model, the PrimeraPro uses a single print head for both thermal-wax transfer and dye-sublimation jobs, but the new print head is more sophisticated, with control circuitry that allows it to operate much faster and with greater precision. The page-setup box allows you to specify the type of output you need—three- or four-color thermal wax, black-and-white, or color photo-realistic dye sub.

For photo-realistic output, the PrimeraPro comes with a dye-sublimation kit that includes a ribbon tray and a ribbon good for ten printouts—just enough to whet your appetite. To switch from dye sub to thermal wax for faster printing and typical business color printing, you swap ribbon trays and reload the printer with thermal-wax paper.

Output Improvements
The PrimeraPro's biggest advancement over its less-expensive sibling is in the quality of the dye-sublimation output. The original Primera maxes out at 203 dpi, which is far from desirable. The PrimeraPro features a high-quality mode of 600 dpi by 300 dpi, a regular mode of 300 dpi by 300 dpi, and a draft mode of 72 dpi by 72 dpi. Most of the artifacts associated with the 203-dpi version, such as posterization and banding, are gone. Although on close examination I could see some banding and dithering, particularly in the highlight areas, the PrimeraPro's dye-sub output is far better than that of any ink-jet or thermal-wax printer at this price. The 600-by-300-dpi thermal-wax output is also quite impressive, but the printer's main selling point is definitely its photo-realistic dye-sub capability. To date I have seen no other printer under $2000 that matches it.

During my test runs, I encountered a couple of printer errors (the system couldn't find the printer), but powering the printer off and then on again solved the problem. Fargo's excellent tech-support department should be able to solve any problems you run into and quickly get you going again.

Mission Critical
Fargo promotes the printer for proofing, so Macworld Lab looked at the different color-correction schemes that came with the printer to see how closely colors on a film proof matched those on the monitor. If your only concern is to match your output colors with the colors you see on the monitor, Fargo's gamma-correction scheme or FargoMatch (the company's proprietary color-matching scheme) will handle the job properly. The printouts' colors, however, were less saturated than those of the film proof. Tinkering with the settings in the dialog box didn't get the printout to match correctly. If your color-matching needs are critical, consider the far more expensive ($8000) SuperMac ProofPositive with the EFI color-management scheme. The PrimeraPro's PostScript Level 2 option (a must if you print from graphics and layout programs), which should be available by the time you read this, will take advantage of device-independent color to achieve better color fidelity.

Speed is the PrimeraPro's main weakness. In dye-sublimation mode, the PrimeraPro is one of the slowest dye-sublimation printers Macworld Lab has ever tested. A 7MB Photoshop file (6 inches by 9 inches, 200 dpi) took 15 minutes for one pass of color, compared with less than 7 minutes on a Tektronix Phaser 4520. Also, since all the rasterization takes place on the Mac, print speed depends on your CPU. Fargo recommends a minimum system of a Centris with 8MB of RAM and 20MB of hard drive space. (Unfortunately, a Power Mac won't help until Fargo writes native drivers.) Fargo expects to have an Adobe Photoshop export module early next year, which should cut the printing time down by at least a third.

On the other hand, the PrimeraPro is one of the fastest thermal-wax printers Macworld Lab has tested. In thermal-wax mode the same 7MB Photoshop file took only about 4 minutes to print. However, my Lab coworkers were annoyed to learn that this small printer is as noisy as a printer two to three times its size.

As with owning a Polaroid instant camera, most of your expenditures go to consumables. An 8½-by-11-inch printout costs about $2.50—a lot for a printer of this price and capability. Thermal-wax printing is a lot cheaper—around 40 to 45 cents, depending on paper quality. If you print many iterations before making a decision, it's faster and more economical to hold off on a dye-sub printout till you're sure. Other options from Fargo: an iron-on-transfer kit and a 4-by-5-inch glossy photographic paper stock that, at 90 cents per print, produces output worthy of your photo album.

The Last Word
Having two print technologies available from a single printer is handy, and the PrimeraPro's photo-realistic output definitely beats that of any other printer in this price range. But with the higher-cost consumables and the slow print time, the PrimeraPro is best suited for routine thermal-wax use and occasional dye-sub work.—MARK HURLOW
NEW IN THE PHENOMENALLY SUCCESSFUL SERIES OF KAY'S POWER TOOLS.

KPT Bryce
FOR MACINTOSH/POWER MACINTOSH

THE PERFECT HOLIDAY GIFT!

HSC SOFTWARE PRESENTS A STANDALONE APPLICATION "KPT BRYCE"
STARRING A UNIQUE INTERFACE TO DESIGN & RENDER LANDSCAPES REAL & SURREAL

AVAILABLE TODAY AT
COMPUTERWARE 800-756-4072
COMPUSA 800-COMPUSA
MAC ZONE 800-248-0800

6303 CARPINTERIA AVE. CARPINTERIA CA 93013 805/566-6220 VOICE

Circle 5 on reader service card
The World's Largest Photo CD-ROM Collection

HUNDREDS OF TITLES! HUNDREDS OF USES!

Hundreds of titles—each consisting of 100 high-resolution royalty free photos in the Kodak Photo CD format.

Come and see the collection at the in-store display!
QuickMail 3.0

Electronic Mail

**PROS:** Easy to set up and use; good documentation. **CONS:** Some security concerns for server; rules-based messaging lacks certain functions.

**COMPANY:** CE Software (515/221-1801). **LIST PRICE:** 1 user $199, 5 users $449, 10 users $649, 25 users $1449, 50 users $2549, 100 users $3799; site licenses available.

QuickMail has become an indispensable tool for organizing, communicating, and collaborating with coworkers. CE Software's recently updated QuickMail delivers an intuitive, easy-to-use interface as well as solid administrative options for network managers. Version 3.0 provides some new client tools; but the most promising of these tools, rules-based message handling, lacks some important features and that cripples its abilities.

Like many E-mail applications, QuickMail comes in two parts: client and administration software. The client software resides on the local user's computer, while the administrator, or server, software runs on a centralized Mac. QuickMail comes with client software for Mac, DOS, and Windows as well as remote client software for Macintosh users (Remote Windows and DOS clients can use any communications package).

The QuickMail experience begins with installing the server software on a suitable Mac. The server software can reside on as lowly a Mac as an SE and can coexist with an AppleShare file server. Installation of the server involves piping in a couple of disks, rebooting the server, and creating a MailCenter.

MailCenters are the heart of every QuickMail server. They're basically the post offices created for a group of users. A MailCenter can also act as a gateway to collect and deliver mail between other QuickMail servers and online services. QuickMail includes scripts for connecting to CompuServe, MCI, AppleLink, and Delphi. Third parties, such as StarNine ($100/649-4949), sell QuickMail gateways that provide access to other services, including the Internet. Creating a MailCenter is an easy task that involves plugging in user names and passwords. A gateway MailCenter requires additional information for such connection terms as baud rate, type of file transfer, and phone numbers. Once the server software has been installed, the QuickMail client software must be installed on all client computers. The minimum configuration for a Mac client is a Plus; for a DOS client, it's an 8088; and for Windows clients, a 386 is the slowest processor allowed.

In addition to providing basic mail-handling options (send messages; attach files; and receive, print, file, and save E-mail), the QuickMail client lets you establish online chats, check the spelling of messages, search through message text, and create rules to automatically handle routine mail.

QuickConference, also available in previous versions, lets you establish online chats with other QuickMail users. I found it most useful when I was on the phone and needed information for the phone call from someone in the office.

The spelling checker provides the type of basic verification in most word processing applications. I surveyed several QuickMail users who thought it was a great addition and used it regularly.

The text-search function works with all locally filed messages. It cannot search new mail or mail that resides on the QuickMail server. Search criteria can include information in any mail-address field as well as message contents. After a search is complete, the found messages can be viewed in the search window or opened for full view. I was disappointed that CE didn't include the ability to use drag and drop so that I could move the contents of found messages onto the desktop or into a new E-mail message.

Rules-based message handling is the most promising feature of QuickMail 3.0. Rules allow you to automate certain actions. For example, QuickMail can automatically file all received messages containing the word Deadline in the subject field, to a folder called Urgent MailRead Now, and then delete the message from the in-box. In addition to filing messages, you can automatically print, reply to, delete, and forward messages. One of my first experiences using the Rules feature required the use of Boolean search criteria. Unfortunately, QuickMail 3.0's limited Boolean search functions preclude the use of an OR statement. Consequently, I had to set up two rules, which means that if a message contains both search triggers, QuickMail will process the message twice. According to CE's technical support, that was the only way to accomplish my search. The tech-support staff acknowledged that other users were requesting the same capability.

Two utility applications are also included with QuickMail—QuickMail Remote and QuickMail Forms; neither application was updated in the current version. QuickMail Remote allows users to attach to the QuickMail server remotely. This application has not been updated in quite some time; it is not intuitive and requires a host of communications configurations. Most large sites using QuickMail have adopted a workaround using Apple Remote Access and a local QuickMail client.

QuickMail Forms enables you to customize your electronic-mail forms to accommodate the personalities of your office and the people who work there. QuickMail currently supports only MacPaint format and does not work with multiple forms simultaneously. Many users I surveyed would like to have additional features.

QuickMail 3.0 has built security features into the client and server software. Passwords are required for almost every modification of an existing MailCenter. QuickMail clients can restrict access to their account by requiring a password each time the application is opened. Crafty snoops can still read anyone's unfilled E-mail by sorting through the QuickMail server and locating the correct files, however. I strongly recommend that QuickMail servers have no keyboard or monitor attached and that administrators use Timbuktu Pro to administer the servers remotely.

The Last Word

If you're shopping for a first-time E-mail application, QuickMail is a good choice. What it lacks in flashy extra features it makes up for in ease of use and setup. The documentation is well written and easy to understand. If you are currently using QuickMail, I suggest waiting for the next revision before upgrading. With 3.0 you're basically purchasing the spelling checker, text-search capability, and an unfinished attempt at rules-based messaging.—Matt Clark

MACWORLD January 1995 59
Ask about our free demo disk! Call 1-800-816-2611 ext. 951 today!

Introducing the new Polaview™ 3000 LCD projection panel from Polaroid

Why do so many expert presenters choose Polaroid's new Polaview 3000 LCD Panel?

Maybe because it gives you the latest in LCD projection panel technology. With 16.7 million colors that make any chart or diagram come alive. And active matrix technology that provides crisp, detailed images.

Or maybe it's the remote mouse, which lets you do more than just point and click. It lets you enlarge images, unmask data, invert type, and time sequences. Even in different languages.

Or it could be the integrated stereo sound and video. Or the fact that it's totally compatible with PC, Macintosh and video sources.

Could it be all of the above? You decide. Give the Polaview 3000 the benefit of your expert opinion. Try it (or any of our other LCD panels) for 30 days. If you're not convinced it's the panel of experts, turn it in for a full refund, no questions asked.

The Polaview 3000 LCD Panel from Polaroid, the company that's leading the way in electronic imaging.

Polaroid products are available on GSA schedule 70.

Circle 295 on reader service card
Claris Organizer


Entering a field as crowded as the personal information manager (PIM) market requires a great deal of confidence on Claris's part. On the one hand, there are already many competitors, some long established, such as Adobe's TouchBase Pro and DateBook Pro, Now Software's Now Up-to-Date and Now Contact, and Portfolio Software's Day-to-Day package (formerly Dynodex). On the other hand, Claris has had the opportunity to build on the features of these programs; Claris Organizer is a remarkably polished first release.

Organizer is an all-in-one PIM that includes modules for Calendar, Contacts, Tasks, and Notes. The program has a floating button palette that lets you access each module's window. Organizer is a single-user product; it can't be opened and shared by multiple simultaneous users, as can Now Up-to-Date and TouchBase Pro. Claris Organizer gets by with only 1.2MB of RAM, despite being a RAM-based program. Because the data is in RAM, performance is good. Sorts and searches occur almost immediately.

Organizer's Calendar module provides separate Weekly, Monthly, and Daily Agenda views, as well as a Navigator window that enables you to quickly jump to any past or future date. Each view has arrow buttons that let you move forward or backward in time; in addition, the Daily and Weekly views have plus and minus buttons that control how many days or weeks you can view at one time. The Daily view window is split horizontally into two panes. The top pane shows your appointments, and the bottom pane displays the day's tasks. The Monthly view, unfortunately, doesn't allow you to create banners that span several days, for denoting business trips or other longer events. You can drag events to move them between days, but you can't option-drag events to copy them from one day to another.

The other three modules—Contacts, Tasks, and Notes—can each display a list view and an individual detail window. Each contact record can handle two sets of addresses, four telephone numbers, and four customizable fields. Tasks (what some programs call to-dos) have five priority levels and, like appointments, can be onetime or recurring. You can also set alarms for tasks or appointments.

The feature that sets Claris Organizer apart from most other personal information managers is its intelligent assistance. Like some programs, Organizer has several data entry aids for entering contacts. The program has pop-up menus with common entries for most fields, such as Title, State, and phone labels. It also automatically completes a field based on the first few keystrokes.

Claris Organizer has the ability to attach any item to any other item. It's easy to attach a contact to an event, or a note to a contact. Items with attachments have a small paper-clip icon next to them. Clicking on the paper clip displays a pop-up menu with a list of the attachments. Of the several ways to attach items, the best is drag and drop. It's simple to associate coworkers with a meeting: just drag the coworkers' names from the contact list onto the appointment in your calendar. Once you attach people to an event, it's a snap to contact any of them. You can also drag items to any of the module buttons in the palette. These items are intelligently named, so that, for example, if you drag an appointment called "Breakfast Meeting" onto the Note button in the palette, you get a new named "Note regarding Breakfast Meeting." If you drag Bob's name from the contact list onto the Task button, you create a "Call Bob" task.

Claris Organizer's assistance really shines with its Auto-Attachments feature. If you enter "Dinner with Bob," the program attaches Bob to the appointment. If your contact list has more than one person named Bob, Organizer pops up a list of all the Bobs, and you choose which one to attach.

Viewing and sorting information in Claris Organizer is adequate but could be improved. You can easily select a list of contacts within a particular category, but there's no simple way to select all contacts except that category, or to select and mark contacts in one step. You can sort on only two fields at a time and only in ascending order.

Claris Organizer lacks a feature found in most of its more recent rivals: an extension that allows quick menu-bar access to Organizer from within all other programs. Now Contact's QuickContact pioneered this idea, and it was followed by the Adobe and Portfolio products. Such easy, universal access to your contacts and calendar is becoming an expected standard for PIMs, and I hope that Claris Organizer will add this feature in the next revision.

The Organizer manual, which consists mainly of a tutorial, is surprisingly skimpy and even lacks an index. The online help included with the program is considerably more detailed and useful.

Claris Organizer does a good job of printing lists or the detail information from all modules, and it can print envelopes, fax cover sheets, and labels. The program comes with several Avery-label templates and lets you specify a start location when printing labels, so that you can reuse partially used label sheets. Contacts and calendars can be printed (double-sided, if desired) in several day-planner formats, but some are less useful than others. The compact day-planner size (4.25 by 6.75 inches, used by Filofax, Day Runner, and others) prints poorly; the printed address-book and calendar pages are a bit too big and print two across a sheet of letter-size paper. Other programs size their pages correctly and fit three compact day-planner pages on each 8.5-by-11-inch sheet.

The Last Word

With the excellent integration of the four modules and the program's intelligent assistance, Claris Organizer is a worthy competitor in the PIM market. In its first release, it lacks some features that other products boast, but none of these are egregious omissions. In its present version, Organizer won't tempt most longtime PIM users to switch. But new PIM users, lured by the low price, good performance, and ease of use, will probably find that Organizer meets their requirements. With such a strong foundation, Claris Organizer just needs to grow up a bit in the next version to become a major player.—TOM NEGRINO
WHEN YOU CAN RUN THOUSANDS OF WINDOWS APPLICATIONS ON YOUR 68040 MACINTOSH, EVERY DAY FEELS LIKE CHRISTMAS.

Did you know you could open a new Windows program every day for 50 years, and still not run all the applications you can run with new SoftWindows for Macintosh? Isn’t it a wonderful life?

New SoftWindows for Macintosh is a breakthrough in Windows convenience and accessibility on your 68040 Quadra, Centris, Performa LC or new generation PowerBook. Just like the Power Macintosh version you’ve been hearing so much about, it’s 100% guaranteed to run all your standard mode Lotus 1-2-3 spreadsheets, dBase IV custom databases, company e-mail, Novell NetWare client software and a whole lot more. All without giving up the Mac you love.

But the real happy ending to this story is that new SoftWindows for Macintosh now runs Windows faster than ever on your 040 Mac. In fact, up to 30% faster!

So open a world of Windows possibilities with new SoftWindows for Macintosh. With more speed than ever and applications up the chimney, it could be the best gift you give yourself all year.

See Your Dealer Or Call 1-800-848-7677 Code SC.
For Fax-Back Info Call 1-800-876-5873
SoftPC Owners: Upgrade to SoftWindows for Macintosh for as little as $79! Call for details.

© 1994 Insignia Solutions, Mountain View, CA. Phone: 415/964-7600/Tax: 415/969-5038. Insignia and Insignia Solutions are registered trademarks of Insignia Solutions. SoflWindows is a trademark used under license.

Windows is a trademark and MS-DOS is a registered trademark of Microsoft Corporation. All other trademarks are the property of their respective holders.

Circle 68 on reader service card
Microsoft Works 4.0

Integrated Software

PROS: Inexpensive; good word processing and drawing tools; includes calendar and address-book components. CONS: Weak spreadsheet and database modules; can’t format tables in word processor. COMPANY: Microsoft Corporation (206/882-8080). COMPANY’S ESTIMATED PRICE: $99.95.

At last, after a serious update, Microsoft Works is starting to look the way it should. With the release of version 4.0, what was a poorly designed, overpriced integrated works program becomes a sensible, low-cost package. It provides entry-level users with a respectable word processor, database, and spreadsheet, along with drawing and communications tools, for under $100.

And, while trimming the price, Microsoft has enhanced Works 4.0 with plenty of new features, including a built-in calendar, an address book, and a slide-show module—features missing in many other all-in-one works packages.

New and Improved

All of the existing Works modules have been improved, some dramatically. The word processor is most noticeably made over, acquiring a fast, efficient spelling checker, a thesaurus, and a straightforward table-making tool. A zoom command has been added so you can view a page layout at magnifications of 25 percent to 800 percent. A new tool bar makes formatting commands available via pop-up menus. There’s also more assistance online. The WorksWizards, for example, provide step-by-step guidance for creating items such as greeting cards, certificates, and newsletters in a variety of styles. The program also ships with a folderful of AutoStart Stationery templates for new documents.

These features make the Works word processor much easier to use, but it’s still a very basic word processor at best. For example, you can add bullets to a series of paragraphs with a single click, but you can’t customize the type of bullets used. You can insert a table into a document, but you can’t change the color and width of grid lines or shade the table cells. And the module also contains a few odd inconsistencies. Drag-and-drop text editing, supported in the word processor, inexplicably doesn’t work within tables.

The program’s drawing and painting modules have taken a substantial leap forward. You can draw objects using a variety of shape tools, apply gradient fills, and rotate objects at any angle. You can enhance paint objects with a number of interesting effects, such as blur, emboss, and trace edges. These image-processing commands let you do some creative manipulation of original or imported images within Works. Another little Works bonus: the drawing tools can be used to create PowerPoint-like slide shows. The slide-show-setup features are bare-bones but fine for assembling simple on-screen presentations, albeit without any transitional effects.

The graphics tools are accessible on a floating tool palette from any of the modules, making it easy to integrate draw and paint objects. You can drop logos, charts, or diagrams onto a page and then use the straightforward text-wrap commands to make the text either wrap around the graphic elements or overlap them. For more elaborate layouts, you can set text in individual text frames within a page (and across pages) and build links between frames as you would with a full-blown page-layout program.

Subtle Changes

The database and spreadsheet modules are less improved, though they too have been upgraded. The database allows you to create multiple data-entry and display forms, along with a fully customizable list view. A new field-placement dialog box simplifies setting up new forms, and the reporting capabilities are improved. You still have to enter data into each field through an entry bar at the top of the screen, spreadsheet-style, instead of directly in the field. And the zoom tool accessible in the word processor can’t be used when designing a database.

The spreadsheet also still lacks a zoom function, so you can’t reduce a large spreadsheet to get an overview of your work. Also, the spreadsheet-formating commands are oddly implemented. If you select a cell and pick a different font, the entire spreadsheet changes to the new font. But if you pick a new color or style, the change affects only the selected cell.

On the positive side, the spreadsheet supports a full range of standard functions and integrates nicely with the other modules in the program. For example, the Paste Special command makes it easy to embed a spreadsheet into a word processing document. Double-clicking on the embedded spreadsheet gives you instant access to the spreadsheet tools so you can edit the spreadsheet from within the word processing document.

The Works telecommunications module is probably the least likely to be used—true for all works programs—but it, too, is enhanced. The module now supports a fuller range of file-transfer protocols, including Xmodem, Ymodem, Zmodem. Other notable features include a status area that lets you display the date, time, and duration of a telecom session, or your online service charges; macros to automate dial-up and log-in sequences; and an option for preselecting an application to open downloaded text files.

In addition to the traditional works modules, Works 4.0 now includes its own calendar and address book. There’s not much to the address book, just a database preset with the appropriate customizable fields for address listings. The calendar is nicer, a simple but useful planner/or- ganizer. It displays daily, monthly, and weekly views of your appointments, along with a list view for to-do items.

The Last Word

Despite all the forward steps, Microsoft Works 4.0 isn’t the best integrated software package around; ClarisWorks still offers stronger individual tools and the best overall selection of features—though it costs about $100 more on the street and lacks a calendar program. But Microsoft Works offers so much at such a good price that it merits serious consideration. Entry-level users looking for an all-in-one package at the best possible price won’t be disappointed with Works 4.0.

—Joseph Schorr
Introducing the
Agfa StudioScan II.

Push a button, make a scan. Is it really that simple? With the new Agfa StudioScan II, it can be.

That's because StudioScan II was designed for simple operation. Two levels of scanning software are built in — easy-to-use Agfa FotoSnap and comprehensive Agfa FotoLook. Plus, our exclusive, 42-page Introduction to Digital Scanning will guide you through the scanning process.

What's more, every StudioScan II comes complete with Agfa FotoTune color management software and our IT-8 reference target, along with Adobe PhotoShop™ LE and OmniPage Direct™ OCR software. All in a 400 x 800 ppi, 30-bit, one-pass scanner. And all for about $1,000.

So if you want an easy way to bring a scanner into your office, all it takes is the new StudioScan II. And your finger.

Call 1-800-685-4271 to find out more information on Agfa's new scanners.

AGFA
The complete picture.
Now Utilities 5.0

**Utilities Collection**

**PROS:** Comprehensive, well-integrated collection of system utilities; excellent value. **CONS:** Inconsistent use of System 7.5's new features. **COMPANY:** Now Software (503/274-2800). **COMPANY'S ESTIMATED PRICE:** $89.

Many—myself included—consider Now Utilities 4.0 the best Macintosh system utility collection around, and version 5.0 proves that Now Software has not been resting on its laurels. The most noticeable improvement to this version is the addition of two modules, Now FolderMenus and Now QuickFiler. Now FolderMenus adds a pop-up menu of a folder's contents to every folder in the Finder. Apparently inspired by Inline Software's PopUpFolder, Now FolderMenus is equally handy, seems faster, and has a few additional and helpful options that PopUpFolder lacks.

Now QuickFiler provides an alternate view of your disks, folders, and files in which you can perform all standard file-management functions. It also has a sophisticated Find command and can compress files on demand or in the background. Although Now QuickFiler performs these tasks adequately, anyone looking specifically for file management will probably find DiskTop (PrairieSoft) easier to use, and if you're serious about file compression, you would do better with StuffIt Deluxe (Aladdin Systems) or DiskDoubler Pro (Symantec).

All of version 4's seven modules have been updated for version 5. Two modules—Now Menus and Now Startup Manager—have been improved significantly. In Now Menus, you can now create any number of menu-bar menus (in addition to unlimited pop-up menus) and give each one a unique and colorful menu icon. The smart menu items (recent folders, recent files, and the like) are also smarter, and you can rename the items in a Now menu for easier identification. Now Startup Manager has added start-up-document conflict resolution and control over more types of start-up documents, to the point where it is a viable alternative to Conflict Catcher II (Casady & Greene), the best extensions manager around.

The other modules from version 4 all have a new look and a better design and are, on the whole, easier to use. Now Profile has been updated to recognize Power Mac and System 7.5 features and can E-mail its system description using PowerTalk. Now Scrapbook supports GIF and JPEG graphic formats. Now SuperBoomerang, Now WYSIWYG Menus, and Now Save display only minor changes aside from the new design.

All Now Utilities modules run in native mode on a Power Macintosh, but only some of them take advantage of System 7.5's new features; you cannot add items to Now Scrapbook by means of drag and drop, for example, although you can, oddly enough, in Now Menus' edit window (and in Apple's Scrapbook). Most of the modules follow the latest trend and sport easy-to-use button bars.

**The Last Word**

Over the course of five software generations, Now Utilities has evolved into a fine-tuned, interlocking set of Finder enhancements. Three of its modules—Now FolderMenus, Now Menus, and Now SuperBoomerang—are almost indispensable, and while the other six may not be tops in their category, they are all worth considering. As a collection, Now Utilities 5.0 remains the best in the business and is an excellent investment for almost any Macintosh owner.

—Robert C. Eckhardt

75.]

Cal 1.0

**Calculator and Calendar**

**PROS:** Powerful calculator; great voice input (on PlainTalk-capable Macs) and output (on all Macs). **CONS:** Limited printing options; no control over type size in datebook. **COMPANY:** Thought I Could (212/678 9724). **LIST PRICE:** $79.95.

Cal is a well-chosen set of desktop necessities: an excellent calculator, an associated-formula editor, a datebook, and a calendar that works closely with the datebook.

All the elements of Cal are easily accessible from any application, with just a mouse-click and a key-press. Both the calculator and the formula editor create tapes that can be saved. The calculator is nicely designed, and any function you might think is missing is probably already in the formula editor, or creatable there. The calculator and formula editor audibly verify entries and speak results. With a PlainTalk-capable Mac, you can use the calculator and editor by speaking to Cal.

The datebook and calendar let you schedule appointments, events, and multiday events (via banners). You can set any item to repeat at intervals. Visual and audible reminders alert you in advance of events. The only problems are of omission. In a program otherwise totally customizable, you're locked into a small type size for event details. And there's no way to prioritize entries.

Printing options are limited but adequate. If you install all of Cal's options you'll need 2.7MB of hard disk space, but by trimming to the essentials you can reduce the used space to under 2MB.

**The Last Word**

With Cal's easy access and ample power, it has become an everyday tool for me. And if you have PlainTalk, Cal works even better.—Steven Bobker

75.]

Customizable Power The cork background is one of more than 65 attractive options provided.
There's the one where your ex-girlfriend turns into a rabid dingo and chases you and you keep getting your feet stuck in some weird mucky stuff until finally you reach a cliff above a river and as you jump you see her mother waiting for you below holding a weed-whacker.

Then there's the one where it's 4:30 the day before your vacation and you accidently hit the delete button as you attempt to print the 46-page update you were supposed to show your boss at 5:00.

Not all dreams should come true. Check out Retrospect. It automatically backs up all the files on your Macintosh. (Or use Retrospect Remote—the network version.) Be it power loss, theft, fire, or spilled cappuccino, it'll save you hours of therapy and recreating. Restores are quick and complete. It backs up data to any storage device whether tape, cartridge, or disk. And has simplified scripting and incremental backups. Sleep better.

Call 1-800-225-4880 for more info. Don't lose it.

circle 26 on reader service card
INFODEPOT, a revamped version of Chena’s Fair Witness, was designed as an all-in-one program for project planning. InfoDepot includes tools for brainstorming and organizing ideas (the Outline and Chalkboard views); for scheduling project steps (the Timeline view); and for entering, calculating, and presenting data (the Table and Form views). And if InfoDepot doesn’t have the built-in capability you need—graphing data, for instance—you can use the program’s excellent AppleScript support to import what you create in other programs and store the final results in InfoDepot’s tables or forms.

InfoDepot’s default starting point is the Outline view, which resembles outlining modules found in programs, such as Actin Corporation’s In Control and Inspiration Software’s Inspiration, but with more options to customize an outline’s appearance. For instance, you can hide individual items in your outline, or you can display only one subheading and its related items by dragging the subheading to replace the outline’s main heading at the top of the window. A pop-up menu next to the heading lets you return to other levels of the outline.

InfoDepot’s Table view converts each entry in the outline to a row and resembles In Control’s outline format, which lets you define columns for data, such as start and finish dates, costs, and people. The Table view functions as a worksheet, since you can add formulas as well as AppleScripts to manipulate the data in a table column or in a single cell. Cells can store text, formulas, graphics, QuickTime movies, AppleScripts, and sounds. Cells can also store multiple values, so you can enter different comments in the same cell and then flip through them by clicking on a page button in the cell.

Just as with the Outline view, you can drag a subheading to replace the main heading in the Table view. For example, your project outline might have separate subheadings for the sales, marketing, and engineering departments; by dragging a subheading to the heading at the top of the window, you can make any subheading the main heading of a more focused table.

To recall this customized displays (such as an outline or a table with a specific subheading selected), InfoDepot lets you define them as layouts you can select from the View menu. InfoDepot doesn’t take the ability to open the layouts far enough, though, since you’re limited to opening only one layout at a time. You cannot open a second window for the same file to see a second layout.

Although InfoDepot’s new calendar window doesn’t compete with those found in calendar programs like Now Software’s In Control or Now Up-to-Date, it’s a useful addition. You can display any column containing dates in the calendar window. Unfortunately, you cannot display all date columns in a calendar simultaneously. To simplify scheduling, InfoDepot lets you drag a date from the calendar window to a cell in the Table view; no longer do you have to worry about accidentally scheduling something on a Sunday or holiday.

InfoDepot retains Fair Witness’s free-form display for typing and drawing ideas but renames it the Chalkboard view. In this view, you can enter ideas and reposition them on screen, drawing lines to connect or group ideas, much as you would in a brainstorming session. InfoDepot doesn’t provide a way for you to convert related items to an out-line (as Inspiration does), so you’re left with the drawing you created.

Fair Witness supported different types of voting for reaching decisions and let you graph the results. Unfortunately, this feature is not available in InfoDepot. Instead, the support for formulas in the Table view lets you define your own equations for weighting votes and creating summaries. If you want to graph the results, you may have to write an AppleScript to send the data to another application, such as DeltaPoint’s DeltaGraph or Microsoft Excel, and then copy the graph into a cell in your table. InfoDepot includes some prewritten AppleScripts to make this process easier.

InfoDepot was designed for use by workgroups, allowing you to define an InfoDepot file as a shared file. If more than one person is working on a shared file at the same time, the program automatically keeps a journal file of all changes and periodically updates each user’s view of the file. InfoDepot supports password security for shared documents by letting you set one password for viewing and another for editing, and you can set a password on a column-by-column basis. If you’re using PowerTalk, you can attach a digital signature to a column in a shared document, indicating that the column has not been changed since you signed it. This feature can be particularly useful in shared budget documents.

The Last Word
InfoDepot does a good job of serving as a central repository for most if not all of your project data. Its multiple views and the ease of switching between them make planning and coordinating projects a simple process. The ability to share documents also makes it easier for team members to contribute to a single plan. And to cap it all off, its powerful support of AppleScript lets you stay in InfoDepot and control other scriptable programs to supplement it.—DAVE KOSIUR
You're well acquainted with this megabyte-eating beast.

But perhaps you're not yet familiar with DynaMO, the magneto-optical solution that eliminates the horrors of data storage.

Like Syquest, with DynaMO you save your files to removable cartridges. But unlike Syquest, you don't have to break the bank each time around. And the 128 and 230 MB industry standard 3.5-inch cartridges you use aren't nearly as vulnerable. In fact, Fujitsu cartridges come with a lifetime warranty.

There's nothing frightening about setting-up DynaMO either. You just plug the drive into your PC or Macintosh.

Get the data on DynaMO by calling 1-800-831-4094. Or request information by fax at 1-408-428-0456 (document 1368).

We'll show you how to enjoy some monstrous savings.
Reviews

ClarisDraw 1.0

Draw Program

PROS: Good automated tools; clip art for producing maps, diagrams, schematics, floor plans, and blueprints. CONS: The fancier the drawing, the slower the program; poor text handling rules out text-heavy projects. COMPANY: Claris Corporation (408/727-8227). LIST PRICE: $399.

CLARIS CORPORATION HAS TAKEN one of the original Gang of Three—the venerable MacDraw—and rehabilitated it for the world of Béziers, QuickTime, and living color. The overhaul is extensive, adding slide-making, outlining, painting, and text-handling tools; but the implementations are uneven.

Two Formats

In drawing terms, ClarisDraw lands somewhere between MacDraw and Bézier-based draw programs like Aldus FreeHand and Adobe Illustrator. ClarisDraw keeps MacDraw’s old arcs, lines, boxes, ovals, and polygons, continuing to draw them in its own native format, and adds stars, regular polygons (hexagons, for example), and a host of set shapes as well.

ClarisDraw has new Bézier drawing tools (for freehand lines and polygons), but the two drawing formats aren’t wedded well. To join a native-format shape to a Bézier shape means converting the former into Béziers first. Problem: Not all native-format shapes are convertible—straight lines and arcs, for instance, are not. In any case, ClarisDraw’s “join” feature can’t create a closed path—you can only add one open path to the end of an existing open path. For better drawing control, you can convert native-format objects—as well as characters from TrueType or PostScript Type 1 fonts—into Bézier-described shapes.

Nondrawing Tools

Many of ClarisDraw’s nondrawing tools are innovative, clever, and amazingly easy to use, even if what they do graphically isn’t dazzling. The program’s alignment tools, for example, are an efficiency expert’s dream. You can select a group of objects (including text blocks) and at the click of the mouse align them with each other at top, bottom, or sides, or along their vertical or horizontal axes. Likewise, one click can make objects the same height or width, or space them evenly apart from each other. You can also convert these alignments and alterations into permanent spatial relationships, so that if you move or resize one object ClarisDraw moves and resizes the others automatically. You can align objects on a catalog page—captions, call-outs, photos, drawings—with just a few clicks of the mouse, without any measuring, imprecise dragging, or aligning by eyeball. For flowcharts, floor plans, and engineering schematics, these tools are a godsend.

Other welcome nondrawing talents include the ability to zoom to any percentage and to save up to six zoom views for later use. Select some text, and an option-click at the new insertion point cuts it and pastes it. In the paint mode, the marquee can automatically trace and select a paint object of any shape. ClarisDraw automatically adjusts pasted objects from drawings made at different scales to fit the scale of the new drawing.

ClarisDraw’s painting talents are modest, not unlike a color version of the old MacPaint, but painting is a handy capability, even if you can’t do much with this implementation. You have to work in a paint frame, not simply a paint layer, and the memory requirements for paint frames are high. If you try to create an 8-bit (256-color) 300-dpi painting for imaging on a color laser printer, the program wants over 2MB of memory for a 4-by-6-inch image. You can’t edit bit-mapped images from outside the program (scans, for example).

ClarisDraw’s color fills for objects, though, are fine. Its tools for creating gradient fills are the easiest I’ve tried (see “Color Blends”). You can also customize the program’s solid-color palettes by adding any color available from Apple’s Color Editor. Sorry, no Pantone colors.

Working With Text

ClarisDraw also does a neat job of creating slide presentations. Its built-in outlining is great for slide presentations, and you can customize your presentations for 35mm slides, on-screen shows, or printed handouts.

Although ClarisDraw touts itself as a good tool for text—for making brochures and reports, for instance—it can’t hyphenate, so justified text looks dreadful. And there’s no single dialog box from which to set type specs—setting font, point size, and leading takes three trips to the Type menu.

You can control the overall spacing of text (tracking) only if it’s bound along a path (something the program doesn’t do well either). There’s no manual kerning, so display type is often badly spaced. You can’t set type on a tight leading, because the background of the letters is opaque—if lines of type get too close together, the lower ones obscure the upper ones.

A cloud hanging over the entire program is speed. Give ClarisDraw a command and there’s often a “Huh? Oh, yeah …” pause, like you caught it napping. It can be difficult to work quickly because you can issue a command before the program has executed the previous one. When you switch from draw to paint mode, the whole screen actually goes blank for a couple of seconds.

For this article I created a file containing a half-dozen of ClarisDraw’s own small clip-art outline objects that I filled with identical three-color gradients (taken straight from the menu) and aligned and linked with each other using the program’s alignment-relationship tools.

Nothing fancy, but opening this half-page, 165K file took nearly five minutes on a 68030 Mac IIcx with 8MB of RAM, 4MB of which were dedicated to ClarisDraw (twice the recommended amount). Just to redraw the screen after closing a dialog box took almost three minutes.

The Last Word

With ClarisDraw’s 10MB of clip art and its grid-oriented layout tools, the program is best suited for presentations, in the broadest sense of the term: engineers’ schematics, maps, architect’s drawings, blueprints, price lists, and slide shows. Graphic artists will find ClarisDraw frustrating—it just doesn’t have the right stuff to compete in the professional ateliers. But for presentations without grand artistic pretensions, ClarisDraw can be an effective tool, although, considering the wobbliness of many of its features, $400 is a lot to pay.—JAMES FELICI

MACWORLD | January 1995 | 69
Admit it. You've never seen anything like RAMboot™ before. The new feature on MacTools® Pro 4.0 that makes disk repair and data recovery faster and easier than ever. Fact is, you may never have to build an emergency disk again. Because instead of fiddling with floppies, now you just hit the RAMboot button and the software automatically creates a temporary bootable RAM disk for both disk repair and optimization. Simply put, you can actually optimize your start-up disk without rebooting from your floppy.

But RAMboot isn't our only innovation. MacTools Pro was designed with a host of features that take time-consuming tasks out of your way. For lesser problems there's Fix-on-the-fly disk repair technology, which repairs most glitches without requiring you to reboot. And Anti-Virus Scanning, that goes to work during idle-time to give you continuous and transparent virus protection.

Now let's talk trash. You asked for file wipe, file type exclusion, file viewing and auto-trash emptying and you've got them. All in our enhanced TrashBack™, which still provides the simplest and safest undeleting available today.

Plus, even more applications are Power Macintosh native, including native disk repair and disk optimization.

So if you spend time fixing drives, call to upgrade for $49.95, or to get info at 1-800-374-2602, ext. 703. Because even if you think you've seen it all, you've never seen anything like new MacTools Pro 4.0.

FOR A LIMITED TIME, BUY MACTOOLS PRO AND GET FREE CD-ROM SOFTWARE. SEE PARTICIPATING RETAILER FOR DETAILS.
Blueprint 5.0

2-D CAD Software


GRAPHSOFT IS A MACINTOSH SUCCESS STORY. AT EACH REVISION, ITS PRODUCTS ADD USEFUL FEATURES YET RUN FASTER THAN THEIR PREDECESSORS. MICROSOFT'S WORD 6 PROFESSIONAL TEAM COULD LEARN A THING OR TWO FROM GRAPHSOFT.

GRAPHSOFT'S BLUEPRINT IS AN OBJECT-ORIENTED DRAFTING PROGRAM THAT MAKES IT EASY TO DO THE KIND OF DRAWING THAT USED TO OCCUPY STUDENTS FOR HOURS IN TRADITIONAL BLUEPRINT-ORIENTED DRAFTING CLASSES. THIS IS NOT STATE-OF-THE-ART CAD: IT HAS NO 3-D FEATURES (WHICH ARE AVAILABLE IN GRAPHSOFT'S MINICAD), SURFACE MODELING, OR ANIMATION, AS THE ARCHITECTURAL PROGRAMS THAT SUPPORT 3-D WALK-THROUGHS DO.

Blueprint's key new feature is improved speed. Version 5 comes with a 680X0 and Power Mac programs in the same disk set. In 680X0 mode Blueprint 5 performs operations from 1.5 to 2 times as fast as Blueprint 4 does. On a Power Mac, it's even more impressive (see Macworld lab's speed test results below). In practice, this means redraws of a nice 30-by-40-inch sheet covered with detail (a 250K file) are nearly instantaneous on a Power Mac. The trademark Graphsoft chatty cursor, which reports and changes shape as you move it across the objects in a drawing, now carries no speed penalty. This program feels significantly faster than equivalent 2-D CAD programs on a midrange Sparstation. That's quite an accomplishment, both for Graphsoft and for Apple.

Blueprint 5 also has enough new features to justify a whole-digit version change. For precisely positioning objects on a page, a new Nudge command lets you move whole objects one pixel at a time. A new Offset tool lets you specify an object offset, and the Move Page tool shifts the page frame relative to the drawing. New drafting convenience features include a Tape Measure; a Protractor; and a 2-D Properties Display that shows area, perimeter, and centroid, among other functions. Blueprint's already nifty tools for handling objects in walls in architectural drawings have been augmented with Y-Join, Butt-Join, and Edit Symbols in Walls. A unique feature, TrueType to Polylines, converts text in a TrueType font to a set of Blueprint lines, making possible unusual font tricks such as distortions and stretches for dramatic titling and labeling.

Blueprint 5 ships with thoroughly educational sample drawings and a fairly complete symbol library, and exchanges files in PICT, EPS, and DXF formats.

Welcome Home What this still picture can't show is that Blueprint 5 on a Power Mac can rotate or zoom drawings as fast as you can issue the commands.

How Much Faster Is Blueprint on a Power Mac?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Power Mac 710/66</th>
<th>680X0 (680X0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open File</td>
<td>39.5</td>
<td>237.6</td>
</tr>
<tr>
<td>Save File</td>
<td>44.9</td>
<td>226.4</td>
</tr>
<tr>
<td>Rotate File 90°</td>
<td>45.8</td>
<td>1225.6</td>
</tr>
<tr>
<td>Redraw File</td>
<td>3.3</td>
<td>8.9</td>
</tr>
</tbody>
</table>

The test file was a 1.4MB Blueprint file with 912 objects. Each computer system had a 16-inch monitor set to 256 colors, 3MB of RAM, and an external 1.3GB Micropolis drive. Blueprint was allocated 16MB of memory—Macworld Lab testing supervised by Danny Lee

MarcoPolo 3.0

Document Imaging and Management

PROS: Searches on title, contents, keywords, and comments; built-in OCR; user-access control; can use predefined keywords; can save queries for reruning. CONS: Cannot create groups for access control. COMPANY: Mainstay (805/484-9400). LIST PRICE: $895; five-user client version $500.

LIKE A FINE WINE, MARCOPOLO KEEPS IMPROVING. NOW SHIPING VERSION 3.0, MAINSTAY HAS ADDED OCR CAPABILITIES TO ITS DOCUMENT-MANAGEMENT PROGRAM AND OFFERS A LESS EXPENSIVE CLIENT VERSION OF MARCOPOLO FOR USERS WHO DON'T NEED ALL THE CAPABILITIES OF THE FULL-BLOWN VERSION.

MarcoPolo is organized around the concept of the document center, which stores searchable images of documents either on your Mac (an individual document center) or on a file server (a group document center). Aside from the network connection, you use both individual and group document centers the same way. The full-blown version of MarcoPolo includes administration options for document centers and an optical character recognition (OCR) capability. The client version is restricted to forming and running queries as well as saving or exporting the results of those queries.

The most significant new feature in MarcoPolo 3.0 is its OCR capability. Using OCR, you can now extract text from scanned documents and store the entire document—images as well as the associated text—for searching and retrieving. MarcoPolo does a nice job of dealing with unrecognized words, one of the problems with most OCR programs. When using OCR to process a document, MarcoPolo maintains the layout of the original document and inserts an image of each unrecognizable word into the OCR text. This way when you retrieve the document, you see the original layout and might be able to recognize the words that didn't make it through OCR.

In an effort to make OCR as simple and reliable as possible, MarcoPolo uses dictionary-based word recognition for the language of your choice, as well as letter-pair recognition, which you can customize (to help distinguish between th and tn, for example). And since not all documents are the same quality, you can create and store scanning tem-
WHEN
You know the drill. It's a quarter to five and you're racing towards a deadline.
Do you really care about superior processing and technological advancements? Hardly.

FASTER
You want your job out of the printer. Now.
And that's what the QMS® 1660 and 1060 Hammerhead Print Systems are designed to do.

ISN'T FAST
We've thought through the technology so that you don't have to.
Say, wouldn't it be nice to get your work out the door on time so that you can, too?

ENOUGH.
Because time is of the essence, call 800 392-7559 Dept. 5017 today.

QMS®
Outperform The Very Best.
plates for different types of documents; these templates store scanner settings such as brightness and resolution.

In an effort to make archiving multiple documents easier while retaining the power of OCR, Mainstay lets you import TIFF files into MarcoPolo for automatic OCR scanning. If you don't want to use MarcoPolo's OCR interface, you can use an alternate scanning program to scan and store your pages as TIFF files. You can then place the TIFF files in the drop folder associated with the MarcoPolo document center and use MarcoPolo's OCR option to convert the files to text.

Users of the full-blown version of MarcoPolo can now add text notes to any page that's stored in a document center.

These notes can be placed anywhere on the page and are available whenever you access the document.

MarcoPolo's new archive-by-proxy feature lets the owner or originator of a document assign a proxy password to someone else to archive documents for the owner. Proxy passwords apply only to archiving documents and cannot be used to create or run queries.

Other significant new changes in MarcoPolo include support for more predefined keywords (up to 64 for each of the 7 keyword headings), autonumbering of archived documents to preserve the archive sequence, and an option to change the archive date (to match the date of creation of a document rather than its archiving date, for example).

The Last Word
MarcoPolo is a significantly improved full-featured document-management system for Macs. The addition of OCR—both the handling of unrecognized words and the ability to batch-process TIFF files with OCR—makes MarcoPolo 3.0 a very usable system.—DAVE KOSIUR

Can You Read It? The frontmost window contains a page with OCR-recognized text along with unrecognized words, which are in boldface. (This document was scanned without any refining of the default scanning parameters.) The background window shows the results of a MarcoPolo query. In the lower-left corner is a thumbnail view of one of the documents found in this query.

The Connectivity module lets you automate Apple Remote Access connections. You create profiles, and Connectivity uses them to log on to different access sites. You can set up keyboard shortcuts to perform actions when you connect to remote sites, such as activating file synchronization. Other options allow you to have AppleTalk automatically switched off if your computer starts up or wakes up without a network connection. If you restart or wake up after hooking up to a network, AppleTalk turns on automatically. You can also toggle AppleTalk on and off as needed.

The PB Guard module provides full security protection for your PowerBook, and unlike some of the other available products, it works on the driver level. You cannot get around password protection if you start with extensions off or with a floppy start-up disk.

The rest of Wiz Tools is rather undistinguished. The PowerSaver module lets you control the intervals for such functions as hard drive spin-down, processor rest, backlight dimming, and sleep. It doesn't take you much further than the standard PowerBook control panel shipped with Apple's latest system software.

PB Ease has possibilities but just misses the mark. It lets you thicken and animate cursors for improved display on passive matrix PowerBook screens. You can establish drop menus and add keyboard shortcuts for dialog boxes. But unlike, for example, Connectix's CPU, Wiz Tools doesn't offer Windows-like keyboard shortcuts for menu-bar commands. You can also assign keyboard shortcuts to represent the page up, page down, home, end, and ten function keys.

On Apple's newest PowerBooks, the 500 series, the function keys are part of the keyboard. Still, if you own an older PowerBook, this feature can be useful.

The manual is brief but informative. Technical support is a toll call; if support personnel are busy with other calls, they'll get back to you promptly.

The Last Word
If the connectivity file-synchronizing and security features of Wiz Tools appeal to you, the package is worth considering. The rest of the modules are also-rans among PowerBook utility packages.

—GENE STEINBERG
Introducing Delrina Fax PRO™ for Macintosh. You’ll wonder how you ever faxed without it.

Now you can use your Mac to send, receive and manage faxes – thanks to new Delrina Fax PRO for Macintosh.

With Delrina Fax, sending faxes is as easy as printing a document – and you can fax directly from any Mac application. Simply select Delrina Fax in your File menu, type in a name and number – or choose a name from the built-in address book – then click on the “Send” icon and your fax is quickly on its way.

Don’t try this with a fax machine.

Delrina Fax also delivers stunning 16-shade gray-scale sharpness and clarity on-screen, as well as to any fax machine or printer. And, since it works in the background, you can send and receive faxes without leaving the application you’re working in and designate faxes to print automatically on receipt.

Delrina Fax automatically keeps a detailed log of all the faxes you send and receive, and it has built-in Optical Character Recognition (OCR) that lets you easily convert your faxes with text into documents that are ready to be edited. There’s even a custom scheduling feature that allows you to schedule long distance faxes when phone rates are lower.

Support that can’t be beat.

Delrina Fax supports all fax modems for the Mac, as well as all Powerbook Express™ modems and AV GeoPort Telecom™ adapters. And installation is virtually automatic.

With over 4 million fax products sold worldwide, and industry-acclaimed tech support, Delrina is the leader in the fax software market. To put this experience to work for you, call the number below and order Delrina Fax PRO for Macintosh today. Once you do, you’ll wonder how you ever faxed without it.
Peirce Print Tools 1.0

QuickDraw GX Print Utilities

**PROS:** Fast, efficient performance; good choice of enhancement tools. **CONS:** Requires QuickDraw GX; few Mac programs support GX features. **COMPANY:** Peirce Software ($29.95). **LIST PRICE:** $59.95.

**MW**

Apple's new QuickDraw GX totally renews the Mac's printing architecture, providing tools to create fonts with thousands of characters, and offers system-level tools for complex graphic effects such as rotating and reshaping text and pictures. Peirce Print Tools is a set of nine handy modules that work with QuickDraw GX. (The software also includes QuickDraw GX, which requires System 7.1.0 or later.)

If the program you're using is GX-savvy, the Peirce Print Tools modules are all available from the Print dialog box. For programs that have yet to join the GX bandwagon (which includes most Mac software), you choose modules via a menu-bar icon that appears when you bring up the Print dialog box.

Most of the modules are useful, but not all are must-haves. Perhaps the best of the bunch is InkSaver, the toner-conservation module. It lets you reduce the darkness of your proofing documents, thereby restore the full toner-density setting for the final version. Whether or not you are concerned with ecology, this will surely make your expensive toner cartridge go farther. Border places a preselected frame around your printed page, and WaterMark creates a backdrop on your printed page, from supplied templates. Both of these utilities save you the drudgery of creating these fancy effects.

The other modules are good performers, but you probably won't use them as frequently. BackToFront is a utility that prints pages from last to first. CoverPage creates a custom first page, based on preselected templates. DoubleSider makes printing on both sides of the page easier, simply by printing your document from front to back on the first pass, and back to front on the second. Log tracks printer usage. Pamphlet is used to create bifold booklets. PaperSaver lets you print thumbnails of your document, sized proportionately from 2 up to 16 per page.

Finally, a separate program, Peirce Print Utility, lets you import custom cover pages and watermarks, or view the contents of the printer-usage log.

You can select options separately or use them together. You can also create custom groups, in which individual Peirce Print Tools features are activated or disabled, and attach them to a specific desktop printer icon. Since QuickDraw GX lets you create more than one desktop printer icon for the same printer, you can use a separate icon for each group of Print Tools options.

The tools themselves all work as advertised. Their programming is slick, and they perform admirably. The watermarks I used printed crisp and clean from my laser printer. While there are other products (such as Portfolio Software's DynoPage, Bookmaker Corporation's ClickBook, and Working Software's Working WaterMarker and Toner Tuner) that offer some of the same features, having such tools all conveniently bundled in a single, well-integrated utility is a real plus.

QuickDraw GX has its own attractions (see "System 7.5" and Graphics news, Macworld, September 1994). But it's also a resource hog. On a Power Macintosh, the GX extension alone requires up to 2MB of RAM. It makes one wish that Peirce Print Tools didn't require installation of GX.

**The Last Word**

Apple supplies two of the Peirce Print Tools modules, PrintSaver and WaterMark, with the CD-ROM version of System 7.5. If you decide to get Apple's new system software, you'll get a chance to sample this package too. While some of the best parts of QuickDraw GX won't come till software developers support the tools, Peirce Print Tools is here now, and it's definitely a product you should consider.—GEOE STEINBERG

TypeTwister 1.0

**Type Styler**

**PROS:** Many good prebuilt font styles; fast; inexpensive. **CONS:** Can't resize main window; limited customization. **COMPANY:** Adobe Systems ($29.95). **COMPANY'S ESTIMATED PRICE:** $59.

**MW**

Sometimes, getting your point across in print requires using a little pizzazz. When plain fonts just won't do, TypeTwister lets you create wildly styled text effects. These type effects can be used in printed flyers, presentations, newsletters, or anywhere you need fancy type.

It's easy to get started with TypeTwister, as virtually the whole program can be used from one window. That main window includes a text-preview area with six magnification options; a field for the text you want to style; a scrolling bar of design buttons with 50 prebuilt text effects; and pop-up menus for Effect, Font, Shape, and Colorset text attributes. There are also buttons that let you copy the text to the Clipboard, and there's a quit button. TypeTwister comes with 20 display fonts, and works with any TrueType or PostScript Type 1 font (you must have Adobe Type Manager installed to preview PostScript fonts correctly).

To create a type effect, scroll the bar of design buttons and select the style you like, then type the text you want to style into the text-entry field. The program immediately renders your styled text. The previewed text appears in a frame with handles that you can use to stretch, resize, rotate, and skew the text. To further modify the text effect, TypeTwister comes with dozens of predefined attributes you can choose from pop-up menus (you can also create and customize your own color sets and text effects).

Twister, as virtually the whole program can be used from one window. That main window includes a text-preview area with six magnification options; a field for the text you want to style; a scrolling bar of design buttons with 50 prebuilt text effects; and pop-up menus for Effect, Font, Shape, and Colorset text attributes. There are also buttons that let you copy the text to the Clipboard, and there's a quit button. TypeTwister comes with 20 display fonts, and works with any TrueType or PostScript Type 1 font (you must have Adobe Type Manager installed to preview PostScript fonts correctly).

To create a type effect, scroll the bar of design buttons and select the style you like, then type the text you want to style into the text-entry field. The program immediately renders your styled text. The previewed text appears in a frame with handles that you can use to stretch, resize, rotate, and skew the text. To further modify the text effect, TypeTwister comes with dozens of predefined attributes you can choose from pop-up menus (you can also create and customize your own color sets and text effects).

Continues...
I want a full-featured, proven market leader which can handle any job: 2D, 3D, cost estimation and client presentations.

I want a program that runs on both the 68K-based Macintosh and the Power Macintosh. At no extra charge!

I want a CAD program that is tailored to my needs, with specialized tools for architecture, mechanical engineering and design.

I want an expandable CAD program which can be customized for specific solutions easily and inexpensively.

I don't want to spend a lot for training or experience an enormous learning curve.

I want an established company with constant R&D funding, so that my investment stays safe.

3 Free Application Specific Modules: Mechanical, Architectural, & Advanced Design

MiniCad 5 offers all of the above and more. The award-winning software has been hailed as the “features champion” by Macworld Magazine (March, 1993). Further, Graphsoft is dedicated to progressive investment in CAD R&D. Graphsoft customers stay more productive than their competitors because Graphsoft supports both the latest technology and evolving user needs. MiniCad has long been the price/performance leader in Macintosh CAD. Don’t be steered away from MiniCad by VARS who want you to buy high-priced CAD products that are hard to learn and only do a few things well. The VARS won’t tell you that MiniCad 5 ships with a multi-media training CD, or that you receive 18 months of free technical support with Graphsoft products or upgrades. In short, MiniCad keeps more of your money in your pocket. Buy MiniCad 5 and save!

MiniCad 5 also includes: speed increases up to 100% even on 68K-based Macintoshes, a Claris CAD conversion program including a $495 upgrade price, a Claris CAD translator, and a helpful conversion guide, translators for importing and exporting to the other major CAD products, an upcoming Windows version, multi-media training CD 18 months of free technical support and a no-hassles 30-day money-back guarantee through authorized dealers. Contact Graphsoft today for detailed literature. To order immediately, call MacWarehouse, MacConnection, or your local dealer. Demo: $19.00

Late Breaking News
MiniCad Wins 1994 Macworld World Class Award for CAD
BLUEPRINT 5 Joins the Power Macintosh Family

Azimuth
The ultimate map creation tool, including nine cartographic projections and more! Used by US News & World Report, 4 mice

Graphsoft
Full-featured 2D drafting. Experience ease of use, high precision and an affordable price. 4 mice, MacWorld Editor’s Choice!

10270 Old Columbia Road, Columbia Maryland 21046 Ph:410-290-5114 Fax: 410-290-8050
Power Macintosh is a trademark of Apple Computer Inc. MiniCad, Blueprint, and Azimuth are trademarks of Graphsoft, Inc.
Claris CAD is a trademark of Claris Corp.
Review

BLAST Professional

Telecom Software

PROS: Decent single-file transfer speeds (when you can get it to work).
CONS: Difficult to achieve efficient connections; file-transfer problems; poor interface; random freezes; lacks automated script-creation capability.

COMPANY: BLAST Inc. (919/542-3007).
LIST PRICE: $139.

LAST IS BOTH THE NAME OF THIS telecommunications software and an acronym for its proprietary file-transfer protocol. It stands for Blocked Asynchronous Serial Transmission, a transfer scheme that allows full duplex file transfers, where you can send and receive a file at the same time. (The computer on the other end of your communication must also be using BLAST.) This would make large file transfers much more efficient in terms of time—if it worked. Unfortunately, the problems I encountered while using this special transfer technique were just some of the many I experienced with this software.

BLAST Professional offers a dozen terminal emulations, ranging from the standard TTY to less common setups such as Data General D200, D410, D411, and 461. BLAST promises compatibility with personal computers and mainframes from a host of manufacturers. In addition to the BLAST protocol, the program offers the usual range of standard file-transfer protocols, such as Xmodem, Ymodem, Zmodem, and Kermit.

The program’s scripting capability allows you to automate your dialing and log-on sequences and perform other tasks automatically as well. Its biggest weakness is that it cannot generate scripts based on the steps you take (unlike programs such as Software Ventures’ MicroPhone Pro and FreeSoft’s White Knight). That means you must learn its scripting language and manually type all the steps in your scripting routine.

BLAST Professional’s interface is startlingly minimalist. There’s no Save or Save As command in the File menu for saving settings files. Unlike in other telecommunications programs, there’s no address book in which to store frequently used connection settings. You can create custom setups, but nothing shows you which setup you’ve opened (you must look through a configuration dialog box to figure it out). While other programs provide tools such as the Apple Modem Tool in a pull-down menu, BLAST makes you manually enter the name of the tool in the Connection settings dialog box. If the name is too long, BLAST simply removes the additional characters and ignores the tool’s existence.

Testing the BLAST protocol was frustrating. I set up two almost identically equipped Power Macintosh 8100s with Supra 288 modems (one in Arizona, the other in Oregon). I’ve successfully used this same setup to transfer large files with MicroPhone Pro, White Knight, and Aladdin Systems’ SITcomm. When I tried BLAST Pro, it was difficult to connect to and stay connected with the modem at the other end. On a few occasions, when I did get a good connection, I would suddenly lose the connection or the program would freeze. Over several days (at different hours of the day) I tried to get a successful, sustained hookup.

BLAST Inc.’s technical-support people suggested a few changes in modem settings, but these didn’t result in much improvement. When I achieved connections for brief periods, duplex transfers using the BLAST protocol proceeded at a snail’s pace (1 percent of a 1-MB file over 10 minutes with a 24,000-bps connection). When the connection was lost, I was unable to resume a partial download (even though the manual says this feature is supported). I could log on to several bulletin board systems, however, and transfer files using Zmodem. Under these circumstances, problems were less severe, though still present.

The Last Word

I could not get BLAST Professional to work reliably and consistently during my tests. I also didn’t like its minimalist and quirky interface. This is not a program I can recommend.—GENE STEINBERG
FastPace Instant Contact 1.0

Contact Manager

**PROS:** Fast; straightforward interface.

**CONS:** Application must be running to search database; no integrated scheduling program.

**COMPANY:** Foresight Technology (817/731-4444). **LIST PRICE:** $79.99.

If you need software to handle a growing roster of contacts, your choices range from simple address books like ComposeTel's Souvenir to general-purpose PIMs like Common Knowledge's Arrange (see Reviews, December 1994). FastPace Instant Contact takes a middle-of-the-road approach by providing comprehensive contact management but no scheduling functions.

FastPace is intuitive and easy to use without referring to the manual. (Just as well, since I found coverage skimpy in places. For instance, some field types aren't adequately explained, and the index is spotty.) A handy feature that displays prompts at the top of the screen when you point to a tool or object also helps new users come up to speed quickly.

FastPace has the features that you'd expect from a field-based contact manager, with 16 name and address fields (including separate fields for home and work addresses), 10 phone fields, 11 custom text fields, 2 number fields, and 3 date fields. A separate notes field holds up to 32K of text, and a check-box field lets you mark contacts for quick access. You can also define tags like "friend" or "business associate" to categorize contacts; oddly, the current release lets you repeatedly assign the same tag to a contact. Several built-in shortcuts help cut down on keystrokes when you're adding new contacts. For example, you can define pop-up menus that contain commonly used entries like salutations or city names. (But FastPace lacks an autocompletion feature for filling in a field as soon as you've typed enough characters to match an item from a predefined list.)

FastPace's lookup options range from simple scans based on a single field to complex multifield searches. (You can also look for contacts by tag, but not in the same operation as a field lookup.) Matching records appear in a separate list view that offers fewer functions than some other programs. For example, you can specify the name and order of fields in the display, but you can't change the font or color, and you can't edit contact data directly within the list view. FastPace also lacks a control panel that would let you look for contacts without launching FastPace, a feature found in competing programs like Portfolio Software's Dynodex.

You can print contact information in a variety of formats, including address books, fax cover sheets, envelopes, and labels. An integrated word processor lets you create custom documents that contain embedded contact information. Although billed as full-featured, the word processor lacks some basic functions, such as find and change. Also, there is no way to import files created with other word processing programs, and you can't save documents for use elsewhere.

FastPace handled my test database of 8000 contacts without a hitch, even on my aging Mac IIx. FastPace lets you open several contact files at once, and you can drag contacts from one database's list view to another if you install FastPace's Drag-and-Drop extension. Sharing contact files on a network is simple and doesn't require a dedicated server. FastPace uses a record-locking scheme that prevents two users from modifying a contact record at the same time. If you keep copies of your contact database on a PowerBook and a desktop Mac, FastPace's merge function can reconcile differences between the two versions.

The Last Word

While FastPace could use a few additional features—especially a menu-bar search function—it does a capable job of contact management. FastPace does not offer two-way sharing of contact and scheduling information the way Now Contact and Now Up-to-Date or Aldus Consumer Division's TouchBase & Date-Book Pro do. (An update that allows FastPace to send contact data to Attain's In Control may be shipping by the time you read this.) If your needs are primarily confined to contact management, FastPace Instant Contact is worth a look.

—Franklin N. Tessler

Launch Pad 1.0

**Desktop for Kids**

**PROS:** Protects files from kids; customizes Mac according to child's age. **CONS:** Alters System file. **COMPANY:** Berkeley Systems (510/540-5553). **LIST PRICE:** $49.99.

Launch Pad, from the maker of the popular After Dark screen saver, is a new utility that takes the worry out of sharing your Mac with kids. Instead of the desktop, your child sees an animated puppy in a rocket-propelled car. Clicking on his or her name at the bottom of the screen opens an account that lets the child access only the desk accessories, applications, and documents that you preselect.

Launch Pad also adjusts controls like mouse sensitivity and key repeat rate to suit your child's dexterity. You can even tell Launch Pad to speak menu items and file names out loud, a boon for kids too young to read. For maximum protection, you can set Launch Pad to load automatically at start-up. Once it's running, you have to enter a password to exit Launch Pad—even hitting &opt;option;&alt; doesn't force the program to quit.

The only drawback to Launch Pad's security is that the installer makes changes to your System file, which could lead to incompatibilities on some Macs. With Launch Pad installed, extension managers such as Casady & Greene's Conflict Catcher no longer respond to the keyboard at start-up, although you can still turn them on and off from the Finder.

The Last Word

A few minor inconveniences are a small price to pay for peace of mind, though. If you want to share your Mac with your kids, Launch Pad is a worthwhile investment.—Franklin N. Tessler
Overall Value?
No One Beats Us!

Out in California the Berkeley Mac Users Group named us a Fall 1994 Choice Product, writing: "This is still the Best All Around Mac Mail-Order Company. Others have tried to beat them but have fallen short...They can answer technical questions almost as well as BMUG, and are always friendly."

Closer to New Hampshire, the Boston Computer Society's 25,000 members recently gave us an UGLY Award (User Groups Like You) for Best All-Around Company. Other comments included: "Superior service," "incredibly fast shipping," "reliable," and "a knowledgeable sales staff."

The Best Since 1984

Did You Know...?

MacConnection is part of PC Connection, which, led by the best-looking mascot in the business, has won PC World's World Class Award for Best Mail-Order Company an unprecedented four times!
So if you need anything for your PC, you can still get the best service in the business.
(Call 800-800-5555).

MacConnection®
14 Mill Street, Marlow, NH 03456 603-446-3333 FAX 603-446-7791
**COMMUNICATIONS**

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CompuServe Member/Navigator</td>
<td>$92.00</td>
</tr>
<tr>
<td>Unison Fax for MacOS</td>
<td>$55.95</td>
</tr>
<tr>
<td>Digiforms TelePort Gold II</td>
<td>$139.95</td>
</tr>
<tr>
<td>Global Village powerPort Gold</td>
<td>$299.95</td>
</tr>
<tr>
<td>Hayes ACCURA 144/FAX144</td>
<td>$409.95</td>
</tr>
<tr>
<td>Hayes OPTIMA 300/FAX441</td>
<td>$409.95</td>
</tr>
<tr>
<td>Lynx Ring Director 600/200</td>
<td>$69.95</td>
</tr>
<tr>
<td>Peripherals MCI 3200/V.32</td>
<td>$239.95</td>
</tr>
<tr>
<td>STF Tech. AutoPak/FaxSTF Bundle</td>
<td>$89.95</td>
</tr>
<tr>
<td>Supra SupraFAXModem 144LC</td>
<td>$139.95</td>
</tr>
<tr>
<td>Supra SupraFAXModem 28.8</td>
<td>$279.95</td>
</tr>
<tr>
<td>Lynx Ring Director 600/200</td>
<td>$69.95</td>
</tr>
<tr>
<td>U.S. Robotics Sportster V.34 Fax</td>
<td>$274.95</td>
</tr>
<tr>
<td>Venture Press Internet Member Kit</td>
<td>$49.95</td>
</tr>
<tr>
<td>Zoom FaxModem PKB 14.4</td>
<td>$199.95</td>
</tr>
<tr>
<td>Zoom Fax Modem Voice 14.5</td>
<td>$149.95</td>
</tr>
<tr>
<td>Adesso Deluxe Mouse</td>
<td>$39.95</td>
</tr>
<tr>
<td>Advanced Games Game Pad</td>
<td>$29.95</td>
</tr>
<tr>
<td>Apogee Studio Scan 1</td>
<td>$699.95</td>
</tr>
<tr>
<td>CoStar LabelWriter XL</td>
<td>$149.95</td>
</tr>
<tr>
<td>Got Mac PowerPrint</td>
<td>$99.95</td>
</tr>
<tr>
<td>Epson 1.0570+LO Dot-Matrix</td>
<td>$259.95</td>
</tr>
<tr>
<td>HP DeskWriter 540</td>
<td>$299.95</td>
</tr>
<tr>
<td>HP DeskWriter 560C</td>
<td>$499.95</td>
</tr>
<tr>
<td>HP LaserJet 4ML</td>
<td>$999.00</td>
</tr>
<tr>
<td>UMAX UC630 Color Scanner</td>
<td>$599.95</td>
</tr>
<tr>
<td>Xerox Ballista OCR Software</td>
<td>$79.95</td>
</tr>
</tbody>
</table>

**EDUTAINMENT**

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMC Family Doctor CD-ROM</td>
<td>$39.95</td>
</tr>
<tr>
<td>Compton's Encyclopedia CD-ROM</td>
<td>$79.95</td>
</tr>
<tr>
<td>Dayna Mini EtherPrint</td>
<td>$59.95</td>
</tr>
<tr>
<td>Farallon EtherWave PN100 Trans 109.00</td>
<td>$109.95</td>
</tr>
<tr>
<td>Farallon Timbukta Pro</td>
<td>$139.95</td>
</tr>
<tr>
<td>Sony 10BASE-T Transceiver</td>
<td>$49.00</td>
</tr>
</tbody>
</table>

**NETWORKING**

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asante 10BASE-T Hub</td>
<td>$249.00</td>
</tr>
<tr>
<td>Compaq Ethernet Print Server 109</td>
<td>$359.00</td>
</tr>
<tr>
<td>Farallon... Trans109.00</td>
<td>$199.00</td>
</tr>
<tr>
<td>Farallon Timbukta Pro</td>
<td>$299.00</td>
</tr>
<tr>
<td>SonicLink 10BASE-T Transceiver</td>
<td>$49.00</td>
</tr>
</tbody>
</table>

**STORAGE**

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Ext. Hard Drive 160MB</td>
<td>$249.95</td>
</tr>
<tr>
<td>Apple Ext. Hard Drive 340MB</td>
<td>$449.95</td>
</tr>
<tr>
<td>Apple Ext. Hard Drive 540MB</td>
<td>$699.95</td>
</tr>
<tr>
<td>FWB Hammer Drive FE270</td>
<td>$399.95</td>
</tr>
<tr>
<td>FWB SGB DAT Drive</td>
<td>$499.95</td>
</tr>
<tr>
<td>Iomega Bernoulli 230MB Removable</td>
<td>$499.95</td>
</tr>
<tr>
<td>Iomega 230MB Cartridge</td>
<td>$99.95</td>
</tr>
<tr>
<td>Mac Ext. Cloning 525x2 CD-ROM</td>
<td>$249.95</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>APC BackUPS 200</td>
<td>$99.95</td>
</tr>
<tr>
<td>BTI PowerBook Baller</td>
<td>$59.95</td>
</tr>
<tr>
<td>Kensington NoteBook Traveler Deluxe</td>
<td>$75.00</td>
</tr>
<tr>
<td>Sony DG90M 15 Pack</td>
<td>$55.00</td>
</tr>
<tr>
<td>Targus Black NotePac Case</td>
<td>$35.95</td>
</tr>
</tbody>
</table>

**NEWTON BUNDLE!**

The Ultimate Bundle!

Apple Newton MessagePad 110 with:

- 30-MHz processor; improved 4MB ROM, 640K RAM.
- Write as type in notes.
- Built-in calendar, To-Do list, database, audio file, calculator, etc.
- Newton software, FaxModem, and many more options.

**FREE with Newton!**

Offer expires 12/31/94

- Send notes, schedule appointments, and exchange data with other Newtons via its built-in infrared beam technology.
- A megabyte of memory.
- Weight only 1.25 lbs.
- Longer battery life.

**SIX FOR THE PRICE OF ONE!**

WordPerfect Student Editions includes six programs every student needs! Get WordPerfect 3.1+

- Templates for reports and term papers.
- French, German & Spanish language modules.
- 100 Bitstream fonts.
- R.H. Webster's Dictionary.
- LinksPro golf game (a great study break).

**ALL AT LOW DISCOUNT PRICES!**

**CALL FOR A FREE CATALOG!**

**LOW-PRICE GRAYSCALE FLATBED SCANNER!**

Micromax's ScanMaker IIg scanner offers 1200 x 1200 dpi maximum resolution and comes with OmniPage Direct Optical Character Recognition software.

**$399.95**

**$319.95**

**$199.95**

**HP PORTABLE INKJET PRINTER!**

The new HP DeskWriter 320 portable inkjet printer is a portable black & white printer with an optional Color Upgrade Kit (F117126-99.95). Its ink bottle is placed on a Battery Pack and goes.

**$99.95**

**$59.95**

**$179.95**

© Copyright 1995 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlboro, NH.
### BUSINESS

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute 40 First for Mac</td>
<td>$99.00</td>
</tr>
<tr>
<td>BestWord Mind Your Own Business</td>
<td>$79.00</td>
</tr>
<tr>
<td>Computer Associates Deluxe Graph 3</td>
<td>$89.00</td>
</tr>
<tr>
<td>Creative Think Creative Write</td>
<td>$29.00</td>
</tr>
<tr>
<td>DeltaPoint DeltaGraph Pro II</td>
<td>$139.00</td>
</tr>
<tr>
<td>IdeaFisher IdeaFisher for Mac</td>
<td>$95.00</td>
</tr>
<tr>
<td>Implementer</td>
<td>$134.00</td>
</tr>
<tr>
<td>Join Business Pmc</td>
<td>$79.00</td>
</tr>
<tr>
<td>NotePad</td>
<td>$29.00</td>
</tr>
<tr>
<td>Nisus Nisus Writer</td>
<td>$249.00</td>
</tr>
<tr>
<td>NotePress WillMaker for Mac</td>
<td>$39.00</td>
</tr>
<tr>
<td>Peachtree Accounting</td>
<td>$115.00</td>
</tr>
<tr>
<td>SoftKey WriteNow</td>
<td>$44.50</td>
</tr>
<tr>
<td>SoftKey Key Card Complete</td>
<td>$34.55</td>
</tr>
<tr>
<td>Symantec ACT 2.0 Upgrade</td>
<td>$49.50</td>
</tr>
<tr>
<td>Symantec Antivirus *</td>
<td>$89.95</td>
</tr>
</tbody>
</table>

### GRAPHICS

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe Illustrator 5.5</td>
<td>$319.95</td>
</tr>
<tr>
<td>Adobe Photoshop 3.0</td>
<td>$569.50</td>
</tr>
<tr>
<td>Adobe Aldus FreeHand 4.0</td>
<td>$399.75</td>
</tr>
<tr>
<td>Adobe Aldus PageMaker 5.0</td>
<td>$549.50</td>
</tr>
<tr>
<td>Aldus Fontographer 4.1</td>
<td>$329.75</td>
</tr>
<tr>
<td>Digi-Click Icon/Manager</td>
<td>$29.50</td>
</tr>
<tr>
<td>Equilibrium adobeToolsX</td>
<td>$239.50</td>
</tr>
<tr>
<td>Extensis Page Tools Extensions</td>
<td>$99.50</td>
</tr>
<tr>
<td>FrameTech FrameMaker 4.0</td>
<td>$569.95</td>
</tr>
<tr>
<td>Graphiscraft BookPrint 5.0</td>
<td>$195.00</td>
</tr>
<tr>
<td>HSC Kai's Power Tools/PPT Viewer</td>
<td>$195.95</td>
</tr>
<tr>
<td>Innovative Data MacDraw 4.0</td>
<td>$349.50</td>
</tr>
<tr>
<td>MacArtist Magazine ImagingFonts</td>
<td>$39.50</td>
</tr>
<tr>
<td>Manhattan Graph Ready/SelGrid</td>
<td>$218.50</td>
</tr>
<tr>
<td>OfficeClip/Clip CD-ROM</td>
<td>$99.50</td>
</tr>
<tr>
<td>RayDream JAG II</td>
<td>$89.50</td>
</tr>
<tr>
<td>RayDream Designer</td>
<td>$249.50</td>
</tr>
<tr>
<td>Specular Initiator</td>
<td>$499.50</td>
</tr>
</tbody>
</table>

### UTILITIES

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BookMaker ClickBook</td>
<td>$44.95</td>
</tr>
<tr>
<td>Central Point MacTools</td>
<td>$85.95</td>
</tr>
<tr>
<td>Connectix Ram Doubler</td>
<td>$50.00</td>
</tr>
<tr>
<td>DataViz MacTools+ Translators Pro</td>
<td>$95.00</td>
</tr>
<tr>
<td>Insignia SoftWindows Mac</td>
<td>$279.00</td>
</tr>
<tr>
<td>Insignia SoftWindows Power Mac</td>
<td>$289.00</td>
</tr>
<tr>
<td>Symantec Norton Utilities Mac</td>
<td>$99.50</td>
</tr>
<tr>
<td>Symantec Symantec Anti-Virus</td>
<td>$89.50</td>
</tr>
</tbody>
</table>

### VIDEO

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnavox 14&quot; Color Display</td>
<td>$299.95</td>
</tr>
<tr>
<td>NEC MultiSync Monitor</td>
<td>$349.95</td>
</tr>
<tr>
<td>Sony 15&quot; 15&quot; Multisync</td>
<td>$499.95</td>
</tr>
<tr>
<td>Radius SuperMac 17X 17&quot; DVI</td>
<td>$699.95</td>
</tr>
<tr>
<td>Radius SuperMac Spigo Power A/V</td>
<td>$999.95</td>
</tr>
</tbody>
</table>

### STATISTICS MADE VISUAL!

For powerful, easy-to-use statistical visualization, JMP 3 from SAS Institute has a multiple of new features for dynamic linking, extensive statistics, quality control, import/export, and printing. QuickTime movie support, too!

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe Photoshop 3.0 (Version)</td>
<td>$148.95</td>
</tr>
<tr>
<td>Central Point MacTools Pro 4.0 (Competitive &amp; Version)</td>
<td>$49.95</td>
</tr>
<tr>
<td>Aldus Consumer DateBook &amp; TouchBase Pro 4 (Version)</td>
<td>$49.95</td>
</tr>
<tr>
<td>Symantec Norton Utilities Mac 3.1 (Version)</td>
<td>$39.95</td>
</tr>
<tr>
<td>Symantec Anti-Virus Mac 4.0 (SAM) (Version)</td>
<td>$29.95</td>
</tr>
<tr>
<td>Microsoft Excel 5.0 (Version)</td>
<td>$95.00</td>
</tr>
</tbody>
</table>

### Microsoft Encarta '94

Microsoft Encarta '94 brings you 23 encyclopedic volumes with 44,000 articles, 7,000 illustrations and photos, 8 hours of sound, 130 animations and video clips, 500 maps, and over 250 interactive charts! Price after $30 mfr's rebate; expires 3/31/95.

### BUILD YOURSELF A MULTIMEDIA LIBRARY!


From classics to current blockbusters, Microsoft Cinemania '95 gives you 19,000 reviews and much more. Includes over 4,000 biographies of stars and directors (2,000 with photos), 1,000 films, 20 video clips, 168 dialog clips, and 139 music tracks. Search by actor, director, release date, genre, Academy Awards, star ratings, and more.

### OUR POLICY

- VISA, MASTERCARD, AMERICAN EXPRESS, and DISCOVER cards. No surcharge.
- All U.S. shipments insured, no additional charge.
- APO/FPO orders shipped Priority Class Mail.
- International orders/ Add 2% surcharge and $22 insurance. Manufacturer support not available for export; call for information.
- COD maximum $1,100. Cash or certified check. COD orders require an additional $35 charge, ship via UPS and may require additional UPS charges.
- 120-day limited warranty on all products. Defective hardware repaired or replaced at our discretion. All items subject to change without notice.

### SHIPPING

Continental U.S.-Total shipping charge on any order is $3. Barren areas beyond our control (credit card orders: CODs) are shipped by ground service by 3 p.m. ET. Call us if you desire expedited service. Insurance, COD orders require an additional $35 charge, ship via UPS and may require additional UPS charges.

- Do not return to manufacturer. We are not responsible for typographical errors.

### HOURS

Our order lines are open 24 hours a day, 7 days a week.
**Terry Ellis**  
President of Imago Records

Notes for speeches  
Notes to my assistant  
Notes regarding a charity dinner I'm organizing  
My children's sports schedules  
Company marketing plans  
Company budgets  
A calculator  
One of my daughter's poems  
America Online  
Now Up-to-Date  
Microsoft Word  
A fax modem  
A personal organizer  
Racehorse breeding records  
A calendar of my artists' concerts  
P.T.A. meeting notes  
A dictionary  
A thesaurus  
Archive files of correspondence  
A recipe for Yorkshire pudding

**Henry Rollins**  
Musician/Spoken Word Performer

My show log  
My workout log  
Eye Scream, a book in progress  
Get in the Van, a book in progress  
Other peoples books I'm proofreading  
A fax modem  
My journal  
An article for Details  
An article for Purr  
DateBook Pro  
Virex  
PSI Fax  
The release schedule for Infinite Zero Records  
My tour schedule  
The preface to a friend's book  
Liner notes for Hubert Selby's spoken word CD  
Transcripts from recent interviews  
Notes for my next video  
A list of things that are true

©1994 Apple Computer, Inc. All rights reserved.
**Bird Brain 2.01**

**Database for Bird-Watchers**

**PROS:** Includes species names and other information; partially automated data entry; wide variety of predesigned reports. **CONS:** Can't divide records into different databases; can be slow. **COMPANY:** Idealform ($15/472-7256). **LIST PRICE:** $125.

---

**Bird Brain 2.01 lets bird-watchers record every sighting of every bird they have ever seen, to create electronic life lists. Bird Brain already knows common and scientific names and major field-guide references for the 1946 species of birds in North and Central America, Hawaii, the Bahamas, and Bermuda. After you enter just a few letters of a species name, Bird Brain guesses which species you want and then enters the species information for you.

Bird Brain also copies the previous record's Date, City, County, State or Province, Nation, and other location fields to each new record; you can, of course, change these entries if need be. Each record also contains two notes fields—one for brief comments, the other capable of holding a full page of text. The Tag field's pop-up menu allows you to assign a user-definable, multiletter code to each record, and you can specify Yes or No (or nothing) in two user-definable Flag fields (for example to note the presence or absence of a nest).

Bird Brain has standard record-finding and sorting functions and can display a tally of the number of species on each of your life lists. The program can print individual records, and it can display and print life lists for any state, for North America, for areas defined by the AOU (American Ornithologists' Union) and ABA (American Birding Association), even for the world, either for all records or for a specified year. It can also generate seasonal lists, trip lists, simple lists of species, and other types of lists.

If you travel outside the areas covered by Bird Brain, you'll want World Bird Brain ($175, including the basic Bird Brain software), which contains data on all 9679 known species of birds on Earth.

If you travel beyond Bird Brain's area of coverage only infrequently, you can manually update and add species to Bird Brain's existing species list. To ensure that the data for each species is correct and compatible with World Bird Brain (should you decide to upgrade to it later), you can use Bird Picker ($30), a separate—somewhat cumbersome—utility that installs, bird by bird, the species data found in World Bird Brain.

---

**Music Study System**

**PROS:** Synthesized accompaniments follow live soloist's tempo. **CONS:** Limited repertoire available at release; high initial cost; repertoire sold separately. **COMPANY:** Coda Music Technology (612/937-9611). **LIST PRICE:** $2295.

---

**Vivace**

**Music Study System**

**PROS:** Vivace's sensitivity to tempo, and you can vary it by section. This one feature makes performing with Vivace a joy. You can also identify troublesome passages, slow them way down, and set them to loop over and over until playing them becomes second nature. I used the looping feature to learn some scary arpeggios in the Mozart Clarinet Concerto's first movement.

A trumpeter friend was astonished by the accommodations to the Haydn Concerto in E-flat and the Hindemith Sonata. Vivace's piano accompaniment to the Hindemith, a notoriously dry composition, has a lively presence that caused her to revise her opinion about the whole piece. The Haydn bubbles with baroque energy, and you can actually hear the digital "bows" scraping across "strings." Educators to whom I showed Vivace were unanimous in their praise. Much of Coda's repertoire is based on standard contest and audition pieces—music advanced students may already be working on.

Another plus: Coda is preparing the entire Jamie Aebersold library of 54 jazz play-along records for Vivace. Tempos in these pieces don't follow the live performer's melodies as the classical pieces do; you can alter the tempos and transpose their keys on the Mac. The rhythm section on the Aebersold volume I tested was excellent—harmonically inspiring, loose, and swinging.

---

**Vivace defines a new, exciting product category. It may be the best thing that's happened to learning wind literature since the metronome. All you vocalists and other instrumentalists will just have to wait until Coda fills in the product line. It'll be worth it.**—RICHARD PENNO
When Life Moves Fast... We Move Faster

UMAX designed the new Vista-S6 to give you the speed you need. At a mere 9 seconds for a black and white image, the Vista-S6 scans so quickly it leaves the competition idling on the runway. Whether your deadline involves managing documents, publishing a newsletter or editing images, Vista-S6 gets the job done and gets it done fast.

Save Time and Money With a list price of under $1000, the Vista-S6 will give you the performance you want at a price you can handle. The Vista's cold cathode lamp and sealed optics design ensure long life and low maintenance scanning. So, go ahead—bring on your biggest project, your most urgent deadline, and leave the scanning to us.

It's Easy The VistaScan user interface is so easy to install and use that you will be up and scanning in no time. VistaScan takes desktop scanning to new heights by automating user controls to a single-step process. With features like AutoDensity to determine highlight and shadow values, Descreen to remove moiré patterns from printed material and QualityScan for optimal image quality, it's no wonder VistaScan is considered to be the most intuitive scanner interface available.

More BANG FOR YOUR BUCK WITH QUALITYSCAN FREE WITH EVERY VISTA-S6

One Vista-S6 includes Photoshop™ LE, OmniPage™ X, and MagicMatch. VIP & PRO Version includes Photoshop Full Version, Kai's Power Tools™ SE, and MagicMatch. (ERP $999)

© 1995 UMAX Technologies, Inc. 35A Gateway Blvd. Torrance, CA 90505 (310) 604-3500 Fax (310) 604-0646. UMAX is a registered trademark of UMAX Technologies, Inc. Other company and product names are property of their respective owners. Scanners in speed chart were tested using a P200-MC. All scanners are tested in Windows 3.1/2.31 and Photoshop 2.5.1.

VISTA-S6 INCLUDES MagicMatch MANAGEMENT SOLUTION.

COMPARE VISTA-S6 TO THE COMPETITION

Vista-S6

More BANG FOR YOUR BUCK WITH QUALITYSCAN FREE WITH EVERY VISTA-S6

© 1995 UMAX Technologies, Inc. 35A Gateway Blvd. Torrance, CA 90505 (310) 604-3500 Fax (310) 604-0646. UMAX is a registered trademark of UMAX Technologies, Inc. Other company and product names are property of their respective owners. Scanners in speed chart were tested using a P200-MC. All scanners are tested in Windows 3.1/2.31 and Photoshop 2.5.1.

Circle 196 on reader service card
Aquazone 1.0

Aquarium-Simulation Software

**PROS:** Beautiful, well-done animations; adjustable simulation speed; the well-written manual keeps the inexperienced from floundering.

**CONS:** Only two kinds of fish; hard to keep fish alive; no bubbling bell-divers or treasure chests.

**COMPANY:** Inago (416/487-4005).

**LIST PRICE:** $79.95.

I came back from vacation to a note that read "So sorry about your fishies... I think they missed you an awful lot." Disease had wiped out the pets in my little live aquarium. A couple of days later, a coworker placed a copy of Aquazone by my Mac. Some hard-core aquarists have schooled together and designed the ultimate virtual aquarium. This is digital life—these electronic pets require daily attention.

Everything you need is provided, so setup is easy. You choose a tank based on screen size, not gallons—the stock filter, heater, and light are in place. There are also five kinds of gravel, a handful of decorative elements like plants, wood, and mini statuary; and ten tank-backdrop designs. Aquazone comes with two species of fish: leopard catfish and neon tetra. That strikes me as darn few fish, but the programmers don't see it that way. They've handcrafted animations for roughly 20 individual fish per species, for a total of 40 fish, from eggs to aquarium old-timers of several years in age. Still, I can't tell the fish apart except for obvious size differences. There appear to be four sizes of each species—egg, tiny, medium, and big—and frankly, if I get 40 fish, I'd rather have 10 species in four sizes than 2 species in four sizes.

The company says it's committed to bringing out more fish species. A series of option disks ($19.95 each) have more accessories, more plants, and one new species of fish per disk.

The minimum RAM requirement is 2.5MB, but that doesn't buy much simulation stimulation: the program crashed when I tried to import food into a 13-inch tank with two fish and some sand. That Spartan arrangement worked in a 10-inch tank—with room to spare for a small plant. Bump it up to 5MB to build a pleasant, well-stocked aquarium.

A few days after setting up my tank, I had a diseased fish. The situation turned ugly fast: a week later all my virtual pets were dead, their little rotting corpses littering the floor of the aquarium until I exported them to the Toilet. I suspected that they didn't like going the weekend without food. The simulation speed adjusts from 0 to 100, but even with the lowest-speed simulation on the weekends, my fish still died. So did those of another Aquazone aquarium-loving coworker. I've read the manual—which could almost be a guide to maintaining an actual aquarium—looking for clues as to why these fish are so darned hard to keep alive, with no luck.

**The Last Word** Even so, I like having Aquazone in the background. It's very soothing. Would I buy it over the real thing? No, but then again, how many offices permit several gallons of water sitting next to computer equipment?

—Suzanne Courteau

Fish Included Aquazone comes with a ready-to-go aquarium for the instant-gratification crowd.

Practica Musica 3.0

Music-Teaching Software

**PROS:** Colorful, enhanced design; excellent accompanying textbook; offers entertaining training for every skill level.

**CONS:** Minor bugs; occasional interface irritations.

**COMPANY:** Ars Nova Software (416/487-4005).

**LIST PRICE:** $79.95.

The name Practica Musica, Latin for "practical exercises in music," probably conjures up visions of droney away with dull drills. Yes, Practica Musica (PM) is a music-teaching program, with emphasis on sight-reading and ear training, and it's based on traditional classical-music courses. But it offers instant feedback and has more variety, and features more explanatory, beautifully written on-screen text than the previous version. The new multisizer feature permits each student to carry around a personal floppy disk with progress records; this feature is slightly intrusive to the individual home user, but it's probably a godsend to music educators. And PM's new exercises do a terrific job of teaching chord sequences. (PM's now hip enough to teach extended jazz chord types, too.)

From a 17-item menu, you select an exercise: sight-reading, intervals and chords, scales, rhythms, or combinations thereof. Most exercises ask you to name, play, or write a certain interval/chord/note/rhythm on the on-screen blank staff. You enter your musical response using any of four methods. You can play the Mac's keyboard like a piano; use the mouse to click notes onto the staff; attach a MIDI synthesizer and play the keys; or sing the notes, using AutoScore, an add-on from Wildcat Canyon Software.

You're graded with tact and clarity. The program should tell you that you must select a skill level from a menu.

Practically Musical After an exercise, the program points out your errors. If any, so on. When you're using the Mac's sequencer (instead of a synthesizer), chords play much softer than single notes. And after you choose an exercise, nothing happens; the program should tell you that you must choose a new exercise from a menu.

The Last Word All kinds of people could benefit from PM's brand of gentle musical self-improvement. A tyke would enjoy playing random melodies on the Mac keyboard. Anyone learning an instrument (or singing) should try the pitch and rhythm exercises. Jazzers and rockers may scoff at the program's quaint founding in classical theory—but they'd do well to pit themselves against the chord-sequence challenge. And of course, Practica Musica shines as a smart, infinitely patient personal music coach in the classroom.—David Pogue
Sure, Word's impressive. But it's no Nisus Writer. By giving you the power to manipulate text in multimedia presentations, edit lengthy books, and create foreign language documents, Nisus Writer starts where ordinary Mac word processors stop. Of course, just because it's big on features doesn't mean it's big on memory requirements. At just 2 MB of RAM, Nisus Writer lets you spend less time waiting and more time writing. No wonder why critics are calling Nisus Writer the ultimate document processor. And why a lot of people are calling those other word processors yesterday's news.
Amazing Animation

Animation for Children

**PROS:** Creative application; great price; comes close to making a complex task fun. **CONS:** Younger children may find the advanced features challenging; canned animations and scenes grow tiresome. **COMPANY:** Claris (408/727-8227). **LIST PRICE:** $39.

A MAZING ANIMATION BRINGS cute pictures, funny sounds, and a kid-friendly interface together in a package that lets children produce short animations or interactive presentations. Think Kid Pix meets Macromind Director.

Of course, animation is notoriously more fun to watch than to make. For this reason the designers of Amazing Animation eschew traditional animation techniques. Instead, kids produce animations primarily by dragging "stamps" across "scenes," or backgrounds. Stamps contain mini animations that run in continuous cycles—a horse running, a bird flying, a planet spinning, and so on. As the child drags the stamp, the program generates animation frames by laying down successive members of the stamp cycle along the motion path.

Amazing Animation comes with 32 animating stamps and 9 background scenes (a CD-ROM version has additional clip art). You can set transitions, such as wipes or dissolves, between scenes. The program also has 53 predefined sounds, some of which loop indefinitely to provide background accompaniment. To add a sound to an animation, you simply move to the desired frame and select the sound from a menu.

The developers recommend Amazing Animation for children ages 5 to 14. Younger users will tend just to play with the canned sounds and graphics. Older or more adventurous kids can create their own backgrounds and stamps with the built-in graphics module. Children can also record sounds using the Mac's microphone.

The three highly computer-literate kids I tried this program on all thought Amazing Animation was pretty cool. After an hour or so, however, the youngest, at 7, seemed bored with moving the premade graphics around. After the same amount of time, his 9-year-old sister, whose designs were more ambitious, was coming up against the inherent truth about animation: producing interesting effects takes planning and unrelenting persistence. She also bamped into some of the program's limitations. For example, there's no way to flip a stamp so that the car, say, can motor right to left instead of vice versa. The teenager, a 15-year-old, had no doubts that his friends would easily be able to master the program, but judged that the interface might be a bit user-cuddly for their tastes.

The Last Word There's nothing quite like the joy of seeing one of your drawings pick itself up off the page and do tricks. Amazing Animation lets kids share that joy. The program is best suited for highly motivated kids in the 9-to-14-year-old range who have access to adult advice. If you're the sort of parent who thinks your kids are better off playing with the computer than watching TV, Amazing Animation is the sort of program that justifies that belief.

—JOE MATAZZONI

ScriptWizard 1.0

AppleScript Editor

**PROS:** Find-and-replace in scripts. **CONS:** No true step-by-step debugging; cannot watch variables in subroutines; slow; does not print headers, footers, or script description. **COMPANY:** Full Moon Software (408/253-7199). **LIST PRICE:** $99.

FULL MOON SOFTWARE'S SCRIPT-WIZARD is the first program that attempts to improve writing and debugging AppleScript scripts—but don't expect any magic. The program, slow and riddled with small problems, barely improves on Apple's Script Editor. ScriptWizard adds debugging and find-and-replace features. Find-and-replace is rudimentary but effective. Debugging is limited to a variables watcher and step feature that are not much help.

ScriptWizard's debugging is essentially event-by-event: it does not step through individual lines but runs to the next line that generates an Apple event, evaluating every expression in between. This makes debugging difficult when scripts have lots of variables between Apple events. Full Moon includes a scripting addition called a pause script that acts as an Apple event. However, its name is misleading. If you use it as a break point in a long script, the script stops not at pause script but, unexpectedly, at the event after pause script. As a workaround, you can use two pause-script commands in a row. Debugging is still difficult, though, because the variable-watcher window works only with properties and with variables in the run handler, ignoring variables declared in subroutines.

Poor performance is also an issue. ScriptWizard takes from a few seconds to as much as 15 seconds longer than Script Editor to compile a script. Simple copies, pastes, and deletes are also slow. Typing is fine—when you can see it.

ScriptWizard lets you lose the cursor in two ways: type a long line and your cursor will wiggle right off the screen; scroll up, then type, and your new text will be types offscreen. In other words, the text window doesn't always scroll or jump to the cursor when you begin typing. No text is lost, but most users expect better.

ScriptWizard has convenient menus and choices for the Finder and System dictionaries. Unfortunately, the descriptions do not use the same formatting techniques as Script Editor's descriptions.

Other problems: you can select text only by using the mouse; recompiling often shifts the current working line to another part of the screen, briefly distorting the user; sometimes ScriptWizard does not come to the front when errors occur, leaving you wondering if the script is finished or stuck; there are no headers and footers, so you must add page numbers, script names, version numbers, and dates to scripts in comment lines or by hand, and the script's description box does not print anywhere.

The Last Word ScriptWizard does not offer the robust features of a development tool, or even all the basic features of Script Editor. Main Event's Scripter may provide a better tool when it ships near the end of the year, but for now, Apple's Script Editor works just fine.—TIM WARNER
NOW YOUR PRESENTATION AND EFFECTIVE AS!
TIONS CAN BE AS EASY THEY USED TO BE.

Remember when presentations were no big deal? Organizing your material was a cinch. You always made an impact on the crowd.

Welcome back to simpler days, with new Microsoft PowerPoint presentation graphics program 4.0 for the Macintosh and Power Macintosh. The easy way to create powerful, convincing presentations.

Getting started is always the hard part, right? Not anymore.

With AutoContent Wizard, select a presentation type, then enter your content in the outline provided.

Using an innovative feature called AutoContent Wizard, pick a presentation type. Then, the Wizard helps you quickly turn your ideas into a fully formatted presentation.

It's all part of IntelliSense technology, built-in intelligence that makes routine tasks automatic and complex tasks a whole lot easier.

Need more help? AutoLayout makes it easy to add slides, with 21 ready-to-use formats. And thanks to Apple's QuickTime support, you can dress up your presentations with QuickTime movies.

We also have slides that fit in your back pocket. Called Hidden Slides, you pull them out only if you need them. Perfect for tough questions.

Finally, use Rehearsal to practice your presentation against the clock. So you're sure to cover your points in the allotted time.

The fact is, PowerPoint 4.0 is so easy to use, you may already know how. Why? Over 100 PowerPoint tasks are done exactly the same way in Microsoft Excel and Word. And now with OfficeLinks, you can turn a Word 6.0 document into a presentation in PowerPoint with a click.

All told, new PowerPoint 4.0 makes presenting effectively a snap. So visit a retailer, or to find one near you, call (800) 871-3267, Department 6HA. And you'll once again master the art of show-and-tell.
AT FIRST GLANCE, THE HARDWARE CHOICES FOR BUSINESS PRESENTATIONS CAN bewilder even seasoned presenters. Big monitors, television screens, videotape, color PowerBooks, and transparencies all have their advantages. But if you routinely give presentations, look for the combination of relative affordability, easy portability, effective video, and interactivity with live presentation data offered by only one technology: LCD panels and projectors. And with dozens of panels and projectors on the market, the pickings are plentiful.

An LCD panel is about the size of a PowerBook; you connect the panel to a Mac’s video port, then place the panel on an overhead projector (OHP). An LCD projector combines a panel and a built-in light source, and is thus much larger than an LCD panel. Both types of products generally feature good image quality and fairly bright colors.

Macworld Lab tested 11 active matrix, video-capable (in nearly all cases, supporting NTSC, PAL, and SECAM input standards) LCD panels and projectors that cost between $3899 and $8999. Most products tested have a resolution of 640 by 480 and support up to millions of colors. Many also include sound and microphone inputs, so users can project sound from built-in speakers.

To ensure consistency in viewing conditions, we tested only products with an 8.3-inch-to-9.4-inch screen; these produce images measuring 6 to 10 feet diagonally, and work well in a medium-size conference room (they aren’t bright enough for large-group presentations). Two vendors—Sharp Electronics and Dolch Computer Systems—also sell panels that have

BY JOANNA PEARLSTEIN
The nView Z115 (left) and the Boxlight ProColor 1500.
 PORTABLE PRESENTERS

10.4-inch screens, which can display larger images for audiences up to about 200 people, for about $500 to $2000 more than their smaller siblings.

Panels versus Projectors

Once you've narrowed down your hardware selection to an LCD product, the choice between a projector and a panel (which weighs much less but requires an

and use, relative portability, price, and technical support.

LCD panels and projectors are hard to evaluate quantitatively because measured lab results don't always directly indicate quality. And subjective appraisal relies on personal taste, which is by no means consistent. (We picked a clear winner—but must to meet your own tastes and needs, preview an LCD projector or transmissivity.) The overall difference between the brightest and dimmest panels was just over 1 percent of total light transmitted—not terribly significant.

Plus, the amount of light a device transmits does not necessarily translate into display quality. Our tests showed that Chisholm's Rainbow LCD panel transmitted the most light—ostensibly the best results—but our judges did not rate it well

PRESENTATIONS CAN BE STRESSFUL EVEN WHEN THINGS GO SMOOTHLY; LOOK CAREFULLY AT TECH SUPPORT

OHP) depends on your company's needs and available equipment.

Conventional OHPs are reflective—that is, the light shines from above and bounces off a reflective base—while LCD panels require a transmissive OHP, in which light comes from the bottom and shines through the LCD to illuminate the image. If your company already has transmissive OHPs in stock, you should probably save money and get an LCD panel.

Most LCD-panel manufacturers recommend OHPs that transmit a minimum of 3000 lumens (a measurement of light emission), though you'll need as much as 7000 lumens in a room with lots of ambient light. Be careful, though; such bright OHPs may damage the panel. Contact the manufacturer to find out what brightness level a particular device can handle. By the same token, avoid OHPs with incandescent bulbs, which can fry a panel. Metal-halide bulbs are best. Projectors tend to be brighter—one factor that contributes to a sharp and vivid projected image (see "Why Brighter May Not Mean Better").

Also consider how much you will move equipment around. Panels tend to weigh less than projectors, but you may need to bring an OHP for a panel—not to mention a computer, backup disks, PowerBook adapter, and laser disk player. The combined weight of an LCD panel and an OHP can exceed that of an LCD projector—the units we tested topped out at about 25 pounds—by a wide margin (see "A Quick Look at LCD Panels and Projectors"). And beware of advertised weight estimates, as some do not include needed accessories. Most vendors sell carrying cases; quality varies, so be sure to check this before you buy.

Hard to Quantify Performance

We evaluated products based on brightness, the aesthetic quality of displayed images (as judged by a group of Macworld editors and designers), the ease of setup

<table>
<thead>
<tr>
<th>Editors' Choice</th>
<th>Percentage of Light Transmitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boxlight ProColor 1500</td>
<td>3.12</td>
</tr>
<tr>
<td>Chisholm Rainbow LCD</td>
<td>3.12</td>
</tr>
<tr>
<td>InFocus LitePro 550*</td>
<td>3.08</td>
</tr>
<tr>
<td>InFocus PanelBook 530</td>
<td>2.95</td>
</tr>
<tr>
<td>Mutoh VP-100</td>
<td>2.23</td>
</tr>
<tr>
<td>nView Z115</td>
<td>2.05</td>
</tr>
<tr>
<td>Polaroid Poliview 3000</td>
<td>2.05</td>
</tr>
<tr>
<td>Proxima Desktop Projector 2800*</td>
<td>2.05</td>
</tr>
<tr>
<td>Proxima Ovation 820</td>
<td>2.05</td>
</tr>
<tr>
<td>Sanyo Datalash AV</td>
<td>1.95</td>
</tr>
<tr>
<td>Telex MagnaByte MZ1</td>
<td>2.38</td>
</tr>
</tbody>
</table>

* Has built-in projector, so could not be measured.

Macworld tested each panel's transmissivity, or the amount of light it lets through. Using a Dukane overhead projector as a constant light source and a Minolta T1 illuminance meter, we measured the amount of light (in lumens) each panel transmits and divided it by the projector's lumen output. The resulting percentage indicates panel brightness. We could not determine the transmissivity of projectors because we had no constant with which to compare the lumens output. In principle, you want a bright display; but brightness is only one measure of a panel's quality, and higher transmissivity may not mean a better display. In this case, the Editors' Choice product (the nView Z115) had the lowest transmissivity, though it was only 1.27 percent lower than the brightest panel. The nView product's superior performance was related to factors that cannot be measured quantitatively, such as color adjustments by a user to enhance apparent brightness. Remember that these devices are used in dark rooms, so the eye will adjust to their display quality. Usually, the longer you look at a display, the better it appears —Macworld Lab testing supervised by Matt Clark

92 January 1995 MACWORLD
they customize the light source to the panel—may have some validity.

Lumens output also varies depending on where in the image you measure brightness. Our OHP was generally brightest in the vertical and horizontal centers of the display; the dimmest area was the upper-right-hand corner, followed by the upper-left-hand corner. This made all the LCD panels’ images fade at the top. To counteract this effect, you should not place light-color or low-contrast images at the very top of the screen.

**Display Aesthetics**

Our judges evaluated products based on the appearance of colors, flesh tones, text, full-motion video, and a typical presentation-slide image. For comparison, we displayed the same images on an Apple 13-inch monitor and, for video, on a television screen.

Our judges liked the nView Z115 panel the best, followed by the InFocus PanelBook 530, saying that both products had crisp images with bright, vibrant colors. The judges were divided on the Polaroid Polaview 3000 panel: some rated it the best, calling its display vibrant, clean, and sharp; and some rated it the worst, saying it was faded and blurry, and had jumpy, banded video.

Aside from differences in personal taste, this inconsistency may be partially due to the type of images used (some units do well with text, while colors appear relatively lifeless), the position of the controls, or the darkness of the room in which images were displayed. (We displayed static images in a large conference room with a small amount of ambient light; we displayed the videos in a small room with practically no ambient light.)

Our judges did agree on the mediocre image quality of some products. Mutoh America’s VP-100 displayed washed-out images and had some ghosting (the appearance of a faint second image behind a primary image), while Telex Communications’ MagnaByte M2xa produced dull, faded, and soft-edged images. Boxlight’s ProColor 1500 is a modified version of the Telex product, and while the MagnaByte M2xa transmitted more light than the Boxlight, our judges liked the Boxlight better. Sayett Technology’s Datashow AV had accurate colors, but images looked washed out and grainy.

The Proxima Desktop Video Projector 2800 had insufficient color contrast and suffered from a noticeable shift in brightness from top to bottom. We found that the Proxima products required a lot of adjustment to produce adequate results, and in some cases we had trouble getting rid of a green cast on the images. Video on the Desktop Video Projector 2800 appeared jumpy and slightly blurry. InFocus’s LitePro 530 looked washed out and had noticeable banding and flicker in our testing. The LitePro 550 also got very hot while in use; remember to let it cool before transporting it.

While most panels support 24-bit color, bear in mind that a panel or projector can display only as many colors as your CPU can handle, so without a video card installed in the Mac, you’re limited to 8- or 16-bit color. And a larger color palette doesn’t necessarily mean a better picture: the two products whose projected images we liked best, the Z115 and the PanelBook 530, have a smaller color palette than other LCDs. The PowerBook 540c, Duo 270c, and Duo 280c can produce 16-bit color at 640 by 400 resolution. If you’re planning to run your presentation from one of these PowerBooks at the higher resolution, adjust your presentation file to account for the fact that the bottom of the image will be cut off.

**Ease of Use**

You can often improve display quality by adjusting brightness, contrast, and tint on LCD panels and projectors. Most products feature both controls on the device itself and remote controls that let the user change display qualities, image orientation, and media source. Most remote controls are easy to use and understand, with the exception of the InFocus unit’s—several of its menus were hard to navigate and exit, and in one case we had to call technical support to make the product work. (Before you buy any of these devices, try adjusting the controls.)

There are few controls on the Polaroid product; if you lose the remote, you lose the ability to adjust display, video source, and image characteristics. At the opposite extreme, nView’s credit card-size remote only lets you move within a presentation file and adjust speaker volume. Its large buttons make it easy to operate in the dark, however.

Many products also contain stereo speakers, but don’t be fooled; if sound is an integral part of your presentation, bring portable speakers and connect them directly to your Mac. Sound inputs on the Boxlight and Telex products were difficult to use; because the sound-input port is poorly constructed, the cables kept falling out of the sockets, leading to radically reduced sound volume or total silence. We had to hold the cables in manually to make the sound audible, although when we could hear the sound, quality was good.

Besides including remote controls and stereo speakers, some vendors offer devices to help users control or modify their presentations. Chisholm’s Rainbow LCD panel includes a drawing tablet that lets you write on the displayed image. Proxima sells a wand called the Cyclops ($495), a 3-foot-long pointing device that serves as a remote mouse, and a smaller device, the Laser Pointer ($295), which serves the same function.

InFocus sells a LiteShow option ($750 for its PanelBooks or $1000 for the LitePro series) that lets users make computerless presentations. You print your slide show to a LiteShow printer driver, place the file on a DOS-formatted disk, and place the disk into the disk drive on the LiteShow-enabled panel or projector. This is a nice option, but Macintosh users may not like the DOS-formatting requirement and may be more comfortable with the control that running a presentation from a computer provides.
A Quick Look at LCD Panels and Projectors

<table>
<thead>
<tr>
<th>Company</th>
<th>Phone</th>
<th>Toll-Free Phone</th>
<th>Product</th>
<th>Price</th>
<th>Projector or Panel</th>
<th>Tested by Macworld Lab</th>
<th>Video Support (NTSC/PAL/SECAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apollo</td>
<td>516/467-8033</td>
<td>800/777-9750</td>
<td>Vision 26X LCD Panel</td>
<td>$4795</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vision Q2 LCD Panel</td>
<td>$5643</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vision Q3 LCD Panel</td>
<td>$6999</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Boxlight</td>
<td>206/779-4479</td>
<td>800/497-4008</td>
<td>PreColor 1300</td>
<td>$2999</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PreColor 1500</td>
<td>$3899</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PreColor 2100</td>
<td>$6999</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Chisholm</td>
<td>408/559-1111</td>
<td>800/888-4210</td>
<td>Rainbow LCD</td>
<td>$5995</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Dolch Computer</td>
<td>408/957-6795</td>
<td>800/538-7506</td>
<td>Prism 1150</td>
<td>$5495</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Systems</td>
<td></td>
<td></td>
<td>Prism 1650</td>
<td>$6999</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Dukane</td>
<td>708/584-2300</td>
<td>0</td>
<td>MagniView 850</td>
<td>$5995</td>
<td>projector</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>InFocus Systems</td>
<td>503/685-8888</td>
<td>800/294-6400</td>
<td>LitePro 540</td>
<td>$7499</td>
<td>projector</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LitePro 590</td>
<td>$8999</td>
<td>projector</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PanelBook 525</td>
<td>$4799</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PanelBook 530</td>
<td>$5299</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PanelBook 550</td>
<td>$5799</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Mutoh America</td>
<td>708/952-8880</td>
<td>0</td>
<td>VP-100</td>
<td>$3995</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>nView</td>
<td>804/873-1354</td>
<td>800/736-8439</td>
<td>Z110</td>
<td>$4995</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Z115</td>
<td>$5495</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Z210</td>
<td>$6495</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Z215</td>
<td>$6999</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Panelight Display Systems</td>
<td>415/772-5800</td>
<td>800/762-3599</td>
<td>ZK</td>
<td>$3695</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Polaroid</td>
<td>617/386-9857</td>
<td>800/816-2611, ext. 970</td>
<td>Polaview 3000</td>
<td>$5995</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Proxima</td>
<td>619/457-5500</td>
<td>800/447-7694</td>
<td>Desktop Video Projector 2800</td>
<td>$8995</td>
<td>projector</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ovalion 820</td>
<td>$4695</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ovalion 822</td>
<td>$5995</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ovalion+ 840</td>
<td>$4995</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ovalion+ 842</td>
<td>$5695</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ovalion+ 846</td>
<td>$6695</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Sayett Technology</td>
<td>716/264-9250</td>
<td>800/678-7469</td>
<td>Datashow AV</td>
<td>$5245</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Sharp Electronics</td>
<td>201/529-8731</td>
<td>800/237-4277</td>
<td>QA-1100</td>
<td>$4795</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>QA-1500</td>
<td>$5795</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>QA-1650</td>
<td>$6295</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>XC-E850u</td>
<td>$9999</td>
<td>projector</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>XC-H440u</td>
<td>$4695</td>
<td>projector</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>XV-F100U</td>
<td>$1995</td>
<td>projector</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td>Telex Communications</td>
<td>612/884-4051</td>
<td>800/828-6107</td>
<td>MagniView M2xa</td>
<td>$5195</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
<tr>
<td></td>
<td>800/328-1371</td>
<td>800/328-1371</td>
<td>Datashow AV</td>
<td>$5495</td>
<td>panel</td>
<td>0/0/0</td>
<td>0/0/0.</td>
</tr>
</tbody>
</table>

• = yes; • = no; NA = not applicable. Technical-support ratings are based on a series of calls made to each company by Macworld staffers (posing as customers) to gauge the accessibility, helpfulness, and timeliness of the support. Ratings are for companies, not individual products, and we call only those companies whose products Macworld Lab tests. Combined weight of products, cases, and necessary accessories.

Sharp Electronics' QA-1500 panel lets you store presentations on Type III PCMCIA cards. This will be appealing when Macintosh drivers for PCMCIA cards emerge over the next few months.

The Support You Deserve
Making presentations can be stressful enough when things go smoothly; when you have problems, it's critical that your vendor supply easy and effective assistance. We tested the quality of each vendor's technical support by calling with commonly asked questions. Boxlight, InFocus, nView, and Proxima had the best technical support. The worst performers were Mutoh America, Polaroid, and Telex Communications.

In the case of InFocus, technical support came in handy because we had a problem with the remote controls. The InFocus manual is also a little confused when it comes to the Macintosh: it says the product is not compatible with "the Macintosh laptop" but is compatible with Mac PowerBooks. InFocus meant the Mac Portable, but that statement could easily instill great fear in a PowerBook user. The English portion of the nView Z115 manual has much less information than most other products' manuals.

Setup Advice
You can often get around relying on tech support by avoiding common pitfalls. When using an LCD panel with an OHP, make sure the room is well ventilated. In our tests, the OHP kept shutting off because it overheated. If you're presenting in a hot room, your OHP may spontaneously shut down at the worst possible moment. Heat causes another problem—an OHP or LCD projector's cooling fan can be noisy, so be prepared to speak loudly, use a microphone, or increase the volume in your presentation file.

To get your presentation to appear both on your PowerBook screen and on your LCD, you must turn on video mirroring in the PowerBook Display control panel—and, of course, you need a PowerBook video adapter. You may be tempted to display your images on a blank wall, particularly in rooms that are too small for the audience. Don't do it. You'll get a better picture if you project onto a beaded, rather than matte or lenticular, screen.

Alternative Devices
Although we tested only active matrix panels and projectors, screens for LCD presentation panels also come in the passive matrix variety. Active matrix panels do a much better job on video. They are also brighter and display sharper images than passive matrix panels; not surpris-
<table>
<thead>
<tr>
<th>Mac Adapter</th>
<th>Maximum Colors Supported</th>
<th>Screen Size</th>
<th>Built-in Speakers</th>
<th>Weight</th>
<th>Technical-Support Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>12.1 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>built-in</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>9.1 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>9.4 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>9.4 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.3&quot;</td>
<td>not tested</td>
<td>10.4&quot;</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>9.4 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>2 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>23.7 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>20.8 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>9.8 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>23.7 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>10.4&quot;</td>
<td>not tested</td>
<td>24.5 lb</td>
<td>excellent</td>
</tr>
<tr>
<td>included</td>
<td>2 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>2 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>24.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>2 million</td>
<td>10.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>2 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>2 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.4 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>46.4 lb</td>
<td>unacceptable</td>
</tr>
<tr>
<td>included</td>
<td>2 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>24.5 lb</td>
<td>excellent</td>
</tr>
<tr>
<td>included</td>
<td>16 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>1.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>10.4&quot;</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>10.4&quot;</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.3&quot;</td>
<td>not tested</td>
<td>9.6 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
<tr>
<td>included</td>
<td>16.7 million</td>
<td>8.4&quot;</td>
<td>not tested</td>
<td>21 lb</td>
<td>acceptable</td>
</tr>
</tbody>
</table>

Elegantly designed and offering crisp display quality, the Z115 weighs less than 10 pounds and comes with excellent technical support. Company: nView. List price: $5495.
PUBLIC-SPEAKING TALES OF HORROR
AND HOW TO AVOID THEM
Murphy’s Law says that whatever can go wrong will go wrong. Presentation veterans say Murphy was an optimist.

You've got just one chance to give a perfect live presentation; it's about the only Mac-based creation you can't edit as you go. Therefore, the key words are preparation and rehearsal: prepare like crazy, and rehearse the presentation as if it were a Broadway show.

First, consider the equipment. Your own Mac has taken you months to customize, enhance with fonts, troubleshoot, and so on. That's why trusting somebody else's Mac—such as a rental—to work the first time, under pressure, is sheer folly. Most pros use their own equipment in presentations, or at least they start up from their own hard drive or SyQuest cartridge. Rehearse the equipment, too—not in your hotel room, but in the actual presentation room—so you'll be prepared for unexpected environmental hazards like dead outlets, burned-out projector bulbs, and noisy air conditioning.

Second, rehearse the people. Presentation veterans tell chilling tales of speakers unexpectedly blinded by the lighting—or by darkness—on the podium; of presenters who jump ahead in the speech so that the slides no longer correspond to it; and of course, of speakers who simply aren’t good speakers. You can still make a good pitch if the equipment plays dead on the day of the show, but you can’t make a good pitch without a good presenter.

Need convincing? Here are a few true tales from the trenches—along with the lessons worth learning. (Some of the names have been changed to protect the innocent.)

**Front and Center**

Greg O'Connor, a telecommuting consultant, was too smart to rent equipment for his important talk in Houston. He created his show at home using Gold Disk’s Astound presentation program and his own Centris 610, which he then lugged to the meeting.

Contrary to what you might expect, however, Greg paid dearly for his decision to use his own Mac. About halfway through his talk, his calendar program, Now Software’s Now Up-to-Date, threw a huge dialog box onto the two giant 27-inch monitors. It was a reminder Greg had set for himself, making its appearance exactly as programmed.

Worse, the text of the reminder was there, in all-capital letters, for the entire audience to see. It was Greg’s note to make a certain purchase on the way home from the talk—a feminine-hygiene product for his wife.

**Moral:**

1. Load only absolutely necessary extensions and control panels onto the Mac you’ll use. (2) Learn to adapt to a little unexpected humor in any presentation.

**PowerBook Draws a Blank**

“No pressure,” muttered George Clar, research director for a major magazine. He was about to deliver his annual sales pitch to 200 advertisers. The hotel ballroom contained a movie screen, a PowerBook 180, and an LCD projection panel.

With 15 minutes to go, George still hadn’t succeeded in getting either the PowerBook or the projection panel to work; both showed nothing but gray blankness when connected. George had tested everything at the office—but now, despite a million restarts and cable checks, neither gadget would behave.

Just as George began contemplating a career in the rewarding field of refrigerator repair, he discovered a clue: the PowerBook screen had a menu bar. There weren’t any menus in it, but the white strip was visible. With morbid curiosity, he slowly rolled the trackball horizontally, farther and farther, until at last, sure enough, the arrow pointer sallied nonchalantly onto the PowerBook screen.

From there, it took George only moments to solve the puzzle. Somehow, in his Monitors control panel, the LCD panel had been selected as the main screen (video mirroring was turned off). Therefore, the PowerBook’s screen was serving as the right-side extension of the LCD panel! Why, then, didn’t the projection panel show the familiar world of icons and windows? Because its contrast knob had been bumped in transit, turning all its pixels dark, as sometimes happens with these panels. George turned the dial and blissfully found his waiting presentation files with only a minute to go.

**Moral:** The Monitors control panel is the most cherished software possession of a Mac-based presenter. Learn it, understand it, and experiment with multiscreen setups—before you’re surrounded by 200 waiting spectators.

**When Four Backups Aren’t Enough**

Dave Mandala, of Them Productions, has been in business masterminding multimedia productions for decades. Over and over again, he’s learned the importance of having a backup of everything, no matter what the cost. So when he planned a multiscreen presentation in Hungary in 1991, he shipped himself 12 monitors instead of the 8 he actually needed.

**BY DAVID POGUE**
When he arrived in Budapest, however, he opened a metal-framed, densely padded shipping case, and a gallon of water splashed onto his feet. Horrified, he tried the next case...and the next. The contents of the shipping cases were completely soaked: the Hungarian airline staff had left the cases on the runway overnight during a downpour. Only four monitors were dry enough to operate—those that had been stacked on the bottom.

Dave had allowed himself three days to prepare for the show—and he needed them. With difficulty in resource-poor Budapest, he purchased several gallons of isopropyl alcohol and a hair dryer. Then he set to work dismantling the monitors, pouring alcohol over their circuit boards and drying them with the blow-dryer. He finished reassembling the monitors the morning of the show; incredibly, he managed to revive four monitors, giving him the eight he needed. When he switched them on, one monitor self-destructed with a brilliant flash. The show went on with only seven screens—but it did go on.

Moral: Overseas presentations are twice as scary. As Dave discovered, knowing somebody who can translate (a cab driver he met) is imperative in times of stress. And of course, not having backup equipment is folly.

One Hot Presentation

Danny Cooper, a computer consultant for stage productions, was supposed to deliver a talk to a national convention of theater producers in Baltimore. He checked and tested the rental setup (Quadra, LCD projection panel, and overhead projector) several times in the actual auditorium. Everything worked.

The presentation began well. The audience was rapt, and the Mac images looked sensational on the big pull-down movie screen—at first. But to Danny’s increasing horror, the LCD panel’s images grew fainter and fainter as his body could simply point the camera at the Mac monitor and project the image for all to see.

That worked—sort of. Trouble was, highly distracting, rolling horizontal lines appeared in the projected image. (These lines show up anytime you use a TV-type camera to record a CRT monitor’s images.) Jenny’s breakthrough solution: she borrowed a PowerBook 520c from a guy in the front row, connected her hard drive to it, and pointed the camera at the PowerBook’s screen. Because it wasn’t a CRT monitor, there were no rolling lines—and no unhappy spectators.

Moral: If you haven’t tested the equipment before the show, you’re courting disaster—but quick thinking is the best defense.

PREPARE LIKE CRAZY; REHEARSE AS IF FOR A BROADWAY SHOW

John Sculley’s Near Miss

Raymond Nasr, an executive speechwriter at Apple Computer, tells of the night John Sculley, then CEO of Apple, was to deliver a crucial speech to an audience of 1200. After the morning’s final rehearsal—one of many—Sculley left his speech notes on the podium, carefully arrayed and ready to read. After the audience was seated and the lights were dimmed, a woman walked onstage and welcomed the crowd. Raymond watched in panic backstage as the woman then picked up her speech notes—along with Sculley’s—and left the stage.

As a second speaker began to introduce Sculley, Raymond scrambled into the audience, chasing the woman, who was now buried somewhere in the crowd. He cornered her at last. “You’ve got the chairman’s notes,” he exclaimed; turning white, she handed them over. Raymond bulldozed his way to the front of the stage just in time to hand the speech notes to Sculley, who was in mid entrance. The presentation proceeded without a hitch.

Moral: No matter how many times you rehearse, no matter how perfect the equipment, the ghost of Murphy can strike. Raymond’s primary advice: he alert not just to the equipment, but also to the people and the environment. And if the presentation follows a meal, bribe the waiters to stay away from the tables during the speech. The absence of dinnerware clanking is worth every penny. 

Contributing editor DAVID POGUE is coauthor of the Macworld Macintosh Secrets 1995 Calendar, a tip-a-day desk calendar (Andrews and McMeel).
NOT SINCE YOUR SEVENTH GRADE SEX EDUCATION CLASS HAS LEARNING BEEN THIS MUCH FUN.

PRESENTING OUR FANTASTICALLY POPULAR ADVENTURE SERIES.
FOUR WAY-COOL EDUCATIONAL SOFTWARE TITLES FOR KIDS AGES THREE TO TWELVE CREATED AROUND THE BELIEF THAT THE AMOUNT OF STUFF THEY LEARN IS DIRECTLY PROPORTIONAL TO HOW MUCH FUN THEY HAVE IN THE PROCESS. (HEY, WE HAVE KIDS TOO, SO WE KNOW IT'S TRUE.) NOW AVAILABLE FOR THE MACINTOSH.
It was closing in on 3 a.m. when I finally called the meeting to a halt.

"We aren't getting anywhere," I told the categories committee of the Macintosh Game Hall of Fame, casting stern glances around the conference table. "We're going to have to end this session and do what we always do when it comes to categories—hang a little loose."

The committee members hardly seemed to hear me. One had booted up SimCity 2000 on a PowerBook and several had gathered around it, suggesting locations for the power plant. I walked over, elbowed the kibitzer aside, and wiped out the settlement with a tsunami.

"Look here," I cried. "This is a tough business, and I know we're all tired. We've spent months loading disks into Mac II's, Performas, and Power Macs. We've explored dungeons, pyramids, haunted houses, and fantasy islands. We've flown so many F-16s that we see head-up displays in our dreams. We've shot enough aliens to win a Senate race in California. As curator of the Mac Game Hall of Fame, I say it's time to call it a day. I've had it. Let's go home."

"Does this mean no separate Power Mac category?" Finster asked. (He's got an 8100.)

"I told you, we ruled it out because we finally decided that all our games should run on the

Power Mac. We'd like to acknowledge great upgrades to existing games, but if they're already in the Hall, Power Mac people will find them."

"Are we really going to lose the CD-ROM category?" asked Sneed. His uncle donated the cash for our New Media wing, so he has an interest in the subject.

"We'll have to," I answered. "Adventure games hardly come on floppies anymore, and soon more than half our games will probably come on CD-ROM. Even shoot-'em-ups are going CD. Look at that Star Wars game, Rebel Assault."

"I still think we should have picked that one as a winner," said Ricksecker, a trustee who's seen Return of the Jedi 14 times.

"Sorry," I said testily. "We decided any game that was unplayable without a joystick couldn't get in. But that's not the point. Categories aren't even the point. What's the difference between adventure and role-playing? Between role-playing and strategy? Strategy and brain game? Brain
game and arcade? It doesn't matter. All that matters is greatness. That's what we're here for, isn't it?"

I had finally silenced the group—no mean trick considering that just about every member has a serious case of attention deficit disorder (not surprising in a collection of computer-game addicts).

"Look, when a game author designs a product, he or she shouldn't be confused by what category it's in. The idea is to make it great. And that's the idea here at the Macintosh Game Hall of Fame—to identify and honor greatness. The ten we picked this year are tagged with categories, but that's more for purposes of identification than to imply that a game fits in only one place."

There were a couple of nods of asseveration. "I know that there are more games out for Windows than for the Mac," I continued. "But the Mac games are trendsetters. They're special. And the very best of them always wind up here, in the hallowed halls of our Pittsfield, Massachusetts, facility. Final choice, of course, is determined by a highly subjective but ultimately infallible curator. We're tradition. Entry into the Macintosh Game Hall of Fame is the ultimate honor, and the Class of 1994 is a terrific one."

"So what were the final choices?" asked Rickseecker.
"I'm glad you asked."

**BEST ADVENTURE GAME**

**MYST**

Bruderbund Software, 415/382-4600; $59.95.

The first few frames of Myst—the sunken boat by the dock on the mysterious island, the gear house on the hill, the weird box with the now notorious marker switch on top—are destined to become part of gaming history, ranking alongside the opening words of the first adventure game, Crowther and Woods's Adventure.

Myst is that rare game that doesn't just push the envelope, it shreds it. Gone are the most annoying parts of adventure games—vocabulary that don't understand you, people you can't talk to, wrong moves that get you killed and make you start over. You try to unravel the enigma of the island by exploring the island, but there's no time pressure to distract you, no arbitrary punishments put in your way. You can linger to take in the sights and sounds—which are gorgeous and universally intriguing.

The brothers Rand and Robyn Miller, whose earlier The Manhole and Spelunx only hinted at greatness, have masterfully provided the framework to create the illusion of a fully fleshed-out alternate world. It's easy to get lost in Myst, but it's not impossible to find your way to a solution. You have to familiarize yourself with the books in the library, check that seat that looks like a dentist's chair, and really get to know your tower. And a story will emerge—one that promises to have some fascinating sequels.

That's for later. Right now, if you have the slightest interest in adventure gaming, you will run out and buy this disc. If you own a CD-ROM drive, you've probably already bought Myst. And if you don't have a CD-ROM drive, well, now there's a compelling reason to buy one.

**BEST MULTIMEDIA GAME**

**GADGET**

Synergy America; 213/687-2905; $79.99.

If Myst has a Tolkienian mystery and wonder to it, Gadget is sort a weird mix of Dennis Potter, Alfred Hitchcock, and the dream sequence in "Twin Peaks." In theory, the goal of this psychological thriller is to find a scientist named Horselover. But the real point is simply to experience the gestalt of the vaguely pre-World War II, London-ish universe, hauntingly rendered by director Haruhiko Shono and spookily enhanced by the music of composer Koji Ueno. The look-and-feel is awesome, and the technology behind it prevents the limitations of the CD-ROM from dampening the effect as you navigate this strange world. Interspersed throughout are eerie, black-and-white QuickTime segments. The people you meet are truly bizarre and apt to come up with statements like "To a metallic..."
CASTLES: SIEGE & CONQUEST

MacPlay, 714/553-6655; $59.99.

What better use for a computer than to immerse you in the heart of the Dark Ages? You are one of several powerful lords in medieval France. If you acquire enough territory and become sufficiently rich and powerful, you may one day be king. To do this, you must maintain the local economies of the provinces you control, keep good relations with most of your rivals, knock off the other rivals, and above all, make sure the pope likes you.

The key to your domain is the castle. You can either create your own or use a preexisting design. But how you design is important, because you can count on someone laying siege to your keep. One of the more depressing parts of your day comes when you are caught shorthanded, with an insufficient number of defenders facing a horde of invaders who are armed with catapult and battering ram, ready to grind your dreams of kingship to dust.

There are several absolutely priceless aspects to the game. One involves the rather comical (at least the first few times) little movies that pop up on the screen at crucial moments. Another is the ability to send saboteurs and spies into neighboring provinces. It's a great feeling when one of your soldiers swipes gold from a rival. More significantly, you can actually command your troops. This requires some research into medieval combat. Thankfully, unlike some other strategy games, Castles: Siege & Conquest doesn't require a master's degree in history to play a decent game. But the more you play, the more you'll want to learn about life in 1314—the better to ascend the throne.

BEST SIMULATION GAME

SIMCITY 2000

Maxis Software, 510/254-9700; $69.95.

The original SimCity is a very tough game to top. But SimCity 2000, by maintaining a low learning curve, manages to keep the spirit of its predecessor, while greatly enhancing the detail. Borrowing some of the more elaborate screen displays of A-Train (another Maxis game), Will Wright and Fred Haslam have conspired to make you a very powerful—but not omnipotent—mayor of a city of your own design (or one of the included cities). Enhancements include a water infrastructure, universities, libraries, prisons, and hydroelectric plants. You can construct truly amazing metropolises.

But as in the original, the real meat of the game is dynamic interaction. From the interplay of forces—what you want to build, what your citizens want, and what nature (including human nature) will allow—emerges a city. As your efforts at construction will teach you, anticipating consequences is key. But sometimes you can't avoid the Sim-urban version of the butterfly effect known in chaos theory (a butterfly flapping its wings in Singapore so profoundly affects meteorological events that a thunderstorm erupts in Kansas). Forgetting to put a police station near a residential neighborhood, an overreliance on auto transportation, or spending too much on a stadium could eventually lead to dire consequences. An increase in property taxes might contribute to riots in the streets.

But the fun is still there, particularly in SimCity 2000's cheerful appeal to nihilism. Lurking under the menu bar is the option to invoke a number of disasters that allow you to damage your empires in entertaining ways. If that isn't enough for you, Maxis offers (for an additional price) a group of famous actual or would-be disasters. You can replay Hurricane Andrew in Homestead, Florida; launch riots in the streets of Washington, D.C.; or sit smugly in your electronic cottage while a microwave-beam disaster wipes out Silicon Valley. Am I a wrathful god? You betcha!

BEST ARCADE GAME

PRINCE OF PERSIA 2: THE SHADOW & THE FLAME

Broderbund Software, 415/382-4600; $39.95.

Again, a sequel manages to add layers of complications, while preserving the excellence of the original. Only now does it dawn on us that the prince is really Aladdin, though this is never overtly mentioned (perhaps to stave off evil magic from the omnipotent empire of Disney). Still, this might have been called The
Revenge of Jafar: the evil vizier contrives to get our prince banned from the kingdom, and your task is to fight about a billion nasty swordsmen (who get fiercer as you pass through the levels), try out some magic, toss some fireballs, and move your prince-figure in all sorts of imaginative ways to get through the mazelike complications that have charmed the fans of games from Lode Runner to Super Mario.

The game controls work very well, and fairly simple keyboard commands elicit elaborate responses from your prince. And the visuals are tremendous—you go from waterfront to cavern to palace, with all sorts of interesting obstacles in between. But what really elevates Jordan Mechner’s sequel is that it augments the duck-slash-jump movements of an arcade game with a mildly baffling series of challenges. On each level you have to figure out the right path to take and the proper sequence of events. So besides being quick with your fingers, you must also be quick with your wits.

**BEST SHOOT-'EM-UP**

**CRystal Crazy**

Casady & Greene, 408/484-9228; $49.95.

Does it seem as if the Game Hall of Fame has a lot of sequels this year? Unlike with movies, the second time around for games is often better. So it is for Crystal Crazy, by Patrick Buckland and Alasdair Klyne, a shoot-'em-up so whimsical that you never for a moment think you're doing anything destructive. Yet you still get the warm, cozy, destructive pleasure that comes from mowing down vast legions of enemies in the course of collecting your crystals.

In various waves, you will attack—and be attacked by—Fracturefluffies, Pro Dupies, Wanglefoots, Yackertacks, and Rawpuscles. And of course the dread Space Cow. You fire at all of them from your happy little circle/spaceship, which, though controlled by the mouse, tends to keep its momentum a little longer than you wish it would.

In Crystal Crazy, however, there’s more involved than just shooting. Sometimes you have to smash things against the walls, at other times you must wash your diamond over picture pieces until a complete image appears, and sometimes you actually have to move puzzle pieces to construct pictures. There’s also new sorts of goodies to pick up, weirder ways to shoot things, bonus rounds—simply more of everything—while the unspeakably satisfying, finish-a-wave *aaahhbb* sound remains.

**BEST BRAIN GAME**

**TROUBLED SOULS**

Varcon Systems, 619/563-6700; $49.95.

OK, picture a marriage between Tetris and that fixture-fitting plumber game of a few years ago called Pipe Dream. The minister who marries them is Edgar Allen Poe. Now you have Troubled Souls, a truly bizarre yet addictively compelling game created by Randy Reddig, a 17-year-old programmer with a truly nasty streak. Troubled Souls requires you to create rings, or closed circuits, from puzzle parts that drop down a chute. Things get tricky when the falling pieces come attached to, um, body parts; then you have to match, say, the severed ear pieces with other severed ear pieces, and the engorged heart pieces with the same. All this, while ghoulish, throbbing music pulses in the background.

Though this sounds rather gruesome, the game is actually a lot more seductive than sadistic. The gothic elements are really just elaborate window dressing for a well-balanced—and terrifically challenging—game-playing experience.

**BEST FLIGHT SIMULATOR**

**F/A-18 HORNET**

Graphic Simulations, 214/386-7575; $79.95.

Every year someone comes up with an absolutely mind-blowing simulation of a hot fighter plane, and in the face of some stiff competition, this year’s hot model is the F/A-18 Hornet. It’s a combination of dizzying verisimilitude, relatively straightforward game control (though some complexity is inevitable), and graphics so vivid that it feels as if you’re in the cockpit. You can even play it with your friends four on a network, or head-to-head via modem.

You get what you expect when you’re strapped in the plane—a frighteningly realistic view of the heads-up display and instrument panel of one of the most fearsome fighters that technology (or McDonnell-Douglas) has ever produced. Of course, you can alter the view, but experienced jockeys rely on radar—once they figure out how it works.

Take a few minutes to assess your avionics and weapon systems in the 256-page manual (filled with charts, diagrams, photos, and the kind of talk that gets Tom Clancy’s blood a-boiling). Better yet, work your way through those training fights. You’ll need them, because you’ll be using live ammo when you get to the gist of this game—performing vital military missions in the Middle East. By that time, you’ll want to be fairly experienced in tak-
the poker experience fully captured, complete with digitized sounds of card shuffling. Designer Todd Oustz has provided everything short of the pretzels and beer, including an array of variations on basic poker that might even stump some of your college buddies. Tennessee, Anaconda, Baseball, Football—they’re all here. You can even make up your own.

You draw chips against five opponents rendered either in cartoonish graphics or QuickTime videos (which are too slow). Almost everything, including the colors of the cards, the game rules, and the house stakes, is under your control—except, of course, the luck of the draw. Still, you are at an advantage here. PowerPoker provides you with the information you always want but can never remember when the chips are literally down. What are the odds of improving a hand? What’s the chance that her ace-high is really a pair? All of this knowledge and much more is available to you—PowerPoker can even chart the relative success of your hands over the course of the evening.

PowerPoker has one fault, however: once you learn how some of your opponents play the game, you’ll understand all too well how to read some of their rather artless bluffs. (And at times, a well-planned offensive on your part will scare off a superior hand.) But for a casual game of Draw or Hold ‘em—or as a wonderful training ground for the real thing—PowerPoker is fine. Plus, it saves you the trouble of rounding up five easy marks. And if you do have friends on your network, you can use the game as a house dealer and a bank.

Quest for Glory I

Sierra On-Line, 206/649-9800; $29.95.

Have you ever noticed how serious role-playing games can be? All these tools of mayhem, the lists of textbooks, and the grim accumulation of dead foes. So it’s a genuine pleasure to welcome Quest for Glory I, which merges classic role-playing aspects—building up a character’s attributes by vanquishing enemies, all in service of a larger goal—with the more playful mood and interactivity of Sierra On-Line’s King’s Quest adventure-game series.

The graphics here are every bit as vivid as the plot, and the atmosphere is more like a fairy tale than your typical dungeons-and-dragons deal. The idea is to be a hero—sort of a single-handed Seven Samurai—saving the town of Spielburg (bad pun) from oppression by thieving brigands. You decide whether you want to be a fighter, magician, or thief; check out some weird folks in town; and venture into the forest, where all sorts of hostile critters hang out. When you encounter someone or something itching for a fight (a rather pedestrian assortment of creepies and monsters await you), you go into combat mode. At that point Quest for Glory takes on an arcade aspect, but ultimately the determining factors in your character’s survival are strength, health, and stamina.

What’s nice about the game is that things never degenerate into the slaughterhouse mentality of some other role-playing games. You’ll have some interesting interactions with people you meet, and you’ll actually have to use your brain here and there. It’s a kinder, gentler form of role-playing game, and one particularly well suited to newcomers to the genre, especially those familiar with adventure gaming.

STEVEN LEVY’s latest book is Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything (Viking, 1994).
What's one without the other?

Your PowerBook and the new HP DeskWriter 320 printer.
Compact and light, just 4 lbs.
Upgradable to color for just $49. And ColorSmart technology makes it vibrant and easy to use.

$379 list price, actual price may be lower.
Bundled with optional sheet feeder for a list price of $455.
Check the Yellow Pages for the HP dealer nearest you.

HP Printers
ack in October 1992, Apple introduced the PowerBook Duos as a comprehensive solution in portable computing. The minimalist Duos didn’t have floppy drives, SCSI ports, or video output, but they weighed only 4 pounds. And because they let you add and remove features through the judicious use of docking stations, Duos were the most flexible Macintosh notebooks. A Duo could be either a lightweight Mac with which to travel or—when you plugged it into a docking station—a fully functional, fully connected Mac on your desk. Then in May 1994, Apple introduced the PowerBook 500 series. These all-in-one notebooks have Ethernet ports, internal hard drives as large as 1GB, PCMCIA card support, an innovative new input device, and much more. In fact, for the first time, it’s possible to buy a PowerBook with all the features of a desktop Mac—or a dock-equipped Duo. Why, then, would anyone still choose a Duo?

The answer is the same as it was before the PowerBook 500’s were introduced: Duos are a great choice for their flexibility and their lightweight. But are they the right choice for you? Apple currently sells seven PowerBooks. These are the 150, 520, 520c, 540, 540c, and the Duos 280 and 280c. (If you’re unfamiliar with Apple’s nomenclature, the two things to remember are that c means color and that the higher the number, the more high-powered the CPU. The 540 and 280 will be discontinued by the end of 1994.)

If you’re looking for a budget option and insist on a new computer, your only choice is the PowerBook 150, although you’ll probably find it lacking and wish you had waited to save more money (see Reviews, Macworld, December 1994). If money isn’t your first priority, either a PowerBook 500-series or a Duo makes more sense. Which one, though, depends on how you intend to use it.

The One and Only?
If you’re trying to decide whether a PowerBook—any PowerBook—can be your sole computer, my answer is simple. No. At least, not without peripherals.

For sustained use, a keyboard and monitor whose bottoms are at the same height are bad news. Looking down at a screen for hours can give you backaches; raising a keyboard to just above eye level can damage your wrists and forearms (see “Safer Computing,” Macworld, December 1994). Plus, neither the displays nor the input devices of PowerBooks or Duos are ideal for long-term work.

Although the display quality of the PowerBook 540’s is slightly preferable to the display quality of the Duos, none of the screens are comfortable to look at for eight hours a day. The active matrix screens of the PowerBook 540’s approach the quality of standard monitors, but the screens are small: 9.5 inches on the diagonal. This compares with 9 inches for the gray-scale Duo 280 and 8.4 inches for the color Duo 280c. (On most 14-inch monitors the portion of the screen that actually displays an image measures between 11 and 13 inches on the diagonal.)

The PowerBook 520-series’ passive matrix screens are inappropriate for daily, full-time use—that’s no surprise. But even the active matrix screens used in the Duos and PowerBook 540 series are inappropriate, despite being superior to passive matrix screens.

The input-device situation is just as problematic. A Duo’s keyboard is 88 percent the size of a standard keyboard. Using it forces your hands into a slightly cramped position, with your arms squeezed against your sides. For a few hours a day that’s fine, but if you try to use
the Duo for full-time computer work, you're asking for trouble. The PowerBook 500's have full-size keyboards that are more comfortable.

However, neither the PowerBooks' trackpad nor the Duo's trackball would be my choice for full-time work. No mistake: the trackpad—a touch-sensitive, black square that uses capacitance to respond to the movements of your finger—is extremely cool. Although it's fun to use (I think fingerpainting in kindergarten was the last time I tried drawing directly with my fingers), my hand feels strained fairly quickly. Positioning my index finger and thumb for drawing and clicking means awkwardly tucking up my other fingers and arching my hand—an unnatural and uncomfortable position. The Duo's trackball is easier for me to use—it has two buttons (the trackpad has only one), so clicking is simpler. Still, it's quite small, and although I don't mind its size, I've heard strong complaints from others. Both of these input devices are perfectly acceptable for short-term use or occasional use, but not as your sole option.

The solution, of course, is adding peripherals: a normal keyboard, a mouse, and a full-size monitor attached to your PowerBook or Duo make it as comfortable as any desktop computer. But how easy is it to attach those peripherals?

The Desktop Portable

A PowerBook 500-series Mac comes with all the connectivity options you've ever dreamed of. All of the 500-series PowerBooks have ports for Ethernet, ADB, SCSI, sound input and output, and video output, supporting external monitors up to 16 inches in 256-color mode (8-bit color depth). All 500's also have two battery bays, one of which doubles as a PDS slot. This slot can hold a battery, a PDS card, or a PCMCIA Expansion Module from Apple ($199, 408/996-1010). This PCMCIA adapter holds two Type II PCMCIA cards (typically used for wireless modems and other connection peripherals) or one Type III card (typically used for hard drives).

A Duo, on the other hand, has only a printer/modem port, a telephone-line connector for an internal modem, and a docking connector. This might sound terrifyingly limited—but with the right dock, a Duo can do anything a PowerBook can do.

To use a PowerBook 500 as a desktop computer, all you need to do is plug in a keyboard, a mouse, the monitor (via a video adapter that comes with the PowerBook), and the monitor cable; then change the settings in the Monitors control panel and you're ready to go. If you need to use an external hard drive or CD-
Unfortunately, the Duo Dock II is not portable. At 16 pounds and about the size of a Quadra 620, a Duo Dock II is acceptable only if you need all your connectivity options in one place. If you need all the features of a desktop Mac at work plus connectivity options when you travel, a Duo plus a Duo Dock II won’t serve your purpose. That doesn’t mean you should forget the Duo, but it does mean you should look at a different kind of dock (see the sidebar “Docking Options”).

Once you’ve added peripherals, both the PowerBooks and the Duos are perfectly acceptable solo computers, although they don’t compare with the best—even on superior midrange—desktop Mac systems. Their CPUs are 68LC040s, ranging from the 25MHz version for the 520’s to the 33MHz version for the Duos and 540’s. This CPU doesn’t have an FPU (a math coprocessor), so while the 500-series machines are generally faster than older PowerBooks, this is not the case for math-intensive tasks, such as rendering. And Macworld Lab tests showed that even a Quadra 630, Apple’s newest inexpensive desktop system, is substantially faster than any current PowerBook options (see Reviews, November 1994). And sharing information between a desktop and a portable is easy to do: you can connect a PowerBook to another Mac using Apple’s $39 HDI-30 SCSI System Cable, while the easiest way to connect a Duo to another computer is to create a LocalTalk network using two PhoneNet connectors. Although LocalTalk is often the fastest networking option, on a mini network of two computers it’s fast enough.

If you choose a separate desktop Mac, a Duo—with its roles as a docked desktop Mac and a subnotebook—seems to lose its purpose. After all, if it won’t be your desktop machine, why buy it?

On the Road

The obvious reason to buy any portable computer is mobility: even if you don’t travel regularly, there are advantages to being able to work anywhere. But to accomplish that, you need a lightweight computer—one that you’re comfortable carrying for extended periods, as well as a computer whose batteries are powerful enough to let you get some work done.

Both the Duos and the 500-series PowerBooks use high-capacity NiMH (nickel-metal-hydride) batteries (although they’re different types). It’s reasonable to expect about three hours of use per battery. The big difference is that the PowerBook 500’s have two battery bays, and if you choose to use both for batteries, you’ll get twice the battery life of a Duo. (The obvious caveat is that you can use two batteries with a Duo, too—just not at the same time.) Of course, this capability doesn’t come free. The battery’s price is only $139; its weight is the heavier cost.

An extra battery adds 0.8 pounds to a PowerBook’s weight. A fully loaded PowerBook 540c—with two batteries and an internal PowerPort Mercury modem from Global Village Communication—weighs 7.35 lb. No problem, right? But add the AC adapter (an item you’ll probably always want to carry with you) and a carrying case, and the weight goes up to a seriously unpleasant 10.35 lb. As far as I’m concerned, that’s simply too heavy—without or with that extra battery.

The Duo 280c, with one battery and an internal modem, weighs 5.05 lb. When you add an AC adapter and a carrying case, that goes up to 7.75 lb. (The difference is that the Duo’s AC adapter isn’t as heavy as the PowerBook 540c according to Apple, the PowerBook 500’s require a larger power supply to support dual batteries.) Of course, every dock and cable adds weight. But if your needs are simple, the weight of a Duo stays well under that of a PowerBook 540c.

The average weight of docks varies greatly, but those that you would travel with (any but the Apple Duo Dock or Duo Dock II) range from 0.25 lb to 1.25 lb. The simpler your needs, the lighter the dock. If, for example, you want to use a color monitor, keyboard, and mouse while traveling—but you won’t need to attach a SCSI device or connect to an Ethernet network—Newer Technology’s Color MicroDock ($349, 316/685-4904) can fill the need for about 0.34 lb.

Even if your needs aren’t simple, leaving a dock behind when you don’t need it is a Duo’s big advantage. If you’re off on a business trip where you’ll make a major presentation, you bring a dock: on the other hand, if it’s a gorgeous day and you want to work in the park down the street, you can leave your dock at home. And although one of the common complaints about Duos is that remembering to take all the necessary external pieces with you is too much work, to some extent forgetting externals is the occupational hazard of any notebook owner. Don’t forget: all of a PowerBook’s great connectors are meaningless without the right cables.

Singular Options

The new PowerBooks do have two features that no dock currently provides for Duos: a PDS slot and a PCMCIA option. At the moment, these features shouldn’t be critical elements in your buying decision. First, no PDS cards for the PowerBook 500 series are shipping. And I don’t expect companies to offer PDS cards, for two reasons. First, many PowerBook 500-series owners will want to use the PDS slot for either a second battery or for Apple’s PCMCIA Expansion Module for PCMCIA support. Second, Apple’s future PowerBooks are likely to switch to the PCI (Peripheral Component Interconnect) bus, making PowerBook PDS cards quickly irrelevant.
What about PCMCIA? The most common PCMCIA cards in the PC market are modem cards and network cards—both options that are already available for Duos without PCMCIA. Wireless networking cards will also be available for use with the PCMCIA adapter. For example, as we went to press, Dayna Communications planned to ship the DaynaComm Roamer PCMCIA Cordless Network Adapter ($699, 801/269-7200) in November. In October, though, Dayna shipped the DaynaComm Roamer Serial Roamer (also $699) for use with a Duo.

Other suggested uses of PCMCIA include added storage, or personalized storage on a corporate loan machine. Certainly the personalized storage sounds convenient—but at the moment, it’s a lot more expensive than other options. For the same price as a PCMCIA adapter and ten 130MB hard drive cards (at about $500 each), you could buy a portable magneto-optical drive, ten 128MB cartridges—and a Duo 280c!

Although at first glance PCMCIA looks intriguing, for the time being the PCMCIA adapter doesn’t give the PowerBook 500’s a considerable advantage over the Duos.

Beyond the List Price
Price isn’t an advantage for the PowerBook 500’s, either, although it’s difficult to compare prices between Duos and PowerBooks because of the numerous hidden costs. For example, a Duo 280 plus two PhoneNet connectors (about $15 each) is, at $2669, the least expensive, usable option; but it requires a second Mac—a cost ranging from about $400 for a used SE to about $2500 for a new Power Mac 6100 system. On the PowerBook side, video-out ports are useful only if you have a monitor to connect to, and Ethernet requires a transceiver, a cable, and a network.

Because the Duo 280’s and the PowerBook 540’s use the same 33MHz 68LC040 processor and active matrix screens, it makes the most sense to compare their prices. Duos are less expensive—until you start adding docks (see the chart, “What PowerBooks Really Cost”). If you have a clear idea of how you’ll use your portable computer, a Duo is probably cheaper because you can pay for only the options you’ll need. But if you think you’ll need absolutely everything, a PowerBook 540 may be less expensive in the long run.

The Last Word
The PowerBook 500-series Macs are appealing computers, elegantly high-tech and feature-rich. But I would never buy one. They’re not a satisfying replacement for a desktop computer, and as far as I’m concerned, they’re too heavy to be a great portable. The Duos, on the other hand, are fantastic portables. They’re light enough to go everywhere you go, and incredibly versatile with the addition of available docks.

Someday Apple will develop the perfect notebook computer—light as a spiral-bound paper notebook, compatible with any network, and accessible to anything from your car to your home security system. Meanwhile, I’ll stick with a Duo.
There are three types of computer users: those who have lost data due to a power problem, those who are going to, and those who have protected themselves against the inevitable surge, blackout or brownout with the most reliable UPS they can buy: Back-UPS by APC. In fact, editors and users alike agree that if your system demands absolute reliability, you can depend on APC Back-UPS.

According to a study by Bell Labs, undervoltages represent the overwhelming majority of power problems likely to hit your computer. The question is not if a failure will occur, but when. Whether due to construction, wiring, weather, other office equipment, or accidents, power problems are as inevitable as death and taxes. That's why you need instantaneous battery backup power from the Back-UPS to prevent data loss, hard disk crashes, and hardware damage.

If you're concerned about lightning, rest assured that when measured using the ANSI/IEEE 587 Category A test wave, Back-UPS are superior to virtually all separate surge suppressors. Surge performance is even backed by a $25,000 Lifetime Equipment Protection Guarantee.
All other brands of UPS die regularly in this lightning prone environment. My APC won’t die,” said Paul Sisilli, Systems Analyst, City of Port St. Lucie. “With other brands, users don’t find out until it is too late. The power interruptions here are very hard to live with. The other brands are dying off. Typically they last just beyond their warranty period. My Back-UPS is going on three years...no other brand is as reliable.”

If you’re protecting a network server, a communications interface port (on models Back-UPS 400 and higher) provides the security of an automatic shutdown to all major OS including NetWare, Windows, Windows NT, LAN Server, LAN Manager, LANtastic, SCO Unix, OS/2, Banyan Vines, AppleShare/System7 and more, so your data is safe whether the system is attended or not. (PowerChute software and interface kits sold separately.)

And since data processed on networked clients needs protection too, the $139 Back-UPS 280 provides an economical solution for all your LAN workstations. And if you have a new green PC, the price is even better at $119 for the new Back-UPS 200.

Discovering how essential Back-UPS protection is can be hard...if you wait for the next storm to roll through. But discovering how affordable it has become is easy...

Call today and find out (the easy way) why more than 2,000,000 satisfied users bank on Back-UPS from APC. With more awards than all other brands combined, field-proven reliability, and a two year warranty, Back-UPS are power protection you can purchase with confidence.

Don Truax knows first hand about Back-UPS reliability: “It ought to be against the law to buy a computer without an APC Back-UPS 250. I recently had a direct lightning hit right outside the house...my computer never blinked. Each morning I get a surge down the line and both APC’s hate it - they simultaneously ‘holler ‘n clamp’ while my ‘Brand T’ quietly sleeps in. I’ve relegated that unit to non-critical household stuff like my VCR.”

Andrew Wargo, Manager at Baxter Land Company, tried two other brands before Back-UPS. “One lasted a few days, a second one went up in smoke after 48 hours, a third lasted less than 24 hours! I then bought my Back-UPS for less than half of what I had paid for the others. We’ve purchased three more Back-UPS and for the past 14 months they’ve been just hummin’ away on the same power line that was eating the other brands alive!”

APC has won more awards for performance and reliability than all other UPS vendors combined...including five consecutive LAN Times Readers Choice awards...

PC World Top 20 Upgrade

More than... 2,000,000
Satisfied Users

Instantaneous backup power beats blackouts and brownouts

Unmatched lightning (tested to UL1449) and surge protection for maximum hardware safety

Network-grade line conditioning and EMI/RFI filters prevent glitches

LAN Interface (on Back-UPS 400 and up) provides automatic shutdown to all major OS: Windows, NT, NetWare, LAN Server, LAN Manager, LANtastic, Unix, OS/2, Vines, AppleShare/System7 and more.

Site diagnostics automatically spot missing ground and reversed polarity, two common miswirings which usually require an electrician’s visit to diagnose.

Option switches allow you to customize transfer voltage and alarm settings.

Test Switch for ongoing peace of mind.

2 year warranty and full safety approvals including ISO9001.

$25,000 Lifetime Equipment Protection

Hot Swappable, User Replaceable Batteries reduce service time, costs by allowing safe removal and replacement of exhausted batteries, while your system stays running.

APC
AMERICAN POWER CONVERSION
800-800-4APC

Back-UPS (L to R) Application Sugg. List
200 Green PCs, small desktop systems $119
280 Desktop systems, LAN nodes, POS $139
400 Desktop 486, 386 systems, servers $229
450 Tower 486, 386 systems, servers $279
500 Heavily configured systems, CAD/ CAM workstations $399
900 Multiple systems, longer runtime applications $599
1250 Multiple systems, LAN hubs, small minis, telecom equipment $799

Circle 72 on reader service card
At long last, there are some encouraging indications that the days of manual trapping—the process of eliminating the gaps between neighboring areas of color—may be drawing to a close.

In the past, only a few programs such as Adobe Photoshop and QuarkXPress offered automated, albeit rudimentary, trapping. (Aldus FreeHand 3.1’s modest trapping functions were eliminated in version 4.0.) Recently, however, some programs have provided more sophisticated trapping controls. Adobe Illustrator 5.5, for example, ships with a special filter that adds traps to selected paths in your illustration, and Adobe now offers an addition called TrapMaker that works with PageMaker 5.0.

Meanwhile, anyone with a generous software budget can now purchase a dedicated trapping package such as Island Graphics’ IslandTrapper ($4495) or Aldus TrapWise ($4995). As you may guess from their high price tags, however, both programs assume you’re well versed in trapping and electronic prepress. A third package, Scitex Full Auto Frame (from Scitex America Corporation, 617/275-5150), appeals to an even more rarefied clientele. At nearly $10,000, Full Auto Frame works exclusively with a $75,000 dedicated Scitex system, via a Scitex-based RIP on a Macintosh. For more on these trapping systems, see the sidebar “Trapping at the Top: A Guide to High-End Trapping Software.”

For this article, I tested the automatic trapping controls in the graphics programs you use every day—namely, Adobe Illustrator, Adobe Photoshop, QuarkXPress, and PageMaker—evaluating each program’s ability to handle five typical situations that require trapping. For a description and visual examples of these situations, see the diagram “Five Common Process-Color Trapping Scenarios.” To begin, though, I explain what trapping is, how it works, and perhaps most important, when you should—and should not—use trapping.

Trapping Zaps Color Gaps

In a perfect world, trapping—the Clearasil of the prepress industry—wouldn’t be necessary. But alas, every full-color document, regardless of how much you pay to print it—has the potential for blemishes that need to be headed off at the press. That’s because a successful print job depends not only on the equipment and the operator, but also on variables such as paper-stock quality, ink viscosity, even the relative humidity of the press area. Lots of minute errors can
When printing full-color documents, your printer has to generate a separate plate for each process color, spot color, and varnish that goes into the mix. These plates must be exactly aligned on the press or registered. But even if the press can align plates in its or her sleep (as most can and probably have), the press may shift slightly, the paper may stretch, and the ink may bleed or even shrink. If a foreground object overlaps part of a background object, that area of the background object doesn’t print. But because a knockout creates abrupt changes where the objects meet, slight gaps of uninked paper appear between the objects.

Trapping is the solution. By expanding neighboring areas of color so they overlap slightly, you create a buffer zone. If color A extends 0.5 points into color B, for example, the registration can be off by as much as 0.5 points—a fairly sizable shift—without any gaps occurring. Put more simply, traps zap gaps. Trapping won’t cure massive registration problems—as exhibited in a typical page from the Sunday comics—but it will cover up the slight errors that have a habit of ranking the most obliging clients.

Traps often result in dark outlines where the colors overlap, though they’re usually less noticeable than the white gaps that would occur without traps. But if two neighboring shapes are filled with light colors—say, one with 60 percent yellow and the other with 30 percent cyan—the darker trap, a pale green comprising both colors, may in fact be more noticeable than a white gap. To avoid this, many programs—including Illustrator and Trap Maker—let you reduce the amount of ink coverage to create a trap that’s no darker than either of the neighboring colors. You might drop the trap down to two-thirds of its original density—40 percent yellow and 20 percent cyan—thereby making the trap almost imperceptible.

To create a trap, an application typically expands the edge of one object and prints it on top of the edge of the neighboring object. This technique is also referred to as either choking or spreading. Quite simply, choking means the edge of the background expands and overprints the edge of the foreground object; spreading is when the foreground edge expands and overprints the background edge.

When Not to Trap

Trapping is needed only if your pages contain high-contrast edges that will be printed using substantially different inks. In other cases, trapping is not only a waste of time, but can actually hurt your document. For example, details inside continuous-tone images, including scanned photographs and most other pixel-based artwork, don’t need to be trapped because there is extremely little difference between the color of one pixel and the colors of each of its neighbors. If you were to graph the value of each neighboring pixel, your graph would look like a series of rolling hills. Trapping would be necessary only if the graph showed absolutely straight up-and-down cliffs. Trapping can hurt images because it softens transitions and muddies important details.

Likewise, adjacent continuous-tone images—inside a desktop publishing package such as PageMaker or Quark—almost never require trapping. Even if one image’s edge is green and its neighbor’s is red, the two edges likely share process colors (here, a lot of yellow and perhaps a little magenta or black). So long as one process color remains in force from one image to the next, as it almost always does, any gap between the other inks will be covered by that color.

The same goes for neighboring hard-edged objects (including characters of text) that share process colors. As a rule of thumb, if two neighboring objects share one process color that varies by 50 percent or less (for example, 80 percent magenta with 25 percent cyan next to 30 percent magenta with 60 percent yellow) or if the objects share two or more process colors that vary by less than 80 percent, you don’t need to trap. The continuous ink or inks will cover the gaps.

In most cases, overprinting (printing the color from one plate over the color from another plate) also eliminates the need for trapping. If a 100 percent magenta object overprints onto a 100 percent yellow background, resulting in a bright red area where the two overlap, there is no need for trapping, even though the two objects have no colors in common. Overprinting is especially popular when the foreground object contains 100 percent black because black appears richer when background colors are mixed in.

In fact, some layout artists manage to avoid trapping entirely by designing their documents so that it isn’t necessary. Objects that don’t overlap, images without borders, overprinting text, and shared process colors are the ingredients for a foolproof print job. But while this may seem like a lot of options, this solution offers little room to wiggle—too little to suit most designers.

Adobe Illustrator 5.5

Illustrator 5.5 ($595; Adobe Systems, 415/961-4100) offers trapping controls.
Some folks think trapping should be left to trained professionals equipped with obscenely expensive prespress systems. In theory this is nonsense, on a par with earlier but similarly snobbish assessments regarding page design, typography, and photo retouching. In practice, however, no matter how deftly you manipulate the trapping controls in Adobe Illustrator or PageMaker, professional solutions provide much better results.

**Full Auto Frame**

Take, for example, Full Auto Frame—a trapping program that's part of Scitex's $75,000 PC-based Dolev prespress system. (For an additional $9900, you can get a Mac version of Full Auto Frame.) The hardware RIP included with the Dolev system rasterizes a PostScript file out to two files: a high-resolution (say, 2400-dpi) linework file, which contains all the object-oriented art and text in the document; and a lower resolution (300-dpi) continuous-tone image file, which contains all the bitmapped images and all gradations (whether originally created as objects or not). Full Auto Frame (frame is Scitex's term for a trap) traps the linework file, composites it with the image file, and sends the finished product to the Dolev imagesetter.

Although it's arguably the most capable electronic trapping system around, expect to pay extra for Scitex trapping services.

**Trapwise versus IslandTrapper**

Two professional trapping programs that aren't dependent on expensive hardware are Trapwise 2.1 (Adobe Systems, 415/961-4100) and IslandTrapper 1.1 (Island Graphics Corporation, 415/491-1000). The $4995 Trapwise rasterizes PostScript files in much the same way as Full Auto Frame. While the Scitex program applies traps to the rasterized file, Trapwise simply uses the file as a reference and writes traps to a separate PostScript document, or appends the traps to the original PostScript file. You can even generate color separations directly from Trapwise.

By contrast, the $4495 IslandTrapper renders EPS files to a proprietary vector format. After assigning traps, the program generates a new EPS document that you have to place into a page-layout program, such as PageMaker or QuarkXPress, to create color separations. (The upcoming IslandTrapper 2.0 will offer a built-in color-separation function.)

On a 68000 Mac, both Trapwise and IslandTrapper take roughly three or four times as long as Full Auto Frame to render PostScript files. That's no surprise, since Full Auto Frame has access to a hardware RIP. But Trapwise and IslandTrapper also take anywhere from four to ten times as long to assign traps. Trapwise 2.1 functions two to three times as quickly on a Power Mac. (Though not available at press time, IslandTrapper 2.0 will also be accelerated for the Power Mac.) Both programs offer batch-processing features.

In general, I prefer Trapwise over IslandTrapper. Though the latter offers a more straightforward interface and even lets you edit the color of objects in your document, Trapwise has the more sophisticated capabilities. It can open multipage PageMaker files; IslandTrapper can open only one EPS page at a time, regardless of the originating application. Trapwise offers sliding traps that traverse from the inside of an object to the outside (or vice versa) to compensate for a gradation, essentially serving as both a choke and a spread at once. It lets you change the flatness of a trap—which reduces the trap to a series of straight lines—for quicker output. It can also trap imported TIFF and EPS images. And, for now, it has the added advantage of being able to open PostScript files without EPS previews and print them directly.

Another of Illustrator's limitations is that it traps fills only, not strokes. If you want to trap a stroke, you have to first convert it to a fill (using the Outline Path filter) and then apply the Trap filter.

**Adobe Photoshop 2.5 and 3.0**

Some state-of-the-art prepress systems trap documents by first rasterizing them to pixels, then modifying the pixels. Together, Photoshop ($895; Adobe Systems, 415/961-4100) and Illustrator constitute a more rudimentary but nonetheless functional trapping system.

When you open an Illustrator document in Photoshop, the latter converts the illustration into an image according to your size and resolution specifications. Once Photoshop has rasterized the image, you can apply the program's trapping function to the image as a whole. The operation is fully automated, offering only a single option for specifying the maximum width of the trap. And yet this function handles nearly all trapping scenarios, even going so far as to increment-
Overriding Defaults QuarkXPress provides both global and selective trapping functions. You can override your global settings for a specific color (top) or a single object (bottom). When setting traps for colors, you can change the width of the trap and whether or not it overprints, but that's all. When selecting a single object, however, you have the additional option of requesting a spread, a choke, or a straight knockout (no trap).

QuarkXPress 3.3

Although the trapping options supplied by page-layout programs are generally more capable than those in Illustrator and Photoshop, they are also less satisfying because you do not get any direct screen feedback. In fact, you cannot see any results until you print the file, and then you have to hold the proofing pages up to the light to accurately gauge how the traps fit.

Otherwise, you get flexible and functional trapping in QuarkXPress (Quark, 303/344-3491). You can specify the default settings for every object in your document and leave it at that. Or, if the defaults don't suit every occasion, you can override your specifications for a single color. If that's still not enough, you can select an object and change the settings inside the Trap Information floating palette (see “Overriding Defaults”). And unlike Illustrator, QuarkXPress is capable of trapping strokes (which it calls frames) independently of fills. Quark even provides special compensation for text, applying trapping only when the form of the characters will not be adversely affected.

1. **Object against object.** QuarkXPress can trap objects against objects, but it cannot blend the colors in objects, as Illustrator and Photoshop can, nor can it reduce ink coverage to prevent dark traps. Rather, it simply overprints the existing colors in an object. It's not the best solution—especially for process-color traps—but it's frequently acceptable.

2. **Partial overlaps.** Quark can't vary the thickness of a trap as it surrounds the perimeter of an object. If an object appears in front of more than one object, and if one background object calls for a choke and the other a spread, Quark instead applies a single trap (according to its Indeterminate value) to the forwardmost object. Again, it's not the ideal solution, but it usually works.

3. **Object against gradient.** As long as a gradient and a solid object are on different separations, QuarkXPress spreads the object to trap the gradient. But because Quark can't mix colors, it can't trap two neighboring gradients.

4. **Object against image.** Quark can spread spot-color objects onto full-color images or process-color objects onto single-color images. But it can't mix process traps with the pixels in a full-color image.

5. **Keep-aways.** If a saturated black object is positioned in front of another object, QuarkXPress automatically creates a keep-away, choking the other colors without changing the black. Otherwise, you have to specify a trap in the Trap Information palette.

PageMaker 5.0 and TrapMaker 1.0

Nine years after its introduction, PageMaker ($589; Adobe Systems, 415/961-4100) finally supplies trapping capabilities in the form of its TrapMaker Addition ($79.95). I can't say that TrapMaker was worth the wait, but it wins my vote as the most robust trapping additive to a desktop publishing program. (Adobe plans to integrate automatic-trapping features in future versions of PageMaker.)

TrapMaker is good at determining where to position a trap. To accomplish this, TrapMaker evaluates colors according to their neutral densities—how light or dark each color is when all its primary colors are taken into consideration. If two objects have relatively similar densities, TrapMaker centers the trap on the edge of the two objects, rather than drawing it on one side of the object or the other.

TrapMaker's other controls enable you to specify a type size below which text trapping is prohibited (to ensure legible text) and customize trapping settings for certain color combinations. However, you cannot adjust settings for selected objects as you cannot in both Illustrator and QuarkXPress.

1. **Object against object.** In this department, TrapMaker, like QuarkXPress, doesn't mix values on a single separation. However, TrapMaker can mix values differently from one separation to the next, effectively creating independently colored traps, and it can avoid overly dark traps by applying the lighter of two values in a single separation.

2. **Partial overlaps.** While QuarkXPress spreads orchores uniformly when partial overlaps are involved, TrapMaker draws a different trap for every pair of intersecting objects and never draws a trap over blank paper.

3. **Object against gradient.** Since PageMaker is one of the few programs that can't create gradations, it's little surprise TrapMaker can't trap them.

4. **Object against image.** TrapMaker ignores imported images entirely, creating knockouts without traps, even if an image resides on a single separation.

5. **Keep-aways.** TrapMaker automates the printing of keep-aways, but only if the object filled with saturated black overlaps another object (similar to QuarkXPress). If not, you have to slide a dummy object behind the saturated black object to force a trap.

Because TrapMaker is an Addition, its options aren't integrated into other portions of PageMaker. To use the Addition, you choose the TrapMaker command, set options inside a dialog box, and print directly from there. It is also worth noting that TrapMaker has online documentation only. You get a poster that shows off TrapMaker's capabilities, but no printed manual. Even so, the features are sturdy enough to satisfy most desktop publishers.

The Last Word

None of these programs are able to handle all your trapping requirements—they all failed at least one of the five trapping scenarios. Just the same, consumer-level desktop trapping is getting better all the time, and it may one day meet the needs of the most discriminating designers.

In the meantime, the question is, When should you attempt trapping on your own and when should you leave it to the experts? The answer depends on your finances. All but the most exclusive service bureaus charge higher (sometimes 50 percent more) per-page prices to trap
Five Common Process-Color Trapping Scenarios

Below are examples of trapping when printing with process colors. Here, as in all process-color trapping scenarios, a trap is unnecessary if adjacent colors are made of similar percentages of the same inks. Trapping with spot colors may differ somewhat.

1) OBJECT AGAINST OBJECT

Plate viewed

When one object appears in front of or next to another, and the objects have no process colors in common, you need a trap to prevent any gaps from occurring when the file is printed. The trap is an area at the point where two differently colored objects come in contact with each other; it’s made of inks used in both.

2) PARTIAL OVERLAPS

Plate viewed

When an object overlaps several other objects and partially extends into the wide-open spaces of exposed paper, the software must surround the forward object with many different traps, one for each pair of abutting colors, without trapping along the edges that border white space.

3) OBJECT AGAINST GRADIENT

Plate viewed

In an object-oriented program, a gradation (sometimes called a vignette in trapping circles) is actually a series of incrementally colored objects enclosed in a mask. If an object partially covers a gradation, the software has to trap the object against every one of the masked colors. Things get even more complicated when one gradation overlaps another, as is commonly the case in high-end illustrations.

4) OBJECT AGAINST IMAGE

Plate viewed

Ideally, to trap an object against a bitmapped background, the software should calculate traps between the object and every pixel in the bitmapped image adjacent to the object’s border. A less sophisticated alternative is to spread and overprint the edges of the object against the bitmap. The result won’t look as good because the object may trap where it doesn’t need to (for example, against a white background).

5) KEEP-AWAYS

Plate viewed

A saturated black (100 percent black mixed with smaller percentages of cyan, magenta, and yellow) won’t appear darker when overprinting objects with other process-color mixes; it also creates a true midnight black not possible using black Ink alone. But the brighter Inks can creep beyond the edges of a saturated-black object. To avoid getting a tiny fringe of colors, you need a keep-away: a hairline border of unsaturated black that’s too thin to distinguish from the saturated black. Should the colors misregister a bit, they just print on the unsaturated black.

documents as they print them; the truly high-end printers include trapping in the per-page price whether you like it or not. If you’re willing to pay the price, prepress professionals have access to superior equipment and software and will invariably come up with better results. But if you’re publishing on a budget, consumer trapping options—particularly those available to Illustrator and PageMaker—are good enough to eliminate the most obvious gaps in your document.

Without a doubt, the most important thing to remember when trapping your own documents is to consult with your commercial printer. Only your printer knows the accuracy of the offset press that your document will be printed on. Most modern presses have small tolerances, typically in the neighborhood of 0.2 point (or about 0.1 millimeter), which is why 0.2 point is the default width offered by most trapping software.

And keep in mind that there’s always the option to create a document that doesn’t need to be trapped: overprint text whenever possible, make sure overlapping objects contain at least one shared process color, and assign either no borders or overprinting black borders to your imported images. You’ll never have to worry about trapping again.

DEKE MCCLELLAND is the author of several books about high-end graphics programs, including Macworld FreeHand 4 Bible, Macworld Photoshop Bible, second edition (both 1994 releases from IDG Books Worldwide), and The Illustrator 5.0/5.5 Book (Peachpit Press, 1994).

The author wishes to thank the following folks for their help on this article: Tom Midgley and Paul Gauthier of Gritz-Ritter Graphics, a prepress and print house based in Boulder, Colorado; Brian Lawler, author of Complete Guide to Trapping (The Color Resource, 1993); and last but never least, Macworld’s editorial production manager, Jeff Sacilotto, and senior designer Anne Hurty.
EVERYONE CAN USE A...
THAT’S WHY WE BUILT ONE IN
You're never alone with the most popular spreadsheet for the Macintosh: new Microsoft Excel 5.0 for the Macintosh and Power Macintosh. Because inside every single box, you'll find an experienced guide.

We call it IntelliSense technology. Simply put, IntelliSense senses what you want to accomplish, then helps you get it done.

All of a sudden, your everyday spreadsheet tasks become automatic. And complex tasks are a whole lot easier. For instance?

Say you're looking for a shortcut through a forest of data. The PivotTable" Wizard comes to your rescue. It helps you assemble a clear summary table. From there, use PivotTable dynamic views to see data from any point of view you want. Whether by category, quarter or region. You decide.

You'll stay on the right path thanks to the "TipWizard" assistant. This handy IntelliSense feature observes how you work, then offers tips on quicker and easier ways to do things in the future.

Then consider the direct route to chart changes. Called Hands-on-Charting, it lets you instantly resize or reformat any part of your chart.

Noticing a trend? IntelliSense technology makes it easier for you to work on your spreadsheet. Period. Letting you focus on your analysis, not your data.

And while working inside Microsoft Excel is easy, working with other Microsoft Office programs is also a cinch. You'll drag and drop Microsoft Excel charts right into Word. You can even make changes to charts without leaving your Word document. OfficeLinks makes it all happen.

For friendly directions to a retailer located near you, just call (800) 871-3268, Department Y3N. Then upgrade to new Microsoft Excel 5.0. It's not only the leader among Macintosh spreadsheets, it even knows how to lead you.
Is your organization growing and spreading out? Do you have sales reps promoting your company's product in several major markets? Does your association's membership hail from every corner of the nation? Or do you have customers with emergency tech-support questions that can't wait until 8:30 Monday morning?

If your answer to one of these questions is yes, a unified system for E-mail and other electronic communication—a full-fledged online information service—would be a big help. But chances are you don't have the budget for the servers and communication lines it would require to run your own system, nor the in-house expertise to build and administer it.

Private online information services, available today from a handful of providers, let you establish an exclusive electronic community where you can exchange information and communicate online with a group of users you choose yourself. You decide what information your system contains and who can access it. The service provider sets up your organization with an environment designed to your specifications, trains your users, provides access software, and gives you ongoing support. Best of all, you don't have the headache of maintaining the system; it all runs on the provider's computers, not yours, and you simply log on with a modem and a local telephone phone call when you need to.

Such a service can satisfy many communications needs. For example, a sales team could use it to keep its members current on pricing, policies, and products, or to hold electronic meetings. A trade association or professional organization could provide a forum where members could debate issues, learn about relevant legislation, and post job listings. Or a service and support contract could include round-the-clock access to an online database of technical information. You can even arrange for your service provider to bill your customers directly for their use of your system, or to send you the information you need to bill them yourself.

What Private Services Offer
Private online-system suppliers provide different services, but the basics include E-mail, electronic bulletin boards, and searchable databases. Another basic feature is support for adding your own logo to the interface, modifying icons, and changing menus to give the system your organization's look.

Other features that some services provide can improve communication as well. Real-time conferencing—where the message one user types appears immediately on the screens of other conference participants—lets users hold online meetings. Forms software lets you replicate your company's paper forms, such as expense reports and invoices, with electronic versions that your employees, customers, or others can fill out and deliver online. And text-searching lets users quickly pinpoint the information they are looking for in your databases and bulletin boards.

In picking a private online-information service provider, price is one of the most important considerations, of course, and vendors' pricing structures are complex, so consider them carefully. Start-up costs could range from as little as several thousand dollars to many tens of thousands, depending on how much custom programming you need, how many users will access it, and the size and complexity of the databases you put online. After you get the system running, expect to pay $3 to $30 or more per user per month, depending on how many users you have, how much time they spend online, or some combination of the two.

CompuServe, Connect, and GE Information Services offer private online-information services. Prodigy says it will offer such a service by the end of 1994 but was not able to provide details in time for this article.

Combine E-mail, Companywide

Private Forum
Though it is well known for running the largest public commercial online-information service, CompuServe also operates private online services, called Private Forums, through its Business Services Group. CompuServe says it operates more than 2000 Private Forum systems for clients running the gamut from retail stores to trade associations to direct-sales organizations such as Amway.

To access your Private Forum, users will need CompuServe Information Manager (CIM), the same communications software that CompuServe provides for subscribers to the public service ($10 in Macintosh, Windows, or DOS formats).
remote conferencing, and file transfer in a single system

CompuServe will customize the software, if you wish, with your company's logo and a special menu that welcomes users to your Private Forum, but that's as far as its customization capabilities go. To anyone familiar with CompuServe, your private system will resemble the public one.

Up front, you pay CompuServe a flat fee of $7500 to design and develop a simple Private Forum with several bulletin board areas and a few read-only databases, such as a calendar of events. Along with the setup, you get training for your system operator and documentation. But be prepared to pay at least $2500 more for a system that supports several large, searchable databases, such as product catalogs or price lists.

Online usage is free for the first three months. After that you're charged one of two ways. Smaller customers are usually billed $4.80 to $9.60 an hour for online usage or $5000 per month, whichever is more. Larger customers can negotiate a monthly fee that amounts to between $3 and $20 per user, based on the number of users and an estimate of online usage.

Setting up a Private Forum takes about eight weeks. Once it's up, your users can employ CompuServe's E-mail to send mail to users on other E-mail systems, including the Internet. They can also explore all public areas on CompuServe—in fact, there is no way to prevent your customers, staff, or others from downloading information from expensive databases or hanging out in chat rooms on your meter, but billing statements itemize how much time each user spends inside...
and outside your Private Forum. CompuServe is the only one of the three providers covered here that supports real-time conferencing.

**Virtual Private Networks**

Connect's specialty is customized information systems for businesses. Connect says that about half of its systems are run by companies, associations, and similar organizations for their own members' use; the other half are used to provide services to (and interact with) customers, suppliers, and others outside the organization. Connect's installed base includes Domino's Pizza, the International Association of Fire Chiefs, which uses its system to share a database of fire-fighting knowledge; and Software AG, a very large software company based in Germany.

Connect sells a relatively vanilla product that it calls a Forum, a customized version called a Virtual Private Network (VPN), and an engine with programming tools that can be used to create a highly customized system. You can program your own system to meet the special requirements of your organization, or hire Connect's programming staff to do the programming.

Connect sells two versions of its client software for accessing Forums, VPNs, or custom Connect systems. Business Connection gives users a graphical interface to E-mail, bulletin boards, and databases; Sales Connection adds features that help salespeople record, track, and exchange sales information in a standard format.

From within a VPN, you can log on to external data sources such as news feeds from The Associated Press, Reuters, and Business Wire; get stock reports; and send E-mail over the Internet. With a little custom programming, you can set up a VPN to connect to your own databases; Connect's servers act as a gateway to a dedicated line into your organization's computers so that customers, suppliers, and others can access your marketing information, upload purchase orders, and so on.

Other custom features available include an automatic log-on that runs searches unattended; a flash-message capability that calls users' attention to new information; and an electronic-commerce feature that lets you charge users for downloading database information. You can also order a sophisticated reporting package that tracks time spent online, characters downloaded, and last log-on, by individual user; the number of times a particular database is accessed; and the number of users in a certain geographic area who have logged on during a given time period.

But you pay for all this flexibility. Start-up costs for a VPN run between $80 and $200 per user, and monthly charges run $20 to $30 per user, based on either an hourly rate or a per-user rate. A Forum, which is comparable to a CompuServe Private Forum, will cost you between $7000 and $10,000 to start up, plus $150 per user for client software. Time spent online costs $11 per hour.

**Business Network**

If you've ever used AppleLink, Apple's soon-to-be-retired private online service, then you've already seen GE Information Services' Business Network in action. Other Business Network systems include Microsoft's Partner Network, for resellers and integrators, and Knight-Ridder's

---

### Companywide Online Systems

<table>
<thead>
<tr>
<th>Feature</th>
<th>Virtual Private Network</th>
<th>Business Network</th>
<th>Private Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Connect</td>
<td>GE Information Services</td>
<td>CompuServe Business Services Group</td>
</tr>
<tr>
<td>Service provider</td>
<td>408/973-0110; 800/262-2638</td>
<td>801/740-4950; 800/433-3663</td>
<td>614/457-8600; 800/529-0095</td>
</tr>
<tr>
<td>Features</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Real-time discussions</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Threaded discussions</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Searching</td>
<td>full-text, Boolean, multiple-database</td>
<td>full-text, Boolean</td>
<td>file name, author, sysop-designated keywords</td>
</tr>
<tr>
<td>Internet access</td>
<td>E-mail only</td>
<td>E-mail only</td>
<td>E-mail only</td>
</tr>
<tr>
<td>Customize interface</td>
<td>very extensible</td>
<td>very extensible</td>
<td>limited</td>
</tr>
<tr>
<td>Add functionality</td>
<td>very extensible</td>
<td>very extensible</td>
<td>limited</td>
</tr>
<tr>
<td>Forms</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Pricing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start-up fee</td>
<td>$80-$200 per user</td>
<td>none</td>
<td>$7500</td>
</tr>
<tr>
<td>Custom interface</td>
<td>negotiable</td>
<td>approximately $2000</td>
<td>$2500</td>
</tr>
<tr>
<td>Add functionality</td>
<td>negotiable</td>
<td>negotiable</td>
<td>no</td>
</tr>
<tr>
<td>Client software</td>
<td>Business Connection $150; Sales Connection $1695</td>
<td>$10-$249 C</td>
<td>$10</td>
</tr>
<tr>
<td>Special software</td>
<td>none</td>
<td>Perform Pro Filler $39-$79</td>
<td>none</td>
</tr>
<tr>
<td>Online charge</td>
<td>$11 per hour</td>
<td>$15 per hour</td>
<td>$4.80-$9.60 per hour or fixed monthly charge</td>
</tr>
<tr>
<td>Monthly charge</td>
<td>$14 per user (includes 1 hour online and 100K traffic)</td>
<td>none</td>
<td>$5000 minimum</td>
</tr>
<tr>
<td>E-mail surcharge</td>
<td>none</td>
<td>$0.90 per page</td>
<td>none</td>
</tr>
<tr>
<td>Download surcharge</td>
<td>$0.08 per kilobyte</td>
<td>$0.08 per kilobyte</td>
<td>none</td>
</tr>
<tr>
<td>Support</td>
<td>toll-free phone, 7 am-6 pm PST, M-F</td>
<td>toll-free phone, free, 8:30 am-8 pm ET, M-F</td>
<td>toll-free phone, 16 hours a day, 7 days a week</td>
</tr>
</tbody>
</table>

* * * * *

* Also available: Forum, a less expensive, less customizable version; tools for programming highly specialized systems.  
* Depends on number of users.  

124 January 1995 MACWORLD
PressLink, which includes online access to news photos.

Business Network, which has been around in one form or another for about a decade and until recently was called BusinessTalk System 2000, lets you build a private online-information service over GE Information Services' global communications network. The majority of Business Network customers are large companies, like Apple, that use it to offer end-user services and for business-to-business communications. GE says that only about 200 Business Network systems are installed, but they are accessed by more than 25,000 businesses.

Business Network systems can be configured to provide access to other E-mail systems including the Internet, as well as to Dow Jones News/Retrieval Service and a personalized news service called QuickNews. (GE's consumer-oriented online service, GEnie, cannot be accessed from Business Network.)

Like Connect, GE can provide you with either a highly customized system or one that is minimally customized, but the way GE costs it out is quite different from the way Connect does.

The major expense of setting up a Business Network system is the cost of client software, which comes in Macintosh, Windows, and DOS versions. For small orders—less than 50 copies—GE charges $249 per copy; for 500 copies or more, the price drops to $100 each. Site licenses are available for $30,000. Once you have the software, GE says, you can get onto the network in a matter of hours—as soon as your system operator enters your user IDs and passwords. GE doesn’t charge a start-up fee, but adding your company logo and welcome menus costs about $2000. An environment supporting large databases and providing a highly customized front end will cost between $10,000 and $50,000, depending on its complexity, not on the number of users.

GE charges $15 per hour for connect time, 8 cents for every 1000 characters downloaded, and 95 cents a page for E-mail. The company does not charge a monthly minimum.

Your Business Network system can be administered locally using software that runs only on Windows. GE also has software for processing electronic forms on its system; the forms-design module is Windows-only, but the fill-in module is available for the Mac.

The Last Word
Should your organization make the move to its own communications system? And if so, which provider is right for your organization's needs? To answer the first question, you need to do a cost-benefit analysis, taking into account current E-mail expenses, how much of your long-distance faxing—not to mention travel—your own system might eliminate, as well as intangibles such as how it could improve relations with your customers. And remember, a private online-information service is designed to be just that: private. Unlike with publicly accessible systems, such as America Online and Prodigy, you control who has access to your service and what parts of it they have access to. In fact, your service may run on the same mainframe system as your competitors' service, but since each is completely isolated, you avoid such abuses as your competitors' checking out your pricing schedules or their customers' using your tech-support staff.

Answering the second question, which system to base your service on, is different from deciding which monitor or disk drive to buy. Unlike a hardware purchase, choosing a provider isn’t a simple matter of determining that GE, Connect, or CompuServe has the best product. Each offers something very different, so you need to decide what you want to provide for your users; then you can determine which vendor has the best price for that set of capabilities.

MARTHA STRIZICH writes frequently about networking and telecommunications.
World-class overheads. Up to 600 x 300 dpi. Up to 2 pages per minute! Dual tray option switches from paper to transparencies by desktop command. Smart!

High impact color images on glossy covers. Info rich color on plain pages inside. Workgroup performance priced for competition. Dynamic!

Background blends and skintones are airbrush smooth using the only desktop color laser technology that prints in continuous tones, instead of halftone dots. Impressive!

Color is color, until you

Then you'll choose Phaser™ Color. For all the colorful things you do in business, graphic arts, science, or engineering—Tektronix covers the spectrum. With more solutions than any other printer manufacturer. So there's sure to be a Phaser color printer that fits your requirements and budget to a tee. No matter which Phaser you choose, each will handle your workgroup's toughest demands. All Phaser color printers offer: • 300 dpi or higher • Adobe® PostScript® Level 2 • Letter-size prints or transparencies • Support for PCs, Macs, workstations and networks—simultaneously

NEW Phaser 140  Phaser 200e  Phaser 220e  Phaser 220i  NEW Phaser 540  Phaser 11 PXi
Vibrant color prints and comps. Full-bleed tabloid. Print front and back, 30 cents a side. Print on any paper, vellum to cover. Zow-wie!

Amazingly precise, photorealistic color. Full-page or tabloid-bleed. Matchless pre-film proofs. Spot on!

see our new spectrum.

- Pantone's color standard
- RISC-speed print processing
- TekColor™ controls
- A Tektronix one year warranty
- Top technical support. That's why Tektronix has the most award-winning product line in the business. So you can make organizational overheads with faces in place. Or print vibrant color on any paper, both sides. Or roll out gorgeous, photorealistic images. You can choose the world's fastest color printer. Or the first continuous-tone color laser. All from Tektronix, a Fortune 500 leader, where quality in workgroup color printers now starts at only $1,695, and innovation never stops.

Tektronix

Phaser 300i

NEW Phaser 440

Phaser 480

Free output sample. Call 800-835-6100, Ext. 1082.

© 1994 Tektronix, Inc. All rights reserved

Circle 143 on reader service card
Cheaper, Better Color Printers

Graphics professionals who want photo-realistic color output without spending a fortune will be glad to know that the cost of quality is coming down. A dye-sublimation printer from Kodak is priced at about $10,000, one from General Parametrics costs less than $8000, and a dye-sub-thermal-wax combo from Fargo Electronics can be had for about $5000.

The Picnura 3 Color Printer from Fargo Electronics is a combination dye-sublimation-thermal-wax printer that retails for $4995—a significant price breakthrough for this type of technology. Due to ship in November 1994, the 300-dpi Picture produces full-bleed 11.5-by-17.5-inch prints on 12-by-18-inch sheets. Fargo claims the Picture 310 can produce dye-sub prints in about 8 minutes, while thermal-wax prints take about 2.5 minutes. Although it includes Fargo's proprietary color-management software, it also supports Apple's ColorSync. The Picture's low cost is partly due to the fact that it has no motherboard but instead uses the Mac's CPU for processing images (RIP time is about 5 to 7 minutes). Included with the printer is a NuBus board to install in your Mac for fast transfer of large print files. An optional PostScript driver will cost an additional $599. Page print cost is $6.58 for dye-sub.

General Parametrics is introducing the $7695 Spectra Star DSx, a dye-sublimation printer that handles both three- and four-color continuous-tone printing. It produces full-bleed 600-dpi prints (full-bleed A4 size for international markets) on oversize media for a maximum image size of 9.3 by 12.7 inches. The DSx includes PostScript Level 2 capability and Pantone color matching. The printer comes standard with a 33MHz RISC processor, 16MB of RAM expandable to 96MB (51495 per 16MB), and two plug-in-cartridge slots—one for a 170MB internal hard drive ($895) and another for adding Ethernet support ($795). Page print cost for full-bleed is $2.85.

The $9955 Kodak XLS 8600 PS is a 300-dpi PostScript Level 2 printer that produces full-bleed output of up to 8.5 by 12 inches on 9.5-by-14-inch media using Kodak's UltraColor rendering. Its 32MB of RAM is upgradeable to 48MB or 64MB, and its multisensing ports can handle SCSI, Centronics, and LocalTalk, with optional support for Ethernet ($995). The printer ships with 35 resident fonts and 30 downloadable fonts. An optional external hard drive to store them will be available in November. Approximate cost per full-bleed page is $2.50, and $3 for transparencies.

Fargo Electronics, 612/941-9470; General Parametrics, 510/524-3950; Eastman Kodak Company, 716/253-0740.—CATHY ABES

Powering Up Photoshop

A NEW "ADOBE-CHARGED" DSP ACCELERATOR board from Adaptive Solutions—PowerShop—is expected to deliver the kind of speed for Photoshop that graphics professionals have long been seeking.

With 64 DSPs working in parallel on one NuBus card, PowerShop is designed to accelerate such computation-intensive functions as RGB-to-CMYK conversions, unsharp mask, and gaussian blur between 5 and 30 times as fast as a Power Mac 8100.

The board supports all NuBus Mac models, from the IIG to the Power Mac 8100. Due by the end of 1994, PowerShop will retail for $3995. Adaptive Solutions, 503/690-1236.—CATHY ABES
Oh Là Là! Toulouse-Lautrec, the Typeface

SHOPPING FOR FONTS THIS FALL? Among the latest releases are typefaces inspired by Toulouse-Lautrec and Frank Lloyd Wright, plus new Multiple Master faces from Adobe Systems.

Monotype Typography’s Toulouse-Lautrec Collection, designed by Luiz DaLomba, pays homage to the French post-impressionist with four type styles and a selection of clip art (accessed with keystrokes). The collection will be available in November for $130.

Agfa’s Eaglefeather, designed by David Siegel and Carol Toriumi-Lawrence, is based on lettering designs by Frank Lloyd Wright. Eaglefeather Formal and Eaglefeather Informal each contain six weights and cost $210 each; a three-weight small caps version is $105. All three volumes are $345, or you can buy individual fonts for $45 each.

Adobe has released four new Multiple Master faces. Nueva ($105), designed by Carol Twombly, is a display face with two design axes, weight and width. Penumbra ($105), by Lance Hidy, is an all-capital design axes, weight and style axes; the style axis allows you to transform Penumbra characters from a light sans serif to a bold serif. Also available are ITC using the Polaroid CS-500i Digital Color Scanner. Future versions will support other film and hardware.

Adobe has also updated its four CD-ROM Type On Call. Version 4.0 has multilingual support, automated ordering, and an electronic catalog for viewing and printing typeface samples. The CD is $69 through January 31, $99 afterwards, and includes a choice of any two of eight designated typeface packages.

Monotype Typography, 312/855-1440; Agfa, 201/440-2300; Adobe Systems, 415/933-5500.—CATHY ABES

Easy Color Separations

POLAROID’S PRINT-TO-PRESS COLOR-calibration software lets you retouch and color-separate Polacolor Pro 100 prints (Kodak’s new instant color film designed for professional photographers) using the Polaroid CS-500 Digital Color Scanner. Future versions will support other film and hardware.

Developed by CyberChrome (a color prepress service bureau and codeveloper with Quark of the DCS format), Print-to-Press consists of two filters, a Photoshop plug-in that controls colors during scanning and an RGB-to-CMYK converter that matches the final colors to the original photograph, to produce an accurate color proof. Due to ship in the first quarter of 1995, Print-to-Press will retail for $3500. Polaroid Corporation, 617/386-2000.—CATHY ABES
GRAPHICS

Expert Graphics

by Cathy Abes

Artist: Annabelle Breakey is a San Francisco-based photographer who specializes in digital imagery. She has been a guest lecturer at the Academy of Art College in San Francisco. Her advertising clients have included Canon USA, Logitech, and Sprint. The image shown here appeared in the Digital Image Exhibition of the 1994 Photoshop Conference.

**How It Was Done:** Originally created for a client's marketing brochure, this image, called “Global Strategy,” was redone as a stock photo for Tony Stone Images, a stock-photo agency. Breakey began by photographing a piece of wrapping paper containing an image of an antique map of the world. After scanning it into Photoshop, she rotated it to the angle she wanted—about 45 degrees counterclockwise. Because rotating it produced blank areas at the top and bottom, she had to fill those areas by cloning and copying/pasting from various parts of the map.

Next, to provide a more textural, three-dimensional look and to eliminate the moiré pattern that resulted from scanning the wrapping paper, she used Photoshop's Emboss filter on a copy of the map, then composited the copy with the original. After adding a checkerboard pattern to the map, she darkened half of the squares and lightened the other half with Brightness/Contrast.

At this point, Breakey began placing the chess pieces on the map/checkerboard background. For each of the chess pieces, she made a shadow by drawing a path around the piece and scaling it to make a long, thin shape. Then she made a path from the selection (Path palette). After exaggerating the shape to give it more definition, she saved the path and made it a selection (because paths can't be rotated). Once she had pasted the selection into the main image at minimal opacity, she rotated the selection to the correct angle. Then, so she could more easily and precisely refine the shape, she made it into a path, saved it, selected it with a 10-pixel feather, and darkened it with Brightness/Contrast.
Pasting the selection made from the path into the illustration at 1 percent opacity made the shadow completely transparent. After rotating the shadow selection and making it a path (at 1.3 tolerance), she saved it, selected it with a 10-pixel feather, and reduced Brightness to -60 and Contrast to -15.

To create a shadow of the knight, Breakey made a pen-tool path around the piece, made a selection from the path, copied the selection, and pasted it into a new document, rotating the selection until it was horizontal.

Using the Scale command without constraining it (Image>Effects), she stretched out the chess piece to make a long, skinny shape for the shadow.

**THE TOOLS**

**Hardware:** Mac Iici with 64MB of RAM and a 210MB internal hard drive; DayStar Digital 40MHz accelerator board; 1GB external hard drive; 44MB SyQuest removable-cartridge drive; 21-inch SuperMac monitor; Wacom ArtZ ADB 6" x 8" tablet.

**Software:** Adobe Photoshop 2.5.1.

The original photo of the chess pieces scanned into Photoshop. Some were placed on the map; others were used only to create shadows.
Now Contact Goes Multiuser

Now software is going multiuser with version 3.0 of its contact manager, Now Contact, so that users can share contact information; the company is also upgrading its calendar program, Now Up-to-Date, to version 3.0.

Like Now Up-to-Date, Now Contact 3.0 allows you to categorize information and share only selected categories with other users. For example, you could categorize some records as business contacts and others as friends, and make only the business-contact records available on the network; you could also make shared contacts' name, company, and phone fields available, but keep the Bozo Warning field to yourself.

Other Contact 3.0 news includes duplicate-record elimination and the ability to synchronize multiple versions of the same file (this is most helpful for PowerBook users); the ability to automatically fill in information when the program recognizes the first few letters of something you type; and a way to search across multiple fields by using predefined keywords.

The new version also has new field types for money and dates.

Now Up-to-Date 3.0 provides a button bar for quick access to features, can search through numerous people's calendars to find a time when all are free to meet, and can track the duration of phone calls.

Now Software says Contact 3.0's street price will start at about $50 and Up-to-Date's street price will start at about $65, with bulk purchases and bundles available for less. To share information between the two programs requires upgrading to version 3.0 of both. Contact runs in native Power Mac mode; Up-to-Date does not. Both should be shipping as you read this. Now Software, 503/274-2800. -D.L.

Common Ground Widens Territory

No Hands Software is upgrading Common Ground, its Adobe Acrobat competitor, to version 2.0 (see At Work news, December 1994). The electronic document-distribution tool is adopting TrueDoc, a new font format developed by Bistream that can display or print text in its original font at any resolution, without requiring the font to be embedded in the document.

Other features new to 2.0 include the ability to convert PostScript files into the Common Ground portable-document format; the digital equivalent of bookmarks and highlighting; a hyperlinks feature for embedding paths and cross-referencing in documents; and a table-of-contents generator. Password-protection is available to block unauthorized reading, copying, or printing of Common Ground documents, and the product also includes DES encryption. Another new feature makes it possible to extract pages from multiple source documents and combine them as one Common Ground document.

Both Common Ground and Acrobat are getting features that make their documents easier to access over the Internet. Spyglass plans to add support for Acrobat's document format to version 2.0 of Enhanced NCSA Mosaic. Spyglass's commercial version of the graphical Internet front-end, while No Hands is
adding support for WAIS, the search-and-retrieval engine for Internet servers, to Common Ground 2.0.

Common Ground 2.0 should ship before the end of 1994 and will list for $189.95. A separate product, as yet unnamed and unpriced, will batch-process files into CG format. No Hands, 415/802-5800; Spyglass, 217/355-6000.—D.L.

Decisive Software

PALO ALTO SOFTWARE IS LAUNCHING a new series of products designed to help business owners and managers run their organizations more effectively. Palo Alto Software has been known for its long line of Excel add-ons, such as Business Plan Toolkit and Marketing Plan Toolkit, but the first product in the company's new Business Essentials Library line, DecisionMaker, is a stand-alone application.

With DecisionMaker, you set up a decision tree—a branching diagram showing each possible outcome in a series of events—and then weight each possibility with an estimated likelihood and its desirability or undesirability. The tree can be expressed in terms of money or other values, and the model calculates best-case, most-likely, and worst-case values. Decision trees are especially useful when several experts in different fields are collaborating on a project, because this type of analysis requires each person to describe explicitly assumptions that are normally not articulated. DecisionMaker should be shipping for $149.95.

Palo Alto's next Business Essentials product, which should ship early in 1995, is called Cash. It is a small-business accounting system that focuses on liquidity rather than profit, so that the business owner can know what business needs are within reach and when cash-flow crunches are likely to occur. Cash will list for $149.95. Palo Alto Software, 503/683-6162.—D.L.

Extracting the Essence of Data

ARBOR SOFTWARE IS SHIPPING A MAC client to Essbase 3.1, a client/server system that makes data residing in corporate databases available for financial analysts, marketing planners, and others to explore from within Microsoft Excel.

Rather than replicating flat database tables and propagating them into row-column spreadsheets, Essbase, with the help of a system administrator, reorganizes the data to create a multidimensional data space in which all related information is linked together. For example, one dimension might hold a hierarchical set of months, quarters, and years; a second dimension might hold product lines; a third might hold data on costs, sales, and profits; and a fourth might contain region and division relationships. A simple click or two could extract changing profit margins over time, compare the life cycles of several product lines, or show which products have higher variation in sales by region than expected. Once disparate data has been mapped into the structure Essbase needs, users can perform ad hoc drilldowns, summaries, cross-tabs, and so on from inside Excel without using SQL or other query languages.

The Essbase server can collect data from SQL hosts, mainframes, and other live databases, while the Essbase server itself runs on either OS/2 or Windows NT. Arbor Software is developing a server that runs under Unix on Hewlett-Packard systems. Arbor then plans to do a server for IBM's AIX; the company thinks the AIX server will run on PowerOpen Unix, a version of AIX that will run on the Power Mac. The pricing structure is complex, but a complete system starts at $35,000 for five users, including a report-generator language for batch processing; Arbor charges an additional 15 percent for the programming tool kit. Arbor Software, 408/727-5800.—D.L.
There are a variety of printers that can produce large, color prints. But look beyond that simple fact and consider the big picture—the Big Color picture. LaserMaster's DisplayMaker Professional digital color printer is the only 36-inch-wide color printer on the market today that offers the patent-pending Big Ink Delivery System—a feature that will save you time, money, and hassles.

Don't settle for just any large-format printer. Look at the big picture. Only DisplayMaker Pro offers the Big Ink Delivery System. Big Ink, combined with the productivity features of the Advanced Color Server, offers both in-house groups and service bureaus the easiest, most economical way to produce Big Color prints. Call today for more information.

(800) 220-9160 or 612-944-9330 Fax: 612-944-1244

*Based on full-ink coverage

© 1994 LaserMaster Corporation, 6700 Slay Oak Road, Eden Prairie, MN 55344 (612) 944-9330. LaserMaster Europe, Ltd., Houtenweg, The Netherlands, (31) 2509-3200. LaserMaster and the LM logo are registered trademarks; Big Ink, Big Color, DisplayMaker, ColorMark, and The Professional's Choice are trademarks of LaserMaster Corporation. This product incorporates the PowerPage Interpreter from Pipeline Associates, Inc. All other product or brand names are marks of their respective holders. DisplayMaker output is not intended for extended use in direct sunlight. Specifications and pricing subject to change without notice. (AMF/CLI) 7/94
Using the Finder Efficiently

MACROS, WIZARDS, TEMPLATES, TOOLbars, AutoThis, PowerThat—developers are loading applications with features that make computing more productive and more efficient.

But what about time spent outside applications, in the Mac's Finder? Tracking thousands of files, navigating folders, mounting file servers, tweaking system settings—chores like these can really eat into your time, turning your Mac from productivity booster to ball and chain. What's a knowledge worker to do?

The Macintosh system software provides numerous features that streamline Finder grunt work; and a variety of utilities, some free or shareware, can also help. This month's column provides answers to Finder productivity issues. And modern owners, take note: I've posted the free and shareware utilities discussed here in Macworld's America Online and eWorld forums.

**Problem:** Locating files that are buried deep in folders.

**Solution:** Use aliases and a hierarchical Apple-menu utility.

Categorizing your files with plenty of folders—for business software, graphics software, games, memos, spreadsheets, business plans, novels—is by far the best way to keep your hard drive organized. But when you start tucking folders within folders within folders, finding a file can send you on an odyssey of double-clicking.

One answer: the alias. Select a frequently used application or document buried within a folder, choose Make Alias from the Finder's File menu, and drag the alias out to the desktop. Next time you need the file, you can open it by clicking on its alias; the original remains filed where you want it. Or better yet, stash the alias in the Apple Menu Items folder in the System Folder and it'll appear on the Apple menu.

You can also dramatically increase the Apple menu's usefulness with a hierarchical Apple-menu utility, such as AlsoSoft's MenuExtend (included with AlsoSoft Power Utilities 1.0.6; $129; 713/353-4090, 800/257-6381) or Kerry Clendinning's $15 shareware utility MenuChoice 2.0; these utilities turn folders and aliases of folders into submenus, allowing express access to even the most deeply nested files (see "Efficiency Experts"). Apple liked the concept so much that it includes a hierarchical Apple menu in System 7.5.

**Problem:** Logging on to a file server.

**Solution:** Create a file-server alias.

If you use a network file server or System 7's file sharing, you know the tedious steps required to mount a remote volume: open the Chooser, click on the Apple-Share icon, select a file server, type a password—chose the volumes you want . . .

The amazing alias can help here. Make an alias of any server you use frequently, and you'll be able to mount the server just by double-clicking on its alias. If you specify a password—which, in these times of file sharing and Apple Remote Access, you'd better—the mounting procedure will pause while you enter the password. And here's a cool way to access a server volume or folder, or even your own shared hard drive, from anywhere on the network: make an alias of it on a floppy disk, and when you need to log on, sit down at any Mac on the network, insert the floppy, and double-click on the alias. (Now aren't you glad you gave your own drive a password?)

**Problem:** Turning file sharing on and then turning file sharing off.

**Solution:** Use simple macros.

System 7's file sharing is great for beaming data between Macs. But you don't want to leave it on when you don't need to share files, because it slows down your Mac, and toggling via the Sharing Setup control panel is too much work. CE Software's QuicKeys 3.0 ($139; 515/224-1995, 800/523-7638) includes an extension called System 7 Specials that can turn file sharing on and off with one keystroke. A similar QuicKeys extension, Choosy, lets you bypass the Chooser when switching between printers.

In the freeware/shareware arena, there's Steve Forgacs's free FileSharingToggle 1.0.4, a simple program that toggles file sharing. And no frequent file server should be without Robert Hess's $10 Shaman 1.1.0, which can toggle file sharing; display an icon in the menu bar to indicate when sharing is on; and, if you have Apple's PlainTalk Speech Manager extension, even tell you aloud when someone logs on or off.

**Problem:** Switching monitor-depth settings is awkward.

**Solution:** Use a utility that can switch bit depths for you.

All color Macs support a variety of monitor settings ranging from black and white (1 bit), to 16 colors (4 bits), 256 colors (8 bits), thousands of colors (16 bits), or even millions of colors (24 bits). When not working in color, you can continue
increase your Mac's performance on certain tasks by setting it to black and white—for example, your word processor will scroll much faster in black and white than in color. But then you'll want to switch back to color for QuickTime movies, graphics, or playing Myst.

QuicKeys' Screen Ease extension provides keyboard shortcuts for depth switching. You can choose a specific depth, such as 256 colors, or you can set Screen Ease to increase or decrease the depth each time you type a command.

Another handy depth switcher is Ambrosia Software's $10 shareware ColorSwitch 2.3.0, which adds a menu to the right edge of the menu bar, listing available bit depths. (You can also specify that depth, such as 256 colors, or you can set the menu to appear under the mouse pointer.) ColorSwitch also lets you change the Mac's speaker volume without going through the Sound control panel (QuicKeys provides a similar feature).

Then there is the shareware file-launching utility Apple 1.0, which lets you create an always-available menu of your favorite applications and often-used documents, and can also switch automatically to a specified bit depth when you start a particular program. Depth switching doesn't get any easier.

**Problem:** Opening folders is s-l-o-o-w.
**Solution:** Customize the way the Finder displays windows.

Using the Finder's list views instead of iconic views makes the Finder run faster; in an iconic view, the Finder has to retrieve from its internal database the icon for every file in every window you open and then display those icons. The Finder's list views—Name, Kind, Size, and Date under the View menu—don't impose this overhead. But list views often contain information you don't need—do you really need the creation date for every file?—and that slows down the Finder as well. Use the Views control panel to pare down what information appears (and don't forget to turn off Calculate Folder Sizes, which constantly totals up the size of all the files in a folder).

Note that removing list-view items means you won't be able to sort by those attributes—for example, if you unchecked Size, you won't be able to sort windows by file size.

**Problem:** Desktop clutter.
**Solution:** Use the Macintosh's application-hiding features or utilities.

The Mac's desktop metaphor is great, but does it have to be so accurate? I'm referring to the clutter of too many open windows. One solution is to choose Hide Others from the Application menu at the right-hand edge of the menu bar, which hides the windows of any inactive application. (Its windows reappear when you switch back to the application.) And you can hold down the option key while changing applications, to hide windows of the active application while switching to the other one.

A great enhancement to the Application menu is Hiro Yamamoto's ApplWindows 2.0.2, a free control panel that displays all open documents for each application in the Application menu so that you can switch to a particular document as you switch applications. ApplWindows can also display its hierarchical Application menu on command at the mouse pointer's location. And do you still long for System 6's MultiFinder, which let you cycle through open programs by clicking on the Applications icon instead of pulling down a menu? ApplWindows supports that, too.

QuicKeys' ProcessSwap extension also provides an automatic hiding feature.

And there's Jeff Winkler's Hide Others 1.0 freeware, a control panel that hides inactive applications when you press a key that you designate.

None of these goodies can really eliminate the clutter that builds up within applications. For that, there's Rob Johnston's free WindowShade 1.2 control panel, which can "roll up" a window—that is, hide everything except the title bar of open documents.

**AppleScript:** Automated Efficiency

System 7.5 provides many of the efficiency features that required add-on utilities under System 7.0: a hierarchical Apple menu (it even lists recently opened documents, applications, and file servers); an automatic application-hiding feature; and a copy of WindowShade. But from an efficiency standpoint, the most exciting thing about System 7.5 is that its Finder supports Apple's wide-ranging automation language, AppleScript. AppleScript has been around for a couple of years now, but support for it has been conspicuously absent from the Mac's Finder. It continues...
Presenting the new Agfa Arcus II.

With all the praise the Arcus family has won, you’d think we’d rest on our laurels. Think again. The Agfa Arcus II is a completely new, 600 x 1200 ppi, 36-bit color scanner with an integrated transparency module. It’s also designed to be the best machine you can put on your desktop.

Compared to other “desktop” scanners, the new Arcus II can capture more highlights and shadows, thanks to its 3.0 dynamic range. That’s the kind of image quality you used to have to send out for. Plus, no other top-of-the-line “desktop” scanner comes with Agfa FotoLook scanning software, Agfa FotoTune color management software, and full Adobe Photoshop” software built in.

And no one else can offer you our new, 42-page Introduction to Digital Scanning, which takes you step by step through a variety of scanning situations.

Truth is, with everything we added to the Arcus II, we’re expecting some more awards. But the real prize winner will still be you. Call 1-800-685-4271 to find out more information on Agfa’s new scanners.
Small colleges can help you make it big.


Some of our country’s most successful people went to small colleges where size, faculty, and curriculum combined to give them the education, skills, and confidence to make it big in today’s world.

A small college can help you make it big, too. To learn more about small independent colleges, contact: Council of Independent Colleges, One Dupont Circle, Suite 320G, Washington, D.C. 20036.

Sponsored by CIC The Council of Independent Colleges.

The System 7.5 Finder is not only scriptable, it’s recordable, which means you don’t have to learn the AppleScript language. You can create scripts by recording the actions you want to automate as you perform them—similar to the watch-me macro-generating features of programs such as Microsoft Excel—though recorded scripts are often too specific and need some editing to work properly in a variety of situations. As you choose commands, you’ll see the script appear in the Script Editor window. After tweaking the script, save it as an application and stash it in the Apple menu. (I have posted a collection of useful sample scripts on the Macworld forums on America Online and eWorld.)

Unfortunately, some System 7.5 components are not yet scriptable. I ran into this roadblock with a script to open the Scrapbook and paste in the Clipboard’s contents: the Scrapbook isn’t scriptable, so the script didn’t work. Creative scripters can work around limitations like these by combining AppleScript scripts with QuickKeys macros. Still, Apple’s slow-and-steady approach to implementing scripting is frustrating.

A bigger frustration is the nearly total lack of documentation on Finder scripting. The Apple Extras folder contains some AppleScript documentation but nothing about System 7.5’s Finder. To whet your appetite, open the Finder’s dictionary using Script Editor’s Open Dictionary command. (In AppleScript-speak, a dictionary is the set of terms—commands, objects, and so on—that a scriptable application provides.) There are no examples of how to use the terms, which run to nine single-spaced pages, but you’ll understand what many of them are for just by their names.

For now, the best way to learn Finder scripting is to dismantle existing scripts and to practice creating your own. You can also read Derrick Schneider’s great primer, The Tao of AppleScript (Hayden Books, 1993). A second edition that covers System 7.5 is in the works.

System 7.5 provides some efficiency features I haven’t mentioned (see “System 7.5 Efficiency Tricks”). Whether you switch to 7.5 or stay with 7.0, learn these techniques; you’ll reduce the time you spend in the Finder and save more time for doing your work—or for doing something better yet.

Next Month: Headache-free Software Upgrading

USP 6.1 for the Macintosh when you need in-depth answers quickly and easily. Go beyond summary statistics and spreadsheet row and column math by using the right tool for the job. SPSS is a complete tool kit of statistics, graphs and reports that enables you to answer tough questions like:
- Why did sales drop in the last quarter?
- How satisfied are my customers?
- What are the patterns in my data?

SPSS products are used today for:
Survey research
- Explore consumer awareness
- Compare perceptions of products
- Discover preferences by group
Marketing and sales analysis
- Analyze your customer database
- Forecast sales by product and region
- Improve mailing responses
- Determine which promotions work best

Research of all types
- Test hypotheses
- Determine group differences
- Track performance over time
- Prepare professional reports

Answer your tough questions from the most basic to the most in-depth analysis, SPSS 6.1 for the Macintosh gives you a wide range of statistics. Use procedures from counts and crosstabs to regression, factor, Kaplan-Meier plus over 60 more! SPSS gives you all the statistics you need to answer your tough questions.

All statistics are located in organized, easy-to-use menus and dialog boxes. Get up and running quickly with the online Tutorial. Task-oriented help and a statistical glossary guide novices and experts alike.

See your results clearly and pinpoint your answers easily with 50+ fully-integrated, high-resolution charts.

Take a closer look at SPSS 6.1 for the Macintosh:
- Allnew Macintosh interface
- Statistics located in easy-to-understand menus and dialog boxes
- Over 60 statistical procedures - from the most basic to the most advanced
- Work with over 600 of your most important data files
- Analyze high-resolution business, statistical and SOC charts with automatic labels, including Pie, Bar, Area, Pie, High-Low-Close, Histogram, Scintillations, Scatter, Box, Error bars, Percent, X-bar, Range, Time series, Forest Plots and more
- Create labeled charts automatically as part of SPSS' potential .statistics
- For off-peak processing, select a printer or output file
- Choose a right chart with the help of the SPSS Chart Advisor
- Expert charts on CDA, TIF, PDF and SPSS
- Manage and save chart assembler with the SPSS Chart Caper
- Access your data with your own data editor
- Access your data with SPSS Data Editor and view your data. Display values as labels or as numbers. Use the Data Editor to edit or delete cases, to search for a particular case in variable value
- Use Option-click any variable to enable a range of special menu options
- Access your data with SPSS Data Editor and view your data. Display values as labels or as numbers. Use the Data Editor to edit or delete cases, to search for a particular case in variable value
- Save your data to SPSS files or export data using your own software
- Keep your formulas safe and secure from your data
- Allnew Macintosh interface
- Statistics located in easy-to-understand menus and dialog boxes
- Over 60 statistical procedures - from the most basic to the most advanced
- Work with over 600 of your most important data files
- Analyze high-resolution business, statistical and SOC charts with automatic labels, including Pie, Bar, Area, Pie, High-Low-Close, Histogram, Scintillations, Scatter, Box, Error bars, Percent, X-bar, Range, Time series, Forest Plots and more
- Create labeled charts automatically as part of SPSS' potential .statistics
- For off-peak processing, select a printer or output file
- Choose a right chart with the help of the SPSS Chart Advisor
- Expert charts on CDA, TIF, PDF and SPSS
- Manage and save chart assembler with the SPSS Chart Caper
- Access your data with your own data editor
- Access your data with SPSS Data Editor and view your data. Display values as labels or as numbers. Use the Data Editor to edit or delete cases, to search for a particular case in variable value
- Use Option-click any variable to enable a range of special menu options
- Access your data with SPSS Data Editor and view your data. Display values as labels or as numbers. Use the Data Editor to edit or delete cases, to search for a particular case in variable value
- Save your data to SPSS files or export data using your own software
- Keep your formulas safe and secure from your data

Get answers to tough questions using in-depth statistics!
Work with 60+ statistical procedures from basics such as counts and crosstabs to more sophisticated statistics including factor, regression and logistic regression.

See your results quickly and clearly!
Use 50+ integrated, high-resolution charts and graphs. Choose from business, statistical and SOC charts. All charts can be fully edited with point-and-click accuracy through tear-off menus and palettes.

Get fast, flexible data management!
The new spreadsheet-style Data Editor makes entering, editing and managing your data fast and easy using either values or value labels. And, you can work with even your largest data files!

Available add-on modules:
- Explore your data more thoroughly with factor analysis and model selection using SPSS" Standardization
- Execute advanced multivariate techniques such as Cox regression, Kaplan-Meier estimates, logistic regression, and more using SPSS Advanced Statistics
- Create customized browser reports with SPSS" tables
- Predict the future using advanced time series analysis in SPSS Trends
- Perform prescriptive mapping, weight analysis and optimal scaling procedures with SPSS Categories
- Build thematic maps with SPSS Categories

Get a great value — order now!
Call 1 (800) 457-8287
or Fax 1 (800) 841-0064
or mail to SPSS Inc., 444 North Michigan Avenue, Chicago, IL 60611
or call toll free to SPSS Inc., 444 North Michigan Avenue, Chicago, IL 60611

Use SPSS 6.1 for the Macintosh when you need in-depth answers quickly and easily. Go beyond summary statistics and spreadsheet row and column math by using the right tool for the job. SPSS is a complete tool kit of statistics, graphs and reports that enables you to answer tough questions like:
- Why did sales drop in the last quarter?
- How satisfied are my customers?
- What are the patterns in my data?

SPSS products are used today for:
Survey research
- Explore consumer awareness
- Compare perceptions of products
- Discover preferences by group
Marketing and sales analysis
- Analyze your customer database
- Forecast sales by product and region
- Improve mailing responses
- Determine which promotions work best

Research of all types
- Test hypotheses
- Determine group differences
- Track performance over time
- Prepare professional reports

Answer your tough questions from the most basic to the most in-depth analysis, SPSS 6.1 for the Macintosh gives you a wide range of statistics. Use procedures from counts and crosstabs to regression, factor, Kaplan-Meier plus over 60 more! SPSS gives you all the statistics you need to answer your tough questions.

All statistics are located in organized, easy-to-use menus and dialog boxes. Get up and running quickly with the online Tutorial. Task-oriented help and a statistical glossary guide novices and experts alike.

See your results clearly and pinpoint your answers easily with 50+ fully-integrated, high-resolution charts.

Take a closer look at SPSS 6.1 for the Macintosh:
- Allnew Macintosh interface
- Statistics located in easy-to-understand menus and dialog boxes
- Over 60 statistical procedures - from the most basic to the most advanced
- Work with over 600 of your most important data files
- Analyze high-resolution business, statistical and SOC charts with automatic labels, including Pie, Bar, Area, Pie, High-Low-Close, Histogram, Scintillations, Scatter, Box, Error bars, Percent, X-bar, Range, Time series, Forest Plots and more
- Create labeled charts automatically as part of SPSS' potential .statistics
- For off-peak processing, select a printer or output file
- Choose a right chart with the help of the SPSS Chart Advisor
- Expert charts on CDA, TIF, PDF and SPSS
- Manage and save chart assembler with the SPSS Chart Caper
- Access your data with your own data editor
- Access your data with SPSS Data Editor and view your data. Display values as labels or as numbers. Use the Data Editor to edit or delete cases, to search for a particular case in variable value
- Use Option-click any variable to enable a range of special menu options
- Access your data with SPSS Data Editor and view your data. Display values as labels or as numbers. Use the Data Editor to edit or delete cases, to search for a particular case in variable value
- Save your data to SPSS files or export data using your own software
- Keep your formulas safe and secure from your data

Get answers to tough questions using in-depth statistics!
Work with 60+ statistical procedures from basics such as counts and crosstabs to more sophisticated statistics including factor, regression and logistic regression.

See your results quickly and clearly!
Use 50+ integrated, high-resolution charts and graphs. Choose from business, statistical and SOC charts. All charts can be fully edited with point-and-click accuracy through tear-off menus and palettes.

Get fast, flexible data management!
The new spreadsheet-style Data Editor makes entering, editing and managing your data fast and easy using either values or value labels. And, you can work with even your largest data files!

Available add-on modules:
- Explore your data more thoroughly with factor analysis and model selection using SPSS" Standardization
- Execute advanced multivariate techniques such as Cox regression, Kaplan-Meier estimates, logistic regression, and more using SPSS Advanced Statistics
- Create customized browser reports with SPSS" tables
- Predict the future using advanced time series analysis in SPSS Trends
- Perform prescriptive mapping, weight analysis and optimal scaling procedures with SPSS Categories
- Build thematic maps with SPSS Categories

Get a great value — order now!
Call 1 (800) 457-8287
or Fax 1 (800) 841-0064
or mail to SPSS Inc., 444 North Michigan Avenue, Chicago, IL 60611
This year, get something free you can actually use.

New ClarisWorks 3.0 software for Macintosh
When you’re the best-selling software for Macintosh, you not only feel grateful, you feel downright generous. But ClarisWorks® 3.0 won’t offer you a goofy gift you’ll never touch, instead you’ll get a personal organizer that’s as indispensable as ClarisWorks itself.

Why is ClarisWorks such a hit with more than two and a half million Macintosh users? Because it perfectly integrates all the functionality of six software applications into one—with a streamlined feature set and responsiveness that gets the job done fast. For example, you can instantly add graphics, charts or a spreadsheet to your text with just a couple of mouse clicks—unlike other “works” and “office” products that seem to take forever to finish the task.

With ClarisWorks you can dash off correspondence, memos and reports. Create and give stunning presentations and slide shows straight from your desktop. Work on budgets and proposals. Develop outlines, review customer lists, create mailing labels and much more.

If you’re in a hurry, let new Claris Assistants step in to do the hard work for you. Assistants guide you through complex tasks like creating tables, and give expert advice on design for newsletters, presentations and more. You’ll also find 150 push-button “Shortcuts” that reduce multistep tasks to a single mouse click.

Even without free Claris Organizer, ClarisWorks 3.0 is still an exceptional value for every Macintosh user. And if you already own ClarisWorks, you can upgrade to version 3.0 for a special price. So see your Claris dealer today, or pick up your phone to order now!

Don’t let another year pass without ClarisWorks on your Mac—and a free gift you can really sink your teeth into.

Free with your order!
Buy ClarisWorks 3.0 before January 31, 1995 and get seven fonts, 75 clip art images, and Claris Organizer (a $99 value that integrates calendars, contacts, to-dos and notes) absolutely free! 1800 293 0617 ext. 484

Simply powerful software.
Tips, Tricks, and Shortcuts

DEDICATING AN ORDINARY MAC TO System 7's file sharing turns the computer into a simple, inexpensive file server for a small workgroup. Folders or entire hard drives on this file-server Mac can be made available to different network users, who in turn can back up important files of their own to the file server.

The problem with a homemade file server is its performance, notes Sam Jennings of San Francisco. System 7's file sharing assumes somebody will use the file-server Mac for more than sharing files, and it reserves about 50 percent of the file-server Mac's processing power for the nominal user—who in this case doesn't exist—to run applications. A utility called Nok Nok 2.0 from the AG Group (510/937-7900), which sells for less than $50, can adjust the amount of processing power reserved for file sharing, greatly improving file-sharing performance. Apple's AppleShare Server 4.0 software also allocates most of the computer's processing power to file sharing, but it costs about $1000. It does more than just optimize file-sharing speed, but for many situations you don't need more.

System 7.5 Size

Q: How in the world can System 7.5 take up so much RAM? Why does the RAM demand for 7.5 grow from 8MB or so on 680X0 Macs to a whopping 16MB on Power Macs? I consider 16MB barely adequate on my 660AV; if I upgrade to a Power Mac 6100, how much more RAM would I need merely to maintain current capability?

Lane Millet
America Online

A: The amount of RAM and disk space that System 7.5 requires depends on which parts of it you install, as tabulated in "System 7.5 RAM and Disk Usage." If you install the System 7.5 core module using the Installer's Easy Install option, you may get features you don't need. You can use the Installer's Custom Install option to select just the ones you need, or you can use the Easy Install option and then use the Custom Remove option to remove those you don't need. The System 7.5 core module uses 700K to 1MB more RAM and about 8.4MB more disk space than System 7.1. The PowerTalk and QuickDraw GX modules together use an additional 1.4MB to 2.2MB of RAM and 7.1MB to 8.6MB of disk space but are entirely optional (unless you use software that requires them).

PowerPC programs—native Power Mac portions of System 7.5 and native Power Mac applications—contain more instructions and therefore take more RAM and disk space than equivalent 680X0 programs. PowerPC programs have more instructions because each instruction does less than the most frequently used 680X0 instructions. Like all RISC (reduced instruction set computer) CPUs, the PowerPC can execute its simple instructions much faster than a CISC (complex instruction set computer) CPU—such as a 68040—can execute its compound instructions. Thus a PowerPC program's larger size is a by-product of its faster performance.

The amount of additional RAM and disk space you need for native Power Mac software varies from program to program. You might get by with no increase in RAM, but more likely you'll want 50 to 100 percent more. Since you use 16MB on a 660AV, I recommend 40MB on a 6100 if you can possibly afford it. While 24MB may be enough right now, you're likely to want more RAM in the future, at which point you'd have to dump the two 8MB SIMMs in order to install two 16MB's. (You must install a pair of same-size, same-speed SIMMs in a Power Mac 6100's two memory-expansion slots. Similarly, you must install SIMM pairs in a 7100's four slots or an 8100's eight slots. All of today's Power Macs come with 8MB of RAM soldered to the system board.)

Color Patterns Gone

Q: I found some interesting extras in the book Totally Rad Programs for the Mac and added them to my Hsi at home and an LC II that I use in my classes. I also downloaded a picture taken by the Hubble Space Telescope and used the picture as a start-up screen. When I tired of the exploding-star start-up screen and tried to go back to the regular start-up screen, all the color desktop patterns disappeared.

A: The amount of RAM and disk space that System 7.5 requires depends on which parts of it you install, as tabulated in "System 7.5 RAM and Disk Usage." If you install the System 7.5 core module using the Installer's Easy Install option, you may get features you don't need. You can use the Installer's Custom Install option to select just the ones you need, or you can use the Easy Install option and then use the Custom Remove option to remove those you don't need. The System 7.5 core module uses 700K to 1MB more RAM and about 8.4MB more disk space than System 7.1. The PowerTalk and QuickDraw GX modules together use an additional 1.4MB to 2.2MB of RAM and 7.1MB to 8.6MB of disk space but are entirely optional (unless you use software that requires them).

PowerPC programs—native Power Mac portions of System 7.5 and native Power Mac applications—contain more instructions and therefore take more RAM and disk space than equivalent 680X0 programs. PowerPC programs have more instructions because each instruction does less than the most frequently used 680X0 instructions. Like all RISC (reduced instruction set computer) CPUs, the PowerPC can execute its simple instructions much faster than a CISC (complex instruction set computer) CPU—such as a 68040—can execute its compound instructions. Thus a PowerPC program's larger size is a by-product of its faster performance.

The amount of additional RAM and disk space you need for native Power Mac software varies from program to program. You might get by with no increase in RAM, but more likely you'll want 50 to 100 percent more. Since you use 16MB on a 660AV, I recommend 40MB on a 6100 if you can possibly afford it. While 24MB may be enough right now, you're likely to want more RAM in the future, at which point you'd have to dump the two 8MB SIMMs in order to install two 16MB's. (You must install a pair of same-size, same-speed SIMMs in a Power Mac 6100's two memory-expansion slots. Similarly, you must install SIMM pairs in a 7100's four slots or an 8100's eight slots. All of today's Power Macs come with 8MB of RAM soldered to the system board.)

Color Patterns Gone

Q: I found some interesting extras in the book Totally Rad Programs for the Mac and added them to my Hsi at home and an LC II that I use in my classes. I also downloaded a picture taken by the Hubble Space Telescope and used the picture as a start-up screen. When I tired of the exploding-star start-up screen and tried to go back to the regular start-up screen, all the color desktop patterns dis-
A. You can fix your problem (and many other problems) by doing a clean install of the system software. Possibly one of the extras you installed from the book removed, replaced, or damaged the regular desktop patterns, which are kept in the System file. A clean install of the system software will restore the missing color desktop patterns. (Don’t bother zapping the parameter RAM or throwing away the Finder Preferences file, which store some control-panel settings. Neither of them contain the desktop pattern setting or options.)

To do a clean install, drag the System file from the System Folder to another folder (such as the Startup Items Folder) and change the name of the System Folder. Unable to find an existing System Folder, the System 7 Installer will create a new one with a clean copy of the system software. If you are installing System 7, you can easily do a clean install by pressing Ê-shift-K in the main window of the Installer. The Installer then gives you a choice of installing a new System Folder (and archiving the old one) or updating the existing System Folder.

Eventually you will need to move preference files from the Preferences folder inside your old, renamed System Folder to the new one. You will also need to move items you added to the Extensions, Control Panels, Fonts, and Apple Menu Items folders in the old System Folder. In addition, look for items in the old System Folder itself that need to be moved to the new System Folder, such as an Aldus folder or a Claris folder. I suggest you move items from the old System Folder a few at a time, and test your system after each move. You may discover an old item that causes problems.

Custom Floppy Icons

Q. I would like to know how to modify the icon resources in my System file so that any disk inserted into the floppy drive has a cool custom icon rather than the boring black-and-white icon that comes with the system. I used ResEdit to customize most of the regular icons (folder, Trash, alert, and so on), but my changes to the floppy icon don’t have any effect. I would rather not use the system extension Clloppy, which modifies the floppy disk icon, because my system takes up too much RAM as it is.

A. To see how much RAM and disk space are used individually by System 7.5, PowerTalk, and QuickDraw GX, I measured the sizes just after installation and start-up on a Mac IIx (with 20MB of RAM, virtual memory off, and a 500MB disk) and on a Power Mac 6100/60AV (40MB of RAM, virtual memory on and set at 60MB, and a 500GB disk). Your savings may not exactly match those listed here. System RAM usage depends on the amount of installed RAM and on the mix of installed extensions and control panels. Moreover, unless virtual memory is on you save very little RAM on a Power Mac by removing extensions. Disk space varies slightly depending on the capacity of the start-up disk.

Matt Taylor
Beverly, Massachusetts

Formatting Tick-Mark Labels

TIP After completing an experiment and tabulating the data, you turn to your Mac and ask ClarisWorks to graph it. Ah, but a problem arises! Although you measured the data precisely (to one and two decimal places), you don’t want to clutter the chart axes with tick-mark labels that have decimal points with zeros after them. Unfortunately, ClarisWorks doesn’t let you directly change the number format of tick-mark labels.

ClarisWorks copies the number format of tick-mark labels from the format of the first value it plots on each axis. So you could simply format the first cell of an axis’s data the way you want the axis’s tick-mark labels to appear. But this simple solution won’t do the trick if you need the spreadsheet to show the full precision of your data.

A trickier technique is to insert dummy spreadsheet cells that change the number format of tick-mark labels without affecting the plotted data, as shown in “Chart Number Formats.” First you insert a cell at the beginning of each range of cells plotted on your chart. In each inserted cell you enter a formula that gives the inserted cell the value of the next cell in the range (for example, A2=A3). Then you format the inserted cells as you want the tick-mark labels formatted. A chart that begins with the inserted cells will use them to establish the number format of the tick-mark labels.

Dan Kuchera
Winterloo, Iowa

StyleWriter Paper Size

TIP To simplify printing on custom-size pages with a StyleWriter I or II printer, you can modify the StyleWriter II driver with ResEdit 2.1.1 or later. For example, the following steps describe

continues

Trackpad Cornering

TIP The trackpad on the PowerBook 500 is wonderful, but sometimes I find it difficult to get to a corner quickly (to use the Apple menu or switch to another open application, for example). You can fool the trackpad into quickly moving the pointer to a corner of the screen. Simply move your thumb or index finger a short distance in the direction of the corner you seek, and then tap the pad with the next finger, an inch or so from where your first finger was moving. The trackpad thinks one finger covered the distance between the fingers instantaneously, and it jumps the pointer directly to the corner.

Matt Taylor
Beverly, Massachusetts

StyleWriter Paper Size

TIP To simplify printing on custom-size pages with a StyleWriter I or II printer, you can modify the StyleWriter II driver with ResEdit 2.1.1 or later. For example, the following steps describe

continues

Trackpad Cornering

TIP The trackpad on the PowerBook 500 is wonderful, but sometimes I find it difficult to get to a corner quickly (to use the Apple menu or switch to another open application, for example). You can fool the trackpad into quickly moving the pointer to a corner of the screen. Simply move your thumb or index finger a short distance in the direction of the corner you seek, and then tap the pad with the next finger, an inch or so from where your first finger was moving. The trackpad thinks one finger covered the distance between the fingers instantaneously, and it jumps the pointer directly to the corner.

Matt Taylor
Beverly, Massachusetts

StyleWriter Paper Size

TIP To simplify printing on custom-size pages with a StyleWriter I or II printer, you can modify the StyleWriter II driver with ResEdit 2.1.1 or later. For example, the following steps describe

continues

Trackpad Cornering

TIP The trackpad on the PowerBook 500 is wonderful, but sometimes I find it difficult to get to a corner quickly (to use the Apple menu or switch to another open application, for example). You can fool the trackpad into quickly moving the pointer to a corner of the screen. Simply move your thumb or index finger a short distance in the direction of the corner you seek, and then tap the pad with the next finger, an inch or so from where your first finger was moving. The trackpad thinks one finger covered the distance between the fingers instantaneously, and it jumps the pointer directly to the corner.

Matt Taylor
Beverly, Massachusetts

StyleWriter Paper Size

TIP To simplify printing on custom-size pages with a StyleWriter I or II printer, you can modify the StyleWriter II driver with ResEdit 2.1.1 or later. For example, the following steps describe

continues

Trackpad Cornering

TIP The trackpad on the PowerBook 500 is wonderful, but sometimes I find it difficult to get to a corner quickly (to use the Apple menu or switch to another open application, for example). You can fool the trackpad into quickly moving the pointer to a corner of the screen. Simply move your thumb or index finger a short distance in the direction of the corner you seek, and then tap the pad with the next finger, an inch or so from where your first finger was moving. The trackpad thinks one finger covered the distance between the fingers instantaneously, and it jumps the pointer directly to the corner.

Matt Taylor
Beverly, Massachusetts

StyleWriter Paper Size

TIP To simplify printing on custom-size pages with a StyleWriter I or II printer, you can modify the StyleWriter II driver with ResEdit 2.1.1 or later. For example, the following steps describe

continues
By now, you realize there are other high-resolution laser printer manufacturers in the main stream, but chances are, you don't know if they offer genuine Adobe PostScript. Well, just for the record, Bo knows!

Only XANTÉ offers Adobe PostScript on a large format, high-resolution laser printer. And, since true PostScript guarantees high performance, incredible print quality, and software compatibility—you know it's the only choice!

You can purchase the Accel-a-Writer 8200 with 600 x 600, 800 x 800, or even 1200 x 1200 dpi—it's your call. Halftones, fine-line text, and graphics are phenomenal. And now, with oversized capabilities (up to 25''), you can print high-quality full-bleed newsletters, CAD drawings, spreadsheets, and more! XANTÉ's Accel-a-Writer 8200 is the new leader in affordable high-resolution printing. Accept no substitutes.

- Adobe PostScript Level 2
  Guarantees superior quality, performance, and compatibility.
- High Resolution
  600 x 600, 800 x 800, or 1200 x 1200 dpi. HP-GL® emulation offers up to 1200 x 1200 dpi.
- NEW Oversized Format
  Print full-bleed 11'' x 17'' pages and custom size output up to 11.75'' x 25''.
- Simultaneous Macintosh/PC Printing
  LocalTalk®, serial and parallel interfacing. Ethernet is available.
- Faster Printing
  Incredibly fast printing, up to 16 pages-per-minute. Faster processing with a 35 MHz AMD 29030 RISC Processor.
- Automatic Emulation Switching
  Selects printer language between Adobe PostScript and HP PCL® 5.

So, before you buy a high-resolution laser printer, look for the Adobe PostScript logo, then call XANTÉ.

1-800-926-8839 ext. 2110
Dealers call ext. 2114
Fax 205-476-9421
MasterCard/Visa/American Express/Discove accepted.
Payroll For Quicken?

NOW! $49*

Aatrix PayCheck

Information or Orders 800-426-0854

* $49 price is guaranteed by calling Aatrix directly
• Trademarks are property of their respective manufacturers.

Aatrix Software...a Macintosh payroll developer since 1985. There isn’t a payroll situation Aatrix can’t handle! In fact we’re so sure that you’ll love it, we have a 30 day money back policy.

Custom Paper Size To customize the Page Size pop-up menu in the StyleWriter II’s Page Setup command, use ResEdit to modify the StyleWriter II driver’s PREC resource whose ID is 3.

3. Press tab until you highlight the field labeled Bn 3 Height. Enter the new page height in inches multiplied by 120—810 in this example (6.75 times 120).

4. Press tab again, highlighting Bn 3 Width, and enter the new page width multiplied by 120—450 in this case (3.75 times 120).

5. Press tab again until you highlight the field that is labeled Bn 3 Name, and enter Memo (as shown in “Custom Paper Size”).

6. Save your changes and quit ResEdit. Make sure the edited StyleWriter II driver is in the Extensions folder.

If the edited StyleWriter II driver is selected in the Chooser, the Page Setup command lists the custom page size as an option.

Fiorin Neumann
Toronto, Ontario, Canada

AV VRAM Correction

While using the TV video-input or output ports of a Quadra 940AV with 2MB of VRAM, you can set the Monitors control panel to display thousands of colors (16 bits per pixel) on a monitor whose resolution is 832 by 642 or less. Tyson Boucher of Oregon City, Oregon, noticed that last November’s Quick Tips incorrectly stated you could display at most 256 colors under those conditions. With an NTSC monitor in flicker-free mode you can set Monitors to a maximum of 256 colors (8 bits per pixel), and live video is not available.

We pay from $25 to $100 for tips published here. Send questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to Quick Tips, Lon Poole, at the address listed in “How to Contact Macworld” at the front of the magazine (include your address and phone number). All published submissions become the property of Macworld. Due to the high volume of mail received, we’re unable to provide personal responses.


Information or Orders 800-426-0854

AV Chart Number Formats Although cells A3:B6 are formatted with decimal places left, the tick-mark labels on the x-y scatter chart (above right) are not cluttered with decimal points and post-decimal zeros; this chart plots cells A2:B2, so its labels take their format from cells A2 and B2. Those cells don’t seem to be plotted because their formulas (A2=A3 and B2=B3) make them duplicate other plotted values. The above left chart plots A3:B6, so its tick-mark labels take their format from A3 and B3.
PRODIGY lets you speak your mind on e-mail, PRODIGY Chat and hundreds of bulletin boards! Access Internet Newsgroups.

PRODIGY® for Mac®.
It's easy. It's better.
Get online today.

New Macintosh® Features.

Use New Mac features like resizable windows, photos and sound, and the ability to access the desktop and other applications! Exchange ideas on Macintosh bulletin boards and more.

With PRODIGY you stay informed, so you stay ahead. From the latest news and sports from ESPNET to stock quotes and a regularly updated encyclopedia, PRODIGY keeps you plugged into a world that never stops moving.

Today's Online Service.

Get 10 FREE hours to try PRODIGY. Call 1-800-PRODIGY, ext. 278

Order your FREE PRODIGY software and get 10 FREE hours the first month. Of course, your first month's membership is FREE.

Get Live on PRODIGY.


Usage beyond trial offer will result in extra fees. 10 free hours may not apply to certain features. Some features charged at surcharges. Credit card may be required. Price charges may apply. Limited time offer subject to change. PRODIGY is a registered trademark of Prodigy Services Company. Mac and Macintosh are trademarks of Apple Computer, Inc. © 1994 Prodigy Services Company. All Rights Reserved.

Circle 75 on reader service card.
Why Switch?

SING THE BANDWIDTH BLUES? Switches may be just what you need to get your Ethernet network humming again. However, only a handful of vendors have designed Ethernet switches specifically for Macintosh workgroups. Two of the most recent entrants in this market are Lantronix and Tribe Computer Works.

Rather than just repeating the signal the way a hub does, an Ethernet switch divides a large, busy network into smaller segments or workgroups. Because it isolates traffic to within individual workgroups, a switch reduces the traffic flooding the entire network.

Without a switch, all the users on a network share a single 10-Mbps pipe; with a switch, each workgroup enjoys its own dedicated 10 Mbps.

That kind of extra bandwidth is especially welcome to users in a Macintosh environment, where heavy peer-to-peer traffic from System 7 file-sharing can bog down a network's throughput.

Lantronix recently started shipping its LSB4, a RISC-based switch that connects up to four Ethernet workgroups. The LSB4 can be managed within a workgroup from a locally attached Macintosh or PC, or centrally from a third-party management system based on the Simple Network Management Protocol (SNMP). The 4-port LSB4 costs $1995. To accommodate larger workgroups, Lantronix expects to ship an 8-port switch in December and a 16-port version in the first quarter of 1995.

From Tribe Computer Works, the maker of two popular LocalTalk switches, comes a new 5-port rack-mountable Ethernet switch called the TribeSwitch EN, also targeted at traffic-intensive Macintosh workgroups.

Tribe expects to ship two TribeSwitch EN versions in November: one, with SNMP-based management software that runs on a Macintosh, costs $2495; the second, without SNMP capabilities, is priced at $1995.

The Lantronix LSB4 uses a switching technique called store-and-forward, while Tribe's TribeSwitch EN uses a cut-through design. Store-and-forward switches read an entire Ethernet packet and check it for errors before moving it to its destination port. Cut-through switches read only a portion of the packet before sending it to its destination, a technique that can be faster but does not filter out bad packets.

A third vendor, Sonic Systems, also offers a Mac-manageable Ethernet workgroup switch. The EtherSwitch, a 5-port cut-through switch, costs $2490 (see Networks news, November 1994).

Lantronix, 714/453-3900; Sonic Systems, 408/736-1900; Tribe Computer Works, 510/814-3900.—MARTHA STRIZICH

Attachmate Cuts Mac-to-Host Cost

ATTACHMATE'S EXTRA FOR MACINTOSH 2.0 costs less than its predecessor. The new version of this Mac-to-mainframe software, which started shipping in October, supports AppleScript, NetWare for SAA and TN3270, and corresponding FTP (file-transfer protocol) file transfers. New tools simplify batch-file transfers and make it possible to do on-screen formatting of 3277 host print jobs.

With version 2.0, the list price drops about 30 percent to a competitive $295 (compare DCA's IRMA Workstation for Macintosh 4.0 listing at $425), with quantity discounts available for the first time. Attachmate Corporation, 206/644-4010.—NANCY E. DUNN
Cayman Regroups

REMOTE ACCESS. CROSS PLATFORM. Multiprotocol. Talk to Cayman's CEO, Brad Noblet, and you'll hear the same themes that rival Shiva's CEO, Dan Schwinn, so succinctly sounded several years ago when Apple (then AppleTalk) Remote Access debuted and both router companies unveiled ARA servers. Since then Shiva has captured a large share of the remote-access server market. Cayman, known for its AppleTalk tunneling technology, has been less visible, while recently laying off a third of its workforce and recharting its course.

A Bird's-eye View

THE AG GROUP WILL FINALLY DELIVER its Skyline software (first announced two years ago) for saving and analyzing Ethernet network-traffic patterns.

Skyline consists of two parts, which communicate via Apple events: a graphical display console (called Skyline) running on a dedicated Mac, and data-collection software (called a Satellite) running on a Macintosh, with a dedicated Ethernet card, residing on each remote network segment. Skyline/Satellite, sold either in a 680X0 or a Power Mac version, costs $795 for one monitor and one remote agent; an additional five remote agents cost $1195. The Ethernet software is scheduled to ship in November. Later versions will support LocalTalk and Token Ring.

Skyline constantly gathers time-indexed traffic data, providing network managers with baseline network data as well as information for troubleshooting. It can send alerts if thresholds are exceeded. Data collected includes all Ethernet traffic and most protocol information. For example, when two network nodes communicate, Skyline tracks source and destination addresses, protocol type, and errors. AG Group, 510/937-7900.—E.D.

Novel says Cayman will continue to leverage its routing, remote access, and Macintosh expertise; however, it will devote more development resources to Windows and DOS—roughly splitting its engineering staff between Macintosh and PC projects. It's also focusing on IPX and TCP/IP development. In further efforts to reach beyond its AppleTalk roots, Cayman is working on WAN protocols such as frame relay, ISDN, and SMDS and will make product announcements early in 1995, according to Tom Pincince, Cayman's vice president of engineering and product marketing.

In continuing to support its Macintosh product lines, Cayman expects to release software upgrades for its GatorRoute iR router, GatorStar iHR hub/router, and the GatorAccess MP remote-access server in the first quarter of 1995. The GatorRoute iR and the GatorStar iHR, which currently tunnel AppleTalk and IPX, will run these protocols over PPP, in addition to supporting TCP/IP. An upgrade will cost $199. The Gator AccessMP, which currently supports TCP/IP and IPX, will support AppleTalk running over PPP. The upgrade will cost $495. Cayman, 617/932-1100.—E.D.

ISDN Modems

NOW THAT MORE COMPANIES—and even well-connected individuals—are opting for ISDN (Integrated Services Digital Network) phone service, digital modems designed for ISDN communications are showing up.

AccessWorks Communications is shipping two models of its QuickAccess ISDN digital modem. Both come with an NT1 port and built-in asynchronous-to-synchronous PPP software conversion. The QuickAccess Remote model ($499) has one 115.2-Kbps data port. The QuickAccess Gateway model ($979) boasts two 115.2-Kbps data ports. If attached to a file server or communications server, a QuickAccess modem can be shared over a network.

Due to the end of 1994, Motorola's Hybrid Modem TA 200 (expected street price $700 to $900) will handle ISDN along with conventional analog 14.4-Kbps V.32bis data and fax communications. When dialing out, users will select which kind of transmission, but the modem will automatically select the correct mode for incoming calls. The HMTA has NT1 built in; it operates as fast as 115.6 Kbps for asynchronous sessions and 64 Kbps for synchronous sessions. AccessWorks Communications, 908/888-4570; Motorola, 205/430-8000.—NANCY E. DUNN

X Window for Mac Catches Up

SPEEDY POWER MACS AND native versions of X server software now make the Mac a good alternative to a dedicated X Window terminal for users who need access to applications on a host computer. Accordingly, White Pine Software, the maker of the highly regarded eXodus line of X Window server software, has licensed its X server software to The Wollongong Group, which will market it as PathWay X Server. The licensed software is based on the Power Mac version of eXodus, which supports version 11 release 5 of the X Window System standard. PathWay X Server is scheduled to ship in December.

Tenon Intersystems also has begun shipping a Power Mac version of its X Software 3.0 ($350) for Macintosh and Power Mac, which runs on top of Tenon's MachTen Unix operating system for the Mac ($495 or $695). Tenon says X Software 3.0 gives SPARC-class performance on a Mac Centris 650.

Last summer Apple Computer and AGE Logic announced plans to work together to produce X server software for the Mac. Apple expects the first fruits of the collaboration—AGE's X server—Software for Mac; and an upgrade to Apple's server, MacX—to ship early in 1995 (prices not set).

AGE Logic, 619/455-8600; Apple Computer, 408/996-1010; Tenon Inter-systems, 805/963-6983; White Pine Software, 603/886-9050; Wollongong Group, 415/962-7100.—NANCY E. DUNN
Let Us Demonstrate How Complicated Our Macintosh Ethernet Products Are To Install.

The Most Complete Line Of Reliable, Easy-To-Install Macintosh Ethernet Solutions.

To many, the idea of setting up an Ethernet network ranks right up there with performing brain surgery. The problem is unnecessary complexity. The solution is Dayna.

Our full line of hubs, print servers, transceivers and adapters are virtually plug and play. This allows just about anyone to get a Macintosh Ethernet network up and running. Whether it’s an EasyNet transceiver they’re installing, or an entire network of products.

Dayna Products Are Inexpensively Priced And Guaranteed For Life.

Competitive pricing also makes our products easy for customers to buy. And because of our commitment to designing simple yet reliable products, they require little maintenance. Of course, if there are problems, customers will be covered with our lifetime warranty and 24-hour repair/replacement program.

All of which demonstrates the easiest thing you can do with Macintosh Ethernet products from Dayna. Sell them. For More Information, call 800-443-2962, ext.812.

FAX Response:
801-269-7340, Doc. #7203

Dayna®
Wide-Area Wireless

LAST MONTH I LOOKED AT PREMISES wireless—radio and infrared links that work within a room or a building. This month I take up wide-area wireless communications that operate across a city or across the country. Today four very different kinds of wide-area wireless data services are in operation or pilot testing.

Data over Analog Cellular
The most familiar route to wireless data is over AMPS (Analog Mobile Phone System), the standard analog cellular phone system. You can use a conventional (wireline) modem; instead of a phone jack, you connect the modem to a cellular phone with a data jack through an interface box such as the $249.95 Cellular/Data Link from ORA Electronics (818/772-2700). The ORA box works with specific Mitsubishi, Motorola, NEC, Oki, and Panasonic cellular phones; if you switch between different phone types, you’ll need a $69 adapter cable. Some phone vendors, such as Motorola, sell interface boxes for their own phones.

Most wireline modems have no special provisions for cellular telephone calls and either work slowly or not at all, running as an ordinary V.32 modem. You should connect while stationary and avoid peak call times—such as late afternoons—when the signal quality degrades. For best results with cellular calls, Motorola engineers suggest reconfiguring your modem:

• Make sure the software runs standard V.42 error correction.
• Set register S7—how long the modem will wait for a carrier tone during call setup—to 90 seconds (the default is usually 50 seconds) because cellular calls can take a long time to connect.
• Set register S10—how long the modem will overlook a loss of the carrier signal—to 5 seconds or more (default is usually 1.4 seconds) so the modem won’t drop the call during a bandwidth from one cell site to another, which may occur even when you aren’t moving.
• Lower the transmit level. Cellular phones make conversations as loud as possible to overcome noise, which clips (distorts) modem signals. Some modems support leased-line operation with an &L1 command that cuts the transmit level by 3 decibels (the modem will still work on dial-up calls with the leased-line setting, which is intended for a special kind of phone line). Many modems lack any transmit-level control.

Even after you adjust the modem, a cellular connection may not work well because the modem and cellular phone cannot work together optimally through a simple RJ-11 cable; a throughput of 200 to 300 characters per second (cps) is typical. (I use cps rather than bits per second, or bps, to emphasize throughput, which is often much slower than the apparent connection speed.) Two modem-and-cellular-phone combinations have been designed to handle data. The $1595 AirCommunicator from Air Communications (408/749-9883, 800/247-3282) is a rather large cellular phone with a built-in modem. The size allows for modem circuitry and a battery for two-hour talk time. Motorola UDS (205/430-8000, 800/351-2369) offers external and PCMCIA modems specifically designed to work with its Flip Phones. The AirCommunicator and Motorola products are designed to increase speed and reduce the error rate by controlling the signal levels and closely monitoring the data exchange. Both products can work effectively, but their performance necessarily varies with conditions. (Each can operate as a wireline modem as well.)

A few modems go a step further by incorporating a special cellular error-correction protocol designed for radio communication. AT&T ETC (Enhanced Throughput Cellular) provides throughput typically in the 700-to-1100-cps range, generally 20 to 30 percent faster than the older Microcom MNP-10 protocol. The rarely found ZyCellular protocol outperforms ETC in several tests. Naturally, all these protocols are incompatible. Both sending and receiving modems must use the same protocol; otherwise the modems will revert to V.42 operation or even basic V.32 without error correction. Very few receiving modems have cellular protocols.

There is a way around this problem. Some cellular services have installed modem pools in their cellular network. continues
Searching for new ways to pour on your creativity? Fractal Design Painter® 3.0 is filled with a whole new lineup of outstanding features with something really cool for everyone!

Painter’s award-winning heritage of advanced Natural-Media® painting and drawing tools have been combined with the revolutionary multiple floating selection capabilities originally pioneered with PainterX2™ — all in one spectacular product!

MULTIMEDIA GETS ANIMATED!

If you’ve been waiting for professional-quality desktop software to create cutting-edge, frame-by-frame animation for multimedia or video, Painter 3.0 is sure to get your reels rolling! All of the really cool features and special effects in Painter 3.0 can be easily applied to imported QuickTime® and Video for Windows™ files. Edit-out objects in individual frames — then retouch your movie frames with any of the countless brush and texture effects available. You can rotoscope your images as well as apply Painter sessions across a series of frames!

CREATE AN ENTIRELY NEW LOOK!

Easy-to-use Painter 3.0 offers yet another new way to paint or illustrate digitally with a wide variety of true-to-tradition realistic brushes that actually simulate loading a brush with multiple colors of paint. These great new brushes give your work a dynamic and expressive quality that you can control down to the smallest bristle!

A MYRIAD OF OTHER NEW FEATURES

Added sassy new features in Painter 3.0 include: a new gradient composer; selective masking & color adjustment tools; a bezier frisket tool; automatic drop shadows; image warping; canvas size adjustment and page rotation for ergonomic tablet use. And naturally, new Painter 3.0 is available for Windows® and Macintosh® platforms. But unlike other Mac applications, users get Painter 3.0 for Macintosh and Power Macintosh™ together for the same low upgrade price! So pour it on, before time runs out!

Special Limited-Time Upgrade Price!

ONLY $149

To Order or for More Information
800-297-COOL

Fractal Design

NOW SHIPPING

Circle 190 on reader service card.
When you dial data calls with a "DATA (*3282) prefix, the cellular system directs your call to a modem in its pool. This modem acts as an intermediary; it presents your portable modem with a cellular protocol and presents the wireless modem you’re calling with a standard V.42 protocol. Primary Access Corporation, the main supplier of modem pool software, supports ETC and MNP-10. Some cellular providers charge for access to the modem pool. Even if you aren’t using a cellular protocol, you may get faster throughput by using the modem pool, whose wired connections are designed for data; the rest of the cellular network is optimized for voice.

The Primary Access modem pools also support TX-CEL, a modem-enhancement process from Celeritas Technologies that works in conjunction with a cellular protocol or with plain V.42. Only a few modems have TX-CEL installed.

Most cellular providers will eventually install modem pools; for now you may need to switch cellular services in some areas. A few Public Data Network companies—which provide connection facilities for online services—have installed modems with a cellular protocol.

Most modems sold for portable computers lack a cellular protocol, but more are adding the feature. The $199 Spectracom 1414iPB with MNP-10 from Bay Connection (408/270-8070) is one of the few that fits inside a PowerBook (100 series only). Microcom (617/551-1000, 800/822-8224) and Racal-Datacom (305/846-4811, 800/722-2555) offer modems with MNP-10; AT&T Paradyne (813/530-2000, 800/482-3333) and Sierra Wireless (see discussion of Cellular Digital Packet Data below) offer modems with ETC. Most of these companies sell both external portable and desktop modems; many have or plan PCMCIA versions that may be compatible with 500-series PowerBooks.

Cellular calls cost 25 to 75 cents a minute, plus roaming fees if you’re outside your normal service area. A megabyte of data costs $5 to $25 to transfer, compared with less than a dollar or even nothing for a local wireline data call. (Long-distance and online charges, if any, are not included in my cost estimates.) You pay as long as you are connected, whether or not you are actually sending or receiving data. Many users prepare their work in advance, connect for the minimum time possible, and get off. Analog cellular can work effectively as an adjunct to the wireline modem on your office computer since you can connect to the same services as you travel and you need only one mail-continues

---

You think she’s finishing the proposal. She thinks you are. Surprise, neither one of you are. And it’s 4 hours before the grant committee meets. Let’s see, 16 new pages of data, 11 article reviews, 3,600 words sent by your partners in Istanbul. Who can type faster? Aaargh! What now?

---

Keep the Flame Alive

The lamp of freedom and the light of learning can take many forms.

Your company’s used computers, laser printers, modems, and other surplus equipment can help empower young minds in America, and advance the development of emerging democracies around the world.

The East West Foundation takes your surplus or used equipment and distributes it to American schools and charities and to democratic and educational institutions in Eastern Europe, Africa, Asia, the Commonwealth of Independent States, and Latin America—wherever it can make a difference. And it does make a difference.

Donating used or overstock computer equipment to the East West Foundation can make a difference to you, too—at the bottom line. Because all donations are tax-deductible. And all types of computer equipment are welcome.

To arrange for a donation or for more information, please call:

EastWestFoundation
49 Temple Place
Boston, MA 02111
(617) 542-1234
Fax (617) 542-3333

Keep the Flame Alive

The lamp of freedom and the light of learning can take many forms.

Your company’s used computers, laser printers, modems, and other surplus equipment can help empower young minds in America, and advance the development of emerging democracies around the world.

The East West Foundation takes your surplus or used equipment and distributes it to American schools and charities and to democratic and educational institutions in Eastern Europe, Africa, Asia, the Commonwealth of Independent States, and Latin America—wherever it can make a difference. And it does make a difference.

Donating used or overstock computer equipment to the East West Foundation can make a difference to you, too—at the bottom line. Because all donations are tax-deductible. And all types of computer equipment are welcome.

To arrange for a donation or for more information, please call:

EastWestFoundation
49 Temple Place
Boston, MA 02111
(617) 542-1234
Fax (617) 542-3333

---

MACWORLD January 1995 151
It Makes People Look Professional.
It Makes People Look Smart.
It Makes People Look.

It's a Proxima Desktop Projector™. It connects to your computer and projects large-screen images. Anything from simple graphics to full-motion multimedia presentations. And yes, you need one. Because with it, you can communicate more effectively and more efficiently than ever before.

But that's not all. Proxima's Desktop Projector is easy to use—just plug it in like a monitor. It's easy to carry around—it even fits under an airplane seat. And it puts you in command. Our unique Cyclops™ interactive pointer system works like a cordless mouse to give you total control of your software from anywhere in the room. Any software, any presentation, any platform.

Suddenly, your presentations are more impressive. Your points more memorable. Your workgroups more productive. All because you have a Proxima Desktop Projector.

To receive your free CD-ROM or information on our complete line of Proxima Desktop Projection™ products, call us today at 1-800-447-7694.

PROXIMA®
THE DESKTOP PROJECTION COMPANY
box. You can usually check a mailbox in a minute or two, but you have no idea when a message is pending unless you dial in, a major limitation of all dial-up systems.

**Packet Radio**

Unlike AMPS (the only major wireless service that charges by the minute), most services break data down into packets and charge by the packet. Since you are charged only for the packets of data you send and receive, there is no cost penalty for staying connected for hours at a time. Thus you can read and write your E-mail without disconnecting. While connected, you get your mail immediately. The radio modems for the packet systems are a bit smaller than a cordless phone and weigh about 12 ounces; for travel, add another pound for the AC adapter/charger.

RadioMail (415/286-7800, 800/597-6245) operates an E-mail system that uses RAM Mobile Data or Ardis, two wireless services in the 900MHz band that are available to 90 percent of the U.S. population. To use one of the services, you attach an external packet radio modem ($400 to $800) to your PowerBook's serial port and run the E-mail program Eudora. The typical throughput is 300 cps to 600 cps. With RadioMail, you have an Internet address for mail but no other Internet access; you cannot connect to any online services. You can send faxes—plain text only—through a gateway. You can exchange files with Internet addresses that can handle the BINHEX format, which is easy if your correspondent also uses Eudora or a similar program but clumsy if your correspondent must process a BINHEX file manually. The maximum message size is 10K (you can request a maximum of 64K). Longer files will be truncated; thus you must segment them before going to RadioMail.

The system is mainly designed for short text messages. After a setup fee of $99, RadioMail charges $89 a month for unlimited messages over RAM Mobile Data. Over Ardis, RadioMail bases the charge on message units of 238 characters each; $59 a month includes 200 message units, and each additional message unit costs another 28 cents, so a megabyte costs $1233 to send.

The new WyndMail network (805/547-6460, 800/549-6000) also uses RAM Mobile Data and the same portable modem as RadioMail. Wynd charges $49 (50K to $139 (unlimited) a month and promises integration with paging and voice mail. Wynd's well-designed software does not truncate long messages or files. WyndMail was scheduled for commercial operation by the end of 1994.

It's 3:50 pm. You've just finished the final revision to the sales plan. Then the phone rings. “We're sending over 10 new pages of competitive info.” Click.

Good thing they lock the windows on this floor. You have to get it into the plan by the end of the day. What now?
Cellular Digital Packet Data

The third class of wireless service, Cellular Digital Packet Data (CDPD) operates in the cellular phone band but works very differently from a dial-up cellular call. Instead of maintaining a continuous carrier like a wireline or AMPS modem, a CDPD modem sends and receives only when necessary, piggybacking all the data on the existing cellular phone system by using the quiet time between ordinary cellular calls (it does not use silent periods within a call). CDPD hops from one channel to another automatically. When you establish a CDPD link, your modem registers itself with the nearest cellular transmitter. Every minute or two, the transmitter broadcasts a list of modems it has messages for; modems that have no pending messages can save power by going into sleep mode (like a PowerBook) until the next broadcast. Therefore, a CDPD modem appears to be connected continuously even though it is asleep most of the time. The peak nominal transmission speed is 19.2 Kbps; current tests suggest that the data throughput is about 800 cps in typical usage.

A CDPD link connects your computer to a TCP/IP network via the Internet. You can browse the Internet and receive your own files if your company has an Internet gateway to its computers. CDPD should be available in most areas by late 1995 or early 1996.

As with packet radio, CDPD pricing encourages short messages. Bell Atlantic charges $24 a month for six 750-character messages a day. Depending on the carrier, a 1MB file transfer costs $5 to $170. Many users may prefer CDPD for interactive messaging but switch to an AMPS connection for long files.

Metricom's Ricochet

If you find the pricing for wireless services too high, consider the dark horse: the Ricochet packet radio system from Metricom (408/399-8200, 800/556-6123). Operating with spread-spectrum radio modems in the 902MHz to 928MHz frequency band, Metricom promises high speed at a low cost. After a $95 activation fee, unlimited use at 9600 bps costs $9.95 per month, 19.2 Kbps costs $29.95 per month, and unrestricted speed costs $79.95 a month. The modem sells for $495 and supports nominal speeds from 2400 bps to 115.2 Kbps; Metricom says
the maximum throughput is typically 2000 to 3000 cps. The connection can be to another computer with a Ricochet modem (in which case the data does not pass through Metricom's network), to a corporate network, to the Internet via gateways ($15 per month), and to dial-up online services through Metricom's modems ($5 per month). Typical monthly bills should run $30 to $40 for unlimited service. Just how well Ricochet will work over larger areas with many users and in the presence of other radio traffic in its unlicensed band remains to be seen. Metricom's plans to introduce service in major cities by the end of 1995 will nevertheless provide much less geographic coverage than the competing services.

Other Wireless Options
If you just need to send or receive a very short message such as a phone number, a pager is the least expensive alternative; many pager services can be reached by modem with software such as AlphaPage ($89) from Information Radio Technology (216/531-1313).

Other digital services are in the offing. The digital voice calls that the cellular providers are now promoting cannot be used for data because the coding methods are designed exclusively for voice. In the future—at least several years away—a dial-up digital service for data over cellular frequencies could operate at fairly high speeds. Recently the FCC has reassigned and auctioned several other frequency bands that could provide data service.

Since most wireless users will also have a wired connection—either through a corporate network or a wireline modem—they'll have to cope with multiple mail addresses and hassle with forwarding messages. A truly integrated system would consolidate all E-mail, pager, fax, and voice-mail messages through a single mailbox. You could retrieve all messages with any available device—computer, pager, fax machine, or voice telephone. For example, if you called in by telephone, you could listen to your E-mail messages. Such consolidation is a long way off, although WyndMail is taking the first steps.

In all the confusion, one thing remains clear: Though sometimes cumbersome, cables will always provide a simpler, faster, and cheaper connection. Wireless will remain an option for people who are willing to spend money—sometimes lots of it—for convenience.

CARY LU is a Macworld contributing editor who covers mobile- and remote-computing issues in this monthly column. He can be reached at carylu@eworld.com.

Get OmniPage OCR software now.
It's easy to install and use. It's fast.
And it enables you to scan in new information with no retyping. It's simply the best text recognition software. Try the OmniPage family for yourself at an authorized Caere dealer today. Or call 800-535-SCAN. OmniPage from Caere. The recognized leader in OCR software.

omniPAGE

A Brilliant Deduction™
Want to help the universe of nonprofit agencies while earning heavenly tax deductions of up to twice cost? Discover product giving through Gifts In Kind America.*

Our free service—customized product donation management—makes it easy for companies to donate computer hardware, software, and office equipment...items that can astronomically improve the productivity of charities supporting health care, housing, training, emergency relief, and more.

Help your company become a shining star while earning valuable tax deductions.

Product giving—the perfect solution!
For more information on how your company can get involved, contact:

700 North Fairfax Street
Suite 300
Alexandria, VA 22314
703-836-2121

Galileo Galilei, Astronomer and Physicist, 1564-1642

Gifts In Kind America...for more than a decade, helping hundreds of leading companies contribute half a billion dollars in products to tens of thousands of charities.
For Senior-level executives in companies that develop, produce, or sell Macintosh software, hardware, or peripherals.

MACWORLD Expo announces a unique opportunity to strategize your Macintosh future and maximize your investment of time, resources, and capital.

The Industry Interchange at MACWORLD Expo/San Francisco will bring leading industry analysts together with key Apple representatives to discuss where the Macintosh industry is heading and how it will impact your business.

Attendees will:
- interface directly with Apple and key industry analysts
- hear the latest updates on industry trends
- exchange information and ideas on crucial issues
- find out what's likely to happen in the future
- pinpoint new areas for increasing your Macintosh profits.

These "trade talks" will be produced by MACWORLD Expo, and sponsored by Apple Computer and Macworld Magazine.

For a detailed brochure, call 800-945-3313.
SEE THE WORLD IN JUST THREE DAYS

Hit all the coolest stops at Macworld Expo January 4-7 by jumping on board Macworld’s 1995 VIP World Tour. The VIP Tour will navigate you through the world of the latest Macintosh hardware and software faster than you can say Phineas Fogg, and that’s not all! Your 1995 VIP World Tour Passport is also a game card. Simply visit ten stops on the VIP Tour and you could win printers, scanners, CD-ROMs, software, subscriptions and more!

Fill out the information below and fax it back to us.

We’ll send you more information on how to participate.

Which products are you interested in?

- DTP
- Graphics
- Modems
- Integrated
- Printers
- Monitors
- Spreadsheets
- Other

- CD-ROM
- Utilities
- Database
- Disk Drives
- Scanners
- Word Processing
- Other

Do you use a Power Mac?

- Yes
- No

Will you purchase or upgrade to a Power Mac in the next 12 months?

- Yes
- No

- Yes, I will be attending Macworld Expo San Francisco
- Sorry, I can’t attend but send me information anyway

Name

Mailing Address

Phone

Fax

Company

Title

RESPOND BY DECEMBER 15 to Macworld VIP World Tour, 501 Second Street, San Francisco, CA 94107 or fax to (415) 442-0766
Buy one, get eight free.

Finally, all the business graphics tools you need in one integrated solution: ClarisImpact.

Why buy your graphics programs one by one when you can get them all in one? New ClarisImpact™ software lets you automatically create timelines, calendars, flow charts, data charts, and org. charts, or draw free-form graphics—all with one consistent interface, all in just minutes. And it's the only solution that has integrated presentation and word processing capabilities that let you combine your graphics with text without leaving your document.

Best of all, ClarisImpact and its built-in native Power Macintosh version can be yours for a special introductory suggested price of just $149.*

See it today at your Claris dealer. Or call us for a free demo.

For a free demo disk call 1 800 544 8554 ext. 348. Then take advantage of the $149* introductory price offer!

Simply powerful software™.
THE DESKTOP CRITIC
BY DAVID POGUE

CPU → TV/VCR
Getting the Mac's picture on TV for under $500

There are more than 100 converter boxes and boards available for the Mac. Our price cutoff was $500. I discovered that these gadgets are amazingly alike. All are about the shape of a romance paperback. When hooked up, they all require wires trailing off to your Mac, TV, and wall outlet. Except as noted below, every box has a jack for a monitor, too, so you can have it and the TV working at the same time. Unfortunately, for some dumb reason, said jack accommodates only IBM-style monitors.

I tested six kinds of images: windows and menus; big, bold, colorful type, as in a Mac slide show; QuickTime movies; 24-bit Photoshop photos; typing in a word processor; and computer-generated fractal graphics. Note that each converter lets you connect two kinds of equipment: the composite type (normal TVs and VCRs) and the S-Video type (expensive TVs and VCRs, such as Hi-8 and S-VHS). The color and clarity of the S-Video jack were judged to be about 50 percent better than composite by a panel of chrominance experts (OK, a few friends in my living room).

L-TV Portable
I admired this unit's compact, PowerBook-colored design, the plain-English instructions, and the DIP switches that adjust the picture's position and size on the screen. Unfortunately, right out of the box, the L-TV produced a dark and muddy picture ($229.99; Focus Enhancements, 617/938-8088).

That's when I discovered the importance of the brightness knob. Turning this tiny dial (with the included screwdriver) made a huge difference in picture quality. What had been drab and dark became bright and beautiful. That's how I learned that a brightness dial is one of the most important bells and whistles you can shop for—and I wound up admiring the L-TV all the more.

Note, by the way, that the L-TV comes with an optional system extension called Squeeze. It gives the Mac a slightly smaller desktop, nudging your icons and menu bar inward, to compensate for the overscan problem; it works great. Alas, Squeeze crashess System 7.5—even the updated version that Focus sent me upon request. (This is true of the similar software included with other converter boxes, too.) On the other hand, Focus does offer a toll-free help line. And get this: it is available seven days a week (and 12 hours each weekday). Whatever happened to that kind of service?

P.S.—At the last minute, I checked out the new L-TV Portable Pro ($299). The extra $70 gains you a full-fledged Mac monitor jack instead of the irrelevant IBM one. The Pro supposedly works with PAL (European) TV sets, too.

Mac DisplayLink
What a clever concept: design a converter box with a little compartment that houses its own cables! Unfortunately, the Mac DisplayLink is otherwise a disappointment (Display Tech, 510/676-9362). The manual writers need a Mac lesson or two—for starters, there's no

HERE'S ONLY ONE WAY TO protest the mindless junk on TV these days, and that's to replace it with some mindless junk of your own. Any home-made QuickTime flick or Adobe Photoshop file is certainly more deserving to be on the boob tube than this season's network crud. Heck, I can even think of a spreadsheet or two I'd rather watch.

Getting the Mac's picture on TV is an even more tantalizing prospect if you make Mac-based presentations. When your audience is too big to crowd around a PowerBook but too small to merit a pricey projector (see "Portable Presenters," in this issue), a TV set is the perfect visual aid.

Alas, when it comes to the Mac, television has, shall we say, an image problem. Several problems, really. For example, the picture on a TV is created by two rapidly alternating sets of scan lines; a Mac screen is painted in one continuous pass. As a result, whenever the Mac displays horizontal lines on a TV screen, they flicker and jitter like they're being electrocuted. Unfortunately, the Mac interface is literally littered with lines, such as the stripes in a window's title bar. Another dilemma: to ensure that you get a full edge-to-edge viewing experience, a TV's electron gun is deliberately designed to overscan the glass screen (that is, to enlarge the picture so that the edges get clipped off). On a Mac, of course, lots of important stuff appears along those edges—your menu bar, for example.

Therefore, if you want to make TV-based presentations, or play video games on the family TV, or record your QuickTime movies onto the VCR, you have to buy a specialized converter box.

Good news: Mac-to-TV converters cost only a third what they did two years ago, and they produce a much better picture. Bad news: a TV is designed to be watched from across the room, not up close like a Mac monitor. No matter what converter you buy, you can't use a TV as a monitor; 12-point type is usually too indistinct to read.

NEW L-TV PORTABLE PRO

I admired this unit's compact, PowerBook-colored design, the plain-English instructions, and the DIP switches that adjust the picture's position and size on the screen. Unfortunately, right out of the box, the L-TV produced a dark and muddy picture ($229.99; Focus Enhancements, 617/938-8088).

That's when I discovered the importance of the brightness knob. Turning this tiny dial (with the included screwdriver) made a huge difference in picture quality. What had been drab and dark became bright and beautiful. That's how I learned that a brightness dial is one of the most important bells and whistles you can shop for—and I wound up admiring the L-TV all the more.

Note, by the way, that the L-TV comes with an optional system extension called Squeeze. It gives the Mac a slightly smaller desktop, nudging your icons and menu bar inward, to compensate for the overscan problem; it works great. Alas, Squeeze crashes System 7.5—even the updated version that Focus sent me upon request. (This is true of the similar software included with other converter boxes, too.) On the other hand, Focus does offer a toll-free help line. And get this: it is available seven days a week (and 12 hours each weekday). Whatever happened to that kind of service?

P.S.—At the last minute, I checked out the new L-TV Portable Pro ($299). The extra $70 gains you a full-fledged Mac monitor jack instead of the irrelevant IBM one. The Pro supposedly works with PAL (European) TV sets, too.

Mac DisplayLink
What a clever concept: design a converter box with a little compartment that houses its own cables! Unfortunately, the Mac DisplayLink is otherwise a disappointment (Display Tech, 510/676-9362). The manual writers need a Mac lesson or two—for starters, there's no

MACWORLD January 1995 159
THE DESKTOP CRITIC

Restart key on the keyboard, folks.

But that's quibbling. The real problem is that the DisplayLink offers no antiflicker feature except on certain Macs—the Quadra 700, 900, 950, and Macs for which you've purchased an Apple 8*24 video card—and then only in 256 colors. On all other Macs, images containing thin horizontal lines are simply unwatchable. For much less than this converter's $3+$ cost, you could buy a unit that works with all video-ready Mac models.

TV Converter Features

<table>
<thead>
<tr>
<th>L-TV</th>
<th>MediNet Encoder</th>
<th>Mac DisplayLink</th>
<th>The Presenter Mac/PC</th>
<th>TelevEyes/Plus</th>
<th>TV Gamer Plus</th>
<th>TV Scan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brightness dial</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Position controls</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Overscan correction</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

- = yes; 0 = no. * Has a switch that helps but doesn't solve the problem fully. ** Accomplished using a system extension; shipping version incompatible with System 7.5.

The Presenter Mac/PC

"TV can be as good as Monitor," says the packaging for this sleek black converter ($429; Consumer Technology Northwest, 503/463-1662). Despite its Hong Kong return address, the unit has a European twist. It supports the European television-signal standard, known as PAL. It also comes with a cable I've never heard of—called Scart—that supposedly produces a picture even better than S-Video. Of course, only European TV sets have Scart connectors, and Macworld's editors refused to fly me to Paris for testing.

Large front-panel knobs adjust the position and width of the TV image; an array of only slightly infuriating DIP switches correct horizontal overscan and switch between PAL and American-style TV. The brilliance of a brightness knob made me a little nervous, but the picture was so clear, and the colors so true, I didn't much mind. Only the high price gave me pause.

TV Gamer Plus

You'd be forgiven for scoffing at the name of this thing. I mean, it's got to be a little demeaning to stand there in the conference room, explaining your department's goals for the year 2000, with something called a TV Gamer dangling from your PowerBook.

But make no mistake, this smooth, black box delivers a perfectly sharp, bright picture. A setup diagram is painted right onto the bottom of the box. It's got a good, illustrated manual and a brightness knob. And it's only $209, half the price of some rivals (SIGI, 510/657-8688).

At that price, you'd expect to find an Achilles' heel—and you do. This unit offers absolutely no solution to the overscan problem—the edges of the TV screen always chop off your menu bar and Trash Can. Rats!

TV Scan

The TV Scan is low-slung, white, and industrial-looking. It's the only converter that can't show an image on both normal and S-Video equipment simultaneously (if anybody cares). Also, there's not a single illustration in the manual. That's a problem, because there are otherwise no hints for identifying the "DB-15," "RGB video monitor," and "VGA HD-15" cables you're supposed to hook up.

There are likable aspects of the TV Scan: its bright, clear picture; nudge keys for picture position; and dials that help solve the overscan problem. But at $399, the TV Scan (ComputerVideo, 603/434-0800) is simply overpriced and underexplained compared with its competition.

MediNet Encoder

This sleek black box has picture-positioning knobs and a Brightness dial; creates a bright, clear picture; and sports a rock-bottom $159 price tag. That's a lot of features for very little dough (P2 Systems, 206/285-2081). The thing is patently geared toward IBM-type computers, though; by way of instructions, you get a few flimsy Xerox pages called Mac Supplement. It's printed—"I kid you not—in 5-point type. The product itself is alternately referred to as MediNet and Medinet in that "manual."

But if I had to choose, I guess I'd rather have the $200 savings than a nicer manual. Once you're running the thing, all you really care about is how well it works. And this one works wonderfully.

P.S. again—Skimming into my mailbox at deadline time was the Encoder Pro ($249). This fanbox adds a Mac jack for your monitor, as well as a freeze-frame button. And it had no overscan problems, even without software.

TelevEyes/Plus

I like to think of the TelevEyes/Plus as the one converter designed for use by humans. "User-friendly" is written all over this thing, from its plain-talking manual to its ingenious white-on-black, top-panel labeling of all the jacks. Finally, you get a free, lite version of Action, the Macromedia presentation software, when you register.

Believe it or not, the TelevEyes/Plus is also the only box I saw that includes any sound features. Sure, when using any converter box, you can run a cable from your Mac's sound-output jack to your TV or VCR. But this one has a volume knob, contributing editor DAVID POGUE wrote the best-selling Macintosh book in 15 countries: Macs for Dummies, third edition (IDG Books Worldwide, 1994). Except during tests for this column, his TV hasn't been on in months.
Any computer information service that has a place for everyone from a skateboarder in Wichita to a bond trader in Hong Kong certainly has a place for you.

On CompuServe, there's room for everybody. Over two million members, in fact, all around the world. People who range from 12-year-old grunge rock aficionados to members in good standing of the Hong Kong stock exchange, all of them taking advantage of more than 2,000 fascinating and rewarding things to do.

Like talking to each other, for instance. On CompuServe they can swap information with a group, update their best friends, fax business reports, flirt, answer questions, argue about politics, and, in general, just plain communicate far faster and easier with far more people than they ever could before.

They learn things, too. They look up facts and figures for everything from homework to professional
reasons. They do business background checks and keep current on the Dow Jones while they’re at work. They figure out which airline rate is the most economical, and find out the best hotel to stay in while on vacation.

You’ll find everything from software to hardware right here.

They ask around to find out which printer is best for their computer.

In fact, when it comes to computer hardware and software, the advice and direction they get can be very helpful indeed. CompuServe is widely known for its downloadable freeware and shareware, and technical support representatives are online, too, along with “regular” people who have been using just about every kind of equipment there is. There are answers on CompuServe to most anybody’s technical questions.

So maybe you should join the crowd. CompuServe is just $8.95 a month for unlimited connect time — day or night — to a full package with more than 70 basic services.

News, stock quotes, travel arrangements, movie and restaurant reviews, and 60 e-mail messages a month are just some of what’s available. Along with many other services for nominal additional charges.

For more information or to order, just see your computer dealer, call 1 800 848-8199 (614 529-1349 for international inquiries), or fax us at 1 614 457-0504. You’ll find out how easy it is to get in touch with more than two million friends that you don’t know yet.

For more information, just mail this card.

(From wherever in the world you are.)

Get a real global perspective on things from CompuServe, the world’s largest and most comprehensive computer information network. Almost two million people, from all over the world, will have plenty to say to you about any topic you can think of.

So for more information, just mail this card or call 1 800 848-8199.

Name ____________________________ Company Name ____________________________

Address ____________________________

City, State __________ Zip

(_____) ________ Day Phone

(_____) ________ Evening Phone

CompuServe®

The information service you won’t outgrow.

MCW 1/95
Send in the Clones

Apple’s licensing approach is a bad idea

At any other time in the past decade, Don Strickland’s job description would have been a hell of an eye-opener. He is Apple Computer’s vice president in charge of licensing operating systems. Talk about oxymoron! Until 1994, directing Apple’s efforts at licensing the Macintosh OS would have been the ultimate do-nothing job. Sort of like running the Vatican’s effort to distribute birth control materials. Or heading the American trade office in Havana.

Yet that is what Don Strickland is doing: overseeing, for the first time ever, an effort to bless companies that wish to produce and sell Power Mac clones. (Apple is willing to discuss licensing clones of the 680X0, but no one seems interested.) As I write this, the names of potential cloners are being floated—everyone from Fujitsu to IBM—and by the time you read this Apple will probably have announced a few.

There are now about 70 people, says Strickland, “dedicated to the Mac clone effort,” and he sees the number eventually growing to a phalanx of 200. Two hundred people, whose entire professional existence is devoted to renting out the Mac OS, the company’s most valuable asset. Even at Apple it would be difficult to launch an effort of that size and see absolutely no result.

Mac clones are coming, and Apple is entering uncharted territory—dangerous territory. Expect the worst.

Of Cursor Keys and Kings

To say that Apple Computer has always been protective of the Mac OS is an understatement of titanic proportions. In the chess game of personal computerdom, Apple has regarded the aggregation of elements that make up the Mac as the equivalent of the king. Anytime a possible infringement, even an imaginary one, came to light, Apple heard “check,” and scrambled to protect the one piece in chess that is never sacrificed.

Others said that Apple’s protective-ness was misguided. These critics did not wave of clones that ran the same software. (This was due in part to clever maneuvering by Microsoft, which, unlike IBM, collected a royalty from the clone companies.) On one hand, MS-DOS became an industry standard—but on the other hand it wasn’t IBM computers that people were buying. It was the low-cost foreign-made clones, or the mail-order clones, or the high-quality, innovation-laden higher-end clones. IBM had lost control.

There was another way for Apple to get market share, of course—to get rid of the ridiculously high premium people had to pay to use the Mac. If Apple had cut its profit margins and made lower-cost computers, it would have won converts in the late 1980s. But Apple did not cut its margins and prices until the nineties, after the market-share battle was lost. And even now its prices aren’t low enough to lure people over from the dominant camp.

Somewhat belatedly, market share is becoming an obsession with Apple. There is a real danger that third-party providers, particularly ones hatching innovative new software, will simply choose to ignore the Mac platform, and despite the stellar performance of Power Macs, Apple products will continue to be marginalized—or worse. Apple’s answer is clones. “Our worldwide market share is now 11 percent,” says Strickland. “The domestic share is around 15 to 16 percent.” By blessing clones, he says, “We want to grow the logo by 25 percent, which means three to four points in the next three to four years.” Strickland is talking a million clones a year.

Self-Inflicted Revolution

It sounds nice, picking up those points. But the accommodations for this event have led Apple to remake its very foundation—in a sense, to inflict a revolution upon itself. It all begins with what Apple calls “a new visual identity for the Macintosh Operating System,” which is now officially known as the Mac OS. The logo is a variation on the familiar happy-Mac—a jagged line runs down the center so you view the smiling face head-on and in profile simultaneously. Some might interpret it to mean that happy-Mac now suffers from the high premium people and to pay to use the Mac. If Apple had cut its profit margins and made lower-cost computers, it would have won converts in the late 1980s. But Apple did not cut its margins and prices until the nineties, after the market-share battle was lost. And even now its prices aren’t low enough to lure people over from the dominant camp.

Somewhat belatedly, market share is becoming an obsession with Apple. There is a real danger that third-party providers, particularly ones hatching innovative new software, will simply choose to ignore the Mac platform, and despite the stellar performance of Power Macs, Apple products will continue to be marginalized—or worse. Apple’s answer is clones. “Our worldwide market share is now 11 percent,” says Strickland. “The domestic share is around 15 to 16 percent.” By blessing clones, he says, “We want to grow the logo by 25 percent, which means three to four points in the next three to four years.” Strickland is talking a million clones a year.

Self-Inflicted Revolution

It sounds nice, picking up those points. But the accommodations for this event have led Apple to remake its very foundation—in a sense, to inflict a revolution upon itself. It all begins with what Apple calls “a new visual identity for the Macintosh Operating System,” which is now officially known as the Mac OS. The logo is a variation on the familiar happy-Mac—a jagged line runs down the center so you view the smiling face head-on and in profile simultaneously. Some might interpret it to mean that happy-Mac now suffers from the multiple-personality syndrome, but Apple claims it signifies a “more open approach to attracting new users to the platform.” The logo will appear on software products.

Send in the Clones

Apple’s licensing approach is a bad idea
THE ICONOCLAST

Barbarians after Gates

Somehow this is not encouraging. How should we react to the news that Apple has developed a logo that software developers can stick on a box to demonstrate compatibility with the Mac OS? Hasn't the idea all along been that Macintosh software works with Macintoshes?

Oh, I forgot. There are no more Macintoshes—just computers that run the Mac OS, some of which will be made by Apple. And the others? Don Strickland says that in the first round of the licensing, Apple may focus on manufacturers intending to bring the Mac OS to markets that Apple, due to its limited resources, simply hasn't been able to address—publishing markets in certain foreign countries, for instance. But eventually Apple will not shirk at licensing the Mac OS to companies that may compete directly with Apple. Even at lower prices. "If you sell it for half as much as Apple does," says Strickland, "that's fine. Really?"

Other companies—maybe even IBM—might try to combine the Mac OS with some new twists. Imagine a box like the Power Mac that runs native software and a built-in emulation mode—of Windows software, Apple claims to welcome any of these innovations.

But what about Apple's own innovations? Innovation is the very heart of Apple's mission—the impetus that created the operating system in the first place. Apple is currently constructing a number of new operating systems, some of them presumably loaded with the sorts of things that Apple hopes will catapult the company back into its position as technology leader. Will these innovations be instantly available to the clone makers of the current Macintosh OS?

Don Strickland admitted that Apple doesn't have the answer to that question. Neither did he have anything to say about the possibility that Apple's new operating systems not shared with clone makers might lead to a new era of confusion, as customers try to sort out which Apple-flavored operating system supports which feature. There are questions concerning limitations that Apple might place upon oneself when considering new innovations—would an installed base of non-Apple clones act as an impediment to future greatness? The beauty of a closely held system was that Apple had the freedom to implement even those changes that required hardware adjustments. What happens when a significant percentage of its user base buys from other manufacturers?

Despite these unresolved questions, the company is plunging into the clone zone, holding an ivory king in its open hand. "We're going to be competitive with Microsoft, whatever it takes," promises Strickland.

That's where it's all headed, of course. Apple wants to be Microsoft. Making Macintoshes doesn't seem to interest Apple any more. (If it did, perhaps Apple would try to increase market share by doing whatever it takes to meet customer demand for its current products.) "Creating a separate identity for Apple is a shot across Windows' bow," said Guerrino De Luca, vice president of marketing in the AppleSoft Division, in an Apple press release, neatly illustrating the company's delusions.

I still think that Apple is capable of the sort of innovation that can, if well marketed and competitively priced, increase its share of the world market—without Mac clones. But if it tries to compete directly with Microsoft, whose bread and butter is licensing operating systems, Apple will lose. The tens of millions of people already wed to the Microsoft world have been well trained to expect innovation in limited doses, preferably with full DOS compatibility. Inertia, not innovation, is the name of that game. In addition, the leaders of Apple are no match for those who run Microsoft—to think that Apple can come from behind and eclipse Gates and company is folly of the first order. Apple's first instinct was right. Protect the king. I look at the clonal happy-Mac logo for the new, not-made-by-Apple future, and can't help but ask: Why is this face smiling?

STEVEN LEVY'S latest book is *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything* (Viking, 1994). He is a Fellow of the Freedom Forum Media Studies Center in New York.
Six common mistakes can cause you big headaches on your taxes. An oversight here, an omission there. From unnecessary tax payments to full blown IRS audits—you can end up paying too much ... or worse. But now, using MacInTax and Macintosh®, you can avoid these simple but costly mistakes:

1. **The Arithmetic Error**
   Today, even the simplest forms contain complex calculations. And with all the late-night scrambling, an innocent mistake could cost you plenty.

2. **The Transcription Error**
   With all those numbers being juggled from schedule to schedule, it's no wonder the figures are so often transcribed incorrectly or entered on the wrong line.

3. **The Omitted Form**
   Even "ordinary" returns require anywhere from six to a dozen forms to complete. It's easy to miss one or end up rushing all over town to find the one you need.

4. **The Misinterpreted Instruction**
   At best, IRS instructions can be tough to understand. At worst they can be mind-boggling. What you need are clear directions in plain English.

5. **The Overlooked Deduction**
   You'd have to be a professional tax preparer to know all the deductions you're entitled to. If you miss just one, it could cost you hundreds of dollars.

6. **The Exceeded Guideline**
   The fastest way to trigger an IRS audit is to exceed the "normal" range on one of your deductions. You need to know what the IRS looks for on a line-by-line basis.

When you do your taxes with MacInTax, mistakes like these are virtually impossible. And filling your taxes couldn't be easier.

---

**America's #1 Tax Software**

The fastest, easiest way to do your taxes right. With a new Macintosh interface and enhanced capabilities for 1994, America's #1-selling tax software for the Mac, now makes preparing your income taxes easier than ever. Just gather your records and receipts, sit down at your computer and let MacInTax's award-winning EasyStep® tax preparation system guide you through every step of the way. Then print out your forms, sign them and drop them in the mail. It's that easy!

---

**Includes Free Bonus Gift!**

**Calendar Creator**, quickly create great-looking calendars for all your personal and business activities with Calendar Creator. Combine color with attractive graphics and fonts, then print in a variety of formats— including Day Runner® and Day-Time®, or create your own pocket-sized calendars. Customize calendars to meet your needs by using over 100 clip art images, different fonts, shading, bars and more!

---

**Yes, I'll try MacInTax FREE!**

Rush me my FREE gift and FREE TRIAL copy of MacInTax as soon as they're available (usually late October). If I'm not 100% satisfied, I'll return MacInTax within 30 days and owe nothing. If I decide to keep it, my credit card won't be charged until after my 30-day Free Trial. Either way, my FREE gift is mine to keep, whatever I decide.

Please Choose:
- [ ] 3-1/2" disks, or
- [ ] High Density, or
- [ ] Low Density
- [ ] MacInTax (for Macintosh®) $39.95
- [ ] TurboTax (BM®-compatible) $39.95
- [ ] TurboTax for Windows™ $39.95
- [ ] TurboTax for Windows - CD ROM $39.95

Mail your order to: Intuit, 2650 E. Elmir Rd., #100, Tucson, AZ 85706-7180. Or Call NOW: 800-964-1040 ext. 42438
It's the latest addition to the #1 selling line of personal information organizers. It features a pen-based graphical user interface, 512K of memory and all the tools you could ever want in a 10.5 ounce package. And the new "ultra-compact fax modem" only adds 1.27 ounces and requires no additional cables or setup for use. Best of all, it can remain attached to the Wizard and still fit in a pocket or purse.

The unit's built-in fax software permits users to send a drawing, a letter, or even an entire folder of documents. The software also provides a speed-dial directory and automatically creates a cover sheet for outgoing faxes. By entering the terminal mode the OZ-9520FX uses ASCII or VT-100 emulation to send and receive electronic mail beamed to a colleague's Wizard or output wirelessly to a PC-compatible printer with the optional infrared adapter.

Scrapbook allows you to draw and store hand-written words or maps and diagrams Mac™ into Scrapbook enabling telephone entries, for example, to have portraits or maps attached to them. A unique Filer system–of graphically represented folders–groups related information together by subject, making it ideal for project management.

And when it comes to time management, Wizard sets the standard. Four different calendar views, 3 phone directories, a To Do list, and there's even a function that allows you to enter professional-looking letters. Completed documents can then be directly on the screen using the Wizard's stylus or your finger. Images can also be imported from a PC or the optional PenCell® spreadsheet card.

Using Computer Link software, data can be transferred to and from a PC or Mac™ and the optional wireless adapter enables Wizard's infrared technology to make this transfer effortless.

And if you ever have any questions there's even a built-in tutorial with explanations and diagrams for every function. But, until you get one, fax us at 1-800-74-SHARP. We'll answer your questions about the OZ-9520FX and tell you about our high-end OZ-9500 and OZ-9600 series. Or call us at 1-800-BE-SHARP and we'll help locate your nearest dealer. It's just about the only thing this Wizard can't do for you.

WIZARD® Carried By The Most Organized People On Earth.

WIZARD® Carried By The Most Organized People On Earth.
Recycling Macs

Wanted: Computers for good homes

**CONSPICUOUS CONSUMER**

BY DEBORAH BRANSCUM

DO YOU HAVE AN OUTDATED MAC IN your closet? You're not alone. Because older Macs aren't worth a lot of cash these days, some folks simply stash them out of sight, where they sit discarded and dusty. And that's a shame, because our old tools can help transform the lives of people here at home and around the globe.

When you donate a computer or software program to a nonprofit organization, you become eligible for a tax deduction based on its market value, and you enrich the lives of students or others who can really use the equipment. Even a broken computer can enrich lives if donated to the right group. Several nonprofit organizations will recycle your disused Mac into a resource for others.

**East West Development**

Thanks to the East West Development Education Foundation and its donors, the Civic Alliance of Mexico was able to monitor the presidential election last August and complete a parallel vote tally after the election. In the previous election, fraud was suspected after the vote-counting machines broke down. This time, the Civic Alliance intended to ensure the vote was honest.

"We had our gear up and running by Friday," says East West president Alex Randall. Both East West and the United Nations sent computers to the Civic Alliance; East West included a technical team as well. "On Saturday all the equipment was sabotaged. Or perhaps not sabotaged. It may have been done by a well-intentioned, very stupid person." Whatever the case, the team discovered viruses on all the computer systems and had to reroute cabling; out of some 40 systems, only 4 would actually start. East West's technicians went to work; the equipment was functioning again by Sunday noon, election day.

East West is a Boston-based nonprofit organization founded in 1990 by Patrick McGovern, the founder and chairman of International Data Group, the parent company of Macworld. In 1991, Randall came on as president and the organization became independent of IDG, but it continues its mission to place computer systems where they can help foster democracy.

East West has placed more than 6000 computer systems in more than 150 countries. In the former Yugoslavia, Sarajevo's remaining newspaper and radio station, and a theater have received East West-donated computers. East West is working to establish an Internet site in Sarajevo so the city's besieged residents can communicate with the outside world. Closer to home, East West has placed computer systems in YMCAs, hospitals, schools, and other nonprofits.

One element in East West's success is its flexibility; the group accepts all or part of a personal computer system, even if broken. Paid technicians and volunteers repair and create full systems out of peripherals and parts, matching a donation of keyboards with another of monitors and CPUs. Donations from Compaq and Microsoft ensure that legal software is available for each machine.

Although East West prefers to receive 80286- and 386-based PCs and Mac II-level computers, it also accepts and places older machines that may seem outdated for modern offices. "Many times, the amount of computer power used vastly exceeds the needs of the application," says Randall. "My folks are perfectly happy using mundane technology because it meets 100 percent of their needs."

One example is the original 1984-era Mac. "Send me the 128s, I love them," says Randall. "We consider them part of a package; we gather 128K Macs and add a higher-level machine like a IIcx. That's a desktop publishing system for a Third World country—128s are quite adequate for reporters."

For more information on East West programs, call 617/542-1234. To receive faxed information, call 617/542-2345.

**Non-Profit Computing, Inc.**

For nearly ten years, Non-Profit Computing has matched computer donations to needy groups. Unlike most other computer-donation groups, NPC accepts any obsolete computer equipment, from mainframes to personal computer components to telecommunications equipment. Currently, it's looking for a home for a Northern Telecom switch that supports 800-number telephone lines.

"We're still happily dealing with people who want to donate pieces of a Commodore 64," says NPC founder John L. German. "Obsolete is a relative term." NPC places equipment primarily on the East Coast, but sometimes ranges farther afield. The organization also helps individuals through its Career Development Group. CDG matches out-of-work computer-telecommunications professionals with internships and volunteer work that hone their skills for future employment. Volunteer work for employed professionals who want to donate their skills is also available. Call 212/759-2368 for details.
**FREE CACHE!**
On all 33 and 40 MHz Speedster '040 Accelerators

**040 Performance**
Now only $349.

Just plug in the Mobius Speedster '040 accelerator and instantly get blazing performance from your existing Macintosh. It's the smartest, fastest, most economical way to get a hot new Mac without buying one.

Universal PDS design supports the Mac IICi, IIsi, IIX, IIXx and LC with 100% compatibility or your money back.

Get an instant speed boost and outperform Apple's Power Macs in emulation mode.

Watch Photoshop resize 4 times faster, Illustrator redraw 7 times faster, Excel recalc 6 times faster or Word replace 5 times faster—everything screens.

**Computer Recycling Center**
Two years ago, Mark Hass, a former robotics engineer for Quantum Corporation, created the nonprofit Computer Recycling Center to divert old computer systems from landfills into schools. Today, 3 staff members and more than 150 volunteers collect and refurbish donated computer hardware, software, and peripherals at the Mountain View, California, center. After any necessary repair, donated equipment is placed in schools and supported by CRC volunteers for a total cost of about $50 per computer.

IBM computers (from PCs to 486s) and compatibles are the most common donations to CRC, but Apple II’s, Macintoshes, and Sun Unix systems are gladly accepted also, along with any available software. Monitors, printers, and hard drives are also welcome. CRC offers network training courses, which help support the organization. For information, call 415/428-3700.

**Other Options**
The Computers for Schools Program (619/456-9045, 800/939-6000) of the Detwiler Foundation is a California-only project that is also dedicated to adding computers to state public and private K-12 schools (California reportedly ranks 48th in the nation in its student-to-computer ratio). Students at vocational training centers statewide refurbish the donated machines to learn computer-repair skills. Then Computers for Schools finds homes for the repaired machines.

The Recycle Technology program of Gifts In Kind America (703/836-2121) helps corporations donate technology to needy organizations. The Metropolitan Life Insurance Company used Gifts In Kind America to place 600 used laptop computers. The laptops went to groups aiding childhood immunizations, coordinating Midwest flood relief, assisting California earthquake victims, and supporting volunteer programs. Gifts In Kind America makes it easy for corporations to donate equipment to good causes.

The National Cristina Foundation (203/622-6000, 800/274-7846) matches donated systems with 500 nonprofit organizations that use them for computer training and the rehabilitation of disabled and disadvantaged children.

If you'd rather donate time than equipment, check out CompuMentor. This San Francisco-based group matches computer whizzes to nonprofits that need help. Such mentors may develop custom databases, set up a network, or troubleshoot a system crash. The group matches experts to nonprofits in California only, but has affiliates in some other cities. For more info, call 415/512-7784.

**Donate Wisely**
If your company is donating old machines that are being replaced by new ones, part of the deinstallation costs are tax deductible, according to East West's Alex Randall. The full costs of packaging, handling, and shipping are also deductible.

According to Henry Holmes of the Internal Revenue Service, there's no magic formula for determining the value of a used computer for the purposes of a charitable tax deduction. Donors need to use "fair market value" to figure the worth of their donations. Owners can gauge the value of their donations by using something like the AmCoEx Used Computer Index published by Macworld or by checking classified advertisements. Federal tax law limits deductions for charitable donations to 50 percent of your income; up to that amount, you can deduct the full value of charitable donations.

Donating computer equipment is a generous act; make sure it's an effective act as well. If you plan to donate to a particular school or organization, make sure your system is compatible with its existing equipment, includes or is matched with the legal software necessary to the site's goals, and that technical support is available for setting up and supporting the system. Don't have the time? Then donate equipment—or cash—to one of the groups above. That simple act may touch many lives in a positive way.

Send nominees for sainthood to Service Heroes, Macworld, 501 Second St., San Francisco, CA 94107 or via the Internet (branscum@aol.com). Also, drop Conspicuous Consumer a line if a company is ignoring you.

---

**Circle 109 on reader service card**
Three? Five? A dozen? There's no simple answer. Until now. Introducing new Now Up-to-Date 3.0 — the easiest way for you and your whole team to manage your busy schedules and eliminate the hassle of coordinating meetings. With a single click Now Up-to-Date 3.0 finds an open conference room...searches each person's calendar...displays a list of available times...and invites everyone to the meeting for you. It's that simple.

MANAGE YOUR BUSY DAY EFFORTLESSLY!

Not only is setting up meetings easier—so is managing your personal time. For example, the Reminder alerts you to upcoming events and keeps your day's commitments in the menu bar for instant access — from any program! New Date/Time Pickers eliminate data entry and make navigating through your calendar a snap, allowing you to schedule appointments with just a couple of clicks. Need to reschedule an appointment? Just click and drag it to a new time. And new Toolbars keep important commands at your fingertips, saving you time and effort at every step.

SHARE SCHEDULES WITHOUT SHARING YOUR ENTIRE LIFE.

You're always in control, because your colleagues see only those events you choose to share. Best of all, you can view your personal appointments and To-Dos alongside common schedules like Company Meetings, so you always have the "big picture."

THE COMPLETE PERSONAL ORGANIZER...

...For you and your entire team! Eliminate scheduling headaches with new Now Up-to-Date 3.0. Plus, use it with new Now Contact 3.0 to share key names and numbers, and you'll have everything you need to stay on top of your busy day.

Save more time and be more organized. You can count on it. Order today!
Introducing SimTower. The World’s Largest Fixer Upper.

Behold the real estate deal of the century. It’s called SimTower™ and this fixer upper can be yours at a price any red-blooded realtor would kill for. Because SimTower lets you build your own marvel of modern architecture. Hotel rooms, restaurants, a state-of-the-art cineplex—with room for 100 floors, the sky is virtually the limit.

But beware: just when you’re feeling smug, along comes a five-alarm towering inferno. Or a terrorist attack that rocks your vertical empire right down to the ground.

And if you think SimTower has a lot of stories, check out the personal lives of your SimTenants. Because not only do you control the building, you also control its inhabitants.

So if you’re in the market for the hottest new property in software games, here’s your chance to get in on the ground floor.
E ditors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

Edited by Elizabeth Maffly

Macworld Editors' Choice is a complete listing of the hardware and software products selected as the best of their type in Macworld's comparative articles. A next to a product indicates that we chose more than one product in that category. A next to a product listing indicates that a native Power Mac version is available.

Hardware

MONITORS

SMALL COLOR MONITORS, Jan 94

14-inch display: Sony CPD 1430: Sony Corp. of America, 800/222-7669; $779.95.

Nanaco FlexScan F340i: Nanaco USA, 800/800-5202; $799.


TWO-PAGE COLOR MONITORS, Nov 94


NETWORK HARDWARE

HIGH-SPEED FAX MODEMS, Oct 93

Teleport Gold and Silver with Global Fax: Global Village Communications, 415/390-6200; Gold $499, Silver $429.

SERVERS, Oct 94


SCANNER/IMAGE CAPTURE

ELECTRONIC CAMERAS, Sep 94

Apple QuickTake 100: Apple Computer, 408/996-1010; $749.

LOW-COST COLOR SCANNERS, Nov 93

$130 to $1600: La Cie Siverscanner II: La Cie, 503/520-9000; $1599.

Hewlett-Packard ScanJet II: Hewlett-Packard, 800/752-9090; $549.

WORKGROUP PRINTERS, Feb 94

High-speed: Hewlett-Packard 4Si MX: Hewlett-Packard, 800/752-9090; $549.


Haylett-Packard LaserJet 4M: Hewlett-Packard, 800/752-9090; $2329.

SYSTEMS/STORAGE

1.3GB OPTICAL STORAGE, Dec 94

$2099.

2.7GB drives: Nova XL 2700: Microtech International, 203/468-6223; $2999.

HIGH-SPEED HARD DRIVES, Aug 93

2.7GB drives: Nova XL 2700: Microtech International, 203/468-6223; $2999.

Video Editing


VideoVision Studio: Radius, 408/434-1010; $449.

Corporate video (offline): Media Composer 400: Avid Technology, 508/660-6789; $14,999.

Video editing: Thunder II GX-1360: SuperMac Technology, 408/541-6100; $4499.

PHOTOSHOP ACCELERATORS, Apr 94

Photo Booster: Radius, 408/434-1010; $999.

continues
SOFTWARE

ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
Small-business system: M.Y.O.B.; Best Ware, 201/586-2200; $199.
Home office/personal finance: MacMoney; Survivor Software, 310/410-9527; $119.95.

BUSINESS TOOLS

STATISTICS, Oct 93
Exploratory data analysis: DataDesk 4.1; Data Description, 607/257-1000; $995.
Comprehensive package: SYSTAT 5.2.1; SYSTAT, 708/864-5670; $895.

CD-ROM

TOP 10 CD-ROMS, Mar 94
Overall: Seven Days in August; Time Warner Interactive Group, 818/955-9999; $79.95.

COMMUNICATIONS/NETWORKS

COMMUNICATIONS SOFTWARE, Aug 94
Basic connectivity: ZTerm; David P. Alverson (no phone number available); $20.95.
Internal communication: Crosstalk for Macintosh; Digital Communications Associates, 404/442-4000; $195.
Internet exploration: VersaTerm; Synergy Software, 215/779-0522; $129.

DOS WINDOWS EMULATION, Oct 94
Timbuktu Pro 1.0.3 for Macintosh, Timbuktu 1.1 for Windows; Farallon Computing, 510/814-9500; $199 each.

HIGH-SPEED FAX MODEM SOFTWARE, Oct 93
Faxstf; Telefocus, 816/886-9800; $299.

NETWORK CONNeCTIVITY, Sep 93
NetWare for Macintosh; Novell, 930/429-7000; $495 for 5-user license to $2295 for 200-user license.

PROTOCOL ANALYZERS, Jul 94
EtherPeek, AG Group, 510/937-9700; $795.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; $149.

GRAPHICS

3-D MODELING, Dec 94
Stand-alone modeler: Form Z; autodesk, 614/488-9777; $1495.
Integrated-modeling package: Strata Studio Pro; Strata, 801/628-5218; $1495.
Entry-level modeler: Infini-D; Spectral International, 413/353-3100; $695.

CLIP ART'S GREATEST HITS, Jan 94
Overall collection: ClickArt Studio Series; T/Maker Company, 415/962-0199; $99.95 per volume.
Electronic Clipart subscription service: Dynamic Graphics, 800/255-8900; $67.90 per month.
Metro ImageBase Electronic Clip Art; Metro ImageBase, 800/525-1552; $74.95 per volume, CD-ROM $149.95.
Images with Impact series: 3G Graphics, 800/456-0234; $99.95 to $129.95 per volume, CD-ROM $49.95.
Typographers' Ornaments; Underground Grammarian, 609/589-6477; $25 per volume, ten TIFF albums $200; EPS volumes $50 each.

DRAG PROGRAMS (LOW-COST), Sep 93
Budget draft: Expert Draft; Expert Software, 305/567-9990; $39.95.
Budget drag/paint: UltraPaint; Deneba Software, 305/956-6644; $79.
Beginners' programs: Aldus SuperPaint; Aldus Consumer Division, 619/558-6600; $149.95.
Overall: Canvas; Deneba Software, 305/956-6644; $399.

FONT BUYER'S GUIDE, Mar 94
Text-face collection: Type On Call CD-ROM; Adobe Systems, 415/961-4400; 800/682-3623; $99 (this price includes the ability to unlock two families from preselelected packages; an additional $25 enables you to unlock individual faces, or $69 to $179 for unlocking families).
Display/decorative-face collection: Fontek; Letraset, 201/845-6100; $39.95 per face.
Bargain collection: Monotype ValuePack; Monotype, 312/855-1440; $89 for 57 fonts.

IMAGE DATABASES, Oct 93
Aldus Fetch 1.0; Adobe Systems, 206/628-5739; $295.
Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; $249.

PAINT AND IMAGE-EDITING, Sep 93
Budget buy: Expert Color Paint; Expert Software, 305/567-9990; $49.95.
Overall program: Fractal Design Painter; Fractal Design Corp., 408/698-4800; $399.
Image-editing program: Adobe Photoshop 2.5.1; Adobe Systems, 415/961-4400; $895.

INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Feb 94
ClariWorks; Claris Corporation, 408/727-8227; $299.

ONLINE SERVICES

ONLINE SERVICES, Aug 94
E-mail: America Online; America Online, 703/853-6288; basic monthly fee $9.95.
Reference: CompuServe; CompuServe Information Service, 614/457-3802; basic monthly fee $8.95.

ORGANIZATION/PRODUCTIVITY

CALENDARS, Jul 93
Alarm system: First Things First; Visionary Software, 503/246-6200; $79.95.
Smart Alarm Plus; JAM Software, 203/630-0055; $75.
Meeting scheduler: How Up-To-Date; Now Software, 501/274-2800; $99.
Meeting scheduler: Meeting Maker; On Technology, 617/374-1400; five-pack $495.

GRAPHING SOFTWARE, Aug 94
DeltaGraph Pro 3.0; DeltaGraph, 408/648-4000; $195.

SALES AUTOMATION SOFTWARE, Oct 93
Contact Ease; WestWare, 619/274-5053; one user $395, five users $1495.
Colleague BusinessSoftware; i2, 346-9964; $495.

TEXT RETRIEVAL SOFTWARE, Dec 93
Small system: On Location; On Technology, 617/374-1400; $129.
Multiuser system: Personal Librarian; Personal Library Software, 301/950-1155, $995.

PRESENTATION TOOLS

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Adobe, 206/622-5500; $495.

UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
Application-independent document distribution: Common Ground; No Hands Software, 800/998-3021; $189.95.
Book-length documents: FrameReader; Frame Technology, 800/843-7263; $84.95.

PRINTING, Sep 93
PC-printer cable packages: PowerPrint; GDT Softworks, 601/291-9121; $149.

VIRUS KILLERS, Jul 94
Commercial software: Virex; DataWatch, 919/549-0711; $99.95.
Free software: Disinfectant; free from online services.

VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, Jun 94
Virtual memory software; Virtual 3.0; Connectix Corp., 415/571-5100; $99.
Memory-enhancing software; RAM Doubler 1.0; Connectix Corp., 415/571-5100; $99.

VENDORS: Please write to Macworld's Editors' Choice, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price.
The easiest way to keep your audience glued to the wall.

Now you can take control of your presentations as easily as you channel-surf among football games.

Our new LPP-5000A projection panel keeps your audience focused on your message while you orchestrate with the convenience of remote control. Just point your remote at the wall or screen. In a blink of an eye, you can switch from full-motion video to computer source and back.

You can even freeze-frame or zoom-enlarge to drive home your message.

The whole wall becomes a menu-driven computer monitor. And your remote control turns into a wireless mouse.

Highest-quality color images are projected through the LPP-5000A's high-resolution, active-matrix TFT LCD screen with light from any OH projector. Built-in patented light blockers contain stray light and help keep your audience riveted. Being road wary, the projection panel is compatible with both NTSC and PAL video, plus PCs and Macs. It weighs less than six lb. and comes with its own rugged traveling case.

So take control of your presentations by taking advantage of today's hottest technology: CTX remote-controlled presentation panels, monitors and notebook computers. Call the CTX office nearest you.

Choice of the Pros.

USA Headquarters 909-595-6146
Eastern Region 201-646-0707
Midwestern Region 708-263-0302
Southern Region 404-729-8909
So.West Region 214-416-0540

©1994 CTX International, Inc. All rights reserved.
Circle 38 on reader service card

SEE US AT COMDEX BOOTH S2524
"...a science fiction movie better than any since Blade Runner."

"...a future shock film on par with Aliens."
- Computer Gaming World

BEST INTERACTIVE MOVIE
Silver Medal Invision Awards

BEST INTERACTIVE MOVIE
Reader's Choice Award
Finalist Multimedia World

BEST NEW PRODUCTS OF THE YEAR
Business Week

QUANTUM GATE IS THE FIRST INTERACTIVE MOVIE EXPERIENCED IN
VirtualCinema™, an exciting new multimedia technology that makes you the main character in an interactive movie.

Interact with many characters to determine who is telling the truth, before you are forced to confront the wrong enemy. Explore all possibilities as you hurtle toward the startling conclusion.

MACINTOSH CD-ROM

Hyperbole Studios
For a dealer nearest you call:
1-800-My Dealer or 1-800-697-3253

Circle 299 on reader service card
Star Ratings

Edited by Wendy Sharp

Macworld Star Ratings lets you compare hardware and software products for the Macintosh by providing summaries of Macworld's authoritative product reviews from the past year. The number of stars at the beginning of each capsule review indicates quality; our reviewers assign five stars to outstanding products and one star to poor ones. The symbol indicates that a product is available in a native Power Mac version, although unless stated otherwise the version we reviewed was the 68000 version.

If a product has been upgraded since our last review, the most recent version number supplied by the vendor appears in parentheses after the reviewed version number. To read a full review of any product in the listing, please consult the issue listed at the end of each synopsis.

Vendor's: Please write to Macworld Star Ratings, 501 Second St, San Francisco, CA 94107 to inform us of changes in the version number or list price of your product, or of changes to your phone number.

Software

BUSINESS TOOLS

**** 4D First 1.0 (1.0.1), AGI US, 408/252-4444, $295. This entry-level relational database is a low-cost way to distribute the power of 4D and 4D Server to an office full of Macs. It's not much easier to use, however, than the full-featured 4D. May 94 0

***** AccuZip 1.8.7, Software Publishers, 800/233-0555, $689. Bulk-mail software has informative progress indicators, batch and individual processing; low rates, and flexible mailing during import; but the interface is incomprehensible. Sep 94

**** BaseMap 1.0.1, GeoPoint, 415/957-1560, $149. For simple maps displaying simple data, this mapping tool may be useful. It's not for the cartographic sophisticate, however, as it offers very limited data-display abilities and only one projection. May 94

**** Bulk Mailer CASS 1.0.0d, Satori Software, 206/443-0765, $150. Unattended operation is possible with this bulk-mail software, but batch processing is slow and the program has coding problems. Sep 94

**** CA-Cricket Graph III 1.52, Computer Associates International, 516/343-5234, $129. Graphing software's features are just right for charts in the physical and social sciences, but lack pizzazz. The program is easy to learn and use, and includes math features for data transformations and curve fitting. Dec 94

**** Clarisimpact 1.0 (1.0 v3), Claris Corp., 408/727-0227, $399. Business graphing, project management, object-oriented drawing, word processing, and presentation functions merge in this business graphics software. The outstanding integration offers versatility that dedicated programs are pressed to match. Jun 94 0

***** Cricket Graph III 1.5 (1.52), Computer Associates International, 516/343-6000, $129. Basic and footfoot charting program produces clearer charts than Excel with little effort, although its feature set is fairly modest. Apr 94

***** Crystal Ball 3.0, Decisioneering, 408-449-5177, $295. Compact business-simulation software is fast enough for complex projects and can pay for itself in disaster-avoidance in a variety of business tasks. Oct 94

***** Decision Analysis 2.5, TreeAge, 800-254-1911, $379. Decision-assistance software handles complex business cases by constructing tree diagrams of probabilities and payoffs. It offers a type of modeling that is more realistic and easier to modify than other options. Nov 94

***** DeltaGraph Pro 3 (3.5), DeltaPoint, 408/648-4000, $195. At its new lower price, this charting program is the best feature-for-feature value in Macintosh charting. There's even a new Chart Advisor function that suggests the appropriate display for your data. Apr 94 0

***** Extend-BPR 3.0, Imagine That, 408-365-0305, $990. Business-modeling software includes superior templates for business-process reengineering, but some programming experience is helpful. Oct 94

***** FastTrack Schedule 2.1, AEC Software, 703/450-1980, $279. Simple project-management software is ideal for managers who need to put together a schedule quickly and easily, but if you require more power to manage conflicts between multiple projects and resource allocation, you'll need a more comprehensive program. Sep 94

***** Helix Express 2.0.1 (2.0.4), Helix Technologies, 708/465-0242, $589. Icon-based relational-database software's improved performance makes it a serious competitor for All-Mac networks. Especially notable is its much faster speed; multiuser operation is downright snappy. Jul 94

***** Map II 1.5, ThinkSpace, 915/858-5047, $395. Well-structured program has most of the functions a simple geographical information system needs and is suitable for introductory instruction in GIS and for alert first-time users who just like maps. May 94

***** MicMac 2.0v1, Nirvana Research, 408/459-9663, $89. The concept of Mac as a drawing machine is unambiguously attractive, and Nirvana Research has pulled it off well. It takes too much of hard drive space to save recordings, though. Nov 94

***** Microsoft FoxPro for Macintosh 2.5 (2.6), Microsoft Corp., 206/882-8080, $495. Dazzlingly fast and easy to use relational database has a greatly improved interface and cross-platform compatibility. For projects of 4 to 20 users that handle large amounts of data (hundreds of thousands to millions of records) it offers excellent performance. Apr 94

***** Pablo 2.0.1 (2.03), Andyne Computing, 613/548-4355, $695. This effective end-user data-reporting tool puts a considerable workload on the corporate information department, but it sidesteps the hassles of SQL data access and produces great reports with minimal effort. Jul 94

***** Street Atlas USA 2.0, DeLorme Mapping, 207/865-1234, $169. For the most part, this geographical information software delivers what it promises at a great price. Although inaccuracies in the data are troubling, DeLorme pledges to fix all reported errors in subsequent annual updates. Oct 94

***** TeamFlow 4.0 (4.1), Kaetron Software Corp., 713/298-1500, $345. Flowcharting program's support for custom symbols and automatic drawing aids, along with its ability to let you easily create and navigate lower-level charts, make it a productive tool. Jul 94

***** ZippZapp 1.0, True Basic, 603/298-8517, $39.95. You can use this data-referencing utility to find an area code, the correct spelling of a city's name, and more. The interface is intuitive, and the cost, low. Oct 94

***** ZP 4.12 (14), Semaphore Corp., 408/688-9200, $125. Inexpensive bulk-mail software supports batch and individual processing, but the progress indicators are uninformative, and unattended operation requires extra work. Sep 94

COMMUNICATIONS/NETWORKS

**** AccessPC 3.0, Insignia Solutions, 445/629-7600, $129.95. Utility translates most word-processing and some database formats, but it doesn't translate graphics and some of its translations result in data loss. Apr 94

**** Crosstalk for Macintosh 2.0 (2.0.1), Digital Communications Associates, 404/442-4095, $195. Commendable communications product has a feature set that will matches its competition. Still, the script editing is complex and you must usually enter phone numbers each time you use it. Apr 94

**** Delrina FaxPro for Macintosh 1.0 (1.5.1), Delrina Corp., 408/363-2345, $129. Fast, efficient fax software has an excellent address-book but also has some interface quirks and minor bugs. Feb 94

**** DOS Mounter Plus 4.0, Dayna Communications, 801/269-7200, $100. File-transfer and continues
**Star Ratings**

translation utilities works with floppies, removable drives, and network volumes and supports wild cards in DOS extensions. Apr 94

EtherPeek 2.0.3 (2.0.4), LocalPeek 2.0.3 (2.0.4), TokenPeek 1.0 (2.0.3), AG Group, 510/937-7900, $495 to $995. Priced at a fraction of the cost of dedicated hardware analyzers, these network analyzer tools give you better analysis with a friendlier interface. They're a worthwhile investment. Jan 94

The Internet Companion, The Voyager Company, 940/550-5500, $39.95. Well-written, HyperCard-based electronic book offers much less information than others. While Internet access is available through the accompanying software, you get just a terminal-emulation screen. Dec 94

Internet Explorer Kit and Internet Starter Kit, Hayden Books, 317/581-3500, $29.95 each. Well-written books and useful software combine to produce one of the best introductions to the Internet available for Macintosh users. Dec 94

Internet Membership Kit, Ventura Media, 919/920-0200, $69.95. If you need access to the Internet, this book-and-software combination is a good package. The best part about it is its included preconfigured software. Dec 94

MacLink Plus/Translator Pro 7.5, DataViz, 203/268-0300, $149. If your PC files are in ASCII formats, you'll need this file-transfer and translation utility. It's a great option for most users, but it doesn't support removable drives or network volumes. Apr 94

MicroPhone Pro 2.0, Software Ventures Corp., 510/644-2222, $295. The new feature set of this communications package includes multiple sessions, faxing, TCP/IP networking, and more, but it's a mixed bag. Not all the features are well integrated, although some are innovations for which users will be grateful. Oct 94

PowerShare Collaboration Servers, Apple Computer, 408/996-1010, $999. Before this collaboration software will be ready for prime time, Apple needs to overhaul the complex Admin application, add serious diagnostic aids, provide comprehensive documentation, and offer knowledgeable technical support at a price less than that of the program itself. Apr 94

Silver Cloud 1.2 (1.2.1), AG Group, 510/937-7900, $495 to $1595. If you're administrating a large network and are drowning in a sea of devices and zones, this network-management software will make your life simpler. Feb 94

SiComm 1.0 (1.0.1), Aladdin Systems, 408/761-6200, $512. Inexpensive telecommunications software is fairly easy to set up and use, and will do well for people who use just one or two online services. Still, it lacks true scripting and has limited protocol options. Apr 94

Snap Mail 5.0.1, Casady & Greene, 408/484-9228, $200 to $1440. Software will put you on the electronic-mail trail more easily and more cheaply than any competing product, if you can live with some minor (but surprising) shortcomings. Jun 94

SoftPC 3.1, Insignia Solutions, 415/694-7600, $499. While the speed of this Windows PC emulator is greatly improved, buying an add-in PC card for your Mac is more efficient. Mar 94

SoftWord 6.0, Insignia Solutions, 415/694-7600, $495. You can run Windows software on a PowerMac with this emulation software, but although it's a viable solution, you pay the price in terms of performance, compatibility, and actual cost. Aug 94

Timbuktu Pro 1.0 (1.0.3), Farallon Computing, 510/814-5000, $199 to $1999. Terminal-emulation product is a must-have for in-house technical-support staff and for people who need direct connection to computer systems on a variety of networks. The major enhancements of this version are TCP/IP support for Macs and noticeably faster screen redraw. May 94

TrafficWatch II 2.0 (2.1), Neon Software, 510/283-9771, $495. The price of this AppleTalk traffic monitor is closer to that of full-blown network analyzers that do much, albeit with greater complexity. Without printing, alarms, triggers, or true multiple protocol support, this product misses the mark. Jun 94

VersaTerm 5.0 (5.04), Synergy Software, 215/779-0522, $195. The price and feature set of this network terminal-emulation package make it a terrific value, in spite of its complex documentation and limitations. If you're looking for a fast path to Internet connectivity, this is it. Jan 94

White Knight 12.0, The FreeSoft Company, 412/846-2700, $139. While this telecom software can be bewildering, it works impressively well. If you're willing to read the manual from cover to cover, the program may become your favorite telecom tool. Nov 94

### DESKTOP PUBLISHING

AboutFace 1.1.1 (1.1.2), Big Rock Software, 716/288-2860, $69.95. Type-specimen generator has many serious deficiencies that need to be addressed. Jan 94

CheckPost 1.3, Working Software, 408/423-5696, $249.95. Interface aside, this imagerester-simulation software is generally disappointing. It can't automatically scale pages, it prints on a single sheet, and its error reporting is limited. Nov 94

ClickBook 1.1, BookMaker Corp., 415/354-8161, $69.95. If you need to create inexpensive booklets quickly and without hassle, this print utility that helps you format documents in double-sided booklet form is an excellent tool. Nov 94

FontChameleon 1.0.1, Ares Software Corp., 415/578-9090, $295. Font utility introduces a new font-creation technology; it builds serif and sans serif fonts from a master outline file. It offers high-quality renditions of many standard fonts, plus the ability to customize fonts. Sep 94

FontMixer 1.1, Monotype Typography, 312/855-1440, $79. Although a tad expensive for a one-trick pony, this font utility is a straightforward, relatively painless way to mix characters from different fonts to create composite fonts. Oct 94

Fontographer 4.0.4 (4.1), Altsys Corp., 214/680-2060, $495. No other font editor does more or works better than this one. For the price of a few font families, it can give you a universe of unique faces. Oct 94

Fototo 1.1 (1.13), Agfa Division of Miles, 508/658-5600, $395. Color-management software has a capable engine, but it's not a complete color management system. Invisible tech support and poor documentation were only part of the problem. Apr 94

FrameMaker 4.0 (4.04), Frame Technology Corp., 408/433-3311, $895. For such projects as long, structured documents—books, instruction manuals, and textbooks—this desktop publishing program is one of the best tools available. It's fast, well mannered, and a real time-saver. Mar 94

LaserCheck 1.0, Systems of Merritt, 205/660-1240, $199. Image-generator-simulation software can save you hundreds of dollars, and many hours, on imagesetting jobs by letting you use a laser printer to proof your work. Nov 94

PageTools 1.0, Extensis Corp., 503/274-2020, $129. This collection of ten PageMaker Additions is packed with utility. Many users will find the PageAlign, PagePrinter, and PageRules Additions alone worth the price, and the others frosting on the cake. Dec 94

Print Shop Deluxe 1.0 (1.1), Broderbund Software, 415/382-4400, $49.95. Even the most ham-fisted can create professional-looking greeting cards, signs, banners, letterhead stationery and calendars with these desktop publishing templates and graphics. While it's not a substitute for a high-end program, it is easy to use and inexpensive. Apr 94

ReadySetGo 6.0.2, Manhattan Graphics Corp., 914/725-2048, $395. There's no strong reason not to use this desktop publishing software if it tools meet your needs, but there's no compelling reason to choose it, either. Its low price is nice, but not enough. Oct 94

Tableworks Plus 1.05, Npath, 206/392-7745, $299. Publishing utility adds a full table-editor to QuarkXPress and is a must-have for anyone doing even mildly complex tables. Jan 94

### EDUCATION

Creative Writer 1.0, Microsoft Corp., 206/882-8080, $64.95. Graphics/page/layout/word processor hybrid offers some terrific type effects, zany sounds, and bright graphics. While it doesn't teach kids to be better writers, it does encourage them to develop ideas and provides a fun vehicle to express those ideas creatively. Sep 94

The Cruncher, Davidson & Associates, 310/793-0600, $59.95. If you want to teach a child spreadsheet basics, this combination educational/sheet management and business application will do the job. It's creative and easy to use, but slow. Aug 94

Groler Multimedia Encyclopedia, Groler Electronic Publishing, 203/797-3530, $395. CD-ROM encyclopedia has excellent search capabilities, weighs much less than a shelf of books, and is lots of fun. Its timeless and some hierarchical schema was slight provocation. Jul 94

How Computers Work, Time Warner Interactive Group, 818/955-9999, $43.60. Graceful, well-integrated CD-ROM tutorial guides the curious through brief but helpful explanations of basic computer technologies. Jan 94

MacGrade 1.5.5 (2.2.7), Called Software, 800/795-0641, $585 to $2435. Grade-book program has a straightforward, simple interface and clear documentation. Although there's room for improvement, it's easy to use and flexible. Feb 94

The Rosetta Stone, Fairfield Language Technologies, 703/432-6166, $395. Foreign-language instruction on CD-ROM is a valuable educational tool and fun to use. Jan 94

Small Blue Planet 1.2.1, Now What Software, 415/885-3432, $79.95. Nicely integrated collection of beautiful Earth-from-space images on CD-ROM lacks many features of standard atlases and doesn't have a search function, but is endlessly fascinating. Jul 94

### ENTERTAINMENT

Crossword Wizard 1.0, Cogis Corp., 415/454-7217, $49.95. If you're a crossword fan, this crossword-puzzle generator is a must. Although it's not perfect, the play mechanics are fantastic. Dec 94
Crystal Crazz, Casady & Greene, 408/484-9228, $49.95. Ultraglossy, supersmooth version of the classic Crystal Quest is challenging and fun without being overly difficult. Each level retains some old elements, and adds some new ones to keep you on your toes. Jan 94  
Firefall Arcade 1.0 (1.0.2), InLine Software, 617/935-1515, $49.95. If you played the classic video game Centipede, or are just looking for a fun shoot-'em-up, this arcade-style game will satisfy. Jun 94  
Hell Cab 1.0.1, Time Warner Interactive Group, 818/955-9999, $35.97. Take a historical New York cabbie with a penchant for time travel, toss in the Empire State Building, add a few brain-teasers, and you've got this engaging game on CD-ROM. It's a slew and the arcade sections are hard to control, but it succeeds. Jan 94  
KPT Bryce 1.0, HSC Software, 805/566-6200, $159. For less than $200, you get a remarkably good 3-D landscape-rendering program, a CD-ROM full of images, a slide-show utility, and even some screen-saver modules. Although the innovative, graphics-heavy interface can be confusing, this software is lots of fun. Dec 94  
Adobe Illustrator 5.5, Adobe Systems, 415/961-4100, $595. Despite slight speed disappointments, this draw program's upgrade is a bargain. It includes more than 200 tile patterns, 220 fonts, and the Acrobat Distiller and Exchange utilities. Sep 94  
Aldus FreeHand 4.0 (4.0a), Adobe Systems, 206/662-5500, $595. The new page-design and test-editing functions of this powerful draw program make it more than worth the price of admission. Aside from some bewildering interface elements, it's an outstanding program. Mar 94  
Canvas 3.5 (3.5.2), Deneba Software, 305/596-5644, $399. Draw program offers two to three times as many features as any competing program, but our reviewer would prefer an interface that you can navigate without scrambling for the manual. Jan 94  
Collage 1.0.1 (2.0), Specular International, 413/253-3100, $399. Image-compositing software allows you to combine and composite multiple RGB images stored in PICT, TIFF, and Photoshop 2.5 formats. While it's functional and indespuably easy to use, its oversights, including slow screen redraw with no interrupt option, are nearly as numerous as its benefits. Jul 94  
Dabbler 1.0, Fractal Design Corp., 408/688-5300, $599. Art-education and paint software provides an excellent paint set with an appealing if slightly quirky interface, at a great price. Nov 94  
DeBabelizer Lite 1.0 (1.1), Equilibrium Technologies, 413/322-4343, $129. Terrific graphics utility converts graphics files from one format to another. It offers a choice selection of capabilities at a nice, slim price. Aug 94  
DesignWorkshop 1.0 (1.1), Artifice, 503/345-7421, $895. The accessible interface and versatile modeling environment of this 3-D modeling software are worth the fairly high price, particularly for architectural/design conceptualization. May 94  
ElectricImage Animation System 2.0, Electric Image, 818/577-1627, $7495. Although the price may seem incredibly high, this software, with its extraordinary animation and image-rendering capabilities, is worth every penny for cinematic-production professionals. Dec 94  
Infini-D 2.5.1 (2.6), Specular International, 413/253-3100, $695. Serviceable 3-D graphics program has a wide range of modeling, rendering, and animation options, with a straightforward interface. Feb 94  
IntelliDraw 2.0, Aldus Consumer Division, 619/558-6000, $129. Wonderful general-purpose graphics package works well, does a great job of automating drawing tasks, and is straightforward. Despite its breadth of features, it always feels approachable. Sep 94  
Kai's Power Tools 2.0a (2.1), HSC Software, 310/392-8441, $199. Phenomenally powerful suite of Photoshop plug-ins have an addictive quality typically associated with arcade games. There's no end to the automated effects you can generate and the artwork you can create. May 94  
Kray Fractal Studio 2.02 (2.1), Kray Software, 314/878-9125, $119.95. Software lets you generate beautiful fractals of your own design. It's a reasonable choice if you are interested in Sierpinski triangles or naturalistic forms, but it's not an all-fractals-for-all-people program. Aug 94  
Live Picture 1.5.5, HSC Software, 805/566-6200, $3995. At its core, this image editor is a promising program rather rudely assembled atop some marvelous technology and burdened by an extremely high price tag. Though fast and blessed with all the benefits of a proxy-based system, its day-to-day functions leave plenty to be desired for improvement. Dec 94  
LogoMotion 1.0, Specular International, 413/253-3100, $1495. Easy-to-use 3-D package is eminently affordable. It's a terrific program, both for creating flying logos and as an entry-level 3-D package for proffesionals. Nov 94  
MacroModel, Macromedia, 415/252-2000, $1495. This 3-D modeling software is a solid resource to have along when you venture out into 3-D space. The interface is elegantly simple. making the Mac's inner space a more pleasant place to work. May 94  
MetaFlO, The VALIS Group, 415/435-5404, $595. Graphics utility yields intriguing visual effects with a minimum of fuss. It imparts elasticity to 2-D images, letting you push and pull collections of pixels while retaining the visual integrity of the image. Aug 94  
MiniCad 5, Graphsoft, 410/290-5114, $795. Excellent CAD software for the Power Mac offers major performance for its price. It's admirably easy to learn. Nov 94  
Paint Alchemy 1.0, Xaos Tools, 415/487-2000, $599. For the price, these plug-in graphics effects are a tremendous value that both casual users and professional artists can use to design a little chaos into their work. May 94  
PhotoMechanic 1.0, DayStar Digital, 408/967-2077, $199. AppleScript-based utility lets you automate tasks in Adobe Photoshop 2.5.1 or later. Although it's limited, it can relieve you of some mundane chores. Nov 94  
Pointillist, Pictor GraFX, 310/865-0495, $39.95. Stereogram software creates images that look, at first glance, like random dots, but as you focus beyond the page, a 3-D image emerges from the pattern and appears to hover inches in front of the background. It's glee-inducing wackily. Jul 94  
Ray Dream Designer 3.0.3 (3.1), Ray Dream, 415/960-0768, $349. Although this 3-D illustration software remains a price leader, unstable operation, misleading features, and sluggish performance are problems that need to be rectified. Jul 94  
ScanRepPro 1.2, ImageXpress, 408/564-9924, $695. Adobe Photoshop add-on automates the scanning and image-managing process and produces good results, although the program is somewhat unstable. Nov 94  
Scenery Animator 1.0.4 (1.1), Natural claims...
Star Ratings

**BUILDER'S TOOLS**

- **StrataVision 3d 2.6.3 (2.1)**, Strata, Inc., 801/628-5218, $1495. If you need a well-balanced, all-in-one 3-D rendering tool, StrataVision 3d offers animation, and is a superior rendering tool and versatile modeler. It's a challenge to learn, however, as the interface is overly dense and sometimes sluggish. (Feb 94)

- **StudioPro 2.0 (2.1)**, Strata, Inc., 801/628-5218, $1495. If you need a well-balanced, all-in-one 3-D rendering tool, StrataVision 3d offers animation, and is a superior rendering tool and versatile modeler. It's a challenge to learn, however, as the interface is overly dense and sometimes sluggish. (Feb 94)

- **Terrazzo 1.0**., Tao Tools, 415/487-7000, $199. Terrazzo is a new and innovative software package that offers a select niche of architects, designers, and video designers. (Nov 94)

- **Typest 2.0 (2.1)**, Pixar, 510/363-4000, $299. An approachable interface, animation support, and outstanding Rendernaround rendering technology make this 3-D modeler/renders popular a choice. This version improves on the original, but still lacks canned positioning options. (Jun 94)

- **upFront 2.0**, SketchTech, 612/379-9181, $299. Capable modeler is something of an acquired taste. However, take the time to learn and you'll find it useful, if unconventional and demanding, tools that are well suited for architectural modeling. (Jan 94)

**MATH/SCIENCE**

- **Caduceus Science Review Macintosh Project 1.0 (1.1)**, Scientia, 617/776-3427, $250. If you're taking the MCAT, you'd be nuts not to buy this interactive science review. With proper use, its 9MB of flies make this a diagram for checking interpretation accuracy and a for-wider range of biological, chemical, and physical-science information. Nov 94

- **JMP 3.0**, SAS Institute, 919/677-8000, $695. Comprehensive chemistry software is the Mac equivalent of software that seven years ago would have cost $200,000 and required an equally costly minicomputer. It's a winner. (Feb 94)

- **Keksul 1.1**., PSI International, 416/821-5980, $495. Science software reads scanned chemical-structure drawings and interprets them, giving both a diagram for checking interpretation accuracy and a formal string representation of the structure. Nov 94

- **LabView** for Macintosh 3.0, National Instruments, 512/338-9119, $1995. For large-scale, demanding projects in data acquisition and analysis, this software is a challenge to learn, however, as the interface is overly dense and sometimes sluggish. (Feb 94)

**PRESENTATION TOOLS**

- **Adobe Premiere 4.0**, Adobe Systems, 415/961-4100, $795. Video-editing software for the Mac can remain as solid and reliable as previous versions, and also advances far above the remaining competitors with new and improved professional-level features. With the right hardware, it can generate high-quality video without compromising quality. (Aug 94)

- **Authorware Professional 2.0.1**, Macromedia, 415/252-2000, $495. Multimedia scripting and presentation software lets you develop complex presentations with amazing speed. Although expensive, it's wonderfully done and will pay for itself in time saved. (Feb 94)

- **Deck II.2**, ASCII, 512/252-0460, $399. AV Mac turns into digital-audio workstations with this software that enables you to record, mix, modify, and play back CD-quality sound. It doesn't include equalization features. (Jun 94)
America Online: It's So Good, It's Free.

Send For Your TEN-HOUR FREE Trial Today!
We're so sure you'll love America Online, we'll let you try it absolutely FREE!
All you need is a computer and a modem; we'll send you the America Online software and TEN FREE HOURS to check it out for yourself.

Featuring Macworld Online.
Catching up on the latest articles from Macworld magazine is easy on America Online. You'll have instant access to the current issue, plus features that can be found only in Macworld Online:

- Stay in touch with editors of Macworld through easy-to-use message boards.
- Tap into Macworld's authoritative hardware and software reviews.
- Browse archives of past issues with the click of a button.

To order by phone, call
1-800-827-6364
Preferred Customer #10224.

Yes! I'd like to try America Online—FREE.
Send me the free software and trial membership. I understand there's no risk—if I'm not completely satisfied, I may cancel without further obligation.

NAME
ADDRESS
CITY
STATE ZIP

SELECT DISK TYPE AND SIZE—
Windows*: 3.5
DOS: 5.25 High Density
Mac*: 3.5 Low Density

*To use America Online for Windows, you must have a 80486 PC or higher, 32MB of RAM, VGA monitor (256 color support recommended), a mouse, a modem, and a working copy of Windows 3.1.

*Use of America Online requires a personal credit card or checking account. One free trial per household. America Online is a registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners.
Try America Online For Ten Hours, FREE

America Online is so easy to use and even easier to try. And if you decide to subscribe, you'll appreciate our simple pricing with no hidden charges. There's no extra charge for Internet access, higher baud rates, or so-called "premium" services. And there's no limit to what you can do on America Online. Just point and click to:

- Send and receive e-mail around the world.
- Build your own software library of the coolest shareware and freeware.
- Participate in lively discussions on just about any topic.
- Manage your portfolio and personal finances with advice from the experts.
- Make new friends, share interests, exchange ideas, and...
- Have fun!

Mail this card, or fax it to 1-800-827-4595.

Fun. Friendly. Free
Send for your America Online software today and see for yourself! Why not? It's FREE!

To order by phone, call 1-800-827-6364 Preferred Customer #1022
Elastic Reality 1.0 (1.2), Elastic Reality. 608/273-6585, $349.95. Exciting morphing tool can create professional-caliber results—if you can figure out how to use it. The needlessly convoluted interface and inadequate tech support make that a difficult task. Feb 94


HyperCard 2.2, Apple Computer, 408/996-1010, $249. Authoring tool strikes a good balance between power and ease of use, and its price is reasonable. It may not satisfy all your wishes, but it should keep you happily building stacks until the next version. Sep 94

Macromedia Director 4.0, Macromedia, 415/252-2000, $1195. Although this multimedia program remains far from easy to use, this admirable upgrade increases the program’s power and improves its interface. Multimedia professionals will continue to find it the best package available. Sep 94

Morph 2.0 (2.5), Gryphon Software, 619/454-6836, $239. Easy to use morphing software is beautifully designed, with delightful new features, including the ability to morph QuickTime movies. Using it is as painless as morphing gets. Apr 94

MovieWorks 2.0, Interactive Solutions, 415/377-0136, $295. With diligence you can get decent results with this all-in-one QuickTime-based multimedia package—but other entry-level programs make leapfrogging into multimedia easier and more rewarding. Sep 94

The Multimedia Workshop 1.0, Davidson & Associates, 310/799-0600, $79.95. Children or adults can use this multimedia-integration tool without big investments of either time or money. It’s full of compromises, though, such as the inability to layer narration over music. Nov 94

Passport Producer Pro 1.0 (1.1.2), Passport Designs, 415/726-0280, $995. Superb, albeit quite expensive, media-integration package makes assembling even complex presentations surprisingly easy. Full animation is limited to entrances and exits. Apr 94

Perseus 3.0, Adobe Systems, 206/622-5500, $339. Users have plenty of new features to cheer about, including improved tool palettes, extensive charting options, and hyperlinks from this presentation graphics program’s upgrade. But high memory and disk-space requirements are drawbacks. Sep 94

QuickFix1.0 (1.1.1), VideoFusion, 419/891-1090, $149. Approachable QuickTime movie making software lacks the high-end features of other programs but costs a whole lot less. Feb 94

SoundEdit 16, Macromedia, 415/252-2000, $379. Digital audio software supports 16-bit sound and has enough goodies to earn it a place in a multimedia producer’s toolbox. But its lack of record-level controls limits its usefulness as a professional audio tool. Dec 94

IDL 3.5, Research Systems, 303/786-9900, $1500. In this shockingly powerful, compact, graphics-oriented, interpreted language, a single command is worth a page of C-language code. If you’re an image processing professional, you should consider adding it to your tool kit. Oct 94

Object Master for Think C and C++, ACI US, 408/252-4444, $255. Object-oriented development environment is full of goodies and will pay for itself in about a week due to increased programmer productivity. Apr 94

Smalltalk/V for Macintosh 2.0 (2.02), Digital, 714/513-3000, $495. Object-oriented development system is viable for commercial projects, while Digital’s customer support and documentation set a standard other vendors should emulate. Feb 94

VIR BASIC 1.0 (1.0.3), Mainstay, 805/496-1010, $295. Popular programming language lets programmers who know only BASIC get started producing real, if interpreted, Mac programs. It’s a serious developer’s tool, though it’s not on the same footing as VIP-C. Jun 94

VIP-C 1.0 (1.5.1), Mainstay, 805/494-8400, $495. If you’ve mastered the rudiments of C, this programming-language generator will let you code about ten times faster than you could using only an editor. Its real strength is in rapidly assembling smaller projects. May 94

UTILITIES

Apple Personal Diagnostics 1.0 (1.1), Apple Computer, 408/996-1010, $129. In trying to make a hardware tool for the rest of us. Apple has come up short. This hardware-diagnostics utility has an uneven manual, some less than thorough tests, and a surprisingly unsatisfying interface. Nov 94

AppleSearch 1.0, Apple Computer, 408/996-1010, $159. Although this search utility is easy to use, this product for archiving and retrieving text is highly useful. It presents retrieved information clearly and extracts text from documents in many formats. May 94

Atticus Vista 1.0 (1.0.2), Atticus Software Corp., 203/348-6100, $69.95. Control panel and application automatically catalogs the disks you mount on the desktop. It has a few problems, including limited search options, but it can help bring order to disorganized disk collections. May 94

Automap Road Atlas for Macintosh 2.0 (2.04), Automap, 206/455-3552, $99.95. Mapping software tells you how to get where you’re going better than any other map or software we’ve reviewed. Although screen redraw is slow, it’s worth it for the written directions and maps. Jul 94

CD AllCache 2.0, CharisMac Engineering, 916/885-4420, $79.95. CD-ROM accelerator improves access time by caching a CD’s directory and putting its most frequently used data into RAM. Despite this software’s limitations, most CD addicts will find the speed improvement worthwhile. Sep 94

CD-ROM ToolKit 1.0 (1.5.1), FWB, 415/474-8055, $79. Software accelerator can halve the time it takes to open files and search on a CD-ROM. The program supports a wide variety of formats and CD-ROM drives, but users should be aware that playback of QuickTime movies is often uneven. May 94

Conflict Catcher II 2.1.1, Casady & Greene, 408/484-9228, $79.95. Customizable, fast, and safe extension-management utility goes well beyond the basics. For Power Macintosh users, it even tells which extensions aren’t written in native code and are likely to slow down Power Macs. Oct 94

CryptOmatic 1.01, Kent Marsh, 713/522-5625, $99. Security software offers fast finder-level encryption and decryption with effective file removal. Although its simplest encryption algorithm isn’t quite hacker-proof, it’s worth considering. Feb 94

DiskDoubler 4.0, Symantec Corp., 503/334-6054, $79.95. In pure efficiency terms, this file-compression software is a winner, but it lacks many features of previous versions. Aug 94

DiskLock 4.0 (1.0), Symantec/Fifth Generation Systems, 503/334-6054, $99. PowerBook utility secures software balances robust security with simplicity and ease of use. It’s harder to crack than most PowerBook utility collections’ security features. Jan 94

FlipBook 4.0 (4.5.1), PrairieSoft, 515/225-3720, $99.95. Organizing a cramped hard drive is a more manageable task with this simple but powerful file-management utility that lets you copy, move, rename, delete, and find files—without using the Finder. Jul 94

The Disney Screen Saver, Berkeley Systems, 510/540-5535, $49.99. Mickey, Goofy, Peter Pan, Ariel, and other Disney favorites cavort around your screen with this screen saver that includes 16 different modules. Mar 94

Drive7 3.0, Cesa Blanca Works, 415/461-2237, $95.95. Highly recommended hard drive formatting utility easily formats and partitions most drives and provides all the options you need. And within its limitations, its Mount Cache utility provides a real performance boost. Nov 94

DriveTech 1.0, MicroMat Computer Systems, 415/898-6227, $59.95. Without decent documentation or clearer error messages, this floppy-drive cleaning and diagnostic program is essentially a $60 floppy-drive cleaning kit. Since you can buy a cleaning kit without software for $10, that makes it a bad deal. Jan 94

DupLocator 1.03, Midnight Software, 303/933-1013, $99. For new Macintosh users who do not have a general file utility, this software locates duplicate files, as well as performs basic file commands such as moving and renaming files, may be useful. Jan 94

eDisk 2.0, Alysic Software Corp., 415/928-2895, $149.95. Driver-level software compresses data read to your drive on the fly and automatically expands data read from your drive. It offers transparent compression. Dec 94

Icon Mania 1.0 (1.01), Dubl-Click Software, 503/317-0355, $69.95. Delightful icon-conediting utility comes with terrific tools for building new icons, including an outstanding thumbnail feature that builds custom icons from graphics files. Aug 94

MacTools 3.0, Central Point Software, 503/690-8090, $149. Recovering trashed files is a snap with this utility package that fixes more disk problems than its competition. It includes disk-and-file maintenance, disk repair, virus protection, and backup. Mar 94

Maxima 3.0, Connectix, 415/571-5100, $99. If you have more than 8MB of RAM, you can use some of it as a RAM disk, speeding up disk-based operations, with this inexpensive utility. Nov 94

Open Sesame 1.02 (1.1), Charles River Analytics, 617/491-3474, $99. Utility automates Finder operations, such as opening, without macros or scripts. It has an elegant interface, but people with strict work habits are more likely to find its suggestions worthwhile than those who don’t follow a routine. May 94

OptiMem 1.4 (1.5.6f), Jump Development Group, 412/681-2692, $125. Systemwide memory manager monitors RAM use and allocates RAM where it’s needed. Mar 94

PopupFolder 1.0 (1.5), Inline Software, 617/933-1515, $59.95. Finder utility is so handy and easy to use, you wonder why it wasn’t built into the Mac’s continues
system software. On the other hand, it's sluggish when readying pop-up menus for every folder. Aug 94

★★★★ PowerAgent 1.1, SouthBeach Software Corp., 305/888-8416, $159. You can revolutionize your MacIntosh work with this agent that manages scripts. It provides excellent support for FileMaker Pro, but unfortunately in many other mainstream applications, scripting is difficult to implement. Nov 94

★★ PowerMerge 2.0, Leader Technologies, 714/757-1278, $129. Powerful file-management tool helps you keep individual files, folders, or entire volumes organized and up-to-date. This version lets you compare and launch documents, rename files, trash superfluous files, and lots more. Aug 94

★★ ProFiles 1.0, Dayna Communications, 801/269-7200, $129. Unusual new utility lets you group related files and folders for quick access and actions such as making aliases, copying, turning sharing on and off, and more. The recommended RAM allocation of 1MB may be a problem for computers with limited memory. Aug 94

★★ QuickKeys 3.0, CE Software, 515/221-1801, $139. The simple, unintruding interface of this macro-building utility allows you to build a set of useful shortcuts quickly. Mar 94

★★★ RAM Doubler 1.0.1 (1.5), Connectix Corp., 415/571-5100, $99. Inexpensive system extension doubles available RAM for many Mac users. There are a number of requirements, however, including System 7, 4MB of physical RAM, and a 68030 board. May 94

★★★ Redux 2.0.2 (2.5), Inline Software, 617/935-1515, $79.95. Easy to learn and relative simple to use, this backup program has some powerful features, such as scripting, but it doesn't have a compression option. Jan 94

★★★ SAM 3.5B (4.0), Symantec Corp., 503/334-6054, $99. Efficient, virus-proof protection software slows down system start-up and application launching, but this program is a worthwhile investment for anyone who exchanges or downloads files. Mar 94

★★★★ SCSI Director Pro 3.0.6, Transoft Corp., 805/665-5200, $99. Utility provides simple, one-button hard disk formatting, but when doing some of the fancy tricks described on the program's box, the going gets rough and technical support costs $1.90 per minute. Sep 94

★★★★ Square One 2.0, Binary Software, 310/449-1481, $74. The slick design, flexibility, and straightforward interface of this file-launching utility make it a pleasure to use. Dec 94

★★★ Stop & Go 4.0, Engram International, 415/455-1100, $69.95. File-protection/backup utility uses a portion of your hard disk to snap a snapshot of all data in your Mac's RAM. It's fast, and it requires only a hard disk formatting, applications, and extensions in a single, unified process, but it's unduly complex. Oct 94

★★★★ Tempo II Plus 3.0.9 (3.0.9a), Affinity Microsystems, 303/442-4840, $179.95. Very capable macro-creating utility may be daunting for novices but offers plenty of power for advanced users. Mar 94

★★★★ TimesTwo 2.0, Golden Triangle Computers, 619/587-0110, $149. This driver-level compression utility is transparent and robust. It caused no problems through a two-month course of testing, on a system with myriad utilities and system software tools. Mar 94

★★ UnderWare 1.0.1, Bit Jugglers, 415/968-3908, $59.95. Inspired, ugly for your Mac's desktop comes from a control panel that adds three features: a screen saver, desktop patterns, and animations that run on your desktop while you work. The price for this whimsy is mostly in disk space. Jun 94

★★★★ Virex 5.0 (5.03), Datawatch Corp., 919/549-0711, $99.95. The extremely fast, trouble-free performance of this software makes the task of guarding against computer viruses almost painless. Its speed puts it ahead of the pack. May 94

★★★★ VirtualDisk 1.1a (2.0), Continuum, 206/695-8136, $79. Rapid disk cataloging, fast, efficient label printing, and an excellent disk-copy utility make this software a wonderful value. Jul 94

★★★★ Working Watermarker 1.02 (1.06), Working Software, 408/423-5696, $49.95. Simple, useful system extension allows you to print or fax "watermarks" in the background of virtually any document. Although it has imperfections, it's an excellent tool in our reviewer's System Folder. Jan 94

VERTICAL MARKETS

★★★★ Claire, The Personal Music Coach 1.0.1, Opcode Systems, 415/856-3333, $129.95. Musicianship program teaches pitch and interval recognition, sight reading, and notation. Although the interface is not standard, it's easy to learn. May 94

★★★★ ErgoKnowledge 1.0, Visionary Software, 503/246-6200, $395. Despite a few shortcomings, this CD-ROM offers a good, basic review of office-computer ergonomics. Dec 94

★★★ MacInteors 1.0 (1.2), Micropost, 408/253-2000, $129. Correctly placing objects is unduly cumbersome in this interior-design software, but once you catch on to the program's quirks, it's useful. Feb 94

★★★ Mayo Clinic Health Book 1.2, IVI Publishing, 612/686-0779, $69.95. Medical CD-ROM for home use deals with the full gamut of healthcare topics, from AIDS to zygotes, although it doesn't include any reference to alternative therapies. Sep 94

★★★ Mayo Clinic: The Total Heart 1.0, IVI Publishing, 612/686-0779, $69.95. Cardiovascular health and related subjects are the topics of this medical CD-ROM for home use. Although it makes liberal use of drawings, photographs, and animations, video sequences would have been more effective. Sep 94

★★★ MusicTime 2.0, Passport Designs, 415/726-0280, $149 to $249. Music notation program is geared for hobbyists and students. If your needs aren't complex, it may fit the bill, at a great price. Oct 94

★★★ SAM-CD, Scientific American Medicine, 212/754-0530, $995. Despite a few shortcomings, such as the poor interface for case simulations, this medical reference work—a popular series of publications covering topics in clinical medicine—should prove a worthwhile addition to any medical library. Sep 94

★★★ WillMaker 5.0, Nolo Press, 510/549-1976, $69.95. Legal found software quickly and easily automates the creation of wills, health-care directives and proxies, and final arrangements documents. It offers excellent explanations, examples, and background. Jun 94

WRITING TOOLS

★★★★ MacWrite Pro 1.5 (1.5 v2), Claris Corp., 408/727-8227, $249. The clean, uncluttered interface of this low- to middle-level word processor is still one of its major assets. This upgrade adds support for QuickTime, PowerTalk, AppleScript, and more. May 94

★★★★ OmniPage Professional 5.0, Caere Corp., 408/395-7000, $695. In a historic first for OCR, this Power Mac software has an accuracy of 100 percent on good text samples. It does still make occasional baffling minor errors on real-world documents. Nov 94

★★ The Oxford English Dictionary, Oxford University Press, Electronic Publishing, 212/679-7300 ext.7370, $895. CD-ROM dictionary contains 20 print volumes, including half a million words. But the flaws, omissions, unorthodoxy, and unforgivably poor design are unbearable. Apr 94

★★ Random House Unabridged Dictionary, Random House Electronic Publishing, 212/572-2600, $179. Comprehensive dictionary on CD-ROM works within any program and is good at guessing misspelled words. Although some functions don't work reliably, the quality and design of the software are better than those of other dictionaries on CD-ROM. May 94

★★★★ TextBridge 2.0, Xerox Imaging Systems, 508/977-2000, $995. Optical character recognition software is impressive on good documents and can be trained and automated. You won't find that anywhere else at this price. Sep 94

★★★★ WordPerfect for Macintosh 3.0 (3.0a), WordPerfect Corp., 801/225-5000, $495. The innovative interface of this word processor uses context-sensitive button bars and expandable rulers to make innumerable features accessible with a click of the mouse. It's an accomplishment in ease of use. Mar 94

★★★ WriteNow 4.0.1, WordStar International, 617/494-1200, $119.95. Tidy word processor's conservative use of memory (the application fits into a dandy 600KB partition) and graceful interface will continue to win fans. This version adds elegant table capabilities and several PowerBook-friendly features. Jun 94

★★★ Writing Coach 1.0, WritePlace Software, 503/484-6380, $895. If you'd like help with your writing, this writing-skill tutorial could be a great investment. Skillfully worded worksheets assist with planning, organizing, and revising. Dec 94

Hardware

INPUT DEVICES

★★ Drawing Slate, CalComp Digitizer Division, 714/821-2000, $395. Digitizing tablet is a good, compact, low-cost implementation of pressure sensitivity, although the battery-operated stylus is a bit heavy. Jun 94

★★ Ear Phone Streamline AV, Jabra Corp., 619/622-0764, $169. As a hands-free telephony tool—and a replacement for the PalmTalk microphone—this telephone/speech-recognition device is a winner. Its biggest drawback is that you can't hear other Mac sounds, such as modem tones, when it's plugged in. Jul 94

★★ FlightStick Pro for Macintosh, CH Products, 619/598-2518, $129.95. The authentic look and feel of this joystick, along with well-conceived software, make it a nearly perfect desktop pilot's companion. Dec 94

★★ Mac Keyboard Deluxe, MicroSpeed, 510/490-1403, $125. If you're in the market for a new or replacement keyboard, this one, which is both smaller and lighter than Apple's Extended Keyboard, is worth considering. It has four ADB ports. Nov 94

★★ PenDirect ADB, FGT Data Systems, 714/995-3900, $398. Input device lets you manipulate items on the Macintosh screen using a stylus called a light pen. It works well, although it seems ergonomically inferior to a mouse for routine tasks. Mar 94

★★ TrakMate, Key Tronic Corp., 509/928-
**MODEMS/NETWORK HARDWARE**

- **Cooperative Adapter**, Photonics Corp., 408/955-7930, $349. The high cost of each unit, the limitations and restrictions inherent in diffuse infrared, and the extremely low cost of traditional LocalTalk adapters and cabling make this infrared network interface an expensive niche product. Dec 94

- **Cypress PhonePro 1.2 (1.4)**, Cypress Research Corp., 408/752-2700, $349 to $950. By improving its Integration with FaxPro and with PowerTalk and PowerShare, this powerful telephone software has greatly extended its business scope. May 94

- **DaynaPort Pocket SSC/Link, Dayna Communications**, 801/269-7200, $259 to $369. Inexpensive, lightweight SSC-to-Ethernet connector works with both desktop Macs and PowerBooks and can use the Mac's ADB port as a power source. Nov 94

- **EtherWave, Farallon Computing**, 510/814-5000, $129. If you need to expand your network at a reasonable price with minimal fafs, get this Ethernet transceiver. It includes a second jack that allows you to daisy-chain to another device through an additional 10BaseT line. May 94

- **FastSwitch 10, Grand Junction Networks**, 510/252-0726, $525.00. Switched Ethernet hub is a great solution for networks that handle large amounts of data traded peer-to-peer, but if your network consists of E-mail and a file server, you probably won't see much benefit in stepping up to switched Ethernet. Dec 94

- **OneWorld Fax, Global Village Communication**, 415/390-8200, $999. Easy-to-use network fax product lets an office share fax-sending resources without outsourcing a dedicated line and CPU; however, it can't receive faxes and can't queue more than one fax document at a time from a single CPU. Aug 94

- **Pocket Ethernet Adapter, Xicor**, 818/878-7600, $349 to $399. All-in-one SSC-to-Ethernet connector is lightweight and works with desktop Macs and PowerBooks. Nov 94


- **Spectra-Com P192mx, Bay Connection**, 408/270-8070, $199.95. If you have a modem, it's likely capable. August 94

- **SupraFaxModem 288**, Supra Corp., 503/967-2410, $329.95. This 2800-bps fax modem is a very good performer, as good as or better than 14,400-bps modems, and the price of admission isn't terribly steep. Combined with fast, stable fax software and a good terminal program, it's hard to beat. Aug 94

- **Watermark Message Central 2.0.2**, High Tide Software, 510/704-9372, $499. If you're willing to put in a lot of effort, you'll find this highly sophisticated voice-mail system supremely flexible. It includes a specially modified modem with voice chip, as well as fax software and telecommunications software. Jul 94

**PRINTERS**

- **Apple Portable StyleWriter**, Apple Computer, 408/996-1010, $439. Sleek, portable inkjet printer weighs 4.5 pounds and is a pleasure to use. It uses standard StyleWriter cartridges. Jan 94

- **Brother HJ-400**, Brother International, 908/356-8880, $569. Compact, 360-dpi ink-jet printer is fairly slow and does not allow background printing. Some large files require additional application memory to print correctly. May 94

- **Color StyleWriter Pro, Apple Computer**, 408/996-1010, $629. Color printer represents one of the best values in the inexpensive color-printing market. It's fast, produces nice-looking output, and has some good features, including a great way of handing color ink cartridges. Sep 94

- **DeskWriter 310**, Hewlett-Packard, 800/752-0900, $379 to $455. Versatile, low-cost ink-jet printer is a 4.8-pound, battery-powered portable. With its 60-page sheet feeder, it's also a great desktop printer. With a $49 color print cartridge, it offers inexpensive three-color printing. Mar 94

- **HP LaserJet 4M**, Hewlett-Packard, 800/752-0900, $1279. Primarily for those of you who use a PC or work in a small, mixed-platform environment, this energy-efficient laser printer offers automatic port and language switching, and is a good buy. May 94

- **LaserWriter Select 360**, Apple Computer, 408/996-1010, $1599. Low-cost, high-performance, 10-ppm printer is perfect for small LocalTalk or mixed networks. For bigger networks, consider buying more than one; they're more cost-effective than a 20-ppm printer. Apr 94

- **Notebook Printer II, Citizen America**, 310/453-0614, $399. If weight and size are your biggest concerns, this portable printer may be a good choice. If speed is at all an issue, however, other options may be preferable. Jan 94

- **Personal LaserWriter 320, Apple Computer**, 408/996-1010, $599. If you've been holding out for a high-quality personal laser printer that's fast enough to share over LocalTalk, the small inconveniences of this 300-dpi printer are easily outweighed by its low price, good speed, and PostScript Level 2 support. May 94

- **PowerPrint 2.5**, GDT Softworks, 604/291-9121, $149. Ingenious hardware-software combo lets you print from your Mac to almost any PC printer. It supports over 1000 printers, ranging from daisy dot matrix models to the newer color ink-jet and laser printers. Sep 94

- **P-Touch PC, Brother International Corp.**, 908/356-8880, ext. 4307, $449.95. Versatile label printer is easy to set up and use, and produces high-quality output. The cost per label is high, though, and the documentation is weak. Sep 94

- **QS ColorScript Laser 1000**, QMS, 205/633-4300, $7999. Color laser printer succeeds in combining the versatility of monochrome laser printing with attention-getting color, but if you don't need to chase rainbows right away, you might wait and see if competition drives capabilities up. Jul 94

- **SilentWriter 640**, NEC Technologies, 508/264-8000, $825. With RAM of RAM, PostScript Level 2 support, and a 6-ppm engine, this printer is a capable performer. Generally, it represents hassle-free printing, but it doesn't handle single sheets of paper well. Jun 94

- **Smart Label Printer Pro, Seiko Instruments**, 408/922-5900, $299.95. If you need to print only a few labels at a time, this label printer may be an expensive but good choice. It prints very quickly, and with excellent print quality. May 94 continues...
At Last! The Definitive Reference to Image Editing with Adobe Photoshop 2.5

MACWORLD PHOTO SHOP 2.5 BIBLE GUIDES YOU EXPERTLY THROUGH ELECTRONIC PAINTING, RETOUCHING, SPECIAL EFFECTS, AND MORE!

Now even novices can explore the creative possibilities of this highly sophisticated graphic design program in a book written expressly for Photoshop 2.5. Author Deke McClelland draws on years of hands-on experience to guide you from Photoshop fundamentals through the most advanced techniques, including retouching and complex electronic imaging.

Concise, well-organized chapters cover key topics such as getting the most out of Photoshop, working with image file formats, resampling and cropping paint and edit tool basics, color manipulations, and more. Get the Macworld Photoshop 2.5 Bible, the only Photoshop book officially authorized by Macworld magazine, and see what great things you can do with this leading design program.

A contributing editor to Macworld magazine, Deke McClelland also writes for PC World and Publish. He has authored nearly 30 books on desktop publishing and computers.

$29.95 USA/$39.95 Canada
860 pages

For fastest service, fax your order to (415) 358-1280. Phone 8am to 5pm, PT, or complete and mail the order form. Also available wherever computer books are sold.

<table>
<thead>
<tr>
<th>Card No.</th>
<th>Exp. Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td></td>
</tr>
<tr>
<td>Visa/MC</td>
<td></td>
</tr>
<tr>
<td>Amex</td>
<td></td>
</tr>
</tbody>
</table>

Yes! Please send me: I Wish to Pay by:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Price</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$29.85</td>
<td>$29.85</td>
</tr>
</tbody>
</table>

Order Risk-Free: 1-800-762-2974
Knowing exactly where your money goes not only feels terrific. It gets better every year.

New Quicken 5 is loaded with more ways than ever to give you that confident, in-control feeling about your finances. It's faster. Easier. Even richer with insight. So now for the first time you can:

Let the new Quicken Financial Calendar handle all your regular payments and deposits once and for all. Simply drag and drop regular transactions onto the Calendar, and it automatically enters them in the register for you from now on. (You can confirm the amounts, each time, of course.)

New QuickMath gives you a pop-up calculator right in the deposit or payment column — and fills in the answer automatically.

Play "what-if" with purchase decisions to see how they affect your future cash flow with the new Financial Forecast.

With improved Reconcile, even balancing your checkbook is quicker and easier than ever.

And there's even more. Like Quicken Tips to help you get the most out of Quicken. New QuickReports and new Comparison reports to give you faster, more useful ways to get at the information you need. Plus dozens more little things that make life "Quicken-easier" — all over the place in new Quicken 5.

Even QuickFill is improved to make register entries faster still. (Just set it to enter exactly what you want, every time!) The new Tax Planner helps you save on taxes, shows where you stand all year, and lets you do tax planning "what-if" style.

Let new Quicken Quotes update prices in your entire investment portfolio automatically via modem.

It gets better every month.

Special Direct Upgrade Offer: You can upgrade at retail and get a $10 rebate. Or upgrade direct and save $10 right now — Only $29.95 direct (Plus $6.50 shipping & handling)

Don't miss the best Quicken upgrade ever. Call now to order. 1-800-781-5999 Ext. 810048

Offer expires 2/28/95.

No-risk money-back guarantee: If you don't agree that this is the best Quicken upgrade ever, simply return it within 60 days for a full refund.
of the other available Power Macs, you should consider it if you’re a high-end user moving your work over to RISC-based computing. Aug 94

★★★★ Power Macintosh Upgrade Card, Apple Computer, 408/996-1010, $599. Current 33MHz 040 machines will get the best bang for the buck with this card, which is a less expensive upgrade path than a standard motherboard replacement. However, other Macs won’t realize as much of a performance gain. Oct 94

★★★★ Quadra 605, Apple Computer, 408/996-1010, $789. Never before has Apple offered so much performance for so little money. The performance and price of this 040-based machine match those of an entry-level 486SX-based Windows PC. Mar 94

★★★★ Quadra 630, Apple Computer, 408/996-1010, $1279. Fast, inexpensive, expandable 33MHz 68040 machine may be the last 680X0-based desktop Macintosh, but it’s one of the best entry-level Macs ever. Nov 94

★★★★ SCSI MicroDock, Newer Technology, 316/685-4904, $175. Tiny Duo docking station is just under 4 1/2 ounces and barely 5 inches long. It adds only an ADB port and a SCSI port—but both are useful. May 94

★★★★ SledgeHammer2000FMF, FSB, 415/474-8055, $3179. RAID drive is both fast and inexpensive. Although it can be a bit noisy when accessing data, it’s a good deal. Apr 94

VIDEO/DISPLAY

★★★★ Apple Macintosh Display Card 24AC, Apple Computer, 408/996-1010, $1579. 24-bit accelerated graphics card offers a satisfactory price/performance ratio, although it can’t switch resolutions from the keyboard. Oct 94

★★★★ Apple QuickTake 100 for Macintosh, Apple Computer, 408/996-1010, $749. If you’re in the market for a medium-quality, digital color camera that costs under $1000, this is the best deal around. But if you’re not in a hurry, you may want to wait until some of the camera’s more obvious problems, such as its fixed-focus lens and lack of a zoom option, are ironed out. Jul 94

★★★★ FlexCam, VideoLabs, 612/988-0055, $595. Small, unobtrusive desktop video camera has a flexible gooseneck for positioning. Dec 94

★★★★ Intellilcolor Display/20, Radius, 408/434-1010, $2399. Although with its exceptional brightness and clarity this monitor would be a fine addition to any designer’s desk, the included Intellilcolor software, which lets you control the settings of your display, doesn’t offer much added value. Apr 94

★★★★ L-TV Portable, Focus Enhancements, 617/938-0888, $299. Sturdy, inexpensive, external TV-converter plugs into your Mac and converts video output to NTSC. It provided a crisp, clean image, but mild flickering and conspicuous shimmers were present. Aug 94

★★★★ L-TV Pro NuBus, Focus Enhancements, 617/938-0888, $399.99. NuBus card converts your Mac’s RGB video signal to NTSC so you can use your Mac with a TV or VCR. It supports a wide range of Macs, but the image has some flicker and distortion, despite flicker-filtering software. Aug 94

★★★★ The Presenter Plus Mac/PC, Consumer Technology Northwest, 503/643-1662, $429. Small, external TV-converter supports output to television from most Macs with built-in video. It does a barely passable job of providing a stable image. Aug 94

★★★★ QA-350 LCD, Sharp Electronics Corp., 800/237-4277, $2495. At less than half the cost of a typical active matrix LCD panel, this passive matrix projection panel offers an economical alternative for presenters who don’t need multimedia capability. Jul 94

★★★★ Radius LeMansGT, Radius, 408/834-1010, $2499. Fast, 24-bit accelerated graphics card has automatic 30-bit CLUT calibration and can switch resolutions on the fly via a pop-up menu. Oct 94

★★★★ RasterOps Horizon 24, RasterOps, 408/562-4200, $1999. This 13-inch 24-bit accelerated graphics card is slower than anticipated and overpriced. The ROM card, however, is upgraded via software. Oct 94

★★★★ Simply TV, E-Machines, 408/541-6100, $439. Easy-to-install video card plugs snugly into a PCI slot, and allows you to use your Mac with a television for display. The image is impressively flicker-free, but the resolution is limited to 256 colors. Aug 94

★★★★ SuperMac Spectrum Power1152, SuperMac, 408/541-6100, $1399. Fast, relatively inexpensive, 24-bit accelerated graphics card can switch resolutions from the keyboard and offers zoom and pan options. Oct 94

★★★★ Tornado Graphics Card, Mirror Technologies, 612/832-5622, $699. Inexpensive 24-bit accelerated graphics card has zoom and pan options but is relatively slow. Oct 94

★★★★ The Presenter Plus Mac/PC, Consumer Technology Northwest, 503/643-1662, $429. Small, external TV-converter supports output to television from most Macs with built-in video. It does a barely passable job of providing a stable image. Aug 94

★★★★ QA-350 LCD, Sharp Electronics Corp., 800/237-4277, $2495. At less than half the cost of a typical active matrix LCD panel, this passive matrix projection panel offers an economical alternative for presenters who don’t need multimedia capability. Jul 94

★★★★ Radius LeMansGT, Radius, 408/834-1010, $2499. Fast, 24-bit accelerated graphics card has automatic 30-bit CLUT calibration and can switch resolutions on the fly via a pop-up menu. Oct 94

★★★★ RasterOps Horizon 24, RasterOps, 408/562-4200, $1999. This 13-inch 24-bit accelerated graphics card is slower than anticipated and overpriced. The ROM card, however, is upgraded via software. Oct 94

★★★★ Simply TV, E-Machines, 408/541-6100, $439. Easy-to-install video card plugs snugly into a PCI slot, and allows you to use your Mac with a television for display. The image is impressively flicker-free, but the resolution is limited to 256 colors. Aug 94

★★★★ SuperMac Spectrum Power1152, SuperMac, 408/541-6100, $1399. Fast, relatively inexpensive, 24-bit accelerated graphics card can switch resolutions from the keyboard and offers zoom and pan options. Oct 94

★★★★ Tornado Graphics Card, Mirror Technologies, 612/832-5622, $699. Inexpensive 24-bit accelerated graphics card has zoom and pan options but is relatively slow. Oct 94

Everyone needs more RAM. But you’ve probably been putting off buying more SIMMS because they cost too much and they’re a hassle to install. Not anymore. With RAM Doubler™ forget about adding SIMMS—you’re one click away from doubling your memory with just software.

RAM Doubler is intelligent memory management. It’s a bulletproof extension that works by using patented techniques to reclaim memory. And it comes from the company that brought virtual memory and 32-bit addressing to the Macintosh.

Macworld readers voted RAM Doubler as the “Most Promising Newcomer” in this year’s World Class awards. Macworld’s editors gave it an Editor’s Choice award. In fact, in almost every review of RAM Doubler you’ll see praise similar to what MacUser wrote: “may well be the best investment you’ll make this year.”

But don’t take their word for it. Try it yourself. RAM Doubler is only $99 SRP with a 30-day money back guarantee. Get RAM Doubler wherever great software is sold.
If you think you just get some floor space, think again.

**You Are Here...**

**...And Here**

**MACWORLD EXPOSITION**

Gain access to a world marketplace.

In 1994, tens of thousands of Macintosh professionals will gather for MACWORLD Exposition where they will make decisions about what products and services they'll buy now and in the coming year. Based on what they see and learn at MACWORLD Expo, they'll decide how to expand their system to expand their world.

MACWORLD Expo/San Francisco – January 4-7, 1995

Reserve your booth space today for MACWORLD Exposition and see how some floor space can turn the world into your marketplace.

Please send me more information on MACWORLD Expo. I am interested in exhibiting in San Francisco.

Name ____________________________
Title ____________________________
Company _________________________
Address __________________________
City/State/Zip _____________________
Phone ____________________________ Fax __________________________
Mail to: Mitch Hall Associates
260 Milton Street, Dedham, MA 02026
Or Fax to: 617-361-3389 Phone: 617-361-8000
486, Pentium, PowerMac...
No matter how fast your PC is, it can't outrun a power problem (Get Uninterruptible...starting at $199)

Just don't have the time for power problems on your PC? Don't worry. They'll always make the time for you. It's not if a power problem will occur, but when. Due to household appliances, poor wiring, bad weather or even other office equipment, power problems are as inevitable as death and taxes.

IN THE NEXT THREE MONTHS, MORE THAN 30,000,000 PCs WILL BE HIT BY POWER PROBLEMS...

In fact, you have better odds of winning the lottery than of escaping the sting of power problems on your PC. One study discovered a typical PC is hit over 100 times a month, causing keyboard lockups, hard drive damage, and worse. And since sags and blackouts represent more than 85% of power problems likely to hit your computer, standard surge suppressors are literally powerless to protect you. And a study in a recent PC Week showed that the largest single cause of data loss is bad power, accounting for almost as much data loss as all other causes combined.

PROTECT YOURSELF BEFORE YOU KICK YOURSELF...

Get instantaneous battery backup power from an APC Uninterruptible Power Supply and prevent keyboard lockups, data loss, and hard disk crashes. Surge protection performance is even backed by up to a $25,000 Lifetime Equipment Protection Guarantee.

Ask for APC at your computer reseller today or call for your FREE handbook.

Starting at just $119, an APC UPS is serious protection no serious computer user should be without.

“Don’t take chances...get the ultimate protection...from APC.” —PC World

Circle 59 on reader service card

APC UNINTERRUPTIBLE POWER MEANS SAFE DATA, HAPPY COMPUTERS

Surge protection backed by a $25,000 insurance policy protects valuable computer hardware from loss.

Site wiring fault indicators automatically diagnose dangerous wiring conditions.

Safe AC

Raw AC

APC

Audible and visual alarms alert you to power problems.

Wires remove electromagnetic interference.

Over 3,000,000 satisfied APC users...

“This is the best computer related purchase I have ever made! Has saved me hours of re-programming...”
Carol Irvine, Wizard Assoc.

“We reduced our maintenance costs by 30% in repairs of equipment.”
Valentina Gonzalez, Pfizer

“Our server was running a project when a load power...we had to close up all the data files. It took four days to recover. But we don’t worry anymore since we got APC...”
Tony Chen, Denza Systems

“We were working on a state bill when the power went out. APC saved the day and year and [sic]...about $600 a month of data saved thanks to APC.”
Raeby, Software Galeria

“A power surge did significant damage to all of our systems except those protected by APC. The APC units were undamaged...”
C. Jeffrey, C. Jeffrey Eng.

“APC has virtually eliminated downtime in our corporate network...”
Kurt Reiner, Searle Corp.

“Power went out while processing payroll? If not for APC we would have had a nightmare.”
Suzi Haginou, OSI Inc

Home office users Don Travis knows firsthand about APC reliability: “It ought to be illegal to buy a computer without an APC. Back-ups 210, I recently had a direct lightning hit right outside the house...my computer never blinked.”

“APC lets me sleep better at night. How much would you pay to get back that one file you worked all day to complete for the boss who gets on the phone at 8:00 a.m.? You should assume that you’ll buy a UPS, not that it’s some luxury item.”
R. Morella, Westminster, CA

“A power surge wiped out the FAT tables on all PCs not protected by APC. Now have APC installed on all...”
Craig Post, Comp. Tech.

“Before I purchased the UPS I had to put in at least two hard drives at $1000. With APC products...no new hard drives in two years!”
S. Foreman, ISP

Solutions

Free 60-PAGE HANDBOOK
What are the causes and effects of power problems? The most common power protection mistakes? Call for your free handbook today! Please reference Dept 99.

APC

AMERICAN POWER CONVERSION
800-800-4APC
401-788-2797 fax 800-347-FAAX faxback
132 Fairgrounds Rd., W. Kingston RI 02892 USA
A publicly-traded company (NASDAQ: APCC)
Selected and edited by Charles Barrett

The following listings include both time-sensitive promotions and open-ended offers being sponsored by Macintosh vendors and their resellers. Each listing indicates which products have been awarded a star rating in Macworld's Reviews (products rated ★★ or lower are not eligible for inclusion), have been selected as an Editors' Choice, and have won a World-Class award. In some cases, the editorial evaluation quoted is for an earlier product version. The symbol indicates that the product is Power Mac related. Except where otherwise noted, prices given are retail prices.

When placing an order, please mention that you saw the offer in Macworld. Should any problems arise, contact the Streetwise Shopper editor by fax (415/642-0766), phone (415/978-2341), or mail (Macworld, 501 Second St., San Francisco, CA 94107).

Vendors respond to desires having to do with services included in this section are encouraged to contact the Streetwise Shopper editor with particulars.

BUNDLES

- **Aldus Program + TypeTwister 1.0** Adobe is including a free copy of its $29.95 TypeTwister (Jan 95 ★★★★★) with any of its Aldus Consumer Division software programs—including Aldus Home Publisher, SuperPaint, Point & Publish, IntelliDraw, Art Explorer, and DateBook & TouchBase Pro. Offering 242 custom colors, TypeTwister works throughout the Clipboard, OLE, or Apple events to provide a selection of designs for cutting and pasting, and tools for custom alteration of text. Offer expires 1/15/95.

- **DAT AutoLoader + Retrospect Remote 2.1** NicoNeutronics Technology is including Danz's Designing World's $449 software (Sep 93 ★★★★★ for Retrospect Remote 2.0) for backing up and archiving three remote Macintoshes and one server with its new $499, 48GB DAT AutoLoader, which is based on DDS-2 digital autoloading technology. Call 714/463-6100 for product and reseller information.

- **Fractal Design Dabbler + Wacom ArtPad** Fractal Design and Wacom Technology are offering a $239 ArtPad bundle consisting of Fractal's $99 natural-media draw and paint application for beginners (Nov 94 ★★★ for 1.0) and Wacom's $199 ArtPad graphics tablet, which includes the cordless, batterypower-sense UltraPen stylus and driver. Estimated street price for the bundle is $175. Call 800-922-6613 for nearest reseller.

- **LightSpeed 1200 + Adobe Photoshop 3.0** Xarre Corporation is including Adobe's $895 image-editing software (Jan 95 ★★★★★) free of charge with its $7495 LaserPhoto-1200, a 1200-bpp-1200-dpi laser printer with PostScript Level 2 software and full-blown 11-by-17-inch capabilities. The 1200 is based on the 8-pages-per-minute Toshiba TN-7270 print engine and includes Ethernet. Call 800/926-8839 for more information. Offer expires 12/31/94.

- **MasterFinder 1.2.1 + Trash Picker** Olduvai Corporation is offering its $79 Trash-management utility free of charge when customers purchase its $149 MasterFinder disk-management utility (Nov 92 ★★★★★) or for $7.95. MasterFind- er allows complete control and manipulation of files and folders on any hard drive, CD-ROM drive, or floppy disk. Trash Picker saves time and disk space while improving file security. Call 800/548-5151 to order. Order expires 1/31/95.

- **QuickMail Internet Access Kit** CE Software is offering a 10-user kit consisting of its $649 (10-user) QuickMail electronic-mail system (Jan 95 ★★★★★ for QuickMail 3.0), StarNine Technologies' $995 (10-user) MultiLink Remote dial-up Internet gateway, plus a free one-month subscription and ten hours of connect time to UUNET's Internet Univ-to-Unix Copy Protocol service for $99. Existing QuickMail customers can purchase MultiLink Remote at significant discounts from CE Software: $279 (10-user pack), $399 (20-user pack), $899 (50-user pack), and $1199 (100-user pack). Call 800/523-6768 for more information.

- **TypeOn Call 4.0 + Adobe Systems** Adobe Systems is offering its $99 Type On Call—a locked CD containing more than 2000 Adobe typefaces available for round-the-clock purchase—bundled with $475 worth of software, for a discount of $49. Type On Call also includes a choice of any 2 typefaces from 8 new selections, 30 of Adobe's most popular Type 1 typefaces, Adobe Type Manager (1993 World-Class), and the Adobe Type Reunion font-menu organizer. Every type package purchased from Type On Call is 35 percent off list. This offer applies only to orders placed through Adobe's Font & Function type catalog, which can be obtained by calling 800/445-8782. Offer expires 7/31/95.

- **WordPerfect 3.1** WordPerfect Corporation is offering this $395 native Power Mac version (Jan 95 ★★★★★ for version 3.0; Aug 1994 for version 3.0a) for $99 ($59 for an upgrade). It comes with its $99 Grammatical 5.0 grammar and style checker, Macintosh Easy Open, and DataView's compound filter for Microsoft Word. Call 800/321-4566 for more information. Offer expires 1/31/95.

SIDEGRADES/UPGRADES

- **4th Dimension 3.2 + 4D Server 1.2** AGI US is offering these $59 and $149 upgrades—3.2 to owners of 4th Dimension 3.1, and 1.2 to owners of 4D Server 1.1—for free of charge. Call 408/253-3366 for more information, or fax 408/252-7215 for order form. Offer expires 1/31/95.

- **Adobe Premiere 4.0 + Logimation 1.5** The MacZone is offering an upgrade (regularly $79) to version 4.0 of Adobe's video-editing software (Dec 94 ★★★★★), together with Specular International's Logimation for creating 3-D animations of text and logos (regularly $108.98), to registered Premiere 3.0 users for $124.98. Call 800/436-0066 to order bundle #491. Offer not to expire before 12/31/94.

- **ClarisImpact 1.0** Class is offering this $399 integrated business-graphics program (Jun 94 ★★★★★) discounted to $149. Registered owners of MacDraw Pro, MacDraw II, ClarisDraw, ClarisWorks, or compatible graphics and charting applications can purchase/upgrade for $99. Call 800/544-8554 for more information. Offer expires 12/31/94.

- **eWorld + Apple Computer** Apple Computer is offering new subscribers to eWorld ten free hours on the service and is waiving the first month's $8.95 subscription fee. The $2.95 U.S. and Canadian hourly recharge during business hours (6 a.m. to 6 p.m.) is being waived during this trial period. A basic subscription includes two free hours of evening or weekend usage each month. Each additional hour costs $4.95. Offer expires 7/31/95.

- **MultiSync 2V Monitor** NEC Technologies is offering this 2.5" (530 in Canada) rebate on this color monitor, which has a maximum noninterlaced resolution of 1024 by 768 up to 70Hz and comes with a three-year limited warranty. The estimated selling price is $395. Call 800/632-4636 for more information. Offer expires 12/31/94.

- **Portrait/15 Pivot + PrecisionColor Pivot** Portrait Displays Labs (PDL) is offering a $100 rebate to customers who purchase either of these 15-inch monitors between 11/17/94 and 3/15/95. Both the PDL Portrait/15 Pivot (which also runs on Windows computers) and the Radius PrecisionColor Pivot are optimized for displaying applications in 192 colors at resolutions up to 1024 by 768, at noninterlaced refresh rates of up to 7Hz. The estimated street price (including rebate) for either monitor is $999. Call 800/688-7744 for more information. Offer expires 3/15/95.

- **Radius Graphics Accelerator Cards** Radius is offering rebates of up to $500 on the following cards if purchased between 10/15/94 and 12/15/94: $150 each for LexMars GT, SuperMac Thunder/24, and SuperMac Thunder II CX/1152; $250 each for SuperMac Thunder II CX/A3600 (Apr 94 "Fast Track to 24-Bit Color" Editors' Choice) and SuperMac Thunder II CX/1600. Rebates are doubled when Radius's new $1099 Photospice-specific, digital signal processor accelerator, Photospice, is purchased on same invoice. Call 800/227-2975 for nearest dealer. Offer expires 12/31/94.

- **SPSS 6.1** SPSS is offering this $695 cross-platform statistical package for $495. Version 6.1 adds a spreadsheet-style interface and features integrated charting. Upgrades from version 4.0 are $199 plus $99 per additional program module, with a module cap of $298. Call 800/543-2185 for more information. Offer expires 12/31/94.

- **Type On Call 4.0** Adobe Systems is offering its $99 Type On Call—a locked CD containing more than 2000 Adobe typefaces available for round-the-clock purchase—bundled with $475 worth of software, for a discount of $49. Type On Call also includes a choice of any 2 typefaces from 8 new selections, 30 of Adobe's most popular Type 1 typefaces, Adobe Type Manager (1993 World-Class), and the Adobe Type Reunion font-menu organizer. Every type package purchased from Type On Call is 35 percent off list. This offer applies only to orders placed through Adobe's Font & Function type catalog, which can be obtained by calling 800/445-8782. Offer expires 7/31/95.

- **WordPerfect 3.1** WordPerfect Corporation is offering this $395 native Power Mac version (Jun 94 ★★★★★ for version 3.0; Aug 1994 for version 3.0a) for $99 ($59 for an upgrade). It comes with its $99 Grammatical 5.0 grammar and style checker, Macintosh Easy Open, and DataView's compound filter for Microsoft Word. Call 800/321-4566 for more information. Offer expires 1/31/95.
January 3, 1995 • San Francisco • 11am–3pm

Get the inside scoop

on Power Macintosh, Apple Licensing, OpenDoc, Emerging Technologies and more at Macworld’s second annual Vision ‘95 conference. Top Macintosh product developers join active buyers in what promises to be the industry’s most lively, interactive and talked about forum.

Your opinion counts!

Launch into Macworld Expo early with Macworld Vision ‘95. All attendees will receive a Vision ‘95 conference binder complete with hardcopy presentations, product information and background articles.

Advance ticket price

is only $99 if ordered before December 9. Regular price after December 9 is $125.* Seating is extremely limited, so reserve your spot early.

Register today!

A full Vision ‘95 packet will be mailed to all attendees on December 15.

*Group/Site discounts available (please call 415-974-7309 for further details)

Yes! I’d like to attend Macworld Vision ‘95. Enclosed is my check in the amount of $ for tickets.

Sorry, I can’t attend but would like to purchase the conference binder for $25.

Name
Title
Company
Address
City State Zip
Phone Fax

Clip and mail to: Macworld Vision ‘95 • 501 Second St. • San Francisco, CA 94107 or fax to 415/442-0766 no later than December 19, 1994.
Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our FastFacts Product Information Card located after the product index.

<table>
<thead>
<tr>
<th>Advertiser</th>
<th>Page No.</th>
<th>Phone</th>
<th>Reader Svc. No.</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>144 Atrix Software</td>
<td>159</td>
<td>800/426-0854</td>
<td>226 DigiCore</td>
<td>268 800/858-4622</td>
</tr>
<tr>
<td>204 Advance Business Center</td>
<td>225</td>
<td>800/723-8262</td>
<td>224 Digital Axis</td>
<td>83 800/747-7555</td>
</tr>
<tr>
<td>64 Agfa</td>
<td>158</td>
<td>800/685-4271</td>
<td>217 Direct Connections</td>
<td>121 800/572-4305</td>
</tr>
<tr>
<td>137 Agfa</td>
<td>43</td>
<td>800/685-4271</td>
<td>205 Educational Resources</td>
<td>210</td>
</tr>
<tr>
<td>12 Agio</td>
<td>—</td>
<td>800/888-2446</td>
<td>255 Educorp</td>
<td>157 800/843-9497</td>
</tr>
<tr>
<td>206-207 Alliance Peripheral Systems</td>
<td>62</td>
<td>800/874-1428</td>
<td>10 Engineered Software</td>
<td>12 910/299-4843</td>
</tr>
<tr>
<td>78A-178B America Online</td>
<td>—</td>
<td>800/827-6364</td>
<td>30-31 Epson America</td>
<td>— 800/BUY-EPSON</td>
</tr>
<tr>
<td>112-113 American Power Conversion</td>
<td>72</td>
<td>800/789-2208</td>
<td>208-209 Express Direct</td>
<td>81 800/705-0020</td>
</tr>
<tr>
<td>14 Antha</td>
<td>—</td>
<td>800/325-3641</td>
<td>150 Fractal Design</td>
<td>190 800/647-7443</td>
</tr>
<tr>
<td>22-23 Apple Computer</td>
<td>—</td>
<td>—</td>
<td>68 Fujitsu</td>
<td>202 800/831-4094</td>
</tr>
<tr>
<td>82 Apple Computer</td>
<td>—</td>
<td>—</td>
<td>8 GJF Softworks</td>
<td>32/42 800/663-6222</td>
</tr>
<tr>
<td>49 Apple Computer</td>
<td>—</td>
<td>—</td>
<td>76 Graphtech</td>
<td>46 410/290-5114</td>
</tr>
<tr>
<td>26 Atrum Software</td>
<td>—</td>
<td>617/776-1110</td>
<td>39 Hewlett Packard</td>
<td>11</td>
</tr>
<tr>
<td>214-215 Bottomline Distribution</td>
<td>63</td>
<td>800/622-8721</td>
<td>105-107 Hewlett Packard</td>
<td>—</td>
</tr>
<tr>
<td>151 Caere Corporation</td>
<td>—</td>
<td>800/535-SCAN</td>
<td>57 HSC Software</td>
<td>5 805/566-6200</td>
</tr>
<tr>
<td>153 Caere Corporation</td>
<td>—</td>
<td>800/535-SCAN</td>
<td>174 Hyperbolic Studios</td>
<td>259 800/MT-DEALER</td>
</tr>
<tr>
<td>155 Caere Corporation</td>
<td>69</td>
<td>800/535-SCAN</td>
<td>62 Inrigieda Solutions</td>
<td>68 800/649-7677</td>
</tr>
<tr>
<td>70 Centelope Power Software</td>
<td>206</td>
<td>800/374-2602</td>
<td>183 Intuit</td>
<td>— 800/781-5999</td>
</tr>
<tr>
<td>140 Davis Corporation</td>
<td>—</td>
<td>—</td>
<td>165 Intuit/Chipsoft</td>
<td>— 800/504-1040</td>
</tr>
<tr>
<td>158 Davis Corporation</td>
<td>—</td>
<td>—</td>
<td>BC Kensington Microware, Ltd.</td>
<td>— 800/535-4242</td>
</tr>
<tr>
<td>202-203 ClubMac</td>
<td>96</td>
<td>800/CLUB MAC</td>
<td>99 Knowledge Adventure, Inc.</td>
<td>44 800/542-4240</td>
</tr>
<tr>
<td>161-162 CompuServe</td>
<td>—</td>
<td>800/848-8199</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-219 A CompuServe Computer Discount Warehouse</td>
<td>137</td>
<td>800/861-1CDW</td>
<td>48 Connectix</td>
<td>192 800/950-5880</td>
</tr>
<tr>
<td>104 Connectix</td>
<td>191</td>
<td>800/950-5880</td>
<td>21 Commer Peripherals</td>
<td>162 —</td>
</tr>
<tr>
<td>21 Commer Peripherals</td>
<td>162</td>
<td>—</td>
<td>58 Corel Corporation</td>
<td>78 800/336-3729</td>
</tr>
<tr>
<td>220-221 CRA Systems</td>
<td>20</td>
<td>800/375-9000</td>
<td>173 CIT International</td>
<td>38 998/395-5146</td>
</tr>
<tr>
<td>66 Dantz Development</td>
<td>26</td>
<td>—</td>
<td>66 DataViz</td>
<td>79 800/780-1466</td>
</tr>
<tr>
<td>148 Dayna Communications</td>
<td>161</td>
<td>800/443-2962</td>
<td>46 DayStar Digital</td>
<td>7 800/532-7853</td>
</tr>
<tr>
<td>24 Delphi</td>
<td>173</td>
<td>800/895-4005</td>
<td>74 Delrina Corporation</td>
<td>137 800/281-0002</td>
</tr>
<tr>
<td>43 Deneba Software</td>
<td>57</td>
<td>800/733-6322</td>
<td>214-215 DGR Technologies</td>
<td>63 800/622-8721</td>
</tr>
</tbody>
</table>

---

**Advertiser Index**

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our FastFacts Product Information Card located after the product index.

<table>
<thead>
<tr>
<th>Page No.</th>
<th>Advertiser</th>
<th>Phone</th>
<th>Reader Svc. No.</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFC-1</td>
<td>Microsoft Corporation</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>88-89</td>
<td>Microsoft Corporation</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>120-121</td>
<td>Microsoft Corporation</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>158</td>
<td>Movibis Technologies</td>
<td>109</td>
<td>800/800-4334</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Multimedia Design Co.</td>
<td>91</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2-3</td>
<td>NEC Technologies</td>
<td>15</td>
<td>800/NEC-INFO</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>NEC Technologies</td>
<td>14</td>
<td>800/NEC-INFO</td>
<td></td>
</tr>
<tr>
<td>IBC</td>
<td>NEC Technologies</td>
<td>16</td>
<td>800/NEC-INFO</td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>Ncis</td>
<td>123</td>
<td>800/647-8794</td>
<td></td>
</tr>
<tr>
<td>169</td>
<td>Now Software</td>
<td>—</td>
<td>800/237-2078</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>nView Corp.</td>
<td>117</td>
<td>800/736-8439</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Pinnacle Micro</td>
<td>115</td>
<td>800/553-7070</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Pire</td>
<td>13</td>
<td>800/688-8856</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Paproid</td>
<td>295</td>
<td>800/616-2611</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PowerTable/ScanCo</td>
<td>—</td>
<td>800/722-8623</td>
<td></td>
</tr>
<tr>
<td>145</td>
<td>Prodigy</td>
<td>75</td>
<td>800/PRODIGY</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>PreDirect</td>
<td>135</td>
<td>800/524-8952</td>
<td></td>
</tr>
<tr>
<td>152</td>
<td>Proxima Corporation</td>
<td>47</td>
<td>800/447-7694</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>CMS</td>
<td>269</td>
<td>800/392-7559</td>
<td></td>
</tr>
<tr>
<td>249-254</td>
<td>Quality Computers</td>
<td>253</td>
<td>800/777-3642</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Samsung Electronics America, Inc.</td>
<td>198</td>
<td>800/933-4110</td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>Sharp Electronics</td>
<td>257</td>
<td>800/85-SHARP</td>
<td></td>
</tr>
<tr>
<td>268-289</td>
<td>Spin Peripherals</td>
<td>248</td>
<td>800/215-9200</td>
<td></td>
</tr>
<tr>
<td>139</td>
<td>SPSS INC.</td>
<td>85</td>
<td>800/457-8287</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Statsoft</td>
<td>99</td>
<td>918/563-4149</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Strata/StrataVision</td>
<td>114</td>
<td>800/869-6855</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Strata/Studio Pro</td>
<td>116</td>
<td>800/869-6855</td>
<td></td>
</tr>
<tr>
<td>211</td>
<td>SuperMicro</td>
<td>126</td>
<td>800/352-3415</td>
<td></td>
</tr>
<tr>
<td>6-7</td>
<td>Symantec Corporation</td>
<td>—</td>
<td>800/628-4777</td>
<td></td>
</tr>
<tr>
<td>127</td>
<td>Tektronix</td>
<td>143</td>
<td>800/935-6100</td>
<td></td>
</tr>
<tr>
<td>199</td>
<td>The Mac Zone</td>
<td>71</td>
<td>800/436-0096</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Tut Systems</td>
<td>89</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>34</td>
<td>Umax</td>
<td>196</td>
<td>800/769-7878</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>VST Power Systems</td>
<td>73</td>
<td>508/287-4600</td>
<td></td>
</tr>
<tr>
<td>143</td>
<td>Xante Corporation</td>
<td>112</td>
<td>800/926-8839</td>
<td></td>
</tr>
</tbody>
</table>

---

**Macworld** January 1995 189
# Product Index

A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the following page.

## Software

<table>
<thead>
<tr>
<th>Advertiser</th>
<th>Page No.</th>
<th>Reader Serv. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUSINESS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>144 Aatrix Software</td>
<td>159</td>
<td></td>
</tr>
<tr>
<td>26 Attain Software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>74 Delrina Corporation</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>IFC-1 Microsoft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>88-89 Microsoft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-121 Microsoft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>189 Novo Software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 Statsoft</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td><strong>POWERBOOK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47 nView Corp.</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>60 Polaroid</td>
<td>295</td>
<td></td>
</tr>
<tr>
<td>152 Proxima Corporation</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>11 Samsung Electronics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>188 America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>166 Sharp Electronics</td>
<td>257</td>
<td></td>
</tr>
<tr>
<td><strong>STATISTICAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>139 SPSS INC.</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>32 Statsoft</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td><strong>UTILITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 Central Point Software</td>
<td>206</td>
<td></td>
</tr>
<tr>
<td>48 ConnecTime</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>8 GDT Softworks</td>
<td>32/42</td>
<td></td>
</tr>
<tr>
<td>62 Insignia Solutions</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>6-7 Symantec Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VERTICAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>144 Aatrix Software</td>
<td>159</td>
<td></td>
</tr>
<tr>
<td><strong>WORD PROCESSING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86 Nisus</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td><strong>HARDWARE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BOARDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>168 Mobius Technologies</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>255 Educorp</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>183 Intel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>183 Intel/Celeron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>157 NEC Technologies</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td><strong>COMPUTER SYSTEMS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>204 Advance Business Center</td>
<td>225</td>
<td></td>
</tr>
<tr>
<td>22-23 Apple Computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49 Apple Computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220-221 CRA Systems</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>226 DiGiCore</td>
<td>268</td>
<td></td>
</tr>
<tr>
<td>290-291 Express Direct</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>211 SuperMicro</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td><strong>DIGITIZERS/SCANNERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64 Agfa</td>
<td>158</td>
<td></td>
</tr>
<tr>
<td>137 Agfa</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>224 Digital Axis</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>30-31 Epson America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>68 Fujitsu</td>
<td>202</td>
<td></td>
</tr>
<tr>
<td>84 Unisx</td>
<td>196</td>
<td></td>
</tr>
<tr>
<td><strong>DISPLAY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>220-221 CRA Systems</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>173 CTX International</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>224 Digital Axis</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>2-3 NEC Technologies</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>SECURITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>186 American Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>112-113 American Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOFTWARE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAD/CAM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Engineered Software</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>76 Graphsoft</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td><strong>CD-ROM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58 Corel Corporation</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>255 Educorp</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>99 Knowledge Adventure, Inc.</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td><strong>COMMUNICATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 DataMic</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>74 Delrina Corporation</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td><strong>EDUCATIONAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>205 Educational Resources</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>99 Knowledge Adventure, Inc.</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>249-254 Quality Computers</td>
<td>263</td>
<td></td>
</tr>
<tr>
<td><strong>ENTERTAINMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>170 Maxis</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td><strong>GRAPHICS/DTP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58 Corel Corporation</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>43 Diebra Software</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>150 Fractal Design</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>57 HSC Software</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>18 Flexi</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>50 ShutterStraitVision</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>51 StudioStudio Pro</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td><strong>MUTIMEDIA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Flexi</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td><strong>NETWORKING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Tel Systems</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td><strong>OCR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>151 Corel Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>153 Corel Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>155 Corel Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRINTERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 GDT Softworks</td>
<td>32/42</td>
<td></td>
</tr>
<tr>
<td>39 Hewlett Packard</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>103 LaserMaster</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>29 NEC Technologies</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>72 QMS</td>
<td>288</td>
<td></td>
</tr>
<tr>
<td>127 Tektronix</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>143 Xantech Corporation</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td><strong>PRODUCT INDEX</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECURITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>186 American Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>112-113 American Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOFTWARE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAD/CAM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>184 Connectix</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CD-ROM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>178A-178B America OnLine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>161-162 CompuServe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 Delphi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>145 Prodigy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMPUTER SYSTEMS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>157 HP America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>175 American Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>112-113 American Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DISPLAY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DIGITIZERS/SCANNERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EDUCATIONAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GRAPHICS/DTP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MUTIMEDIA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NETWORKING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRINTERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECURITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOFTWARE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAD/CAM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CD-ROM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMPUTER SYSTEMS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DISPLAY</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

190 January 1995 Macworld
JUST FOR YOU. FREE PRODUCT INFORMATION FROM MACWORLD.

There’s no cost or obligation. We even pay the postage! Simply fill in the questionnaire, then circle the numbers on the card below for the products that interest you. Numbers for advertised products can be found in the ad and in both the Product Index and Ad Index. Fold card and mail.
No staples please.

Please answer these questions so that we may better serve you.

A. Including yourself, approximately how many people are employed at your entire work-site (i.e., employees in your office, building, or cluster of buildings)? (Check one.)
   a. 1000+
   b. 999 - 100
   c. 99 - 25
   d. Under 25

B. Which of the following computers are installed at this entire work-site? (Check all that apply.)
   a. Apple Workgroup Server/ Mac Quadra series
   b. Mac Centris-series/II-series/LC III/ Performa 600/605/ SE 30
   c. Mac LC/LC II/ Performa 40/45/ 400/200 Classic-series/S/Plus/ 512K/128K/ Portable
   d. Mac PowerBook-series/Duo-series

C. What is the total number of Macs installed at this entire work-site? (Check one.)
   a. 000+
   b. 999 - 150
   c. 99 - 50
   d. 9 - 1
   e. None

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/or services? (Check one.)
   a. Under $1 million or more
   b. $999,999 - $500,000
   c. $499,999 - $100,000
   d. $99,999 - $50,000
   e. $49,999 - $10,000
   f. Under $10,000

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)
   a. Initiate/Determine need for product/capabilities/features
   b. Evaluate, recommend, or approve purchases/quotes
   c. Evaluate, recommend, or approve purchase source
   d. Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)
   a. Under $1 million or more
   b. $999,999 - $500,000
   c. $499,999 - $100,000
   d. $99,999 - $50,000
   e. Under $10,000

G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)
   a. Business software (Word processing, spreadsheet, database, etc.)
   b. Graphics/publishing software
   c. Monitors/displays
   d. Printers/scanners
   e. Networking/communications hardware and/or software
   f. Multimedia/AV hardware and/or software
   g. Mobile computing products (PowerBooks, peripherals, software, etc.)

H. What is your primary job function? (Check one.)
   a. Computer Reseller/VAR/VAD
   b. MIS/IT/IS/Network Management
   c. Engineering
   d. R&D/Scientific
   e. Corporate/Government Management
   f. Accounting/Finance
   g. Marketing/Ad/P/PR/Communications
   h. Art/Design/Creative Services

Thank You!

Please print or type all information.

Title: ____________________________
Co: ____________________________
Phone: ____________________________
Fax: ____________________________

☐ Check box and fill in the appropriate information to subscribe to Macworld.
You will be billed $19.97 for a 1-year (12 issue) subscription (U.S. only).

Expires Mar. 9, 1995 N1 January 1995

RIP: RECYCLED PAPER
All Post Consumer Waste

Please print or type all information.
FREE PRODUCT INFORMATION.

Get valuable information about the products that interest you. There's no cost; no obligation. Just fill out both sides of this FASTFACTS Information form. Circle the numbers for the desired products. Then mail the card. We pay the postage! For even faster results fill out and send the card via our FASTFAX.

Now fast... get the facts, the competition's gaining on you.

Macworld

FOLD HERE AND CLOSE WITH TAPE. DO NOT STAPLE!

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 215 PITTSFIELD, MA
POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES
Enter to WIN a NEW Apple® Macintosh Quadra® 630!
NO PURCHASE REQUIRED!

THE LARGEST AUTHORIZED FULL LINE
APPLE MACINTOSH® MAIL-ORDER
SUPERSTORE!
Verified lowest prices with over 2500 products on sale!

Lower Than Warehouse Prices!!!

Now Authorized for Macintosh® Performa®!!

CALL TODAY FOR YOUR
FREE CATALOG!!!
800-222-2808
WE HAVE THE
LARGEST SELECTION
OF APPLE
PRODUCTS!

NEW!!!
MacMall Hours
Open 24 hours

NEC MultiSpin 2V
DOUBLE SPEED CD-ROM DRIVE

NEW! $247.99!

BONUS! Microsoft Encarta
CD-ROM with 2V

Supra Express 144 Plus
$99.99 NEW!

14.4k Fax/Data MODEM

Apple® 340MB
External Hard Drive

$398.99!

FASTEST DELIVERY
SERVICE GUARANTEE!

“We will deliver your order by 10:30am
THE NEXT DAY or
pay for your shipping!”*

*limited to stock orders placed before 8:00AM PST (not including configuration and delivery by FedEx®) and delivered within the contiguous U.S. (Next Day air not available to certain areas.)

License fee of $25.00 payable for new Macintosh® Performa® systems.

Microsoft Office Upgrade
Includes RAM Doubler
 doubles RAM with just a click

$237.99!

VividQuest™
Read/Write
44 and 88MB

$299!

1-800-222-2808
Fax 310-222-5800 • Customer Service 800-560-6800

-BERKELEY- 510-841-1980
-TULSA 918-666-0688
SOUTHEAST 404-257-0820
 Northwest 206-622-8870

**See page 5 for conditions.
**HP LASERJET 4MP**

• Compatible
• 300 dpi resolution, extendible to 1200 dpi

**HP SCANJET 3p Scanner**

The high performance color/grayscale scanner that provides advanced features at a breakthrough price.

- Superior image quality with 1600 DPI enhanced resolution, 480 DPI optical resolution
- 24-bit color allows you to scan over 16 million colors
- HP AccuJet for better text recognition
- Optional transparency adapter available
- Optional 30-page document feeder available
- One year HP Express Exchange Warranty for 24-hour replacement service

**DeskWriter 320 w/ Sheeter**

- Transparency Adapter for I2x
- DeskWriter 310/320 Battery
- DeskWriter 310/320 Rapid Charger
- DeskWriter 310/320 Carrying Case
- DeskWriter 310/320 Sheet Feeder
- Black Ink Cartridge for DeskWriter 310/320
- Toner for LaserWriter II, LaserJet III, IID
- Toner for LaserWriter Plus, LaserJet Plus
- Toner for LaserJet IIIS, 45L, 450L
- Toner for LaserWriter Pro, LJ 4, 4M, 4MP, 6MP Plus, 6MP Plus
- Tri Color Cartridge DeskWriter/DeskJet
- Color Printing Kit for 310/320/540

**DeskWriter 320 Printer**

- PostScript level 2
- Enhanced resolution up to 1200 dpi
- Resolution Enhancement technology
- MS RAM 1440 memory

**DeskWriter 560C Printer**

- HP's affordable high-quality black and color printer for the Macintosh
- Clear, sharp 600x200 dpi professional quality output HP's exclusive Resolution Enhancement technology, ColorSmart technology
- Prints up to 3 pages per minute in black, and an average of 4 pages per minute in color
- Black and color printing without switching cartridges
- 35 Adobe scalable fonts
- AppleTalk, AppleTalk interfaces

**DeskWriter 400 Plus, LaserJet Plus**

- Tenor for LaserPrinter Plus, LaserJet Plus
- One year HP Express Exchange Warranty for 24-hour replacement service

**Automatic Document Feeder for HP SCANJET 3p Scanner**

**FileMaker Pro 2.1**

- Special Holiday Pricing
- Full Version
- From Sept. 15th Through Dec. 30th
- Full Version

**Claris Works 3.0**

- Full Featured:
  - Word Processing
  - Spreadsheet
  - Database
  - Charting
  - Presentation
  - Drawing/Paint
  - Outlining
  - Communication

**From Alice to Ocean CD**

Alice to Ocean is an award-winning, entertaining multimedia photojournalistic essay, created by world-renowned photographer Rick Smolan, that describes Robin Davidson's 1700-mile trek across the outback of Australia, and her adventures learning the ancient language and culture of the aboriginal people.

**Amazing Animation CD**

Amazing Animation is designed to provide teachers and parents with ready-made curriculum for studies in language arts, social studies, mathematics and science.

**Customer Service**

Fax: 310-222-5880
Order Status: 800-560-6800
International Orders: 310-787-4500

Mail: Mac Mall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

**Call to Order, Call Toll-Free**

1-800-222-2808

Call today for your FREE Catalog!!!
SyncMaster™ 4Ne
15" Color Monitor

The SyncMaster 4Ne offers Macintosh and PC users a low radiation 15" monitor that provides superb image quality with reduced distortion - thanks to its flat square screen. With a .28mm dot pitch, it offers a very high resolution: 1024 x 768. This SyncMaster carries the EPA Energy Star logo, which attests to its compliance with lower power consumption standards. In addition, it features a power saving mode that complies with VESA guidelines. The SyncMaster 4Ne delivers the sharp, high-quality images required for Macintosh and PC applications, including presentation graphics, desktop publishing and multimedia. It offers an unlimited palette of colors, so charts, graphics and illustrations come to life. The SyncMaster is also backed by a two-year warranty.

SyncMaster™ 17GL
17" Color Monitor

The SyncMaster 17GL is the ideal monitor for general business, desktop publishing, multimedia or entry-level CAD applications. This high performance monitor has a large viewing area with a small footprint for easy integration into an existing desktop system. Also included is a power saving mode that complies with VESA guidelines. The SyncMaster 17GL features a flat square CRT with Invar Shadow mask for sustained brightness levels, and its Dynamic Focus provides optimum focus across the large 17" viewing surface. Additional features include an On-Screen Display that makes it easy to carry out precise adjustments of screen geometry. The SyncMaster 17GL is also covered by a full two-year warranty.

SyncMaster™ 17GLs
17" Color Monitor

For the most exacting visual applications, Samsung offers the top-of-the-line SyncMaster 17GLs. This 17" flat-square monitor offers ultra-precise, sharp images—even in the corners—thanks to its .26mm dot pitch and extremely high resolution. The SyncMaster 17GLs carries the EPA Energy Star logo, which attests to its compliance with low power consumption standards. Outstanding features of this display include an On-Screen Display that makes it easy to carry out precise adjustments and a power-saving mode that complies with VESA guidelines. It has up-front digital controls for easy image adjustments, as well as a special AR coating to limit glare while maximizing focus. The 17GLs is covered by a two-year warranty.

SyncMaster™ 15GL
15" Color Monitor

The SyncMaster 15GL is the perfect display for Macintosh users, or anyone looking for a well-rounded monitor. The SyncMaster 15GL is designed to meet the requirements of all Macintosh applications. This full-featured display offers users a combination of excellent screen performance and an advanced ergonomic design. All screen images are stable and flicker-free for easy on the eyes viewing. The SyncMaster 15GL meets all of today's environmental and work-place requirements by adhering to the Swedish MPR-II guidelines for lower ELF and VLF emissions and EPA Energy Star requirements for power consumption. In addition, Samsung's attention to production quality has been rewarded with EEC '93 certification, and the SyncMaster 14GL is backed by a two-year warranty.

SyncMaster™ 14GL
14" Color Monitor

To Order Call Toll Free 1-800-222-2808
Offer Code: D4C2MG14

NEW!!! MacMail Now Open 24 Hours!!
**Crystal Crazy**

Crystal Crazy is the long-awaited, hilarious sequel to the original award-winning Crystal Quest. Now there are more crystals to collect, puzzles to solve and adventures to embark on. You'll be appalled at how much time you've wasted on this game - and you'll love every minute.

3.5” Floppy $32.99

Publisher: Casady & Greene

---

**Star Trek 25th Anniversary CD**

Pilot the famous U.S.S. Enterprise through the final frontier. Control phasers, photon torpedoes, shields, communications and warp devices. Complete with musical score, sound effects and the actual voices of William Shatner, Leonard Nimoy and Deforest Kelley (Soundtrack and CD ROM version only.)

CD-ROM $34.99

Publisher: MacPlay

---

**Glider Pro**

It's the magical and wacky sequel to Glider 4.0! Master-game inventor, John Colman, just keeps getting better. Fly your paper Glider in and out of each of the over 400 new rooms of eccentric, architecturally-dastardly, old house. Avoid the bizarre obstacles such as flaming candles and the dreaded paper shredder. Then... Fly right out the window! Over meadows and mountains, in-and-out of mailboxes, even underground.

3.5” Floppy $32.99

Publisher: Casady & Greene

---

**Flashback**

Flashback combines action, adventure, science fiction and drama making it a worthy addition to your inventory. With over 200 game screens and 75 fully animated cinematic movements, Flashback contains dozens of puzzles. Starting deep within an artificial, electricity-killing jungle on Saturn’s moon Titan, you realize that your memory has been erased. You’re no longer sure who you are or why you’re being attacked by Royal Watchdogs and Mutant Guards. Traveling through seven levels, logic is your only hope in saving the earth.

3.5” Floppy $38.99

Publisher: MacPlay

---

**Wolfenstein 3D**

Fast and furious first-person “virtual reality” game, now accelerated for Power Macintosh users! Make your way through 90 levels of nonstop action, battling with knives, pistols and machine guns, under either keyboard or joystick control. Requires: 256-color Mac or Power Mac with 2500K free memory, System 6.0.7 or later.

3.5” Floppy $38.99

Publisher: MacPlay

---

**Myst CD**

The most compelling computer adventure/mystery of the year is awaiting your skills at discovering the extraordinary world of Myst. Every scrap of paper, rock and sound holds vital clues to help you unravel the tale of intrigue and injustice. You are the main character as you "walk" through Myst’s 3D photo-realistic world.

CD-ROM $49.99

Publisher: Brøderbund

---

**Prince of Persia II: The Shadow and the Flame**

Just when you thought it all, the evil magician Jaflar assumes your identity, steals your beloved princess, and casts you out of the palace as a beggar. With ferocious palace guards in pursuit, you flee from rooftop to rooftop, through corners, across a desert island, past ancient ruins and beyond. Explore 15 exciting levels, encountering serpents, spikes, magic spells, quicksand, skeleton swordsmen, dismembered heads, and then... well, things get just a little tricky.

3.5” Floppy $39.99

Publisher: Brøderbund

---

**Photo/Graphic Edges CD**

Photo/Graphic Edges™ is a unique collection of more the 650 edges effects that can be combined with any grayscale or color photograph to create stunning new looks. Photo/Graphic Edges™ can be used in either a page layout program such as Aldus PageMaker and Quark/Express or with Adobe Photoshop. Edges styles vary from traditional darkroom looks to custom designed, artistic edge effects. Even the most discriminating of designers and photographers will find a wealth of choices that give them a new and exciting way of expressing the emotions of a photo with elegance, simplicity and the highest of quality.

Photo/Graphic Edges CD $132.99

Publisher: Cyr&Knowles

---

**To Order, Call Toll-Free**

1-800-222-2808

Fax: 310-222-5800

Customer Service: 800-560-6800

Order Status: 800-560-6800

International Orders: 310-787-4500

Mail: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

**Call today for your FREE Catalog!!!**

Overnight Delivery by 10:30am! $3 Per Order

Customer Service Fax: 310-222-5800

Customer Service Mail: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

---

**Photo/Graphic Edges™**

Create stunning designs with Edges

**Photo/Graphic Edges CD**

CD-ROM $99.99

Available for Photoshop or Quo.

Publisher: Cyr&Knowles

---

**Crystal Quest**

Crystal Quest is the long-awaited sequel to the original award-winning Crystal Quest. Now there are more crystals to collect, puzzles to solve and adventures to embark on. You'll be appalled at how much time you've wasted on this game - and you'll love every minute.

3.5” Floppy $32.99

Publisher: Casady & Greene

---

**Marathon**

From the makers of the award-winning Pathways into Darkness comes the next step in 3-D, texture mapped action. Onboard the intergalactic colony ship Marathon things have gone horribly wrong. A science officer on the mission, you are the last hope for defending the ship as hostile and intelligent aliens prepare to destroy every living thing. A wide array of advanced weaponry and unusual settings provide a unique experience. Texture mapped floors and ceilings, 100’s of miles of terrain on multiple elevations, all depicted in high resolution graphics. Functionally designed interface, and a digital soundtrack heighten the intensity. Networkable for up to 8 players.

3.5” Floppy $39.99

Publisher: Bungie

---

**Photo/Graphic Edges™**

Create stunning designs with Edges

**Photo/Graphic Edges CD**

CD-ROM $99.99

Available for Photoshop or Quo.

Publisher: Cyr&Knowles

---

**Star Trek 25th Anniversary CD**

Pilot the famous U.S.S. Enterprise through the final frontier. Control phasers, photon torpedoes, shields, communications and warp devices. Complete with musical score, sound effects and the actual voices of William Shatner, Leonard Nimoy and Deforest Kelley (Soundtrack and CD ROM version only.)

CD-ROM $34.99

Publisher: MacPlay

---

**Flashback**

Flashback combines action, adventure, science fiction and drama making it a worthy addition to your inventory. With over 200 game screens and 75 fully animated cinematic movements, Flashback contains dozens of puzzles. Starting deep within an artificial, electricity-killing jungle on Saturn’s moon Titan, you realize that your memory has been erased. You’re no longer sure who you are or why you’re being attacked by Royal Watchdogs and Mutant Guards. Traveling through seven levels, logic is your only hope in saving the earth.

3.5” Floppy $38.99

Publisher: MacPlay

---

**Photo/Graphic Edges™**

Create stunning designs with Edges

**Photo/Graphic Edges CD**

CD-ROM $99.99

Available for Photoshop or Quo.

Publisher: Cyr&Knowles

---

** prince of Persia II: The Shadow and the Flame **

Just when you thought it all, the evil magician Jaflar assumes your identity, steals your beloved princess, and casts you out of the palace as a beggar. With ferocious palace guards in pursuit, you flee from rooftop to rooftop, through corners, across a desert island, past ancient ruins and beyond. Explore 15 exciting levels, encountering serpents, spikes, magic spells, quicksand, skeleton swordsmen, dismembered heads, and then... well, things get just a little tricky.

3.5” Floppy $39.99

Publisher: Brøderbund
Radius IntelliColor Display/20e
The Intelligent 20" Color Display for Macintosh Computers

The next generation in professional two-page color display, the Radius IntelliColor Display/20e, delivers unrivaled command of your desktop, from "on-the-fly" resolution switching to state-of-the-art color temperature control. Compatable with most built-in video on Quadra, Centris and PowerMac models, Trinitron technology and adjustable color temperature means more accurate color. It also meets the Swedish MPR II ergonomic guidelines, with electromagnetic shielding and a bonded anti-glare panel. IntelliColor software provides control over a myriad of settings to give you the best possible picture for your Macintosh application! Exclusive Worry Free Warranty.

$1999.99

SuperMac Thunder/24 v.3.0
The latest release of the award winning Thunder/24 graphics card. With the leading QuickDraw acceleration the Thunder/24 v.3.0 processes layouts, illustrations, and other full-color graphics with lightning speed. Now up to 43 times faster. After $150 Rebate... $1449.99

MacHandwriter®
Setting the standard for desktop pen computing worldwide

MacHandwriter - the all in one plug-and-play input device for entering graphics, text and commands - was named by MacWeek as one of Macworld's "must see products". Why constrain your own creativity with a mouse? Handwriter lets you easily draw or trace and works perfectly with your existing graphics software. And it reads your handwriting! Imagine highlighting, changing words, moving text, spell-checking, pointing and more from your own handwriting!

$278.99

ScanMaker IIHR
- 2400 dpi resolution (interpolated) - true 600 x 1200 optical resolution
- Maximum document size 8.5" x 13.5"
- Includes a full version of ADOBE PHOTOSHOP 3.0 and OmniPage Direct
- Apple ColorSync compatible
- Full grayscale scanning capability
- Optional transparency adapter and automatic document feeder available

$1067.99

ScanMaker IISP
- The new single-page ScanMaker IISP Color Flatbed Scanner with DCP*, the most accurate color system calibration available for the desktop, is on another price/performance breakthrough from Microtek. Accurate color calibration for more vibrant, saturated and true color which used to be only available at a premium price on high-end scanning equipment. Now Microtek includes it with the most affordable ScanMaker IISP. It is also Apple ColorSync compatible. Comes complete with Adobe Photoshop 3.0 LE and OmniPage Direct.

$747.99

VideoVision Studio 2.0
The Professional Macintosh Digital Video System

With VideoVision Studio you can record full-screen, full motion, 60-field per second, digital video input and output to and from your hard disk. It digitizes stereo audio simultaneously and stores it with the video for easier editing.

WORRY FREE WARRANTY $3599.99

Radius PrecisionColor 17
New 17" color monitor with "on-the-fly" resolution switching from 640x480 to 1152x870. Digital controls for precise settings and super sharp .25mm dot pitch give you quality you can see! Compatible with built-in video of Quadra, Centris and PowerMac. Ask about the Radius worry-free service warranty!

$1059.99

ScanMaker II
This scanner uses a three-pass scanning method to capture full 24-bit color or 256 shades of gray. Features 300 dpi horizontal x 600 dpi vertical resolution, with a maximum of 1200 dpi x 1200 dpi through interpolation. Includes Adobe Photoshop 3.0 LE, OmniPage Direct and scan module with Automatic Contrast Control and Display Matching System, making it a snap to get great looking images on the first try.

$2487.99

To Order Call Toll Free 1-800-222-2808
OFFER CODE: D4C2MG14

NEW!!! MacMall Now Open 24 Hours!!
To Order, Call Toll-Free 1-800-222-2808

Fax: 310-222-5800
Customer Service: 800-560-6800
Order Status: 800-560-6800
International Orders: 310-787-4500
Mail: MacMall Order Dept., 2645 Mariposa St., Torrance, CA 90503-5144

Color Scanning Solution

• De-screening, Auto-density adjustment, filtering function
• TWAIN complaint
• Optical resolution of 300x600 dpi
• Includes Adobe Photoshop 3.0 LE, OmniPage Direct
• Single pass with single cold lamp technology
• Scans block and white, color and line art
• SCSI 2 interface with cable included
• Supports up to B.5"x1" material
• Magic Match color matching system

4800 dpi, High Speed, Single Pass, Color Scanning Solution

• Magic Match color matching system
• Supports up to 8.5"x11" material
• SCSI 2 interface with cable included
• Scans black and white, color and line art
• Single pass with single cold lamp technology
• Includes Adobe Photoshop 3.0 LE, OmniPage Direct
• Optical resolution of 300x600 dpi
• TWAIN complaint
• Micro-stepping optical transmission for faster speed
• De-screening, Auto-density adjustment, filtering function

VISTA-S6

4800 dpi, High Speed, Single Pass, Color Scanning Solution

• Magic Match color matching system
• Supports up to 8.5"x11" material
• SCSI 2 interface with cable included
• Scans black and white, color and line art
• Single pass with single cold lamp technology
• Includes Adobe Photoshop 3.0 LE, OmniPage Direct
• Optical resolution of 300x600 dpi
• TWAIN complaint
• Micro-stepping optical transmission for faster speed
• De-screening, Auto-density adjustment, filtering function

Star Play Productions

$39.99

Umax

UMAX

$759.99

BUNDLE

Get both Crystal Caliburn Pinball and Loony Labyrinth Pinball in one great bundle!

Loony Labyrinth™ Pinball

If you own Crystal Caliburn™, you'll want to be one of the first to purchase Little Wing's newest pinball game. Loony Labyrinth is a unique pinball where the player is challenged to complete the maze before running out of lives. Players are rewarded for their speed and accuracy with extra bonuses and points. Requires: 4MB RAM, 256 colors; all Macs with 13" or larger monitors.

PowerLook

It Beats Other Flatbed Scanners... Like a Drum.

1200 dpi Color Scanner

• 30-bit scanning mode recognizes more than one billion colors and 1,024 shades of gray (10-bit per pixel); true 30-bit output!
• Single pass CCD image captures 30-bit color without the need for prints, filters or color lamps. This gives you superior images with outstanding reliability
• Includes full version Adobe Photoshop 3.0, Omni Page Direct and Kai's Power Tools SE
• 2400 dpi maximum scanning resolution (interpolated), with 600x1200 optical
• Supports color, grayscale, half tone, line art modes
• Built-in SCSI II interface
• Scaling from 1% to 400% in 1% increments

Journey to the Source

An Expedition along the Yangtze River

Join acclaimed China explorer How Man Wong on his epic ten-month expedition along the mighty Yangtze River. Inspired by an old Chinese proverb, "When drinking water, think about the source," he travels the river from the industrial coastal cities to the high Tibetan Plateau, revealing for the first time some of China's most exotic cultural and geographic locations.

How Man Wong, described as a latter day Marco Polo, is an explorer/scholar specializing in China's remote regions. His work in China began in 1974 and since the 1980's has been dozens of expeditions including six for the National Geographic Society.

Requires: 256-color Macintosh, System 6.0.7 or above

MacMall has all the latest PowerMac Native Software!!

PowerMac

MacMall has all the latest PowerMac Native Software!!

NEW!

Fastest Delivery Service Guarantee

"We will deliver your order by 10:30am THE NEXT DAY or pay for your shipping!!"

"Subject to stock orders placed before 8am (PST), not requiring special handling and delivered to destinations within the contiguous U.S. by FedEx. Next day delivery not available to certain remote areas. Limit 10 lbs.

We do our best to check for mistakes, occasionally they do occur. Prices and special subject to change without notice. ©1993 MacMall

Our Policies: 1.000 FeeEx® offer applies to contiguous U.S. only. orders over 10lbs incur extra charges. Call customer service at 800-560-6800 or tech support at 800-760-3800. If you have a question or problem with any order. Your packages will be accepted without a Return Authorization Number from Customer Service. All returned products must be in original condition with all packing and registration card, with in 30 days of original invoice date. For International orders, please include photocopies of the front and back of your credit card. Minimum International order is $50 Canada, $100 foreign. $250 in U.S.A. Apple and Hewlett Packard products cannot be shipped outside of the U.S.A. International orders shipped via DHL, FOR Los Angeles, Apple, the Apple logo and Macintosh are registered trademarks of Apple Computer, Inc. While we do our best to check for mistakes, occasionally they do occur. Prices and specials subject to change without notice. ©1993 MacMall

FedEx®

Circle 131 on reader service card
You have so many reasons to try The Mac Zone!

NEED TAX HELP?

SAVE $5.00 WITH MAIL-IN REBATE!

MacInTax

The Easiest Way To Do Your Taxes

Preparation your taxes can be easier, faster and more accurate than ever before with MacInTax, America's best-selling tax software. Features include:
- Electronic filing capability
- IRS-approved forms and worksheets
- Tax savings suggestions

Only $34.98

Our Low Price ...... $99.98
Deduct Mfr. Mail-In Rebate - $5.00
Final Price $34.98

MacInTax 1040 Final

Preparing your taxes can be easier, faster and more accurate than ever before with MacInTax, America's best-selling tax software. Features include:
- Electronic filing capability
- IRS-approved forms and worksheets
- Tax savings suggestions

FREE Catalog Subscription
Get a FREE One-Year Catalog Subscription. Stay up-to-date on the latest innovations and all the best buys in the industry. To get your FREE subscription, just fill out and mail in the coupon below.

Before you buy, call The Mac Zone

1-800-436-0606

For the best Macintosh products at better than Warehouse and Superstore prices.

Fax (206) 603-2500 • International (206) 603-9570 • CompuServe code: GO MZ

CORPORATE SALES 1-800-258-0892
GOVERNMENT SALES 1-800-372-9663
EDUCATION SALES 1-800-381-9663

Online

YES! START MY FREE 1-YEAR CATALOG SUBSCRIPTION AS SOON AS POSSIBLE:

MAC ZONE ☐ PC ZONE ☐ CORPORATE ZONE ☐ LEARNING ZONE

Mail to: The Mac Zone, 15615 SE 37th St., Bellevue, WA 98006-1800

MW501
We're not like the other Macintosh "Systems"

Whether you need a system for high-end color publishing, professional pre-press applications, desktop design and production or simply business productivity — Express Direct can custom configure a Mac System that's right for your specific job and right for your budget.

$4499
Power Macintosh 8100/80 AV with CD ROM Drive (16MB RAM, 500 MB HD), includes Ethernet & FPU.
- Add SuperDrive 21TMX display, Thunder G4 with DSP, 8MB graphics accelerator, Extended Keyboard & System 7. Complete System Price $8599

#1 Mac Systems Mail Order Reseller 5 years Running

And remember, all Macs aren't created equal! At Express Direct we do more than take orders and ship boxes. We install the memory, video card and system software. Then we test every System — so all you need to do is plug it in! And only Express Direct gives you Toll-Free Technical Support with every Mac!

$869
The Unique UCP/160 Mike offers nearly accurate 1200 dpi scanning with enhanced resolution up to 9600 dpi. Showing with optical transparency adapter. See below for bundles.

UMAX

UC 600 400 to 900 dpi, 24 bit color $509
UC 840 400 to 1400 dpi, 24 bit color $569
NEW Vista 66 600 to 4000 dpi, 24 bit color $679
UC 1260 1200 to 9600 dpi, 24 bit color $689
PowerLock Pro 1200 to 6600 dpi, 24 bit color $2956
Pick Your Own Software Bundle Available only with scanner purchase $428
Pro Bundle Full Photoshop, Full Power Tools & MagicMatch $100

UMAX

UC 600 400 to 900 dpi, 24 bit color $509
UC 840 400 to 1400 dpi, 24 bit color $569
NEW Vista 66 600 to 4000 dpi, 24 bit color $679
UC 1260 1200 to 9600 dpi, 24 bit color $689
PowerLock Pro 1200 to 6600 dpi, 24 bit color $2956
Pick Your Own Software Bundle Available only with scanner purchase $428
Pro Bundle Full Photoshop, Full Power Tools & MagicMatch $100

UNIX

SCS JadHammer $629
1 GB RAM RAID Nubli Upgrade $1609
Upgrade your existing Apple or Mac Pro to a 2 GB RAM memory kit. MacPro Users Must Order Frame
17.5 GB Model 7400FMX Nubli $11,009
3.5 GB Model 300FMX Wide $6159
5 GB Model 7400FMX Wide $11,009
Available with all Mac Pro models. Includes extended warranty, Mac ToolsKit software, cables, active terminator.

IBM

$5799

GCC TECHNOLOGIES

Goniostat Plus paper output! The SelectPress 1200 prints full bleed graphics and accepts non standard paper up to 100 lb on 17.2" wide paper. With Ethernet and 100 MB internal hard drive.

SelectPress 1200 $3649
17.2" print paper at 1200 dpi. Includes Extended font& 32MB RAM &50MB HD.
SelectPress 1200 Pro $4499
17.2" print paper at 1200 dpi with 50MB RAM, 100MB HD.

We stock a complete line of quality products from all of the above manufacturers & more.

1-800-765-0020

Express Hours (CST) M-F 8am-7pm, Sat 10am-2pm • 24hr Fax • Customer Service Hotline: 1-800-236-3059
We'll give it to you straight.

When it comes to product knowledge and understanding the needs of graphic professionals—**nobody even comes close to Express Direct.** Not the other mail-order companies, not the superstores, not even your local dealer.

When you call us—**you'll talk with an expert.** Someone who's done their homework, knows the product, knows what they're talking about. Not an order-taker, like you get with the other mail-order companies.

We carry only top-notch products from the industry's best manufacturers. No garbage. You demand quality and so do we. What's more, our strict criteria for selecting products means we always get the lowest price—directly from the manufacturer. So **nobody can give you a better value** than Express Direct.

But that's just the beginning. With customer service and technical support that's the best in the industry, we make it our business to take care of you. All this is just a free phone call away. So, call Express Direct today. You're going to love working with us!

---

We'll give it to you straight.

When it comes to product knowledge and understanding the needs of graphic professionals—**nobody even comes close to Express Direct.** Not the other mail-order companies, not the superstores, not even your local dealer.

When you call us—**you'll talk with an expert.** Someone who's done their homework, knows the product, knows what they're talking about. Not an order-taker, like you get with the other mail-order companies.

We carry only top-notch products from the industry's best manufacturers. No garbage. You demand quality and so do we. What's more, our strict criteria for selecting products means we always get the lowest price—directly from the manufacturer. So **nobody can give you a better value** than Express Direct.

But that's just the beginning. With customer service and technical support that's the best in the industry, we make it our business to take care of you. All this is just a free phone call away. So, call Express Direct today. You're going to love working with us!

---

**express direct**

1801 W. Larchmont Ave.
Chicago, IL 60613

**Call to receive a FREE catalog!**

---

**Mail order companies. mile for you.**

---

When it comes to product knowledge and understanding the needs of graphic professionals—**nobody even comes close to Express Direct.** Not the other mail-order companies, not the superstores, not even your local dealer.

When you call us—**you'll talk with an expert.** Someone who's done their homework, knows the product, knows what they're talking about. Not an order-taker, like you get with the other mail-order companies.

We carry only top-notch products from the industry's best manufacturers. No garbage. You demand quality and so do we. What's more, our strict criteria for selecting products means we always get the lowest price—directly from the manufacturer. So **nobody can give you a better value** than Express Direct.

But that's just the beginning. With customer service and technical support that's the best in the industry, we make it our business to take care of you. All this is just a free phone call away. So, call Express Direct today. You're going to love working with us!

---

**express direct**

1801 W. Larchmont Ave.
Chicago, IL 60613

**Call to receive a FREE catalog!**

---

When it comes to product knowledge and understanding the needs of graphic professionals—**nobody even comes close to Express Direct.** Not the other mail-order companies, not the superstores, not even your local dealer.

When you call us—**you'll talk with an expert.** Someone who's done their homework, knows the product, knows what they're talking about. Not an order-taker, like you get with the other mail-order companies.

We carry only top-notch products from the industry's best manufacturers. No garbage. You demand quality and so do we. What's more, our strict criteria for selecting products means we always get the lowest price—directly from the manufacturer. So **nobody can give you a better value** than Express Direct.

But that's just the beginning. With customer service and technical support that's the best in the industry, we make it our business to take care of you. All this is just a free phone call away. So, call Express Direct today. You're going to love working with us!

---

**express direct**

1801 W. Larchmont Ave.
Chicago, IL 60613

**Call to receive a FREE catalog!**

---
<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Type</th>
<th>Size</th>
<th>Transfer Rate</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4GB</td>
<td>Hawk 2</td>
<td>IDE</td>
<td>9ms</td>
<td>2000MB</td>
<td>$119</td>
</tr>
<tr>
<td>4.3GB</td>
<td>Hawk 4</td>
<td>IDE</td>
<td>9ms</td>
<td>4000MB</td>
<td>$219</td>
</tr>
<tr>
<td>1.7GB</td>
<td>Barracuda 1</td>
<td>IDE</td>
<td>8ms</td>
<td>1351MB</td>
<td>$129</td>
</tr>
<tr>
<td>2.56GB</td>
<td>Barracuda 2</td>
<td>IDE</td>
<td>8ms</td>
<td>2048MB</td>
<td>$139</td>
</tr>
<tr>
<td>4.3GB</td>
<td>Barracuda 4</td>
<td>IDE</td>
<td>8ms</td>
<td>4000MB</td>
<td>$249</td>
</tr>
<tr>
<td>5.25GB</td>
<td>Haw 3</td>
<td>IDE</td>
<td>11ms</td>
<td>2750MB</td>
<td>$219</td>
</tr>
<tr>
<td>9.16GB</td>
<td>Elite-1</td>
<td>IDE</td>
<td>11ms</td>
<td>8600MB</td>
<td>$386</td>
</tr>
</tbody>
</table>

Seagate drives include a 30-Day Money Back Guarantee and a 5-Year Warranty.
SuperMatch 21T-XL

VideoVision Studio 2.0

Multimedia Solutions

Scanners

Modems

Printers

NEC Silentwriter Model 640

Printers

NEC NEW Enterprise Series...

HP DeskWriter 320 Printer

HP DeskWriter 320 with Cutsheet Feeder

HP DeskWriter 5800 Inkjet Printer

HP DeskJet 1200C/PS Color Printer

HP LaserJet 4ML Printer

HP LaserJet 4MT Printer

HP LaserJet Printer with Ome Warranty

Accelerator

Networking
EASY FINANCING
90 Days Same As Cash
Specializing in Configuring Systems to Your Needs
$0.00 Down Personal Financing & Leasing
Customer Service & Technical Support

UMAX
NEW! Vieta $675
NEW! POWERLOOK 30-bit

PERIPHERALS

MAC & POWER MAC

POWERBOOK

POWERBOOK 500's

NEW! POWERBOOK 440c Power Package!

MAC & POWER MAC

POWERMAC 800 SuperSystem

MICROTEK

VIDEO PRODUCTION

VIDEO PRODUCTION

WACOM

SOO'S

TEXAS INSTRUMENTS

THE CLEARANCE BOX

DISCOUNT WAREHOUSE

January 1995

Circle 225 on reader service card
Call today for your FREE
236-page Catalog!

800-610-5003

USA/Canada
708-888-8300 In Illinois

Educational Resources is North America's #1 supplier of educational technology. Nobody is more qualified than our on-staff educators to answer your questions and help you choose the educational products that best suit your home or school needs. Call today for your FREE 236-page Full-line Catalog.

Special Offer! FREE Holiday Graphics Sampler disk with any purchase!*

*Please mention this ad when ordering to receive Special Offer.

Educational Resources • 1550 Executive Drive, Elgin, IL 60123 • FAX 708-888-8499/8689

• Checks & School P.O.'s welcome • $25 min. on charge cards • Free shipping over $400 in U.S. • Under $400 add 5% shipping with $5 min. • Canada add $6.00 on orders up to $100.00; add $10.00 on orders up to $200.00; add $15.00 on orders up to $500.00; add $20.00 on orders over $500.00 - also add 7% GST • Prices effective through 1/31/95

Circle 210 on reader service card
State of the Art: APS MS 4.0!

...AND THE AWARD GOES TO

State of the Art: APS MS 4.0!

The APS MS 4.0

Got huge amounts of data to manage? The APS MS 4.0's nearly 4 GB formatted capacity is serious storage space. But with that much data, you need speed, too. Fortunately, the APS MS 4.0 has the speed you demand. The MS 4.0 supports nearly 6MB/sec sustained reads and 3.6 MB/sec sustained writes. Average seek times as low as 0.7ms. Average access times as low as 13ms. This is one fast drive! House in the award-winning APS SR2000 enclosure, the APS MS 4.0 is the best value around.

**APS MS 4.0**

$2499.95*

Need two Gigs?

Get the APS D 2.0 internal for only $1199.95*!

The APS D 2.0 delivers seek times as low as 9.6ms and transfer rates as high as 3.2MB per second. As an extra bonus the APS D 2.0 provides exceptional performance in both AV and non-AV applications.

**APS D 2.0**

$1199.95*

**SCSI Sentry™**

“With all we said and done, SCSI Sentry did its stuff. All the problems I have experienced seem to disappear...and this device may well be the cure for your SCSI woes. Even if your SCSI setup is working OK, I highly recommend SCSI Sentry as an extra layer of protection.”

- Messing SEPT 74

Just $79.95

**POWERBOOK DRIVES**

The Perfect Home for your 3.5" Drive.  
APS SR 2000 Upgrade Kit

$199.95

**SR 2000 UPGRADE KIT**

Award-winning SR 2000 Upgrade comes with a detailed install guide and a step by step installation video.

Now Available!

$199.95

**APPS HARD DRIVES**

For your Mac or Power Mac

<table>
<thead>
<tr>
<th>APS HARD DRIVES</th>
<th>Model</th>
<th>Capacity</th>
<th>Internal</th>
<th>SR2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>258MB - 2040MB</td>
<td>APS O 270</td>
<td>256MB</td>
<td>$189.95</td>
<td>$289.95</td>
</tr>
<tr>
<td></td>
<td>APS O 540</td>
<td>512MB</td>
<td>$279.95</td>
<td>$379.95</td>
</tr>
<tr>
<td></td>
<td>APS D 1.5</td>
<td>1003MB</td>
<td>$599.95</td>
<td>$999.95</td>
</tr>
<tr>
<td></td>
<td>APS D 2.0</td>
<td>1024MB</td>
<td>$599.95</td>
<td>$799.95</td>
</tr>
<tr>
<td></td>
<td>APS D 1.5</td>
<td>1920MB</td>
<td>$599.95</td>
<td>$899.95</td>
</tr>
<tr>
<td></td>
<td>APS ST 2.0</td>
<td>2040MB</td>
<td>$1099.95</td>
<td>$1199.95</td>
</tr>
</tbody>
</table>

| 2047MB - 8673MB | APS D 2.0 | 2047MB | $2499.95 | $2599.95 |
|                 | APS MS 4.0 | 4075MB | $2499.95 | $2599.95 |
|                 | APS MS 4.0 | 8506MB | $2569.95 | $2669.95 |
|                 | APS ST 2.0 | 9673MB | $2499.95 | $2599.95 |

**POWERBOOK DRIVES**

- APS T 340 324MB
- APS T 520 300MB
- APS T 820 300MB
- APS T 640 325MB

**SR 2000 UPGRADE KIT**

Award-winning SR 2000 Upgrade comes with a detailed install guide and a step by step installation video.

Now Available!

$199.95

**APPS TECHNOLOGIES**

1-800-874-1428

APS Technologies 6011 Deramus  
Kansas City, MO 64120

Great Products. Priceless Support!
APS MO Drives

Only APS brings you the best of both worlds: amazing deals and top SCSI performance with Digital Active Termination™

Magno-optical technology is the simple, ultra-reliable, infinitely expandable data storage solution, and APS offers two rock-solid MO drives at unbeatable prices. Choose the affordable APS 230 MO and pack nearly 230MB of data onto one nearly-corrupption-proof cartridge the size of a floppy disk. The APS 1.3Gig MO offers the same data security in "Extra-Large." Both come with built-in DTerm™ Digital Active Termination and APS's proven support.

**MAGNETO OPTICAL**

**Model** | **Internal** | **SR 2000**
--- | --- | ---
APS 230MB MO* | $799.95 | $999.95
APS 1.3Gig MO* | 2009.95 | 2109.95

**APS 1.3Gig MO**

*MO Media (formatted) 1-4 5-19 20+
128MB cartridge — 559 559 559
230MB cartridge — 459 459 459
1.3Gig cartridge — 109 109 109

**CD ROM**

**Model** | **Internal** | **SR 2000**
--- | --- | ---
APS T 3501 | $499.95 | $499.95
APS T 3401 | 399.95

**POWERBOOK STUFF**

**APS SCSI DOC/w/ PowerMerge Lite** | $399.95
**APS PowerBalls (Original 4 Pack)** | $999.95

**APSSQ310**

Rugged Palm-Sized 23-30 PowerBook SCSI Adapters

**APSSQ32701**

270MB

**APS DAT**

AMAZING VALUE!

**Model** | **Capacity** | **Internal** | **SR 2000**
--- | --- | --- | ---
APS DAT² | 1.8-3.6 in 20 tape | $749.95 | $799.95
APS HyperDAT² | 0.5 in 5 tape | $949.95 | $999.95

**All APS Drives Are Power PC Mac Compatible!**

I-800 874-1428

Circle 62 on reader service card
THE SMARTTERM®
ACTIVE DIAGNOSTIC TERMINATOR

SmartTerm is a SCSI performance upgrade that adds active termination to any
SCSI chain. While analyzing impedance
and termination, it optimizes SCSI perform-
ance and data integrity. On-line status
indicators let you monitor signal quality.
Improvements over other designs include
gold plated connectors for high quality
signals, and internal power. Get SmartTerm
and put an end to SCSI insanity!

SPIN DAT DRIVES

Don't wait for a disaster! Back up your
valuable data with a Spin DAT drive. Spin
DAT's feature WangDAT mechanisms, known
for performance and reliability. With 2 GB
capacity, the 3100 is a low cost solution for
everyday Macs. The 3200 compression DAT
archives up to 5 GB, perfect for file server
backup. The 3400 DDS2 drive stores up to
8 GB at an astounding 30 MB per minute!* 
Great for archiving large audio, video and
graphics files. All DAT drives include
SurGuard® for easy complete backup
*The rate of compression will vary depending on tape length
and type of data, and does not include compression.

- Spin 3100 (7 MB/perm.) .......... $799.00
- Spin 3200 (14 MB/perm.) ....... $1,082.00
- Spin 3400 DDS2 (28 MB/perm.) .... $1,445.00

SPIN SYQUEST DRIVES

Cartridge sold separately

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>44 MB</td>
<td>$199.00</td>
</tr>
<tr>
<td>510C-44 MB</td>
<td>$299.00</td>
</tr>
<tr>
<td>200 MB</td>
<td>$409.00</td>
</tr>
<tr>
<td>195 MB</td>
<td>$278.00</td>
</tr>
<tr>
<td>270 MB</td>
<td>$429.00</td>
</tr>
</tbody>
</table>

GET YOUR MEDIA OVERNIGHT!

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>44 MB</td>
<td>$55.00</td>
</tr>
<tr>
<td>88 MB</td>
<td>$69.00</td>
</tr>
<tr>
<td>200 MB</td>
<td>$79.00</td>
</tr>
<tr>
<td>105 MB</td>
<td>$56.00</td>
</tr>
<tr>
<td>270 MB</td>
<td>$65.00</td>
</tr>
<tr>
<td>Optical</td>
<td>$36.00</td>
</tr>
</tbody>
</table>

SPIN DEC DRIVES

Obviously, MacUser Labs was suitably impressed with our high
performance drives. Better yet, these kind words were written before
Spin introduced its latest innovations. Like the stackable Tornado enclo-
sure with our exclusive DCR Active Termination™, RAIDLine disk array software included with each drive, and
RedLine software that pushes the drives to new extremes.
Spins speed, features, and a great price are what you need, so
buy the drives that leave the competition in the dust.

THE NEW SPIN TORNADO ENCLOSURE

- Power switch conveniently
  located on the front.
- Stacks easily horizontally or vertically.
- Spin's exclusive DCR (Digital
  Comparator/Regulator) Active Termination™.
- Heavy duty auto-
  switching 46-watt
  power supply. Use in
to any country. Each drive has its
  own power supply, and fits into your
current SCSI chain.

THE SPIN 1021: "THE FASTEST DRIVE IN
THIS CATEGORY (1 GB–1.6 GB) ... A KILLER."

THE SPIN 2149: "THE SECOND FASTEST
DRIVE (1.7 GB–2.8 GB CATEGORY) AND
COSTS LESS."

SPIN HARD DRIVES

(includes SurGuard Backup Software)

<table>
<thead>
<tr>
<th>Capacity (Model)</th>
<th>Access</th>
<th>Internal</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>270 MB (LPS270S)</td>
<td>12</td>
<td>$195</td>
<td>$29</td>
</tr>
<tr>
<td>340 MB (LPS340S)</td>
<td>12</td>
<td>$279</td>
<td>$42</td>
</tr>
<tr>
<td>540 MB (LPS540S)</td>
<td>12</td>
<td>$329</td>
<td>$54</td>
</tr>
<tr>
<td>1.08 GB (Emp 1GB)</td>
<td>12</td>
<td>$699</td>
<td>$79</td>
</tr>
</tbody>
</table>

DIGITAL DRIVES

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Access</th>
<th>Internal</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 GB (DSP-3107)</td>
<td>9.5</td>
<td>$699</td>
<td>$715</td>
</tr>
<tr>
<td>2.1 GB (DSP-3210)</td>
<td>9.5</td>
<td>$1,199</td>
<td>$1,295</td>
</tr>
</tbody>
</table>

MICROPOLIS DRIVES

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Access</th>
<th>Internal</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 GB (M4110AV)</td>
<td>8.5</td>
<td>$799</td>
<td>$85</td>
</tr>
<tr>
<td>1.7 GB (M227AV)</td>
<td>8.5</td>
<td>$999</td>
<td>$105</td>
</tr>
</tbody>
</table>
PRODUCTS AND DELIVERY YOU CAN COUNT ON.

At Spin Peripherals, we deliver the best storage products available. Because that is our business, we do not want inflated and unnecessary shipping charges to interfere with your satisfaction. As part of our commitment, we will ship any order to you overnight for just $51.00 per pound, with a $5.00 minimum. Except, of course, unless your shipment is over 21 pounds—then your price per pound goes down. No headaches, no asterisks, no fine print.

Oh, and there is no need to tip the courier. Enjoy.

SYQUEST MEDIA OVERNIGHT: INEXPENSIVE AND FAST.

Order your genuine SyQuest Cartridges from Spin Peripherals, and we will deliver up to five cartridges overnight for just $15.00.

PIN AV DRIVES
day's performance-hungry applications need drives that can keep the pace. Enter the Micropolis AV drives, optimized for maximum performance in applications like QuickTime, high-resolution scanning, and video capture. Built with enhanced thermal recalibration, AV drives add a new level of insurance that incoming data is complete. Housed in our Tornado enclosure with DCR Active Termination, and bundled with RAIDLine disk array software and RedLine! driver software, these drives will get the whole picture.

SPIN OPTICAL DRIVES
The 3.5" Olympus magneto-optical gives you 230 MB of capacity at hard drive speed! The NEC 5.25" magneto optical drive allows you to use ISO standard 650 MB or 1.3 GB media, compatible with the popular SONY standard. Sporting a 1 MB buffer and 30 ms. average seek, the NEC defines 5.25" optical performance.

RAIDLINE ARRAY SOFTWARE
FREE WITH HARD DRIVES OVER 1.0 GB!

Stripping for Performance. RAIDLine doubles your throughput, writing to 2 drives simultaneously. Stripping (RAID Level 0) provides unparalleled speed for all applications, including digital video and PhotoShop®.

Mirroring for Insurance. RAIDLine can create redundant disks automatically, so that your data is always safe. Mirroring (RAID Level 1) is perfect for server applications and your valuable files.

1-800-215-9200
**MEGAHAUS**

- Low price guarantee!
- Our 8th year selling quality drives at incredibly low prices.
- 30 Day money back guarantee.
- Fast service. Most orders shipped same day!
- Lifetime technical support.
- 24 Hour turnaround, 1 year replacement policy.
- Friendly, helpful staff. We appreciate your business!

---

**MICROPOLIS**

- 5yr warranty. Add $50 for External.
- Includes Power Mac Native Hard Disk.
- Now Available! New 6100 ZFP model features a case that fits perfectly under your Power Mac 6100. Holds up to 4 drives.
- Call for up to the minute pricing.
- Includes cables, and 1 free disk.
- Smart Storage Solutions drives feature toll free support & mechanism made by IBM.
- Includes Mac Hanger for 10+ or w/window purchase.
- Call for up to the minute pricing.

**ATTENTION: POWER MAC OWNERS**

- Drives from 270MB to 4Gig that are specifically configured for Power Mac operation.
- Includes Power Mac Native Hard Disk ToolKit software.
- Now Available! New 6100 ZFP model features a case that fits perfectly under your Power Mac 6100. Holds up to 4 drives.
- Call for up to the minute pricing.

---

**POWER HD**

**Quantum**

- 5yr warranty. Add $60 for External.
- Includes Power Mac Native Hard Disk ToolKit software.
- Now Available! New 6100 ZFP model features a case that fits perfectly under your Power Mac 6100. Holds up to 4 drives.
- Call for up to the minute pricing.
- Includes cables, and 1 free disk.
- Smart Storage Solutions drives feature toll free support & mechanism made by IBM.
- Includes Mac Hanger for 10+ or w/window purchase.
- Call for up to the minute pricing.

---

**OPTICAL DRIVE SALE!**

- Includes cables, and 1 free disk.
- Smart Storage Solutions drives feature toll free support & mechanism made by IBM.
- Includes Mac Hanger for 10+ or w/window purchase.
- Call for up to the minute pricing.

---

**HARD DRIVES**

**Quantum**

- 5yr warranty. Add $60 for External.
- Includes Power Mac Native Hard Disk ToolKit software.
- Now Available! New 6100 ZFP model features a case that fits perfectly under your Power Mac 6100. Holds up to 4 drives.
- Call for up to the minute pricing.
- Includes cables, and 1 free disk.
- Smart Storage Solutions drives feature toll free support & mechanism made by IBM.
- Includes Mac Hanger for 10+ or w/window purchase.
- Call for up to the minute pricing.

---

**CD ROM DRIVES**

**TAPE DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.

---

**MEGAHAUS HARD DRIVES**

- Low price guarantee on all Quantum drives!
- Same day shipping on most orders!
- 1 year warranty.

---

**SyQuest**

- 5yr warranty. Add $60 for External.
- Includes Power Mac Native Hard Disk ToolKit software.
- Now Available! New 6100 ZFP model features a case that fits perfectly under your Power Mac 6100. Holds up to 4 drives.
- Call for up to the minute pricing.
- Includes cables, and 1 free disk.
- Smart Storage Solutions drives feature toll free support & mechanism made by IBM.
- Includes Mac Hanger for 10+ or w/window purchase.
- Call for up to the minute pricing.

---

**FUJITSU**

- 5yr warranty. Add $60 for External.
- Includes Power Mac Native Hard Disk ToolKit software.
- Now Available! New 6100 ZFP model features a case that fits perfectly under your Power Mac 6100. Holds up to 4 drives.
- Call for up to the minute pricing.
- Includes cables, and 1 free disk.
- Smart Storage Solutions drives feature toll free support & mechanism made by IBM.
- Includes Mac Hanger for 10+ or w/window purchase.
- Call for up to the minute pricing.

---

**MEGAHAUS TAPE DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.

---

**MEGAHAUS CD ROM DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.

---

**MEGAHAUS TAPE DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.

---

**MEGAHAUS HARD DRIVES**

- Low price guarantee on all Quantum drives!
- Same day shipping on most orders!
- 1 year warranty.

---

**MEGAHAUS TAPE DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.

---

**MEGAHAUS CD ROM DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.

---

**MEGAHAUS TAPE DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.

---

**MEGAHAUS HARD DRIVES**

- Low price guarantee on all Quantum drives!
- Same day shipping on most orders!
- 1 year warranty.

---

**MEGAHAUS TAPE DRIVES**

- Includes Retrospect 2.1, 1 tape, and cables. OPTIMA DeskTower Software mounts DAT on desktop $275.
$0 Down Leasing from SUPERMICRO!

Get the system you need now—with zero down and low monthly payments! Call 800-352-3415 and find out all the advantages of leasing.

$10,499

POWERPC 8100 SUPER STATION

• POWERPC 8100/60MHz w/ 60MHz PPC 601 CPU
• 40MB RAM, 540MB hard drive, extended keyboard
• Dual spin CD ROM drive
• SuperMac 20, 24-bit color monitor
• SuperMac Thunder 24, 1152 x 870 video card
• Image processing multifunctional drive: 65MB optical and SyQuest BIC in one enclosure

$8,399

POWERPC 6100 IMAGING STATION

• POWERPC 6100/60MHz w/ 60MHz PPC 601 CPU
• 40MB RAM, 340MB HD, extended keyboard
• SuperMac 20, 24-bit color monitor
• SuperMac Thunder 24, 1152 x 870 video card
• External SyQuest 200MB with cartridge
• Archive 2.0MB tape backup system
• TI Pro 500, 9 ppm, 600 dpp laser printer
• AVision 680AV, 640 x 4600 dpl scanner w/IPS LE

$20,299

VIDEO PRODUCTION WORKSTATION

• POWERPC 8100
• 72MB RAM
• 2GBIS internal hard drive, extended keyboard
• SuperMac 20, 24-bit color monitor
• SuperMac Thunder 24, 1152 x 870 video card
• SuperMac 117 monitor
• Exabyte 8500 tape drive
• Radii Video Vision Studio
• 4GB RIV disk array with FastWise SCSI controller

$3899

POWERPC 7100 VALUE STATION

• POWERPC 7100/60MHz w/ 60MHz PPC 601 CPU
• 72MB RAM, 540MB hard drive, extended keyboard
• Dual spin CD ROM drive
• SuperMac 20, 24-bit color monitor
• SuperMac Thunder 24, 1152 x 870 video card
• Image processing multifunctional drive: 65MB optical and SyQuest BIC in one enclosure

MULTIFUNCTIONAL DRIVES

A multifunctional drive is a custom-made combination of hard drive, optical drive, CD-ROM, tape, or Syquest drive mounted in the same enclosure. Multifunctional drives require less space, eliminate compatibility problems and cost less than separate components.

$75

SCANNERS

8.5" x 14" scanning area 600 x 600 or 800 x 800 dpi 24-bit color, grayscale, halftone and true art mode Built-in gamma correction controls

$299

SUPERMICRO

We Specialize in Image Processing

800-352-3415

MACWORLD January 1995 211
Runs on Macs and Windows

FileMaker Pro 2.1
Provides individuals and workgroups with the perfect balance of functionality and accessibility through its easy-to-use graphical data-entry fields, unmatched report generation facilities, point-and-click scripting, and unique cross-platform workgroup capabilities. Easily access information, automate customized tasks and operate in multi-user environments.

Price: $99
Publisher: Claris

Power-XPress

NEW! QuarkXPress

Power Macintosh

The clear choice for publishing professionals. In addition to the features of QuarkXPress 3.3, this program includes: new XTexts™ new fonts, sample Quark Libraries, superb typographical control, file compatibility with both Mac & Windows, professional trapping tools, polygon text boxes and more.

Price: $659
Publisher: Quark

Do your taxes the easy way!

MacInTax

Now preparing your taxes can be easier, faster, and more accurate than you ever thought possible. MacInTax gives you all the forms you need, guarantees the calculations are accurate, and walks you through the entire tax preparation process—step by step. It even alerts you to items that might flag an audit. And sends out deductions you may have missed.

Price: $299
Publisher: Intuit

Microsoft Office 4.2

For only

$239

Get the latest versions of Microsoft Excel, Word, and PowerPoint all in one complete package. Includes: RAM Doubler, Quicken 5, MacInTax, and much more.

For more information call: 1-800-255-6227

Order toll-free 24 hours a day, 7 days a week!
GEAR UP FOR OVERNIGHT DELIVERY - ONLY $3.00!

1-800-255-6227
(1-800-ALL-MACS)

Call 24 hours a day, 7 days a week.

Inquiries: 908-367-0410
Fax Your Order to: 908-905-9279

CompuServe Code: GMW

NEW! 1995 Grolier Multimedia Encyclopedia!

Get the 1995 version of the Grolier Multimedia Encyclopedia for just $99—with The Animals! FREE—and own a reference so powerful there's no limit to what you can learn! This new, expanded and updated version contains a host of new features, articles, photos and images. It includes the entire 21-volume American Academic Encyclopedia all on one CD-ROM.


Pay less for overnight shipping and handling with Code GMW.

Now only $99 with FREE The Animals! CD-ROM

Get a lightning-fast triple-speed CD-ROM drive for your Mac!

Bundles: 2 for $179, 3 for $229, 4 for $275

MacWAREHOUSE carries more than 2000 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. Just fill in the information requested below and mail in the coupon. We'll start your free, one-year subscription to the MacWAREHOUSE catalog with the next issue.

Order by Midnight EST for Overnight Delivery - Only $3.00!
**QuarkXPress 3.31 (68K)** $549  
**QuarkXPress 3.31 (PPC)** $625  
Ask about our wide selection of QuarkX Tensions

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TI microLaser Pro PS23</td>
<td>$1198</td>
</tr>
<tr>
<td>PowerBook 540c</td>
<td>$3849</td>
</tr>
<tr>
<td>8 pages per minute</td>
<td>600 dpi</td>
</tr>
<tr>
<td>1MB TI Upgrade</td>
<td>$89</td>
</tr>
<tr>
<td>2MB $179</td>
<td></td>
</tr>
<tr>
<td>4MB $239</td>
<td></td>
</tr>
<tr>
<td>QuarkXPress 3.31 (68K)</td>
<td>$549</td>
</tr>
<tr>
<td>QuarkXPress 3.31 (PPC)</td>
<td>$625</td>
</tr>
</tbody>
</table>

**Magic Memory**

- 1MB 30pin 120ns: 25  
- 244MB 30pin 80ns: 80/139  
- 4MB 72pin 60/70/80ns from 144  
- 8MB 72pin 60/70/80ns from 285  
- 16/32MB 72pin: 48/999  
- PowerBook RAM: Call  
- LC/Quadra RAM: 29/19  
- Teleport Mercury: 269  
- Teleport Gold: 218  
- Teleport Gold II: 129  
- PowerBook Mercury: 312  
- PowerBook Mercury P850: 315  
- OneWorld Fax-1 line: 749  
- OneWorld Fax-2 line: 1150  
- UCLA 1260: $1129  
- Magic CD-ROM Pro: $348  
- 4/7/8 Mice MacUser Dec 94

**SYSTEMS**

- Call for latest prices  
- All new Apple CPU's

**CPU's**

- PowerPC 6100: $43 per mo  
- PowerPC 7100: $68 per mo  
- PowerPC 6100: $100 per mo  
- 540C: $320  
- Q630: $250  
- Powerbook: $37 per mo  
- Apple 15: $15 per mo  
- Apple 17: $30 per mo

**NETWORKING**

- Asante FriendlyNet Adapter: 76  
- MacCon HE94: 149  
- Etherwave Adapter: 299  
- Etherwave Transceiver: 99  
- Magic: Alu Tranciever 10BaseT: 49  
- Alu Tranciever thin: 49

**PRINTERs**

- Apple Laserwriter 360: 415  
- Hewlett Packard Laserwriter 310: 290  
- Laserwriter 520: 325  
- Laserwriter 600c: 359  
- Laserjet 4M: 296  
- Laserjet 4M/F: 1029  
- Texas Instruments microLaser PowerPro: 1635  
- microLaser Pro PS65: 1525  
- microLaser Pro PS23: 1198

**VIDEO SOLUTIONS**

- NEC Multisync 3FGE: 579  
- Multisync 5FGE: 1391  
- Multisync 6FGE: 1999  
- Radius: IntelColor 20c: 1875  
- DGR Extended Keyboard: 49  
- Kensington Turbo Mouse: 99  
- Apple Design Keyboard: 95

**DRAINs**

- Precision Color 17" $999  
- Precision 21" $1999  
- Two Page Display 25gs $789  
- Two Page Display 21gs $949

**RINoStaR**

- Clearwave 17: 890  
- 20/20 Multimold: 1699  
- Clearwave 21: 2222

**SuperMac**

- Kodak 17" Color: 1875  
- Kodak 17" Color: 2949  
- Kodak 17" Color: 1949  
- Kodak 17" Color: 1849

**BOTTOM LINE 24-HOUR INTERNATIONAL SALES FAX (512) 892-4455**

Bottom Line Distribution is committed to the needs of the International Macintosh user and reseller. We offer discounted rates with DHL, UPS International and Airborne Express. Delivery times to most countries is 2 to 3 days. We stock 220 versions of most hardware. Dealer inquiries are welcome. Language interpreters are available. Se hace pedidos internacional. Nous acceptons des commandes nationales et internationales. Internationale Handlerkonditionen.
### Scanners

- **PowerPro 80MHZ 6.0/Acc 288MB** - $599
- **Studio Scan II** - $865
- **Coolscan ext** - $699
- **All models** - call for support

### Accelerators & Cache

- **Daystar PowerPro 80MHZ 6.0/Acc 1995** - $348
- **Turbo 040 40MHZ w/Cache** - $949
- **Dimo fastest, Highest Rged C'd's:**
  - DGR Tornado CD Rom - $348
  - Magic CD Pro - $343
- **XM5501 QuoSpeed CD** - $449

### CD Game Software

- **Flying Nightmares Power PC47** - $39
- **Hilarious Journey to the Yangtze** - $37
- **NFL Magazine 1994** - $25
- **Myst** - $49
- **PGA Tour Golf II** - $39

### Utilities Software

- **Adobe Acrobat 3.0** - $96
- **Central Point Mac Tools 3.0.81** - $25
- **Disk Doubler 4.0** - $52
- **Fileguard 2.7** - $130
- **Fontographer 4.0** - $244
- **Macintosh Plus Translators 8.0.1** - $49
- **Magic Modems 3.0 PPC** - $49
- **Norton Essentials PB 1.0** - $85

### Now Utilities

- **5.0** - $70
- **Quick Keys 3.0.1** - $90
- **Retrospect** - $139
- **Stuffit Deluxe 3.0** - $64
- **Virex 5.0** - $59

### Graphics/Word Processing

- **Adobe Illustrator 5.0** - $369
- **Photo Engine** - $899
- **LeMans GT** - $518

### Analog Modems

- **Magic Modems**
  - **Magic 28.8**
  - **Magic 14.4 Data/Fax** - $49
  - **Magic 14.4 With Voice Mail** - $49
  - **High Speed Modem Cable** - $14

### Business Software

- **Microsoft Word 4.2** - $450
- **WordPerfect 3.0** - $279
- **Business Software**
- **Colleague Business** - $649
- **Project 3.0** - $429
- **Power Point 4.0** - $289
- **Power Point 4.0** - $289

### DRIVES & TAPES

- **Dellis 230 Optical** - $999
- **Dellis 1300 Optical** - $799
- **Dellis 230 Optical** - $159
- **Dellis 1300 Optical** - $279

### Scanners

- **Supra FaxModem 28.8** - $249
- **Supra FaxModem 28.8 $249**

### CD ROM

- **DGR Tornado CD Rom** - $348
- **Magic CD Pro** - $343
- **XM5501 QuoSpeed CD** - $449

### DRI+MOCI

- **Dellis 1300 Internal** - $159
- **Dellis 230 Internal** - $139

### ACCELERATORS & CACHE

- **Daystar Turbo 040** - $949
- **Dimocache 80MHZ w/Cache** - $137
- **Dimocache 50MHZ** - $413
- **Dimocache 50MHZ w/FPU** - $518

### DRIVES & TAPES

- **Dellis 230 Optical** - $999
- **Dellis 1300 Optical** - $799
- **Dellis 230 Optical** - $159
- **Dellis 1300 Optical** - $279

### Scanners

- **Supra FaxModem 28.8** - $249
- **Supra FaxModem 28.8 $249**

### CD Game Software

- **Flying Nightmares Power PC47** - $39
- **Hilarious Journey to the Yangtze** - $37
- **NFL Magazine 1994** - $25
- **Myst** - $49
- **PGA Tour Golf II** - $39

### Utilities Software

- **Adobe Acrobat 3.0** - $96
- **Central Point Mac Tools 3.0.81** - $25
- **Disk Doubler 4.0** - $52
- **Fileguard 2.7** - $130
- **Fontographer 4.0** - $244
- **Macintosh Plus Translators 8.0.1** - $49
- **Magic Modems 3.0 PPC** - $49
- **Norton Essentials PB 1.0** - $85

### Now Utilities

- **5.0** - $70
- **Quick Keys 3.0.1** - $90
- **Retrospect** - $139
- **Stuffit Deluxe 3.0** - $64
- **Virex 5.0** - $59

### Graphics/Word Processing

- **Adobe Illustrator 5.0** - $369
- **Photo Engine** - $899
- **LeMans GT** - $518

### Analog Modems

- **Magic Modems**
  - **Magic 28.8**
  - **Magic 14.4 Data/Fax** - $49
  - **Magic 14.4 With Voice Mail** - $49
  - **High Speed Modem Cable** - $14

### Business Software

- **Microsoft Word 4.2** - $450
- **WordPerfect 3.0** - $279
- **Business Software**
- **Colleague Business** - $649
- **Project 3.0** - $429
- **Power Point 4.0** - $289
Magic 230MB $799
Reads and writes 128MB & 230MB media at full speed. 2 year warranty. 230 MB Cartridges $44

Magic 1.3GB $1999
5.25 inch storage solution. 1.3 GB Cartridges $89

Magic CD-Rom $353
"Built for Speed"

Power Mac Accelerators
Take your Power Mac to the limit with our 100% compatible accelerators. Makes your 6100/7100/8100 up to 40% faster! Includes failsafe user installation instructions.
84Mhz 6100 $995
84Mhz 7100 $995
100Mhz 8100 $995

High Performance SCSI Products from Magic

RamDrive
Less than .2 ms access time with storage sizes up to 1.5Gb
768MB $399
1.5Gb $599

SCSI Cache
Make your optical or Syquest up to 300% faster! Drive Cache only $399
230 MO Drive w/Cache $1149
270 SyQuest w/Cache $749

SCSI Bus Extension
Allows for 21 additional SCSI 1 & 2 devices. Seven SCSI extenders allow 147 devices on the SCSI bus. Extender $299

AV Raider
Hardware controlled RAID system at an affordable price. Faster than software RAID System. AV Raider $599

Magic Accessories: Hard Drives, Memory & Modems

Drives / Optical
All Magic drives backed by a 30-day money back guarantee. Includes Anubis software.
LPS Drives Internal External
0.440 Raw 290 380
IBM Drives "New" Internal External
Alleycat 2GB 1049 1199
Spitfire 1GB 639 739
520MB 299 399
720MB 399 499
Magic SyQuest Drives Cart
SyQuest 880 315 84
SyQuest 200 459 85
SyQuest 270 439 65
Magic Optical Drives
128 Optical Drive 399
230 Optical Drive 2900 RPM 28 MS 799
1.5GB Optical Drive Turbo 1999

Back-Up / RAID

Magic Backup
230 Tape Drive $899

Magic RAIDs
Recommended for Mac professionals. Our Magic RAID systems offer SCSI 1 & 2 compatibility and high data throughput.
External RAID
1.0GB RAID 1299
2.0GB RAID 1899
4.0GB RAID 2899
8.0GB RAID 4999
RAID Upgrade for Quadra 900, Quadra 950 & 8100 Power Mac
1.0GB RAID 749
2.0GB RAID 1499

Memory

Magic 30 Pin SIMMs
1MB 30pin 120ns 25
2MB 30pin 80ns 80
4MB 30pin 80ns 139

Magic 72 Pin SIMMS
4MB 72pin 60/70/80ns from 44
8MB 72pin 60/70/80ns from 85
16MB 72pin 449
32MB 72pin 999

Powerbook RAM Call
LC/Quadra RAM Call
LC/Quadra VRAM 20/19

Lifetime warranty!

Modems

Magic Fax Modems
Magic 28.8 V. Fas. Class 149
Magic 14.4 Data/FaxModem 99
14.4 With Voice Mail 149
High Speed Modem Cable 15

All FaxModems come with Delrina FaxPro Lite, America Online and CompuServe Startup Kit.

1-800-347-1942
512-892-4070 Fax. 512-892-4455
Internet: sales@max.dgr.com

Circle 65 on reader service card
800-572-4305 Fully Compatible power pc drives
30 DAY MONEY-BACK

SHIPPING DRIVES FOR 7 YEARS!!

HOURS: M-F 8:00-6PM CST

HARD DRIVES
THE FIRST 2GB DRIVE UNDER $1000
UNBELIEVABLE!! CONNOR 2.1GIG

CAPACITY SIZE ACCESS INTERNAL EXTERNAL
Fujitsu
530MB** 3.5" 13MS $ 379 $ 439
1.2GB 3.5" 8.5MS $ 599 $ 655

Seagate
CAPACITY SIZE ACCESS MODEL INTERNAL EXTERNAL
2.46GB 3.5" 9MS ST12450W $ 1749
2.56GB 3.5" 8MS Barracuda 2 $ 1345
2.56GB 3.5" 8MS Barracuda 2 wide $ 1549
3.46GB 5.25" 10MS Elite 3 $ 1999
1.1GB 3.5" 8MS Barracuda 4 $ 2335
1.6GB 5.25" 11MS Elite 9 $ 3749

CONNER
CAPACITY SIZE ACCESS MODEL INTERNAL EXTERNAL
130MB** 4.5" 12MS CFA340S $ 320
145MB** 3.5" 12MS CFA540S $ 450
1.06GB 3.5" 9MS CFP1060S $ 635
2.16GB 3.5" 9MS CFP2106S $ 995
1.26GB 3.5" 9MS CFP4207S $ 2195

Quantum
CAPACITY SIZE ACCESS MODEL INTERNAL EXTERNAL
1.06GB 3.5" 9MS E1080S $ 645
2.26GB 3.5" 9.5MS E2160S $ 1095
1.36GB 3.5" 9MS 4280S $ 2295

POWERBOOKS
240MB 14MS $315 $415
340MB 14MS $385 $485

CD ROMS
Toshiba 4101 $ 275
Toshiba 3401 $ 335
Toshiba 3501 4 Speed $ 445
Yamaha 4 Speed recorder $ 495
Ricoh 1000 CD-Recorder $ 2395

MONITORS
Sony GDM-15SF1 15" $469
1st anti-glare coated supports every 12" and Mac resolution in. 1280 x1024

TRINITRON MONITORS
Sony GDM-17SE1 17" $1059
Sony GDM-20SE1 20" $1899

OPTICAL DRIVES
650MB EXTERNAL $999
INCLUDES ONE CARTRIDGE

CAPACITY MODEL ACCESS EXTERNAL
128MB Ricoh 30MS $ 599
230MB Fujitsu 2yr. Warranty 30MS $ 835
230MB Olympus 2yr. Warranty 28MS 4200 RPM $ 915
650MB Sony 40MS $ 999
1.3GB Ricoh 40MS $ 1999
1.3GB Sony 40MS $ 2099

TAPE BACKUP
SYSTEMS JUKEBOX UPTO 140GIG
INCLUDES TAPE + RETROSPECT SOFTWARE

CAPACITY MODEL MEDIA INTERNAL EXTERNAL
250MB Tandberg TDC 3660 D6C250 $ 445 $ 499
1.3-2GIC DC DAT 4MM 4MM $ 709 $ 769
1.3-4GIC DC DOUBLE DAT 4MM 4MM $ 899 $ 999
4.0-8GIC DC 4326 DDS-2 4MM 4MM $ 1029 $ 1089
4.0-8GIC Sony 5200 DDS-2 4MM 4MM $ 1539 $ 1599
1.3-10GIC Exabyte 8505 8MM 8MM $ 2179 $ 2259
1.3-10GIC Exabyte 8505XL 8MM 8MM $ 2255 $ 2355

RAID SYSTEMS
GUARANTEED FASTEST

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

CD-ROMS

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.

"This Array is the one to beat!!" - Ken Grey
Writer for WIRED, Computer User, Movie Maker, Computer Video, and Digital Video magazines.

* This Array is the one to beat!!
4.0 GIG Barracuda 2 RAID.
* 6.0 GIG Fast and Wide
Fastest RAID for Video Vision Users.
MacDeal$: 
"For all your Macintosh computing needs, call and order your free Macintosh catalog today!"
<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeskWriter 560C Color inkjet printer</td>
<td>$464.60</td>
</tr>
<tr>
<td>Sportster V.34 Mac &amp; Fax</td>
<td>$248.33</td>
</tr>
<tr>
<td>Bernoulli Transportable 230</td>
<td>$454.44</td>
</tr>
<tr>
<td>Symantec Norton Utilities V.3.1</td>
<td>$396.67</td>
</tr>
<tr>
<td>QuarkXPress® V.3.3 for Macintosh</td>
<td>$569.50</td>
</tr>
<tr>
<td>Power Mac CD ... $649.59</td>
<td></td>
</tr>
</tbody>
</table>

**CDW Computer Centers, Inc.**

1020 E. Lake Cook Rd.
Buffalo Grove, IL 60089-1900

**Hardware, Peripherals and Software at Discount Prices**

<table>
<thead>
<tr>
<th>Phone: 800-509-4CDW (800-509-4639)</th>
</tr>
</thead>
</table>

**MacWorld January 1995**
20 inches for the cost of 17!
While Supplies Last!

Your Choice of...
Radius Precision Color Display 20
- Multiple resolutions
1280x1024 to 640x480
- Mac/PC compatible
- Works with most any
Macintosh built-in video
SuperMac or
E-Machines 20
- 1152x870 to 1024x768
- Flat screen
- Shadow Mask Tube
- Built in video support

LOWEST PRICES ANYWHERE!

All products new with manufacturer’s full warranty.
All quantities limited and sold on a first come first serve basis.

radius 
SuperMAC

$999

Retail $1999

"Best Overall Screen Uniformity" – MacUser

PIVOT DISPLAYS

Radius Color Pivot LE
$399

With purchase of video card. We have cards for SE/30, LC, IIsi, Nubus, Quadras

Precision Color Pivot $699
Grayscale Pivot $499
Radius Full Page Display $399

17 INCH

E-Machines T18 II MR
$799

Limited Quantities!
- High Grade Studio Trinitron Series
- .25mm multi-resolution

20 INCH

Intelicolor Display 20
$1699

Limited Quantities!
- Top rated 20" Trinitron
- MacUser Editors Choice Finalist

800.375.9000

CRA SYSTEMS

Monday thru Friday
9AM to 6PM CST
Saturday 10AM to 4PM CST
Fax 817.754.2345

MacWorld
ROCKET 33MHz w/FPU $399**

Don't wait any longer for Quadra Power!
While supplies last you can finally upgrade your old Mac into a QUADRA level POWERHOUSE for a NEVER BEFORE OFFERED LOW PRICE!
- Motorola 68040 processor
- FPU built-in
- Multi-processing
- 33MHz
- SCSI-II & DSP capable
- MacWorld Editor's Choice

Radius Rocket 25i $299**
SCSI II Booster $249
PhotoBooster for Rocket $299
RocketShare $299
Stage Two Rocket $1299

PhotoBooster $299
Retail $999
- Twin AT&T 3210 66MHz DSPs
- Accelerates Photoshop filters
- Up to 10x faster than a Quadra 350
- MacUser Editor's Choice

**With purchase of any Rocket peripheral

DONT MISS THIS OPPORTUNITY!

VIDEO BOARDS

Thunder 24 $1299
with Color Calibrator
Thunder II GX 1600 $CALL
Thunder II GX 1360 $CALL
"The Thunder II GX 1360 simply can't be beat" MacUser
Thunder II GX 1152 $CALL
Thunder II Light $1499
Radius LeMans GT $1399
PrecisionColor Pro 24X $999
Precision Color 24X $799
Precision Color Pro 24XX $699
Radius 24XP/Futura SX $299
Radius 24XX/ Futura MX $599
Radius 8XJ $399
Spectrum 8.24 P00 $399
Spectrum 8 Series III $349
E-Machines Futura LX $799
E-Machines Futura MX $599

Circle 20 on readerservice card

MULTI MEDIA

$999*

*Without Premiere

VideoVision Presentation $999*
- We stock complete VideoVision Studio systems with CPUs and monitors • Sell or Lease • Call to speak with one of our experts

VideoVision Studio Upgrade $CALL
VideoVision Studio $CALL
Studio Array $CALL
VideoSpigot Nubus $199
Adobe Premiere from $199
VideoSpigot llsi $299
VideoSpigot Pro $399

Apple Catalog Reseller
Authorized Service Provider

Dealers and consultants call for quantity pricing. We ship anywhere.
Domestic Sales 800.375.9000
Consultants/Dealers 817.754.2131
International Sales 817.754.2120
TeleFax 817.754.2345

CRA Systems, Inc.
300 South 13th St., Waco, TX 76701
Great Deals!

**Buy with Confidence from MAC BARGAINS**.
- A leading direct marketer of Mac products
- Over 2,500 products in stock
- Most orders ship the next day
- Our goal is 100% customer satisfaction

**Discount Prices on Quality Hardware, Software & Accessories**

**NEC Multisync XE Color Monitors**
- Flat square technology CFT
- Dual dynamic beam offers superior focus across the entire screen
- Large screen size improves your productivity
- $999.99

**Call MAC BARGAINS before you buy!**

**1-800-619-9091**

Why get slower ground shipping? **Overnight Delivery Only $6.00 and up**

**30 Day Money Back Guarantee**

**$49.00 OFF**

**$44.18 OFF**

**$41.18 OFF**

**$36.45 OFF**

**$32.45 OFF**

**$28.24 OFF**

**$28.24 OFF**

**$24.25 OFF**

**$20.23 OFF**

**$19.99**

**$19.99**
For the Best Deals Around!  
1-800-619-9091

**MONITORS**

- *Optiquest*
  - NEC XP 1111 Color
  - NEC XP 1111 Color
  - NEC XP 1111 Color

- *Sony*
  - 19" Super H/EF 1111
  - 19" Super H/EF 1111

- *NEC*
  - NEC MultiSync 12" Color
  - NEC MultiSync 12" Color

- *Sageview*
  - 19" VideoView 1111
  - 15" SpruceColor 1111

- *Supermac*
  - 15" Supermac 1111

**INPUT DEVICES**

- *Farallon*
  - CD-ROM (3.5")

- *Microtek*
  - Scanner

**COMMUNICATIONS/MODEMS**

- *Global Village*
  - CellPhone/Modem

**COMPUTERS**

- *Superstar*
  - 300 Universal
  - Powercache 50MHz

**STORAGE SYSTEMS**

- *Iomega*
  - Zip 250MB Zip
  - Zip 250MB Zip

**ACCELERATION**

- *Dynamar*
  - 16x Modem 1111

**NETWORKING**

- *Tasante*
  - MacConf
  - Ethernet 1111

**MEMORY UPGRADES**

- *Ramtek*
  - 512 RAM Memory 1111

**PRINTERS**

- *Epson*
  - 6800

**POWER BACKUP**

- *APC*
  - UPS

**MONITOR ACCESSORIES**

- *Apple Hard Drives*

**MEDIA**

- *Barrett Cartridges*

**MOBILE COMPUTING**

- *PowerBook HD*

**MEMORY UPGRADES**

- *PowerMac 5400*

**CALL FOR PRICING**

**DISCOUNT PRICES ON QUALITY HARDWARE, SOFTWARE & ACCESSORIES**

**IF YOU DON'T SEE IT... CALL!**

**MAC BARGAINS**

**FAX: 1-206-603-2520**

**15815 S. E. 37th Street, Bellevue, WA 98006-1800**

**Knowledgeable Sales Advisors help make buying easy!**

Call Now!

Circle 70 on reader service card
DIGITAL AXIS INTERNATIONAL

**WACOM Digitizers**
12" x 18" Tilt with 2-Handed Input Calligraphy/Correction Pen

$659
Wacom /UD1218RM

12"x12" ........................................... $499
ARTZ 6x8 ........................................... $299
ARTZ/Point 2.0 Bundle ......................... $479
4"x5" - Compatible with Mac or PC .......... $149

**Photoshop 3.0 $199**
With purchase of Scanner or Wacom Tablet

**UMAX Scanners**
Vista V56 - 600dpi One-Pass Scanner ........ $699
UMAX 630 - 600dpi .............................. $309
UMAX 840 - 800dpi .............................. $499
UMAX 1260 - 1200dpi ......................... $879
PowerLook - including Transparency Adapter $299
UMAX Transparency Adapter ................. $429

**FUJIX FV-7 $995**
Slide/Copy Stand Capture/Video Camera for capturing and previewing slides, negatives, photos, 3D-objects, or full motion scenes.

**ColorEase PS**
Color DyeSub Printer/PS level 2 ............... $5,599

**KODAK PCD Writer with software**
$6139
Leasing Now Available

**DIGITAL AXIS**
512-329-7001
800-247-4678
Fax 512-329-0291

17" Trinitron
$769
- Plug & Play with On-Board Video for the Quadra, A3, Centris, LC111, PowerMac
- WYSIWYG, 832x624, 26mm dot, 75Hz
- 1 Year Warranty
- Dealers call for volume discounts
- $999 with 24-bit Accel Video Card
- $1,659 with TouchScreen & Software

20" Color Display
$1,589
Ikegami CT-20
24-bit Accel Video Card Bundle $1,999

RasterOps PaintBoard 24Xi $499

Microtek 45T Slide Scanner
$5895
35mm to 4x5" Slide Scanner, 36-bit 1000 x 1000 dpi, includes full version of Adobe Photoshop & DCR Color Calibration Software

JVC CD-ROM Products
- Personal Archiver - External .................. $3599
- Personal ROMMaker ........................... $5695
Includes 168 Hard Drive, writes all CD-ROM standards, including Red-Book Audio

SONY CD MEDIA - 74 Minute, 640 MB .......... $19

Circle 83 on reader service card
### Quantum Quantum Quantum

**LPS/Pro-Lightening, Maverick, Empire Grand Prix**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>170 MB</td>
<td>$165</td>
</tr>
<tr>
<td>270 MB</td>
<td>$185</td>
</tr>
<tr>
<td>540 MB</td>
<td>$220</td>
</tr>
<tr>
<td>730 MB</td>
<td>$235</td>
</tr>
<tr>
<td>1090 MB</td>
<td>$250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1440 MB</td>
<td>$255</td>
</tr>
<tr>
<td>2100 MB</td>
<td>$275</td>
</tr>
<tr>
<td>4200 MB</td>
<td>$295</td>
</tr>
</tbody>
</table>

All drives are tested and formatted with the latest SCSI controller software. All drives are compatible with Power PC and PA-RISC systems. External data is complete with extended termination and your support of a double shielded 25/50 system cable or 60/30.

---

### Media

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Warranty</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantum</td>
<td>170 MB</td>
<td>3 year</td>
<td>$165</td>
</tr>
<tr>
<td>Quantum</td>
<td>270 MB</td>
<td>3 year</td>
<td>$185</td>
</tr>
<tr>
<td>Quantum</td>
<td>540 MB</td>
<td>3 year</td>
<td>$220</td>
</tr>
<tr>
<td>Quantum</td>
<td>730 MB</td>
<td>3 year</td>
<td>$235</td>
</tr>
<tr>
<td>Quantum</td>
<td>1090 MB</td>
<td>3 year</td>
<td>$250</td>
</tr>
<tr>
<td>Quantum</td>
<td>1440 MB</td>
<td>3 year</td>
<td>$255</td>
</tr>
<tr>
<td>Quantum</td>
<td>2100 MB</td>
<td>3 year</td>
<td>$275</td>
</tr>
<tr>
<td>Quantum</td>
<td>4200 MB</td>
<td>3 year</td>
<td>$295</td>
</tr>
</tbody>
</table>

All drives include a 2 year factory warranty, Quantum drives include a Disk Manager 4.3 compatible formatting software.

---

### IDE Hard Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Seek</th>
<th>RPM</th>
<th>Buffer</th>
<th>Int.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>88 MB</td>
<td>SQ5110C</td>
<td>20ms</td>
<td>3200</td>
<td>32K</td>
<td>305</td>
<td>365</td>
</tr>
<tr>
<td>105 MB</td>
<td>SQ2105</td>
<td>14.3ms</td>
<td>3400</td>
<td>6K</td>
<td>245</td>
<td>305</td>
</tr>
<tr>
<td>200 MB</td>
<td>SQ2200</td>
<td>18 ms</td>
<td>3200</td>
<td>64K</td>
<td>425</td>
<td>485</td>
</tr>
</tbody>
</table>

---

### Tape Backup Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Transfer Rate</th>
<th>Warranty</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 GB</td>
<td>SQ7200</td>
<td>2.5 MB/sec</td>
<td>2 year</td>
<td>$2020</td>
</tr>
<tr>
<td>5-10 GB</td>
<td>SQ8200</td>
<td>5 MB/sec</td>
<td>2 year</td>
<td>$2080</td>
</tr>
</tbody>
</table>

---

### Memory Products

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Centrrix/LCL Quad</th>
<th>Warranty</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 MB</td>
<td>SQMB4A</td>
<td>4MB/60/70s</td>
<td>4 year</td>
<td>$995</td>
</tr>
<tr>
<td>8 MB</td>
<td>SQMB8B</td>
<td>8MB/60/70s</td>
<td>4 year</td>
<td>$1150</td>
</tr>
<tr>
<td>16 MB</td>
<td>SQMB16</td>
<td>16MB/60/70s</td>
<td>4 year</td>
<td>$1315</td>
</tr>
</tbody>
</table>

---

### Cabinets

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seagate</td>
<td>$325</td>
</tr>
<tr>
<td>NEC</td>
<td>$450</td>
</tr>
<tr>
<td>IBM</td>
<td>$500</td>
</tr>
</tbody>
</table>

---

### NEW!!! CD Rom Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Warranty</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyQuest</td>
<td>1.3 GB</td>
<td>1 year</td>
<td>$325</td>
</tr>
<tr>
<td>Fujitsu</td>
<td>1.3 GB</td>
<td>1 year</td>
<td>$395</td>
</tr>
</tbody>
</table>

---

### New Low Pricing!!!!

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantum</td>
<td>170 MB</td>
<td>$165</td>
</tr>
<tr>
<td>Quantum</td>
<td>270 MB</td>
<td>$185</td>
</tr>
<tr>
<td>Quantum</td>
<td>540 MB</td>
<td>$220</td>
</tr>
<tr>
<td>Quantum</td>
<td>730 MB</td>
<td>$235</td>
</tr>
<tr>
<td>Quantum</td>
<td>1090 MB</td>
<td>$250</td>
</tr>
<tr>
<td>Quantum</td>
<td>1440 MB</td>
<td>$255</td>
</tr>
<tr>
<td>Quantum</td>
<td>2100 MB</td>
<td>$275</td>
</tr>
<tr>
<td>Quantum</td>
<td>4200 MB</td>
<td>$295</td>
</tr>
</tbody>
</table>

All drives are tested and formatted with the latest SCSI controller software. All drives are compatible with Power PC and PA-RISC systems. External data is complete with extended termination and your support of a double shielded 25/50 system cable or 60/30.

---

### New Low Price!!!!

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Warranty</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantum</td>
<td>170 MB</td>
<td>3 year</td>
<td>$165</td>
</tr>
<tr>
<td>Quantum</td>
<td>270 MB</td>
<td>3 year</td>
<td>$185</td>
</tr>
<tr>
<td>Quantum</td>
<td>540 MB</td>
<td>3 year</td>
<td>$220</td>
</tr>
<tr>
<td>Quantum</td>
<td>730 MB</td>
<td>3 year</td>
<td>$235</td>
</tr>
<tr>
<td>Quantum</td>
<td>1090 MB</td>
<td>3 year</td>
<td>$250</td>
</tr>
<tr>
<td>Quantum</td>
<td>1440 MB</td>
<td>3 year</td>
<td>$255</td>
</tr>
<tr>
<td>Quantum</td>
<td>2100 MB</td>
<td>3 year</td>
<td>$275</td>
</tr>
<tr>
<td>Quantum</td>
<td>4200 MB</td>
<td>3 year</td>
<td>$295</td>
</tr>
</tbody>
</table>

All drives include a 2 year factory warranty, Quantum drives include a Disk Manager 4.3 compatible formatting software.
Some people donate money to keep the air clean. Jeff Angus wrote 2000 lines of code.

Jeff Angus has regularly donated money to the Natural Resources Defense Council. Now he also supports them in a different and maybe even more valuable way. By donating his skills to modify a dBASE program that generates customized reports about toxic substances.

If you'd like to put your own special skills to good use, call 1-800-659-3579. And we'll match you with a local non-profit organization whose needs are compatible with your area of expertise. Call us now, and we'll show you a great way to make a real difference in the world.

By doing what you do best.
Technology changes
times change
people change

but one thing stays the same

we win.

Why do we keep winning Best Computer Magazine? The Computer Press Association judges say it's because "Macworld is an outstanding mix of news and service journalism, humor and opinion." It's also because Macworld contains more product reviews than any other monthly Macintosh publication. And the magazine is designed with style—clean layouts and illustrations generated entirely by the Mac.

So, in an industry that changes every second, it's reassuring to know that Macworld continues to be the Best Computer Magazine and the Macintosh authority.
## PRODUCT INDEX

<table>
<thead>
<tr>
<th>Category</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESSORIES</td>
<td>247</td>
</tr>
<tr>
<td>Covers</td>
<td></td>
</tr>
<tr>
<td>Diskettes</td>
<td></td>
</tr>
<tr>
<td>BUSINESS TOOLS</td>
<td>229-230</td>
</tr>
<tr>
<td>Bar Code</td>
<td></td>
</tr>
<tr>
<td>Cataloging Software</td>
<td></td>
</tr>
<tr>
<td>Credit Authorization</td>
<td></td>
</tr>
<tr>
<td>LCD Panels</td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td></td>
</tr>
<tr>
<td>Point of Sale</td>
<td></td>
</tr>
<tr>
<td>Real Estate</td>
<td></td>
</tr>
<tr>
<td>EDUCATIONAL &amp; RECREATIONAL</td>
<td>247-249</td>
</tr>
<tr>
<td>Astrology</td>
<td></td>
</tr>
<tr>
<td>Degree Program</td>
<td></td>
</tr>
<tr>
<td>Discount Software</td>
<td></td>
</tr>
<tr>
<td>Genealogy</td>
<td></td>
</tr>
<tr>
<td>Grading</td>
<td></td>
</tr>
<tr>
<td>Languages</td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>GRAPHICS</td>
<td>248-B</td>
</tr>
<tr>
<td>CAD/CAM</td>
<td></td>
</tr>
<tr>
<td>CD ROM Photos</td>
<td></td>
</tr>
<tr>
<td>Clip Art</td>
<td></td>
</tr>
<tr>
<td>Fonts</td>
<td></td>
</tr>
<tr>
<td>Graphics Translators</td>
<td></td>
</tr>
<tr>
<td>Magazine</td>
<td></td>
</tr>
<tr>
<td>MOBILE COMPUTING &amp; PDA'S</td>
<td>246</td>
</tr>
<tr>
<td>Solar Battery Chargers</td>
<td></td>
</tr>
<tr>
<td>MULTIMEDIA &amp; CD-ROM</td>
<td>248-A-B</td>
</tr>
<tr>
<td>CD ROM Presentation</td>
<td></td>
</tr>
<tr>
<td>NETWORKING &amp; COMMUNICATIONS</td>
<td>246</td>
</tr>
<tr>
<td>BBS</td>
<td></td>
</tr>
<tr>
<td>ISDN</td>
<td></td>
</tr>
<tr>
<td>PROGRAMMING &amp; UTILITIES</td>
<td>251</td>
</tr>
<tr>
<td>Languages</td>
<td></td>
</tr>
<tr>
<td>SERVICES &amp; SUPPLIES</td>
<td>248-C-D</td>
</tr>
<tr>
<td>Computer Insurance</td>
<td></td>
</tr>
<tr>
<td>Computer Repair</td>
<td></td>
</tr>
<tr>
<td>Data Recovery</td>
<td></td>
</tr>
<tr>
<td>Patent Research</td>
<td></td>
</tr>
<tr>
<td>Progress Services</td>
<td></td>
</tr>
<tr>
<td>Slides</td>
<td></td>
</tr>
<tr>
<td>SYSTEMS &amp; PERIPHERALS</td>
<td>230-240</td>
</tr>
<tr>
<td>Hard Drives</td>
<td></td>
</tr>
<tr>
<td>Switch Box</td>
<td></td>
</tr>
<tr>
<td>Printers</td>
<td></td>
</tr>
<tr>
<td>UPGRADES &amp; MEMORY</td>
<td>240-246</td>
</tr>
</tbody>
</table>

### POINT OF SALE

<table>
<thead>
<tr>
<th>Category</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCOUNT MANAGERS</td>
<td>800.888.8622</td>
</tr>
<tr>
<td>Carol Johnstone</td>
<td>415.978.3152</td>
</tr>
<tr>
<td>Shannon Smith</td>
<td>415.974.7414</td>
</tr>
<tr>
<td>Niki Stranz</td>
<td>415.978.3105</td>
</tr>
<tr>
<td>DTP COORDINATOR</td>
<td>415.978.3132</td>
</tr>
</tbody>
</table>

### PRODUCT INDEX

#### THE RECOGNIZED MACINTOSH BAR CODE EXPERTS

**UniScan-100 ADD Bar Code/Mag Stripe Reader**

(Industry's only lifetime warranty)

- Complete with wand & bar code printing software
- Compatible with all Macs from 128K to current models
- Investors of keyboard interface bar code reader for Macintosh

**PDCS-300 Portable System**

(1 year warranty)

- Includes wand, communications software, cable, battery & AC adapter
- 256K storage (128K RAM & 128K Flash PROM); upgradeable to 1 meg
- Data collection program included - Inexpensive program generator

**30-Day Money-Back-Guarantee on All Products**

Established 1978 - Newton Scanners and Software

Discounts for Resellers, Schools, Non-Profit & Government Agencies

2495 Old Middlefield Way, Mtn. View CA 94043

(415) 988-0141 Fax (415) 988-0289

(800) 526-5920 AppleLink: BARCODE

#### THE EXPERTS CHOICE FOR BARCODING!

**Bar Code Generation**

**MacBARCODA**

Win a software that works

The highest precision barcoding package available for the Mac

**For Sheet-fed Labels**

Easy to use, prints any label with bar codes, text, graphics, numbers and dates.

**For Reel-fed Labels**

Prints short-run labels on reels with bar codes, text, graphics, numbers and dates. Compatible with the full range of Zebra Printers.

**Bar Code Readers**

A complete line of bar code scanners starting at $255

Call toll free 800 289 0993

28 Green Street, Newbury MA 01951, Fax 508-462-8198

#### THE EXPERTS CHOICE FOR BARCODING!

**Medical Office Mgmt**


**Tess Data Systems, Inc.**

14340 Torrey Chase Blvd, Ste 340
Houston, TX 77014-1021

800/218-TESS Sales
713/440-9995, 713/440-6526 Fax

#### CREDIT CARD

**Credit Card Authorization & Electronic Deposit Software**

- Save hundreds, if not thousands of dollars
- Automatically authorizes and deposits all credit card sales – individually or in batches
- Integrate with your sales system with AppleEvents, AppleScript & import/export

**MaCardrige**

- Single and Multiple User Versions
- POS Credit Developers since 1981

800/483-5526 408/274-1110

Tellus Software, Inc
Scanning bar codes is even easier!

Creating precision bar codes is as easy as using a font!

PRINTBAR™ BAR CODE FONTS

- Compatible with virtually any Macintosh application.
- Choose from: • UPC/EAN/ISBN
  • Code 39 • Interleaved 2 of 5
  • POSTNET/IM
- 90-day money back guarantee.

- "This is the best product of its kind, and it's reasonably priced too." —MacUser review

Bundle discounts available. Call the Bar Code Experts
800 232-7625

Bar Code Headquarters

Bar Code Readers

for all Macintosh ADB or Serial
- Attaches thru ADB as 2nd Keybd
- UPC/EAN, Code 128, 2 of 5, Code 39,
- Interleaved 2 of 5, Code 93, etc.
- All European Keyboards Supported
- Top Rated by Independent Reviews
- Complete with Corded Wrap -- $29
- Complete with Cordless Wrap -- $99
- Complete with Cordless Laser -- $175

PORTABLE READERS

for all Macintosh ADB or Serial
- 64K or 256K RAM, Keyboard or serial
- Wand, CCD or Laser Input
- UPC/EAN, 128, 2 of 5, MSI, Code 39, etc.
- Voice messages tell operator what to do at specified errors and at data entry steps. Simple!
- Complete 64K unit with Wand & Voice -- $795, 256K unit -- $895

Fonts for Film Masters

- 65 PostScript Type 1 Bar Code Fonts
- As easy to use as Times or Helvetica
- Use in any program with a font menu
- Code 39, UPC/EAN, Code 128, Interleaved 2 of 5, PostNet with FIMS

Only $3,799.

Project Wall-Sized Multimedia

Introducing the BOXLIGHT ProColor
1500 Multimedia Projection Panel. Full-color, big-screen multimedia and video projection with built-in audio! Industry-leading performance at special introductory price of only $3,799!

- Active-matrix color
- Built-in video & audio
- Rugged & portable
- PC & Mac Compatible
- Unbeatable price

Make Intelligent Buying Decisions

Subscribe to The Mac Buyer's Journal

- Find out where to find the lowest prices
- Covers PowerMac, Quake II, PowerBook
- Mac II, Performa, monitors, printers, etc.
- Not affiliated with any dealer/retailer
- Get rock-bottom prices
- Get the straight scoop
- Save $5 on every purchase

1-800-813-7459

Your direct source for all the bright answers.
- Widest selection
- Instant availability
- Overnight shipping
- 30-day guarantee

Mac Landlord S399

Upgraded version 2.2 now available. Still the Easiest-to-use property management program for multiple properties & unlimited units. Includes tenant and unit records, recurring income and expense, check writing, checkbook balancing, printing tenant notices, income and expense ledgers, and much more. Free telephone support. Demo for $25, credited to purchase.

Labana Management Company
P.O. Box 2037
Dearborn, MI 48123
313/562-6247

CIRCLE 412 ON READER SERVICE CARD

CIRCLE 417 ON READER SERVICE CARD

Macworld Shopper

BUSINESS TOOLS
Our service is the difference. At AEDON we specialize in optical storage products and memory, and service you can count on. No backorders. No hype. Most of our products are stocked at our location, which means they can be shipped to you by the next day. Depend on us and we'll show you just how easy mail ordering can be.

Call for prices on any items not listed.

Government, School & Corporate PFS accepted.

Minimum Five Year Warranty on most items.

Pentium 300 Series... $169/320... 1/16/125

300 300 Series... 140/320... 10/97/1085

PowerMac... 1/24/94... 1/55/11919

200 Mac... 70/86... 75.33

66 Mac... 70/86... 285

166 Mac... 70/86... 565

230 Macs are backwards compatible with 110x. A 3 1/2" is backwards compatible with 128x.

AEDON TECHNOLOGY - Mon-Fri 9am-6pm, Sat 9am-2pm PST

Kiwi Computers, PO Box 67381, L.A., CA 90067

MacUSA

(310) 553-4507

Mac USA - Serving Mac Users Since 1985

MacBYTE

Low & High End Custom Setups

CASH FOR MACS

1-800-334-KIWI

Power Mac

$100/1500... $219

$245

$1245

$124/Gig... $779

$1024/Gig... $980

PowerBook

150/4/120... $339

$360

$360

$360

Performa 400/400... 16 mhz 6000...

$595

Performa 475/4750... 25 mhz 6000...

$949

Performa 500/516... 33 mhz 6000...

$1149

Performa 560/5160 CD, 33 mhz 6030...

$1199

StyleWriter II (with computer purchase).... $215

All products listed above are new with a 1 year warranty.

Factory Refurbished Macs

All Performa models include 14" color monitor, System 7.1 and Claris Works. All Performa include standard keyboard except Performa 600 which includes extended keyboard. Performa 500 includes internal CD-ROM and 14" Ethernet display.

PowerBook

150/6/120... $339

$360

$360

$360

Peripherals include internal CD-ROM and 14" Ethernet display.

Performa 400/400... 16 mhz 6000...

$595

Performa 475/4750... 25 mhz 6000...

$949

Performa 500/516... 33 mhz 6000...

$1149

Performa 560/5160 CD, 33 mhz 6030...

$1199

StyleWriter II (with computer purchase).... $215

Refurbished products have a 90 day warranty.

Visa & Mastercard No Surcharge.

Better Business Bureau Member.

Klein Computers, PO Box 67381, L.A., CA 90067

Toll Free (800) 534-5494 Fax (310) 286-9071

In California and Overseas (310) 534-5407

Hours: Mon-Fri 7:30am-6pm, Sat 9am-2pm PST

Prices subject to 1% processing fee. Prices advertised are subject to change without notice.

And while Mac outfits come and go, we just keep on doing what we do best. We've been refurbishing and selling used computers for 11 years. Your satisfaction is guaranteed, we'll say.

1-800-334-KIWI

Call Anytime!
### Power Macintosh CPUs

<table>
<thead>
<tr>
<th>Model</th>
<th>MHz</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Mac 6100/66 8/250</td>
<td>66</td>
<td>$1679</td>
</tr>
<tr>
<td>Power Mac 6100/8250/Cd</td>
<td>8250</td>
<td>$1899</td>
</tr>
<tr>
<td>Power Mac 6100/16600/Cd</td>
<td>16600</td>
<td>$2154</td>
</tr>
<tr>
<td>PM 6100AV 8/250/Cd</td>
<td>8250</td>
<td>$2154</td>
</tr>
<tr>
<td>PM 7100 8/500/Cd</td>
<td>8500</td>
<td>$2788</td>
</tr>
<tr>
<td>PM 7100 32/1GB</td>
<td>32</td>
<td>$4149</td>
</tr>
<tr>
<td>PM 7100AV 16/500/Cd</td>
<td>16500</td>
<td>$4955</td>
</tr>
<tr>
<td>PM 8100/80 8/500/Cd</td>
<td>8800</td>
<td>$4194</td>
</tr>
<tr>
<td>PM 8100 16/250/Cd</td>
<td>16250</td>
<td>$4299</td>
</tr>
<tr>
<td>PM 8100 16/250/Cd</td>
<td>16250</td>
<td>$4299</td>
</tr>
<tr>
<td>PM 8100 16/250/Cd</td>
<td>16250</td>
<td>$4299</td>
</tr>
<tr>
<td>PM 8100 4/10/GCD</td>
<td>4100</td>
<td>$6395</td>
</tr>
</tbody>
</table>

### PowerBooks Duo

<table>
<thead>
<tr>
<th>Model</th>
<th>MHz</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duo 280 12/240/MODEN</td>
<td>12240</td>
<td>$2829</td>
</tr>
<tr>
<td>Duo 280c 12/240/MODEN</td>
<td>12240</td>
<td>$3349</td>
</tr>
<tr>
<td>Duo 280c 12/320/MODEN</td>
<td>12320</td>
<td>$3829</td>
</tr>
<tr>
<td>Duo Dock 18/320/MODEN</td>
<td>18320</td>
<td>$4499</td>
</tr>
<tr>
<td>Duo Dock 8/160/MODEN</td>
<td>8160</td>
<td>$898</td>
</tr>
<tr>
<td>DUO FLOPPY DRIVE</td>
<td></td>
<td>$119</td>
</tr>
<tr>
<td>DUO FLOPPY ADAPTOR</td>
<td></td>
<td>$119</td>
</tr>
</tbody>
</table>

### PowerBooks

<table>
<thead>
<tr>
<th>Model</th>
<th>MHz</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBooks PM 150 4/20</td>
<td>420</td>
<td>$1589</td>
</tr>
<tr>
<td>PowerBooks PM 150 8/20</td>
<td>820</td>
<td>$1859</td>
</tr>
<tr>
<td>PowerBooks PM 145B 8/20</td>
<td>820</td>
<td>$1859</td>
</tr>
<tr>
<td>PowerBooks PM 200 4/160</td>
<td>4160</td>
<td>$2049</td>
</tr>
<tr>
<td>PowerBooks PM 200 8/160/MODERMAN</td>
<td>8160</td>
<td>$2659</td>
</tr>
<tr>
<td>PowerBooks PM 200 16/160</td>
<td>16160</td>
<td>$3090</td>
</tr>
<tr>
<td>PowerBooks PM 540 4/320 NEW 40</td>
<td>4320</td>
<td>$4295</td>
</tr>
<tr>
<td>PowerBooks PM 540 12/320/19,2 Modem</td>
<td>12320</td>
<td>$4895</td>
</tr>
</tbody>
</table>

### PowerBooks Duo

<table>
<thead>
<tr>
<th>Model</th>
<th>MHz</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBooks Duo PM 630 4/20</td>
<td>420</td>
<td>$1589</td>
</tr>
<tr>
<td>PowerBooks Duo PM 630 8/20</td>
<td>820</td>
<td>$1859</td>
</tr>
<tr>
<td>PowerBooks Duo PM 630 16/20</td>
<td>1620</td>
<td>$2049</td>
</tr>
<tr>
<td>PowerBooks Duo PM 630 32/20</td>
<td>3220</td>
<td>$2659</td>
</tr>
<tr>
<td>PowerBooks Duo PM 650 4/20</td>
<td>420</td>
<td>$1589</td>
</tr>
<tr>
<td>PowerBooks Duo PM 650 8/20</td>
<td>820</td>
<td>$1859</td>
</tr>
<tr>
<td>PowerBooks Duo PM 650 16/20</td>
<td>1620</td>
<td>$2049</td>
</tr>
<tr>
<td>PowerBooks Duo PM 650 32/20</td>
<td>3220</td>
<td>$2659</td>
</tr>
</tbody>
</table>

### Monitors

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple 14 Color Plus</td>
<td>$269</td>
</tr>
</tbody>
</table>

### Hard Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerMac Adapter 1000MB 2.5&quot;</td>
<td>$1299</td>
</tr>
<tr>
<td>PowerMac Adapter 2000MB 2.5&quot;</td>
<td>$2129</td>
</tr>
<tr>
<td>PowerMac Adapter 4000MB 2.5&quot;</td>
<td>$3999</td>
</tr>
<tr>
<td>PowerMac Adapter 8000MB 2.5&quot;</td>
<td>$7999</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe Illustrator 36</td>
<td>$899</td>
</tr>
<tr>
<td>Adobe PageMaker 6.5</td>
<td>$1299</td>
</tr>
<tr>
<td>Adobe Photoshop 5.5</td>
<td>$1199</td>
</tr>
<tr>
<td>Adobe Acrobat 3.0.1</td>
<td>$799</td>
</tr>
<tr>
<td>Adobe Office 4.0.2</td>
<td>$1299</td>
</tr>
<tr>
<td>QuarkXPress 3.3 Mac</td>
<td>$449</td>
</tr>
<tr>
<td>SoftWindows 1.6 PPC</td>
<td>$449</td>
</tr>
<tr>
<td>Adobe Photoshop 5.5</td>
<td>$1199</td>
</tr>
<tr>
<td>Adobe FreeHand 3.0</td>
<td>$999</td>
</tr>
<tr>
<td>Adobe Illustrator 4.0</td>
<td>$999</td>
</tr>
<tr>
<td>Adobe PageMaker 6.5</td>
<td>$1299</td>
</tr>
<tr>
<td>Adobe Photoshop 5.5</td>
<td>$1199</td>
</tr>
<tr>
<td>Adobe FreeHand 3.0</td>
<td>$999</td>
</tr>
<tr>
<td>Adobe Illustrator 4.0</td>
<td>$999</td>
</tr>
<tr>
<td>Adobe PageMaker 6.5</td>
<td>$1299</td>
</tr>
<tr>
<td>Adobe Photoshop 5.5</td>
<td>$1199</td>
</tr>
</tbody>
</table>

### E-Machine E-20

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Machine E-20 20&quot; Dual Core AMD</td>
<td>$899</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### SuperMac 20" Color

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperMac 20&quot; Color STBY TEST5</td>
<td>$999</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### SuperMac 17" Color

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperMac 17&quot; Color 20&quot; Trinitron</td>
<td>$639</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### SuperMac 17" Multidisplay

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperMac 17&quot; Multidisplay 20&quot; Trinitron</td>
<td>$465</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### SuperMac 20" Trinitron Hi-Res.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperMac 20&quot; Trinitron Hi-Res 1360x1024</td>
<td>$1299</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### SuperMac 21"/21x1 T

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Machine 21&quot;/21x1</td>
<td>$600</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### PowerPC 200MHz Dual Micro Display

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Futura SX/MM/MLX</td>
<td>$799</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### Spectrum 240DPQ/Thunder 24

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectrum 240DPQ/Thunder 24</td>
<td>$799</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### Thunder iMac 1125/1360/1600

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thunder iMac 1125/1360/1600</td>
<td>$1199</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### PowerPhoto/Spindawd Power Av

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerPhoto/Spindawd Power Av</td>
<td>$899</td>
</tr>
<tr>
<td>PowerMac Adapter</td>
<td>$40</td>
</tr>
</tbody>
</table>

### Video/View Studio 2.0 Pro Pak

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video/View Studio 2.0 Pro Pak</td>
<td>$3399</td>
</tr>
</tbody>
</table>

### Call for the products not listed.

*Factory Refurbished*
Make your PC peripherals Macintosh compatible!

Mediator lets you use your PS/2 style peripherals just as if they were connected directly to your Mac! Use the Cybex AutoBoot™ Commander in conjunction with the Mediator to control a mixture of PCs and Macs from a single keyboard, monitor and PS/2 mouse. Or allow several users to share a Mac with PC-Expander Plus™. With the Mediator, going multplatform is easy!

- Compatible with most Macintosh computers with detachable monitors
- Supports VGA, SVGA and Macintosh HiRes video
- Supports PS/2 style keyboard, mouse or peripherals

For Sun® workstation support, ask about our Mediator for Sun!

Mediator™ for Macintosh
Cybex Corporation
4912 Research Drive • Huntsville, AL 35805 USA
(205) 430-4000 • FAX (205) 430-4030

Prices reflect cash discount. Prices subject to change.

Computer Revelations Inc.
1 800 275-9924
in NY 516 737-0800
ALL MACINTOSH, & PCs,
Sales, Leasing, Service & Support
331 E DANTE COURT HOLLAND NY 14194 FAX 516-737-0623

Prices reflect cash discount. Prices subject to change.
You won't find anyone with more Macintosh expertise than the experienced consultants at PowerMax. Give us a call today for a competitive quote and expert advice.

Mac CPU's & Powerbooks

PowerBook's

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6100/160</td>
<td>$1,750</td>
<td>800 MHz PowerPC G3, 40GB, 256MB RAM</td>
</tr>
<tr>
<td>5500/160</td>
<td>$1,599</td>
<td>700 MHz PowerPC G3, 20GB</td>
</tr>
<tr>
<td>6000/189</td>
<td>$1,699</td>
<td>650 MHz PowerPC G3, 20GB</td>
</tr>
<tr>
<td>5600/189</td>
<td>$1,799</td>
<td>650 MHz PowerPC G3, 20GB</td>
</tr>
<tr>
<td>5700/189</td>
<td>$1,799</td>
<td>650 MHz PowerPC G3, 20GB</td>
</tr>
<tr>
<td>5800/189</td>
<td>$1,899</td>
<td>650 MHz PowerPC G3, 20GB</td>
</tr>
<tr>
<td>5900/189</td>
<td>$1,999</td>
<td>650 MHz PowerPC G3, 20GB</td>
</tr>
</tbody>
</table>

PowerMac's

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>600/160</td>
<td>$1,499</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>550/160</td>
<td>$1,399</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>610/160</td>
<td>$1,599</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>560/160</td>
<td>$1,699</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>570/160</td>
<td>$1,799</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>580/160</td>
<td>$1,899</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>590/160</td>
<td>$1,999</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
</tbody>
</table>

QUADRA's

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>605/160</td>
<td>$1,499</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>555/160</td>
<td>$1,399</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>615/160</td>
<td>$1,599</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>565/160</td>
<td>$1,699</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>575/160</td>
<td>$1,799</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>585/160</td>
<td>$1,899</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
<tr>
<td>595/160</td>
<td>$1,999</td>
<td>300MHz PowerPC G3, 10GB, 64MB RAM</td>
</tr>
</tbody>
</table>

MACINTOSH

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7100/66</td>
<td>$2,799</td>
<td>400MHz PowerPC G3, 20GB, 64MB RAM</td>
</tr>
<tr>
<td>7100/60</td>
<td>$2,599</td>
<td>400MHz PowerPC G3, 20GB, 64MB RAM</td>
</tr>
<tr>
<td>8100/80</td>
<td>$3,699</td>
<td>600MHz PowerPC G3, 40GB, 128MB RAM</td>
</tr>
</tbody>
</table>

PowerMax 17" Color Monitor

16MB Power Mac 17" monitor has 1024 x 768 pixel pitch, 350 nit brightness, easy access controls and a quick start button. Comes with Apple PIR package. No modeling. Call us today and hear the PowerMac difference.

800-844-3599

24 hour fax line: 1-503-232-7110

Power Mac

Knowledge is Power

CALL THE MAC EXPERTS!

TRADE IN YOUR OLD MAC FOR A NEW MAC

Our special trade-in program offers our best prices and highest trade-in value of any major Macintosh dealer.

TRADE IN

100 to 540 = $150
541 to 1080 = $300
1081 to 2160 = $600
2161 to 3240 = $1,000
3241 to 4320 = $1,500
4321 to 5400 = $2,000

TRADE IN ON QUADRA & POWERBOOKS

QUADRA 900 $1399
QUADRA 1000 $1999
QUADRA 950 $2299
QUADRA 1060 $2599
QUADRA 1100 $2899
QUADRA 800 $1599
QUADRA 840AV $1799
QUADRA 800 Color $1999
QUADRA 400 $1799
QUADRA 440 $2299
QUADRA 440SE $2599
QUADRA 440SE Color $2899
QUADRA 800 PowerBook $1299
QUADRA 840AV PowerBook $1799
QUADRA 1000 PowerBook $2999
QUADRA 1100 PowerBook $3499
QUADRA 610 PowerBook $4499
QUADRA 840AV PowerBook $5499
QUADRA 610 PowerBook G4 $6999
QUADRA 840AV PowerBook G4 $8999
QUADRA 1000 PowerBook G4 $9999
QUADRA 1100 PowerBook G4 $11999

WE SELL: NEW MACS, PRE-OWNED MACS AND PARTS!

POWER Supplys
FLPPY Drives
HARD Drives
LOGIC BOARDS
UPGRADE

INTERNATIONAL COMPUTER & NETWORKING

FAX 310-445-6600  CALL 310-445-6611

2045 S. BARRINGTON, LOS ANGELES, CA 90025
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Macs 8100, 80MHz</td>
<td>$1999</td>
</tr>
<tr>
<td>16MB/1 Gig HD/Apple CD</td>
<td>4695</td>
</tr>
<tr>
<td>24MB/500MB/SoftWindow</td>
<td>4499</td>
</tr>
<tr>
<td>40MB/1 Gig/Radius 20e/Ext. keyboard</td>
<td>6595</td>
</tr>
<tr>
<td>40MB/1 Gig/Syquest 200MB/Apple 17&quot; Monitor/Ext. key.</td>
<td>6195</td>
</tr>
<tr>
<td>163MB/3.6 Gig AV HD/Supra Mac Press View 217/7 Radius -LeMans GT/Radius Video Vision Studio/ NEC 4x CD Rom</td>
<td>17990</td>
</tr>
<tr>
<td>(AV)/24/1 HD Apple CD</td>
<td>5199</td>
</tr>
<tr>
<td><strong>Quadra 630 Special</strong></td>
<td><strong>$1599</strong></td>
</tr>
<tr>
<td>8MB/230/14&quot; Color Plus/Keybrd &amp; Supra LC 14.4 Modem</td>
<td>$1399</td>
</tr>
<tr>
<td><strong>Ultra 600 Special</strong></td>
<td><strong>$1999</strong></td>
</tr>
<tr>
<td>8MB/230/14&quot; Color Plus/Keybrd</td>
<td>$2999</td>
</tr>
<tr>
<td>&amp; Supra LC 14.4 Modem</td>
<td>$1599</td>
</tr>
<tr>
<td>Systems &amp; Peripherals</td>
<td></td>
</tr>
<tr>
<td>Nikon</td>
<td></td>
</tr>
<tr>
<td>Electronic Imaging</td>
<td></td>
</tr>
<tr>
<td>Coolscan External</td>
<td></td>
</tr>
<tr>
<td>Scanner Touch 1200dpi</td>
<td></td>
</tr>
<tr>
<td>Transparency 5x</td>
<td></td>
</tr>
<tr>
<td>COOL Print</td>
<td></td>
</tr>
<tr>
<td>Infinity 880c/20 Syquest</td>
<td></td>
</tr>
<tr>
<td>Infinity 270 Syquest w/Cart.</td>
<td></td>
</tr>
<tr>
<td>DAT 10GB DDS2 W/Retrospect</td>
<td></td>
</tr>
<tr>
<td><strong>Nikon</strong></td>
<td><strong>$4695</strong></td>
</tr>
<tr>
<td>Power Macs 7100, 66MHz</td>
<td>$5997</td>
</tr>
<tr>
<td>16MB/500 MB /AppleCD</td>
<td>3199</td>
</tr>
<tr>
<td>40MB /1.7 Gig HD</td>
<td>4575</td>
</tr>
<tr>
<td>24MB/500/500/SoftWindow</td>
<td>3535</td>
</tr>
<tr>
<td>24MB/1 Gig/88 Ext. HD/Ext. keyboard</td>
<td>3735</td>
</tr>
<tr>
<td>40MB/1 Gig/Apple 17&quot;/Apple CD/2mb Vram</td>
<td>5199</td>
</tr>
<tr>
<td>24 bit color with Resolution of 832x624</td>
<td></td>
</tr>
<tr>
<td>(AV)/24/1 Gig/Apple 17&quot;/Apple CD/Ext. Key</td>
<td>5129</td>
</tr>
<tr>
<td>Power Macs 6100, 60MHz</td>
<td>$7999</td>
</tr>
<tr>
<td>16MB/500 HD/Apple CD</td>
<td>2479</td>
</tr>
<tr>
<td>16MB/500/SoftWindow</td>
<td>2785</td>
</tr>
<tr>
<td>8MB/250HD/Apple Color Plus &amp; CD/Ext. key</td>
<td>2233</td>
</tr>
<tr>
<td>(AV) 16/1 Gig HD Apple CD</td>
<td>3099</td>
</tr>
<tr>
<td><strong>PowerBook E20</strong></td>
<td><strong>$5999</strong></td>
</tr>
<tr>
<td>4MB/160 MB HD</td>
<td>3190</td>
</tr>
<tr>
<td>2MB/240MB/19.2 Modem /Call</td>
<td>2476</td>
</tr>
<tr>
<td><strong>PowerBooks 540</strong></td>
<td><strong>$6999</strong></td>
</tr>
<tr>
<td>4MB/240 MB/Modem</td>
<td>2936</td>
</tr>
<tr>
<td>4MB/320 MB</td>
<td>4333</td>
</tr>
<tr>
<td>12MB/320 MB/Modem</td>
<td>4999</td>
</tr>
<tr>
<td><strong>PowerBook 150 ** <strong>NEW</strong></strong></td>
<td><strong>$7499</strong></td>
</tr>
<tr>
<td>$240 MB/HD/Modem</td>
<td>1368</td>
</tr>
<tr>
<td>4MB/160HD+14.4 Modem</td>
<td>1725</td>
</tr>
<tr>
<td>Duo Deck 86</td>
<td>1875</td>
</tr>
<tr>
<td>Apple Printers</td>
<td></td>
</tr>
<tr>
<td>Select 310/320/360</td>
<td>595/875/1450</td>
</tr>
<tr>
<td>Stylewriter II/Color 2400</td>
<td>299/499</td>
</tr>
<tr>
<td>Apple Monitor Keyboards</td>
<td></td>
</tr>
<tr>
<td>20/17&quot; Multiscan</td>
<td>187/988</td>
</tr>
<tr>
<td>14&quot; Multi Scan 15&quot;</td>
<td>399/477</td>
</tr>
<tr>
<td><strong>Quadra 630 NEW</strong></td>
<td><strong>$8999</strong></td>
</tr>
<tr>
<td>8MB/250MB/CD</td>
<td>1729</td>
</tr>
<tr>
<td>[AV]20/240MB/16 bit video capturing</td>
<td></td>
</tr>
<tr>
<td>Ext KEYscan 15&quot; Apple Monitor</td>
<td></td>
</tr>
<tr>
<td>Call for the lowest price on Quadra 630</td>
<td></td>
</tr>
<tr>
<td>Umax Microtek</td>
<td></td>
</tr>
<tr>
<td>Better Image Through Innovation, SCAN MAKER</td>
<td></td>
</tr>
<tr>
<td>Transparency Adapter</td>
<td>456</td>
</tr>
<tr>
<td>Vista S6/PhotoShop LEPro</td>
<td>749/849</td>
</tr>
<tr>
<td>UC630/830 PRO</td>
<td>599/699</td>
</tr>
<tr>
<td>UCB400/600 CI/PhotoShop LE</td>
<td>675</td>
</tr>
<tr>
<td>UCB 260 1600 CI/PhotoShop</td>
<td>1079</td>
</tr>
<tr>
<td>UC 1260 1600 CI/PhotoShop</td>
<td>665</td>
</tr>
<tr>
<td>II 1260/1600 CI/PhotoShop/LE</td>
<td>565</td>
</tr>
<tr>
<td>PowerLook w/transparent</td>
<td></td>
</tr>
<tr>
<td>MAC World Shopper</td>
<td></td>
</tr>
<tr>
<td>To Order Call: 1-800-223-4622</td>
<td></td>
</tr>
<tr>
<td>• 6924 CANBY AVE, UNIT #104 RESEDA CA, 91335</td>
<td></td>
</tr>
</tbody>
</table>
MAc LC II 4/80  $599.00
BASIC COLOR MONITOR  DUO 210 4/80 WITH DUO DOCK  $875.00
STAND. II KEYBOARD  MAC II/3 3/40  $675.00
MAC LC575  $1,299.00
5/160 W/CD  STAND. II KEYBOARD

CPU'S

<table>
<thead>
<tr>
<th>Model</th>
<th>Speed (MHz)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB 100</td>
<td>2/20</td>
<td>$499.00</td>
</tr>
<tr>
<td>PB 140</td>
<td>4/40</td>
<td>$699.00</td>
</tr>
<tr>
<td>PB 145B</td>
<td>4/80</td>
<td>$849.00</td>
</tr>
<tr>
<td>PB 165C</td>
<td>4/120</td>
<td>$1,199.00</td>
</tr>
<tr>
<td>PB 170</td>
<td>4/40</td>
<td>$1,099.00</td>
</tr>
<tr>
<td>PB 180</td>
<td>4/120</td>
<td>$1,199.00</td>
</tr>
<tr>
<td>PB 180C</td>
<td>4/80</td>
<td>$1,199.00</td>
</tr>
<tr>
<td>Duo 210</td>
<td>4/80</td>
<td>$599.00</td>
</tr>
<tr>
<td>Duo 230</td>
<td>4/80</td>
<td>$799.00</td>
</tr>
<tr>
<td>Duo 230</td>
<td>4/80/W/Floppy</td>
<td>$849.00</td>
</tr>
<tr>
<td>Mac LC 520</td>
<td>4/80</td>
<td>$899.00</td>
</tr>
<tr>
<td>Quadra 800</td>
<td>8/500</td>
<td>$1,749.00</td>
</tr>
<tr>
<td>Mac Classic II</td>
<td>2/40</td>
<td>$499.00</td>
</tr>
</tbody>
</table>

SUPER DEALS ON USED

**Personal Laser LS** $279.00
ImageWriter II $199.00
Apple OneScanner $249.00
Apple Color OneScanner $499.00
PowerBook DuoDock $299.00
PB & Duo Express Modems $899.00
PowerBook Carrying Cases $399.00
Apple GeoPort Adapter $49.00
Apple CD150/CD300 Ext. $149.00/$249.00
StyleWriter AC Adapters $399.00
Duo & PwrBook Access. $149.00
Laser NTR Logic Bd. Upgrade $229.00
Apple LocalTalk Din 8 Connect. $14.00

PERIPHERALS

LaserSelect 300 $349.00
LaserSelect 310 $369.00
LaserSelect 360 $899.00

**New Microsoft Works - $29.00**
New Microsoft Office - $149.00
ONLY $99.00 With Any CPU

New NEC CD Drive - $99.00
Includes Over $200 Software
T/Maker Clickstart 2000 & FWB CD Toolkit & The Merchant

New LaserWriter LS-$399.00 • New LaserWriter Select 310-$449.00

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Mac LC 520 4/80</td>
<td>$1,199.00</td>
</tr>
<tr>
<td>New Mac IIvX 5/80 W/CD</td>
<td>$999.00</td>
</tr>
<tr>
<td>New LaserWriter II Engine</td>
<td>$499.00</td>
</tr>
<tr>
<td>New Apple Color Plus Display</td>
<td>$299.00</td>
</tr>
<tr>
<td>Mac Plus 1/0</td>
<td>$199.00</td>
</tr>
<tr>
<td>Mac SE (800K) 1/0</td>
<td>$225.00</td>
</tr>
<tr>
<td>Mac SE/30 1/0</td>
<td>$225.00</td>
</tr>
<tr>
<td>Mac Classic 2/40</td>
<td>$299.00</td>
</tr>
<tr>
<td>Mac LC 2/40</td>
<td>$299.00</td>
</tr>
<tr>
<td>Mac LC II 4/40</td>
<td>$399.00</td>
</tr>
<tr>
<td>Mac LC III 4/80</td>
<td>$599.00</td>
</tr>
<tr>
<td><strong>Mac IIvX 4/0</strong></td>
<td>$699.00</td>
</tr>
<tr>
<td><strong>Mac IIvX 5/80 W/CD</strong></td>
<td>$899.00</td>
</tr>
<tr>
<td>Mac II 1/0</td>
<td>$199.00</td>
</tr>
<tr>
<td>Mac IIi 3/40</td>
<td>$429.00</td>
</tr>
<tr>
<td>Mac IIcx 1/0</td>
<td>$399.00</td>
</tr>
</tbody>
</table>

(Other Configurations Available)

1-800-729-7031

WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT

**Factory Refurbished**

MAC WORLD

January 1995

CIRCLE 461 ON READER SERVICE CARD
SMF "HIGH CAPACITY IS ALL WE DO" 1-800-644-7484 GIGABYTE / WAREHOUSE

MICROPOLIS
ST12000N 1.0GB SCSI 3.5" $675.00 / $725.00
ST12400N 2.1GB SCSI 3.5" $1295.00 / $1350.00
ST12550N 2.1GB BAl!lACUDA $1375.00 / $1450.00
ST15230N 4.2GB SCSI 3.5" $2250.00 / $2325.00
ST15520N 4.2GB 2MB SIMM $2725.00 / $2825.00
1991 9.1GB SCSI 5.25" $3450.00 / $3650.00

MICROPOLIS AUDIO/VIDEO
ST15230N 4.2GB SCSI 3.5" $2217.00 / $2325.00
ST15520N 4.2GB 2MB SIMM $2725.00 / $2825.00
1991 9.1GB SCSI 5.25" $3450.00 / $3650.00

QUANTUM
ST1200N 1.0GB SCSI 3.5" $655.00 / $695.00
ST12400N 2.1GB SCSI 3.5" $1475.00 / $1575.00
ST12550N 2.1GB BAl!lACUDA $1415.00 / $1495.00
ST15230N 4.2GB SCSI 3.5" $2217.00 / $2325.00
ST15520N 4.2GB 2MB SIMM $2725.00 / $2825.00
1991 9.1GB SCSI 5.25" $3450.00 / $3650.00

SEAGATE
ST1200N 1.0GB SCSI 3.5" $655.00 / $695.00
ST12400N 2.1GB SCSI 3.5" $1415.00 / $1495.00
ST12550N 2.1GB BAl!lACUDA $1415.00 / $1495.00
ST15230N 4.2GB SCSI 3.5" $2217.00 / $2325.00
ST15520N 4.2GB 2MB SIMM $2725.00 / $2825.00
1991 9.1GB SCSI 5.25" $3450.00 / $3650.00

MITSUBISHI COLOR MONITOR
FOG1601 8540.00
CRT Size 16" A5 View
Resolution 832 x 624
Dot Pitch 0.25 mm
Colors Millions

MCE 457 ON READER SERVICE CARD
WEBUSED
MEMORY
QUANTUM

1080S 1.0GB SCSI 3.5" $1565.00 / $1615.00
1400S 1.4GB SCSI 3.5" $825.00 / $895.00
2100S 2.1GB SCSI 3.5" $1075.00 / $1150.00

SEAGATE
BRING YOUR SIMM'S WITH NO HIDDEN CHARGES! VISA/MC - NO EXTRA CHARGE PRICES INCLUDE SHIPPING LIFETIME WARRANTY 201 WORKING OR BROKEN

MAC UPGRADES!
MEMORY
MK MEMORY
HIB $60NS $15/4M0-140/170 $1137
2MB BON'S $74/4M0-160/180 $848
4MB $99/8M0-165C $195
8MB $149/160/180 $266
16MB $299/165C/180C $528
24MB $599/165C/180C $1050

WE BUY USED MEMORY
GREEN MEMORY 714-842-1227
1868 MAIN STREET #607, HUNTINGTON BEACH, CA 92648
CALL FOR PRICES UPFRONT ON ALL MEMORY (310) 323-9090 • CA: (800) 725-7252
Fax: (800) 726-3552
LUNDINE WMANLY
WE WILL NOT BE UNDERSOLD!

EXPERIENCE THE BEST SERVICE IN THE INDUSTRY
WE BUY USED MEMORY
GREEN MEMORY 714-842-1227
1868 MAIN STREET #607, HUNTINGTON BEACH, CA 92648
CALL FOR PRICES UPFRONT ON ALL MEMORY (310) 323-9090 • CA: (800) 725-7252
Fax: (800) 726-3552
LUNDINE WMANLY
WE WILL NOT BE UNDERSOLD!

SOURCE INTERNATIONAL
Silicon Valley's FIRST CHOICE for Computer Memory (800) 323-9090
Phone (415) 323-6059
Fax (415) 326-3582
Lifet ime Warranty

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld Shopper offers a great way to reach 550,000 active shoppers.
**DiiMOCache 50MHz Accelerator $445**

We will buy your old memory at great prices! Call for details.

**Prices Changing — Call for Best Prices!**

### Video RAM

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Bit to 8 Bit Upgrade</td>
<td>$4.00</td>
</tr>
<tr>
<td>256K Quadra 700/900, Performa 455 VRAM</td>
<td>$20.00</td>
</tr>
<tr>
<td>256K Quadras, LC 520 VRAM</td>
<td>$35.00</td>
</tr>
</tbody>
</table>
| 512K VRAM for LC, LCII, IIX, 
IIv, DuoDock, and Performas | $36.00 |

### Cache Cards, Etc.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>256K Level 2 Cache Card for PowerMacs</td>
<td>$4.00</td>
</tr>
<tr>
<td>256K Cache Cards for Quadras</td>
<td>$7.00</td>
</tr>
<tr>
<td>128K Cache Card for LCII and Performa 450</td>
<td>$12.00</td>
</tr>
<tr>
<td>25 MHz FPU</td>
<td>$17.00</td>
</tr>
<tr>
<td>64K Cache Card</td>
<td>$15.00</td>
</tr>
<tr>
<td>64K Cache Card</td>
<td>$12.00</td>
</tr>
<tr>
<td>IIX 2-slot Card and 68882</td>
<td>$11.00</td>
</tr>
</tbody>
</table>

### Math Coprocessors

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>68882 16 MHz FPU</td>
<td>$39.00</td>
</tr>
<tr>
<td>68882 25 MHz FPU</td>
<td>$45.00</td>
</tr>
<tr>
<td>68882 33 MHz FPU</td>
<td>$49.00</td>
</tr>
<tr>
<td>68882 50 MHz FPU</td>
<td>$99.00</td>
</tr>
<tr>
<td>68881 16 MHz FPU</td>
<td>$45.00</td>
</tr>
</tbody>
</table>

### Miscellaneous

- LaserWriter 320 2.4. and 6MB upgrades — CALL
- LaserWriter Pro 810 4 MB upgrade — $275.00
- LaserWriter Pro 810 8 MB upgrade — $499.00
- T.I. MicroLaser 1 MB | $49.00
- Mac Classic 1 MB Board | $75.00
- 68851 16MHz 4MBMMU | $89.00
- 440 MHz Processor w/ FPU $299.00

68040 Accelerators for 610s:

- The CentrisBooster and QuadraBooster take your Centris/Quadra 610 to super-sonic speeds! Double the clock speed of your Centris 610 by installing our 40MHz 68040 accelerator, or make your Quadra 610 fly with the 50MHz version. The Centris version is also available in a $245.00 configuration which includes Motorola’s latest 68030/40 processor.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>68040 40MHz Accelerator for Centris 610</td>
<td>$385.00</td>
</tr>
<tr>
<td>68040 50MHz Accelerator for Quadra 610</td>
<td>$595.00</td>
</tr>
</tbody>
</table>

**Newton PDA Upgrade Products**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>512K Static RAM Storage Card</td>
<td>$115.00</td>
</tr>
<tr>
<td>1 Megabyte Static RAM Storage Card</td>
<td>$165.00</td>
</tr>
<tr>
<td>2 Megabyte Static RAM Storage Card</td>
<td>$279.00</td>
</tr>
<tr>
<td>2 Megabyte Flash Storage Card</td>
<td>$235.00</td>
</tr>
<tr>
<td>4 Megabyte Flash Storage Card</td>
<td>$399.00</td>
</tr>
<tr>
<td>8 Megabyte Flash Storage Card</td>
<td>$599.00</td>
</tr>
<tr>
<td>16 Megabyte Flash Storage Card</td>
<td>$995.00</td>
</tr>
</tbody>
</table>

#### TOLL FREE TECH SUPPORT

ORDER BY 6:30 PM CST FOR SAME DAY SHIPPING

OVERNIGHT DELIVERY FROM $8.00 **same restrictions apply**

**PERIPHERAL OUTLET, Inc.**

327 East 14th, PO Box 2329 • Ada, Oklahoma 74820

405/332-6581 FAX 405/436-7245 • AppleLink: PERIPHERAL

**HOURS:** Monday-Thursday 7AM-7PM CST, Friday 7AM-6PM

---

*Due to reliability in the market all prices and availability are subject to change without notice. We accept Visa/MC/Amex/Discover, and COD (Cashiers check upon approval. Educational, Government, and Fortune 500 P/T's accepted upon approval.)*
**ACCELERATORS**

- Variable Speed Overdrive-Quadra 700/90... $189
  - Speeds processor up to 30MHz
- VSO-Quadra 950...
  - Speeds processor up to 40MHz
- VSO-IIx...
  - Speeds processor up to 40MHz
- VSO-IIi...
  - Speeds processor up to 50MHz
- Quadra Overdrive (Centris 650, 610, Quadra 610, 700, 900, 950)...
  - Doubles processor speed to 50 MHz for up to 200% speed increase (Centris 610 up to 40MHz) as well as much functionality
- Quadra Overdrive+ (Centris 650, 610, Quadra 610, 700, 900, 950)...
  - Combinis the Quadra Overdrive with 128K high speed cache

**ACCESSORIES**

- PowerExtend-Nubus...
  - Call for prices
- Super high speed RAM drive of up to 256MB in the Quadra 840AV computer. Complements high-end graphic imaging software.
- SCSI-II Burst-Burst state storage system...
  - 256K level 2 cache raises the 610's/710's performance to a new height to maximize productivity
- Power MacCache...
  - 256K level 2 Cache raises the 610's/710's performance to a new height to maximize productivity
- SCSi MicroDock...
  - Docking station for PowerBook Duos, allows SCSi devices to be attached
  - $141
- Color MicroDock...
  - Docking station for PowerBook Duos to add color monitor, keyboard and speakers
  - $259

**POWERBOOK**

**ACCESSORIES**

- Ethernet MicroDock...
  - $192
  - PowerBook Duos can quickly and easily be attached to networks
- Power Assist Battery Extender...
  - $47
  - Supplements DC power with AC for up to 18 hours on each charge

**ACCESSORIES**

- *Airborne Express Overnight & up*
  - First quality brand new products
  - P.O.'s accepted upon approval
  - All major credit cards accepted—No surcharge
  - Credit card not charged until order is shipped
- *Orders received before 7:30 pm EST weekdays shipped same day*
  - We export to most countries in the world
  - All returns require approval and are subject to a restocking fee
  - No stops to change—Not responsible for typographical, pricing, or clerical errors
  - Orders can be accepted at 1-800-840-2212 (7am to 6pm PST, Mon-Fri)
  - No sales tax except applicable sales tax in WA
### Xtra REASONS TO BUY FROM MAC Xtra...

#### MEMORY UPGRADES
- 1X8X80 $37
- 2X8X80 $75
- 4X8X80 $133
- 4X8X80 II/IIX $155
- 16X8X80 (Low Profile) $619
- 1X8X80FX $42
- 4X8X80FX $155
- 4MB 72Pin(70NS/ 60NS) $156/$169
- 8MB 72Pin(70NS/ 60NS) $299/$319
- 16MB 72Pin (60 NS) $595
- 32MB 72Pin(60NS) $1115

#### MAC XTRA'S
- Power-PFY Cache 256k $255
- FPU L/C/Lt/Clip $49/$59
- FPU Classic II $55
- FPU Color Classic $48
- FPU Duo Dock/Performa 600 $59
- FPU/ CPU 040 25 MHz $299
- VRAM 256K / 512K $20/$39

#### POWERBOOK UPGRADES
- PB 520-540C 4MB/8MB $197/$399
- PB 520-540C 16MB/32MB $795/$1565
- PB 140-170 4MB/6MB $139/$209
- PB 160-180 4MB/6MB $135/$205
- PB 160-180 8MB/10MB $269/$329
- PB 165C-180C 4MB/6MB $139/$229
- PB 165C-180C 8MB/10MB $299/$335
- PBDUO 4MB/8MB $175/$335
- PBDUO 12MB/14MB $353/$592
- PBDUO 20MB/28MB $930/$1429
- PowerBook Tool Kit $9.65

#### MODEMS
- SuperMac Spectrum/24 Series V.24 $104
- DaynaPort EII-T Nexus $104
- DaynaPort E/LC-T Mac LC Card $88
- DaynaStar Mini Hub 5 10BaseT $140
- DaynaStar Mini Hub 10Base T $193

#### NETWORKING
- DaynaPort Pocket SCSI/Link-T $231
- DaynaPort SCSI/Link Powerbook-T $247
- DaynaPort TRX (Friendy Net Adapter) $54
- DaynaPort E/I-T Nexus $104
- DaynaPort E/LC-T Mac LC Card $88
- DaynaStar Mini Hub 5 10BaseT $140
- DaynaStar Mini Hub 10Base T $193

#### DRIVES
- Xtra Drives
  - SyQuest 44/88MB w/Cart. $289/$409
  - SyQuest 200MB w/Cart. $339
  - SyQuest 105/270MB w/Cart. $429/$559
  - CD-Rom Photo CD 2x $259
  - 8GB DDS2 Dat $1209
  - MicroNet
    - Int/Ext 170MB Fast SCSi-2 $264/$288
    - Int/Ext 270MB Fast SCSi-2 $302/$337
    - Int/Ext 340MB Fast SCSi-2 $347/$392
    - Int/Ext 1GB Fast SCSi-2 $490/$597
    - External 2.7GB Fast SCSi-2 $532/$632
    - Int/Ext 128MB Optical Drive $904/$1184

#### CARDS
- Verbatim 128MB Optical $30
- Verbatim 660 Optical $79
- Verbatim 3GB Optical $105
- Verbatim RCD (for RCD Drives) $20
- Komag
  - Komag 128MB Optical $28
  - Komag 600MB Optical $28
  - Komag 1.3MB Optical $99
- Samsung
  - Samsung 128MB Optical $30
  - Samsung 650MB Optical $79

#### DRIVES
- Samsung 650MB Optical $79

#### ACCESSORIES
- Wacom
  - 6x12 ADB Series Tablet $299
  - 12x18 USB Series Tablet $498
  - 12x18 Series Tablet $761

#### MONITORS
- Samsung 650MB Optical $79

#### VIDEO CARDS
- Radius
  - DaynaPort 040 33MHz W/Cache $795
  - DaynaPort 040 40MHz W/Cache $959
  - DaynaPort 040 128K Cache $185
  - DaynaPort 33/33 w/FPU $279/$357
  - DaynaPort 50/50 w/FPU $415/$557
  - DaynaStar Turbo 040 33Mhz W/Cache $1795
  - DaynaStar Turbo 040 40Mhz W/Cache $959

#### XTRA MEDIA
- Verbatim
  - Verbatim 128MB Optical $30
  - Verbatim 660 Optical $79
  - Verbatim 3GB Optical $105
  - Verbatim RCD (for RCD Drives) $20
- Komag
  - Komag 128MB Optical $28
  - Komag 600MB Optical $28
  - Komag 1.3MB Optical $99
- Samsung
  - Samsung 128MB Optical $30
  - Samsung 650MB Optical $79

#### POWERBOOK UPGRADES
- PB 520-540C 4MB/8MB $197/$399
- PB 520-540C 16MB/32MB $795/$1565
- PB 140-170 4MB/6MB $139/$209
- PB 160-180 4MB/6MB $135/$205
- PB 160-180 8MB/10MB $269/$329
- PB 165C-180C 4MB/6MB $139/$229
- PB 165C-180C 8MB/10MB $299/$335
- PBDUO 4MB/8MB $175/$335
- PBDUO 12MB/14MB $353/$592
- PBDUO 20MB/28MB $930/$1429
- PowerBook Tool Kit $9.65

#### MONITORS
- Precision Color 17" Multiscan $1,075
- Precision Color 20" 20V $1,417
- Precision Color 21" 20V $1,110
- Full Page Display 15" Mono $455
- NEC
  - 5FG E 17" Multiscan $1,036
  - 5FG E 17" Multiscan $594
  - 4FGE 15" Multiscan $652
- SuperMac
  - SuperMatch 177 17" 28 $1,063
  - SuperMatch 17XL 17" 28 $1,020
  - SuperMatch High Res 20" $2,763
  - SuperMatch 21T XL 21" $2,257

#### MEMORIES & MEMORY
- MasterCard, VISA & Discover NO Surcharge
- Prices subject to change
- Returns subject to approval & restocking fee

#### OVERNIGHT DELIVERY
- Overnight Delivery - $7 and up / UPS Ground - $6 and up

---

**MAC XTRA**

1075 Bellevue Way N.E. Suite 114
Bellevue, WA 98004 • Phone: (206) 455-0786
Fax your order 24 Hours a day! (206)455-3448

---

**MAC WORLD**

January 1995

---

**MAC XTRA**

1-800-553-4230

---

MAC WORLD

January 1995

243
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rumi SyQuest Drives</td>
<td></td>
</tr>
<tr>
<td>Rumi 44MB SyQuest (FREE Cartridge)</td>
<td>$279</td>
</tr>
<tr>
<td>Rumi 88c (R/W 44) SyQuest (FREE Cartridge)</td>
<td>$399</td>
</tr>
<tr>
<td>Rumi 105MB SyQuest (FREE Cartridge)</td>
<td>$279</td>
</tr>
<tr>
<td>Rumi 200MB SyQuest (FREE Cartridge)</td>
<td>$399</td>
</tr>
<tr>
<td>Rumi 270MB SyQuest (FREE Cartridge)</td>
<td>$399</td>
</tr>
<tr>
<td>Rumi CD-ROM Drive</td>
<td>$259</td>
</tr>
<tr>
<td>Rumi Hard Drives</td>
<td></td>
</tr>
<tr>
<td>Rumi 120MB Internal</td>
<td>$199</td>
</tr>
<tr>
<td>Rumi 270MB Internal</td>
<td>$299</td>
</tr>
<tr>
<td>Rumi 340MB Internal</td>
<td>$399</td>
</tr>
<tr>
<td>Rumi 540MB Internal</td>
<td>$499</td>
</tr>
<tr>
<td>Rumi 1.0GB Internal</td>
<td>$599</td>
</tr>
<tr>
<td>Rumi 2.0GB Ext (Seagate Barracuda)</td>
<td>$229</td>
</tr>
<tr>
<td>Rumi Powerbook 256 Int (Quantum)</td>
<td>$399</td>
</tr>
<tr>
<td>Rumi Powerbook 340 Int (Toshiba)</td>
<td>$499</td>
</tr>
<tr>
<td>Rumi DAT Drives</td>
<td>$469</td>
</tr>
<tr>
<td>Rumi 2.0GB DAT Drive w/ Retrospect (Includes Tape)</td>
<td>$979</td>
</tr>
<tr>
<td>Rumi DDS / 80GB w/ Retrospect (Includes Tape)</td>
<td>$1199</td>
</tr>
<tr>
<td>Rumi Optical Drive</td>
<td></td>
</tr>
<tr>
<td>Rumi 128MB Optical Drive</td>
<td>$999</td>
</tr>
<tr>
<td>Microtek ScanMaker II</td>
<td>$999</td>
</tr>
<tr>
<td>Microtek ScanMaker IIII</td>
<td>$999</td>
</tr>
<tr>
<td>Nikon Coolscan</td>
<td>$999</td>
</tr>
<tr>
<td>Citizen Notebook II Color Printer</td>
<td>$399</td>
</tr>
<tr>
<td>Notebook II Ni-cad Battery Pak</td>
<td>$499</td>
</tr>
<tr>
<td>LabelWriter II XL</td>
<td>$499</td>
</tr>
<tr>
<td>HP DeskWriter 310/340/550</td>
<td>$499</td>
</tr>
<tr>
<td>SCANNERS / PRINTERS</td>
<td></td>
</tr>
<tr>
<td>HP IICX</td>
<td>$999</td>
</tr>
<tr>
<td>HP IIP</td>
<td>$499</td>
</tr>
<tr>
<td>UMAX UC630 PS/LE</td>
<td>$499</td>
</tr>
<tr>
<td>UMAX UC840</td>
<td>$499</td>
</tr>
<tr>
<td>UMAX 1260 PS/LE</td>
<td>$1099</td>
</tr>
<tr>
<td>Microtek ScanMaker IIG</td>
<td>$499</td>
</tr>
<tr>
<td>Microtek ScanMaker ISP</td>
<td>$499</td>
</tr>
<tr>
<td>Microtek ScanMaker II</td>
<td>$499</td>
</tr>
<tr>
<td>Microtek ScanMaker IIII</td>
<td>$1099</td>
</tr>
<tr>
<td>Nikon Coolscan</td>
<td>$999</td>
</tr>
<tr>
<td>Canon Color Image Printer</td>
<td>$379</td>
</tr>
<tr>
<td>Notebook II PCL Battery Pak</td>
<td>$299</td>
</tr>
<tr>
<td>Network</td>
<td></td>
</tr>
<tr>
<td>Sonic Ether 10T/Thin-I/II/III/IV</td>
<td>$929</td>
</tr>
<tr>
<td>Sonic Micro SCSI PowerBook</td>
<td>$9297</td>
</tr>
<tr>
<td>Sonic Friendly Net 10T/Thin</td>
<td>$959</td>
</tr>
<tr>
<td>Sonic Starbase T9</td>
<td>$959</td>
</tr>
<tr>
<td>Sonic Hublite 5 port</td>
<td>$959</td>
</tr>
<tr>
<td>Sonic PowerBridge</td>
<td>$959</td>
</tr>
<tr>
<td>ASANTE</td>
<td></td>
</tr>
<tr>
<td>Asante Friendly Net Adapters</td>
<td>$599</td>
</tr>
<tr>
<td>Asante Mac Con-i Nubus 10T</td>
<td>$599</td>
</tr>
<tr>
<td>Asante Mac Con-i Nubus</td>
<td>Nubus 10T</td>
</tr>
<tr>
<td>Asante Mac Con-i SCII w/Thick/Thin</td>
<td>$599</td>
</tr>
<tr>
<td>RASTEROPS</td>
<td></td>
</tr>
<tr>
<td>Horizon 24</td>
<td>$1699</td>
</tr>
<tr>
<td>PaintBoard Lightening</td>
<td>$999</td>
</tr>
<tr>
<td>PaintBoard Professional</td>
<td>$999</td>
</tr>
<tr>
<td>PaintBoard Lite 10/16/116/135</td>
<td>$399</td>
</tr>
<tr>
<td>24MX</td>
<td>$599</td>
</tr>
<tr>
<td>24STV</td>
<td>$599</td>
</tr>
<tr>
<td>Movie Pak 2 Pro Suite</td>
<td>$3479</td>
</tr>
<tr>
<td>RasterOps Clearview</td>
<td>$949</td>
</tr>
<tr>
<td>RasterOps Color Display</td>
<td>$1699</td>
</tr>
<tr>
<td>RasterOps Multimode</td>
<td>$999</td>
</tr>
<tr>
<td>RasterOps Color Monitor</td>
<td>$1699</td>
</tr>
<tr>
<td>RASTEROPS THE ART &amp; SCIENCE OF COLOR</td>
<td></td>
</tr>
<tr>
<td>HP DeskWriter Printers Now Available</td>
<td></td>
</tr>
</tbody>
</table>

"Customer Service Guaranteed! Depend on LLB for Quality, Service and Value"
MAC MEMORY, CALL FOR LOWEST PRICE

NEW POWER PC & BLACKBIRD MEMORY
30 PIN SIMMS 72 PIN SIMMS
1X8-80/70 1X32-70/60 4MB
1X6-80/70 2X32-70/60 8MB
2X8-80/70 4X32-70/60 16MB
4X8-80/70 8X32-70/60 32MB
4X8 PAL 4MB,8MB,10MB,16MB,160,180C
4X8 F/X 4MB,8MB,8MB,10MB,16C,180C
8X8-70 2MB,4MB,6MB,10MB
16X8-70 4MB,8MB,16MB,32MB
4MB,8MB,8MB,10MB

LIFETIME GUARANTEE

POWER BOOK
100:
2MB,4MB,6MB
140,145,170
2MB,4MB,8MB
160,165,180
4MB,8MB,8MB,10MB
165C,180C

BLACKBIRD 520, 520C
4MB,8MB,8MB,10MB,16MB,160,180C

POWER BOOK
30 PIN SIMMS 72 PIN SIMMS
1X8-80/70 1X32-70/60 4MB
1X6-80/70 2X32-70/60 8MB
2X8-80/70 4X32-70/60 16MB
4X8-80/70 8X32-70/60 32MB
4X8 PAL 4MB,8MB,10MB,16MB,160,180C
4X8 F/X 4MB,8MB,8MB,10MB,16C,180C
8X8-70 2MB,4MB,6MB,10MB
16X8-70 4MB,8MB,16MB,32MB
4MB,8MB,8MB,10MB

WE ACCEPT

M.C, VISA & DISCOVER.
UNIVERSITY, GOVERNMENT AND CORPORATE P.O.'S WITH APPROVED CREDIT

1-800-662-SIMM (7466)

DATA MEMORY SYSTEMS INC.
15 UNION ST. LAWRENCE, MA 01840
TEL. 508-683-2325 ESTABLISHED 1963 FAX 508-975-5232

CIRCLE 447 ON READER SERVICE CARD

CIRCLE 448 ON READER SERVICE CARD

CIRCLE 449 ON READER SERVICE CARD

CIRCLE 450 ON READER SERVICE CARD

CIRCLE 451 ON READER SERVICE CARD

WANTED: USED SIMMS TOP $$$ PAID

256K-32MB POWER FOR SIMMS
256K-32MB POWERBOOK 2MB - 28MB
256K-32MB PowerPC 601 / 603 / 604

WE BAY MUCS

MacSolutions
(310) 394-0001
FAX (310) 394-7744

CIRCLE 452 ON READER SERVICE CARD

Memory Wanted
WE BUY NEW OR USED SIMMS
256K, 512K, 1MB2, 2MB, 4MB, 8MB, 16MB, 32MB.
30 Pin, 64 Pin or 72 Pin.

POWERBOOK 2MB - 28MB

The Buy-In Quarterly. Call or E-mail Now.
INNOVATIVE MICRO PRODUCTS, INC.
2045 Lombard Pkwy, Suite 201
Fall Church, Virginia 22043
Tel: 703-848-0711 Fax: 703-848-0712

CIRCLE 453 ON READER SERVICE CARD

SUN RUNNER
SOLAR POWER FOR POWERBOOKS & NEWTONS
This revolutionary system will recharge or run your portable computer with power from the sun.
Sun Runner uses flexible solar panels sewn into rugged canvas nylon backing. Built for the heartiest road warrior. Now you can compute as long as the sun shines without worrying about battery life!
Works with any PowerBook, Newton, and some PCs.
800-227-6882 ext. 21 Keep H Simple Systems
Fax (408) 449-3924 e-mail KISS4@iodel.com

CIRCLE 454 ON READER SERVICE CARD

TeleFinder BBS
Create Your Own GUI On-Line Service!
Fax: ZMODEM File Transfers
View GIF and PICT graphics online
Easy-to-use Electronic Mail
Conferences and Message Forums
Gateways to the Internet and FidoNet
Multi-User Chat and Instant Messages
File Search and Thumbnail Previews
Client software for Mac and Windows

CIRCLE 455 ON READER SERVICE CARD

Affordable Upgrades
Acceleration
Maximum Performance for your Mac

$99.00

Mac Use $29.00 only

Low profile design will not interfere with NuBus or PCI cards.

(800) 392-1234

Do it yourself kit with Step-by-Step Instructions

CIRCLE 456 ON READER SERVICE CARD

ACCELERATORS/FPUS
DOUBLE THE SPEED OF YOUR CENTIUS OR QUADRA!

40Mh 68040 Centius 610
50Mhz 68040 Quadra 605/660av
Quadra 505, 610, 700, 900
$99

Mobile Speedster 25Mhz 604 $49

33Mhz 603 w/Video Mac SE $249/$299

25Mhz 602/FPU LC $99

33Mhz 603/FPU LCIL P400-430 $149

33Mhz 603 Mac II, Itx $149/$199

265 Cache Card PowerMac $199

6804-25 FPU 605, 610, 1C475 $249^1

6804-33 FPU QLC PS57/630 $299

($will fit Mac II)

6882 FPU LC III, Duo, etc. $49

6881/51 MAC II w/Mac52 Mac II $99

SONNY TECHNOLOGIES
714-261-2800 Fax 714-261-2461
800-945-3668

CIRCLE 460 ON READER SERVICE CARD

CIRCLE 461 ON READER SERVICE CARD

CIRCLE 462 ON READER SERVICE CARD

CIRCLE 463 ON READER SERVICE CARD

HOT SHOPPER
PRODUCT CATEGORY
HELPEO BUSES
FIND THE PRODUCE THEY NEED.

Mac ISDN
ISDN, the breakthrough communications technology being tested by Microsoft, IBM, Intel, and the Baby Bells, is now available for the Macintosh. Across town or around the world, ISDN offers significant price and performance benefits over outdated, modem-based networking solutions. ISDN offers higher-speed ISDN service. Mac products and services from Apple are now ISDN-enabled. Apple, the notice board, is available.

($will fit Mac II)

6881/51 MAC II w/Mac52 Mac II $99

CIRCLE 457 ON READER SERVICE CARD

CIRCLE 458 ON READER SERVICE CARD

CIRCLE 459 ON READER SERVICE CARD

CIRCLE 460 ON READER SERVICE CARD
**We Do The Work!**

We research, collect, sort and test the very best shareware in the world! Made available to you monthly by our professional software librarians.

The most economical way to get hands on experience with the latest and greatest programs anywhere!

619-931-8111 X510
Fax 619-929-1163

**MacGrade**

See Macworld review
1989 (p.28)

New Version 9.0

GRAADING MADE EASY!

Grade Machine is fast, flexible and easy! Learn design custom reports, narrative comments, graphs and much more. New social studies features for elementary, secondary, and college. Affordable and easily licensed with multi-teacher packs available. Noteworthy.

Rated Top Productivity Program by teachers

Highest rated software for testing environment: home, classroom, grade levels, industries, and certification.

- Item Banking & Test Production
- Form Scoring & Group Comparisons
- Mastery, Reporting & Remediation
- Survey Scoring and Analysis
- Weighted & Multiple-Response Grading
- Multiple-Response At Question Types
- Integrated Design (Mac & Windows)

Logic

909-980-0016 Fax 987-8706

EXTENSION

Resources Ranchita Cucamonga, CA 91730

CIRCLE 490 ON READER SERVICE CARD

**SuperConverter 2.0**

Easy to use conversion calculator

*"Over 600 different conversions"*


To order call, mail or fax:

GT QUALITY MANUFACTURING
2222 Fortune Way, Suite A
Vista, CA 92083

(619) 599-7181 Fax: (619) 599-7182

**Practica Musica**

Version 3

Your personal music tutor now includes rhythm training, chord progression, and many other exciting new features. More than ever the most complete music teaching packages available for both beginner and advanced musicians. $149

800-795-0049

**We recommend you order directly from the companies listed in the magazine.**

**Accessories**

**Educational & Recreational**

**Softbyte of the Month Club**

619-931-8111 X510
Fax 619-929-1163

CIRCLE 497 ON READER SERVICE CARD

**Family Heritage File**

New Version 3.1!

Most powerful, full-featured, easy-to-use genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogists and professionals. • Standalone • Limited • Surname

Leaserary Family informations, displays

$149.95+3.00 S/H. Visa/M.C.

To order call, mail or fax:

GT QUALITY MANUFACTURING
2222 Fortune Way, Suite A
Vista, CA 92083

(619) 599-7181 Fax: (619) 599-7182

**FREE 100% Money-Back Warranty**

**Do The Work!**

We research, collect, sort and test the very best shareware in the world! Made available to you monthly by our professional software librarians.

**Japanese Language Kit!**

Japanese Text Translation Kit

Japanese Language Kit

Aldus PageMaker - J EGWord
Aldus Freehand - J SOLO Writer
Adobe Illustrator - J Excel
Adobe Photoshop - J AEM
Apple LEDs - J LEDS
Apple LaserWriter Vol. 1 - LogoViz E-J
Apple LaserWriter Vol. 2 - Applause E-J

**Quiltilas Trading Co.**

2005 Buitlcr Avenue, Berkeley, CA 94724

Phone: (510) 848-8080 Fax: (510) 848-8080

CIRCLE 582 ON READER SERVICE CARD

**Emotions & Feelings**

**Integrating Design**

**MacGrade**

**SuperConverter 2.0**

Easy to use conversion calculator

*"Over 600 different conversions"*


To order call, mail or fax:

GT QUALITY MANUFACTURING
2222 Fortune Way, Suite A
Vista, CA 92083

(619) 599-7181 Fax: (619) 599-7182

**FREE 100% Money-Back Warranty**
Are you Fascinated by the Internet But Don’t Know How to Get Started?

Start exploring today with The Internet For Everybody™, a lively and entertaining interactive CD-ROM (also available on videotape). It’s easy to follow and understand the instruction given by international computer and Internet expert Dick Rubenstein. Dick’s personal guided tour gives you the benefit of first-hand experience in exploring the Internet from the perspective of four different people: a business person, teacher, retiree, and high school student. Watch over Dick’s shoulder as he travels the hidden depths of the information superhighway using some of the following tools:

- Electronic Mail
- Gopher
- Global Network
- Lynx
- Newsgroups
- Navigator
- WAIS
- World Wide Web
- Mailing Lists
- Telnet
- Jumpstation
- MUDS

COST: $49.95 (CD-ROM or Videotape) plus $5 dom./$15 int'l. shipping and handling. Visa and Mastercard accepted. To place a credit-card order now call: (508) 879-0006. Mail prepaid orders to: ETA, 111 Speen Street, Suite 202, Framingham, MA 01701. Video available now, CD available early December (Windows or Macintosh compatibility). Email: earleta@aol.com

Here’s what satisfied Internet explorers have had to say about The Internet For Everybody™:

“I feel as though there is some hope for me re: navigating the Internet...”

“For neophytes, it’s a tremendously clear introduction to many Internet pathways...”

“...it immediately sent me to my computer to try some of them out.”

COST: $49.95 (CD-ROM or Videotape) plus $5 dom./$15 int'l. shipping and handling. Visa and Mastercard accepted. To place a credit-card order now call: (508) 879-0006. Mail prepaid orders to: ETA, 111 Speen Street, Suite 202, Framingham, MA 01701. Video available now, CD available early December (Windows or Macintosh compatibility). Email: earleta@aol.com

ETA
Emerging Technology Applications/Aa BIG Company
Best Software Education Division

POINT PRODUCTIONS INC.
EDUCATIONAL & RECREATIONAL
MULTIMEDIA & CD ROM

Software Discounts Up to 80%!
*Full Packages* (Student-Teacher-Schools) *Latest Version*

<table>
<thead>
<tr>
<th>Software</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MiniCAD 5</td>
<td>$319</td>
</tr>
<tr>
<td>Authorware 6</td>
<td>$999</td>
</tr>
<tr>
<td>SoftWindows 2.0</td>
<td>$229</td>
</tr>
<tr>
<td>Fractal Painter 3.0</td>
<td>$229</td>
</tr>
<tr>
<td>Mathemagic 2.2</td>
<td>$199</td>
</tr>
<tr>
<td>Director 4.0/4.1</td>
<td>$599</td>
</tr>
<tr>
<td>Symmetry C+7</td>
<td>$149</td>
</tr>
<tr>
<td>QuarkXpress 3.3</td>
<td>$279</td>
</tr>
<tr>
<td>AutoCAD Rel.12</td>
<td>$149</td>
</tr>
<tr>
<td>PageMaker 5.0</td>
<td>$249</td>
</tr>
<tr>
<td>Strata StudioPro</td>
<td>$1,195</td>
</tr>
</tbody>
</table>

**NEW CD ROM!**
**$79.95**
Expires 12/31/94

**SELECT DISKS AVAIL.**

**BIBLE MASTERY: NAS COMPUTER BIBLE**
Get them all together...

King James Version Standard Version
New American
New International
American Bible Sales
870 S. Anaheim Blvd., Anaheim, CA 92805

**HYPER CHINA**

• Full 1-year course
• Speak, read & write
• 2GB of sounds
• Fun games & skills
• Animated strokes
• Only $995
• FREE demo disk
• SinoLogic Software
  P.O. Box 5542
  Berkeley, CA 94705
  1-800-866-9664

**COMPUTER GRAPHICS**

- Animation
- Desktop Publishing
- Photo Retouching
- Computer Illustration

**SOFTWARE FOR THE CHURCH**

**ONLINE BIBLE**—Basic pkg includes KJV/NIV, Strong’s, Lexicons, Written in C, Fast, easy. 10 mgs. $75. Many add-on items available.

**ROLL CALL or HONOR ROLL**
Management software for churches and ministries. Written in 4th Dimension. Demos with tour guide $10 each.

**BY THE NUMBERS, INC.**
RR1 Box 75, Sutton NH 03221
603-927-4508

**Family Roots**

**Genealogy. Do it YOUR way!** Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indexes and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information. Satisfaction guaranteed.

**Macinternet CD-ROMs**

- InfoMac 4 CD-ROM, 600MB of current PDS/Shareware from Stanford Univ’s InfoMac Internet Archive.
- MacSource CDROM, 600+MB of utilities and source code from the internet.
- HyperStacks CDROM, 1000+HC
  Stacks! Including games, books, tools, education.
- MacGames CDROM, the 600 best Mac games from InfoMac Archive.
  $59.95 each + $4.95 S&H...

**Macworld Shopper**

Offers a great way to reach 550,000 active shoppers.
Power Tools for the Power Presenter

One stop shop for all major brands

For the latest in color projection panels and projectors call the experts in LCD technology. Your satisfaction guaranteed or your money back. Quick delivery via FedEx or UPS.

Call for CATALOG 1-800-726-3599

Panelight

101 The Embarcadero Ste. 100-A, San Francisco, CA 94105
Hours: 6:30 to 5:30 PST, 9:30 to 8:30 EST
VOICE: 415 772 5800 FAX: 415 596 5817

Detailed Networks in Minutes with NetDraw® 2.0!
With over 330 professionally drawn images, NetDraw® 2.0 gives users immediate access to clip art symbols for LANs, WANs, computing, PCs, telephony and patching and cabling. Also included are flow charting symbols as well as mapping graphics to depict your networks geographically. Available now for just $129.95, NetDraw® 2.0’s complete clip art library is easily imported into most Macintosh applications. Call 800-643-4668 to order your copy today!
Results! Are what our customers want...
And results are what they get via
• 50 Vector Input Formats - 2D & 3D
• 40 Vector Output Formats - 2D & 3D
Results that work for dozens of professions, throughout your office or manufacturing plant... work easier, work smarter with -CADMOVER® - Graphic Translator
Call 703-532-0213 for more information.

FORTRAN on the Mac
• ANSI standard FORTRAN 77
• VAX & Cray extensions
• Advanced debugging features
• Extensive code optimizations
• User-friendly Mac interface
• PowerMac & 68K available
• Background execution
• 2D & 3D graphics support
• C & Pascal compatibility
• Education discounts
800-252-6479
See us at Macworld Expo, Apple Pavilion
Language Systems Corp. • 100 Carpenter Dr. • Sterling, VA 20164
(703) 478-0181 • Fax: (703) 689-9503 AppleLink: LANGSTS
"I am thoroughly impressed with your service, the knowledgability of your staff, and sterling treatment I received. Rest assured, I will recommend you to everyone I can."

— Evelyn M., CFE

**DATA RECOVERY**

**Disaster Planning • Upgrades**

- Expertise in Macintosh & virtually every operating system & storage device - including tape & removable media
- 24-Hour Worldwide Support with on-site, weekend, and priority service
- Professional Service Authorized by major manufacturers

**Ontrack**

- MN: 1-800-872-2599
- CA: 1-800-752-7557

London: +44 (0)61 974 5525 • Germany: 0130-815-188 • France: 05 90 72 54 04

Ask about our referral programs —

**MAC REPAIR**

- Apple™ Certified Technicians
- One-Day Service Turnaround
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Export Advice and Prices by Phone
- Power Supplies & Logic Boards
- Lifetime Warranty

Tel: 1-503-642-1456

**SLIDES**

From PC & Mac files $3.75

4x5 chrome/500/1000 $16

Dye sub print/overhead $2.75

Hi Res Scanning $10

Call for special pricing on Quantity Duplication of Slides & Overheads

Show & Tell 39 W38th St., NY, NY 10018

212-840-2912 • 212-840-7953 (fax)

**IMAGERS**

**Digital Output & Production Center**

- Slides & Overheads
- Kodak Portfolio Services
- Dye-Sub Overheads/Prints
- Large Color Posters
- Canon Fiery Lasers
- Slide Duplication
- 4x5 Neg/Pos/B&W
- Economy Slides/$3.00

**OVERNIGHT $4.95 Slides & Canons**

**POSTSCRIPT**

**Scans $0.90**

**Computer Peripheral Repair & Recovery Services, Inc.**

- "Professional Data Recovery Service at a reasonable cost. "1987" Manufacturer Trained Technicians on Recovery No Charge 96% Success Rate" All Storage Devices & Operating Systems

11440 Okeechobee Blvd, Suite 201
Royal Poinciana, FL 33411

800 765-9292 • 407 795-7266
Internet Myths:

It’s too dangerous  It’s too confusing  It’s too big

Internet Fact:

Internet access for teachers and students is finally safe and affordable—with theLINQ

theLINQ is the new Learning and Instruction Network from Quality Computers. And thanks to theLINQ, the Internet is safe, organized, and brought down to size. That’s because theLINQ is a monitored Internet service created specifically for education.

Unlike the Internet at large, you won’t find obscene or pornographic material on theLINQ. Nor will you find games or other non-educational material. We collect only the best of the Internet (screening out inappropriate information), cross-reference it for easy access, and deliver it directly to your classroom. Now even students can access the Internet without danger.

And theLINQ is affordable. There are no per-minute charges or hourly limits. That’s because theLINQ server you and your students use is actually in your school, not halfway across the country. Everyone can access theLINQ from any computer on your local area network—as much as they want—even from their home computer, with a modem. Your school pays a single subscription fee that covers everyone in the building, no matter how much the service is used.

theLINQ is an out-of-the-box solution that gives your school the Internet services you’ve asked for:

- Internet E-Mail for teachers, students, administrators, parents, and even residents of your community
- Free software collected from the Internet’s vast resources
- Educational forums where you can discuss topics ranging from local topics (fund raising, school news, etc.) to global affairs (multi-cultural education, the environment, etc.)
- Global projects that involve classes all over the world in research and discovery
- And much more, including demonstration versions of today’s hottest software, online reference materials, and support forums from top software publishers.

Imagine the possibilities when teachers, students, and parents can openly share and harness our most valuable resources—our creativity and our ability to learn. And not just within your community, but around the world through the Internet. It’s true global education, and theLINQ brings it to your classroom. For more information, call Quality Computers for your free LINQ information kit, demo disk, and video, and read the other ads in this issue of Macworld.

Someday is now

theLINQ
CUSTOM INTERNET ACCESS FOR EDUCATION
1-800-777-3642
With theLINQ
nobody is an island

There's a way for students and teachers to communicate across the school or around the world today—*theLINQ*

What's this Internet thing all about anyway? If it could be summed up in one word, it would be COMMUNICATION. People are brought together when they communicate. People learn when they communicate.

With *theLINQ*, you get communication. *theLINQ* provides a safe, organized, easy-to-use connection to the Internet.

Just imagine being able to consult fellow teachers from all over the country about ways to reach a troubled student; or being able to let your students share their ideas with students from another country. You'd find that you're no longer an island, but that you and your students have a network of friends—on *theLINQ*.

The possibilities are endless. Your students could share their stories and poems with students in Japan. Children in New York City could learn how children in Hawaii live—and vice versa—by communicating directly with them. What music do you like? What sports do you play? What's your climate like? What's your favorite food? Just imagine the questions they'd ask. Imagine what they'd learn.

You've heard of the vast reference resources available on the Internet. With *theLINQ*, you and your students don't have to hunt for them. *theLINQ* brings them directly to you. How would you like to have access to some of the most prestigious university libraries in America? Or a collection of interactive reference works? It's possible now, with *theLINQ*.

For more information, call Quality Computers for your free LINQ information kit, demo disk, and video, and read the other ads in this issue of Macworld.

Someday is now

*theLINQ*
CUSTOM INTERNET ACCESS FOR EDUCATION
1-800-777-3642
Compared to the LINQ, other Internet services don’t look so good.

There’s a way to connect to the Internet that breaks the mold of traditional “dial-in” services—the LINQ.

The LINQ stands for Learning and Information Network from Quality Computers. What it does is take you where you want to go on the Internet. How it does it will make the way you access bulletin boards now seem old fashioned.

Think of how you and your students have to get to any on-line service now. Everyone has to have an account number. Everyone has to dial. You get billed for every minute that someone is logged on.

The LINQ is different. Your LINQ server stays connected to the LINQ service 24-hours a day. Anyone in your school can log onto your LINQ server anytime they want with any computer on your network. No account number needed! Your LINQ server is automatically updated every night so in the morning, you have the latest the LINQ has to offer.

The LINQ gives you the Internet you want without all the other junk. E-Mail, free software, educational forums, software demos, on-line reference works, and access to other commercial services at discount rates are all part of the LINQ.

And unlike the Internet at large, the LINQ is safe. You don’t have to worry about your students meeting an on-line predator. Everything we put on the LINQ is screened and reviewed.

For more information, call Quality Computers for your free LINQ information kit, demo disk, and video.
Looking for Educational Software for your Home Computer? Shop where teachers shop!

Quality Computers is in its tenth year as America's number one source for educational technology. Now you can find out what professional educators have known for years—QC's guaranteed low prices can't be beat. If you're trying to convert your home computer from a game machine into an educational tool, a QC sales rep can recommend the right software for you and your family.

If you're a teacher, be sure to ask for Enhance, our free publication that brings teachers and technology together. Enhance gives you the information you need to integrate technology into your curriculum. It also comes with our complete educational catalog—140 pages of the hottest educational products at the guaranteed lowest prices.

SUPER SPECIALS

SIMMS
1 MEG ......49.95
2 MEG ......89.95
4 MEG ..... 149.95
8 MEG ..... 329.95

COMPLETE FAX MODEM PACKAGE
The Q-Express Modem Package gives you everything you need to start communicating—14400 baud rate, Microphone and Faxcelliate software, and all manuals and cables. The price is right!

$99.95

Includes Modem, Software & Cables

1-800-777-3642
The cutting edge of Macintosh technology

SMARTVOICE

Give your Mac a clear, natural voice with SmartVoice
- Reads any text in any program
- Add speech to your favorite word processor
- Great for proofreading—find out how your writing REALLY sounds
- Works in the background so you can work while your Mac reads
- Comes with 14 unique voices, speech lab, talking computer psychiatrist, talking text editor, talking clock, talking calculator, and more fun extras
- Uses Apple's new PlainTalk" technology
- Comes bundled with Apple's Speech Manager", MacinTalk 2", and MacinTalkPro 2"
- High-quality synthesized speech with realistic inflection and tone
- Speaks notification boxes from the Finder, for example, if the printer is out of paper your computer will actually tell you aloud
- Works on any Macintosh

"SmartVoice is not only fun, it's a wonderful productivity tool. It's a must have for any MacIntosh user!"
—Chris Moeller

just $49.95
save $40 off retail

SMARTVOICE BONUS PACK

Includes amazing digital tape recorder

Speech Bonus Pack Features:
- An incredible digital "tape recorder" that allows you to transcribe hours of letters and memos to yourself (or your secretary) on your Mac. Then play them back while you're typing in any word processor.
- Aziz--a vile-tongued talking psychiatrist with an attitude. Match wits and insults as Aziz gives you absolutely no help at solving your petty personal problems. Its animated talking head will "mouth" the words from your Mac.
- Almost 3 MB of full electronic text versions of famous novels, including Star Wars, Alice in Wonderland, The Gettysburg Address, and more. Let SmartVoice read this material to you or your children. Or just plain read it, print it, fax it, e-mail it, even record it. Work to the future.

$29.95
With Purchase Of SmartVoice
Save $10

1-800-777-3642

Quality Computers™

FREE EDUCATIONAL CATALOG
Find out why Enhance is America's favorite journal & catalog of educational technology. Every year, over a million educators look to Enhance for grant writing tips, technical advice and product reviews. Enhance is free! Just clip and mail this order form.

Name ____________________________
Address _____________________________
City ___________________ State _______ Zip ______
Phone (________) ____________________
Occupation: Q Educator Q Other ________________
Title ________________________________

Name ____________________________
Address _____________________________
City ___________________ State _______ Zip ______
Phone (________) ____________________
Occupation: Q Educator Q Other ________________
Title ________________________________

MacWorld
Quality Computers • 20000 Nine Mile Rd. • St. Clair Shores, MI 48080

Authorizer Educational Dealer
America's #1 source for educational technology

THE BEST DEAL IN CLIP ART

CLIP ART CD

- Over 1200 high quality curriculum-oriented images, borders, and more!
- 20 different categories
- Pictorial Index & Catalog included
- PICT & EPS formats
- Easy-to-use
- 30 Day Money Back Guarantee
- Preferred choice of educators

ONLY $49.95

Also available on 3.5" diskettes. Ask for details!

SUPER COMBO! GET BOTH CD-ROMS FOR JUST $59.95 SAVE $30 ▲

MACNIFICENT 7 3rd Edition
THOUSANDS OF PROGRAMS

Art • Adventures • Astronomy
Arcade Action • Chemistry • Board Games Geography • Card Games • Health
Simulations • Languages • Sports • Political Science • Trivia • Physics
Word Games • Music • Math • Puzzles Literature • Nature • War Games

Now you can have the most comprehensive, up-to-date collection of Macintosh, PowerMac, and Newton shareware and freeware games and educational programs in existence—with the MACNIFICENT 7 CD-ROM, Third Edition. Every single one of the more than 4,200 programs, demos, and support files have been tested for compatibility with System 7, 32-bit addressing, and the Power Macintosh. (The Third Edition includes more than 300 new programs.)

The included Librarian software makes it easy to find the software you're looking for and copy it to your hard drive in seconds—and it also contains descriptions, ratings, tips, and compatibility information for over 1,800 programs. With over 550 megabytes of great software, there's something for everyone in your family!

all for only $39.95

1-800-777-3642

Circle 263 on reader service card

“I have purchased over 15 different clip art collections, and yours is truly the best!”
—Scott Goldstein
FREE EXPRESS 2-DAY SHIPPING
Free express 2-day shipping on products marked with an *. See store for details.

FREE CATALOG!
1,100 CD TITLES

MUSIC

Action, Aliens & Mysteries!
#068, $79.95 3 award-winning CDs, Jump Queen, Lishtina and Who Killed Sam Rupert?
1467 Bellcrk Dead ........................................ $49.95
50027 CH.A.S.O. Continuum in the $29.95
35590 Critical Path ......................................... 36.95
50149 Darkened ............................................. $44.95

Spaceship Warlock #D1983 $19.95

Midnight Stranger #50316, $59.95
This is a trademark product that may be in the Smithsonian Institution. Glenn Colyer, B.S.U.
Adults only. A strange sight out in a gritty urban environment. The first CD to employ Virtul Primary Reality Headphones.

GAME ROOM

Game Room+D1611 125 Digital games.

EDUCATION & BUSINESS

GAMES

Encyclopedia Encyclopedias
"...wonderful...scrolled...fun"游泳者在线的iP
Designed by biologist Bob Faone, Ph.D., The Merriam-Webster dictionary winner for Best Database Resource. Features include unique story-evolve interface, video, advanced graphics, and an interactive search.

Educational CD-ROM Drive Bundle
Includes drive, 12 educational CD-ROM titles, speakers, stereo headphones, cable, microcomputer and power supply. (See store for details.)

FREE EXPRESS 2-DAY SHIPPING
Free express 2-day shipping on products marked with an *. See store for details.

EDUCORP 1-800-843-9947

I Photograph To Remember #B1774 $9.95

NEW DOUBLE SPEED!

Mac 2X #202X Accessible 2X2 disks. New fast & affordable "A" will be available.

EDUCORP Shareware 9.0+ #AM2 #1300, $99.95
New & updated version! The best collection of shareware and shareware plus just took better. 100% System 7 compatible. Easier to use, special documentation for new users, a browser with support, demos and more over 1 gigabyte of games, education, clip art, etc.

Amazing Media Bundle #AM3, $49.95
You get 3 CD-ROMs: Oceanus Below, Space Shuttle and Capital Hill.

Baseball's Great Hits v.1 #L1771

Sports Illustrated Sports Almanac '91 #D1948

Music Genres

100 CD TITLES

Action, Aliens & Mysteries!
#682, $79.95 3 award-winning CDs.
Jump Queen, Lishtina and Who Killed Sam Rupert?

50545 Flying Nightmares ................................... $44.95
1476 Hell Cab—New lower price! $45.95
2084 Iron Helix ............................................. 59.95
50840 Journeyman Project Turbo ......................... 39.95
50089 Jump Women .......................................... $44.95
50380 Mankol Manholepieces ............................ 34.95

Midnight Stranger #50316, $59.95
This is a trademark product that may be in the Smithsonian Institution. Glenn Colyer, B.S.U.
Adults only. A strange sight out in a gritty urban environment. The first CD to employ Virtual Primary Reality Headphones.

50107 Myst .................................................. $47.95
50438 Rebel Assault ......................................... 49.95
50439 Specter VR ............................................. $49.95
50375 Tennis Gold ............................................ $39.95
50135 The 7th Guest ......................................... $49.95
1980 Who Killed Sam Rupert? ............................ 18.95

ELECTRONIC BOOKS

Butterflies of the World ............... $39.95
Mammals of Africa ......................... $39.95
Rainforest I ......................... $39.95
Whales & Dolphins ............... $39.95
PowerFinder ......................... $39.95
Random House Dictionary ................. $59.95
Redshirt MA Adriodnacy ............... $49.95
Small Blue Planet: Real Pictures ....... $49.95
Street Atlas USA (limited time offer) .... $69.95
Travel Guide for the 80's ............... $29.95
Total History! 3-CDs ....................... $74.95
Vita From Earth ....................... $29.95

CD-ROM DRIVES & BUNDLES

Educational CD-ROM Drive Bundle
Includes drive, 12 educational CD-ROM titles, speakers, stereo headphones, cable, microcomputer and power supply. (See store for details.)

NEW DOUBLE SPEED!

Mac 2X #202X Accessible 2X2 disks. New fast & affordable "A" will be available.

Edwardian Era

Fashion, Design & Decor

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.

1900s style in this collection. The Edwardian Era Collection includes clothing design and fashion history.
Objective Investing

Oy vey and mea culpa: a column that cost Guy money

FEW MONTHS AGO OBJECTIVE SOFTWARE disappeared from the list of conflicts of interest in my byline (see below). It's not because I cashed out. It's because Objective is gone, kaput, aloha oe.

The Product

Objective Software's product was called SpreadBase. Its goal was to combine the functionality, as you might guess, of a spreadsheet and a database. The concept was that a spreadsheet was a good and well-understood method for manipulating and viewing data. A database, in addition, was a good and well-understood method for holding large amounts of information.

Combining both, however, turned out to be not so good and not so well understood. SpreadBase was caught in the hand-waving zone of a "new category of software." (When you hear that a product creates a new category of software, it means the product is too slow and too incomplete to compete in existing categories.)

The Lessons

Whatever you call my Objective investing, I call it an expensive education. My only solace is that the failure of Objective has provided column fodder. Here's what I've learned from the whole fiasco.

Lesson 1: Never invest in a product you wouldn't use. The warning bells should have gone off at the very start, because no matter how good SpreadBase was, I would never use it. I'm simply not a spreadsheet and a database kind of guy. I don't have to model or forecast anything, and I don't need to store massive amounts of data.

I invested in a product I wouldn't use for two reasons: one stupid, the other stupider. The stupid reason is that I convinced myself (albeit with Objective's help) that there was a market that needed to manipulate and display database-type data with spreadsheet-type tools. There wasn't such a market.

The stupider reason is that I love to take on Microsoft. This yields another lesson: Invest to make money. Invest to make customers happy. But never invest to do someone in.

Lesson 2: The hard part of introducing a new product is "crossing the chasm." A few months after losing all my money, I came across a book called _Crossing the Chasm_, by Geoffrey Moore (HarperCollins, 1991). The book's message is that early adopters like anything new and are willing to roll with the punches of a new product. However, early-adopter enthusiasm is not a safe make.

This is because it's easy to get a few people inside a company excited about a new product: you treat them special, return their phone calls, and send them prerelease software. Even if your product is merely decent, they'll like it just because of the fawning attention.

Once you ship and your product doesn't work so well with 50,000 records, it's very hard to make inroads against a "standard."

Lesson 3: It's your money, so speak up when you don't believe something you hear. The executives of Objective stated over and over that beta sites liked the product so much that they would cut purchase orders before the product shipped. And — get this — they were going to price SpreadBase roughly three times higher than Excel "to communicate how much more powerful SpreadBase was than Excel."

I didn't believe this then and certainly not now. I should have protested at the top of my lungs, and if this failed, resigned from the board. But no, I was placated (bludgeoned, more accurately) when they told me, "Guy, you're used to selling $60 contact managers, file-compression software, and screen savers. You don't understand high-end users."

Silly me. With everyone else in the room nodding in agreement, I thought, "Guy, you're the stupid one. These fellows know better than you do. Go with the flow. Be a team player. No one said you've cornered the market on new-product introduction knowledge." At least I learned that there is a big difference between groupthink and team play.

Lesson 4: You invest in product, not just the people. I invested in Objective Software mostly because of my faith in several of the employees. My thinking was, "These folks are some of the most competent software people I know, so whatever product they create, it will be great."

In hindsight, I should have known that great people don't always create great software. There are other factors that can affect the product: (1) everyone else who works for the company might not be as great; (2) the past is not always a good indicator of the future; and (3) the role of luck and timing cannot be discounted.

This is not to say that you should get involved in a company with a great product made by people you despise or don't respect — I've done this too. A good investment requires both good people and a good product.

Get Back in the Saddle

There you have it: everything I learned for my money. May you never have the occasion to write a column like this. And by the way, if you've got a word processor that is cheaper and better than Word, I'm game. ☛

GUY KAWASAKI'S views are his own and only sporadically represent those of Macworld. He has investments in Bit Jugglers, Global Village Communication, Bookmaker Corporation, and others. He is president of Fog City Software. He can be reached at macway@aol.com.
INTRODUCING
A TECHNOLOGICAL
BREAKTHROUGH.
A CD-ROM READER
THAT CONVERTS
EXPECTATIONS INTO
REALITY.
Perhaps the only thing that’s advanced faster than CD-ROM technology is the hype about it. No longer.

The NEC 4X CD-ROM readers achieve a level of performance that leaves no room for exaggeration.

Their increased transfer rate and throughput make quick work of even the most ponderous databases. And render video and animation with a fluidity previously unknown to multimedia.

They even come with a 2-year limited warranty and are compatible with both PC and Mac.

In short, NEC’s MultiSpin® CD-ROM readers fulfill the most demanding of technological criteria. Namely, your expectations.

SEE, HEAR AND FEEL THE DIFFERENCE.

NEC
Faster Data Retrieval
With access times as fast as 180 ms, these readers will make you more productive. Instantly.

Smother Video
A transfer rate of 600 KB/sec means that video and animation will run. Not hop, skip and jump.

Improved Throughput
Simply stated, information traveling from your CD-ROM will no longer be taking the scenic route. We know you're in a hurry.

Easier to Use
LCD status displays, front-mounted audio controls and our Windows-based Simple Start software make these machines among the friendliest you'll meet.
Because no two people think alike. Or work alike.

Thinking Mouse™

The way you program Thinking Mouse all depends on how you work. For example, you can open an application more easily by double-clicking with just one click. You can drag, scroll or highlight with less effort by locking a button down with just one click. You can even execute multi-step commands faster with a single click—like printing and saving a document, entering a block of text, logging onto a network, even sending a fax. The possibilities are endless.

Create your own pop-up menu.

Want to save even more time?
Thinking Mouse lets you organize frequently used commands in a personalized pop-up menu.
First, you create the menu with our easy-to-use software. After that, simply click on the assigned mouse button when you want the menu to appear. Click once more to execute any command.
You can indent text, change fonts, even insert your signature into a document.

Comfortable.
Fits most hand sizes.
Satisfaction guaranteed.

The tapered design, symmetrical shape and EasyGrip™ sides offer advanced comfort and control for a variety of hand sizes, and for both right-handed and left-handed users.

The unique Kensington Satisfaction Guarantee gives you a 5-year warranty, toll-free technical support and a no-risk 90-day trial. Thinking Mouse is guaranteed compatible with System 6.0.7 and above, including System 7.5 and Power Macintosh. For more information, call 800-535-4242. Outside the US and Canada, 415-572-2700. For information by fax, dial extension 82 and request document 308.