50 Best Products
World-Class Champions

All-New

$1199 Quadra 630
Plus: Video/TV Cards from $199, Page 98

8 Electronic Cameras
Does Film-Free Photography Measure Up? Page 140

Low-Cost Printers
Image Quality and Speed Tested
MANY PEOPLE STRIVE FOR PERFECTION. WOULD YOU SETTLE FOR PERFECTION?
FECI HARMONY IN THEIR LIVES. ECT HARMONY IN YOUR MAC?

New Microsoft Office 4.2

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.

* Support for Microsoft Office in no charge. However, normal telephone company charges apply. Microsoft support services are subject to Microsoft's then-current prices, terms, and conditions, and are subject to change without notice. © 1994 Microsoft Corp. All rights reserved. Microsoft, Microsoft Office, IntelliSense, Office, PowerPoint, Word and Excel are registered trademarks of Microsoft Corp. Office Standard is a trademark of Microsoft Corp. Office Standard includes Microsoft Excel, Word, PowerPoint and a Mail workstation license.
When it comes to performance, the sky should be the limit— not your equipment. Introducing the Raven Pro Disk Array, our next-generation flying machine. Now you can open a 480 MB Photoshop file with lightning speed. Transfer dailies without losing a single frame. Gain access to mirrored business-critical data in less than 8 ms or mix and match RAID levels and partitions to meet your specific needs. With 17.2 MB/sec throughput and up to 52 GB on-line capacity, they're four times faster and have 35 times the capacity of the high-performance 500 MB drive you're probably using now. To find out what Raven Pro can do for your company's throughput, call 1-800-800-DISK. Then let your imagination and productivity take flight.
MicroNet's flexible utility program allows you to optimize drive caching and each partition's parameters, including location on disk and block size, for maximum application performance.

Raven Pro disk arrays offer a flexible upgrade path for all high-powered Macintosh systems via PDS, NuBus or software. PDS and NuBus versions provide a 32-bit data path via Fast/Wide SCSI-2.

MicroNet's Raven Pro is the newest addition to our family of award winning storage solutions. Based on the proven Raven technology, it takes the science of disk array engineering to an unprecedented level.

Look for us at Macworld, Booth #5652

Circle 139 on reader service card
Features

98 The Multimedia Mac

BY JIM HEID A sneak peek at Apple's slick new multimedia machine, the Quadra 630—featuring improved speed, better AV capabilities, and some surprising technology inside.

106 Macworld's Eighth Annual World-Class Awards

BY DAN MUSE Our readers choose the best hardware and software for the Mac in over 45 categories.

116 Personal Printers

BY JIM HEID High performance, low-cost monochrome printers are here—Macworld Lab tests 13 ink-jet and laser printers under $1600 and proves good buys abound.

126 System 7.5

BY LON POOLE Apple's new system software brims with powerful additions, but is the hefty RAM requirement worth it?

News

31 MacBulletin

32 News Low-cost, lightweight PowerBook • SAM, Norton Utilities revved • Color laser printers, and more

41 Power Mac News 120MHz Power Mac® • Development tool deficit • Apple rejects first 603 chip, and more

45 New Products

Opinion

19 State of the Mac

BY ADRIAN MELLO The hunt for killer apps.

23 Letters

187 The Desktop Critic

BY DAVID POQUE The oracular Mac.

191 The Iconoclast

BY STEVEN LEVY Apple's whiz-bang vision thing.

197 Conspicuous Consumer

BY DEBORAH BRANSCUM What to do when companies go out of business.

286 Wise Guy


ON THE COVER
Photograph by Paul Franz-Moore. Scen image by Makihara Okubo/Photonica.
Graphics

132  News  QuickDraw GX pros and cons • Photoshop adds layers, color controls • Improved Kodak digital camera, and more

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

140  Photography without Film  BY JIM HEID  Macworld focuses on digital and still-video cameras—and the balancing act of convenience, image quality, and price.

At Work

150  News  MS Works adds kitchen sink • ACT 2.0 goes for workgroups • Your calendar as a desktop pattern, and more

153  Working Smart  BY JIM HEID  We love it, we hate it—a preview of Word 6.

158  Address Books Compared  BY FRANKLIN N. TESSLER  Tired of losing names and numbers? We compare six dedicated contact managers that can help you organize—then find—your contact information.

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

Networks

174  News  Blazing ATM LANs • More PhoneNet, Ethernet options • Network lockout security card, and more

177  Electronic Software Distribution  BY RAINES COHEN  Save yourself headaches and hassles by distributing software over the network. An overview on using ESD in offices large and small.

183  PowerBook Notes  BY CARY LU  Lasting strategies for battery use.

Buyers' Tools

201  Editors' Choice  Top picks from our comparative articles.

205  Star Ratings  More than 300 product-review summaries.

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

Reviews

56  Adobe Illustrator 5.5  Draw program

57  Aldus FreeHand 4.0  Power Mac update

58  Apple Color StyleWriter Pro  Color printer

59  Intellidraw 2.0  Draw program

59  Infini-D 2.6  Power Mac update

61  Macromedia Director 4.0  Multimedia/animation program

63  DateBook & TouchBase Pro 4.0  Personal information manager

65  Persuasion 3.0  Presentation graphics program

67  FontChameleon 1.0.1  Font utility

69  PLI Infinity 270 Turbo  SyQuest drive

69  PowerPoint 2.5.1  Print utility

71  MovieWorks 2.0.2  Multimedia software

73  P-Touch PC  Label printer

73  HyperCard 2.2  Authoring tool

75  Dynodex for MacIntosh 3.5  Contact manager

77  AccuZip 1.8.7: Bulk Mailer  CASS 1.00d; ZP4 12.1  Bulk-mail software

78  FastTrack Schedule 2.1  Project scheduler

83  SCSI Director Pro 3.0.6  Hard disk/utility formatting

85  Creative Writer 1.0  Writing skills

87  Mayo Clinic Family Health Book 2.0; Mayo Clinic: The Total Heart 1.0  Medical CD-ROMs

91  SCSI Sentry  Terminator

91  Conley SR2 RAID System  High-performance storage

93  SAM-CD  Clinical medicine articles on CD-ROM

93  TextBridge 2.0  Optical character recognition software

95  CD AllCache 2.0  CD-ROM accelerator

95  JMP 3.0  Statistics software
Welcome to the next generation of PowerBook. Four new Apple PowerBook computers that redefine, once again, what a notebook computer can be.

One look tells you these are very new indeed. The flowing shape. The sleek lines. The futuristic curves. But the new appearance is only your first clue to the dramatic changes, refinements and improvements we’ve engineered inside.

The PowerBook 500 series is designed around the Motorola 68LC040 processor—a chip that offers far more power than the chips that powered previous PowerBook models.

In benchmark tests, the new PowerBook 540c running at 66/33 MHz was 80% faster than the fastest previous PowerBook. (Its gray-scale counterpart, the 540, is equally fast.) And with the same chip running at 50/25 MHz, the 520 and 520c aren’t far behind.

We’ve supported that processing power with 80% more memory capacity (up to 36MB), 56% more internal storage capacity (up to 320MB) and built-in high-performance Ethernet networking (as well as LocalTalk).

This makes the PowerBook 500 series powerful enough not only for word-processing long documents or Fortune 500-sized spreadsheets, but also for doing fieldwork with programs like Adobe Photoshop and other high-end, graphics-intensive programs.

Add SoftPC software from Insignia Solutions Inc., and you’ve got the ability to run MS-DOS programs as well.

The 500 series offers the possibility of even more power later, because you can upgrade to PowerPC technology when it’s available for PowerBook. (Contrast this with 486 notebooks that aren’t upgradable to Pentium technology.)

The trackpad brings a new level of precision to PowerBook computing. The revolutionary new Apple trackpad makes pointing and clicking even more intuitive than before.

This intuitive method of moving the cursor, combined with the new dual-scan and active-matrix screens, gives you much more precise control over the location of the cursor and makes extremely detailed work...
possible (it's actually precise enough for photo retouching) wherever you happen to be.

The PowerBook 540c has what may well be the finest screen ever to grace a notebook computer: an active-matrix, 95-inch display capable of showing thousands of colors at the same time. Combined with QuickTime® video and built-in stereo sound, these screens make for truly spectacular presentations in the most unspectacular locations: on a crowded plane, in a noisy diner, wherever.

More expandability. The new PowerBook 500 series includes a lot of things that aren't standard on ordinary notebook computers.

Things like built-in file sharing and networking. Stereo sound and video-out. Macintosh PC Exchange™ software, eWorld© and PowerBook File Assistant file-synchronizing software. And we've even included Apple Remote Access software that allows any modem-equipped PowerBook to work with the Macintosh® computer on your desk, and with your network, as if you were sitting in your office. Even during those times when your office happens to be thousands of miles away.

Still, there's a lot of room to grow. These are the first PowerBook computers to come with a built-in Processor Direct Slot (PDS) for third-party expansion modules. And they're also the first ones to offer the optional plug-in PowerBook PCMCIA Expansion Module, so you can use two Type II or one Type III PCMCIA card for even more flexibility.

You can even install an optional 19,200-baud internal modem to send and receive information quickly, and when it becomes available, a third-party cellular interface for convenient wireless access to your office network.

More battery life. Even the batteries have been thoughtfully redesigned. The PowerBook 500 series can use two PowerBook Intelligent Batteries. These high-powered NiMH batteries use special processors within each pack to monitor battery power and the new PowerBook Control Strip — power management software that tells you exactly how much time you have before you need to recharge the batteries.

The result is 40% more battery life than before — up to seven hours per charge — when using both batteries. They recharge faster, too — in as little as two hours for both batteries when the PowerBook is asleep or shut down. And the batteries even recharge while you're using the PowerBook.

More information. While this has been an abundance of information, by any standard, it can't serve as a substitute for a personal demonstration. Something that can be easily arranged at your authorized Apple reseller. To find the one nearest you, simply call 800-732-3131, ext. 100. (In Canada, call 800-665-2775, ext. 910.)

And soon discover more of the power you buy a PowerBook for. The power to be your best.
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 a free catalog!

*Adjustable for off for a free catalogue!

Lifetime Warranty.

Lots of choices.

800-325-3841
10415 SW Tualatin-Sherwood Hwy.
Tualatin, OR 97062
Fax: (800) 325-0045

GSA contract no. GS-00F-5040A. Available for OEM applications. Prices from $159.00

Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

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.

Simply powerful software.
Now you can print from your Macintosh to over 1,000 PC-compatible printers. At home using an old PC printer? On the road with your PowerBook? Sharing PC printers on a network? PowerPrint's cable-and-software package gives you instant access to just about any laser, dot matrix, color, or fast wide-carriage printer.

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

Also available in network versions. PowerPrint/LT™ for LocalTalk™ networks. PowerPrint/NW™ for Novell NetWare printing services.

Call 800-330-9833 for more information, or contact your local dealer.
Hermann Marketing Presents
Apple Merchandise

Apple Polo Shirts—Polo-shirt featuring knit ribbing in collar and sleeves. Made of heavyweight, 100% brushed cotton that's washing-machine friendly. Adult sizes S-XXL.
- APL120 White
- APL122 Black
- APL124 Navy
- APL174 Rainbow collar

Apple CD Wallet—This CD wallet stores up to 12 discs. Made of top-grain black cowhide, its fold-and-snap closure offers extra security. Debossed Apple logo on the lower right corner of the front cover. Dimensions: 6-1/2" x 8-1/2" closed. APL409 $44.95

Apple Gym Bag—Waterproof nylon with metal hardware, web handles, and adjustable shoulder strap. APL238 $21.95


Apple Leather Notebook Briefcase—This briefcase holds a PowerBook and accessories, in multiple easy-access compartments. The luxurious top-grain exterior covers a layer of dense polyfoam for scratch-resistant shock protection. Adjustable shoulder strap is removable. M00066 $99.95

Apple Comfort Kits—Improve your productivity and reduce fatigue with this ergonomic trio. The wrist rest provides ideal support while you're typing. The circular mouse pad provides an optimal work area in minimal space. The mouse cover maintains constant metatarsal elevation. Kit for computers with Apple desktop
- Bus Mouse I
  - M00061 Red
  - M00063 Blue
- Bus Mouse II
  - M00084 Red
  - M00085 Green
  - M00086 Blue
$24.95

TO ORDER CALL TOLL FREE
1-800-590-5005

Hermann Marketing is an authorized supplier of Apple logoed merchandise.
Copyright 1994 Apple Computer, Inc. Apple, the Apple logo, Macintosh, and Macintosh Color Classic are registered trademarks of Apple Computer, Inc. PowerBook is a trademark of Apple Computer, Inc.
Only the best value in accounting software can produce numbers this good: $400 value. Now $199.

Free with your order:
- Free 60 day toll free support!
- Free starter set of business forms
- Free copy of Financial Competence, a self-training software tool to help you become a financial wizard. A $99.00 value!

Features:
- General ledger and financial reporting
- Extensive management reporting
- Accounts receivable/billing/collections/finance charge calculations
- Invoicing for parts, services, and time
- Quotes for fast estimates and good customer service
- Accounts payable, partial payment tracking, discount tracking

Today, you either get organized or you'll drop the ball. That's why there's MacP&L. The unbeatable accounting software that goes far beyond the basics of bookkeeping. It helps you keep track of everything from project revenues and expenses, receivables and payables to sales and returns. Multi-user available.

Experts agree: This software has received Editors' Choice awards from both MACWORLD & MacUser magazines.

"MacP&L's features beat the field. When I saw how easily this program handled our fast-changing inventory, I was sold." (Owner, retail specialty store)

Hurry, this offer ends September 23rd, 1994

All For Just $199! Save Over $200!

Call now! 1 800-854-3415
You must be satisfied, 30 day money-back guarantee.

State Of The Art Accounting Software

MacP&L List price $299.

Circle 219 on reader service card
INTRODUCING THE NEW SYQUEST-COMPATIBLE CARTRIDGES FROM IOMEGA.

Only Iomega could make a more reliable SyQuest-replacement cartridge than SyQuest. It starts with the highest quality IBM media, reinforced with a diamond-like coating for greater resistance to head crash or shock. So important data is there when you need it. Plus, Iomega's new driver allows you to mount any cartridge without rebooting your system. And they're SyQuest licensed,* so you have no worries about compatibility or the warranty on your drive. Best of all, Iomega also delivers more affordable storage than SyQuest, complete with a 5-year "No Questions" limited warranty. So get SyQuest compatibility enhanced by Iomega reliability.

For product details, call Iomega directly at 1-800-967-0326.

©1994 Iomega Corporation. The Iomega logo is a registered trademark of Iomega Corporation. All other products and names mentioned are property of their respective holders. *Announced by SyQuest, 6/94.
Macworld
HOW TO CONTACT MACWORLD
SUBSCRIPTION QUESTIONS
Mainland USA
800/288-6848
All other locations
303/447-9930
or write Subscription Services
P. O. Box 94529
Boulder, CO 80322-4529
MACWORLD ONLINE
Contact Macworld editors directly via the Macworld areas on America Online and eWorld. On these services, readers can search current and past issues, exchange messages with editors and other readers, and attend live online events. Readers can also send electronic mail via CompuServe (70370,702), MCI Mail (294-8078), AppleLink (Macworld 1), or Internet (macworld@macworld.com).
MACWORLD IN MICROFORM
Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1344; 800/838-7610.
MACWORLD EDITORIAL
MAIL OR COURIER
AppleLink: Macworld1
CompuServe: 70370, 702
Fax: 415/442-0766
LETTERS TO THE EDITOR
All written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to Letters to the Editor.
QUESTIONS AND QUICK TIPS
Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to Quick Tips, Lon Poole. Please include your name and address.
CONSUMER ADVOCATE
Been burned? Really steamed? Direct your concerns (by mail or electronically) to Conspicuous Consumer, Deborah Branscum.
NEW PRODUCTS AND UPDATES
Direct press releases and product announcements (by mail or electronically) and shrink-wrapped software upgrades (by mail or courier) to New Products Editor.
BUGS & TURKEYS
Mail in descriptions of bugs (flaws in conception or design) or bugs (defects or flaws in execution); copies of correspondence with vendor or telephone contact notes (if any); and your telephone number, mailing address, and T-shirt size to Streetwise Shopper. To obtain an application for inclusion of special product promotions in Streetwise Shopper, vendors and resellers should contact Charles Barrett (by mail or electronically).
PRINTING ORDER PERMISSON
Permission will be granted by the copyright owner for those registered with the Copyright Clearance Center (CCC) to photocopy any article herein—for personal or internal reference use only—for the flat fee of $1.50 per copy of the article or any part thereof. Specify ISSN 0741-8647 and send payment directly to the CCC at 27 Congress St., Salem, MA 01970. Address requests for reprint orders and for permission to copy editorial for other purposes to Reprints and Permissions, Editorial Dept.
WRITING FOR MACWORLD
Do not send us unsolicited manuscripts. If you're interested in writing for Macworld, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to Writer's Guidelines, Editorial Dept.
When It Comes To CD-ROM, We're for Multiple Choice.

Chinon's Complete Family Of Quality CD-ROM Drives.

Chinon has just the CD-ROM drive you need—for even the most demanding multimedia applications.

Take the 535 Series, arguably the fastest performing CD-ROM drives for handling desktop video.

The 535 offers an impressive 220 millisecond access time and a double speed data transfer rate of 300K/Sec. But it's the 535's massive 256K data buffer and unique caching method that enables it to outperform the rest of the crowd.

That's because the 535 is optimized for transferring information blocks of 32 sectors—meeting the exact demands of QuickTime and Microsoft Video for Windows.

The results have consistently shown the Chinon 535 to outperform other 2X, 3X and even 4X drives when handling the 16, 32 or 64 sector blocks of today's most popular multimedia applications.

In addition, the 535 exceeds MPC2 standards and reads your favorite music and multisession Photo CDs.

Our 435 Series drives are the perfect choice for affordable and dependable single speed performance.

And like all Chinon CD-ROM drives, they work with PCs and Macs and are constructed for rock-solid reliability.

So make the right choice and call Chinon today.

CHINON
The Drive to Succeed

Chinon America Inc., 615 Hawaii Avenue, Torrance, CA 90503. Toll-free (800) 441-0222. In California (310) 533-0274

© 1994 Chinon America Inc. All trademarks and registered trademarks are the property of their respective holders.

Circle 64 on reader service card
La Cie hard drives with Silverlining™ hard disk management software deliver the best performance and value. La Cie’s Tsunami drives are sleek, portable and powerful. With features like switchable active termination for maximum data integrity and up to a five year warranty, Tsunami drives can be used with confidence.

**QUANTUM 3.5" HARD DRIVES**

La Cie hard drives with Silverlining™ hard disk management software deliver the best performance and value. La Cie’s Tsunami drives are sleek, portable and powerful. With features like switchable active termination for maximum data integrity and up to a five year warranty, Tsunami drives can be used with confidence.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Internal</th>
<th>Tsunami</th>
</tr>
</thead>
<tbody>
<tr>
<td>170MB</td>
<td>$199</td>
<td>$259</td>
</tr>
<tr>
<td>270MB</td>
<td>$269</td>
<td>$329</td>
</tr>
<tr>
<td>340MB</td>
<td>$299</td>
<td>$359</td>
</tr>
<tr>
<td>540MB</td>
<td>$399</td>
<td>$499</td>
</tr>
<tr>
<td>1080MB</td>
<td>$749</td>
<td>$849</td>
</tr>
<tr>
<td>1400MB</td>
<td>$939</td>
<td>$999</td>
</tr>
<tr>
<td>2100MB</td>
<td>$1339</td>
<td>$1399</td>
</tr>
<tr>
<td>1650MB S</td>
<td>$1979</td>
<td>$2039</td>
</tr>
</tbody>
</table>

La Cie hard drives with Silverlining™ hard disk management software deliver the best performance and value. La Cie’s Tsunami drives are sleek, portable and powerful. With features like switchable active termination for maximum data integrity and up to a five year warranty, Tsunami drives can be used with confidence.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Internal</th>
<th>Tsunami</th>
</tr>
</thead>
<tbody>
<tr>
<td>2050MB S</td>
<td>$2269</td>
<td>$2329</td>
</tr>
</tbody>
</table>

S=Seagate mechanism (1 year warranty)

**ZFP REMOVABLE MEDIA SOLUTIONS**

For reliability and quality in removable media choose La Cie. Our SyQuest drives offer capacities from 88MB to 270MB. Our CD-ROM drive supports both single and double speed data transfer, plus Photo CD. Our new optical drive offers quiet, reliable operation with cost-effective media. Protect your valuable data with our high-capacity DAT drives. For economical back-up for smaller capacities, try our TEAC tape drives. We have your selection. External drives are shipped in zero-footprint cases.

**SyQuest Drives**

<table>
<thead>
<tr>
<th>Drive</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>88C MB 5.25&quot;</td>
<td>$399</td>
<td>$459</td>
</tr>
<tr>
<td>200MB 5.25&quot;</td>
<td>$559</td>
<td>$599</td>
</tr>
<tr>
<td>105MB 3.5&quot;</td>
<td>$349</td>
<td></td>
</tr>
<tr>
<td>270MB 3.5&quot;</td>
<td>$599</td>
<td></td>
</tr>
</tbody>
</table>

**CD-ROM Drives**

<table>
<thead>
<tr>
<th>Drive</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toshiba Dual Speed</td>
<td>$639</td>
</tr>
</tbody>
</table>

**Optical Drives**

<table>
<thead>
<tr>
<th>Drive</th>
<th>Internal</th>
<th>Cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>230MB NEw</td>
<td>$1009</td>
<td>$59</td>
</tr>
</tbody>
</table>

**DAT Drives**

<table>
<thead>
<tr>
<th>Drive</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0GB DAT</td>
<td>$1099</td>
<td>$1159</td>
</tr>
<tr>
<td>TurboDAT</td>
<td>$1299</td>
<td>$1359</td>
</tr>
<tr>
<td>8.0GB DAT</td>
<td>$1539</td>
<td>$1599</td>
</tr>
</tbody>
</table>

**Tape Drives**

<table>
<thead>
<tr>
<th>Drive</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>155MB</td>
<td>$569</td>
<td></td>
</tr>
<tr>
<td>600MB</td>
<td>$729</td>
<td>$789</td>
</tr>
</tbody>
</table>

Each drive comes with Silverlining™ and one free SyQuest cartridge.

Each drive comes with Silverlining™ and one free 3.5" optical cartridge.

Each drive comes with Retrospect™ and one free DAT or TEAC tape cartridge.

**For reliability and quality in removable media choose La Cie. Our SyQuest drives offer capacities from 88MB to 270MB. Our CD-ROM drive supports both single and double speed data transfer, plus Photo CD. Our new optical drive offers quiet, reliable operation with cost-effective media. Protect your valuable data with our high-capacity DAT drives. For economical back-up for smaller capacities, try our TEAC tape drives. We have your selection. External drives are shipped in zero-footprint cases.**

---

*Call for details on terms, conditions, limited money back guarantee (shipping not included), warranty and free offers. Comparisons may not apply to all vendor products, check specifications. Prices do not include shipping and only apply to products shipped within the continental United States. International customers must pay for all shipping charges. Add sales tax where applicable. Java, ZFP, Tsunami, PowerDrive, PocketDrive, SilverGiant, Silverspan, Snowball, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. FORTUNE 500 is a registered trademark of the Time Inc. Magazine Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or remorse. © Copyright 1994 La Cie, Ltd. 8720 Dr. Cieski Place, Beaverton, OR 97005. Phone: (503) 523-9000, Fax: (503) 523-9100. All rights reserved. Printed in U.S.A.
HURRY! ACT NOW!
We are making room for the new releases by offering closeout prices on these popular hard drive models. These prices won't last long! Quantities are limited!

This first quality merchandise carries a ONE YEAR WARRANTY and includes SILVERLINING* hard disk management software ($149.00 value).

Closeout External Hard Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>External Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>40MB</td>
<td>$89</td>
</tr>
<tr>
<td>80MB</td>
<td>$119</td>
</tr>
<tr>
<td>100MB</td>
<td>$149</td>
</tr>
<tr>
<td>120MB</td>
<td>$199</td>
</tr>
<tr>
<td>200MB</td>
<td>$249</td>
</tr>
<tr>
<td>400MB</td>
<td>$369</td>
</tr>
<tr>
<td>525MB</td>
<td>$449</td>
</tr>
<tr>
<td>1000MB</td>
<td>$799</td>
</tr>
<tr>
<td>1200MB</td>
<td>$929</td>
</tr>
</tbody>
</table>

*Drive enclosures vary.

Every drive also includes owners manual, necessary cables, Apple System software and a generous collection of shareware.

The La Cie Advantage
- Silverlining™ Disk Management Software
- Unlimited TOLL-FREE Technical Support
- 30 Day Money Back Guarantee
- All Drives Burned In and Tested
- Double Shielded SCSI Cables
- FCC, UL, TUV, VDE & CSA Approved
- Ready to Plug and Play
- Valuable Warranties

To order or for more information, call toll-free

800-999-1671
Mon - Fri, 5 a.m. - 8 p.m. & Sat, 8 a.m. - noon PST
International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 001 4-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.

Circle 52 on reader service card
HOP ON!

IF YOU'RE NOT USING CANVAS™... YOU'RE MISSING OUT.

When the rubber hits the road, you can't afford to spin your wheels using underpowered graphics software. You need drawing tools designed for today's high-tech tasks. Tools that deliver unrivaled speed and accuracy without inhibitions. You need them now, not years from now.

WE DELIVER.

Canvas has just the right combination of tools to help you enjoy your work and become more productive. Without sacrificing quality or compromising your creativity. Just ask our biggest fans — our competitors. They've been busy copying innovations Canvas users have enjoyed for years. Like unlimited layers, integrated drawing and painting, preview editing, object path combinations, to name just a few. Imagine what will happen when they find out what we're working on today. The choice is clear... you can use Canvas now or spend a lifetime waiting for the competition.

DON'T LISTEN TO US.

Our competitors aren't our only fans. Just listen to the 400,000+ high-tech professionals who power up Canvas every day in seven languages to produce today's top technical illustrations. Or the expert analysts from leading multinational corporations, government agencies and top educational institutions who have chosen Canvas as their graphics standard. Or the computer experts at leading industry publications. They'll all tell you Canvas is the most advanced, cost-effective multi-platform graphics solution. Period.

WE WON'T BORE YOU WITH THE DETAILS.

Needless to say, Canvas has all the drawing tools and features you'll probably ever need. From freehand Bézier curves to 1/65,000th-inch precision and fifteen classes of anti-aliasing.

From slide presentations with QuickTime™ support to high-quality separations. From precision type handling to over a dozen industry-standard import/export tools, including HPF, DWF and CYS (Canvas for Windows). And thanks to our unique Open Architecture Technology (OAT™), there's plenty of raw power available and even more when you need it. As proof, let us point out that every detail of this ad was created and color separated within Canvas.

DON'T MISS OUT ANY LONGER.

Stop grinding your gears with old technology. Quit wasting valuable time and energy with the wrong graphics tools. Dust off your leather jacket, put on your baddest shades and make tracks to your favorite Canvas reseller today. Or call 1-800-733-6322 to order, and hop on for the ride of your life. Helmet not included.

CANVAS
THE HIGH-PERFORMANCE DRAWING ENVIRONMENT
WINDOWS  Macintosh

$149.95 COMPETITIVE UPGRADE

Still using some other graphics program? Now we've made switching to Canvas even easier! Keep their clip art, but trade in that scatter for some real precision drawing power. Simply show us proof of ownership of any Macintosh graphics program and we'll ship you a new Canvas for only $399.95! (See details for details)

Circle 57 on reader service card
EVER SINCE WORD PROCESSING and spreadsheets started driving computer sales, developers have been searching for the next killer app. What is a killer app? Many people now use the term to mean simply a software hit. But in the Macintosh world the phrase killer app has meant something much more ambitious. It describes an innovative product or product class that redefines what computers can do and creates major new markets that fuel the engine of success.

In most respects, the Mac has thrived because it has inspired innovative applications. To ensure its continued success, the Mac must offer new capabilities that distinguish it from the hordes of Windows PCs. It’s not enough to offer competitive performance at a reasonable price. What the Mac needs is another killer app.

Of course, dreaming up the next killer app is anything but easy. Otherwise, everyone would have done it by now. Every developer in the personal computer business would love to cook up the product that creates the next major market windfall. They dream about it in their sleep. This explains the phantasmagoria of knowledge navigators, voice recognition, personal digital assistants, the information superhighway, and to some extent, multimedia.

I confess that I don’t know what the next killer app is any more than the quixotic marketers and developers who pursue those dreams do. My guess is that Apple doesn’t know either. But maybe Apple doesn’t have to. Maybe it just needs to figure out how to create the conditions from which the next killer app will arise. Perhaps we can figure out what those conditions are by looking for lessons in past successes and failures.

The First Killer Mac App

To a great extent the Mac’s success has been linked to desktop publishing—a genuine killer app because it created a whole new industry, going far beyond the mere replacement of typewriters, files, and balance sheets. It’s not that productivity software such as word processors, database managers, spreadsheets, and accounting programs weren’t important—to this day they represent the lion’s share of software use. It’s just that the Macintosh needed to be unique to give people a compelling reason to buy it instead of the already well entrenched PC platform. The introduction of page-layout programs and PostScript laser printers on the Mac platform revolutionized the publishing market and remade it in the Macintosh mold.

So why did desktop publishing first arise on the Macintosh? The graphics architecture that is the foundation of the Mac’s design made the Mac uniquely suited for manipulating text and imagery. To this day, the Macintosh is still superior to a great extent the Mac’s success has been linked to desktop publishing. Consequently, dreams of a new Macintosh killer app are fueled by the hope of discovering the killer app that redeems the Mac.

Wannabe Killer Apps

Have there been any other killer apps? Over the years, the marketing wizards at Apple and other companies have promoted new technology on the basis that it was "the next desktop publishing." You could tell what was supposed to be the next killer app because it was always preceded by the word desktop.

After desktop publishing came desktop presentations, heralded by the introduction of slide-layout packages such as Microsoft PowerPoint, which were accompanied by desktop film recorders. This candidate killer app was supposed to parallel the one-two software/hardware punch of page-layout software and PostScript laser printers. The movement to desktop presentation was smart because it leveraged technologies similar to those that caused desktop publishing to succeed.

But there were a couple of important differences that stopped desktop presentations from reaching killer status. Few people were willing to fuss with desktop film recorders (although LCD projectors have met with some success). Presentation packages are popular, but most of those who use them are presenters only part of the time. The lesson here is that a killer app must help a large group of people do the core functions of their jobs.

Multimeanings

Next on the list of wannabe killer apps has to be multimedia. The jury is still out on this one, but it’s fairly obvious that no killer app has emerged in the few years multimedia has been touted. Why? The main reason is that multimedia describes a set of intersecting technologies, but everyone talks about multimedia as if it were a single cohesive application—which is just confusing. I think the reason it is promoted as a single application is that...
everyone would love to think they’ve got a line on the next killer app.

Video production, multimedia presentations, multimedia training, and CD-ROM titles are often considered multimedia apps. Yet none have developed into a killer app. While you can certainly do some interesting things with video on a Mac, the system is not yet powerful enough to take the video-production market by storm. At any rate, video is a smaller market than print publishing.

Multimedia presentations constitute a legitimate market but one that’s still quite small. Multimedia training makes more sense as a potential killer app, but training as a whole remains undervalued by companies and organizations.

CD-ROM titles are an entirely different beast. As more compelling titles become available and as more CD-ROM drives are installed, CD-ROM publishing may become a successful business. But CD-ROM titles are a distribution medium covering eclectic interests—not a cohesive application. The lesson of the multimedia experience is not to mistake an enabling technology for an application.

The Basis of Innovation

What do these few lessons tell us? Apple may or may not be able to develop the next killer app on its own, but the company can do a lot to create the conditions that bring it to fruition. Apple needs to develop the most promising enabling technologies and incorporate them into the Mac platform. In a way it’s harder to do this now because Apple can’t reinvent the Mac from the ground up; however, by migrating to a RISC architecture and a fully object-oriented operating system, Apple is laying the groundwork for the most flexible personal computer possible. The real significance of the Power Mac will depend on what other enabling technologies Apple builds on top of it.

How should Apple choose which new technologies to add to the mix? It should go for those that support a range of activities central to the work of a large group of people. These technologies should go beyond whizzy new features like voice recognition and stereo sound, and help change the way a class of workers gets their job done. Along the way, Apple must remain clear about the distinction between technology and applications and should avoid marketing technology instead of solutions. Based on some recent talks I had with decision-makers at Apple, the company appears ready to focus on providing solutions to problems that key markets have. Apple must also listen more closely to its developers to get an understanding of what they need if they are going to satisfy their customers.

Assuming Apple creates the proper technological basis for the next killer app, the company must encourage developers to commit resources to the quest. Developers must perceive real opportunities and have exceptional support to justify committing resources at a time when they are operating under smaller margins and shorter development times. According to a number of developers, Apple has done a good job of providing technical guidance for building Power Mac applications. But it has not done such a good job of having all the tools ready. At this crucial time, Apple must do an extraordinary job of balancing what developers want and what the platform needs, to grow in a way that provides unique cachet. Whatever new capabilities Apple gives the Mac, they must be remarkable enough to capture the imaginations of new customers and revitalize the aspirations of existing Macintosh users.
Certain things should not be compromised

When the printed page is a reflection of your creativity, don't let the printer compromise your work. XANTÉ's Accel-a-Writer® 8100 will ensure the printed page is as good as the person behind it.

The Accel-a-Writer 8100 offers high-resolution plus NEW full-bleed capabilities on 11" x 17" documents using oversized paper.

Other paper handling benefits include two input trays, allowing you to print on different size pages without having to reload the printer. A third tray can be installed to allow for up to 850-sheet capacity.

XANTÉ combines resolution technology and ultra-fine toner to break the 600 dpi barrier and provide unmatched quality. With the Accel-a-Writer 8100, you can upgrade to 800 x 800, 960 x 960, and even 1200 x 1200 dpi.

The 8100 is fully PostScript™ Level 2 compatible and comes with 35 resident typefaces. Simultaneous Macintosh®/PC printing is simple with concurrently active LocalTalk®, parallel, and serial interfaces.

Optional EtherTalk is also available. The 8100 offers performance that will improve the quantity of your work as well as the quality. You may be surprised to find you won't be forced to compromise your budget either. At $3,995, it is the most aggressively priced printer in its class.

Don't compromise your work, Call XANTÉ directly to order your Accel-a-Writer 8100.

1-800-926-8839 Ext. 2111 Fax 205-476-9421

© 1995 XANTE Corporation. XANTE and Accel-a-Writer are registered trademarks of XANTE Corporation. Other brands and product names are trademarks or registered trademarks of their respective holders. XANTE Corporation, 2590 Enzinger Rd, Mobile, AL 36606, Post Office Box 1050, Mobile, AL 36651-0250 USA Tel. 205-476-8839

Circle 111 on reader service card
If they're out there drawing, you're not drawing them in. But our new Polaview™ 3000 LCD panel can help you make a few important improvements — graphically speaking.

16.7 million colors are hard to ignore

The Polaview 3000 LCD panel offers the latest in LCD projection panel technology with features certain to make people sit up and notice. Its 16.7 million colors make any chart or diagram come alive. Active matrix technology provides crisp, detailed images.

This much control can be riveting

The remote mouse is more than just point and click. It lets you point to and enlarge images, unmask data, invert type, and time sequences. Even in different languages. Keep your audience focused with new looks all the time.

Wake up to full multimedia presentations

With integrated stereo sound and video, virtually anything goes. The sound is so sophisticated it can even do the talking for you. The Polaview 3000 LCD Panel is totally compatible with PC, Macintosh and video sources. And with the Polaview 1800 and 1500 LCD panels, Polaroid has a solution for every need — and budget.

From the inventors of instant imaging

Now you can change your presentation anywhere — even minutes before you present — and still make it perfect. Polaroid has always understood how valuable your time is. Whether your image is on film or on screen, we're committed to making it shine.

Get a free Polaview 3000 demo disk!
Call 1-800-816-2611 ext. 951 today!

SEE US AT MACWORLD EXPO BOOTH #3100 BAYSIDE

Polaroid

Circle 119 on reader service card
Classic Blues

ADRIAN MELLO WAS RIGHT TO lament the disappearance of the original Mac box (State of the Mac, June 1994). Its passing is indeed a somber subject. However, when he calls for a new Classic, he asks all the right questions but fails to see the answer in front of him. The new Classic must (1) have a small footprint; (2) be fast; (3) have decent expandability; and (4) have a strong visual identity. Mello may not realize it, but he is talking about the PowerBook.

Joe Freeman via the Internet

NOT ONLY HAS APPLE REMOVED THE Classic, but the company is doing the one thing I never thought I'd see it do: confuse users with complex choices! Wasn't Apple supposed to be the easy-to-use company? How many Macintosh lines have been introduced up to this date? Let's see... there's the Lisa, Plus, SE, SE/30, at least seven II-series models, the Classic, Centris, PowerBook, Duo, Quadra, Performa, and now Power Mac. Even I start to get a little Apple-dizzy when we add in the Newton (also upgraded, to the MessagePad 110); the Mac TV (where did that come from?); and the AV systems. Can you imagine Macintosh users giving up on Apple and switching to Compaq or Dell because they are easier to deal with or offer simpler packages? I'll rue the day, but I see it coming.

Matt Leavitt
Derry, New Hampshire

FOUND ADRIAN MELLO'S VIEW ON Apple's revamping of the lost Macintosh Color Classic interesting. But as the owner of a pathetic few hundred dollars' worth of Apple stock, I'm not sure I really want to see the company risking its profit margin on a computer that would be cool but, by definition, limited.

Here's a different angle on the Classic, for die-hard Mac lovers: Apple could simply release the Classic case with the interior gutted and the monitor replaced with a handy little 9-inch fishbowl. Bundles would be available—the complete Macquarium could come with a certificate for free guppies redeemable at Pets-R-Us, or possibly include a packet of dried sea monkeys. Every Mac fan could have one on their desk—a perfect reminder that Apple has always been nothing if not original. And at, say, 50 bucks a pop, I'll bet sales would go swimmingly.

Nick Appleby via America Online

The Sound of Glass Breaking

R. MELLO MAY LOVE THE CLASSIC, but there are also those who still have a soft spot in their hearts for the Edsel. Some of us appreciate a Classic for what it is: a thing from the past, which is where it should remain.

Jeff Greenlee and Mark Jaress via America Online

was good in the areas it covered, but what about sounds? I make my living creating custom sound effects and music, and it annoys me to no end to see bulletin boards freely distributing zillions of illegally copied audio samples. Programmers' rights are protected, and visual artists' rights are protected, but sound and music seem to be considered common property by bulletin boards that would never allow copyrighted programs or art to be downloaded for free.

Doug Blackley via the Internet

We did mention audio in our article but chose not to cover it in depth because the issues, while similar in some ways, differ significantly from those related to images.—Ed.

Font Follies

I WAS INTERESTED TO READ DAVID C. Rakowski's letter in which he claims that although he released his fonts as freeware he retained the copyright (June 1994).

The legislative history of the Federal Copyright Law indicates that Congress deliberately declined to provide copyright protection for typefaces. Since then, the Copyright Office has refused to accept registration for typefaces, and the courts have upheld this decision.

Courtney Bailey
San Francisco, California

Copyright protection for digital typefaces is a complex subject. Briefly, U.S. courts have routinely interpreted typefaces to be industrial designs, and copyright law does not protect industrial design. However, some typefaces have been protected with design patents—among them ITC Stone, Adobe Garamond, and Adobe Minion.

But while its design isn't copyrightable, a digital typeface is a software program and can receive copyright protection as such. In other words, you can't take another vendor's font software and resell it.

MACWORLD September 1994 23
CORRECTIONS

The correct telephone number for New What Software, maker of Small Blue Planet (Reviews, July 1994), is 415/885-1689.

In July's State of the Mac ("Grading the Latest Mac"), the PowerBook 540c was incorrectly identified as the 580c.

The correct voice number for Interex is 316/524-4747 (MacBulletin, June 1994).

Since our July 1994 feature "PowerBooks: The Next Generation," Apple's Duo upgrade policy has changed. Apple will offer an upgrade to the Duo 280 for the Duo 250, and the Duo 270c can be upgraded to the Duo 280c. No upgrades are currently available for the Duo 210 and 230. In the future, Apple will offer a direct PowerPC upgrade for all Duos.

Also in the July PowerBook feature, the infographic "The Pull-Apart PowerBook" incorrectly implied that users could install or upgrade the keyboard, hard drive, RAM, CPU, modem, and SuperDrive of their 500-series PowerBook. According to new information from Apple, if you are not an Apple-authorized technician, performing these operations voids your warranty.

The correct phone numbers for Vision's Edge are 904/386-4573, 800/983-6337, and (fax) 904/386-2594 (New Products, August 1994).

The NuDesign Engineering Color Printer should have received an "acceptable" tech-support rating ("Color Printers for Every Budget," August 1994).

It as your own, or make unauthorized copies. As a result, Mr. Rakowski does have the right to retain whatever copyright protection is available to any software program he has created.—Ed.

DOS Card Review

I FOUND YOUR REVIEW OF THE DOS Compatible Card to be a bit foppish (Reviews, June 1994). The card was easy to install on my Centris 610, and it performed as promised. Printing to my LaserWriter is now effortless from either operating system, and I no longer have to spend countless hours fine-tuning my DOS machine to accept modems, mice, graphics cards, and printers.

Many Macintosh users need DOS/Windows compatibility so they can occasionally use some odd, proprietary programs. I think Apple should be commended, not lambasted, for a solid effort to keep us in the fold. The DOS Compatible Card may have a limited audience, but it's a sensible, cost-effective product that delivers.

G. D. Rothenberg
Richmond, Virginia

The DOS Compatible Card may have delivered, but Apple no longer delivers the DOS Compatible Card: the company discontinued the card early this summer.—Ed.

Future OS

I'TS INTERESTING TO NOTE THAT even though Apple now makes the personal computer with possibly the fastest processor, it doesn't have an operating system to match the CPU's capabilities ("Apple Tells Its Software Future," News, June 1994). In some ways, the situation is like the one that exists for PC-compatibles, in that most users are running DOS on the latest Intel processors.

If a true multitasking Macintosh Operating System will not be forthcoming until 1996, it may keep potential Mac converts from crossing the line. Once you've tasted a true multitasking OS, you notice the difference.

Peter Chant
Port Coquitlam, British Columbia, Canada

Purchasing Tip

WHEN IT BECAME NECESSARY TO replace my aging Mac, I sought prices on a new system from the many mail-order houses advertised in Macworld. The prices were all over the place—some were in line with the quote I received from a local dealer, but others were thousands of dollars less.

If this happens to you, ask a vendor promising an incredibly low price to fax a confirmation of the quote. (If you do not have a fax machine, it is worth a trip to a store where you can pay to receive a fax.) When I asked for faxed confirmation, the mail-order vendor apologized, said that the order taker had underquoted the system price, and quoted me a new price that made my local dealer's offer look very attractive.

J. W. P. Barnes
Macon, Georgia

Whether you make your purchases by mail or from a local dealer, insisting on a written quote helps eliminate the confusion that can occur when you buy something as complex as a complete computer system. With a quoted price in hand, both sides continue.
ENDLESS DRIVE.

Take a drive with Pinnacle's sporty new 3.5” 230 MB rewritable optical storage system. No roadblocks to slow you down because the capacities and applications are endless.

The Tahoe-230™ is the most versatile storage system available. It is as fast as most hard disk drives. And the Tahoe can be used as your primary drive, secondary drive, or for data backup. It's perfect for both desktop and notebook computing. To expand your data just add another disk.

Take it on the road with an optional travel case and battery pack. It gets great mileage due to its small size (8.16 x 4.84 x 1.45 in.) and light weight (1.8 lbs.).

All this in a small, compact storage system from Pinnacle that will take you wherever you need to go. The possibilities are endless. To order or for a local reseller call: 800.553.7070

Optical Drive 230MB Mac
$999.00
Travel Case & Battery Pack
$199.00
Optical Media
$69.00

Pinnacle Micro
International Tel. 714-727-3300 U.S. Fax 714-727-1913
Circle 115 on reader service card
can verify what has been ordered and how much it will cost.—Ed.

Battery Clarifications

IN THE "HOW LONG DO BATTERIES Last?" chart in your June article "PowerBook Power Management," when cycling is turned on it makes the battery wear down faster, and when the hard drive is set to never spin it has no effect on the battery. However, you recommend turning on processor cycling and letting the hard drive spin down. Which of these is correct? It seems that if the former were correct, then you wouldn't want to do the latter. Your help is greatly appreciated.

Frank Malinowski
via CompuServe

Several of the entries in the Processor Cycling column in the "How Long Do Batteries Last?" chart were accidentally reversed. All of the entries under the Optimum Conservation and Run-Down Battery Test headings should have read on in the Processor Cycling column, except for the processor cycling test, where we turned the cycling off (also, the title of that row should have read "with Processor Cycling off").

As for whether or not you should let your hard drive spin down, that depends on how often you access your disk, as we said in the text of the article. If you can spin down your hard drive and let it sit, your battery will last longer. If you are constantly firing up and shutting down your hard drive, the power drain required to bring the drive up to speed will offset any idle-time savings.—Ed.

Nomenclature

NOW THAT THE APPLE POWER Macs have arrived, I see a dilemma on the horizon. What will Apple name a PowerPC-based PowerBook? An Apple Power PowerBook? And if so, should an informative document on the subject be called a Power PowerBook book?

Bob Harshburger
Green River, Wyoming

Look for the answers to these and other questions in a future issue of Power Power Mac World.—Ed.

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 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 MORE,
THE MERRIER.

(THAT'S THE PHILOSOPHY BEHIND NEW FILEMAKER PRO SERVER.)

It may sound like a party, but the benefits are far more substantial. You see, FileMaker® Pro Server lets you and your entire workgroup do more, more quickly. (Come to think of it, not a bad thing to celebrate.)

FileMaker Pro Server is a high performance database engine, designed to dramatically accelerate multi-user file sharing over your network. In fact, its sophisticated client/server technology can speed database performance by up to 100 percent over FileMaker Pro 2.1, and increase multi-user file access from 25 to 100 users per file.

Connecting FileMaker Pro Server to your existing network is simple. It supports both Macintosh and Windows users. And while it's compatible with standard Mac systems, including Centris and Quadra, it's accelerated (native) for Apple's new Power Macintosh systems.

With its simple plug and play design, the Server can be run by just about anyone in your organization, not only network administrators or those with database experience.

In short, FileMaker Pro Server can help you get more out of your workgroup. Even as more people get into your workgroup. For the name and address of the dealer nearest you, call Claris Customer Assistance at 1-800-3CLARIS.

©1994 Claris Corporation. All rights reserved. Claris, FileMaker and the FileMaker design are registered trademarks, and Simply Powerful Software is a trademark of Claris Corporation. Apple, Macintosh, Macintosh Centris and Macintosh Quadra are registered trademarks, and Power Macintosh is a trademark of Apple Computer, used under license. Windows is a trademark of Microsoft Corporation.
The detail of EPSON's 4800 dpi, scanner really stands
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 LCX</th>
<th>Microtek II HR</th>
<th>Umax UC1260</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.
Out of chaos comes order.

Claris Organizer.
The first P.I.M. that's got it all together.

If you've tried to use your computer to get organized, you know that most personal information managers (PIMs) do one or two things well. But the things they do, aren't well integrated. Until now.

New Claris Organizer software is the first program to seamlessly integrate four PIM environments into a single easy-to-use intelligent application.

- Calendar — appointments and tasks displayed in customizable daily, weekly and monthly views.
- Contacts — a powerful database that handles all your contact information—easily sortable by name, zip code, company, etc.
- Tasks — manage all to-do items, including recurring tasks.
- Notes — the flexible way to write, categorize, search, and sort your notes and memos.

With its breakthrough intelligent assistance, all your calendar entries, notes, to-do lists, phone numbers and addresses can be automatically linked—putting everything at your fingertips, from anywhere in the program. Plus, a Smart Search feature finds what you're looking for just by typing phrases in plain English.

Combine its integration and intelligence with the ability to print in many formats, including DayRunner, Filofax and Avery labels, and you have the ultimate personal organizer for Macintosh computer users. At a compact 800K, it's perfect for all PowerBook or desktop Macintosh computers!

Want a PIM that's smart enough to really simplify your life? Order Claris Organizer. It'll bring order to the chaos, fast.

Simply powerful software!

*Try new Claris Organizer risk-free for 30 days. Price and money back guarantee offer good only in the U.S., from Claris, and is subject to change. Shipping and handling costs are additional. Price offer not good with any other discounts or promotions. Bestline prices and terms may vary. ©1999 Claris Corporation. All Rights Reserved. Claris, Claris Organizer, and Simply powerful software are trademarks of Claris Corporation. Macintosh and PowerBook are registered trademarks of Apple Computer, Inc. DayRunner, Filofax and Avery are trademarks of their respective manufacturers.

SEE US AT MACWORLD EXPO BOOTH #5462
DOS-Compatible Born Again?  Apple demonstrated a working prototype PC coprocessor card for the Power Macs at the PC Expo on July 27 but said it was not yet announcing a product. However, in November 1993 Apple unveiled a similar prototype that five months later shipped as the now-discontinued DOS Compatible Card for the Centris and Quadra 610. The latest prototype uses a 50MHz 486DX2 CPU, which is about 1.5 times as fast as the CPU in the DOS Compatible Card.

PowerPC Upgrades for Mac II Line  Apple recently gave DayStar Digital the exclusive right to include Apple's Power Mac ROM code on DayStar Power Mac upgrade boards for selected Mac II models. DayStar expects to make upgrades for the Mac Iici, Iiiv, Iilv, Iilx, Iiff, the Performa 600, and possibly the Iissi. The company hopes to ship by Macworld Expo in January. Prices were not set at press time. DayStar, 404/967-2077.

Macintosh PC Exchange 2.0 Ships  The latest version of Apple's Macintosh PC Exchange can open, save, move, copy, rename, and delete files in any DOS disk format. When saving a Mac file to a DOS disk, the new version gives the Mac file a name that's compatible with the limited file-naming capability of DOS. The $79 program will be distributed free with System 7.5. Current owners can upgrade for $35 through resellers and from Apple at 800/769-2775.

Graphics Contender  xRes, a paint and image-editing program from Fauve Software due in late summer, has most of Adobe Photoshop's editing tools and special effects plus Fractal Design Painter's natural-media tools. And because it represents images mathematically on layers, xRes lets you work quickly on very large, high-res files while using minimal memory. Layers and undos are unlimited. $799. 919/388-9933.

PCMCIA Drive for PowerBooks  Epson America has introduced a PCMCIA-based 170MB hard drive that will work in PowerBook 500-series notebooks equipped with Apple's optional PCMCIA adapter. The $629 drive-on-a-card requires no special drivers for Mac compatibility. 310/782-0770.

Ergonomic Radius Monitor  Radius is shipping its first 20-inch, Energy Star-compliant color monitor, the IntelliColor Display20e (ICD/20e). Supporting resolutions up to 1600 by 1200 pixels, the $2399 monitor can change bit depth or resolution on the fly. It includes a new version of the company's IntelliColor software that gives digital control of any on-screen aspect, according to Radius. The ICD/20e complies with Swedish MPR II guidelines for reduced magnetic-field emissions. 408/434-1010.

Now Utilities 5.0  Expected to ship in September for around $89, Now Software's major upgrade features two brand-new components: Now QuickFiler, a file manager and compressor with searching and synchronization; and Now FolderMenus, which pops up a hierarchical menu of a folder's or volume's contents when you click and hold on a desktop icon. Version 5.0 includes native Power Mac code and takes advantage of Apple's System 7.5—particularly the revamped Now Menus, which can create draggable custom menus in the menu bar. 503/274-2800.

ClarisDraw Ships  First announced about a year ago, ClarisDraw 1.0 ($399), a cross-platform application offering linked, intelligent drawing tools, is now shipping. MacDraw Pro users can upgrade for $89 (or $29 if they purchased MacDraw Pro after June 1, 1993). Users of MacDraw II or other competitive programs can switch to ClarisDraw for $99. Upgrade prices are good until at least November 30. 408/727-8227.
Apple's latest portable, the PowerBook 150, weighs about a pound less than previous all-in-one models but still uses a 68030 processor (see the benchmarks, "PowerBook 150: How Fast Is It?", on page 34).

Lighter Low-Cost PowerBook

Apple's latest and lowest-cost portable, the PowerBook 150, is lighter than its all-in-one predecessors and adds a larger screen, more expansion capability, and a passel of built-in software. The 150 replaces the current low-end PowerBook 145B. Unlike the PowerBook 300 series, the PowerBook 150 does not use a trackpad as a pointing device, instead sticking with the same trackball as earlier all-in-one PowerBooks.

The new PowerBook comes with considerable software installed on its hard drive, including System 7.1.X; ClarisWorks 2.1; and the PowerBook Mobility Bundle, which includes ARA, eWorld, the Control Strip and PowerBook Control Panel (both for power management), PC Exchange and DataViz's MacLink Plus Easy Open Translators for exchanging and translating files for DOS and Windows machines, File Assistant, Launcher, a HyperCard player, a calendar DA, and backup utility software. Luckily the only configuration of the PowerBook 150 comes with a 120MB hard drive (and 4MB of RAM, expandable to 40MB).

For the first time, the internal hard drive is an IDE (Integrated Device Electronics) drive, not a SCSI drive. IDE is one of several standards used on the DOS and Windows side, and drives using it tend to be less expensive. Apple is including a SCSI port on the 150, so users will still be able to attach their existing external SCSI peripherals.

Apple managed to drop about a pound from the weight of the previous all-in-one PowerBooks: the 150 tips the scales at about 5½ pounds. The company used a lighter, manual-insertion SuperDrive floppy drive; the improved screen is also lighter; and the designers employed the internal architecture of the Duo 230, which means there are generally fewer components.
and no need for the daughter-card used in previous all-in-one PowerBooks. To expand the memory of the 150, users will need the same kind of SIMM as for the Duo 230; otherwise, all accessories are the same as for the original all-in-one PowerBooks, including the NiCad batteries.

Apple expects internal fax modems to be available for the 150 from Global Village, PSI, and Supra. The PowerBook 150 has a serial port and built-in LocalTalk but does not include an ADB port (for an external keyboard or mouse), nor does it offer a video-out port for connecting to an external monitor. The 150's backlit, supersized, passive LCD screen measures 9½ inches diagonally and displays 480-by-640-dot resolution, or 16 gray at 640-by-480-dot.

The PowerBook 150 includes a 33MHz 68030, so it's not the fastest portable Apple offers (see the benchmarks, on page 34). But at an estimated street price of $1449 the 150 should attract a lot of attention from value-conscious buyers. At press time Apple said it expected to begin shipping the PowerBook 150 in mid-July.—T.M.

The Latest Color Lasers

**QMS and Xerox Offer Business Color Choices**

Who needs color? Just imagine life with monochrome monitors, even in today's business environment. The color revolution that happened on the screen is starting to happen at the printer—color is coming to a workgroup laser printer near you.

The QMS magicolor Laser Printer is a true 600-by-600-dpi color laser printer that sends out black-and-white pages at 8 ppm and color pages at 2 ppm; the printer handles up to legal size (8½-by-14-inch) paper or transparencies but can only print in color within the letter-size portion of a legal-size sheet. The magicolor has simultaneously active serial, Centronics, and LocalTalk ports (built-in), as well as a slot that accepts a multiprotocol Ethernet or Token Ring CrownNet interface card. The magicolor supports PostScript Level 2, PCL 5, and HPGL/2; and the printer comes with 65 resident typefaces, as well as a standard 80MB internal hard drive—a 120MB internal drive is available as an option.

QMS sells its color laser printer in two configurations: the 12MB version lists for $9999 and provides 600-by-600dpi monochrome resolution and 300-by-300-dpi color resolution; the 28MB version lists for $10,999 and provides 600-by-600-dpi resolution for both color and monochrome. Users can expand the magicolor's memory to a maximum of 64MB.

With its 4900 Color Laser Printer, Xerox has taken a slightly different approach. Xerox's entry prints at a maximum of 1200 (horizontal) by 300 (vertical) dpi, at 12 ppm in monochrome and 3 ppm in color. Like the magicolor, the Xerox 4900 has simultaneously active serial, Centronics, and LocalTalk interfaces; and the printer speaks PostScript Level 2, PCL 5, and HPGL/2. Ethernet cards are available for EtherTalk and NetWare, and a Token Ring card is also available for NetWare. The Xerox 4900 handles up to legal-size paper or transparencies and ships with 35 PostScript fonts, 13 Intellifonts, and 7 bit-mapped fonts resident. The printer comes with 12MB of RAM, upgradeable to 48MB. Users can also add a Media Server option, which enables the printer to print DOS-formatted PostScript and PCL files directly from an internal 3½-inch floppy disk drive. The Xerox 4900 includes Xerox's Printer Services application, which with a user can monitor and configure the printer. Among other functions, the app displays the status of consumables such as toner and maintenance items such as the print belt and toner waste box and, when multiple paper trays are installed, identifies which tray holds which media type. The Xerox 4900 Color Laser Printer is shipping now at a list price of $8495. QMS, 205/633-4300; Xerox, 800/275-9376.

—Cameron Crotty

**In Brief**

**T/Maker Acquired**

Saying it needed a strong partner, T/Maker Associates announced it would be bought by billion-dollar check-printing company Deluxe Corporation, which also has a greeting-card and gift-wrap division. The T/Maker principals are expected to remain at the company, which has changed its focus somewhat in recent years to concentrate on clip art (in its ClickArt line) and children's multimedia software on CD-ROM. The company no longer owns its longtime mainstay, the word-processing program WriteNow.

**68060 Delay**

DayStar's 68060-based accelerator boards, originally due to ship in May, have been delayed until September at the earliest. DayStar's 66MHz and 80MHz PowerPro PowerPC accelerator boards for several Quadra models are now shipping, about two months after originally planned. PowerPro boards for LC III-style Macs and for II-series Macs are under development, as previously announced; but DayStar has not committed to shipping boards for every model, citing various development and market concerns. 404/967-4077.

**SyQuest Cuts Cartridge Costs**

SyQuest has dropped prices for several of its removable hard disk cartridges for various SyQuest drives. The 88MB 5¼-inch removable cartridge's expected street price is down to $69 from about $88. The street price of SyQuest's 200MB 3½-inch cartridge was reduced to $79, versus a street price of about $90 previously. The street price of a 270MB 3½-inch cartridge fell to about $59 from a range of $70 to $75. SyQuest says it cut its cartridge prices to compete more effectively with magneto-optical drives. 800/245-2278.
News

could not use its high-end Silicon Graphics workstations for the entire project and turned to its group of Macintoshes to meet its deadline. The animation and special-effects company had previously bought Macs because it prefers them and because, at the time, Photoshop was not available for DOS or Windows systems. The sequences of the flying chip and three moving computer screens were produced using Electric Image software.—T.M.

Symantec Revisits Norton, SAM

When Neil Young said, "Rust never sleeps," he could have been talking about your Macintosh. To combat the entropy attacking your Mac, Symantec has released newly updated versions of both its Symantec AntiVirus for Macintosh (SAM) and its Norton Utilities for the Macintosh (NUM).

The company has tweaked nearly every piece of NUM 3.0, including the package's approach to repair and maintenance. FileSaver, which previously passively tracked files and volumes to improve your chances of recovery in case of a problem, now actively scans for file fragmentation and corruption.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Mac's speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

The latest Norton Disk Doctor is faster and scans more areas of a disk.

FileSaver reminds you when it's time to back up or defragment your drive, and it notifies you when it detects a file or volume problem developing that needs more intense attention. You can launch Norton Disk Doctor (NDD) directly from the FileSaver control panel, and the faster and more capable NDD can now scan for and repair bad blocks and examine more areas of the disk. Less critical, but certainly more convenient, NDD also has an improved Rebuild Desktop feature—you can now update a single icon without having to rebuild your entire desktop.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Macs' speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

The latest Norton Disk Doctor is faster and scans more areas of a disk.

FileSaver reminds you when it's time to back up or defragment your drive, and it notifies you when it detects a file or volume problem developing that needs more intense attention. You can launch Norton Disk Doctor (NDD) directly from the FileSaver control panel, and the faster and more capable NDD can now scan for and repair bad blocks and examine more areas of the disk. Less critical, but certainly more convenient, NDD also has an improved Rebuild Desktop feature—you can now update a single icon without having to rebuild your entire desktop.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Macs' speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Macs' speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Macs' speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Macs' speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Macs' speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.
Buying Macs by Mail

APPLE AUTHORIZES CATALOG SALES

For the first time in history, you can buy Macs by catalog from Apple-authorized dealers. So far, Technology Now and Elek-Tek in Illinois and Creative Computers' MacMall in Torrance, California, have all qualified under Apple's new catalog reseller program and have begun to advertise their wares at prices slightly below what you'd expect to pay on the showroom floor.

As part of the qualifying process, resellers had to prove that they could provide complete service and support facilities, but since this purchasing channel has Apple's official benison, long-distance purchasers also have the option of taking their new Mac to a local Apple dealer in case of trouble. Technology Now, 708/990-1560; Elek-Tek, 708/677-7660; Creative Computers' MacMall, 310/787-4500.  

—CAMERON CROTTY

600-dpi Printer Wars

HP AND APPLE UP THE HI-RES ANTE

The ongoing battle for the office market has moved to a new level: 600 dpi. Both Hewlett-Packard and Apple have weighed in with well-received entries, and now both GCC and QMS have announced 600-by-600-dpi networkable laser printers aimed at the office workgroup.

The GCC Elite 600 is a 10-ppm, edge-to-edge laser printer that handles paper up to A4 or legal size (8½ by 14 inches). The printer supports PostScript Level 2, PCL 5, and HPGL/2 across all of its simultaneously active ports (LocalTalk, RS-232 serial, and Centronics), automatically sensing the protocol of an incoming job. GCC ships 60 PostScript fonts and 15 PCL fonts with the Elite 600, as well as 4MB of RAM (expandable to 20MB), and the printer lists for $1479. If your workgroup lives on an Ethernet, the Elite 600et, which lists for $1869, comes with 6MB of RAM and an EtherTalk card configured to support both 10BaseT and thin Ethernet. The card is also available separately.

THE AMCOEX INDEX OF USED MAC PRICES

<table>
<thead>
<tr>
<th>Machine/RAM/Hard Drive</th>
<th>Average Sale Price</th>
<th>Monthly Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBook 100/4MB/20MB</td>
<td>$750</td>
<td>$0</td>
</tr>
<tr>
<td>PowerBook 140/4MB/40MB</td>
<td>$900</td>
<td>$50</td>
</tr>
<tr>
<td>PowerBook 180/4MB/80MB</td>
<td>$1700</td>
<td>$50</td>
</tr>
<tr>
<td>PowerBook Duo 230/4MB/80MB</td>
<td>$1100</td>
<td>$0</td>
</tr>
<tr>
<td>Mac Classic/2MB/40MB</td>
<td>$425</td>
<td>+$25</td>
</tr>
<tr>
<td>Mac SE/30/2MB/40MB</td>
<td>$600</td>
<td>$50</td>
</tr>
<tr>
<td>Mac LC II/4MB/40MB</td>
<td>$575</td>
<td>+$25</td>
</tr>
<tr>
<td>Mac II/2MB/40MB</td>
<td>$525</td>
<td>$50</td>
</tr>
<tr>
<td>Mac IIci/4MB/80MB</td>
<td>$900</td>
<td>$0</td>
</tr>
<tr>
<td>Mac IIcx/4MB/60MB</td>
<td>$1100</td>
<td>+$50</td>
</tr>
<tr>
<td>Centris 650/8MB/230MB</td>
<td>$1200</td>
<td>+$25</td>
</tr>
<tr>
<td>Quadra 900/8MB/160MB</td>
<td>$2100</td>
<td>-$175</td>
</tr>
</tbody>
</table>

Index provided by the American Computer Exchange of Atlanta, Georgia (800/786-0717). It reflects sales during the week of June 20. Configurations include keyboard and exclude monitor and display board for noncompact models.

In Brief

SoundEdit Update

Macromedia has replaced the popular SoundEdit Pro program with SoundEdit 16. The new version of this multitrack sound-editing software is QuickTime-compatible and can edit 16-bit sound files. The application can also read and write the .WAV and .MOV Windows sound formats. The SoundEdit 16 package is currently available for $379 from Macromedia. 415/252-2000.

Speeding Your Power Mac

KS Labs has begun shipping a CPU booster for the Power Mac 7100/66. The $165 Alacity accelerator product, which clips onto the 7100's clock crystal, makes the 7100 run at 80MHz. KS Labs has discontinued a similar speedup product for the Quadra 610 because the company found that it does not work in 30 percent of the Quadra 610s. (Not every unit of a particular Mac model can be accelerated; in such cases, the Mac is undamaged, according to the company, and KS Labs refunds the purchase price. The company says the average nonfunction rate for all its CPU boosters is 5 percent.) 614/374-5665.

230MB Optical Drive

LaserByte said it is preparing to ship a 3.5-inch, removable-cartridge magneto-optical drive. The LB3230 drive can fit 230MB of data on a single formatted cartridge. The drive also features an average access time of 36ms and an average sustained data-transfer rate of 1.2MB per second. The magneto-optical drive is backward-compatible to 128MB cartridges (for both reads and writes) and should be available from various distributors in August. LaserByte is currently charging $800 for sample units, but the list price of the final version of the finished drive was unavailable at press time. 408/734-9200.
arately for $329, and GCC expects to have a multiprotocol Ethernet card available this fall.

QMS’s latest addition to its Hammerhead line, the 1060 Print System, is also capable of delivering 600-by-600-dpi output at 10 ppm. The 1060 has simultaneously active LocalTalk, serial, and Centronics ports; supports PostScript Level 2, PCL 5, and HPGL/2; and automatically switches to the appropriate protocol. The 1060 also has two interface slots that users can fill with QMS’s Ethernet or Token Ring cards. QMS’s printer handles paper up to A4 or legal size, it ships with 8MB of RAM (expandable to 64MB) and 39 PostScript fonts, and it lists for $2699.

In related news, QMS has also announced the larger 1660 Print System, which can print full-bleed 11-by-17-inch pages at 1200 by 600 dpi. When printing letter-size documents, the printer can achieve 16 ppm. The 1660 features the same ports, slots, and protocols as the 1060; has 39 resident PostScript fonts; and ships with 12MB of RAM (expandable to 64MB). The suggested retail price is $4199. GCC Technologies, 617/275-5800; QMS, 205/633-4300.

—CAMERON CROTTY

**Joule Drives’ Portable Dock**

**POWER TO GO**

A

La Cie’s Joule Portable Dock lets users take Joule drives for a spin.

At Macworld Expo in August, La Cie will introduce its Joule Portable Dock, a lightweight connecting device for the company’s Joule Drive Modules. An owner of a La Cie Joule Module’s Storage System (see *News, Macworld*, August 1994) can take one of the Joule 2½-inch or 3½-inch Drive Modules on the road and use the Portable Dock to attach that module to a Macintosh. The Portable Dock provides power, SCSI, and termination to the drive, and will sell for $99 on its own, or, for example, bundled with a 230MB hard drive, for around the same price as competing hard drives, according to La Cie. The portable dock should ship in August. La Cie will also offer an optional battery pack for powering the selected Joule module. 503/920-9000.—T.M.

**BUGS & TURKEYS**

Version 1.0.1 of Connectix’s RAM-enhancement software, RAM Doubler, failed to fix a string of compatibility, speed, and network bugs in version 1.0. Along comes version 1.0.2, which, in addition to the fixes and optimizations, tries to prohibit shareware hacks like MaxRam that triple or quadruple physical RAM—Connectix says MaxRam can cause slowdowns due to increased hard disk swapping of compressed memory. The patch is available via online services or by calling Connectix at 800/950-5880.

Apple shipped its $129 Personal Diagnostics Program without one of the emergency disks—the one compatible with the Quadra 610, 650, 660AV, 800, and 840AV; the Centris 610, 650, and 660AV; the Mac TV; and the Workgroup Server 60 and 80. For the few who might own one of these models, Apple is selling the third disk for only $10.

Though released within a month of each other, Apple’s original QuickTake digital camera is incompatible with the Power Macintosh. The camera software won’t even run in emulation. At press time, Apple began shipping the QuickTake 100, a version for Power Macs and Windows machines. Owners of the original QuickTake can upgrade their software free by calling the Apple Order Center at 800/760-2775, ext. 7888.

*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*.

**RasterOps’ 21-inch Display**

**CLEARVUECOLOR 21**

If George Bush was excited about 1000 points of light, how would he feel about more than 2 million pixels? That’s how many dots you get at the maximum 1600-by-1280-pixel resolution of this 21-inch multitfrequency color monitor. The ClearVueColor features a 0.25mm dot pitch; vertical refresh rates up to 90Hz (77Hz at resolutions up to 1280 by 1024 pixels); and digital controls for image size, position, geometry, and color temperature. The monitor comes with 13 preset resolutions and has space for 8 user-definable modes. The ClearVueColor 21 is both Energy Star and MPR II compliant, and it lists for $2449. RasterOps, 408/562-4200.

—CAMERON CROTTY
THE STATE OF THE Art.
Here's what's going on in our head. Pencil sketch is scanned into Adobe Illustrator. Rainbow color effect is created with Linear Gradient. Scanned eye is colorized in Photoshop to simulate a sunglass effect. Grid of green & black in the other lens is altered with Twirl filter. Circles are added to the bottom of the letter "A". Pathfinder filter unites them. Letter is imported into Adobe Dimensions which adds perspective. Brush stroke is created with the Calligraphy tool and then painted with multi-color Gradient. The spreadsheet chart is converted into an Acrobat PDF file and imported. Light bulb glow is achieved with Shape Blending tool. Punk filter creates spikes on globe. Entire ad was created and spell checked using Adobe Illustrator 5.5.

Adobe is pleased to announce a mind blowing upgrade. The leading illustration and page design program for Macintosh now becomes a more powerful, all-encompassing creative resource. Adobe Illustrator 5.5 for Macintosh runs native on the new Power Macintosh, and it's loaded with features that add power and automate tasks once difficult or impossible in other drawing programs. New features include trapping and text handling tools like tabs, smart punctuation and a spell checker. And you can import, export and edit any document from any application using the Acrobat Portable Document Format (PDF). You also get a free CD-ROM with 220 Adobe Type 1 fonts, tips and techniques, clip art and more. This upgrade has it all. Now, with Adobe Illustrator 5.5, what the mind wants, the mind gets. Call 1-800-521-1976 for information and your nearest Adobe Authorized Reseller.

If you can dream it, you can do it.
Enough creative options to put you in a State of Rapture

Adobe Illustrator 5.5

Call 1-800-521-1976 today and upgrade to Adobe Illustrator 5.5 for only $99. (Or $149 if you have a version earlier than 5.0).

“Upgrade” doesn’t even start to say it. New text tools, trapping, and Adobe Acrobat give you unheard of value in a single box. It’s a no-brainer that’ll take your mind as far as it can go.

Version 5.5 comes bundled with Acrobat Exchange and Acrobat Distiller™. These breakthrough tools give you the freedom to create PDF files from any application, retaining all of the document’s original formatting, graphics and color. Import these, and you’ll be able to perform touch-up editing on a page-by-page basis. Adobe Illustrator 5.5 also includes the Deluxe CD-Rom Edition which contains QuickTime™ movies of tips and techniques, clip art, documentation, tech notes, and more. This upgrade also contains 220 Adobe Type 1 fonts to further expand your graphics options.
**Power Books May Face Delay**

APPLE CONSIDERS USING NEW 603 CHIP

Because the PowerPC 603 CPU's performance when running 680X0 programs in emulation is unacceptably slow, Apple has decided not to use the 603 for its next-generation PowerBooks, due in 1995, according to sources at Apple and other companies. Getting around the slow performance would have meant adding a large external cache, which would have increased power usage, heat emissions, and design costs; so Apple decided to drop the 603 completely. In response, Motorola, which has primary design responsibility for the 603, quickly developed a new version of the 603, dubbed the 603+, that includes a larger internal cache and will likely ship in a 100MHz configuration. Although the 603+ won't be as power-efficient as the original 603, Apple is counting on its power-management features and its high performance to compensate.

Preliminary tests at Apple show that the 603+'s performance in emulation is satisfactory. The problems with the 603 have delayed the development of the PowerPC PowerBooks and the PowerPC upgrade card for the PowerBook 500 series by up to several months, and their release is now expected to occur in the spring of 1995. (Apple's official ship date is the first half of 1995.) Motorola's price for the 603+ is the same as for the 603, so the final PowerBook costs should not be affected, an Apple source said.

Apple would not officially confirm these reports, although a spokeswoman did say Apple had not committed to using a particular PowerPC CPU for its PowerBook line. A year ago, the company had touted the 603 as its CPU of choice. Motorola would not comment directly to deny or confirm the 603+'s existence.

**Memory Compatibility**

In related news, Apple will not commit to the compatibility of the memory in the PowerBook 500 series with the forthcoming PowerPC upgrade card. Unlike the desktop Power Macs, whose motherboards run at half the PowerPC 601's rated speed and so don't need fast memory, the PowerPC PowerBooks' motherboards will run at the PowerPC 603's full speed. That may require faster memory than the PowerBook 500 series has.—GALEN GRUMAN

**Development Tool Shortage**

COMPILERS AVAILABLE FOR SOME LANGUAGES

The initial dearth of native Power Macintosh applications can be partly blamed on the shortage of finished Power Mac programming tools. Fortunately, PowerPC-savvy development tools are starting to ship.

Unstable early beta versions of Power Macintosh development tools in the dominant languages for commercial Macintosh development—C and C++—impeached progress on Power Mac native applications. Apple and Metrowerks shipped final versions of their Power Mac C and C++ programming tools only in mid-May, two months after the Power Macs shipped. Motorola, Symantec, and XVT plan to deliver Power Mac C and C++ compilers by October.

Developers whose products use Pascal, such as Claris's Filemaker Pro, are faced with a choice of rewriting their applications in C or C++ or waiting a couple more months for Power Mac Pascal tools. Apple has said that programmers working in Pascal, formerly Apple's language of choice, should learn C++. Symantec and Apple don't plan to offer Power Mac-capable Pascal tools; however, Metrowerks and Language Systems do plan to by late summer.

And Apple tells developers flat out not to use assembly, the language used to develop WriteNow and WordPerfect. Even so, England-based MicroAPL has released PortAsm, a 680X0-to-PowerPC translator to let developers salvage some 680X0 code.

Programmers emphasize that while they've gotten real work done with beta tools, the overhead created by dealing with unfinished products added to the already difficult process of writing for a new microprocessor. For example, that was one reason for the delay in introducing QuarkXPress 3.3 for Power Mac, according to Quark.

Apple (through APDA), 716/871-6555; Language Systems, 703/478-0181; Metrowerks, 514/747-5999; MicroAPL, 44(71)922-8866; Motorola, 512/345-1145; Symantec, 503/334-6054; XVT, 303/545-3106.—JIM FEELEY

**Glimpse of the Future**

FASTER MACS, PCI BUS, MAYBE IBM COMPATIBILITY

New Power Macs are likely to ship at the end of the year or in early 1995, but Apple will not yet detail product plans. However, the company has demonstrated a prototype Power Mac using a 120MHz PowerPC 601 CPU continues.

The PowerPC 604 will form the heart of powerful Power Macs due to be released next year.
and has stated its goal of increasing performance on a regular basis.

So should prospective Power Mac owners delay their purchases? In most cases, no. Apple does not expect to see the dramatic speed difference between current and next-generation Power Mac models that it saw between the Quadras and the first Power Macs. Even the more powerful PowerPC 604 CPU, to be used in some future Power Macs, won't offer the two-to-four-times performance increase over the first 601-based Power Macs that the first Power Macs offered over the 68040-based Quadras, according to Apple. Much of the speed boost between the Quadras and the Power Macs was due to the use of PowerPC-native software.

But if you're thinking of also investing in NuBus cards, you might want to wait. When Apple ships the first Power Macs with the PCI expansion bus in 1995, it's highly unlikely to also include NuBus slots. Earlier this year, vendors discussed rumors that Apple would have the two buses coexist as a transition aid, much as most PCs now use some combination of the four popular PC buses (ISA, EISA, VLB, and PCI), but Apple discounts those rumors.

Meanwhile, the technical teams from Apple and IBM seeking to make IBM's PowerPC Reference Platform specification accommodate Apple's system needs are making good progress, according to Gary Griffiths, director of business development at IBM Power Personal Systems. If the two companies agree on a common specification, the way would be paved for non-Apple, PowerPC-based computers to run Power Macintosh system software. But questions over business strategies—should Apple open up the Mac to other machines?—may delay or scuttle a final agreement. Apple says work is ongoing and that it expects no quick convergence of the specifications.—Galen Gruman

**Video Hits Roadblocks**

**R**adius, RasterOps, and SuperMac are struggling to make their 60-fields-per-second video-capture boards work with the Power Mac. The companies say that unexpectedly slow data-transfer rates through the Power Mac's NuBus, especially through the 7100's NuBus, force them to compress the video data more than on Quadras. The extra compression degrades video quality.

Radius says that VideoVision Studio will never work well in the 7100. The company plans to provide a $359 fix by August that will let its board work with the 8100 and the Power Macintosh Upgrade Card. The company says that the 7100 yields a NuBus data-transfer rate of 1.2MB per second, compared with over 6 MBs on Quadras. The 30-fps VideoVision without the 60-fps Studio option works fine in Power Macs now, according to Radius.

RasterOps says that while the 7100 presents more problems than the 6100 or the 8100, it plans to have MoviePak2 working on all three Power Mac platforms by late July. Upgrades are free.

SuperMac, whose DigitalFilm board captures 60-fps video at 320-by-240-pixel resolution (versus full-screen, 640-by-480-pixel resolution in the other boards), says its board will work fine in both the 7100 and the 8100 by late August. Upgrades will be $79.

Radius and SuperMac also acknowledge poor data transfer with the Power Macintosh Upgrade Card. A fix for this problem is uncertain. Each vendor's fix will require that new software, new ROMs, and in some cases, new chips be installed on the boards.

Vendors say that after the digitizing boards are upgraded to work with Power Macs, the Quadra 840AV will still provide the highest NuBus transfer rates, followed closely by the 8100 and then the Quadra 950, 800, and 650.

Other vendors of video hardware—Avid, Digital Translation, FAST Electronic, and ImMix—have yet to announce specific plans for Power Mac support. Avid says that it won't consider the Power Mac platform complete until Apple ships Power Macs with a full native operating system and PCI slots.

Radius, 408/434-1010; RasterOps, 801/785-3750; SuperMac, 408/541-6100.

—Jim Feeley

**Power Watch**

**D**ataquest, a market-research company, says it expects a short-term shortage of 16MB RAM chips by the end of this year and early in 1995, partly because of demand generated by the Power Macs. The high-power programs that Power Mac users will want benefit from large amounts of RAM, which will increase the demand for 16MB SIMMs. However, Dataquest says, the supply of such SIMMs is not increasing at the same rate. The Power Macs aren't alone in using such RAM—the popularity of Pentium PCs is another major force in raising demand.

• Absoft has released its $699 Fortran 77 Software Development Kit, which allows the development of native Power Mac software. Neuron Data expects to ship Power Mac versions of its software-development tools by fall of this year. Prices vary. Absoft, 313/853-0050; Neuron Data, 415/321-4488.

• Apple Computer has announced a PowerPC upgrade card for 404-based Macs using the LC III-style PDS (the Quadra 605, the Quadra 630 and its LC and Performa variants, the LC and Performa 470 series, and the LC and Performa 570 series). The card does not plug into the PDS, since the slot's limited data-transfer capacity would result in poor PowerPC performance; instead the card plugs directly into the Mac's 040 socket. Apple expects the card's price to be about $700, with availability later in the fall. 408/996-1010.

• Engineered Software has released PowerCADD 1.0, the native Power Mac version of the company's $795 PowerDraw CAD software. The upgrade for registered users of PowerDraw version 5 costs $79. Although the Power Mac and 680X0 Mac programs have different names, they are functionally the same. 910/299-4843.

• Virtus offers the $99 Virtus/VR 3-D design software. Upgrades cost $20. 919/467-9700.—Galen Gruman

**Virtus/VR**

Virtus/VR takes advantage of the Power Mac's fast processor to build 3-D objects.
FIRST WE BEAT THE COMPETITION.
THEN WE DECIDED TO BEAT OURSELVES.

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.

AGFA and the Agfa rhombus are registered trademarks. Photoshop is a trademark of Adobe Systems Incorporated, which may be registered in some jurisdictions.

Circle 158 on reader service card
When you carry a MessagePad 110, the new Newton communications assistant from Apple, you carry the power that comes from having information at your fingertips. Which means no matter where you go, you always have access to the facts you need, at the moment you need them.

With the Newton Connection Kit 2.0 for Macintosh, you can exchange information with your Macintosh, as well as with a range of popular Mac software, such as ACT! contact manager, Lotus 1-2-3, Excel and Microsoft Works.

So now you can do things like reference sales leads from Dynodex and work with data created in Microsoft Word, all from the palm of your hand. And if you're working on a PC running Windows, the Newton Connection Kit 2.0 for Windows will allow you to easily do the same with all your current Windows applications.

To find out more, call 800-365-3690, ext. 100, for the Newton dealer near you. Or check out an on-line service for the interactive demo found on the Newton forum. Either way, you'll find that instead of giving you more technology, Newton gives you something you can really use: help.

Newton. It's there when you need it.
New Products

THE LATEST MACINTOSH RELEASES

by Cameron Crotty

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY MACWORLD. UNLESS OTHERWISE SPECIFIED, THE MINIMUM REQUIREMENTS FOR OPERATION ARE A MAC PLUS WITH 1MB OF RAM, RUNNING SYSTEM 6. ALL INFORMATION AND PERFORMANCE CLAIMS ARE SUPPLIED BY THE PRODUCT VENDOR AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY MACWORLD. ALL PRICES ARE SUGGESTED RETAIL. PLEASE CALL VENDORS FOR INFORMATION ON AVAILABILITY.

HARDWARE

AAU-T and AAU-T These Ethernet transceivers connect to the AAU on-board Ethernet port optionally available on Quadras and Power Macs. The AAU-T connects to thin Ethernet networks (10Base2), while the AAU-T works with 10BaseT networks. Both adapters are equipped with power-on LEDs. Both the AAU-T and AAU-T also work with LaserWriter IIG and 630 laser printers. $89. MacNet, 408/954-8888, 800/486-2638; fax 408/434-9575.

Advantage 200 This SCsi-2 removable-cartridge SyQuest drive can read and write 51/2-inch cartridges in 44MB, 88MB, or 200MB format. The drive features a sustained data-transfer rate of 2 MBps and an average access time of 18ms. $699 for both internal (available only for Quadras and Power Macs) and external versions. MicroNet Technology, 714/453-6000; fax 714/453-6001.

Clipper As long as your Mac is concerned, the Clipper looks like a SCsi-2 hard drive, but this solid-state storage device uses 22-pin, 16MBit, 32MBit, and 64MBit DRAM modules to provide nearly instantaneous access to your data. The Clipper connects to a standard SCsi chain, uses its own power supply, and comes with an internal sealed lead-acid battery that maintains data for up to 12 hours after a power failure. 16MB internal $2615; external $2915; 612MB internal $2519, external $2949. Curtis, 612/631-9512; fax 612/631-9508.

DGR 1.3REM Roll up your sleeves and stuff 1.3GB of data onto each magneto-optical cartridge with this 5.25-inch drive. The 1.3REM features an average access time of 29ms and a sustained data-transfer rate of 2.26 MBps; it can also read from and write to 956MB and 650MB cartridges. A 1.3GB cartridge is included, as are a SCsi cable, a terminator, and Anubis' formatting software. $1299. DGR Technologies, 512/476-9685, 800/235-9748; fax 512/476-6399.

LC/Performa PDS Cache Card Get a performance boost for your LC III, LC520, or Performa 450, 466, 467, 550, or 560 with this 128KB SCsi-2 cache card. The card plugs into the PDS slot and comes with control-panel software to switch the cache on and off. $119. TechWorks, 512/794-8533, 800/688-7466; fax 512/794-8530.

M202 This print server has ports for up to four printers: two parallel and two serial. The M202 has both thin Ethernet and 10BaseT ports; supports TCP/IP, IPX, and EtherTalk simultaneously; is SNMP manageable; and can receive start-of-job, end-of-job, and PostScript-error messages via SMTP E-mail. The server can also be configured to send print jobs to the first available printer. $595. Microplex Systems, 604/444-4232, 800/666-7798; fax 604/444-4239.

MultiModemPCS-Mac data between two MultiModemPCs, you can pick up your handset and have a simultaneous voice conversation. This fax modem supports protocols up to and including V.32Vo (19.2-Kbps transmission speed), V.42bis (data compression), and MNP Class 5 (error correction). It ships with MultiTech's MultiExpressPCS-Mac software, which can handle fax and data transmissions, and additionally turns your Mac into a phone/voice-mail system, with speed-dialing; hold, mute, and unified in- and out-baskets for fax, data, and voice communications. $799. MultiTech Systems, 612/785-3500, 800/328-9717; fax 612/785-9874.

Qudra Cache Newer Technology calls this 128KB cache card invisible because it plugs into the CPU socket on the motherboard on your Centris or Quadra (except for the Quadra 605), rather than into the PDS or NuBus slot. To install the Quadra Cache, you remove the CPU from the motherboard (instructions and aching tool are included), place it in an identical socket on the cache card, and plug the card into the motherboard socket. The manufacturer claims speed improvements of 10 to 40 percent, depending on the application. $375. Newer Technology, 316/685-4904, 800/678-3726; fax 316/685-9398.

Spectro-Comm P192mx This pocket-size (4.5 inches by 3.5 inches by 1 inch) V.32Vo fax modem sends and receives data at up to 19.2 Kbps, and also supports most standard protocols, including V.32bis (14.4 Kbps), V.42bis (data compression), and MNP Class 5 (error correction). The fax hardware sends and receives faxes at up to 14.4 Kbps and supports the V.17 protocol. The P192mx can be used with a 9V battery or the included power adapter; it ships with a serial cable, carrying case, Faxset fax software, and MicroPhone LT comm software. $249. Bay Connection, 408/270-8070, 800/475-8329; fax 408/270-0698.

Tahoe-230 You wish that Tahoe were your destination, and not just the name of this 230MB, 3.5-inch, SCsi, removable-cartridge, magneto-optical drive. The Tahoe-230's average access time is 38ms, and it can sustain a data-transfer rate of 1.5 MBps. At 1.8 pounds, and 1.4 inches by 4.5 inches by 8 inches, it's portable, and an optional battery pack provides about 3.5 hours of typical use. The Tahoe-230 is also backward-compatible, automatically detecting and continues...
running 128MB media. $999; battery pack and travel case $199. Pinnacle Reading 128MB media. $999; battery fax 714/727-1913. your Mac via two NuBus cards and Video 19-inch rack-mountable box plugs into audio component) and digital and analog audio (XLR, AES/EBU, S/PDIF) inputs and outputs. All the hardware works together to provide 16-bit stereo audio; 3D-frame, 60-field full-motion video capture and playback, full genlock capability; and support for SMPTE time code for audio and video. Requires VideoVision Studio. Price not available at press time. Radius, 408/434-1010, 800/227-2795; fax 408/954-1927.

SOFTWARE

Amazing Animation
This multimedia tool is aimed at helping kids create animations quickly. At its simplest level, users can just choose a background and a character, move the character across the screen, and let the software create the animation. More advanced users can create custom backgrounds and characters with the included paint tools, record and add their own sounds, and add text and transition effects. Productions can be exported as QuickTime movies. 2MB min. memory;

Even though PowerBooks are portable, they aren’t always convenient. Batteries die, data gets lost or stolen, and controlling the cursor is, well, a curse.

Connectix PowerBook Utilities™ (CPU) solves these problems and makes your PowerBook a real pleasure to use.

CPU is the award-winning, number one selling PowerBook utility. And now CPU works with all the new '940 PowerBooks. Order CPU from your favorite dealer or call us at (800) 950-5880 toll-free today.

A PowerBook with CPU installed:
• Displays accurate battery status
• Allows keyboard shortcuts for menus and dialogs
• Protects your files
• Instantly sleeps and wakes
• Saves your LCD screen when inactive
• Keeps the cursor visible
• And has over a dozen other enhancements.

SEE US AT MACWORLD EXPO BOOTH #1618 BAYSIDE

Circle 191 on reader service card
AND THE ODDS ARE YOU'LL LOSE YOUR DATA, TOO.

In the last 12 months alone, half the respondents in a recent MacUser subscriber survey had lost data. It happened to them. And you can bet it's going to happen to you. Fortunately, you can avoid the inevitable with Retrospect from Dantz.

THE NUMBER ONE BACKUP SOFTWARE FOR THE MACINTOSH. We're not talking about some after-the-fact recovery utility that sends you digging through the trash and sifting through the scraps. But rather, full-blown, 100% seamless restoration. Something you'll definitely want when the data really hits the fan. With automatic backups, point-and-click operation, unparalleled performance, total support of every type of storage device, and ridiculously simplified network operation.

RETROSPECT HAS SWEPT THE TOP INDUSTRY AWARDS. From the MacWeek Diamond Award to the coveted MacUser Editor's Award. So whether it's for a single user, or an entire network, Retrospect will keep you covered. And at a price you can afford—less than $200 for individuals, a bit more for networks. To learn how Retrospect can help you, visit your local dealer. Or call Dantz at 1-510-253-3020 to receive a free copy of our white paper: Backup—Personal Computing Insurance.

What have you got to lose?

Circle 26 on reader service card

SEE US AT MACWORLD EXPO BOOTH #5646
import, and the utility can search for file names that contain a given text string. Requires QuarkXPress. $95. North Atlantic Publishing Systems, 508/250-8080; fax 508/250-8179.

Health Care Images

This package offers over 150 medical symbols and images contained in a True- Type font. Images include human anatomy, physician's instruments, hospital-department icons, ECG waves, handicap symbols, and international health-care symbols. A PostScript Type 1 version of the font is also included. $89.95. The Communications Shop, 716/473-1650, 800/733-1650; fax 716/473-5201.

The Internet Membership Kit

You've read about it, you've heard about it, and now you want a piece of the Internet. The Internet Membership Kit comes with Eudora E-mail software, as well as TurboGopher, Fetch, and Stuffit Expander, for finding, retrieving, and decompressing files. Users also get two books: Ventana's Internet Tour Guide and Osborne/McGraw-Hill's internet Yellow Pages. The Kit also includes an offer for a one-month free membership on CIRNet (a commercial Internet service provider), plus six free hours of connect time. 4MB min. memory; requires System 7, 9600-bps modem, Internet account with SLIP or PPP connection. $69.95. Ventana Press, 919/942-0220, 800/743-5369; fax 919/942-1140.

Kid Keys

This software helps kids get an early start on learning the computer keyboard and the alphabet. Consisting of three activities—Magic Keyboard, Dragon Tunes, and Monster Rescue—the package reinforces hand and key positions with music, sound effects, and animation. Children start with Magic Keyboard, which displays animations and letters in response to key presses. Dragon Tunes associates musical tones with letters on the keyboard. In Monster Rescue, kids must correctly type words that appear on the screen to rescue the monsters. 2MB min. memory; requires Mac Classic. $39.95. Davidson & Associates, 310/793-0600, 800/945-7677; fax 310/793-0601.

MacToPic Plus

If you have to connect to a host computer running Unix, Pick, or Vms/krue vers, you might need this software that emulates ADDS Viewpoint, Wyse 50, DEC VT101, and McDonnell Douglass Prism terminals, with full function-key support. This latest version of MacToPic Plus supports the Comm Toolbox color pictures, and QuickTime movies. Users can select host menu items with a mouse, remotely control data transfers, and switch between 80-column and 132-column modes. 2MB min. memory. $295. Carnation Software, 206/333-4288; fax 206/333-4902.

Professor Office

Learning how to use a new program can be as fun and easy as getting a tooth pulled, but this instructional software for Word 5.1 and Excel 4 is intended to help new users climb the learning curve, and it also provides a ready reference for experienced Mac jockeys. Professor Office combines lessons, practice exercises, and quizzes to teach skills as basic as creating a new document and setting preferences, and as advanced as analyzing spreadsheet information. $49.95. Individual Software, 510/734-6767; fax 510/734-8337.

Star Trek Screen Posters

Is that a Klingon warship dead ahead, or just one of the scenes from this collection of 35 full-screen images? This package contains scenes from the Star Trek movies, pictures of starships and starbases, shots of Star Trek characters, screens of trivia, and images of promotional movie posters. With the included After Dark engine, you can install the images as desktop art or use them as a slide-show screen saver. 2MB min. memory; requires color. $32.25. Berkeley Systems, 510/543-5535, 800/344-5541; fax 510/540-5115.

Virex Administrator

Do you count on your network users to scan for viruses? With this software, network administrators can remotely scan for viruses and repair any damage, either on command or on a schedule. They can also install and update Virex on individual computers or globally across the network. Virex Administrator maintains an audit trail of scans, updates, detections, and repairs. 2MB min. memory; requires System 7 on administrator's machine. $1695. Trak-It Solutions, 408/737-9454; fax 408/737-9456.

Health Care Images

The power to explode, shatter and atomize!

Strata Studio Pro is the most comprehensive 3-D program available on the Macintosh. Studio Pro fully integrates advanced modeling tools, award-winning rendering technology and a sophisticated Animation System putting it in a class by itself.

With Strata Studio Pro you have professional power for your designs and animations.

Unleash it today!

For more information call 1-800-Strata3d (800-787-3283)
YOUR MAC WILL LOVE
COMPUSERVE, TOO.

Let CompuServe make your life more exciting, with more to do, try, learn, and be. It’s just a mailbox away. For more information about CompuServe, just mail this card, or call 1 800 848-8199.

Name

Company Name

Address

City, State

Zip

(____) ____________________________ __
Day Phone

(____) ____________________________ __
Evening Phone

Mac World/Sept.
BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 407 COLUMBUS, OHIO

POSTAGE PAID BY ADDRESSEE

CompuServe®
NEW MEMBER DEPARTMENT Mac World/Sept.
PO BOX 20961
COLUMBUS OH 43220-9988
WHY JOHN NAGY'S MAC LOVES COMPUSERVE.

Helpful advice.

Stock updates.

Hourly weather updates.

Consumer Reports online.

A friendly interface.

Shopping.

Gardening Forum.

Airline reservations.

Over 20 Mac forums.

Virus updates.

Science Fiction and Fantasy Forum.

Downloadable programs.

Desktop publishing assistance.

It's because CompuServe makes John's life so much more exciting.

John talks with friends all over the world about everything from gardening to how to connect his printer. He meets far more, and far more interesting, people than he's ever met before. He shops for clothes, tries software demos, and checks the weather where his sister lives. He even learns new and better ways to use his Mac in CompuServe's Mac forums.

All this excitement makes John happy, and keeps John's Mac busy. Which is why you should contact CompuServe too, at 1-800-848-8199 (614 529-1349 for international inquiries). Because, as we all know, a busy Mac is a happy Mac.

CompuServe
The information service you won't outgrow.
An Intelligent Offer That Doesn't Take A Genius To Figure Out*

We put our heads together and devised an incredible offer on our Power Utilities bundle that adds up to the best value in Mac utility software. You'll get the newest MasterJuggler 1.90 ($69.95 if purchased separately) and the renowned DiskExpress II ($89.95 if purchased separately).

**MasterJuggler** "One of the best productivity enhancers." Macworld/4/94

The complete font manager, MasterJuggler allows you to group fonts together in named sets and work with just the fonts you need at any given time. No need to restart your Mac or all of your applications!

**DiskExpress II** "Best all-around optimizer." Macworld/3/94

Patented technology in DiskExpress II keeps your hard disks running at their absolute fastest. No floppy boot disk is required! Set it for automatic or manual optimization. Includes disk error detection and more.

**Five Free Bonus Utilities**

The Power Utilities bundle also includes utilities not available anywhere else. You'll get DiskCheck, ScreenEclipse, DiskFlash, MenuExtend plus MultiDisk!

All this adds up to an intelligent offer that doesn't take a genius to figure out.

**Special Price of $29.95 x 2 Payments**

For a limited time you can get the entire Power Utilities bundle for two payments of $29.95! When you order with a credit card we'll charge the first payment and rush you a copy of Power Utilities. The second payment will not be charged until 30 days after the first payment date.

**Value Guarantee - Love it or the Second Payment is Free**

If you don't agree that Power Utilities is worth more than the price in this special offer, just notify us before the second payment due date and the second payment is free!**

*$3.00 shipping and handling added to the first payment. Texas residents add 7.25% sales tax to each payment.*

**Our date is proof on your return.

Call to order or for details

800-ALSOFT

Circle 98 on reader service card
Corel Professional Photos is the world’s largest photo CD-ROM collection, with hundreds of categories available, and new ones released every month!

No CD-ROM drive? No problem!
Just give the disc to your service bureau or photographic processor and have the photos inserted into your designs.

For extra savings, volume sets are also available. See our free color catalog for details.

CALL TODAY!
1-800-772-6735
Ext. 109

Corel Professional Photos is the world’s largest photo CD-ROM collection, with hundreds of categories available, and new ones released every month!

No CD-ROM drive? No problem!
Just give the disc to your service bureau or photographic processor and have the photos inserted into your designs.

For extra savings, volume sets are also available. See our free color catalog for details.

CALL TODAY!
1-800-772-6735
Ext. 109
New Products

SlimPack
Keep your PowerBook or Duo living indicator and ships with Slim battery features a running for eight to nine hours. The (sold separately). Compact and inexpensive, these speakers are magnetically shielded technology, 213/728-7874, and breathing for hours on end, the 2w amplifier is powered by temporarily fastened to a host computer with the included connectors, or more permanently with a mounting kit (sold separately). SlimPack for PowerBook $169.95; for Duo $299.95; mounting kit $19.95. Battery Technology, 213/728-7874, 800/982-8284; fax 213/728-7996.

Bitchin' Mac Programs
BitPack

ClassWorks Companion
You may not want to write a doctoral thesis about ClassWorks, but if you need to learn its ins and outs quickly, this book could be for you. Author Barrie Sosinsky explains all the features of the program, from the word processor to the data base and communications tools, with an emphasis on getting a beginning user up and running. The book includes shortcuts to effective graphics and hints on combining different types of elements in a single document. 281 pages. $14.95. Hayden Books, 317/591-3500, 800/428-5331; fax 317/591-3500.

Designing NetWare Directory Services
NetWare is coming to the Macintosh—in fact, for some it’s already here. This book, written by Gamal Herbon, is a reference for network administrators and designers on installing and maintaining NetWare 4.x networks. Through discussions and examples, the book helps the reader lay a solid foundation for efficient directories on either a small LAN or a large enterprise network. 320 pages. $29.95. M&T Books, 212/886-9255, 800/488-5233; fax 212/807-6664.

Fundamental Photoshop
In this introduction and guidebook to the magic of image editing, authors Adele Droblas-Greenberg and Seth Greenberg cover both the Macintosh and Windows versions of Adobe Photoshop. Readers will learn how to digitize images, create color separations, blend images together, and other Photoshop fundamentals. The authors also teach how to take advantage of Photoshop’s unique tools, and how to create custom brushes, colors, and patterns. A tutorial on color theory and professional color-correcting and retouching techniques is included. 608 pages. $27.95. Osborne/McGraw-Hill, 415/549-6600, 800/227-0900; fax 415/549-6603.

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 94017. Macworld reserves the right to edit all product announcements.

Power Tools for the Power Presenter
One stop shop for all major brands

SALES+LEASES+RENTALS

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 Fed-X or UPS.

Call for CATALOG 1800 726 3599

Panelight

momentum call 808 263 0088 fax 808 263 0099

Circle 1 on reader service card

Circle 8 on reader service card
Introducing a printer for those who have ideas bigger than this page.

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

$9,995*

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.
Offer good in the United States and Canada only. All trademarks are property of their holders. ©1994 WordPerfect Corporation. All rights reserved.
Click the button. It’s so simple. Click. It’s the easiest way to get things done. Which is why new WordPerfect® 3.0 for the Mac® puts all the things you want from your interface in your face.

Giving you more buttons to click than any other word processor. So features are easy to find. And use. Want to change your text formatting? Click. Apply a style? Click. Create a table? Click. Then you can bring up a different bar with all the table functions you want. Borders, editing—even math functions—it’s all right there. Click. Our customizable button bars put your favorite tools right there, too. Like spell checking. Grammar checking. Our integrated drawing program. Whatever you want. There’s even buttons for common tasks like bulleted indents. So you’ll seldom have to do anything. Besides click. (And type, duh. This is a word processor.) But you can do other cool stuff, too, like run QuickTime." Or WordPerfect native on the Power Macintosh®. So visit your local reseller or call us at (800) 526-7820 for our $99* competitive upgrade. If the number was nine buttons shorter, it’d be as easy as our interface. Click.
Adobe Illustrator 5.5

Draw Program

**PROS:** Flexible tab ruler; capable of opening and editing Acrobat PDF files; new object-by-object trapping capability; improved printing of gradations.

**CONS:** Badly implemented rows-and-columns filter; noticeably slower than FreeHand.

**COMPANY:** Adobe Systems (415/961-4100).

**LIST PRICE:** $595.

ADOBE AND ALDUS MAY BE in the midst of tying the connubial knot, but Illustrator and FreeHand—the companies’ respective top draw programs—continue to duke it out. Illustrator version 5.5 includes improved text-formatting functions, new trapping filters, and support for Adobe Acrobat’s PDF (Portable Document Format). The program is also native Power Mac.

Deep into Text Territory

Illustrator 5.5 still lacks FreeHand’s clever page-setup functions, but formatting and text-editing have been enhanced. Take tabs, for example. Although FreeHand 4.0’s support for tabs is comprehensive—including a unique wrapping tab stop that accommodates multiple lines of type per entry—the feature is marred by clumsy implementation. Every text block gets a large tab rule, and the placement of the ruler is fixed. By contrast, Illustrator’s tab ruler is a free-floating palette that you can hide or move at will. To make alignment easier, Illustrator extends a vertical line from a tab stop as you move it. You can also snap tab stops to ruler increments and move multiple tab stops at the same time. And you can create free-form lists by wrapping tabbed text around paths.

You can divide a text block into regular rows and columns. As in FreeHand, you select a text block and specify the number of rows and columns, the height and width of the gutters between them, and the order in which the text flows (to the right or down). But you can’t insert hairline rules between rows or columns, as in FreeHand, nor can you create rows and columns inside nonrectangular text blocks. Try the latter and Illustrator changes the shape of your text, even combining two linked text blocks into one. Another irritant is the Preview option, which displays the watch cursor—whether the preview is updating or not.

You can also divide a standard rectangle into rows and columns to create a custom grid. But this feature was less satisfactory than FreeHand’s regular grid. Changing one value in the Rows & Columns dialog box causes at least one other value to change in kind. For example, if you enlarge the height of the rows in the grid, Illustrator reduces the height of the gutters to compensate. This is OK for text, but it’s not OK for grids. Even if you do the math and figure out exactly how different values will work together, a bug forces row values to inexplicably change when you adjust column values; a value may change even if you merely enter the abbreviation pt. All in all, the filter is more hassle than it’s worth.

In addition to searching and replacing words, version 5.5 lets you search and replace uses of fonts. For example, if a document includes Helvetica Black but you don’t have that font installed, you can replace one or more instances of the font with Helvetica Bold. But this filter took a full half-minute—running on a Power Mac 7100—to provide access to the 200 fonts in my system.
You can automatically upgrade punctuation in your document. Besides inserting curly quotes, Illustrator 5.5 replaces triple hyphens with em dashes (doubles, with en dashes), and double spaces after periods with single spaces. Illustrator can replace strings of characters with single ligature and fraction characters included separately in Adobe Expert Collection fonts. Illustrator 5.5 also includes filters that check the spelling in your document and change the case of selected text.

Illustrator Looks Outward

Illustrator still wouldn't know a TIFF image if it came with a resumed and pedigree, but the program now imports PICT objects, such as Canvas drawings and Microsoft Excel charts. This enhancement pales, however, next to Illustrator 5.5's support for Acrobat PDF files. The Illustrator 5.5 package bundles both Acrobat Distiller and the PDF Writer driver, both of which can convert a document to a PDF file. If all printer fonts and images are available during PDF conversion, Illustrator is able to edit the text and graphic objects in the file.

Does it work? The process isn't foolproof, but it works surprisingly well. After printing a five-page Aldus PageMaker document to disk, I converted it to a PDF file using Distiller and opened it inside Illustrator 5.5. A dialog box let me browse the pages in the document, view thumbnail previews, and select and open a page. Illustrator treats every page as a separate document. I could access objects inside an EPS illustration that I had created in Illustrator 3.0 and imported into PageMaker. However, rather than interpreting text in continuous blocks, Illustrator treated each line of type as independent and even broke some lines into multiple objects. These breaks seemed to occur at points where I had kerned the text. This made editing tricky, but not a single letter was lost.

Printing and Pace

Illustrator 5.5 makes a respectable attempt at automated trapping. (FreeHand 3.0 lets you assign spreads to all objects uniformly, but that was dropped from version 4.0.) A Pathfinder filter allows you to select an object set against a different-color background, specify the thickness of the trap, and even vary the proportions of the trap according to height and width. Illustrator then generates a new composite path filled with a mix of the colors from the background and foreground objects. However, you can't apply the filter to gradations, strokes, or placed images.

Illustrator's other printing improvements are equally practical. If you've had problems printing gradations to older PostScript Level 1 devices, you can select an option that describes gradations as object blends, much like those you get when saving a document to the Illustrator 3.0 format. This can dramatically slow the printing speed, but it beats buying a new printer. Illustrator 5.5 also provides new filters that let you control the overprinting of black ink, generate reports listing the fonts and imported images in a document, and change the halftone settings for an illustration. But you can't change the halftone settings for a single object as you can in FreeHand.

Predictably, Illustrator 5.5 runs two to three times as fast on a Power Mac as its predecessor does on a 680X0 machine. Documents with lots of text take a long time to redraw because of Illustrator's reliance on Adobe Type Manager. ATM 3.8, a native Power Mac version, will display text three to five times as fast.

Illustrator 5.5 performed slower than FreeHand in all but one Macworld Lab test; in one test, version 5.5 running on a Power Mac was slower than Illustrator 5.0 running on a Centris 650. Part of Illustrator's slowness was a function of our test files. Version 5.5 calculates bounding boxes more accurately than its predecessor, thereby preventing exported EPS files from clipping off thick strokes and mitered corners, but this takes lots more time. Since the majority of the objects in our drawing test file were stroked, Illustrator devoted a huge percentage of its redraw time to calculating bounding boxes, even in the artwork mode. If you rely mostly on unstroked objects, your illustrations will redraw more quickly.

But even taking into account the slight speed disappointments, Illustrator 5.5 is a bargain. For only $99 to registered 5.0 users—that's less than the $129 upgrade fee for the Power Mac version of FreeHand, which includes no new features—the Illustrator 5.5 package includes more than 200 tile patterns, 220 fonts, and the Acrobat Distiller and Exchange utilities. I for one wouldn't hesitate to upgrade.—DEKE MCCLELLAND

### Power Mac Versions of Illustrator and FreeHand

#### SCREEN REDRAW

<table>
<thead>
<tr>
<th></th>
<th>Drawing</th>
<th>Layout</th>
</tr>
</thead>
<tbody>
<tr>
<td>FreeHand 4.0 (native)</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>FreeHand 4.0 (680X0)</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>Illustrator 5.5 (native)</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Illustrator 5.5 (680X0)</td>
<td>36</td>
<td>8</td>
</tr>
<tr>
<td>Illustrator 5.0 (680X0)</td>
<td>37</td>
<td>54</td>
</tr>
</tbody>
</table>

#### ARTWORK/KEYLINE TASKS

<table>
<thead>
<tr>
<th></th>
<th>Drawing</th>
<th>Layout</th>
</tr>
</thead>
<tbody>
<tr>
<td>FreeHand 4.0 (native)</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>FreeHand 4.0 (680X0)</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>Illustrator 5.5 (native)</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Illustrator 5.5 (680X0)</td>
<td>30</td>
<td>79</td>
</tr>
<tr>
<td>Illustrator 5.0 (680X0)</td>
<td>40</td>
<td>112</td>
</tr>
</tbody>
</table>

#### PREVIEW TASKS

<table>
<thead>
<tr>
<th></th>
<th>Drawing</th>
<th>Layout</th>
</tr>
</thead>
<tbody>
<tr>
<td>FreeHand 4.0 (native)</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>FreeHand 4.0 (680X0)</td>
<td>36</td>
<td>56</td>
</tr>
<tr>
<td>Illustrator 5.5 (native)</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>Illustrator 5.5 (680X0)</td>
<td>56</td>
<td>29</td>
</tr>
<tr>
<td>Illustrator 5.0 (680X0)</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Illustrator 5.0 (680X0)</td>
<td>79</td>
<td>79</td>
</tr>
</tbody>
</table>

### Behind Our Tests

We tested how FreeHand and Illustrator handled two different kinds of documents. The first was a color drawing filled with gradations, object blends, tile patterns, masks, text on a curve, and complicated paths. The second document was a page layout with linked text blocks, display type, and a placed color EPS (300dpi) image. We tested on a Centris 660 with 16MB of memory in 8-bit color mode and on a Power Macintosh 7100/66 with 24MB of memory in 8-bit color mode.—Macworld Lab testing supervised by Lauren Black
UNTIL RECENTLY, THE HEWLETT-PACKARD DeskWriter C was the only choice among low-cost color printers for most Macintosh users. The Apple Color StyleWriter Pro not only prints faster than the DeskWriter, the Pro has better-looking printouts, and it has some good features that are missing from the DeskWriter 560C.

The Apple Color StyleWriter Pro uses the same engine as the Canon BJC-B20, a printer that received rave reviews from many PC magazines. It has a maximum print speed of 2 pages per minute and a print resolution of 360 dpi in best mode (180 dpi in draft mode). The paper tray supports up to 100 sheets of paper, 20 sheets of transparency film, glossy or coated paper, or 15 envelopes; and supports a print size of up to A4, an international format.

One of the printer’s best features is how it handles the ink. The ink comes in individual cartridges for each color, and they are extremely easy to replace. This approach has a distinct advantage over Hewlett-Packard’s one-cartridge-three-color approach.

Let’s say you use up all of the magenta ink first. With the Apple Color StyleWriter Pro, you need to replace only the magenta cartridge (around $9). The HP DeskWriter 560C, on the other hand, requires that you replace the whole cartridge (over $30) even if you have plenty of cyan and yellow ink left. Also, since the StyleWriter Pro’s ink cartridges are transparent, you can estimate how many more pages you can print. The DeskWriter gives no indication you are running out of ink.

Like most Apple Color imaging products, the Apple Color StyleWriter Pro comes with ColorSync, a color-matching extension that helps the output colors closely match the colors you see on the monitor. But for most purposes, Macworld Lab has discovered that color matching is unnecessary.

Like the black-and-white StyleWriter, the StyleWriter Pro can be shared on a network through a host machine. ColorShare allows users on the network to access the printer through the CPU. The printer is hooked up to. Since the CPU does the processing, the host machine may encounter a slight performance degradation. I tired printing to a Color StyleWriter that was shared through a Power Macintosh 7100/66, and I noticed no performance hit on the 7100. When an IIc was the host, I noticed occasional pauses on the IIci.

The Hewlett-Packard 560C supports a direct LocalTalk connection, which is a lot more convenient than the Apple Color StyleWriter Pro’s approach. On the other hand, the Color StyleWriter Pro can be shared on an EtherTalk network through a host machine, while the DeskWriter 560C requires a network router.

To determine the quality of the printouts, we assembled a panel of 12 Macworld editors and graphic designers to compare the output of the Color StyleWriter Pro to that of the DeskWriter 560C. The Color StyleWriter Pro scored a little bit better than the DeskWriter 560C in almost all of the categories except text. The Color StyleWriter Pro output is more vivid, more saturated, and sharper than the DeskWriter’s. I noticed some banding on the Color StyleWriter Pro for documents printed with the normal quality and faster halftoning options selected. When a better halftoning method was selected, the banding problem disappeared.

The Color StyleWriter Pro didn’t compare quite as well in the text output. Due to a higher resolution (600 by 300 dpi) for text, the Hewlett-Packard DeskWriter 560C definitely printed sharper characters. However, ink from the DeskWriter tends to splatter around the text. The Apple Color StyleWriter Pro uses fast-drying ink that is less prone to splattering. And speaking of text, the Color StyleWriter Pro ships with 64 fonts, while the 560C ships with 35.

I also noticed that the Color StyleWriter Pro’s printouts don’t wrinkle as much as the DeskWriter 560C’s, again because of the faster-drying ink. The transparencies that the Color StyleWriter Pro creates are less prone to fingerprints, and the ink of the transparencies is harder to scratch off than that of the DeskWriter 560C.

The Color StyleWriter Pro is not only a better printer than its predecessor, but it also holds the edge against its arch rival, the Hewlett-Packard DeskWriter 560C. No longer is an Apple color ink-jet a ho-hum printer in the color printer field; the new Apple Color StyleWriter Pro now represents one of the best values in the inexpensive color-printer market.—MARK HURLOW

---

**Color Printer**

**PROS:** Fast, sharp, clean output. **CONS:**
Network connection affects host machine; text not as sharp as DeskWriter 560C’s.

**COMPANY:** Apple Computer (408/996-1010).
**COMPANY’S ESTIMATED PRICE:** $629.

---

**How Fast Is the Apple Color StyleWriter Pro?**

<table>
<thead>
<tr>
<th>Print Speed (in seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PostScript Graphic</strong></td>
</tr>
<tr>
<td>MacDraw Pro document</td>
</tr>
<tr>
<td>containing more than 840</td>
</tr>
<tr>
<td>color objects, most of</td>
</tr>
<tr>
<td>them gradient-filled.</td>
</tr>
<tr>
<td><strong>Object-Oriented</strong></td>
</tr>
<tr>
<td>Graphical Design</td>
</tr>
<tr>
<td>Print speed for a complex</td>
</tr>
<tr>
<td>MacDraw Pro document</td>
</tr>
<tr>
<td>containing more than 840</td>
</tr>
<tr>
<td>color objects, most of</td>
</tr>
<tr>
<td>them gradient-filled.</td>
</tr>
<tr>
<td><strong>Photoshop RGB</strong></td>
</tr>
<tr>
<td>Using Plug-in</td>
</tr>
<tr>
<td>Print speed for a 7MB,</td>
</tr>
<tr>
<td>200-dpi, RGB Photoshop</td>
</tr>
<tr>
<td>file using the printer’s</td>
</tr>
<tr>
<td>driver.</td>
</tr>
<tr>
<td><strong>Page-Layout Document</strong></td>
</tr>
<tr>
<td>Print speed for a 4-page</td>
</tr>
<tr>
<td>PageMaker newsletter</td>
</tr>
<tr>
<td>with several fonts, a</td>
</tr>
<tr>
<td>PostScript graphic, a PCT</td>
</tr>
<tr>
<td>file, and a color TIFF</td>
</tr>
<tr>
<td>file.</td>
</tr>
<tr>
<td><strong>Presentation-Graphic</strong></td>
</tr>
<tr>
<td>Transparency</td>
</tr>
<tr>
<td>Print speed for a PowerP</td>
</tr>
<tr>
<td>Point transparency with</td>
</tr>
<tr>
<td>gradient background and</td>
</tr>
<tr>
<td>color TrueType text.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Printer</th>
<th>PostScript Graphic</th>
<th>Object-Oriented Graphical Design</th>
<th>Photoshop RGB Using Plug-in</th>
<th>Page-Layout Document</th>
<th>Presentation-Graphic Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Color StyleWriter Pro (normal*)</td>
<td>402</td>
<td>667</td>
<td>227</td>
<td>832</td>
<td>523</td>
</tr>
<tr>
<td>HP DeskWriter 560C (normal)</td>
<td>425</td>
<td>441</td>
<td>540</td>
<td>811</td>
<td>1128</td>
</tr>
<tr>
<td>Apple Color StyleWriter Pro (best**)</td>
<td>499</td>
<td>736</td>
<td>328</td>
<td>1014</td>
<td>436</td>
</tr>
<tr>
<td>Canon BJC-820***</td>
<td>618</td>
<td>1199</td>
<td>882</td>
<td>1419</td>
<td>371</td>
</tr>
<tr>
<td>HP DeskWriter 560C (best**)</td>
<td>763</td>
<td>547</td>
<td>828</td>
<td>1419</td>
<td>1075</td>
</tr>
</tbody>
</table>

*Normal mode uses a pattern dither. **Best mode uses a scatter dither. ***Only one mode available.
IntelliDraw 2.0

PROS: “Smart” tools; versatile feature set; approachable environment. CONS: Lacks a pen tool; unconventional Bézier curves.


IntelliDraw gets its name from its “smart” tools that automate drawing functions. However, IntelliDraw also flows text over linked columns, giving it basic page-layout capability. It creates multipage documents from editable master pages, produces animated effects, and incorporates QuickTime support, making it a highly competent presentation tool as well.

Foremost among IntelliDraw’s innovative tools are the Symmetrigon and Connectigon. The Symmetrigon produces perfectly symmetrical objects by establishing an axis and mirroring the shape being drawn. The Connectigon builds elastic objects that attach to the control handles of standard objects and automatically reshape themselves when the standard objects are edited or moved.

IntelliDraw also has connectors that can lock objects to each other at specific distances and angles, or stretch to retain the connection when objects are moved.

IntelliDraw includes a shape-blending function that connects individual shapes into flowing forms. For example, several airfoil shapes could produce a representation of an aircraft wing.

With IntelliDraw 2.0 you can also produce polymorphic shape blends. However, polymorphic blends are not just static combinations. IntelliDraw 2.0 can meld multiple shapes over a sequence of user-defined steps to produce an editable composite that retains all the steps of its transformation. A slider control attached to the blended shape itself lets you step through the stages of morphing. And fills applied to the original objects are also blended in sequence for chameleon-like effects. When combined with IntelliDraw’s animation function, polymorphic blending can produce complex sequences, such as transforming a flower from bud to blossom.

IntelliDraw 2.0 offers new warping and perspective effects that, for example, easily let you reshape an object’s duplicate into a distorted shadow. However, apply the shadow’s fill before you distort the object. After warping, a fill affects only the bounding area around the shape, not the shape itself. IntelliDraw 2.0 can handle simple drafting chores. You can distribute a group of objects along a path defined by another object. Or you can attach a series of duplicate objects to another object. For example, on an illustration of a machine part, you could quickly position screw holes along a circle. And IntelliDraw 2.0 provides associative dimensioning tools that recalculate themselves when the dimensioned object is edited and remain attached when the object is moved.

IntelliDraw 2.0 still relies on its polygonal tool to produce Béziers, and they still behave differently than in other illustration programs. However, IntelliDraw’s Béziers are easy to create and manipulate. And the program now lets you split and rejoin curved segments, making its Béziers more appealing to graphic artists.

General text handling has been improved with better controls for kerning and for justifying character and word spacing. A spelling checker and hyphenation dictionary have been added as well. Also, IntelliDraw 2.0 can place text along a curve. Text is applied as an object group along the selected path and remains editable after placement.

IntelliDraw 2.0 also introduces IDraw templates, a nicely implemented rendition of object libraries. IDraw templates can be anything from page masters for presentation documents to clip art objects. You can open as many libraries as memory permits, each with its own drag-and-drop, multipleumbnail window, and save user-created objects to new IDraw template libraries.

IntelliDraw is not perfect. It still lacks a pen tool for graphic artists, and curved objects with offline control points don’t mesh properly with Connectigon shapes. But such criticisms are relatively minor.

IntelliDraw 2.0 works well, does a great job of automating drawing tasks, and is straightforward in character. Despite its breadth of features, the program always feels approachable. All in all, IntelliDraw 2.0 is a wonderful general-purpose graphics package.

—CARLOS DOMINGO MARTINEZ

MACWORLD September 1994 59
Now isn’t it time you got the big box of crayons?

There comes a time in your life when you just have to stop and say, I want all the colors and I want them now. If you have reached that point, congratulations: You’re ready for the new Tektronix® Phaser® 300 color printer. Prepare to be amazed. At a glance, you’ll see that the color is amazingly crisp, rich and detailed. And because we know you don’t like sitting around watching paint dry, we’ve made the Phaser 300 fast. Now you can spit out up to an 11”x17” full bleed image on nearly any kind of paper in two minutes flat. On top of all this, the Phaser 300 gives you PANTONE® approved color matching, true Adobe® PostScript® Level 2 and connects to any Mac, PC or workstation. Color me flexible.

For a free Phaser 300 print sample or the name of your nearest Tektronix dealer, call 800/835-6100, Department 33C. For faxed information, call 503/682-7450, and ask for document #5002. You’ll be amazed at what the big box of crayons can do. Of course, the Phaser 300 may not come with its own built-in sharpener, but hey, with color like this, you can forget about things getting dull.

Phaser is a trademark of Tektronix, Inc. PostScript is a trademark of Adobe Systems, Inc. All other marks are trademarks or registered trademarks of their respective companies.
Macromedia Director 4.0

Multimedia/Animation Program

**PROS:** More logical interface; improved documentation; immediate compilation of code; cross-platform compatibility; new run-time production option; better memory management.

**CONS:** Less recognizable thumbnail previews; expensive.

**COMPANY:** Macromedia

**LIST PRICE:** $1195

Macromedia Director has long been one of the most powerful applications for creating multimedia productions. Its wide array of authoring tools let you create navigation buttons, introduce sounds in the middle of frames, provide full-blown interactivity, and so on. But this power comes at a price. Not only do you have to fork over a sizable chunk of cash—its cost nearly doubled between 1.0 and 3.1—but Director has been one of the Mac’s most daunting programs to learn. Version 4.0 represents a significant change for the better. The price of the program remains unchanged—hey, at least it didn’t go up again—but the interface has been revised significantly.

A Kinder, Gentler Director

Work in Director still revolves around the Score window, an unfriendly but functional matrix of frames and channels that looks like a spreadsheet, complete with numeric values. Each cell represents the contents of a frame at a specific point in time. The number inside the cell is the address of a transition effect, sound, graphic, or other element inside the frame. Rather than bagging this solution—once you come to terms with it, it is quite efficient—in Director 4.0, the window makes more sense. New options let you send elements backward and forward, and change the colors of cells to distinguish them. You can also drag the contents of selected cells and drop them into new cells. Other options available in previous versions of Director are now more clearly labeled, obvious in purpose (the script editor button, for example, now looks like a button instead of an option box), and better documented.

The Cast window, which stores elements that you use in your production, has seen even more improvement than the Score window. The old, completely nonstandard navigation controls have been replaced by a conventional scroll bar and two arrow icons for jumping from one available cast member to the next. Also, rather than labeling cast members according to a base-8 system of letters and numbers, Director 4.0 assigns each cast member a standard base-10 number and allows you to assign a text label of your own. In previous versions, you could drag a cast member and drop it into the Stage (the representation of the active frame in the production). Now you can drop an element directly into the Score window, allowing you to place the element inside any frame or channel.

All is not perfect in the new interface, however. For one thing, Director 4.0 enlarges the previews but abandons dithering. As a result, the previews are not satisfactorily recognizable. In the Stage, there’s no provision for selecting elements in front of or behind elements that are already selected. And the Paint window needs to be either significantly enlarged or relegated to a separate module so users can throw it away and use Adobe Photoshop. The Paint window provides only the most basic collection of tools, and it doesn’t even let you edit 256-color images when your monitor is set to 16-bit color or higher.

New Ways to Speak the Lingo

In Director 4.0, scripts are now automatically placed in the Cast window, making them easier to access and edit. However, when you edit a script in the Cast window, you change all occurrences of that script. This is a change from Director 3.1, which created a revised copy of the edited script. It’s ultimately a change for the better—allowing you to make global changes to many portions of a production at once—but experienced users will need to be careful.

Director 4.0 now compiles Lingo scripts immediately after you write them, and it automatically checks for accurate syntax; you no longer have to replay the production to make sure the code flies. Automatic compilation also dramatically increases the speed at which Lingo scripts are processed. Math operations, for example, play as much as four times faster.

Among Lingo’s new functions is the ability to play one Director production inside another. This process, although not straightforward, lets you create production modules that you can switch in and out, allowing you to update a kiosk or other large-scale production without replacing any files. Director 4.0 ships with an excellent example of a production that plays ten other Director productions, so you can examine how the process works.

Director and the Real World

Director productions created on the Mac will reputedly be ready to run on Microsoft Windows as soon as a Windows version of Director 4.0 ships, which should happen in the fall. In the meantime, Director 4.0 provides the Save and Compact command, which optimizes a production for playback on CD-ROM; and the Create Projector command, which creates a run-time version of the production. Besides the fact that the old Player utility is no longer needed, the beauty of projector files is that users can’t open and manipulate them within Director or any other program.

A few of the program’s enhancements are geared toward very large productions. Director 4.0 can accommodate a whopping 32,000 cast members, up from the previous limit of 512, and up to 48 channels in a production, twice as many as previously. And most important, a single production file can be larger than 16MB. You can also speed up performance by specifying how Director purges cast members from memory.

Director 4.0 is an admirable upgrade, one that increases the power of the program and improves the interface as well. The program remains far from easy to use, and its cost is sufficiently high to ward off casual users. But multimedia professionals and longtime Director enthusiasts will continue to find it the best multimedia production package around.

—Deke McClelland

MACWORLD September 1994 61
HERE'S WHY GETTING IN CONTROL BEATS JUST GETTING ORGANIZED.

No other calendar program compares to getting the all new IN CONTROL. That's because IN CONTROL 3.0 is no ordinary calendar. No way!

It combines the ease of the flexible, multi-column Action Outliner™ with bigtime database power. It simply helps you plan smarter. And only IN CONTROL works with FileMaker® Pro. (Look it up!)

If you're just keeping track of your time, check out this chart. Right now. In Control 3.0 - the calendar to plan on!

Exclusive! Full Integration With FileMaker Pro and Other Contact Managers

Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>IN CONTROL</th>
<th>DATEBOOK® PRO</th>
<th>NOW UP-TO-DATE™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-featured calendar</td>
<td>YES</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multi-column Action Outliner</td>
<td>YES</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>FileMaker® Pro lookup</td>
<td>YES</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Lookup contacts from Touchbase® Pro, Now Contact™ and Dynodex™</td>
<td>YES</td>
<td>Only Touchbase Pro</td>
<td>Only Now Contact</td>
</tr>
<tr>
<td>Unlimited number of outline columns</td>
<td>YES</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

No wonder IN CONTROL was cited in MacWEEK as the "best single-user calendar on the market now!"

Full-Featured Daily, Weekly, and Monthly Calendars

Automatic carryforward of unfinished tasks
Banners highlight multi-day events
Automatically log-in recurring events

The choice is yours. Use just an ordinary calendar or get yourself IN CONTROL. Call today 1-800-925-5615.

Special Competitive Upgrade Price

$65!

Regular Price: $89.95* Includes Shipping

For information on site licensing and volume discounts, call 1-800-925-5616 or (617) 776-1110. To upgrade, call 1-800-784-7388, ext. 301

©1994 Attain Corporation.
All products are trademarks or registered trademarks of their respective holders.

©1994 Attain Corporation.
All products are trademarks or registered trademarks of their respective holders.
The latest versions of DateBook Pro and TouchBase Pro are easier to use and have many new features. More important, Aldus has improved the linking of data between the two programs, making the combination a potent PIM.

Under System 7, TouchBase and DateBook are dynamically linked; if you change information about a TouchBase contact that is linked to a DateBook calendar item, the contact information in DateBook reflects the change. As before, you can create a calendar event from TouchBase or a contact entry from DateBook, but now you can link items by simply dragging them from one program's windows to the other's.

As shipped, both programs are multiuser, so you can share your contact and schedule information over a network. The new version can also operate as a single-user program, which is speedier and takes up less space.

**DateBook Pro 4.0**

Aldus has refined many of DateBook Pro's features. You can now edit the icons that you place in the Month or Quarter views. There are dozens of icons for almost every occasion, from hearts for Valentine's Day to the skull and crossbones I use to indicate deadlines. Time bars, which indicate appointments graphically on an hourly grid, now include Summary text so you can identify an appointment without clicking on it. To-Do's have an In Progress choice in addition to the previous Pending and Completed selections. You can now set the font and size of banner text, and you can choose to have an event skip to the next business day.

In the previous version of DateBook, there were two user-configurable pop-up menus at the bottom of the item-entry screen—one called Groups, the other, Categories. You could assign a calendar item to one Group (for example, Business) and another calendar item to one Category (say, Meeting). The new version consolidates Groups and Categories into one pop-up menu called Keywords.

Version 4.0 lets you attach documents from other programs to calendar items, and you can launch the attached documents from within DateBook Pro, thereby allowing you to organize documents from different programs related to a single project.

A real time-saver, the new Custom Items feature allows you to set up templates for any memo, to-do, or event that you do regularly. You define the item's attributes, then name and save it as a new Custom Item, which then appears in the Custom Items menu. You can then enter a new item using that template. The Custom Item template could be an Event with a Summary field containing *Meet with Accountant*, set as a High Priority, and with the Keywords *Business* and *Meeting* linked to your accountant's TouchBase record, and your expense spreadsheet as an attached document. To set up the meeting, you simply click on the day in the calendar, choose the template, and fill in the time fields.

Another big feature added to DateBook Pro is Projects, a collection of calendar items grouped into folders within DateBook. The new Project view shows each project as a folder, with a summary line showing the percentage of the project completed and a triangular tab next to the folder. You can set up Project templates using Items, with preset intervals between items.

I found an annoying bug when I converted my old DateBook Pro calendar: the program did not always correctly convert the previous version's Groups and Categories information into multiple Keywords. Some, but not all, of my old entries were assigned incorrect Keywords, and others had their Keyword information set to None. The program also froze on two occasions when I had several applications open and was attempting to launch an attached document, but this did not occur consistently. Finally, speed of integration between the two programs is fine on a 68030- or 68040-based Mac, but users of older Macs may find it too slow.

**TouchBase Pro 4.0**

TouchBase Pro now has separate windows for a list: view and a detail view. There are now fields provided for two addresses (home and work) per contact, and you can choose a Preferred Listing by either name or company. The list view has alphabetical tabs that make it easy to display any part of the list. And contact information can be individually formatted according to a country's telephone or mailing requirements.

The contact information has been consolidated into one scrollable list with several sections, each of which can be collapsed or expanded by clicking on the triangular bar. There is a Fleder; a General section containing the name, the company, and three phone numbers; Addresses; Custom Fields, with up to 16 configurable fields, including check-box, date, and number fields; Notes, which can hold up to 16K of time- and date-stamped notes; Calendar Items, which list the links from a contact to DateBook Pro; and Documents, a listing of the contacts' attached documents.

With their improved linking capabilities, these two programs compare favorably with all-in-one PIMs such as Attain's In Control and FIT Software's Full Contact. TouchBase Pro and DateBook Pro are c...

The Under $1400 Printer, Redefined.

When we set out to design the ideal 600 dpi printer, we asked thousands of users what they wanted most. And the result is the TI microLaser Pro 600. As you see from the chart, not only do we give you more, we charge you less. And if blazing speed for heavy graphics printing is required, check out our 40MHz PowerStep® upgrade. It's a great way to protect your investment as your processing needs become more complex. We're so confident you'll like the TI microLaser Pro 600, we'll give you our 30-day satisfaction guarantee.* For more information or a dealer near you, call 1-800-TI-TEXAS (1-800-848-3927).

<table>
<thead>
<tr>
<th>TI microLaser Pro 600</th>
<th>HP LaserJet® 4MP</th>
</tr>
</thead>
<tbody>
<tr>
<td>True 600 dpi</td>
<td>Yes</td>
</tr>
<tr>
<td>Speed/Processor</td>
<td>8ppm/RISC</td>
</tr>
<tr>
<td>Emulations</td>
<td>PCL5/Adobe® PostScript 2</td>
</tr>
<tr>
<td>40MHz Processor Upgrade</td>
<td>Optional</td>
</tr>
<tr>
<td>Compatibility</td>
<td>MacDOS</td>
</tr>
<tr>
<td>Toner Cart. Life</td>
<td>15K pages*</td>
</tr>
<tr>
<td>Paper Trays</td>
<td>250 pages</td>
</tr>
<tr>
<td>List Price</td>
<td>$1599*</td>
</tr>
<tr>
<td></td>
<td>$1729</td>
</tr>
</tbody>
</table>

Specifications in chart are based on information as of 5/94. *Offer applies if returned in good condition. **Estimated street price is under 15,000. Dealer prices may vary. "At all stores, microLaser, PowerStep and "Extending Your Reach" are trademarks of Texas Instruments. "PostScript" is a trademark of Adobe Systems, Inc. Windows is a trademark of Microsoft Corporation. Mac is a registered trademark of Apple Computer, Inc. LaserJet and PCL are registered trademarks of Hewlett-Packard, Inc. © 1984 TI.
SAVE ALMOST 50% off the cover price

12 Issues for $24!
When you subscribe today

☐ Send me 1 year (12 monthly issues) of Macworld for $24. Save 20% off the basic subscription rate. Please bill me later.

☐ SAVE EVEN MORE! 2 years (24 monthly issues) for $39.97. Please bill me later.

Basic subscription price is $30 for 12 issues. The annual cover price is $3.95 per issue. For Mexican and Canadian subscriptions, please add $18 per year for shipping; $70 for all other foreign countries.

Name ____________________________
Company __________________________
Address __________________________
City/State/Zip _______________________

Macworld

FreeHand
Illustrator

Expand Your RAM Space with System 7, Page 110

Top Video-Editing Tools

$1820 Power Mac

Macworld feature: How to Boost Productivity, Page 18

For Mexican and Canadian subscriptions, please add $18 per year for shipping; $70 for all other foreign countries.
LONGTIME PERSUASION FANS SHOULD be forgiven for wondering if their favorite program was getting any attention from the folks at Aldus. In the two-and-a-half-year hiatus since Persuasion 2.1 appeared, older competitors like Microsoft's PowerPoint have gained ground, and new programs like Gold Disk's Astound—with its emphasis on live presentations and special effects—have entered the scene. In an effort to regain the lead, Aldus has released Persuasion 3.0, a major upgrade that offers users plenty of new features to cheer about, but not without a few disappointments.

The Price of Progress

If you’re thinking about trading up, you may need more than the $150 upgrade fee. A complete installation consumes about 30MB of disk space, increased from 8.5MB. RAM requirements have also ballooned, with an allocation of at least 2.5MB for Persuasion alone. You’ll need even more memory if you want to add tables and charts to your presentations, since those functions are now handled by separate applications, Aldus Chart and Aldus Table. It’s practically impossible to run all three applications at the same time on an 8MB Mac.

Ironically, Aldus has chosen Microsoft’s Object Linking and Embedding (OLE) extensions to let you plant charts and tables in your presentations. To create a graph, for example, you select Persuasion’s chart tool and then click wherever you want the chart to appear on the slide. Aldus Chart launches automatically, giving you access to a surprisingly comprehensive array of charting options, including the familiar pie, bar, line, and scatterplot graph formats. Aldus Chart also gives you extensive interactive control over graphic elements like pie rotation, segmentation, and thickness, although support for shadowed text is notably absent. Aldus Table is less impressive, but it’s a big improvement over Persuasion 2.1’s table tools.

Unfortunately, all this functionality comes at a cost. In addition to the extra memory demands, linking objects into presentations can be frustratingly slow. On my Quadra 650, for example, it took almost ten seconds to transfer from Persuasion to Chart, even with both applications already loaded. On the plus side, though, Aldus’s choice of OLE technology means that you can easily embed documents from other OLE-compliant applications like Microsoft Word and Excel into your presentations.

Familiar Territory

People who are already accustomed to Persuasion will find it easy to work with Persuasion 3.0, even without reading the well-written manual. (Persuasion also includes a helpful function that lets you search for topics by keyword. Coverage tends to be scattered, though, forcing you to do a lot of navigating to cover a subject adequately.) Aldus provides 90 days of free support beginning with the first call; my questions were answered promptly and courteously by the tech-support staff.

A welcome change in Persuasion 3.0 is the use of floating palettes to replace the cumbersome hierarchical menus that plagued earlier versions (see “Tools Galore”). As much as I like Persuasion’s new interface, though, I’d like to see Aldus add a customizable tool bar and a befeater set of drawing functions (a Bezier-curve tool would be a good addition, for example). Persuasion could also benefit from user-definable keyboard shortcuts.

Persuasion’s new model for handling colors can be a bit confusing. Persuasion ships with six different master color sets, each containing 160 hues. Two other color sets can be customized to meet your needs. From each master set, you choose subsets of 20 shades that form the basic color scheme for your presentation. Once you get the hang of it, it’s easy to change the color of all the titles or other presentation elements with a few mouse-clicks.

Live Video

Aldus has added several new features designed to enhance on-screen presentations. For example, you can designate any text or graphic object as an Autojump location so that the presentation skips to another slide or application when you click on it. Persuasion also includes simple animation tools that let you make objects or text move on or off the screen. Another useful feature called Autolayer automates the time-consuming process of creating a layered presentation, where each line or paragraph on a slide is highlighted in turn.

The player that Aldus bundles with Persuasion lets you distribute your slide shows. The player is more compact (609K versus 2.3MB), uses less memory, and runs slide shows more smoothly than the main application. It also does a good job of matching a presentation’s colors to the display monitor. You can even annotate presentations while they’re running. (Persuasion ships with players for both Macintosh and Windows machines.)

Missing in Action

After such a long wait, I was disappointed that Aldus didn’t remedy some of Persuasion 2.1’s shortcomings. For example, there is still no support for dual (left and right) slide presentations, a common requirement in educational and scientific circles. Persuasion’s rudimentary spelling checker—an important feature when you consider how glaring spelling mistakes can be when projected larger than life—is as frustrating to use as ever. Finally, Persuasion still doesn’t support rotated text, and saving presentations to disk often takes longer than it should.

Despite its problems, though, this new release brings Persuasion back into the presentation software mainstream. If you can spare the disk space and memory, and you don’t mind the delays associated with linking charts and tables into your presentations, then you can consider Persuasion 3.0 a strong contender. It’s also worth considering an upgrade if you’re already using an earlier version.

—FRANKLIN N. TESSLER
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 drag and drop 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.

Delrina and Delrina Fax PRO for Macintosh are trademarks of Delrina (Canada) Corporation. Macintosh is a registered trademark of Apple Computer, Inc. All other product names are trademarks of their respective owners. © 1993-1994 Delrina (Canada) Corporation. All rights reserved.

Circle 137 on reader service card
Font Chameleon 1.0.1

**Font Utility**

**PROS:**
- High-quality renditions of popular fonts;
- Fonts can be customized; descriptor files are compact.

**CONS:**
- No italics in current version (but will be offered soon).

**COMPANY:** Ares Software Corporation (415/578-9090).

**LIST PRICE:** $295.

---

**S IT BERKELEY OLDSTYLE, OR IS IT Ares Serif 13?** You tell me. Look at the top pair of PostScript type samples in "Imitation of Type," and see if you can tell which is Adobe's ITC Berkeley Oldstyle Book and which is a font synthesized by Ares Software's FontChameleon. It's hard to tell one from the other.

FontChameleon introduces a new font-creation technology; it builds serif and sans serif fonts from a master outline file. These fonts are renditions of popular faces such as Avant Garde, Bookman, Futura, Garamond, Helvetica, Janson, Melior, Palatino, Times, Univers, and others. In most cases, a number of weights and styles are available (Ares currently offers 220 fonts from 50 families, and the company claims it will provide more in the future).

FontChameleon uses files called font descriptors to mold the master outline into the characters of the requested font design. Font descriptors are binary files, so you can move them between Macintosh, DOS, Windows, and Unix systems. FontChameleon uses the font descriptor and the master outline to generate a PostScript or TrueType font, which you can install and print just like a font from Adobe, Bitstream, or any other digital type vendor. Unlike a PostScript or TrueType font, which might be 40K or 50K in size, a font descriptor—essentially a "recipe" for creating a font from the master outline—takes up 5K or less, allowing you to fit hundreds of font descriptors on a floppy disk. If you want to send a document to an associate who owns FontChameleon, you can send the font descriptors—rather than the fonts themselves—along with the document, and your colleague can use his or her copy of FontChameleon to construct the necessary fonts. Such a scheme consumes less disk space and also saves time and money when you send files over a modem.

The fonts created by FontChameleon are compatible with Adobe's font metrics. You can assign Adobe Font Metrics (AFM) files to font descriptors, ensuring that documents created with FontChameleon fonts will have the same character spacing and line spacing as fonts in the Adobe Type Library. For example, if you create a document using FontChameleon's version of Melior and then print it at a service bureau that uses Adobe's Melior, the font metrics of the two documents will match.

You can use the set of font descriptors that comes with FontChameleon, or you can modify the descriptors to create custom fonts. The program lets you alter a character's weight, width, slant, x-height, and tracking and save the result as a new font descriptor (see "Building a Font"). You can also blend fonts to create hybrids, which can range from eye-catching novelties to aesthetic atrocities. If you're feeling creative, you can blend attributes from one font design into another; if you're of a more practical bent, you can blend weights within the same family to create, for example, a demibold weight. Unlike Adobe's Multiple Master fonts, which put some constraints on character manipulation, FontChameleon lets you condense or extend the heck out of fonts, such that you can create either misbegotten mutants that should never have seen the light of day, or art (depending on your point of view). According to an Ares representative, the company decided against limiting character manipulation and blending so that professional designers could have maximum flexibility—despite the potential for amateurs to run amok.

The fonts generated by FontChameleon are inexpensive (around $300 for 220 master font descriptors plus virtually unlimited style and weight variations), remarkably faithful to the original designs, compact, and portable across platforms. So what's the catch? There's really no catch—just a few limitations. FontChameleon's master outline, impressive though it may be, can be stretched and molded only so far; Cooper Black is about the limit of its stylistic versatility. If you want a more exotic design—or simply a face that isn't in the program's font-descriptor repertoire—you'll have to purchase a traditional PostScript or TrueType font. A more serious limitation is the lack of italics; FontChameleon includes oblique versions of many of its sans serif fonts but doesn't provide italics for its serif fonts. Ares says it is addressing this limitation by revising the master outline to support true italics; an inexpensive upgrade will be available soon. As for other criticisms, the user interface is not always as simple as I like to see, although the program is generally easy to use and includes helpful tutorials. Also, you can't print font samples from within FontChameleon (though it has an on-screen preview), and the manual lacks an index.

If you want an inexpensive alternative to purchasing a large type library, try FontChameleon. Fifty high-quality font families for the price of two or three traditional families is a good buy (once the lack of italics is addressed). And professional designers and amateurs alike should enjoy the program's ability to customize fonts. Depending on your needs, FontChameleon can offer the right blend of practicality, economy, and creativity.

—ERFERT FENTON

---

**Building a Font**

FontChameleon lets you create custom fonts by blending the attributes of two existing fonts (in this example, a bold and heavy weight from the same family) and altering factors such as width and x-height. You can then save the result in PostScript or TrueType format and install it just like any other font.
Your mind’s eye visualizes the finished work and you are drawn to the screen of the new ViewSonic 17. This is where perfection is found. The image on the screen is vital to you — not all monitors are created equal. That’s why we developed the New Generation ViewSonic 17 color monitor. There is a difference!

The revolutionary super dark screen of the ViewSonic 17 is designed to increase contrast and produce pure, sharp colors. In addition to a vivid, luminescent image, our digitally controlled 17” monitor offers ViewMatch™, a color control system designed to accurately match the screen to printer output. To customize settings, such as screen size or pincushioning, there is OnView®, an easy-to-use array of on-screen adjustments. And the monitor supports non-interlaced resolutions up to 1,600 x 1,200 pixels.

The ViewSonic 17 is even equipped with BNC connectors, which allows two systems to be attached to the monitor at the same time. As a matter of fact, the entire line of ViewSonic’s 15-through 21-inch New Generation monitors is Mac and PC compatible, and meet Swedish MPR-II standards for low radiation.

Unleash your creative forces with the new ViewSonic 17 ... and See The Difference!
PLI Infinity 270 Turbo

SyQuest Drive

**PROS:** Speedy performance; easy setup; small size suitable for use on the road. **CONS:** Incompatible with existing removable formats; lacks power-on light. **COMPANY:** Peripheral Land Inc. (510/657-2211). **LIST PRICE:** $651; formatted cartridges $59.

In the surface, PLI’s new Infinity 270 Turbo seems the same as the older Infinity 105 Turbo (see Reviews, Macworld, September 1993). However, SyQuest has used such techniques as increasing information density and using smaller heads to allow its line of 3.5-inch cartridges to store much more data. The new SyQuest 270MB removable hard drive supplements, but doesn’t replace, existing 105MB drives, and it reads from and writes to the older-style cartridges.

PLI’s 270MB drive is only slightly wider than the cartridges themselves, about 2 inches high, and less than 8 inches long. There is no cooling fan, but there are ample vents for cooling the drive. When a cartridge is not in use, the unit is absolutely silent. The only way to know it’s on, other than to look at the rear power switch, is to insert a cartridge and watch the activity light flash. A real power-on light would be nice. The drive uses an external power supply.

The rear panel is conventional, though everything is packed into a tighter space than with a standard-size drive case. PLI provides switchable termination (an advantage, I think), a convenient SCSI ID wheel, a pair of 50-pin SCSI jacks, and a power on/off switch. PLI’s supplied Formatter 4.0 handles disk-preparation chores speedily and efficiently. An extension enables you to mount disks after your Macintosh starts up.

In day-to-day use, the new 270MB drive performs about as fast as the older 105MB model. SyQuest claims 13.5ms seek times and 21.8ms access times, which my informal tests confirmed. Read/write performance is comparable to that of a fixed drive of the same capacity. The cartridges weigh less than 3 ounces but seem sturdy enough. I would not, however, subject them to the same sort of abuse that a Bernoulli or optical cartridge might tolerate. I did not put them through any severe abuse tests, such as dropping the cartridges or using them as Frisbee substitutes.

There are so many removable formats for disk drives available now, you might begin to feel dizzy at the prospect of selecting one. SyQuest drives come in five forms: 44MB, 88MB, and 200MB for 5.25-inch devices, and 105MB and 270MB in the 3.5-inch line. There are many different sizes of Bernoulli cartridges, 128MB and 230MB opticals, and more. In addition, prices have fallen tremendously in the fixed-drive market, and 1GB drives at less than a grand are fairly cost-competitive with some removable formats. However, at $59 each, 270MB SyQuest cartridges are in a class by themselves.

If you need to move large files from place to place, a removable drive may be a good investment for you. The PLI’s diminutive size also makes it a good candidate for travel. I was able to easily slide the drive, its power supply, and cartridges into the side compartment of my PowerBook’s carrying case.

When all is said and done, the PLI Infinity 270 Turbo SyQuest drive is a very good product: fast and reliable. The cost of the media is competitive with optical cartridges. The Infinity 270 Turbo’s small size makes it an excellent traveling companion, and it is about as fast as comparably sized fixed hard drives. If compatibility with other devices and the possibility that drives of greater capacity might be coming along soon don’t faze you, I recommend the product without hesitation. —Gene Steinberg

PowerPrint 2.5

**Print Utility**

**PROS:** Compatible with wide variety of PC printers; includes print spooler; supports color and gray-scale printing. **CONS:** Doesn’t support PostScript printing. **COMPANY:** GDT Softworks (604/291-9121). **LIST PRICE:** $149.

PowerPrint is an ingenious hardware-software combo that lets you print from your Mac to almost any PC printer. The newest version includes support for over 1000 printers, ranging from aging dot matrix models to the newer color ink-jet and laser printers.

On the hardware end, PowerPrint comes with a 6-foot-long serial-to-parallel converter cable. One end of the cable has an eight-pin connector that plugs into your Mac’s modem or printer port. The other end connects to the Centronics parallel port available on most PC printers. (PowerPrint doesn’t support connections to PC printers that are equipped with serial ports only—but there are relatively few of those.) The Centronics end of the cable assembly is equipped with a single LED, which has various flash patterns to indicate when the cable is receiving power, waiting for data, or encountering a problem with the printer.

The accompanying software consists of 18 drivers that provide a broad range of printer support. (If your disk space is limited, you can opt to install the Popular Printers Package, which places just 3 drivers on your hard drive. These 3 support 650 printers.)

The updated PowerPrint package includes drivers to support newer printers, such as the HP LaserJet 4L and the color DeskJet series. Also new in version 2.5: support for 32-bit color printing, gray-scale output on black-and-white printers, and a print preview function previously unavailable with certain drivers. (Owners of earlier versions of PowerPrint can upgrade for $35.)

Once the printer drivers are installed in your Mac’s Extensions folder, you use PowerPrint by selecting the appropriate driver in the Chooser and then using the standard Page Setup and Print commands to set up print jobs. A HyperCard reference stack helps you figure out which drivers to use with various printers.

Setting up the hardware and software is pretty straightforward, although coming up with a successful configuration for continues
The new NEC Silentwriter 640 is you. And you. And you. And you. And you. And you. And you.

Our new personal Mac laser printer lets you say what you want to 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.
Reviews

when it debuted, MovieWorks was buggy, sluggish, awkward, and difficult to use. It's now more powerful and less confusing, but it's still slow—and disturbingly unstable. The premise remains unchanged: MovieWorks is an all-in-one multimedia package that lets you create and edit media elements—sounds, pictures, and text—and then combine them with animation and special effects into a cohesive production.

The package is a group of five separate applications. The MW Text, MW Paint, and MW Sound editors are programs that allow you to create graphics, antialiased text objects, and sound clips for use in a project. Composer is the integration tool you use to combine all the pieces, using a variety of transitional and animation effects. (You don’t have to create all your media elements from scratch using the MovieWorks editors; Composer can import QuickTime movies, AIFF, and SND resource, as well as PICT, TIFF, and MacPaint graphics.)

Finally, Player is a module for playing back run-time versions of your presentations. You can distribute Player free along with your finished projects.

Interactive Solutions has completely reworked, and substantially improved, the MovieWorks interface. Most notably, each segment of a project is now called a Scene instead of a Movie—thus eliminating the confusion of importing movies into movies to create movies—and the media elements you import into scenes are now called Objects rather than Tracks. The befuddling Medibase window of version 1.1 has been replaced with two new windows—one displaying thumbnails of each scene, the other showing all the imported objects used in each scene. All of this makes the process of assembling a project a bit easier.

But much of the MovieWorks interface still needs improvement. For example, setting up the links, transitions, and attributes for each object in a scene involves navigating clumsily through a series of dialog boxes. And moving between the integrated modules takes too long. Using the Text application is particularly irritating: every time you want to add text to a scene, you must go to the Text program and create a new text object. (A built-in text tool in Composer would have been far more practical.) All of this, combined with the program’s overall sluggishness, means you have to work too hard for too long to produce good results.

Also, because MovieWorks is QuickTime-based, it decompresses each scene in a project before playback. This reduces file sizes and allows for higher-quality playback on Macs with lower RAM configurations. However, it makes assembling even a basic multimedia production frustratingly slow. Each time you update a scene—or even a piece of a scene—you must recompress it before you can view it in real time.

MovieWorks sometimes gives you unpredictable results. In several of my projects, titles got mysteriously chopped off, and some disappeared completely. Colors were garbled during compression, and combining more than one or two media objects in a scene produced jerky, stuttering transitions and unsatisfactory animations. Although the MovieWorks modules are more stable now than they were in version 1.1, I still experienced freezes and unexpected quits when working with the Text, Paint, and Composer programs. Interactive Solutions acknowledged several of the problems, some of which were fixed with version 2.0.2. Others they anticipate fixing in version 2.0.3, which should be available soon.

With diligence you can get decent results with MovieWorks, and the Paint and Sound modules do have some genuinely good, sophisticated editing features. But there are other entry-level multimedia programs—for example, Gold Disk’s Astound—that make leaping into multimedia production a lot easier and more rewarding.—JOSEPH SCHORR
EXPAND YOUR BUSINESS.
HARNESS THE SUN.
NAVIGATE AN OCEAN.
THEN BREAK FOR LUNCH.

INTRODUCING CLARISDRAW.

With this dramatic new upgrade of the best-selling MacDraw® Pro, you're destined to create great things in a swift and painless fashion. Like maps, floor plans, flyers, free-form and technical drawings, to start. ClarisDraw™ brings you intelligent features like PointGuide™ and SmartConnectors™ to save you time by reducing the number of steps needed to create graphics. There's also advanced text handling (like binding text to curves), sophisticated image editing and 24-bit color painting. The program translates popular industry-standard graphics formats. And it's accelerated for Apple's new Power Macintosh™ systems. With ClarisDraw, you'll produce professional-quality graphics in no time. (So you can take that extra hour for lunch.) For more info, call 1-800-544-8554, ext. 358.

©1994 Claris Corporation. All rights reserved. Claris, MacDraw and Apple are registered trademarks; ClarisDraw, ClarisDraw design, PointGuide, Simply Powerful Software, Smart Connector are trademarks of Claris Corp. Power Macintosh is a trademark of Apple Computer, Inc., and Apple Store. In Canada please call 1-800-544-8554.

SEE US AT MACWORLD EXPO BOOTH #5462
The Brother P-Touch is one of the best and most versatile label creators available. It consists of a small thermal printer, a connecting cable, and two programs: the P-Touch PC printer driver, which controls the actual printing, and P-Touch PC Editor, which creates the label text. The software suite also includes a comprehensive help file, several attractive fonts, and sample label formats. A disk with Windows software and the cable for connecting to a PC are also included.

The P-Touch PC is a 180-dpi thermal printer that connects to a serial port. It's quiet, fits in tight spaces, is a snap to set up, and works like a champ on the eye-catching fluorescent-era attractive fonts, and sample label for each label. That can be a bit of tape (about and out of the printer. Color cassettes dancing label margins the P-Touch wastes scrap waste at a time. Best and most versatile label makers. The great hold up well even in harsh and high-traffic environments. Brother will soon offer un laminated label tape for envelopes or similar uses. The unlaminated labels will be cheaper than the laminated ones and will come in refillable cassettes.

The printer's street price is just over half its list, while the label cassettes sell from $25 to $50 each, depending on width and color combination. The great quality and the ease of creating the labels make the tape prices palatable.

The P-Touch PC printer driver is, as far as I can torture it, flawless. It works with P-Touch PC Editor exactly as advertised. It even works well with many other applications—just mind the warnings in the manual.

P-Touch PC Editor is merely OK. It does simple jobs well and gives you easy access to time and date stamps and a wide variety of bar codes (you type in text, and P-Touch prints correct and, far more important, readable bar codes). Editor handles TrueType fonts well and can handle PostScript if you have Adobe Type Manager installed. The manual is bad, explaining some features inadequately and failing to explain others at all. Fortunately, the software is simple enough that you can figure out much of its workings yourself.

Editor's database functions, which you use to create runs of mailing labels, for example, are limited, and I suspect there are here mostly to make the product look good to reviewers. I recommend that you use your regular database or spreadsheet when printing a large quantity of labels.

The preview feature saves tape and is nice when it works correctly. Unfortunately, the readability of the preview depends on your selected type and font size. For example, if you use a 12-point Geneva for mailing labels, previewing at 250 percent gives you true WYSIWYG display, while smaller percentages (including 100 percent) are not WYSIWYG at all; if you use something like 16-point Stone Informal, however, you get true WYSIWYG previews at 100 percent.

Decide on a type size and font, learn what preview size is WYSIWYG, and stick to that. You can always print label proofs to your regular printer, but that works against the P-Touch PC's whole fast-and-easy-label concept.

Tech support is free, but you hear the cost of a call to southern California. The several times I called, I got right through to nice technicians who quickly supplied correct answers.

All complaints aside, I really like this printer and use it frequently. I'm even getting more organized.—STEVEN BOBKER

---

REVIEWS

**P-Touch PC**

**Label Printer**

**PROS:** Versatile; high-quality output; easy to set up and use. **CONS:** High cost per label; very weak manual. **COMPANY:** Brother International Corporation (908/356-8880, ext. 4307). **LIST PRICE:** $449.95.

---

**HyperCard 2.2**

**Authoring Tool**

**PROS:** Inexpensive; powerful; many new multimedia extensions; AppleScript-compatible. **CONS:** Color tools are slow and poorly integrated. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** $249.

With its intuitive stack-of-cards metaphor, simple graphics toolbox, point-and-click interface, and friendly scripting language, HyperCard made it possible back in 1987 for a beginner to create customized interactive software with minimal training and effort. HyperCard became a standard tool for building interactive presentations, tutorials, hypertext books, and multimedia documents. For longtime users, HyperCard 2.2 includes several welcome enhancements and a few disappointments.

Version 2.2 has new options for creating families of radio buttons, pop-up menus, dimmed (inactive) buttons, oval buttons, standard and default dialog-box buttons, and list fields. It's easier than ever to create a stack that has the look and feel of a modern Mac application. And with 2.2, it's possible to turn a finished stack into a stand-alone, double-clickable application that runs without HyperCard. You pay a price, though: a stand-alone application takes up about 700K more disk space, since it effectively has a copy of HyperCard built into it.

Then there's the speed issue: HyperCard stacks have always seemed sluggish compared with programs built with other programming tools. With today's faster Macs, HyperCard's speed is less of an issue. But even on a Quadra, HyperCard 2.2 isn't exactly hyperactive.

Except for a couple dozen new features and refinements, HyperTalk remains unchanged, so most stacks created with earlier versions will work under HyperCard 2.2, and version 2.2 stacks that don't use the new features can run with version 2.1. HyperCard 2.2 allows scripts created in the included AppleScript, as well as other OSA-compatible languages, to mix with HyperTalk scripts in a stack, so the stack can communicate with FileMaker Pro, Excel, and other scriptable applications. HyperCard 2.2 is also compatible with WorldScript, so it's easier to convert stacks to different languages and character sets.

---

CONTINUES
EXPLORE the INTERNET!

FREE

EXPLORE the INTERNET!

DELPHI is the only major online service to offer you full access to the Internet. And now you can explore this incredible resource with no risk. You get 5 hours of evening/weekend access to try it out for free!

Use DELPHI's Internet mail gateway to exchange messages with over 20 million people at universities, companies, and other online services such as CompuServe and MCI Mail. Download programs and files 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 4500 topics!

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

Over 600 local access numbers are available across the country. Explore DELPHI and the Internet today. You'll be amazed by what you discover.

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 MW949

DELPHI INTERNET

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

Circle 173 on reader service card
Reviews

Probably the biggest complaint about HyperCard has been its lack of color. HyperCard was designed with the original black-and-white Mac screen in mind. Version 2.2 still looks, at first glance, like a refugee from the MacPaint era, with basic paint, button, and field tools. But a new Color Tools stack makes it easy to colorize buttons, fields, cards, and backgrounds, and you can now include color drawings, paintings, and scanned images in stacks without scripting. Still, color can slow a stack’s response time, and a colorized stack requires a bigger memory partition. If you move a button while a card is visible, the associated color patch doesn’t move with it. Also, color images aren’t visible in the Recent dialog box, and HyperCard’s black-and-white visual effects don’t work in colorized stacks. It’s easy to attach color-transition effects, but they are less versatile than their monochrome counterparts.

The HyperCard 2.2 package also includes QuickTime Tools (for adding video to stacks) and AddMotion II—Motion Works’ add-on that includes a color paint module, sophisticated animation tools, and a versatile sound editor. With Color Tools, QuickTime Tools, and AddMotion II installed, HyperCard includes most, if not all, of the features multimedia authors need. Unfortunately, working with this patchwork of HyperCard extensions feels a little like juggling several remote-control devices to control your stereo system. Still, HyperCard’s extensibility is one of its biggest strengths. If HyperCard can’t do something by itself, there’s a good chance somebody has written a shareware XCMD (external command) to do it.

In the crowded world of authoring tools, HyperCard strikes a good balance between power and ease of use, and its price is reasonable. If you’re using a previous version of HyperCard, the upgrade is a good investment. It may not satisfy all your wishes, but it should keep you happily building stacks until the next version comes along.—GEORGE BEEKMAN

Dynodex for Macintosh 3.5

**Contact Manager**

**PROS**: Improved printing; Dynofind feature makes contacts accessible from all applications; links to Dyno Notepad.  
**CONS**: No current link to a calendar program.  
**COMPANY**: Portfolio Software (802/434-6400).  
**LIST PRICE**: $69.95.

**Portfolio Software’s Latest**  
version of Dynodex has a few new features, improved performance, and an easier-to-use interface.

Dynodex was the first contact manager capable of printing double-sided pages for the popular day-planner formats, such as Filofax, Day Runner, and Day-Timer. Version 3.5 has made printing even easier by consolidating several commands into the Page Setup and Print dialog boxes, and by significantly speeding up the printing process. The Field Setup and Form Setup windows now give you WYSIWYG previews of a contact record and a page. Field labels in the entry window can be renamed, and you can change the font and style of both the fields and their labels.

A welcome change is the ability to print names and phone numbers from the Just Names window. You can now specify the font and text size and resize and rearrange the columns. Background color has been added to alternating lines for easier reading.

Dynofind is Portfolio’s implementation of an idea that first appeared in Now Software’s Now Contact. Dynofind is a control panel that places an extra menu in all applications; the menu contains the names and main phone numbers of your frequently used contacts. Searching your Dynodex file with Dynofind is fast and easy. You first enter the name in the Dynofind search dialog box (accessible through the Dynofind menu or via a user-configurable hot key). The Dynofind dialog box appears with the contact’s information, along with buttons to dial any of the contact’s four possible phone numbers. The Copy Label button copies the contact’s name and address for letterheads or envelopes to the Clipboard; the Add to Menu button adds the contact and whichever one of the four phone numbers you choose to the Dynofind menu. The next time you want to call that contact, you can bypass the search dialog box and dial the contact by holding down the ⌘ key while choosing the contact from the Dynofind menu. Dynofind is very convenient for quick lookups, dialing the telephone, and pasting addresses into letters.

A button on the Dynex 3.5’s entry screen links to Portfolio’s Dyno Notepad. This outline processor and-to-do-list manager was previously marketed by Symmetry Corporation as Acta 7. When you click on the link button, Dyno Notepad launches and creates a new outline document titled with the name of the current contact. If you have previously created an outline for the contact, clicking on the Link button launches Dyno Notepad, opens the outline, and creates a new outline topic—date- and time-stamped and ready for note-taking. Dynodex also has a link to Portfolio’s forthcoming calendar product, promised for the second half of 1994.

Dynodex 3.5 is an excellent contact manager. It compares very well to Now Contact and Aldus Consumer Division’s TouchBase Pro. In fact, these programs have similar features, so much so that your buying decision may be more a matter of preference than functionality. Dynodex, however, lacks a companion calendar program, which the other products offer. This integration of contacts and activities is now the norm, not the exception, and no company can afford to ignore that fact. Until Portfolio delivers on its calendar program, Dynodex will offer only half a solution.—TOM NEGRINO

**Easy on the Eyes**  
Dynodex 3.5 lets you customize the display for easier reading. I’ve changed the font and size of text in the Just Names window, while leaving the entry window in the default Geneva font. Note the icon for the Dynofind menu next to the Font menu.
Making sense of the amount of data flowing into your company is like trying to drink from a fire hose. You need a better way to correlate it. To think about it. To interpret it. To visualize it. To form a comprehensive picture of what it really means.

MapInfo is that better way. Because all data has one thing in common. Location. It all occurs somewhere. And when you use MapInfo solutions to link data together by location, dynamic pictures of what your organization really looks like begin to appear. Clear pictures of opportunities you’ve been missing. New insights for better, faster decisions. New ways to use data as a competitive weapon. To slash waste.

To directly impact the bottom line in every corner of your organization. From sales and marketing to customer service, operations and planning.

Inside every fat database are a thousand beautiful ideas just trying to get out. MapInfo is the key.

Call 1-800-327-8627 for a free copy of MapInfo Magazine.

Federal Sales: 1-800-619-2333.

MapInfo is completely open. Use data wherever it is stored (Oracle, DB2, Sybase, Ingres, dBase, Lotus 1-2-3, Excel and many others). With our MapBasic Development Environment, you can easily integrate mapping into your client/server applications, too. On any desktop you want (Macintosh, Windows, Sun, HP, DOS).
Mail-List Management

**Bulk-Mail Software**

**AccuZip 6 1.8.7**

**PROS:** Flexible parsing during import; informative progress indicators; batch and individual processing; unattended operation possible; lowest rates. **CONS:** Can’t view CD-ROM data; incomprehensible interface; confusing processing; unattended operation possible; bar-code font; inexpensive.

**List Price:** $689; annual subscription $200.

---

**Bulk Mailer CASS 1.00d**

**PROS:** Unattended operation possible; supports Apple events; inexpensive. **CONS:** Slow; batch processing only; coding problems; can’t view CD-ROM data; poorly documented; no bar-code font. **COMPANY:** Satori Software (206/443-0765). **List Price:** $150; quarterly updates $150; whole year $525.

---

**ZP4 12.1**

**PROS:** Batch and individual processing; can view CD-ROM data; supports Apple events; includes bar-code font; inexpensive. **CONS:** Uninformative progress indicators; unattended operation requires extra work; only online documentation. **COMPANY:** Semaphore Corporation (408/688-9200). **List Price:** $125; quarterly updates $125.

---

**Computers Products Often Promise to Save Time, Effort, and Money, but Rarely Are These Savings as Easy to Quantify as with CD-ROM-Based Mail-List-Management Tools. Software Publishers’ AccuZip6, Satori’s Bulk Mailer CASS, and Semaphore’s ZP4 Can Pay for Themselves by Helping You Qualify for Lower Postage Rates When Mailing 200 or More Letters or Postcards at One Time. And They Eliminate Waste by Weeding Out Duplicate and Undeliverable Addresses. You Don’t Need a Computer to Do Bulk Mailings. Just Pay the Annual Permit Fee, Sort Mail According to United States Postal Service (USPS) Guidelines, Prepare the Necessary Forms, and Deliver Everything to the Appropriate Facility. Sounds Easy, but USPS Regulations Make Our Tax Code Seem Simple and Fair. The Three Programs Relieve Some of the Drudgery.**

The more help you give the post office, the lower your rate. A 29-cent first-class letter drops to just 19.8 cents via third-class if you sort by zip code. Include zip+4 and pay 18.9 cents per piece. Apply bar codes and it’s only 17.9 cents each. The rates get even better for mailings concentrated geographically. (For more on bulk mailing, see *Working Smart, Macworld*, March 1994.)

To qualify for zip+4 rates, you must use a program certified for Coding Accuracy Support System (CASS). At their most basic levels, AccuZip6, Bulk Mailer CASS, and ZP4 are all CASS certified and all work the same. First, you import tab-delimited mailing lists generated by other programs. (AccuZip6 lets you specify any delimiter—handy for processing non-Mac lists.) As each program imports records, it standardizes them, identifying address components, correcting abbreviations and capitalization, and then placing the components in the order the USPS requires. Once each program has standardized the imported addresses, it adds zip+4 and carrier-route numbers that it determines by consulting a CD-ROM containing every valid U.S. postal address.

Processing time depends on the speed of your computer and CD-ROM drive (for best performance, copy data files to a hard drive). On a Mac IIci, Bulk Mailer CASS processed 200 records per hour; AccuZip6 and ZP4 were twice as fast. Since processing is time-consuming, progress reports are essential. AccuZip6 is exemplary, displaying the contents of records as well as the number completed/remained, time elapsed/remained, and a breakdown of valid/invalid addresses. Bulk Mailer CASS displays just the elapsed time and number of records processed, and updates this only periodically. There are other progress options, but they aren’t documented. ZP4 shows the least, displaying only a percentage-complete thermometer.

You might think all CASS-certified programs would generate identical output, but that’s not the case. For example, AccuZip6 was the only one of the three that had difficulty with some strange but valid addresses such as S67W17573 Ross-

---

**AccuZip6** AccuZip6 does everything you could ever demand of a mail-list program—standardize, code, sort, label, and so on—all with an interface only a mother could love.

---

**ZP4** All three programs can process batches, but only ZP4 allows you to examine individual addresses by looking directly at the valid address information on a CD-ROM.

---

**Bulk Mailer CASS and ZP4 are Simple Tools for Standardizing Addresses and Adding Zip+4 and Carrier-Route Codes. But Neither Program Stores Mailing Lists, Prints...**
labels, or helps bulk-mail preparation in any other way. For those tasks, you must rely on a database manager or dedicated mailing-list program. Both programs support Apple events, but Bulk Mailer CASS works only with Satori's own companion mail-list program; ZP4 comes with sample stand-alone applications, as well as scripts for FileMaker Pro, HyperCard, and Frontier. Unfortunately, the online instructions for incorporating these scripts into your own files are negligible. Despite ZP4's flaws, I recommend it over Bulk Mailer CASS for periodic mailings of a few hundred or few thousand pieces. It's faster and cheaper, and it allows you to see the actual address information on CD-ROM. Bulk Mailer also comes with the bar-code font necessary to obtain the best postal rates.

For mailings of many thousands of pieces, consider AccuZip6. It not only cleans lists, but it also locates duplicate records and prepares all the forms, sack tags, and labels for first-, second-, and third-class bulk mailings. You can even maintain your database in AccuZip6. This program supports a wide variety of Avery laser labels and envelope printers and can print bar codes and special sorting flags telling you when to begin a new bundle, sack, or tray. Best of all, AccuZip6 suggests the sorting method that results in the lowest possible postal rates. For example, you might save money by delivering some mail to a Bulk Mail Center and the rest to the Section Center Facility.

Without question, AccuZip6 is the most comprehensive mailing program available for the Mac. Unfortunately, it is also the most incomprehensible. Inscrutable postal regulations are part of the problem, but most of the blame lies with AccuZip6's bewildering user interface and documentation. Software Publishers claims that much of the modality of the program will disappear when AccuZip6 switches from 4th Dimension to FoxBase. In the meantime, expect to spend a considerable amount of time and money on Software Publishers' technical-support line.—Owen W. Linzmayer

FastTrack Schedule 2.1

Project Scheduler

PROS: Arranges activities in outline-style hierarchy; hides low-level activities; displays planned and actual schedules on the same chart; provides custom symbols for activity bars; lets you paste graphics on Gantt charts. CONS: No scaled views of Gantt charts; no automatic tracking of personnel or material resources. COMPANY: AEC Software (703/450-1980). LIST PRICE: $279.

PROJECT SCHEDULERS COME IN ALL shapes and sizes. The simpler ones enable you to create graphical time lines called Gantt charts to plan a project's schedule, and then compare the planned schedule to the actual schedule. More complex programs offer resource allocation, linked projects, and more chart and report formats than you can shake a stick at. FastTrack Schedule is one of the simpler project schedulers, and its feature set is ideal for managers who need to put together a schedule quickly and easily.

FastTrack Schedule lets you customize just about every aspect of a Gantt chart. In addition to the mundane options, such as selecting time periods (hours, days, months, or years), hiding weekends, and selecting the start and end dates for a project, you can design new symbols for activity bars and milestones, and paste graphics onto a Gantt chart. You can also create new columns for a chart—including start date, finish date, duration, or percent completed—from a predefined list, or you can add a new column for your own data, for example, expense estimates, project leaders, or needed resources. Unlike Microsoft Project or MacProject, FastTrack Schedule is not designed to track resource assignments.

FastTrack Schedule has a clever option for tracking user-customized values. If you associate a column's value with an activity bar, the value displayed in the column changes whenever you change the length of the corresponding activity bar. This helps track linearly related project items, such as human-resource costs (if the costs are a fixed amount per day, for example).

As you create a Gantt chart in FastTrack Schedule, you can create a hierarchy of tasks and subtasks, assigning start and end dates to each. The hierarchy is similar to that created with an outline—when you double-click on a task, its related subtasks are hidden; you see only the activity bars and other information for the major tasks, but not for the subtasks. This method is useful for large projects.

One of FastTrack Schedule's more useful features is setting dependencies. You can use either "hard" or "soft" dependencies; when you create a hard dependency between two activities, the time period separating the two stays the same, even if the first activity slips to a later date. A soft dependency allows the time between the final date of the first activity and the start date of the second activity to shrink to nothing if the first one slips to a later date. But when the two dates become the same, any further slippage of the first activity pushes back the start date of the second.

FastTrack Schedule does not include any scaling options for viewing Gantt charts. When you create a large chart, you see only a small part of it on your screen, and you have to scroll the window to see other dates or tasks. I would prefer to select a 50 percent reduction or even a scale-to-fit option for viewing the chart on screen.

If you're new to project management, or if you just need to create Gantt charts for single projects, I recommend FastTrack Schedule. You can create impressive graphical charts for presentations, as well as track a large number of activities in complex projects. But if you require more power to manage conflicts between multiple projects and resource allocation, you'll need a more comprehensive program like Microsoft Project.

—Dave Kosjur
10 REASONS TO ORDER SOFTWARE & PERIPHERALS from MacConnection®

1. You can order later from us than anyone (3:15 a.m.) and still get it overnight. Only the Stork and Santa do it better.

2. We ship weekends, too! Order Friday, get it Saturday. Order Saturday/Sunday, get it Monday!

3. Our hometown of Marlow, NH has more chickens than people. (And our One Minute Mail Order service makes ordering faster than a speeding pullet.)

4. You can call us toll-free with questions anytime. Before or after you buy.

5. We only "bait and switch" when the fish ignore our high-tech lures and we go back to good old worms.

6. Our prices are so low that our CEO was recently spotted picking up pennies in the parking lot.

7. We'll ship your order freight free if you ask your salesperson the question that all America is asking, "What planet is Marlow on, anyway?"

8. We're environmentally correct. You won't find foam peanuts, here.

9. The TOTAL freight charge on every order is just $3. Unless you follow the instructions in #7!


It's Our 10th Anniversary!

That's right, folks. When it comes to transforming mild-mannered Macs into the stuff that dreams are made of, we are most definitely history! Why, we were selling Mac software and peripherals from this classic New England inn back when a powerbook was the latest Steven King novel! Since then, we've been responsible for every major innovation and most of the good one-liners in the chuckle-filled world of Mac mail order. Never tried us? Hey, make a little history yourself—give us a call and join us for the next decade! (Need a little incentive? Don't miss Reason #7!)

800-800-3333

MacConnection®

14 Mill Street, Marlow, NH 03456  603-446-3333  FAX 603-446-7791
Apple Computer

The affordable, new Apple Newton
MessagePad 110 is here! Features updated
4MB ROM for improved performance, 640K
RAM, and 20MHz processor. Built-in notepad,
co-disk drive, word file, calculator, pop-up
software keypad—plus great low price!

New Product!
1338 Newton MessagePad 110 $399
THE NEWTON MESSAGEPAD
The Apple Newton MessagePad 110 is the
ultimate PDA! Features sleek, compact, 1MB
RAM, increased battery life. Plus a world of
capabilities in the palm of your hand, yet it just weighs 1.28 pounds!
Free month's subscription to Newton Mail Mag.

FREE Month's Subscription to Newton Mail Magazine with purchase of Newton MessagePad

Apple Newton MessagePad 110 $599

POWERBOOK/NEWTON
Abacus Concepts
7108 StarView 4.0...
Adesso - 1 year
5579 PS Battery 5.5 $1407 KPad/B Win 89.95
Apple Computer
1332 Apple Newton MessagePad 110...
A30 Software...
1498 WIZ OR. 55...
Battery Tech, Inc.
8631 CPR 2.0...
Global Village...
7720 PowerPort/Sliver 269...
Lind Electronic Design
1497 SBC-2 139...
Sophisticated Circuits...
7452 PowerPad Granite...
Technologin, Inc...
1411 Power/Plane SX...
U.S. Robotics
11941 WorldPort 14.4 Fax...
VST ThinPack...
55.5
BUSINESS
Alida Consumer Division...
11598 Touchbase & 11576 Datebook, Pro ea. 49
Atria Corporation...
69 MBG...
Atmel Corporation...
69 MBG...
Bai Technologies...
8615 IN CONTROL 3.0...
Beall-Ware...
14113 8088 5.5...
CheckMark...
5963 Multi Ledger 95...
Chih...
3062 ChihWorks 2.1 for Mac...
ClockShop...
3039 ClockShop 24...
DeltaPoint...
1297 DeltaGraph Pro 3...
Etch-A-Sketch...
13518 DeltaGraph Pro 3 Compat...
Fusion...
1450 Creative Pack...
Gold Disk...
1279 Gold Disk...
Integra...
11269 Integra 4.0...
Intuit...
11849 Intuit 4.0...
MECA...
69 MBG...
Microsoft...
2848 Works 3.0 150.5 $902 Word 5.1 295...
Nordic...
3680 Excel 4.0 & 295...
Now Software...
1703 Now Up-to-Date 15...
Palo Alto...
88 MBG...
Peripherals...
6987 Bus. Plan 75...
ProUCC...
60 MBG...
Panorama 249...
Symantec...
60 MBG...
3670 ACT! (contact manager)... 199.
Time/Mac Version Upgrade...
2938 Timeslips III 2.1K...

Apple Newton

New After Dark 3.0

Berkley's After Dark 3.0 is wilder, weirder, and wackier than ever! Watch Bad Dog
trash your desktop, try your luck at the track with Rat Race, and soar with
the majestic, new Flying Toasters!
5737 After Dark for Macintosh 3.0...$29.95

Claris

Clear Choice...
41380 Impact 140.95 3518 PrintRaver $29.95
Beneke Software...
11059 aWorks 99.327 Canvas 3.5...
15819 DeltaGraph Pr 3...
11582 Touchbase or 11577 Datebook Pr 49.
14014 DeltaGraph Pr 3...
15804 Claris CheckMark...
12604 Abacus...
30 MBG...
12582 BatteryTech, Inc.

Apple Computer


Bungie Software

Battle your way through texture-mapped 3D landscapes in Marathon. Defend your inglorious colony ship against hostile alien adversaries with an array of futuristic weaponry.

2342 Marathon...
7445 Pathways into Darkness...

$39.95

$39.95

$194.
Apple Computer

The new QuickTake 100 Digital Camera lets you dress up your documents with digital photos. Take up to 32 digitized color pictures you can download to your Mac's hard drive. Compact, easy-to-use.

3560 QuickTake 100 Digital Camera $689.95

MDS Drives

Removable drives from Marlow Data Systems are superior storage value. Choose zero footprint or an upright case. Also available with cartridges included.

15802 MDS ZFP 88 Syquest (w/o cart.) $299.95
15560 MDS ZFP 200 Syquest (w/o cart.) $299.95
5592 MDS 105 Upry (w/o cart.) $339.95
5592 MDS 270 Upry (w/o cart.) $539.95

MULTIMEDIA/VIDEO

Apple Computer

3561 QuickTake 100 Camera $689.95

CDP Media Technology ... 30 day MBG
5040 Fine 2.0 548. 12207 F. Anglea ... 548.95

DVD Drive

11901 Kaboom! $29. 12278 eMachines Kaboom 569.95

Great Wave ... 30 day MBG
1914 Connectware Pro 1.0 ... 1914

Macromedia

5087 Director 4.0 ... 5087

Noise Cancellation Technology

4033 Noise Buster ... 4033

Novell Development

11901 Kaboom! $29. 12278 eMachines Kaboom 569.95

PrecisionColor Printer (Rec. Input) $799.95

3497 PhotoBooster ... 3497

Ricoh...Painted Series Disease

4173 Litho. 24-bit 850. 12200 Litho XL1199.95

Sony Multiscan Trinitron Monitor

10529 CPM-170W 169. 13179 159.99 549.95

SuperMac/E-Machines ... 30 day MBG
12794 24/Co 149. 10630 Co. PG 1199.95
10022 Precision Monitor 9. 10022

UltralX K. 8759 UltralX Deck 449.95

COMMUNICATIONS

Apple Computer

2775 Camera $59.95
3421 Remote Access 2.0 Client for Mac $59.95

Asante Technologies, Inc.

2775 TC $29. 2772 TC $12. 2772 TC $29. 12 2772 TC $12. 12

CommForce

15882 4-Sight Fax. $599.95

Compressions ... 60 day MBG
15676 Membership Kit $25.95

Dataviz/Macin Linc Plus ... 60 day MBG
15676 TC $59.95

Dayna ... 60 day MBG
11878 COG Model ... 11878

Delrina Technology ... 60 day MBG
10689 Fax/Pro for Macintosh $79.95

Parallon Computing ... 30 day MBG
10453 Timbtab $35. 10453 Remote 123.
11499 EtherWave AUIA Transceiver
10453 PhoneNet Connector 10-P $179.95

SIMMs

We have memory for every Macintosh, including the new Power Mac and the PowerBook 520 and 540.

Please call for the latest pricing!
This is how E-mail should be. Totally complete, ready to go, right out of the box. Chock full of everything you need to make the connection with virtually anyone, anywhere. And so intuitive, so highly automated, you won't have to spend half of your life with a user's manual.

New QuickMail™ 3.0 delivers everything you need to communicate across the hall and around the world. So you can exchange messages and files with co-workers, no matter what kind of computer they're working on. With more than 150 third-party gateways and bridges, QuickMail connects you to pagers, Newton® fax systems and even other mail systems. And you can access AppleLink®, MCI Mail®, CompuServe®, the Internet and more.

QuickMail has always been the Mac user’s #1 choice. It was the first E-mail system specifically made for Mac networks. It's now being used by more than one million people and almost 50% of all Macintosh® users.

And even before this latest upgrade, QuickMail was also the choice of the experts. As Macworld proclaimed, "...with its combination of excellent user and administrator features, its ease of use in a mixed environment, and its improved remote access abilities, QuickMail retains its superiority in an increasingly competitive E-mail market."

If you happen to be stuck using one of those other LAN-based systems QuickMail is superior to, now you can make the switch to QuickMail and save with our special $12 per user upgrade offer.

Because we think everyone should be able to have the best choice in E-mail: QuickMail.
SCSI Director Pro 3.0.6

Pros: Simple, one-button hard disk formatting; supports SCSI Manager 4.3.

Cons: Some features don't work on Power Macs; so-so manual; expensive, no phone number for tech support.


Transoft's SCSI Director Pro takes a kitchen-sink approach to hard drive formatting. In addition to formatting and partitioning most fixed hard drives, optical drives, and SyQuest and floptical devices, the program supports CD-ROMs and mirroring, a feature that allows you to set up another volume for real-time backups. A Data-Guard utility prevents data corruption if a SCSI cable is accidentally removed or if there is a loss of power. Additionally, SCSI Director can supposedly mount removable devices without using a System extension.

The program ships with two high-density disks. One floppy is a start-up disk containing System 7.1 and a collection of System enablers. The other disk contains the SCSI Director application, the CD-ROM software, and some auxiliary software, including a removable-disk-mounting extension (even though you aren't supposed to need it with this program—but more about that later).

If you just want to format and test your hard drive, setup is easy. You click on the Auto Setup button in the program's main window and OK the warning messages, and SCSI Director takes it from there. Partitioning (dividing your drive into more than one volume) is also simple: just click on the Partition button and select the number and kinds of partitions you wish to create.

However, when it comes to doing some of the fancy tricks described on the program's box, the going gets rough, and the manual doesn't simplify things. (The program provides a number of Help menus, but they don't really expand on the manual.) When I tried out one of SCSI Director's advertised features—mounting a removable device without installing a disk-mounting extension—I found no information about it in either the manual or the Help menu. The program's Read Me file contained the sole specific reference to the feature, and indicated that the option was turned off by default because enabling it slowed down drive performance slightly. Whatever the reason, I never got the feature to work properly after turning it on.

Although SCSI Director seemed to work OK on regular Macs, I ran into problems when I used it on a Power Macintosh. Some drives formatted with the program failed to mount properly at startup, and I ended up mounting these disks with programs like SCSI Probe.

Transoft's technical-support line, a 900 telephone number, costs $1.90 per minute. Although response time was quick when I gave the staff a call—and they did call me back to try to diagnose the disk-mounting problem—they were not able to solve the problem. When I reformatted the affected drives with either Casa Blanca Works' Drive7 3.0 or FWB's Hard Disk TooKit 1.5.1, all was well again. Transoft's CD-player application was equally troublesome. Although it sports a pretty face, it had a problem getting past the first track on my audio CDs when I tried it with Apple's new CD300s drive.

SCSI Director has a history of frequent revisions, so I expect that the difficulties I encountered will be solved before long. If you stick to basic disk-formatting and partitioning chores, the program will get the job done. But if you want to try some of its special features for size, be prepared to fly blind, unless paying $1.90 a minute for help doesn't faze you.

—Gene Steinberg
The Macworld Magazine WORLD CLASS AWARD for training sits in my office. The readers of Macworld voted for MacAcademy by a margin of 2 to 1 over audio training systems, disk based systems, and all other training companies and products. Simply, we won because our training works! It's affordable, it's flexible, it covers an incredible amount of programs, it's simple to use and it's guaranteed! We won the award because over 250,000 satisfied customers are proof that MacAcademy training programs will work for you.

Below please find a current listing of the MacAcademy Video Training Library. Each video is approximately two hours in length and costs only $49. Each video carries a complete money-back guarantee if not totally satisfied and can be upgraded when software is upgraded for only $14.95.

<table>
<thead>
<tr>
<th></th>
<th>Videos</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th Dimension</td>
<td>6</td>
</tr>
<tr>
<td>Canvas</td>
<td>5</td>
</tr>
<tr>
<td>ClarisWorks</td>
<td>6</td>
</tr>
<tr>
<td>Design &amp; Layout</td>
<td>1</td>
</tr>
<tr>
<td>Desktop/PrePress</td>
<td>2</td>
</tr>
<tr>
<td>Director</td>
<td>4</td>
</tr>
<tr>
<td>Excel</td>
<td>5</td>
</tr>
<tr>
<td>FileMaker Pro</td>
<td>4</td>
</tr>
<tr>
<td>Mac Fonts</td>
<td>1</td>
</tr>
<tr>
<td>FreeHand</td>
<td>4</td>
</tr>
<tr>
<td>HyperCard</td>
<td>3</td>
</tr>
<tr>
<td>Illustrator</td>
<td>4</td>
</tr>
<tr>
<td>Infini-D</td>
<td>2</td>
</tr>
<tr>
<td>Integrate Programs</td>
<td>1 Video</td>
</tr>
<tr>
<td>Lotus 1-2-3</td>
<td>3 Video</td>
</tr>
<tr>
<td>Macintosh 7.X</td>
<td>4 Video</td>
</tr>
<tr>
<td>MacDraw Pro</td>
<td>2 Video</td>
</tr>
<tr>
<td>Mac P &amp; L</td>
<td>3 Video</td>
</tr>
<tr>
<td>MacProject Pro</td>
<td>4 Video</td>
</tr>
<tr>
<td>MacWrite Pro</td>
<td>3 Video</td>
</tr>
<tr>
<td>MS Works</td>
<td>4 Video</td>
</tr>
<tr>
<td>Networking</td>
<td>1 Video</td>
</tr>
<tr>
<td>Now Up-To-Date</td>
<td>1 Video</td>
</tr>
<tr>
<td>PageMaker</td>
<td>6 Video</td>
</tr>
<tr>
<td>Peachtree Acctg</td>
<td>3 Video</td>
</tr>
<tr>
<td>Persuasion</td>
<td>2 Video</td>
</tr>
<tr>
<td>Photoshop</td>
<td>6 Video</td>
</tr>
<tr>
<td>PowerBooks</td>
<td>2 Video</td>
</tr>
<tr>
<td>PowerPoint</td>
<td>2 Video</td>
</tr>
<tr>
<td>Premiere</td>
<td>3 Video</td>
</tr>
<tr>
<td>QuarkXPress</td>
<td>3 Video</td>
</tr>
<tr>
<td>Quicken, Personal</td>
<td>2 Video</td>
</tr>
<tr>
<td>Quicken, Business</td>
<td>2 Video</td>
</tr>
<tr>
<td>QuickTime</td>
<td>1 Video</td>
</tr>
<tr>
<td>SuperPaint</td>
<td>3 Video</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>3 Video</td>
</tr>
<tr>
<td>Word</td>
<td>4 Video</td>
</tr>
<tr>
<td>WordPerfect</td>
<td>4 Video</td>
</tr>
</tbody>
</table>

$49 each

Live Training Workshops Available in 32 major cities throughout the United States. Please call for complete schedule and/or on-site corporate training.

TOLL FREE ORDER LINE: 800-527-1914
ORDER FAX LINE: 904-677-6717
Checks, PO's, Credit Cards Accepted 48 Hour Delivery
100 E. Granada Blvd., Dept. MW994, Ormond Beach, FL 32176

"Where the world learns the Macintosh"

Circle 106 on reader service card
Creative Writer 1.0

**Pros:** A good variety of text, graphics, and effects tools; approachable for young Macintosh users; colorful and fun design. **Cons:** Strays from Mac interface; may be too cute for older kids. **Company:** Microsoft Corporation (206/882-8080). **List Price:** $64.95.

You might expect a program called Creative Writer to focus primarily on writing skills. However, Creative Writer’s emphasis is clearly on creative. Suggested for ages 8 and up, Creative Writer doesn’t teach kids to be better writers, but it does encourage them to develop ideas and provides a fun vehicle to express those ideas creatively. It’s a graphics/page-layout/word processor hybrid that offers some terrific type effects, any sounds, bright graphics, and wacky characters.

When kids load Creative Writer, they enter the city of Imaginopolis and meet McZee, a dorky but likable character that eight-year-olds will find inviting. While McZee may be a little too offbeat for some preteens and early adolescents, his sidekick, Max, is a much cooler character who balances out some of McZee’s Barney-like qualities.

The creativity takes place in a four-story building that contains the lobby/library, the project studio, the writing studio, and the idea workshop. All four floors eventually lead to the same tool-based editor, which is bursting with special effects, borders, backgrounds, stickers, and sounds.

The lobby/library is where kids find the portfolio that contains their saved work, although there are other easy ways to open saved files. (New documents can be started on any of the other three floors.) Creative Writer frequently asks kids if they want to open something they’ve already created, and they can also personalize the lobby/library by hanging their own drawings on the walls. Kids ride an elevator or click on the firefighter’s pole to move up to the higher floors. It’s easy to skip the lobby/library level and get right to work.

The project studio offers templates for creating newspapers, cards, and banners. Eschewing political correctness, Microsoft offers access to the various projects through animal heads mounted on the wall: click on the moose head to make a Moosepaper, the aardvark head to create a Cardvark, and the rhinoceros head to build a Banneroceros.

The writing studio lets kids access dozens of tools. Don’t be surprised if you find yourself creating cards and signs with the program’s special tools for adding shadows, textures, odd-shaped words, and a variety of eye-grabbing effects.

The idea workshop offers some simple tools to help kids develop a story. The Split Machine scrambles a variety of sentence fragments to come up with weird sentences that young writers can use to generate story ideas. For example, they might get a sentence like this one: *The silly rabbit rode a bike through your bedroom closet.* The Picture Window provides interesting line drawings that children can color and/or use as the inspiration for a story.

Creative Writer’s interface is colorful and fun. For younger children who might have a shorter attention span, there’s never a dull moment. McZee changes randomly from one wacky outfit to another; after short periods of inactivity, an animal scurries across the screen, or McZee pokes his head through the wall. Creative Writer takes over your Macintosh, however, so you lose access to the familiar Mac interface and the Finder until you quit the program. For kids who have already mastered Macintosh fundamentals, Creative Writer can be counterintuitive.

Creative Writer has no manual, but it does come with a brief Getting Started pamphlet and a colorful poster that does a surprisingly good job of describing the basics of the software.

While Creative Writer’s features are appropriate for kids of all ages, some more-mature young users may find it kid stuff. Keep the program’s cartoonish design in mind when you’re buying software for kids in their early teens. That small caveat aside, Creative Writer is an engaging program that packs a lot of fun and features into the small city of Imaginopolis.—DAN MUSE

---

**Now You’re Playing With POWER!**

VST ThinPack™ and ThinPack™ PLUS are high-density, maintenance-free batteries for the PowerBook™ 100 through 180c. Both are UL listed and come bundled with VST ThinPack Utilities battery management software.

**Cool Effects Are a Snap** Creative Writer makes it easy to add fancy and fun effects to cards, banners, and any other projects your kids can dream up.

Creative Writer’s interface is colorful and fun. For younger children who might have a shorter attention span, there’s never a dull moment. McZee changes randomly from one wacky outfit to another; after short periods of inactivity, an animal scurries across the screen, or McZee pokes his head through the wall. Creative Writer takes over your Macintosh, however, so you lose access to the familiar Mac interface and the Finder until you quit the program. For kids who have already mastered Macintosh fundamentals, Creative Writer can be counterintuitive.

Creative Writer has no manual, but it does come with a brief Getting Started pamphlet and a colorful poster that does a surprisingly good job of describing the basics of the software.

While Creative Writer’s features are appropriate for kids of all ages, some more-mature young users may find it kid stuff. Keep the program’s cartoonish design in mind when you’re buying software for kids in their early teens. That small caveat aside, Creative Writer is an engaging program that packs a lot of fun and features into the small city of Imaginopolis.—DAN MUSE

---

**Consistently rated BEST in technical reviews.**

**ThinPack PLUS - 10 Amp-Hours**

- Dimensions: 11” x 9” x 1/4”
- Weight: Only 3 lbs.
- Runtimes: 8-15 hours (b&w)
- 4-7 hours (color)

**ThinPack - 5 Amp-Hours**

- Dimensions: 5” x 9” x 1/4”
- Weight: Only 1.5 lbs.
- Runtimes: 5-9 hours (b&w)
- 3-4 hours (color)

**Distributed by:**

**INGRAM MICRO**

Available through all major resellers or at:

**VST Power Systems, Inc.**

Phone: (508) 287-4600
Fax: (508) 287-4068

**ThinPack™** is a trademark of VST Power Systems, Inc. **PowerBook™** is a trademark of Apple Computer, Inc.

Circle 73 on reader service card
Never Before has Speed been So Sweet

LOGICODE QUICKTEL®
28,800 FAX/MODEM

- Easy Upgrade Program
- Limited Lifetime Warranty
- Made in the USA
- Free Lifetime Technical Support

Whether it’s a large graphics, data or multi-media file transfer, you’ll save time and money with LOGICODE’s new 28,800bps V.FAST Class fax/modems. With V.42bis data compression you’ll get error free data throughput of up to 115,000bps. It’s compatible with all lower speed modems. In addition to our blazing speed and broad compatibility, all QUICKTEL® MAC Fax/Modems include free FAX and communications software, cables and easy to follow manuals.

So whether it’s our 28,800 bps Fax/Modem which includes caller ID and all of the features listed above, or our new DATA SAFE™ Fax/Modem which offers such state of the art security features, built directly into the hardware, as Password Protection, Call Back Security and Master Password Remote Configuration, you’ll get the fastest speeds available backed by the company known for quality and innovation.

LOGICODE, Reshaping The Way You Communicate

Circle 297 on reader service card
**Two Health Guides**

**Medical CD-ROMs**

**Mayo Clinic Family Health Book 1.2**

**PROS:** High-quality photographs of skin disorders and other diseases; effective use of hypertext and audio.  
**CONS:** No reference to some alternative therapies; appearance of text could be improved.  
**COMPANY:** M.D. Publishing (612/686-0779).  
**LIST PRICE:** $59.95.

**Mayo Clinic: The Total Heart 1.0**

**PROS:** Covers risk assessment as well as diagnosis and treatment.  
**CONS:** Videos would be more effective than animations in many places; limited section on cardiovascular emergencies.  
**COMPANY:** M.D. Publishing (612/686-0779).  
**LIST PRICE:** $59.95.

---

**The Mayo Clinic Family Health Book and The Total Heart are the first in a series of medical CD-ROM titles from the Mayo Clinic. Don’t expect a step-by-step guide to removing your aunt’s spleen or repairing a leaky heart valve, though—both programs are aimed squarely at healthcare consumers, not professionals. The two reference works sport a common interface, with a table of contents and a large, fixed-size window for text, graphics, and movies. Icons provide single-click access to functions, including a dictionary, a search engine that lets you hunt for topics by keyword, and a handy list of recently viewed items.

The most disappointing part of the presentation is the plain-vanilla Geneva font that is used for most of the text; the absence of curly quotes and apostrophes also is surprising. On the other hand, hypertext is used effectively, with linked text and icons clearly shown in color. I also like the succinct narrations that accompany the illustrations, although you can turn off the audio if you wish.

**Home Health Guide**

As its name suggests, the Family Health Book deals with the full gamut of healthcare topics, from AIDS to zygotes. Major sections cover basic human anatomy, first aid, keeping fit, diseases, skin disorders, and modern medical care. The appendix—not the squiggly thing that surgeons like to remove—includes helpful information on medical tests, a guide to drugs, conversion tables for weights and measures (a working calculator would be even more useful), and a dictionary of medical terms.

The Family Health Book is most effective at presenting material graphically. For example, the 8-bit color photographs of rashes and other skin diseases are first-rate and are bound to be helpful to parents struggling to decide whether to quarantine Junior for a few days (see “Rash Decisions”). The anatomic diagrams are accurately rendered and instructive, and they incorporate a clever sliding control that brings different organ systems into view by altering the transparency of various body parts. On the other hand, I was disappointed to find no reference to alternative therapies such as acupuncture. I was also surprised that some well-accepted tests (like transvaginal ultrasound) are not mentioned at all.

**The Total Heart**

More narrowly focused than its companion, The Total Heart concentrates on cardiovascular health and related subjects. Major sections cover normal anatomy and cardiac function, heart disease, risk assessment and reduction, and diagnosis and treatment. There is also a chapter that touches briefly on topical issues in cardiology such as the role of aspirin in preventing stroke. The final section, on cardiovascular emergencies, is limited to a table that lists symptoms, possible diagnoses, and suggested actions.

Although The Total Heart makes liberal use of drawings, photographs, and clever animations, video sequences would have been more effective. The few videos that are included are well done, however.

Limitations notwithstanding, the Family Health Book and The Total Heart contain a wealth of useful information. If you have a suitably equipped Mac, both are worthwhile additions to your CD-ROM library. —Franklin N. Tessler, M.D.
Eco-Logical.

Energy

EPA POLLUTION PREVENTER

This symbol identifies energy-efficient computers that save you money and reduce air pollution by “powering down” when not in use.

Over 2000 computers, monitors and printers have earned the right to bear the Environmental Protection Agency’s Energy Star® logo. These computers are so smart, they go to sleep when not in use and wake up with a simple touch of the keyboard or mouse. Energy Star® Computers don’t cost any extra, will save money on your energy bill, and prevent pollution from electricity generation. Be part of the solution and look for this logo when you make your next computer purchase. To receive a list of available products call the Energy Star® Hotline at 202 775-6650.

Buy It And Save.
It's about learning. It's about technology. It's about time.

The Electronic Learning Fair
Coming to the San Jose Convention Center, December 2-4.

Imagine 30,000 parents, three weeks before Christmas, in search of technology for the home. That is what we expect at the Electronic Learning Fair when parents, teachers and kids all come together to experiment with - and buy - the latest learning technology for home and classroom.

The San Jose Mercury News, in association with Multimedia World and Macworld, will present the Electronic Learning Fair (ELF) in the San Jose Convention Center on December 2, 3 and 4. This unique, first-ever showcase is about what's available today, not another fantasy about the Classroom of Tomorrow.

Only in Silicon Valley could you find an event like this - along with lots of computer-literate parents and educators in the market for new teaching resources.

Twelve Model Classrooms
The main attraction at ELF will be a dozen model classrooms, preschool through high school. Each classroom, equipped with 20 to 30 multi-platform workstations will give attendees hands-on exposure to the latest in edutainment and educational software.

Exhibit Booths
From these classrooms, parents and teachers will be referred to reseller exhibit booths where they can buy demonstrated hardware and software products. Other exhibit booths will include non-profit groups and family and educational service providers.

Promotion Plan
Promotional efforts to encourage Bay Area parents and educators to attend ELF will include an aggressive schedule of radio, television and newspaper advertising. These will be supplemented by direct promotion through area schools, community groups, and an extensive public relations campaign.

A Unique Opportunity
The Electronic Learning Fair offers obvious benefits to participating hardware and software companies. Vendors will enjoy an audience of the most computer-literate consumers anywhere - and a unique classroom setting that lets them demonstrate the full appeal and potential of their products. Don't miss this unique opportunity. For more information on how your company can participate, call Nancy Woodard, San Jose Mercury News, (408) 920-5850.
WHAT OUR ENGINEERS HAD IN MIND WHEN WORKING ON OUR NEWEST SCANNER.

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 and the Agfa rhombus are registered trademarks. Photoshop is a trademark of Adobe Systems Incorporated, which may be registered in some jurisdictions. OmniPage Direct is a trademark of Core Corporation.

Circle 159 on reader service card
SCSI Sentry

**Terminator**

**PROS:** Reduces SCSI hookup hassles. **CONS:** A little bit pricey for a terminator.

**COMPANY:** APS Technologies (816/483-6100). **LIST PRICE:** $99

*Macworld*

**Reviews**

**SCSI Sentry**

**LOOKING UP AN EXTERNAL SCSI device (such as a hard drive, CD-ROM drive, or scanner) to your Mac should be a simple affair. You keep cables as short as possible, and the first and last device on the SCSI chain must be terminated. But sometimes SCSI chains just won’t behave as they should. APS Technologies’ SCSI Sentry is designed to address and simplify these complicated situations.

With long SCSI chains, hard drives may fail to mount when you start up your computer, or your Mac may freeze at the Welcome to Macintosh screen, or it may crash when it writes data to and from a drive. You are then forced to resort to an endless process of swapping cables, SCSI devices, and termination until the situation becomes normal again—if it ever does.

The SCSI Sentry is an active termina-

**Conley SR2 RAID System**

**High-Performance Storage**

**PROS:** Extremely fast in some operations; excellent tech support. **CONS:** Tricky to reconfigure; software reports nonexistent errors.

**COMPANY:** Conley Corporation (212/682-0162). **LIST PRICE:** $25,335.

*Macworld*

**SPEED DEMONS, CLUTCH YOUR HATS (and your pocketbooks). While RAID technology is typically praised for its fault-tolerance rather than its speed, Conley proves that you can have both. The Conley SR2 disk array, with its five 1.6GB drives, offers redundancy and hot-swapping capabilities and comes in several other configurations—including one with redundant array controllers and 16GB of storage.

As a RAID Level 3 array, the SR2 is best for large data transfers. In Macworld Lab tests, it outperformed the fastest Level 0 arrays currently used for high-end digital video and sound. On a Centris 650, the SR2 took only half as long as the fastest Level 0 array to transfer a non-Finder copy of a 40MB file—6.25 seconds, versus 13 seconds. Low-level tests show a maximum sustained-transfer rate of 16.5MB per second on writes and 17.6 MBps on reads.

The SR2 achieves such high speeds by using a PDS card with dual-channel Fast and Wide SCSI (our tests only used one data channel) and a five-channel array controller capable of managing 15 drives. For the Power Macintosh, Conley provides a NuBus adapter board that, the company claims, achieves the same speeds as PDS cards. For the best performance, a Power Mac 8100/80 is required. But, of course, performance varies depending on the task. In Adobe Photoshop tests, the SR2 and our Level 0 array were roughly equivalent. (At press time, Conley claimed speeds of 3 MBps for the SR2 as a Level 0 array using both data channels.) When we configured the SR2 as a Level 5 array, a search through a 96,000-record 4th Dimension database ran 13 percent slower on the SR2—and only 3.4 percent faster than a standard 230MB internal drive. We pulled out one of the five drives to simulate a drive failure and were impressed when the 4D search continued as if nothing had happened; the search took no more time than it had under the complete five-drive array.

The array, however, can cause some headaches. Though simple to use, the management software often reports nonexistent errors. For example, when we reconfigured the array from Level 0 to Level 3, we got several error messages, but the SR2 worked fine just the same. In contrast, a mistake that we made while configuring a Level 3 or Level 5 array slowed the SR2 to a crawl. Fortunately, Conley’s manuals are concise and clear, and its technical support is stellar.

Is the SR2 worth its high price? For critical tasks requiring redundancy and round-the-clock operation, the SR2 is one of the best (and only) Mac RAID systems shipping. For high-end video, the answer depends on whether your software takes full advantage of the SR2’s speed. Even with these caveats, the Conley SR2 is impressive.

—Tim Warner
### Features

- QMS 860 - 600x600 dpi output
- QMS 860 Plus - 1200x600 dpi output
- QMS 860 - Up to 11x17/A3 output
- QMS 860 Plus - Up to 11x17 (full bleed output)
- QMS Crown™ technology, featuring multi-tasking, advanced job spooling, complete-ahead processing, context switching and virtual memory
- Compatible with a variety of languages including PostScript™ Level 2 and Level 1, HP PCL™ and HP-GL™
- SIC (Simultaneous Interface Option)
- ESP (Emulation Sensing Processor)
- 39 resident type fonts, all with multilingual character sets
- An international network of service and support organizations in over 230 metropolitan areas throughout the U.S. and around the world
- Several convenient service plans that include on-site response within an average of 4 hours, emergency service and other options
- Our exclusive Q-Fax (800-633-3850) or 205-633-3850 and ComputerServe® (GO DTPV5N) services at your fingertips 24 hours a day
- Full one-year warranty
- Emergency telephone support
- Onsite installation available

### Benefits

- High resolution for camera-ready originals or accurate press proofs
- More flexible page layout, B-size check plots and no need for tiling
- Increases print job responsiveness, provides a platform for convenient, cost-effective enhancements and enables peak performance as a network node with interfaces supporting protocols that include EtherTalk™, NetWare® and TCP/IP
- Accommodates the latest application software on all major platforms
- Accepts data streams on all ports simultaneously to increase system responsiveness for all users
- Eliminates user intervention to select compatible printer language
- Fast, local response to service and support requirements
- Flexible programs designed to be just right for your needs
- Quick and easy access to a full range of information and support
- Parts and labor coverage for the important components of your print system
- Direct dial with technical experts
- Experts to assure fast, trouble-free installation

---

**QMS 860 Hammerhead Print System**

**QMS 860**

- 600x600 dpi • 11” x 17”/A3 • SRP $4595

**QMS 860 Plus**

- 1200x600 dpi • 11” x 17”/A3 full edge-to-edge • SRP $5999

Dominant. Powerful. Precise. That's the formidable character of the QMS® 860 Hammerhead™ Print System. It's fast, compact and capable of remarkably accurate printing without hesitation.

And now the world's most popular 11 x 17/A3 laser printer is available with all of the features of the QMS 860, plus 1200x600 dpi resolution output...the powerful 24 MB QMS 860 Plus!

These desktop printers are creatures like no others - able to operate in mixed environments of PC, Macintosh® and workstation systems with standard and optional interfaces. Yet, with all their impressive power, they are both surprisingly affordable.

Others see them as killers. You'll see them as lifesavers. The QMS 860 and 860 Plus Print Systems. The perfect printing machines.

---

IN THE WILD, THEY'RE KILLERS.

IN BUSINESS, THEY'RE LIFESAVERS.

---

**QMS**

For service on QMS and other products, call 800 762-8894 (U.S.)

Q-Fax 800 633-7213 • E-mail: info@qms.com • Canada 800 263-5508

QMS, the QMS logo and Hammerhead are trademarks or registered trademarks of QMS, Inc. One Magnus Pass, Mobile, AL 36618, 205 633-4900.

PostScript is a trademark of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other product and company names are trademarks or registered trademarks of their respective companies.

---

Circle 289 on reader service card
Reviews

SAM-CD

Clinical-Medicine Articles on CD-ROM

**PROS:** Articles include text, tables, illustrations, and case simulations; fast search engine.

**CONS:** Difficult to open linked items; poor interface for case simulations; no global font preferences. **COMPANY:** Scientific American Medicine (212/754-0550). **LIST PRICE:** $395 for four quarterly discs.

---

SF SOME MEDICAL PUBLISHERS HAVE their way, those textbooks and journals that line the shelves of doctors' offices will soon be replaced by rows of CD-ROMs in plastic cases. **Scientific American Medicine**—a popular series of publications covering topics in clinical medicine—is the latest reference work to become available in electronic format. For $395, you get a one-year subscription to SAM-CD, with a new disc coming out quarterly. (The license agreement requires you to return the previous disc when a new one arrives, using the provided postage-paid envelope.)

SAM-CD runs on any Mac equipped with a CD-ROM player and at least 1MB of RAM. If you only want to browse, you can view an alphabetical list of all the articles on a disc; double-clicking on a title opens the article in a separate window. You can change the 12-point Geneva default font to any font and size you prefer, but alas, there's no way to make your preferences permanent. Buttons at the top of the window let you view an article in outline form or a list of all the tables and figures in the article. SAM-CD's illustrations are generally quite good, although some of the X rays are barely adequate for learning purposes.

**CONS:** Problems of three exception ally clean documents (in TextBridge scored coming out quarterly). Xerox also turned in a fine body text of a scanned paper fax, a particularly challenging document since the text resolution had effectively been degraded twice. In competition with the six Mac OCR-roundup packages on a variety of documents, TextBridge would probably place no lower than second. Accuracy on italic and bold text was exceptionally good.

TextBridge's recognition problems are truly baffling. On a document from a statistics-software vendor, it got *hierarchical cluster analysis* right, but read *the as the all* the way through the text. Xerox's Lexifier technology is supposed to guard against this and other low-level errors. To its credit, TextBridge's Verifier mode enables you to train the program to recognize easily misconstrued words in a particular font; at the expense of considerable processing time (several minutes per page on a Power Macintosh 7100), you can push reading accuracy to 98-plus percent on nearly any font at point sizes larger than 6, if you're willing to verify 5 to 15 pages of text.

TextBridge has settings for text quality, previewing, verifying, image orientation, zoning, and language character set (English, French, German, Italian, and Spanish). The Auto Zone feature correctly chose columns in every multicolumn document I tested, although blocks of line art usually confused it. TextBridge supports every currently available scanner and the TWAIN source manager, and it can process scanned documents to sets of TIFF or PICT files for later recognition, but it could not read TIFF files saved in Photoshop 2.5.

AppleScript gives this product extra power for heavy-duty use, in one specific way. It's possible to train TextBridge on your documents (to attain acceptable accuracy) and fine-tune some of the AppleScript examples to recognize and store massive sets of files automatically. TextBridge is priced as an entry-level product, but its AppleScript capability is likely to appeal mostly to advanced users with large projects.

Users often expect OCR software to be able to read less-than-perfect text, the way humans can read. Neither TextBridge nor any other OCR product quite does that yet. But TextBridge is impressive on good documents and can be trained and automated. You won't find that anywhere else at this price. —FRANKLIN N. TESSLER, M.D.

---

TextBridge 2.0

Optical Character Recognition Software

**PROS:** Convenient interface; respectable accuracy; includes AppleScript for batch processing.

**CONS:** Problems with some TIFF files; bewildering small flaws. **COMPANY:** Xerox Imaging Systems (508/977-2000). **LIST PRICE:** $99.

---

XEROX IMAGING SYSTEMS HAS released a Mac version of its highly-regarded TextBridge optical character recognition (OCR) software, available for more than a year under Windows.

It's a bargain—the current market leaders in OCR cost $500—but that recommendation includes several caveats. On a set of three exceptionally clean documents (in 14-point Times Roman printed at 600 dpi), TextBridge scored 100 percent accuracy. That puts it on a par with Caere's OmniPage Professional, a *Macworld* Editors' Choice in our last OCR roundup (November 1993). TextBridge also turned in a fine performance (95 percent accuracy) on the body text of a scanned paper fax, a particularly challenging document since the text resolution had effectively been degraded twice. In competition with the six Mac OCR-roundup packages on a variety of documents, TextBridge would probably place no lower than second. Accuracy on italic and bold text was exceptionally good.

TextBridge's recognition problems are truly baffling. On a document from a statistics-software vendor, it got *hierarchical cluster analysis* right, but read *the as the all* the way through the text. Xerox's Lexifier technology is supposed to guard against this and other low-level errors. To its credit, TextBridge's Verifier mode enables you to train the program to recognize easily misconstrued words in a particular font; at the expense of considerable processing time (several minutes per page on a Power Macintosh 7100), you can push reading accuracy to 98-plus percent on nearly any font at point sizes larger than 6, if you're willing to verify 5 to 15 pages of text.

TextBridge has settings for text quality, previewing, verifying, image orientation, zoning, and language character set (English, French, German, Italian, and Spanish). The Auto Zone feature correctly chose columns in every multicolumn document I tested, although blocks of line art usually confused it. TextBridge supports every currently available scanner and the TWAIN source manager, and it can process scanned documents to sets of TIFF or PICT files for later recognition, but it could not read TIFF files saved in Photoshop 2.5.

AppleScript gives this product extra power for heavy-duty use, in one specific way. It's possible to train TextBridge on your documents (to attain acceptable accuracy) and fine-tune some of the AppleScript examples to recognize and store massive sets of files automatically. TextBridge is priced as an entry-level product, but its AppleScript capability is likely to appeal mostly to advanced users with large projects.

Users often expect OCR software to be able to read less-than-perfect text, the way humans can read. Neither TextBridge nor any other OCR product quite does that yet. But TextBridge is impressive on good documents and can be trained and automated. You won't find that anywhere else at this price. —FRANKLIN N. TESSLER, M.D.

---

Words and Pictures SAM-CD from Scientific American Medicine includes all of the text and illustrations from the series' printed version in an accessible CD-ROM format.

---

M AC W ORLD September 1994 93
Should the New MiniCad 5 be your CAD Program?

Take the Quiz.

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 aggressive 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: $19.00Buy MiniCad 5 and save!

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

10270 Old Columbia Road, Suite 100, 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 Diehl Graphsoft, Inc. Claris CAD is a trademark of Claris Corp.

Circle 46 on reader service card
CD All Cache 2.0

**CD-ROM Accelerator**

**PROS:** Caches both directories and data; offers predefined cache settings; permanently caches unlimited number of CD directories.

**CONS:** User can’t control which disk drive is used for caching; user can’t add to predefined settings; maximum RAM cache is 512K.

**COMPANY:** CharisMac Engineering (916/885-4420). **LIST PRICE:** $79.95.

UNTIL RECENTLY CD-ROM FANS have had to live with CD-ROM’s slow access speeds. CD All Cache promises to improve access time by caching a CD’s directory onto a hard disk and putting its most frequently used data into RAM.

CD All Cache 2.0 consists of a control panel that replaces your CD-ROM driver; a disk accessory for playing audio CDs; and a well-written user’s guide. Once the program is installed, whenever you insert a CD that CD All Cache hasn’t seen before, it copies the CD’s directory to a file on your start-up disk and immediately begins caching data accesses to a RAM buffer of up to 512K. The audio-player DA includes one notable feature: it offers five sizes and orientations for the control window.

You customize CD All Cache through its control panel, which lets you specify the total RAM cache size and page size. The control panel includes a list of buttons that set the cache parameters to predefined values; the buttons include generic types, such as QuickTime, as well as title-specific buttons. The control panel also displays a list of directories cached on your start-up drive; you can delete directories you don’t want.

Both the directory and data caches work well. When you use a previously cached CD, having the directory stored on a hard disk makes mounting and accessing files much quicker. The RAM data cache also allows for extremely fast access of repeated data, such as large images and text files.

Although CD All Cache does its primary job well, there is room for improvement. Directories can be large, and if your start-up volume is small, you can quickly run out of space just by swapping CDs. The program should let you select the destination volume, but doesn’t. Also, though the settings buttons are handy, you can’t add your own. It would be nice, too, if CD All Cache restored the last cache setting for a particular disc the next time you inserted the CD; as it is, you must manually change cache settings for every disc. (CharisMac plans, in an upcoming version called CD Auto Cache, to add a feature that lets users scan a CD and automatically optimize the cache settings based on the CD’s contents.) Finally, the 512K cache limit is too small, and CD All Cache is incompatible with Apple’s Audio Player DA, which you may prefer for its ability to catalog CD song titles.

Despite CD All Cache’s limitations, though, most CD addicts will find that the speed improvement it delivers is worth the trouble.—MEL BECKMAN

**Cache Control**

CD All Cache’s control panel lets you change CD cache settings without rebooting. It includes a scrollable list of predefined settings for several popular CDs, but you cannot change the list.

JMP 3.0

**Statistics Software**

**PROS:** Includes experimental-design module; now offers survival and cluster analyses. **CONS:** Needs time-series analysis. **COMPANY:** SAS Institute (919/677-8000). **LIST PRICE:** $699.

AMONG THE GREAT PITCHER Satchel Paige’s collection of maxims was “Don’t look back ... something might be gaining on you.” JMP 3.0 from SAS Institute is gaining on Mac statistics market leaders StatView, DataDesk, and SYSTAT. In the world of statistics, SAS has the kind of resources Microsoft commands with its familiar business software, and the new version of JMP implements several years’ worth of detailed user requests.

The starting point of a JMP analysis has always been a spreadsheet-like data table, acquired as any delimited text file or directly from SAS applications on other platforms. The Tables, Rows, and Columns menus contain more than 30 table-editing commands for convenient and precise data-structure control, but the feature that really sets JMP 3.0 apart is the Design Experiment command under Tables. SAS’s excellent experimental-design program now operates directly on data tables within JMP, allowing specification of simple, mixed, general factorial, and optimal designs with a single mouse-click. The documentation of design features was easier to follow when JMP Design was sold as a separate product, but that’s not much of a price to pay for the convenience of integration.

JMP 3.0 implements a substantial list of additions. Cluster analysis with tree-graph output operates on any selection of rows in a table; JMP now offers QuickTime data movies (a surprisingly useful method of exploratory data analysis); and contour and ternary plots are both options (although the contour plots are not as sophisticated as those in Igor and DeltaGraph). A new survival-analysis option (for analyzing failure in engineering or, ahem, death in medical experiments) includes proportional hazard models and parametric failure-time models. Two new moving-average control charts (unweighted, exponential) appear as quality-control options; it’s puzzling that timeseries data smoothing doesn’t appear in other contexts in JMP.

Some improvements—floating tool palettes, an annotation tool for data tables, better color support, and a magnifier—simply indicate that JMP is catching up with its competitors. Other enhancements—such as the ability to accommodate any number of rows, limited only by RAM—are significant for users of large-systems SAS files. It’s encouraging to note that calculation and graphing response (using a Quadra 610) is nearly instantaneous on data files smaller than 20 columns by 2000 rows. JMP has always had a simple focus on correlation and regression, and now with the addition of integrated experimental design, JMP 3.0 can be used for a wide range of biological, chemical, and physical-science investigations. It still needs time-series facilities for econometrics, and social scientists will want more explicit nonparametric statistics, but version 3.0 expands JMP’s domain without losing any of its original appeal.—CHARLES SEITER
The Quadra 630 is faster than the Quadra 610 it replaces, and it's priced right: $1199 for a model containing 4MB of memory and a 250MB hard drive (not including a keyboard or monitor).

Like many of Apple's recent 68040 Macs, the Quadra 630 has some nearly identical cousins: the LC 630, which is sold to the education market, and the Performa 630 series, which is sold through consumer electronics and office-supply outlets. The Performa 630 line includes several variants, each of which includes a selection of bundled software as well as a high-speed fax/data modem, monitor, and keyboard (see "The Quadra 630 Family Tree").

Why build a new 68040 Mac when you're busy preaching the Power Mac gospel? One reason is that the 68040 remains less expensive than the PowerPC 601 chip, so it still has a home in low-cost computers. Another reason is software: the Quadra 630 is available worldwide, and few Power Mac-native programs have been localized for languages other than English. What's more, the 630—specifically, the LC 630—is designed for the education market, where little native Power Mac software currently exists.
As a subscriber you are entitled to receive a full year of Macworld for almost 50% less than the annual cover price of $47.40. You save $23.40!

Please Check:

- [ ] 12 issues/$24.
  Bill me later.

Name

Company

Address

City, State, Zip

Allow 4 to 6 weeks for delivery. For Mexican and Canadian subscriptions, please add $18 per year for shipping. Add $70 annually for all other foreign countries.

Savings Statement

<table>
<thead>
<tr>
<th>Annual Cover Price</th>
<th>$47.40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Subscription Price</td>
<td>$30.00</td>
</tr>
<tr>
<td>Your Special Rate</td>
<td>$24.00</td>
</tr>
</tbody>
</table>
By the time 630 owners are ready to make the move to PowerPC, Apple’s planned upgrade option should be available (within a month or two of when you read this).

The Box and Board
The Quadra 630 uses a new, compact case design. The front of the case contains a headphone jack and volume-control buttons—convenient alternatives to the rear-panel sound-output jack and the Sound control panel. Just above the volume-control knobs is an infrared sensor for the remote control that accompanies the optional TV-tuner card, described below.

The Quadra 630’s logic board lives on a tray that slides out of the case—the scheme is similar to that of some of Apple’s big all-in-one Macs, such as the LC 575. In an LC 630 or Performa 630 model, the logic board sports a 68LC040, a version of the 68040 microprocessor that lacks built-in math processing circuitry (generally called a floating-point unit, or FPU). The Quadra 630 uses the full-blown 68040, so it yields superior performance with applications that support floating-point math. (Examples include statistical-analysis, three-dimensional graphics, and high-end spreadsheet software.)

In all 630-series machines, the central processor runs at a speedy 66MHz, but the remainder of the logic board runs at a more leisurely 33MHz. Overall, however, the 630-series machines are strong performers (see “How Fast Are the 630 Macs?”). In Macworld Lab tests performed on preproduction models, the Quadra 630 performed comparably to a Quadra 950, finishing just below the Quadra 800. In entry-level tests, the LC 630 did better than any other low-cost Mac except the LC 575.

The 630 ships with between 4MB and 8MB of memory, depending on the configuration. The logic board has room for a total of 36MB; the computer requires 72-pin, 80-nanosecond SIMMs.

The Quadra 630 provides a built-in monitor port and supports monitor sizes ranging from 12 to 15 inches. (The port itself is the standard 15-pin variety, not the new high-density connector used on the Power Macs.) The Quadra 630’s logic board contains 1MB of video memory, which enables the computer to support 16-bit color—the standard for viewing QuickTime movies—on monitors as large as 14 inches. The video memory is not expandable; to obtain 24-bit color (the standard for color-image processing) or to drive monitors larger than 15 inches, you must install a video card in the 630's processor-direct slot. That slot is the standard 630 LC Processor Direct Slot (PDS) that is used in many LC, Performa, and low-end Quadra models.

Rather than providing separate video memory (VRAM), the 630 models use a dedicated block of dynamic RAM (DRAM). This yields a less-expensive computer—and slower video performance, since the processor sometimes has to wait in order to access the video memory. Apple endowed the 630 with a variety of buffer circuits designed to eliminate delays, but we still saw mediocre video performance. In Macworld Lab’s video tests, the Quadra 630 was only as fast as the under-$1000 Quadra 605. Still, the 630 was faster than the long-discontinued Quadra 700, which we all thought was speedy a year or two ago.

The 630’s logic board contains three additional slots. The first one is a video slot that accommodates a video-digitizing card. The second is the TV direct slot; it holds the optional TV-tuner card, which can be installed without removing the logic board. The third slot is a communications slot identical to that of the recently introduced LC 575. The communications slot can accept an internal 14.4-Kbps fax/data modem (several Performa 630 series models include one) or an Ethernet networking card (the Quadra 630 is available with one).

Introducing IDE
Macs have used the SCSI bus to support internal hard drives since the SE and Mac II shipped in 1987. The Quadra 630 departs from this tradition. It still provides a rear-panel SCSI connector for external hard drives, scanners, and other devices, and it still has an internal SCSI connector for an optional CD-ROM drive. But for the internal hard drive, Apple has switched to a bus design called Intelligent Drive Electronics, or IDE. IDE is popular on DOS/Windows machines; the Quadra 630 marks its debut in the Macintosh world.

In an IDE drive, the controller circuitry—the chips that enable the computer to communicate with the drive mechanism—are built into the drive itself. The primary reason Apple used IDE for the 630 is price: the drives cost slightly less than equivalent SCSI drives.

The Macintosh Quadra 630 ships with a 250MB hard drive. Apple is planning 350MB configurations for some Asian Pacific and European markets, but these details weren’t final at this writing. In any event, Apple says you will be able to replace the internal hard drive with any standard IDE drive that supports the IDE Identify command and PIO mode 2. Apple says it has tested a variety of drives from different manufacturers and that most work fine.

Video Input and QuickTime
The Quadra 630’s TV talents fall into two broad categories: support for video digitizing and support for broadcast and cable...
television. The Apple Video System card provides video-digitizing features similar to those of Apple's AV Macs. (In fact, the card uses the same Phillips digitizing chips.) Connect a video cassette recorder, camcorder, or other video source to the card's input jacks, and you can create QuickTime movies, grab individual video frames, and display video in a window on the screen. The price: only $199.

Like an AV Mac, the Apple Video System card provides both composite-video and S-Video connectors. (S-Video generally provides a sharper image because the signal's color and brightness information travel on separate wires; in a composite-video signal, this information is merged.) Unlike an AV Mac, the card also provides a standard RCA-style audio-input jack; so there's no more cause the signal's color and brightness information travel on separate wires; in a composite-video signal, this information is merged.) Unlike an AV Mac, the card also provides a standard RCA-style audio-input jack; so there's no more struggling to find a miniplug-to-RCA adapter when you need to connect the card to an audio source.

The Video System card's video-in-a-window features are similar to those of an AV Mac. You can, for instance, resize the video window to any size, and you can drag windows around and choose menu commands without interrupting the action.

For this and other video-related tasks, Apple designed a new custom chip that contains much of the AV video architecture, including the dual frame buffers that make video in a window possible. Apple says this new chip, located on the 630's motherboard, may be the most complex ASIC (application-specific integrated circuit) it has designed to date.

The new chip doesn't just shrink the AV video architecture; it improves on it in some ways. You can, for example, digitize QuickTime movies even when using 16-bit color. On a Quadra 660AV or 840AV containing just 1MB of video memory, you must switch to 8-bit color to digitize movies—it's an annoyance that 630 owners are spared. Also, where an AV Mac displays TV video in red-green-blue (RGB) form, the Video System card uses a YUV color model (the model used by television), which yields a better picture with less bleeding where colors meet.

For QuickTime digitizing, the Video System card includes a simple program called Apple Video Player. This program lets you grab individual frames, digitize movies, and switch between video sources (see "Apple Video Player"). It's preinstalled in the Apple menu for convenient access.

One key performance factor in the QuickTime world deals with the frame rate—how many frames a digitizing system can record every second. Apple engineers say they were aiming for 15 frames per second at a movie size of 320 by 240 pixels, but prototype systems were falling just short of that goal. In any event, a frame rate in this ballpark would be perfectly adequate for entry-level QuickTime work—and indeed, would be terrific given this system's price. The Video System card also provides a digital-audio-video (DAV) connector that accepts add-on boards that allow recording and playback of full-screen video at 30 frames per second.

Another important phase of any QuickTime project involves compressing the movie so that it uses less disk space and plays back smoothly. This can be one of the most confusing aspects of QuickTime; the compression world is laced with technical jargon and concepts. The Apple Video Player software simplifies things by providing three compression settings: None, Normal, and Most. (For the QuickTime-savvy, Apple Video Player uses QuickTime's video codec—the algorithm that compresses and decompresses video. The Most setting corresponds to the highest-quality video codec setting, Normal corresponds to the normal video setting, and None, of course, means no compression.)

Sound is one area where the 630 falls short of AV and Power Mac standards. The 630 can't record stereo sound (although it can play back stereo QuickTime movies and compact discs), and its sound-playback features use 8-bit sampling resolution rather than the cleaner-sounding 16-bit sampling of the AVs and Power Macs. The 630's audio features are adequate for viewing multimedia CDs and creating amateur-level content, but they aren't intended to meet the needs of professional producers.

AV Macs aren't limited to just video input; they also provide composite-video and S-Video output jacks that let you display Mac screens on television sets and record them using video recorders. The 630 lacks these features, but you can add

---

**The Quadra 630 Family Tree**

<table>
<thead>
<tr>
<th>Family Tree</th>
<th>Price</th>
<th>Processor</th>
<th>Memory</th>
<th>Hard Drive</th>
<th>Includes CD-ROM</th>
<th>Includes Monitor and Keyboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadra 630</td>
<td>$1199</td>
<td>68040</td>
<td>4MB</td>
<td>250MB</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>LC 630</td>
<td>$1299</td>
<td>68LC040</td>
<td>4MB</td>
<td>250MB</td>
<td>no</td>
<td>yes (14-inch)</td>
</tr>
<tr>
<td>LC 630</td>
<td>$1949</td>
<td>68LC040</td>
<td>8MB</td>
<td>250MB</td>
<td>yes</td>
<td>yes (14-inch)</td>
</tr>
<tr>
<td>Performa 630</td>
<td>$1494</td>
<td>68LC040</td>
<td>4MB</td>
<td>250MB</td>
<td>no</td>
<td>yes (14-inch)</td>
</tr>
<tr>
<td>Performa 630CD</td>
<td>$1849</td>
<td>68LC040</td>
<td>8MB</td>
<td>250MB</td>
<td>yes</td>
<td>yes (14-inch)</td>
</tr>
<tr>
<td>Performa 635</td>
<td>$1849</td>
<td>68LC040</td>
<td>5MB</td>
<td>250MB</td>
<td>yes</td>
<td>yes (15-inch)</td>
</tr>
<tr>
<td>Performa 636</td>
<td>$1349</td>
<td>68LC040</td>
<td>4MB</td>
<td>250MB</td>
<td>no</td>
<td>yes (14-inch)</td>
</tr>
<tr>
<td>Performa 636CD</td>
<td>$1649</td>
<td>68LC040</td>
<td>8MB</td>
<td>250MB</td>
<td>yes</td>
<td>yes (14-inch)</td>
</tr>
</tbody>
</table>

* Apple's estimated street prices.  * Available in K-12 education channel only.  * Available in higher-education channel only.

---

**A LOW-COST WAY TO GET YOUR MAC ON TV**

The $299 Apple Presentation System connects to any Mac with a 15-pin monitor connector—that includes many PowerBooks—and lets you display the Mac's screen image on any NTSC or PAL television. Connect the box to a video recorder and you can record Mac images such as presentations or QuickTime movies.

The Presentation System provides both composite-video and S-Video outputs. Software bundled with the box lets you activate a flicker filter and choose from several display resolutions. In short, the product provides the same video-out capabilities as the AV Macs.

Actually, the Presentation System does the AVs one better by supporting mirroring—the ability to display an image on a Mac monitor and a TV set simultaneously. With the AV Macs, when you switch to TV output, the Mac's monitor goes dark—which complicates life if you haven't connected your cables properly.

Numerous video-out boxes are available from third parties, but the Presentation System's aggressive price is likely to narrow the field—or bring down prices. It's an appealing little box that should find a home in schools or businesses that want to use large-screen monitors for training, in the briefcases of PowerBook owners who want to connect to TV sets for presentations, and on the desks of people who want to record Mac screen images and QuickTime movies.
them—inexpensively—with the new Apple Presentation System (see “A Low-Cost Way to Get Your Mac on TV”).

**TV Time**

Last year Apple built one production run of a computer called the Macintosh TV, which combined a slick but flawed TV tuner with a relatively slow 33MHz 68030 Mac (see Reviews, Macworld, April 1994). The Macintosh TV is still available (it didn’t exactly fly off the shelves), but now there’s a better way to put “The Simpsons” alongside your spreadsheets: a Quadra 630 equipped with the $249 Apple TV/Video System card, which includes the Video System card.

The Macintosh TV’s biggest flaw is that it forces you to choose between full-screen TV and a full-screen Mac desktop. The Quadra 630’s TV/Video System card lets you view television in a resizable window. Another new plus is that the Video System card can digitize QuickTime movies of TV programs.

This opens up some interesting possibilities. A schoolteacher could digitize an interesting scene from an educational program for later playback. After obtaining permission, a businessperson might digitize a financial report from CNN to include in a noncommercial presentation. And doctoral candidates doing disserta-

---

**How Fast Are the 630 Macs?**

<table>
<thead>
<tr>
<th>BUSINESS SYSTEMS</th>
<th>Processor</th>
<th>Drive-Access</th>
<th>Video-Display</th>
<th>Floating-Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadra 840AV</td>
<td>118</td>
<td>59</td>
<td>49</td>
<td>99</td>
</tr>
<tr>
<td>Quadra 800</td>
<td>129</td>
<td>54</td>
<td>52</td>
<td>70</td>
</tr>
<tr>
<td>Quadra 650</td>
<td>136</td>
<td>57</td>
<td>53</td>
<td>74</td>
</tr>
<tr>
<td>Quadra 950</td>
<td>135</td>
<td>58</td>
<td>60</td>
<td>76</td>
</tr>
<tr>
<td>Quadra 630</td>
<td>139</td>
<td>61</td>
<td>64 *</td>
<td>78</td>
</tr>
<tr>
<td>Quadra 605</td>
<td>171</td>
<td>62</td>
<td>64</td>
<td>81</td>
</tr>
<tr>
<td>Quadra 610</td>
<td>167</td>
<td>60</td>
<td>63</td>
<td>84</td>
</tr>
<tr>
<td>Quadra 660AV</td>
<td>170</td>
<td>67</td>
<td>63</td>
<td>86</td>
</tr>
<tr>
<td>Quadra 700</td>
<td>172</td>
<td>63</td>
<td>74</td>
<td>96</td>
</tr>
<tr>
<td>ili</td>
<td>467</td>
<td>111</td>
<td>173</td>
<td>200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENTRY-LEVEL SYSTEMS</th>
<th>Processor</th>
<th>Drive-Access</th>
<th>Video-Display</th>
<th>Floating-Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC 575</td>
<td>67</td>
<td>25</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>LC/Performa 630</td>
<td>67</td>
<td>28</td>
<td>88</td>
<td>83</td>
</tr>
<tr>
<td>Quadra 605</td>
<td>82</td>
<td>57</td>
<td>96</td>
<td>104</td>
</tr>
<tr>
<td>LC 520</td>
<td>202</td>
<td>57</td>
<td>245</td>
<td>107</td>
</tr>
<tr>
<td>ili</td>
<td>219</td>
<td>57</td>
<td>258</td>
<td>104</td>
</tr>
<tr>
<td>LC 550</td>
<td>168</td>
<td>47</td>
<td>197</td>
<td>261</td>
</tr>
<tr>
<td>LC III</td>
<td>211</td>
<td>58</td>
<td>241</td>
<td>328</td>
</tr>
<tr>
<td>LC 520</td>
<td>211</td>
<td>57</td>
<td>245</td>
<td>339</td>
</tr>
<tr>
<td>ili</td>
<td>265</td>
<td>68</td>
<td>320</td>
<td>432</td>
</tr>
<tr>
<td>LC II</td>
<td>432</td>
<td>115</td>
<td>489</td>
<td>740</td>
</tr>
<tr>
<td>Classic</td>
<td>1202</td>
<td>248</td>
<td>836</td>
<td>2152</td>
</tr>
</tbody>
</table>

**BEHIND OUR TESTS**

To gauge the performance of the LC/Performa 630 and the Quadra 630, Macworld Lab ran three sets of real-world tests. The Core-Performance segment gauges relative performance against other Macs by using applications that test basic performance attributes, which we report in terms of times as fast as a Classic.

The Business Systems set consists of a mixture of tasks typical of professional business users. The programs used include Adobe Photoshop, Aldus FreeHand, QuarkXPress, Microsoft Excel, Microsoft Word, Claris FileMaker Pro, and Specular Infini-D.

The Entry-Level Systems set is a mixture of typical home- or small-office tasks. The programs used include Claris FileMaker Pro, ClarisWorks, Deneba UltraPaint, Microsoft Word, and Microsoft Excel.

The new machines are targeted for entry-level users yet are more powerful than most of their predecessors. We tested the LC/Performa 630 against other entry-level systems, and the Quadra 630 (which has a built-in FPU) against other business systems. For non-floating-point-intensive tasks, both machines should perform the same.

For the new Mac, we tested prototypes. In all cases, we used an external Quantum-based 230MB hard drive, whose speed ensures that we consistently measured the Mac's bus performance.

We also used the Apple 14-inch monitor for all systems that don't have a built-in monitor; this ensured that we measured only the video circuitry's performance.

—Macworld Lab testing supervised by Mark Hurlow
tions on the sociological impact of the cartoon show "Ren and Stimpy" will be able to illustrate their efforts vividly. Remember, digital video uses astronomical amounts of disk space; it remains to be seen whether these scenarios will be practical, given the relatively small hard drives that ship with the Quadra 630 (though you can also do still captures of single video frames).

The TV/Video System card's software is similar to that of the Macintosh TV (see "TV Tuning"). A control panel lets you activate an automatic scan mode in which the card scans each of the 181 channels it's capable of receiving and locks out inactive ones, so you can channel-surf without static. Other options let you activate closed-captioning and assign text labels, such as call letters or network names, to channels. You can specify a keyboard shortcut for displaying the TV window, and you can specify a password that must be typed before the window appears. (The security system is as easy to defeat as the Mac TV's; just yank the TV Preferences file out of the System Folder and restart, and the passwords are gone.) And a handy new Reminder option lets you program the TV/Video System card to automatically display given channels at specified times—no missing "Home Improvement" because you're mired in financial forecasts.

The TV/Video System card includes a compact remote control that lets you not only control the TV functions, but also turn the computer on and off and play audio compact discs with the 630's built-in CD-ROM drive. (You can also use a programmable universal remote control to control the 630's tuner and CD-ROM.) The CD-ROM drive itself is Apple's latest, the CD-300 Plus, whose motorized CD tray does away with annoying CD caddies.

A Wider View
One problem with watching video in a window is that you might wish for a larger screen in order to also have room for your document windows. Apple hopes to fulfill your wish with its new, 15-inch Multiple Scan 15 Display. (Now you know one of the reasons why the Quadra 630's on-board video circuitry supports monitors of up to 15 inches.)

The Multiple Scan 15 Display uses a flat, Hitachi-built picture tube that provides a 0.28mm dot pitch. (Dot pitch is one of many ways to measure potential image sharpness—the smaller the dot pitch, the better. In this regard, the Multiple Scan 15's screen falls short of the Sony Trinitron screens Apple uses in many of its 14-inch monitors; those units provide a 0.26mm dot pitch.)

The Multiple Scan 15 Display provides built-in stereo speakers and a headphone jack, but it isn't as ideal a multimedia monitor as Apple's costlier AudioVision 14. The speakers are on the sides instead of up front, and there's no microphone or external audio-input jacks. But the Multiple Scan 15 does provide more screen real estate, supporting resolutions of up to 1024 horizontal pixels by 768 vertical ones. (Note that the 630 is limited to a maximum resolution of 800 by 600.) The Multiple Scan 15 also supports 800 by 600 and 640 by 480, and lets you switch between them without restarting the Mac.

The new monitor also provides an energy-saving feature: a control panel lets you specify that the monitor power down after a specified period of Mac inactivity. Both the monitor and the 630 itself join a growing number of Apple products—from Macs to monitors to printers—that meet the Environmental Protection Agency's Energy Star criteria.

The Last Word
In the new 630 family, Apple has refined some of its best TV- and video-related technologies to create what may be the least expensive multimedia computer available. Apple learned from the mistakes it made in the Macintosh TV, improved on the AV video architecture, and borrowed from the PC world to cut costs.

Of the new machines, the Quadra 630 is my favorite, thanks to the superior floating-point performance it's 68040 provides. But most people don't need this extra measure of speed and will be well served by one of the Performa 630-series machines. Similarly, educators who frequently use television, videotapes, and multimedia will find a lot to like in the LC 630. The only drawback for them is that the LC 630 lacks the all-in-one-box convenience and security of other models such as the LC 575.

What's particularly exciting about the 630 family is that its low cost didn't come at the expense of innovation. Indeed, there are more slick new technologies—the TV capabilities, the infrared sensor (which Apple says third-party developers can use to create remote-control functions for presentation programs), the new video chip—in the 630 series than there were in the low-end Power Mac 6100/60.

As for the new Apple Presentation System, it should become popular among presenters, multimedia buffs, and educators—the only people who won't like it are the numerous third-party developers who sell more-expensive video-out hardware. The release of this box—and the Video System card, which makes even SuperMac's VideoSpigot seem overpriced—proves that Apple is no longer a company that goes out of its way to avoid competing with third-party developers. In a way, the new world order of low-cost computing made that change inevitable. Apple can't worry about stepping on a few toes when running with elephantine competitors like Compaq, IBM, and Dell.

Contributing editor JIM HEID has been writing about new Macs since the fall of 1983. He's the author and producer of the third edition of the Macworld Complete Mac Handbook Plus Interactive CD (IDG Books Worldwide, 1994), which not only has the longest name of any Mac book, but also covers the Quadra 630.
The only thing missing is the wait.

Dennis Manarchy, F-8 at 1/64 sec.
New SprintScan 35 Slide Scanner from Polaroid — Brilliant Scans in Under a Minute.

Think of how much more high-quality scanning you’ll be able to do at your desk. Or how fast you’ll respond to high-volume or last-minute projects. Or even how soon you’ll get home.

At under a minute per scan, the SprintScan™ 35 is 5 to 15 times faster than other tested slide scanners, with no loss of quality.* Scanning at resolutions up to 2700 dpi, it samples 10 bits per color (RGB) to deliver the best 24 bits. Which gives you a broader range of colors and better shadow detail. And at only $2,495,' SprintScan 35 won’t change the color balance on your bottom line.

Just drop in the slide (positive or negative), point and click. It’s that easy. Automatic real-time color processing and image sharpening reduce the need for lengthy post-processing. And it’s compatible with both Macintosh and Windows.

The SprintScan 35 Slide Scanner — part of an exciting new line-up of electronic imaging systems from Polaroid.

Don’t waste another minute!
For more information call today,
1-800-816-2611 ext. 965.

Polaroid®

Dennis Manarchy, 2700 dpi scan, 30 sec.

"Polaroid" and "SprintScan" are trademarks of Polaroid Corporation.

Circle 295 on reader service card

See us at Macworld in Boston from August 2-5. Booth #3100 Bayside
Macworld's Eighth Annual World-Class Awards

Our readers pick their favorites—with some surprising results
BY DAN MUSE For 11 months out of the year, the editors at Macworld evaluate products and pass on our buying recommendations to you. But once a year we turn the tables. In April, we asked you to assess your level of satisfaction with up to ten products that you regularly use, and to vote for the most promising hardware and software newcomers. Then we and The Research Spectrum, an independent research company, analyzed the ballots. On the basis of your judgments, we now announce the 1994 World-Class Awards.

This is not merely a popularity contest. While the number of mentions a product received was a factor, we put more stock in your 1 to 10 ratings—the passion index, as we like to call it. We're usually able to anticipate some of the winners. Products such as Adobe Photoshop and Microsoft Excel are by now almost as much fixtures in the Mac universe as the Finder, so it's no surprise that they win year in and year out. In fact, of the 50 winners, fully half are back for at least their second time. This is not mere name-brand loyalty; to their developers' credit, these products do keep getting better.

World-Class winners among products new to the market are often tougher to predict. While we expected to see the Power Macintosh top out as this year's most promising new hardware arrival, we were eager to see what you thought of this year's software crop. A multitude of excellent new products came to market, and we wholeheartedly concur with your insightful selection of Connectix Corporation's RAM Doubler as the best new software. Something we didn't predict was how closely this year's World-Class Macintosh models would mirror last year's list. Again at the top of the list were the Quadra 950 and the PowerBook 180, joined by the Quadra 800 and the Quadra 650. Ironically, perhaps, Apple has since ceased producing both the Quadra 800 and the PowerBook 180.

Our open-ended ballots do not yield winners in every conceivable category. So if you're wondering why we have no OCR category, for example, it's because the category didn't garner enough responses to give us a clear call. Macworld congratulates all 32 companies. And as you look over the following pages, pat yourself on the back for choosing a great crop of 1994 World-Class products. Finally, congratulations to Keiichi Sato of San Francisco, whose name was randomly chosen from over 6200 respondents to receive a Power Macintosh 6100 system.
SYSTEMS

Desktop
Apple Computer/Quadra 650, 800, and 950
Notebook
Apple Computer/PowerBook 180
Accelerator
DayStar Digital/accelerators
Monitor
NEC Technologies/MultiSync FG series
Video Board
Radius/PrecisionColor series
Input Device
Kensington Microwave/Turbo Mouse

The Quadra 950 and PowerBook 180 reclaim their throne, joined by the Quadra 800 (discontinued) and 650. We know you hold onto your Macs, but seldom unimproved: your choice for accelerators, the DayStar line. The Radius/PrecisionColor board and NEC MultiSync FG are your picks for a better picture. And the Mac world beat a path to Kensington's door to pick the Turbo Mouse.

DESIGN

CAD
Graphsift/MiniCad+
Modeling/Rendering
Specular International/infini-D

Creating realistic 3-D models is a daunting challenge. MiniCad+ takes the award for CAD: Infini-D, for 3-D modeling and rendering. Both programs are already available in native Power Mac versions.

GRAPHICS AND PUBLISHING

Page Layout
Adobe Illustrator 5.0
QuarkXPress and PageMaker

Illustration/Drawing
Adobe Systems/Adobe Illustrator
Image Editing
Adobe Systems/Adobe Photoshop
QuarkXPress and PageMaker tie. Illustrator edges out FreeHand, but Photoshop wins for editing images.
CONNECTIVITY

Communications Software
Alverson Software/2Term (shareware)
Electronic Mail
CE Software/QuickMail
Cross-Platform
Connectivity
DataViz/MacLinkPlus series
Modems
Global Village Communication/PowerPort series

With so many ways to get connected—and so many reasons to do so—the insular Macophile is a rarity these days. Retaining their titles are Global Village Communication's PowerPort modems for PowerBooks and the popular shareware from Alverson Software, 2Term (not pictured). Business users gave the nod to CE Software's QuickMail for electronic-mail software. And when you need to communicate with a foreign operating system, MacLinkPlus products make world-class ambassadors, handling both file exchange and file translation.

PRINTER

Ink-Jet
Apple Computer/StyleWriter II
Color
Hewlett-Packard/DeskWriter 550C
Laser
Apple Computer/LaserWriter Select 360

No surprise to find Hewlett-Packard and Apple divvying up these awards. The StyleWriter II returns as the ink-jet champ, but HP's DeskWriter 550C and Apple's LaserWriter Select 360 bring new blood to the color and laser divisions.

PRESENTATION

Presentation Software
Microsoft Corporation/
Microsoft PowerPoint
Authoring
Macromedia/
Macromedia Director
Video Editing
Adobe Systems/Adobe Premiere

In today's business environment, few speakers venture out in front of an audience without slides, animations, or films, and few corporate communications departments are without at least one of these World-Class Award-winning products—Microsoft PowerPoint, Macromedia Director, and Adobe Premiere.
UTILITIES

Writing
Baseline Publishing/Thunder 7
System Enhancement
Now Software/Now Utilities
Printer Utility
GDT Softworks/PowerPrint
Font Utility
Adobe Systems/Adobe Type Manager

Macintosh users are ever on the lookout for enhancements. This year's World-Class Award-winning system enhancements are Baseline Publishing's Thunder 7, a versatile interapplication spelling checker; GDT Softworks' PowerPrint, which enables Macintoshes to print to a multitude of non-Mac printers; Adobe Type Manager, from Adobe Systems, for getting a good approximation of the fonts you need; and Now Utilities, from Now Software, a nifty toolbox for inveterate tinkers.

MUSIC

Coda Music Technology/Finale

Coda Music Technology's Finales, a high-end package that accepts input from MIDI instruments and the Mac keyboard and turns it into elegant sheet music, is still the standard against which other music programs are measured.

STORAGE

Hard Drive (all capacities)
APS Technologies/APS hard drives
Alternative Storage
APS Technologies/APS DAT drive
Backup/Storage Utility
Aladdin Systems/Stuffit series

APS takes the honors this year for both best hard drive and best alternative storage. But since you can never have enough storage, Aladdin's Stuffit series is your choice as the best utility for making the most of a valuable commodity.
Here’s a category where it’s hard to topple the market favorites. Last year ProVee’s Panorama upset Claris FileMaker Pro, but no surprises this year. This year’s list of productivity winners looks like a who’s who of application software.

**Accounting**
- CheckMark Software/MultiLedger
- Personal
  - Intuit/Quicken

CheckMark’s MultiLedger and Intuit’s Quicken, the World-Class winners for accounting and personal finance, respectively, both take an integrated approach to financial management, helping you make sense of your dollars and debits.

**Scanner**
- Reflective Scanner
  - Apple Computer/Apple OneScanner
- Transparency Scanner
  - Nikon/LS-10 Coolscan

The Apple OneScanner and the Nikon LS-10 are clear winners in a category that divided itself into two.

**Education and Entertainment**
- Education
  - Broderbund Software/Living Books series
- Entertainment
  - Broderbund Software/Myst

If there was any doubt that the software market is rushing to CD-ROM, Broderbund’s two winning products clear it up. The Living Books series and Myst dominated the education and entertainment voting, respectively, proving that Mac owners have CD-ROM drives and use them.
DEVELOPMENT AND ANALYSIS

Scientific Analysis
Synergy Software/
KaleidaGraph
Programming Language
Zedcor/FutureBASIC

FutureBASIC. Zedcor's powerful yet easy-to-learn iteration of BASIC, won readers' accolades for demonstrating the elegance of simplicity. KaleidaGraph, from Synergy Software, is a stand-out graphing program that's particularly lauded by scientists who use the Mac.

MOST PROMISING NEWCOMER

Hardware
Apple Computer/Power Macintosh series
Software
Connectix Corporation/ RAM Doubler

If ever two products spoke to the perpetual desire for more computing power, these two newcomers do. Connectix Corporation's RAM Doubler is ingenious software that effectively fools your Mac into thinking it has twice the memory that is actually installed. The long-anticipated Power Macintosh 6100, 7100, and 8100 are making good on their promise of exceptional processing power and cross-platform compatibility.

BEST CUSTOMER SUPPORT

Hardware
Tie—APS Technologies and Apple Computer
Software
WordPerfect Corporation

Awards for customer service go out this year to WordPerfect Corporation (for software support), APS Technologies, and Apple Computer (the latter two tied for hardware support)—three companies that understand the value of maintaining a satisfied clientele.
FLIP & FAX
To Receive **FastTrack Schedule™ For Only $129.**

If you currently use Microsoft® Project, MacProject®, Time Line®, or any other scheduling software, you can **upgrade** to FastTrack Schedule 2.1 for only **$129** simply by flipping this card over, filling in the information, and FAXing the card and a photocopy of your scheduling software’s manual cover or program disk to AEC Software (FAX 703-450-9786). So Flip & FAX to find out why **MacUser, MacWeek,** and **Windows Magazine**, all rated **FastTrack Schedule** at the top of the charts.
I've Flipped Over The **FastTrack Schedule™** Competitive Upgrade Offer. Here's my FAX.

Please send me the **FastTrack Schedule™** competitive upgrade for $129.

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Mac</th>
<th>$129</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty.</td>
<td>Win</td>
<td>$129</td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

**Add Applicable Sales Tax**

VA residents only-4.5%

**Shipping & Handling**

Add $7.00 for one copy (2-day delivery service).

Add $5.00 for each additional copy.

Call for international rates.

**Grand Total**

$ __________  

---

**AEC SOFTWARE**

800-450-1982  

FAX 703-450-9786

Offer valid through September 30, 1994; all funds payable in U.S. dollars.
THE PROJECT SCHEDULING SOFTWARE THAT'S TOPPING THE CHARTS.

FastTrack Schedule from AEC Software is so quick, powerful and easy to use, no wonder it's a hit with Fortune 500 companies like 3M, Procter & Gamble, GE, and McDonnell Douglas. In fact, leading computer publications like Windows Magazine, MacWEEK and MacUser have awarded it the highest ratings in its class.

In just minutes, you can create project schedules that will enhance both your productivity and presentations. Plus, there's no need for cumbersome project management packages or time-consuming drawing programs.

Simply click and drag—or use your keyboard—to create start and end dates. Outline multi-level tasks and link activities to show dependent steps. Further enhance your schedules with custom bars, milestones, colorful graphics, and flexible timeline scales. And because FastTrack Schedule runs on either Windows or Macintosh, files built on one platform can be opened on the other.

To order, or for more information, call AEC today. And let FastTrack Schedule put you on top of your projects.

800-450-1982

AEC Software, Inc., 22611-113 Markey Court, Sterling, Virginia 20166 • Telephone: 703/450-1980 • Facsimile: 703/450-9786. ©1994 AEC Software, Inc. All rights reserved.
Let's talk scanned image quality.

**MICROTEK SCANMAKER II SP**

A good test for RGB color registration is to scan black and white line art in RGB color mode. When magnified and displayed on the monitor you should not see red, green or blue pixels, only gray and black. Microtek's ScanMaker IISP image on the left shows no red, green or blue pixels. Hewlett Packard's ScanJet IICx, however, shows too many red, green and blue pixels.

**BEFORE YOU BUY ANY SCANNER, TAKE A GOOD, HARD LOOK AT THE QUALITY CHECKS YOU SHOULD BE MAKING**

Before you lay down your hard-earned bucks for a single-pass color desktop scanner, here's a simple test you can perform to see for yourself how well it handles color registration. Scan black and white line art in RGB color mode. Then enlarge and examine the results.

If the colors are properly aligned — or “registered” — the lines will look black. If you see dots of red, green or blue at the edge, the scanner's color registration leaves something to be desired.

**SEE FOR YOURSELF**

In a recent direct comparison between the Hewlett-Packard ScanJet IICx and the Microtek ScanMaker IISP, the ScanMaker clearly shows superior color registration. The H-P ScanJet IICx, well, leaves something to be desired. And because poor registration is only one factor that causes inaccurate color, it further degrades color quality when accuracy problems already exist. So color registration is only one of the quality checks you should be making if you want the best scanner for your money.

Another is color accuracy — how close does the color of the scanned image come to the color of the original? The Microtek ScanMaker IISP uses an award-winning system called Dynamic Color Rendition (DCR) which automatically calibrates and optimizes color for the scanner shown with optional Transparent Media Adapter. Optional Automatic Document Feeder also available.

*The scanner to ask for, Microtek's ScanMaker IISP, comes complete with Adobe Photoshop LE for Windows or Macintosh and the DCR color calibration/correction system including software and an IT-8 calibration target. Or ask for the ScanMaker IISP with the full-version of Adobe Photoshop. Scanner shown with optional Transparent Media Adapter. Optional Automatic Document Feeder also available.*
Color accuracy is important in most of the images we scan. To test color, we scanned color swatches from an industry standard color-matching system. Once again, Microtek's ScanMaker IIISP easily outclassed the well-known ScanJet. The disparity is even more apparent when the Transparent Media Adapter is used. H-P's stationary "light table" light source results in uneven accuracy, while Microtek's moving light source gives consistently more accurate color.

Look at Registration and Color Accuracy.

corrects colors to make them virtually indistinguishable from the original.

To prove it, we scanned a 100% magenta color swatch on the ScanJet IICx and the Microtek ScanMaker IIISP. The results, as you can see, show the ScanMaker IIISP's color accuracy is superior to H-P — or anyone else. In fact, in a scanner comparison published in the February 8th edition of PC Magazine, the editors said, "...the ScanMaker IIISP's color output was clearly the best of any scanner in our survey."

Something Else H-P Can't Say.
Hewlett-Packard makes some great printers. They also make computers and a host of other electronic equipment.

Microtek makes scanners. Period. In fact, Microtek pioneered desktop scanners. So our history with scanners is longer and deeper than anyone else you can name. Including H-P.

Don't Buy a Scanner Until...
If you're considering a scanner — anybody's scanner — don't write the check until you've seen the Microtek ScanMaker IIISP. For your free copy of The Scanned Image (an easy introduction to scanners), more information or to find out where to see the IIISP for yourself, call us at 800/654-4160 or fax a request to 310/297-5050.

Before you buy a scanner, let's talk.
800/654-4160

Circle 287 on reader service card

The following are trademarks or registered trademarks of their respective companies: H-P, Hewlett-Packard, ScanJet of Hewlett Packard Company; Microtek, ScanMaker and OCR (Optical Character Recognition) of Microtek Lab. Inc.; Adobe Photoshop LE of Adobe Systems.

Prices and software bundles are subject to change. Test results may vary with specific company products. 3M1156-MW-994
Great machines with less-than-great technical support: from top to bottom, the Apple StyleWriter II, the Texas Instruments microLaser Pro 600, and the Apple Personal LaserWriter 320.
What makes the perfect personal printer? It depends on the person. A freelance graphic artist working at home has different needs than a college student with term papers to print. Weight-conscious business travelers have their own requirements, as do small businesses that have a couple of DOS PCs as well as Macs. No one printer is perfect for every person.

Nonetheless, you’ll still find several common requirements on every buyer’s shopping list. First, the printer has to be affordable—preferably well under $1000, but no more than about $1400. (We tested only printers that sell for $1400 or less based on vendor-supplied street-price estimates at the time of testing.)

Second, it has to be compact—dormitories, home offices, hotel rooms, and small businesses don’t have room for a picnic cooler–size printer. And third, it has to produce great-looking output—none of that chunky dot matrix stuff.

Making demands like these ten years ago would have earned you a jacket with sleeves that tie in the back. Today, there’s a large selection of printers that meet these demands—as this Macworld Lab survey of 13 monochrome (black-and-white) personal printers proves. The growth of the home-office market has inspired printer manufacturers to create remarkably capable machines that sell for surprisingly little. When sales volume is up, manufacturing costs go down, and prices fall with them.

The street prices of the printers tested here run from $289 to approximately $1400—a wide range that reflects the fact that there’s no single definition of a personal printer. What’s more, that $1400 upper limit is more of a cloud bank than a ceiling. A fuzzy boundary separates high-end personal printers from low-end workgroup printers—the kind of machines a medium-size office might attach to a network. For this reason, I’ll also spotlight some printers that cost slightly more than $1400 but provide features more typically associated with workgroup workhorses.

In addition to the 13 desktop printers tested, we also examined several portable printers designed to be PowerBook travel mates (see “Printers for the Road”). Nearly every portable printer we looked at has major-league limitations—slow performance, mediocre output quality, awkward paper handling. But they can run on batteries, which no desktop machine can.

Ink-Jets: Under $300
With prices starting at under $300, ink-jet printers do the best job of combining high-quality output with low cost. They
accomplish this by using very simple printing mechanisms and by making the host machine—the Mac connected to the printer—handle the calculations required to position text and graphics on the page. This technique of making the host do most of the work is common in the econoprinter world; the downside is that the Mac slows as it churns through print jobs.

The star of an ink-jet printing mechanism is a disposable print head that contains a supply of water-based ink and an array of microscopic, tightly spaced nozzles. The print head is mounted in a carriage that travels left and right across a page. As it moves, the head sprays fine streams of ink onto the paper.

It sounds sloppy, but a decade of evolution has yielded mechanisms capable of printing up to 600 dots per inch (dpi). That's theoretically sharper than most low-end laser printers, but the theory falls apart on paper, whose fibers can suck up ink like a paper towel and give text a fuzzy-edged look (see "Getting the Best Text"). Although ink-jet machines can print on plain paper—indeed, the results are perfectly acceptable for proofreading and casual correspondence—you get the sharpest results with the special coated papers that most manufacturers sell.

The biggest news in personal ink-jets comes from Hewlett-Packard, whose ThinkJet created this product category ten years ago. HP's $365 DeskWriter 520 provides 600-by-300-dpi output—600 dots horizontally and 300 vertically. Previous DeskWriters provided 300-by-300-dpi resolution; in the new machines, HP doubled the horizontal resolution by finely controlling the left-right positioning of the print head. The DeskWriter 520 also provides HP's Resolution Enhancement Technology (RET), previously found only on HP's laser printers. RET smoothes character edges by adjusting the position of ink dots.

The DeskWriter 520's enhancements do yield better output quality than the earlier DeskWriter provided, but it isn't significantly better than that of the closest competitor, Apple's $289 StyleWriter II. This printer uses a Canon-built mechanism that produces 360 dpi. That sounds significantly coarser than 600 by 300, but the effect isn't dramatic. The DeskWriter 520 produced slightly clearer text in sizes smaller than 10-point.

Each printer has its strengths and weaknesses. The StyleWriter II is much more compact than the DeskWriter 520—the StyleWriter weighs only 6 pounds, versus 14, and it's several inches narrower. If you don't need battery operation, the StyleWriter II is a good choice for a portable printer. The DeskWriter 520, however, provides better envelope-printing features—it automatically senses envelopes and adjusts its print head to accommodate their extra thickness. With the StyleWriter II, you must remember to manually flick a lever to switch between cut-sheet and envelope modes. The DeskWriter 520 also holds 20 envelopes to the StyleWriter II's 15.

The DeskWriter 520 has the edge in network sharing. Both it and the StyleWriter II can be shared on a network, but the StyleWriter II requires that the host Mac process jobs being printed by other Macs on the network. If yours is the host Mac, you'll notice a slowdown when other users print. The DeskWriter 520, in contrast, makes each Mac handle its own print jobs—a better approach. (Keep in mind that both printers are too slow for large- or even medium-size network use—in this price stratum, network sharing means two or three Macs.)

We tested a third desktop ink-jet: Brother International's HJ-400, but we weren't impressed with it. Besides turning in some of the slowest times in this roundup, the printer doesn't support gray-scale printing (you can't print scanned images, for example).

The Laser's Edge

One floor up from the ink-jet bargain basement are the low-cost lasers. What does the extra cash buy? Faster printing, for one thing, thanks to a laser printer's photocopier-like print engine, which prints an entire page in one pass instead of working its way from left to right and top to bottom.

Most personal lasers can print 4 to 6 pages per minute (ppm); the actual speed depends on the print job's complexity. Time-consuming jobs typically include complex page layouts, large scanned images, and documents containing many fonts and sizes.

You also get sharper output. Not only is laser output immune to the waving that plagues ink-jet printers, but also many lasers provide output-enhancement technologies that play tricks with the laser to smooth jagged character edges and produce sharper halftones of scanned images.
I tested four portable printers and found that portability and capability are on opposite ends of the seesaw. The better the printer, the larger and heavier it is. The smaller the printer, the slower and more limited it is. It's an adventure in compromise, and it's difficult to find a winner.

The two most capable machines are Hewlett-Packard's 4.3-pound DeskWriter 310 and Apple's 4.5-pound Portable StyleWriter. The $379 DeskWriter 310 is an interesting bird. In its most portable configuration, it measures 2.5 inches high by 12 inches wide by 5.75 inches deep. It also holds just one sheet of paper at a time: you must hand-feed the printer for multipage documents. An optional ($99) sheet feeder accepts up to 60 sheets. Another $49 buys a kit that enables the printer to print in color—a nice plus.

Apple's $289 Portable StyleWriter is a bit bulkier than the DeskWriter 310. The StyleWriter also handles just one sheet of paper at a time; a 100-sheet feeder costs $85. The Portable StyleWriter can't print in color—in fact, it can't even print in gray-scale. True, most people don't print scanned images in their hotel rooms, but I'd bet many of them print graphs from spreadsheet programs or business graphics from presentation packages. The Portable StyleWriter is not suited to these jobs; think of it as a text-only printer. You could work around the lack of gray-scale output by formatting graphs to use patterns rather than colors or gray shades, but given these compromises you might be better off buying the HP DeskWriter 310 instead.

The $399 Citizen America Notebook Printer II weighs a little more than 2 pounds and is the only portable printer tested that can hold more than one sheet of paper (it holds 5). The Notebook Printer II has a unique emulation mode that lets it imitate an Apple StyleWriter II. With the printer in this mode, you can use the StyleWriter II driver (included with System 7, but not with the Notebook Printer II) to print scanned images using Apple's GrayShare technology; the scheme works reasonably well. The printer can also print in color using Citizen's driver, but don't bother—the quality is poor.

Finally, there's GCC Technologies' $329, 2V2-pound WriteMove II. This printer's output isn't bad, but loading paper is guaranteed to frustrate. The Notebook Printer II is a better miniprinter.

I can't enthusiastically recommend any of the four portables tested. If you need occasional hard copy when on the road, consider using your PowerBook's modem to fax a document to the hotel where you're staying. If you need better quality or tighter security, then consider HP's DeskWriter 310. It strikes the best balance on the portability/capability seesaw.

### Portable Printers at a Glance

<table>
<thead>
<tr>
<th>Company</th>
<th>Phone</th>
<th>Product</th>
<th>List Price</th>
<th>Number of Fonts</th>
<th>Paper Capacity/Optional Feeder Capacity (in sheets)</th>
<th>Batteries Included/Pages per Charge</th>
<th>Weight (in pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Computer</td>
<td>408/996-1010, 800/757-2775</td>
<td>Portable StyleWriter</td>
<td>$289*</td>
<td>39</td>
<td>1/100</td>
<td>yes/50</td>
<td>4.5</td>
</tr>
<tr>
<td>Citizen America</td>
<td>310/453-0614, 800/477-4683</td>
<td>Notebook Printer II</td>
<td>$399</td>
<td>0</td>
<td>5/NA</td>
<td>no/50</td>
<td>2.1</td>
</tr>
<tr>
<td>GCC Technologies</td>
<td>617/275-5800, 800/422-7777</td>
<td>WriteMove II</td>
<td>$329</td>
<td>0</td>
<td>1/NA</td>
<td>yes/16</td>
<td>2.5</td>
</tr>
<tr>
<td>Hewlett-Packard</td>
<td>800/752-0900</td>
<td>DeskWriter 310</td>
<td>$379</td>
<td>35</td>
<td>1/60</td>
<td>no/100</td>
<td>4.3</td>
</tr>
</tbody>
</table>

NA = not applicable. *Vendor's estimated street price.

Laser printers also support a wider range of papers. (Ink-jets don't always perform well with highly textured stocks, nor do they handle stiff card stock.) Also, laser output doesn't smear when it gets wet, ink-jet output can. And most laser printers provide PostScript, which is essential for professional publishing work and for printing illustrations created with PostScript-oriented draw programs such as Adobe Illustrator and Aldus FreeHand. PostScript printers are also easy to share on a network, even one containing both PCs and Macs.

To produce printers that will sell for less than a grand, many companies cut features or corners, or both. Some printers also contain a new generation of minimalist print engines designed to be cheap to build—and buy. Consider Apple's $689 Personal LaserWriter 300 and $949 Personal LaserWriter 320.

Instead of providing adjustable guides (handy for feeding envelopes) with their manual-feed slots, each of these printers provides one fixed guide that's molded into the printer's paper tray. It is the little cost-cutting measures like these that help bring prices down.

### QuickDraw Lasers: How Low Can They Go?

The largest selection of under-$1000 lasers comes from Apple itself, and the $719 LaserWriter Select 300 is one of the best. This is the only non-PostScript, under-$1000 laser printer available that provides resolution enhancement for both text and graphics. (It does need a 4MB printer memory upgrade for enhanced graphics output, though.) Scanned images printed with Apple's PhotoGrade image-enhancement technology look far sharper and more realistic than do images printed with unenhanced 300-dpi printers.

Like the ink-jet printers tested, the LaserWriter Select 300 relies on the Mac to process print jobs. And like Apple's StyleWriter II, the Select 300 can be shared on a network—but the host Mac slows while handling others' jobs. Apple sells a PostScript upgrade that turns the Select 300 into the LaserWriter Select 310. We tested the 310 last year and found it slow and unexciting.

Don't confuse the LaserWriter Select 300 with the Personal LaserWriter 300—they're completely different. The LaserWriter Select 300 uses a 5-ppm, Fuji-builled print engine; the Personal LaserWriter 300 uses a smaller, lighter-duty, 4-ppm Canon engine. The Personal LaserWriter 300 (not tested) supports neither FinePrint nor PhotoGrade output-enhancement technologies.

---

**Macworld September 1994 119**
**PostScript Lasers: Under $1000**

If you had told me ten years ago that 1994 would see PostScript printers selling for three figures, I'd have said you were dreaming. But it's true: this year's roundup includes several printers with list prices of less than $1000 that sell for less than $700 on the street.

The low-cost laser leader is Digital Equipment Corporation's $699 (list) DEClaser 1152. This printer provides built-in PostScript Level 2 as well as connection ports that can accommodate Macs and DOS PCs. What's the catch? For one thing, the DEClaser 1152 holds only 70 sheets of paper, its competitors hold 100 to 250 sheets. (A 250-sheet feeder is a $128 option.) The printer provides just 17 built-in fonts, compared with the 35 that many PostScript printers provide. (DEC sells a font upgrade kit with 26 additional fonts for $249.) And it's slow. The DEClaser 1152 turned in some of the slowest times of any PostScript printer tested. But this printer does deliver PostScript Level 2 and laser quality, so it's worth considering—if you're patient.

Also in the slow-but-cheap category is Texas Instruments' microWriter, whose retail price starts at $799 for a 23-font version. We tested the $1099 microWriter PS65, which provides a whopping 65 fonts—the largest font library of any printer tested. The microWriter includes a 250-sheet paper tray and accepts an optional ($199) second 250-sheet tray. (Two paper trays make it easy to mix stocks—for example, to print business letters using letterhead and second sheets. See my *Working Smart* column in the June 1994 *Macworld* for more details.)

The DEClaser 1152 and TI microWriter were really sluggish in our PageMaker and font-document tests—not surprising, considering that these tests tax a printer's controller, the portion of a PostScript printer that translates printing commands from the Mac into dots on the page. Both slowpokes use 68000-family processors, while most faster PostScript printers use RISC processors.

In the under-$1000 class, there is only one RISC-based PostScript printer: Apple's $949 Personal LaserWriter 320. The RISC paid off: the Personal LaserWriter 320 was the second fastest printer tested, finishing behind only Hewlett-Packard's costlier LaserJet 4ML.

The Personal LaserWriter 320's appeal goes beyond the stop-watch. Unlike TT's microWriter, the 320 lacks a parallel port (commonly used to connect to DOS PCs) and doesn't accept a second paper tray or a 65-font upgrade, but it's superior in every other way. It provides PostScript Level 2; the microWriter uses Level 1. (For background on Level 2, see "Inside PostScript Level 2," *Macworld*, July 1994.) The Personal LaserWriter 320 provides FinePrint output-enhancement for text, and with a $345 printer memory upgrade, supports PhotoGrade to deliver gorgeous grayscale output. The microWriter lacks resolution enhancement of any kind.

We tested another under-$1000 PostScript printer—NEC's SilentWriter 640, which sells for approximately $800. This Level 2 machine finished in between...
the tortoises and the hares in our tests. It provides output enhancement for text but not for graphics. Its toner-cartridge loading scheme is a bit more awkward than that of the Apple and TI printers, and its manual-feed slot was downright difficult to use. Its text quality is good, and NEC's tech support was very good in our tests, but if you can swing the extra $100 or so, get the Apple Personal LaserWriter 320.

**Upper-Class Lasers**

In the $1000 to $1400 range, you start to see the kinds of features that are common among pricier workgroup printers: multiple ports and emulation modes that provide better Mac-and-PC sharing; faster engines that print 8 ppm or even 10 ppm; 600-dpi resolutions that yield near-type-set-quality text; and even PostScript fax boards that let a printer send and receive faxes. These are personal power printers, ideal for publishers who work at home or for small businesses that need a full-featured printer and can afford to spend more than can a student or home user.

Apple has no offerings in this price range; its LaserWriter Select 360 sells for more than our $1400 cutoff point. It is a knockout, though, providing 600-dpi resolution, 10-ppm and RISC controller performance, and a PostScript fax option. If it were a bit cheaper, the Select 360 would have walked away with top honors. It's a winner well worth considering.

Just over the $1000 mark is the $1195 QMS 420 Print System. This printer is the poster child for the Good News, Bad News Society. The good news: 600-dpi resolution and a sophisticated controller architecture that lets you fine-tune the way the printer's memory is used. The bad news: it holds just 70 sheets (a 250-sheet tray is optional), and it's slow—far slower than the other 600-dpi machines tested. A 600-dpi printer demands a RISC processor, but the 420 has a 68020.

In a similar price range but at the other end of the performance spectrum is Hewlett-Packard's $1279 LaserJet 4ML, one of the fastest machines tested. The LaserJet 4ML uses the same 300-dpi speed addicts, TI sells a $349 option, called PowerStep, that doubles the speed of the RISC chip, thereby boosting performance even more.) Options include a high-speed Ethernet network interface (ideal for printing scanned images, which tend to bog down a LocalTalk network) and a SCSI interface to which you can connect a hard drive to store fonts and improve performance. All this fits in a...
## Personal Workgroup Printer Performance

### Multiple Fonts

<table>
<thead>
<tr>
<th>Printer Type</th>
<th>Print Speed for a Typical 7-page Microsoft Word Document with a Variety of Fonts, Sizes, and Styles</th>
<th>Print Speed for a 20-page Word 5.0 Document with Double-Spaced 12-point Courier Text in Plain, Bold, and Italic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>300-dpi Printers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HP LaserJet 4ML</td>
<td>200</td>
<td>104</td>
</tr>
<tr>
<td>Apple Personal LaserWriter 320</td>
<td>197</td>
<td>143</td>
</tr>
<tr>
<td>Apple LaserWriter Select 300</td>
<td>194</td>
<td>143</td>
</tr>
<tr>
<td>NEC SilentWriter 1097</td>
<td>160</td>
<td>144</td>
</tr>
<tr>
<td>NewGen Systems Turbo PS/600p</td>
<td>214</td>
<td>147</td>
</tr>
<tr>
<td>NEC SilentWriter 460</td>
<td>348</td>
<td>223</td>
</tr>
<tr>
<td>Apple StyleWriter II</td>
<td>315</td>
<td>221</td>
</tr>
<tr>
<td>HP DeskWriter 520</td>
<td>357</td>
<td>221</td>
</tr>
<tr>
<td>QMS 420 Print System</td>
<td>254</td>
<td>235</td>
</tr>
<tr>
<td>Brother International HJ-400</td>
<td>497</td>
<td>213</td>
</tr>
<tr>
<td>DEC DEClaser 1152</td>
<td>514</td>
<td>153</td>
</tr>
<tr>
<td><strong>600-dpi Printers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ti microLaser PS/650</td>
<td>571</td>
<td>359</td>
</tr>
<tr>
<td><strong>TrueType</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Single Font

<table>
<thead>
<tr>
<th>Printer Type</th>
<th>Print Speed for a Complex Graphic with Special PostScript Effects Including Nonlinear Blends and Bézier Curves</th>
<th>Print Speed for a 4-page Newsletter with Several Fonts, a MacPaint Image, and 150-dpi Gray-Scale TIFF Images</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PageMaker 5.0 (test 1)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HP DeskWriter 520</td>
<td>142</td>
<td>142</td>
</tr>
<tr>
<td>QMS 420 Print System</td>
<td>151</td>
<td>151</td>
</tr>
</tbody>
</table>

### FreeHand 4.0

<table>
<thead>
<tr>
<th>Printer Type</th>
<th>Print Speed for a 4-page Newsletter with Several Fonts, a MacPaint Image, and 300-dpi Gray-Scale TIFF Images</th>
<th>Print Speed for a 4-page Newsletter with Several Fonts, a MacPaint Image, and 300-dpi Gray-Scale TIFF Images</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PageMaker 5.0 (test 2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HP DeskWriter 520</td>
<td>142</td>
<td>142</td>
</tr>
<tr>
<td>QMS 420 Print System</td>
<td>151</td>
<td>151</td>
</tr>
</tbody>
</table>

### TrueType

<table>
<thead>
<tr>
<th>Printer Type</th>
<th>Print Speed for a 4-page Newsletter with Several Fonts, a MacPaint Image, and 300-dpi Gray-Scale TIFF Images</th>
<th>Print Speed for a 4-page Newsletter with Several Fonts, a MacPaint Image, and 300-dpi Gray-Scale TIFF Images</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TrueType</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Macworld Lab testing supervised by Danny Lee and Lauren Black

*Does not offer resolution enhancement; tested in standard configuration. All other 300-dpi printers were tested with resolution-enhancement on.

*Resolution enhancement required at 600-dpi. Other 600-dpi printers were tested at standard resolution.

*Could not print.

---

A compact package that sips less than 18 watts of juice in its idle mode.

A close competitor to the microLaser Pro is NEC's $1399 SilentWriter 1097, which provides a 600-dpi, 10-ppm engine and also accepts a PostScript fax option. The SilentWriter 1097 is smaller than the microLaser Pro and provides just one paper tray, but it outperformed almost every other printer in our tests.

The SilentWriter 1097 has a bizarre bug that causes it to print a black stripe along one edge of every page when you've disabled the printer's start-up page. (PostScript printers can print an optional start-up page listing status information.) Another problem: in its 600-dpi mode, the printer wouldn't print a document containing Microsoft's Minstrel TrueType font in sizes larger than 36-point. TI's printers suffered from the same problem, which TI attributed to insufficient printer memory. The 1097 did print the font in 300-dpi mode, but it took twice as long as did the sluggish DEC Laser 1152.

**The Last Word**

So which printer should grace your home office? Among ink-jets, the Apple StyleWriter II is priced right and provides great print quality, but Apple's technical support was unacceptable in our tests. (Actually, it was nonexistent: we were kept on hold for more than 45 minutes, after which we gave up, on three separate tries.) Therefore, HP's DeskWriter 520 gets the ribbon. Not only was HP's tech support better, but also the DeskWriter 520 provides better networking features, superior envelope-handling capabilities, and slightly sharper text at small sizes.

In the low-cost laser league, Apple's Personal LaserWriter 320 is a superb machine, providing just the right mix of features and performance for this segment of the market. Its FinePrint technology delivers beautiful text; add the $345 6MB memory upgrade, and you get PhotoGrade-enhanced gray-scale output. Again, Apple struck out on technical support, so we can't in good faith anoint the 320 with the Editors' Choice. But the 320 is clearly superior to its competitors, so if you can live without adequate support, don't hesitate. Otherwise, consider the NEC SilentWriter 640; it's considerably slower than the Personal LaserWriter 320 and its print quality is inferior, but NEC's technical support was very good.

Among upper-class personal lasers, it's hard to argue with TI's microLaser Pro: 600-dpi output, a fast controller, and great paper-handling features make this a versatile machine you won't outgrow. Despite a poor technical-support rating, the TI microLaser Pro 600 is still by far the best we tested. Other high-end machines worth considering include NEC's SilentWriter 1097 (which accepts a PostScript fax board) and HP's LaserJet 4ML. And don't forget about Apple's LaserWriter Select 360, which is often discounted to around $1500 and also accepts a fax board.
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 into one another in a number of ways.

The largest selection of statistics and graphs in a single system: comprehensive implementations of: Exploratory techniques; multi-way tables with banners (presentation-quality reports); nonparametrics; distribution fitting; multiple regression; general nonlinear estimation; stepwise logit/probit; general ANCOVA/MANOVA; stepwise discriminant analysis; log-linear analysis; factor analysis; cluster analysis; multidimensional 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. Hyperlink-based Stats Advisor expert system. Extensive data management facilities (spreadsheet with long formulas, block operations, advanced clipboard support, IDE 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 with 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 menus. 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 ship $10 per product; 14-day money back guarantee.

Circle 99 on reader service card
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.}

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.)

MADE IN

And since data processed on networked clients needs protection too, the $139 Back-UPS 250 provides an economical solution for all your LAN workstations.

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 1,000,000 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.

AWARD-WINNING FEATURES

- 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 present 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
- $25,000 Lifetime Equipment Protection

More than... 1,000,000 Satisfied Users

APC has won more awards for performance and reliability than all other UPS vendors combined...including four consecutive LAN Times Readers Choice awards...

PC World Top 20 Upgrade

Ward's

Readers' Choice

Readers' Choice

Unmatched lightning (tested to UL1449) and surge protection for maximum hardware safety

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

$25,000 Lifetime Equipment Protection

APC

AMERICAN POWER CONVERSION

800-800-4APC

APC EUROPE (+33) 44615900 / ASIA PACIFIC FAX: 401-789-1631 / L. AMERICA FAX: 401-789-9771 / Comparex: GO APC/SUPPORT

Circle 72 on reader service card
Improved printing and new online help highlight Apple's latest system upgrade

by Lon Poole

After leaving System 7's core features virtually unchanged for three years, Apple has finally spruced up its Macintosh system software. A new version, System 7.5, is slated for delivery in September. The new version makes good on Apple's four-year-old promise of simplified printing, and finally delivers major upgrades to typography, graphics primitives, and color matching that have been in the works for years. Yet most of these advanced features will lie dormant until developers revise applications to take advantage of them, and several important developers have indicated reluctance to do so.

The major new technology in System 7.5 is QuickDraw GX, the long-awaited successor to the QuickDraw graphics and printing component of the Mac system. QuickDraw GX gives you new printing options right away, as well as the potential for color matching, more flexible printing, typefaces with 65,000 characters, extensive ligature and fraction substitution—and more, when developers compose applications. (See "A Quick Look at QuickDraw GX," Graphics news, in this issue.)

You have to pull down the Help menu to see another significant addition, called Apple Guide. This new type of help system leads you through tasks step-by-step, with written instructions and graphical cues.

System 7.5 also incorporates PowerTalk and AppleScript from System 7 Pro, as well as a host of lesser improvements, many of which have been available for years as commercial and shareware utilities. PowerTalk-collaboration services include E-mail, catalogs of people and network devices you work with, simplified connection to file servers, and digital signatures. AppleScript lets you record and edit scripts to automate tasks in the Finder and other applications. (Finder scripting is new in System 7.5.)

You can install System 7.5 on a Power Mac (most of the new features are written in native PowerPC code) or a Mac with a 680X0 CPU. Apple will install 7.5 on all new Macs, and will sell upgrade kits through software resellers at prices no higher than what System 7 Pro now costs ($149 retail for one user). A new...
installer program makes it easy to install just the System 7.5 core features first and add the advanced features later.

Apple recommends that a 680X0 Mac have 4MB of RAM for the core features and 8MB for everything; double those sizes on a Power Mac. You'll need more RAM if you plan to install many extra system extensions or keep multiple applications open.

**New Printing Interface**

Installing QuickDraw GX changes how you print. You no longer use the Chooser to choose an output device for printing. Instead, the Chooser creates desktop printer icons for each printer, fax modem, or other output device you use. After the desktop printer icons are created, you use the Finder instead of the Chooser to choose a printer by selecting the printer's icon and choosing Make Default Printer from the Finder's new Printing menu. You can use the Finder's Sharing command to share, and optionally password-protect, any directly connected or network printer that has a desktop icon.

You can also choose a printer whenever you use the Print or Page Setup command in an application that has been revised to take full advantage of GX printing. In such applications, the Print and Page Setup dialog boxes have new two-level designs. One level presents minimal options, and clicking a More Choices button enlarges the dialog box to show more options (see "GX Page Setup and Print"). Applications that adopt GX printing can also combine multiple page sizes, such as letter and envelope, in a single document. Of the developers Macworld surveyed, Microsoft, WordPerfect, and Manhattan Graphics said some or all of the applications they would soon have the GX printing dialog boxes; Deneva Systems plans to add these dialog boxes but isn’t sure when; and Adobe, Aldus, and Quark have decided to forgo these dialog boxes, at least for now. Claris had no comment.

Whether or not applications adopt GX printing, existing printer drivers don't even show up in the Chooser when QuickDraw GX is installed. Apple has a utility that lets you use non-GX drivers with any program.

Apple is providing new GX drivers for its printers, including a LaserWriter GX driver that Apple claims will work with most PostScript output devices. Hewlett-Packard says it'll have some GX drivers available soon after System 7.5 ships.

The LaserWriter GX driver does not work with PostScript printer description (PPD) files, which Adobe invented for accessing specific options of individual printers such as multiple input trays. Apple claims device-specific options can be handled by custom GX drivers or by GX printing extensions. These extensions can add more flexibility to printing than PPDs—handling, for example, watermarks, multiple pages per sheet of paper, two-sided copies, and booklets—but PPDs work on Windows and Unix computers, while GX extensions work only on Macs.

One of Apple's GX drivers creates portable digital documents (PDDs). The advantage of PDDs is that anyone who has QuickDraw GX installed can view and print PDDs at any resolution without the applications and fonts used to create the PDDs. A PDD can include the fonts used in it, and anyone can view and print a PDD with SimpleText, the TeachText replacement included with System 7.5.

SimpleText does not perm t copying, pasting, or searching text in PDDs. Apple says this kind of PDD manipulation is possible and sees it as an opportunity for enterprise developers. Other portable document makers, such as No Hands Software's Common Ground, Adobe's Acrobat, and Farallon's Replica, already let viewers manipulate their portable documents. Moreover, those products work on Windows computers and on Macs without QuickDraw GX. But they can't print with full fidelity at any resolution, and they don't come with the system software.

**Step-by-Step Help**

If you never use System 7's balloon help, you're not alone. You'll be much more likely to use the step-by-step help called Apple Guide in System 7.5. It actually shows and tells you how to get things done. Choosing it from the Help menu brings up a window that floats above all other windows in the active application.

You get help on a task by choosing a topic and then a subtopic from organized lists, browsing an index, or having Apple Guide search for a term. You move to the next or previous step in the task by clicking buttons in the Apple Guide window. At each step, the guide coaches you by marking an object on screen with a circle, arrow, or underline. All these coaching marks look neatly hand-drawn, and on a color screen they appear in an attention-getting color.

Apple Guide can adjust itself if you work ahead of if you make a mistake. If you make a mistake, it will show you what you should have done, and then continue. Apple guides can even perform a step for you (for example, opening a control panel).

System 7.5 comes with help guides for system-level tasks such as printing, file sharing, using control panels, and troubleshooting. Developers and system administrators can create additional help guides, which can cover tasks that involve multiple applications. Apple Guide's usefulness depends greatly on how well-crafted the help procedures are for individual tasks. Apple has set a good example with its system-level help procedures. Now it's up to developers to follow suit.

**Borrowed Enhancements**

Besides original work like Apple Guide, System 7.5 includes many enhancements to the interface based on utility software that has been available for years.

**Hierarchical menus**

A prime instance is the hierarchical Apple menu. This option—like Now Software's WYSIWYG Menus, Kiwi Software's Power Menus, and other utilities—displays a submenu when you highlight a folder in the Apple menu. The
submenu lists the contents of the highlighted folder. System 7.5's Apple menu can automatically display submenus listing the documents, applications, and servers you used most recently.

**Collapsible windows** Another System 7.5 option lets you collapse a window into its title bar. The effect is like rolling up a window shade, and the option works with all windows and palettes (not just Finder windows).

**Stickies** Everyone knows someone whose clutter bristles beyond the screen in the form of sticky notes. With System 7.5, you can suck that clutter onto the screen. You can set the text style in Stickies, but you cannot paste a graphic, movie, or sound into them. Stickies do not float on top of the active application's windows.

**Performa interface** Apple borrowed more interface enhancements from its own Performa version of System 7. These options include the ability to protect your System Folder, big flashy desktop patterns, dedicated folders for applications and documents, the ability to hide the Finder automatically when you open or switch to another application so that accidentally clicking the desktop doesn't take you to the Finder, and the Launcher (a window containing aliases of frequently used items, each of which you can open with a single click).

**Foreign-file compatibility** Continuing the bundle started with System 7.1.2 (for Power Macs), Apple includes Macintosh Easy Open (MEO) and PC Exchange with System 7.5 (for all Macs). With MEO, the Finder no longer complains when it can't find the application that created a document you're trying to open. Instead MEO displays a list of alternate applications that may be able to translate the file. MEO remembers the substitute application you pick for a particular type of file and uses it by default the next time you open the same type of file. PC Exchange lets a Macintosh read and write floppy disks formatted on PCs. With PC Exchange, these foreign disks appear on your desktop like Mac disks.

All of these interface enhancements—not to mention the clock in the menu bar—are optional. You turn them on and off using control panels. And they all work with the software you have now.

**Beyond Pro** Apple decided not to do a separate Pro version of System 7.5, instead rolling all of the former Pro features into the standard system software.

**Scripting** One former Pro feature is AppleScript, which allows systemswide scripting. This is the first version of the system software that includes a scriptable Finder, so you can automate tasks such as adding an alias to the Apple menu, finding an alias's original item, changing the number of displayed colors, and setting up a shared drop folder. A folder full of ready-made scripts does these and other useful things, and you can record and edit your own scripts with the included Script Editor program.

**Collaboration services** PowerTalk collaboration services are also inherited from System 7 Pro. With PowerTalk you can exchange E-mail with other network users, and you can catalog individual people, groups, file servers, and things you work with.

You can apply a digital signature to any document, and anyone with PowerTalk can verify who signed the document and can confirm that no one has changed it since it was signed.

**Drag-and-drop editing** In addition to the former Pro features, System 7.5 includes an improved version of a formerly independent system extension for drag-and-drop editing between applications. In applications that take advantage of this extension—such as SimpleText, the new resizable Scrapbook, Stickies, and the improved Note Pad—you can drag a copy of selected text or graphics from one document window to another.

**Bundled extensions** System 7.5 includes several pieces of system software that had been distributed other ways.

One of these is the asynchronous SCSI Manager like the one in the ROMs of the Quadra 660AV and 840AV, and the Power Macs. Now that SCSI Manager 4.3 comes in System 7.5, all Quads and Centrises can keep multiple SCSI devices busy simultaneously—for example, by reading from one device while writing to another. To realize the asynchronous SCSI Manager's full potential, you may need to upgrade the driver software for your hard drives and other SCSI devices.

MacTCP is also included for access to Unix networks and the Internet.

**Fix-Its** Other refinements speed up menus, program launching, application switching, and file copying in the Finder and let you use storage devices that hold up to 4GB. The System file includes System Update 3.0, which fixes several bugs and makes minor enhancements.

The hodgepodge of system-enabling files has been consolidated into one file. That should end the hassle of keeping different emergency disks for each Macintosh model.

**The Last Word**
System 7.5 offers many components, but it may be that neither you nor your applications will benefit from them. Several developers plan to ship applications that incorporate some new features of System 7.5, but Macworld's survey of major developers failed to turn up one product that has them all. One reason is that many developers of applications with both Mac and Windows versions are reluctant to implement GX's advanced typography and graphics because Windows has no equivalent technology.

That's OK, because System 7.5 is worthwhile even if you don't use all of it, and you can install its three components separately. Unless your Mac has less than 4MB of RAM, you'll benefit from installing the core component.

The rest of System 7.5 is gravy. Install PowerTalk when you want collaboration services, and wait to install QuickDraw GX until you have the RAM for it, you have the drivers for GX printing, and your applications can make use of it. System 7.5 is no must-have right now, but its solid interface enhancements make it a decent value, and its whizbang technology gives it great promise.

---

Contributing editor LON POOLE is the author of Macworld System 7.5 Bible (IDG Books Worldwide, 1994).
You got a Mac. And then a few more. You tied them together. People started sharing. Everything.
Funny thing about the Macintosh computer. With little fanfare and an idea known simply as "plug and play," it turned a whole lot of novice users into networkers.

And is it any surprise? All you have to do is plug a connector into your Macintosh, and you're networked. You can share printers. You can share modems. You can even share files with your peers.

This kind of "peer-to-peer" network is all some workgroups need.

Others, however, soon find they're ready to take the next step: a Workgroup Server dedicated to improving the ebb and flow of vital information.

How do you know if you're ready? Just ask yourself a few simple questions. Do I have more than five computers tied together in a peer-to-peer network? Is one printer always backlogged while others sit idle? When people share files, are their systems slowing down? Is there confusion about who has the latest data and where it resides?

If you answered yes to any of these questions, it's definitely time to consider a Workgroup Server from Apple.

Workgroup Servers provide a centralized place for users to store and share files. Which means your shared files don't get lost, your systems don't slow down and users always have access to the latest information.

A server also gives you a place to put network applications and services — accounting programs, databases, e-mail and more — for everyone to use.

And that's just the start. With print spooling software, your users won't wait forever for your printers to print. With FileWave software, you can distribute new programs and upgrades from the server, without trekking from computer to computer. With Dantz Retrospect Remote, you can back up every system on the network — both clients and servers — automatically. While with Apple's Remote Access software, your users can access the network from anywhere.

"OK," you say, "but how difficult is it to use a Workgroup Server?" It's as easy as using a Macintosh. All you have to do is connect the components, turn on the power, and you're ready to go.

Choosing the right server for your workgroup is just as easy. We have six models for all kinds of needs, from the Workgroup Servers 60, 80 and 95 to our newest models based on the high-performance PowerPC chip: the Workgroup Servers 6150, 8150 and 9150.

No matter which one you choose, you're backed by our expert telephone support, 24 hours a day, seven days a week.

And for a limited time, you'll get GraceLAN Server Manager software, a $395 retail value, at no extra charge.

For a free brochure, simply pick up the phone and call us at 800-538-9696, ext. 430. And unlock the power of your workgroup. The power to be your best.
A Quick Look at QuickDraw GX

QuickDraw GX is Apple Computer’s first significant enhancement to the Mac’s System-level graphics capabilities. An optionally installable component of System 7.5 (which Apple expects to ship in September for about $150), QuickDraw GX offers a variety of features that the company hopes will be of particular interest to graphics professionals.

Printing QuickDraw GX provides a number of printing enhancements. For example, you can now drag print jobs directly onto Finder-level printer icons (see the feature “System 7.5,” in this issue, for a detailed look at GX’s printing interface). And you can customize and track print jobs using third-party GX printing extensions. The extensions modify a print job once the application is finished with it; thus, your application doesn’t need to be GX-aware to use the printing extensions.

Peirce Print Tools, $129 from Peirce Software (408/244-6554), is expected to be the first package of GX printing extensions (it shipped in June). The package includes a logging module, which service bureaus and other users can use to track details (print time, client name, and so on) of print jobs. Because QuickDraw GX introduces a new print architecture to the Mac, it renders your applications’ current printer drivers useless. In hopes of solving the problem, Apple is shipping with GX new versions of all its printer drivers and is “actively evangelizing” printer manufacturers to develop their own GX drivers, according to Ron Fernandez, product marketing manager for QuickDraw GX. Apple’s new LaserWriter GX driver works with most existing PostScript Level 1 and Level 2 printers, Fernandez added.

But the LaserWriter GX driver doesn’t work with PPD (PostScript Printer Description) files. As a result, some printing controls available in PPD-dependent applications—Aldus PageMaker among them—might not be supported by initial GX printer drivers. To get around the problem, Apple has included in GX a Finder-level menu utility that will let you print using existing printer drivers on an application-by-application basis—provided that both the GX and non-GX driver are available in the System Folder.

Fonts QuickDraw GX includes a “smart” outline-font data structure. GX fonts (in both TrueType and PostScript Type 1 formats) can contain as many as 65,000 glyphs (character variations), enabling font developers to build in an array of digital typeface characteristics and instructions.

An individual QuickDraw GX typeface can include a variety of contextual character substitutions (such as ligature sets, fractions, and swashes); automatic kerning and tracking; the ability to stretch, skew, or rotate editable type; automatic optical text alignment; optical scaling; and the capability to change a font’s weight and width easily and to mix text from various languages (English, Arabic, and Japanese, for example) within a single line of type.

Current applications will be able to recognize and print GX fonts, but they must be revised to take advantage of GX’s font-manipulation capabilities. At press time, only a few software applications—among them Pixar’s Ty pestr y, Ares Soft-
Kodak's Latest Digital Camera

**EASTMAN KODAK HAS ANNOUNCED**

the Kodak Professional DCS 420, a digital camera similar to the DCS 200 model it replaces except for enhancements such as improved image capture, storage, and battery power. (For more on the DCS 200, see "Photography without Film," in this issue.)

The DCS 420 captures images at 12 bits per RGB color and automatically resamples them to 24 bits for improved color depth; Eastman Kodak says a future software upgrade will offer full 36-bit transfer. Unlike the DCS 200, which stores up to 50 photos on an internal hard drive, the DCS 420 stores 65 to 70 photos on a 105MB Type III PCMCIA card. And for annotating photo shoots, the new camera can record audio clips onto the PCMCIA card.

Photoshop's Layered Look

**THE FIRST FULLY NATIVE**

PowerPC version of Adobe Photoshop, 3.0, will give users some eagerly anticipated features, including multiple layers, color-correction controls, drag-and-drop between documents, and floating, customizable palettes.

The most obvious improvements, the Layers palette, provides greater flexibility in manipulating and compositing images. You can turn individual layers on and off; reorder, group, and merge them with other layers; give each layer its own mask; and interactively apply any kind of effect—changing or undoing the operation if it turns out to be less than ideal.

Photoshop's color-correction controls include CMYK Preview, which lets you proof output colors before conversion; Selective Color, for altering color percentages in each plate; Replace Color, to select and alter areas by color; and Gamut Warning, which highlights out-of-gamut areas that you can interactively bring back into gamut with color-adjustment tools such as the new sponge tool, which interactively saturates and desaturates colors. Color Range lets you build complex masks.

With Photoshop 3.0's Layers palette, you can add as many as 99 layers (in addition to the background layer) to an image. Layers can be reordered, grouped, or merged; plus, each layer can have a mask attached. Floating palettes can be collapsed, expanded, consolidated with other palettes, and displayed in one or more columns. (Photo-illustration by Linda Tapscott. Cactus photo: PhotoDisc™.)

The Kodak DCS 420 uses PCMCIA cards for storing images and lets you take five shots in 2.25 seconds.

**The DCS 420** uses one rechargeable nickel-metal-hydride battery pack promising at least 1000 exposures per charge—about ten times more battery life than the DCS 200's capacity. The DCS 420's list price of $10,995 includes a Nikon N90 camera as well as the DCS 420 digital camera back. Eastman Kodak, 716/724-4000.—J.A.M.
The Wait for QuickDraw GX Is Over—Sort Of

Five years after some of QuickDraw GX’s capabilities were first announced, Apple is expected to begin shipping it as an optionally installable component to System 7.5 in September. But for most users, the wait for some GX features is far from over.

Except for QuickDraw GX’s printing architecture and ability to create and display Portable Digital Documents, applications must be revised to take advantage of GX features. But at press time, only a few graphics software companies had firm plans to incorporate GX capabilities in their programs—among them Manhattan Graphics, with a GX-aware version of ReadySetGo in the works (see Graphics news, Macworld, August 1994).

There are several reasons that many developers are wary of GX. Companies such as Aldus, Adobe, Quark, and Frame Technology are concerned about cross-platform compatibility. QuickDraw is a computer environment particular to the Mac, which makes it difficult, if not impossible, to support GX-specific features on DOS, Windows, or Unix machines (see “A Quick Look at QuickDraw GX,” in this section).

“QuickDraw GX offers some nice features for the Mac, but we have to think about Windows and Unix as well,” said Martin Doettling, director of product marketing for Frame, which develops the document processing application FrameMaker. Some vendors don’t want their programs to rely on QuickDraw for the execution of important graphics features. Quark spokesperson Peter Warren said the company has worked hard to add sophisticated graphics capabilities to QuarkXPress. “We don’t want to simply hand over the control [of those features] to Apple,” Warren added.

In addition, Apple’s prolonged procrastination in bringing GX to market has made many developers think twice before supporting GX’s features. At least one company—Corel—has discontinued development of a GX-aware graphics program largely because of Apple’s tardiness.

Still, most developers say that if a significant number of users request GX features, they’ll revise their applications accordingly. “With QuickDraw GX, we’re going to wait and see what the customer demand is,” said Frame’s Doettling. “We’re not,” he added, “going to be a pioneer.”—J.A.M.
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.

DRIVE SPECIFICATIONS
- Capacity: 128-230 MB
- Data transfer rate: 2.1 MB/s (max.)
- Average seek time: 30 ms (typ.)
- Rotational speed: 3,600 rpm

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.
by Cathy Abes

Artist: Mark Jenkins is a senior designer at Rucker Huggins, a Mountain View, California–based design studio whose clients include Fractal Design, Ray Dream, and Apple Computer.

How It Was Done: This image was created for an exhibit of computer art in Vancouver, British Columbia. Jenkins began by scanning in two photos he had taken of people sleeping on a wall—one color, the other black-and-white. Because he wanted the image to look like a traditional-media painting, Jenkins did most of the work in Fractal Design Painter. After opening the scanned images in Painter, he used the Charcoal brush to flesh out the figures and the Total Oil brush to add details.

Because Jenkins didn't like the position of the bottom figure's legs and feet, and because she was partially blocked by the other sleeping figure, he created a new pair of legs for her. To do this, he scanned various halftones of figures in different positions, trying different sets of legs with the body until he found one that worked. After pasting in the new legs and feet, he painted over the feet and added the blanket using the Charcoal and Total Oil brushes until they blended in with the rest of the body.

In Photoshop, Jenkins created a separate mask for each figure, and a feathered mask with a black-to-white gradation for each ledge; then he used the Composite command (Calculations) to merge each figure mask with its corresponding ledge mask so the hard-edged figures stood out against the wall, while the ledges faded into the wall. The wall itself was a composite of fragments Jenkins took from several photos. To add numerous layers and keep the wall from looking too uniform, he used the Charcoal brush as a cloner with the Grainy Soft Cover Cloning method; this allowed him to select a paper texture for the clone to react to, making it vary from the original. The finished figures and ledges were composited with the wall in Photoshop.

THE TOOLS

Hardware: Quadra 800 with 74MB of RAM and a 185MB internal hard drive; 1GB MicroNet external hard drive; 44MB removable SyQuest drive; 6-by-9-inch Wacom tablet; 21-inch Super/Mac monitor; Hewlett-Packard IICX color scanner.

Software: Fractal Design Painter 2.0; Adobe Photoshop 2.5.1.
To give the brushstrokes a three-dimensional quality, Jenkins added luminance to the face and arms of the figure (top left), using the Image Luminance method in Painter’s Apply Surface Texture window (bottom left).

To add depth and texture to the blanket draped over the figure’s legs (top left), Jenkins applied a texture he had previously created—Moroccan Tile—from Painter’s Paper Palette (bottom left).

In Photoshop, Jenkins used the Add command (in the Calculate submenu) to merge the two separate channels for the figure and the ledge into one mask for compositing them into the final illustration.
Here's the recipe. It begins with nine scanned images of restaurants, tables, chairs, a waiter, picture frames and a dinner to die for. Background layer 1 holds master image. On another layer 2, sections of two restaurants complete overall scene. Layer Masks are used to hide unwanted portions of image. Wine bottle shadow 3 is extended using airbrush on Fade setting. Replace Color feature 4 changes color of wine from red to white. Lighting Effects filter 5 is used to reduce ambient light and add highlights that reflect multiple light sources. Color Range feature 6 isolates waiter (originally shot against textured wall), and he is placed in the scene. Mirror images 7 are copied to multiple layers where they are scaled, composited and further manipulated. Clouds filter 8 creates window to outside world. 

Adobe Photoshop, the world's leading photo design and production tool, now offers what everyone has been craving: a banquet of unlimited creative possibilities and remarkable production control. With support for multiple layers, Version 3.0 gives you the freedom to compose and experiment with ease. Add graphics, text and special effects to any layer without altering images on other layers. A redesigned interface with totally customizable floating palettes puts just what you want where you want it. New Lighting Effects, Dust and Scratch removal filters, and Color Range masking are only the beginning of the latest offerings. Improved color production control includes CMYK preview, Gamut Warning, Selective Color Correction and a Sponge Tool that saturates or desaturates color areas. This latest version supports your current operating system on Macintosh™ or Windows™ and even takes advantage of Power Macintosh™ and Windows NT™. A Deluxe CD-ROM is also included.


If you can dream it, you can do it.™
Digital cameras come in a variety of sizes and configurations. Clockwise from top: Leaf Systems’ Lumina; the Eastman Kodak DCS 200 (which uses a Nikon body); and the Apple QuickTake 100.
These days, many photographs captured on film end up as computer images—so why shouldn’t they start out that way, too? That’s the question many professional photographers, publishers, and illustrators are asking themselves, now that electronic cameras are becoming more affordable. Although electronic cameras have been around for years, Apple Computer’s recently released QuickTake 100 is widely considered to be the first to offer both ease of use and good color-image quality for less than $1000.

Electronic cameras combine photographic optics with computer imaging—and do away with film expenses, caustic chemicals, and processing delays. For economy-minded amateurs and deadline-driven professionals—and for anyone who wants to include images in computer-generated documents—a filmless camera seems like a dream come true.

To find out how well electronic cameras deliver on their promises, I spent two months working with seven models (all under $10,000): Apple’s QuickTake 100, Canon USA’s RC-570, Dycam’s Dycam Model 3, Eastman Kodak’s DCS 200, Fuji Photo Film’s Fujix DS-100, Logitech’s FotoMan Plus (which is identical to the Dycam Model 3 except for the software that comes with it), and Sony Electronics’ MVC-7000. I also tested a preproduction unit of Leaf Systems’ Lumina digital camera/three-pass scanner (see “Leaf’s Lumina: Something Completely Different”). At press time, Kodak announced it was replacing the DCS 200 with the DCS 420, a similar but upgraded version of the digital camera. See “Kodak’s Latest Digital Camera,” Graphics news, for more information.

For my tests, I photographed a variety of indoor and outdoor scenes to assess each camera’s image quality and ease of use, and I put the image-transfer hardware and software most cameras provide through their paces. In addition, Macworld asked San Francisco–based professional photographer Stan Musilek to use the cameras in his studio and offer his impressions (see “Comparing Image Quality”).

The verdict? There’s room for improvement in both cost and image quality. For example, the most exciting new offering, the QuickTake 100 ($749), costs much more than a 35mm single-lens reflex (SLR) camera that accepts inter-
How Digital and Film Cameras Compare

Digital cameras bring photography into the computer age, yet they operate on the same basic principles as traditional cameras. Some key differences make digital cameras better suited for electronic publishing. Below, we show the two image-capture methods at the moment light enters the camera.

The medium is the difference
The two cameras use very different media to capture an image. In a traditional camera the medium is film; in a digital camera it's a charge-coupled device (CCD).

2a Film is made of multiple layers: outside protective layers and inner emulsion layers. (The emulsion is a gelatin filled with light-sensitive crystals.) Color film pairs three emulsion layers—each sensitive to one of the primary colors (cyan, magenta, or yellow)—with three dye layers, which color the emulsion. The image forms on the emulsion layer.

FILM CAMERA

2b A digital camera's CCD and its peripheral circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2c Behind the Lens

Most of the parts are the same (1a and 1b) because both cameras are based on the same principles, they share many of the same components: lenses focus incoming light; an aperture controls the amount of light entering the camera; a shutter controls the length of time that light comes through the aperture; and a photosensitive medium captures an image. But the similarities end here.

2d A digital camera's CCD has smaller light-sensitive cells than the full-frame C CDs used by most digital cameras. To compensate, a still-video camera has to do more manipulation of the CCD's data, making images more prone to undesirable artifacts: fuzzy fringes surrounding the objects in a high-contrast scene, or vibrant colors that bleed slightly into surrounding areas (see "Comparing Image Quality").

2e A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2f A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2g A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2h A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2i A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2j A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2k A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2l A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2m A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2n A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2o A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2p A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2q A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2r A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2s A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2t A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2u A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2v A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2w A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

2x A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.
2b) A CCD is a multilayered silicon chip. In one layer, a grid of electrodes divides the surface into pixels. Each electrode is connected to leads, which carry a voltage. A color filter layer determines which primary color (in this case red, green, or blue) each pixel senses. The image forms on a layer of silicon substrate.

Image resolution in film is determined at the crystal level and is very high. Film can respond to a broader range of lighting conditions than a CCD, but it must be developed after exposure. Scanning adds yet another step for electronic publishers. In a CCD, image resolution is determined at the pixel level and is much lower than in film, but images captured by a CCD are immediately ready for use in electronic publishing.

What happens when light strikes
The medium's job is to record the various levels of light in the scene being photographed.

3b) A CCD reacts to light electro-magnetically. Light particles pass through the CCD, freeing electrons in the silicon substrate. A voltage applied to the electrodes draws freed electrons together in special areas (called photo sites) in the silicon substrate. The stronger the light, the greater the number of electrons drawn together at that site. The CCD transfers captured electrons, one by one, to an analog-to-digital converter, which assigns each site a digital value corresponding to the number of electrons the site holds. In this form the image is saved to disk and is ready for use in electronic publishing. The number of electrons in a photo site determines how light or dark each pixel in the image is.

Storing Images
A lowly roll of film can store more images than almost any filmless camera. Digital images devour storage space, and to hold them, filmless cameras use either battery-powered memory chips or small floppy or even hard disks.

Of the cameras tested, three store images in internal memory (called EPROM—Erasable Programmable Read Only Memory): the QuickTake 100, the Dycam Model 3, and Logitech's Foto-Man Plus. The Fujix DS-100 uses slide-in memory cards, each about the size of a business card and powered by a coin-size lithium battery.

Leaf Systems' $7500 Lumina takes a unique approach to providing higher resolution and better image quality than any under-$10,000 digital camera provides. The Lumina uses a 2700-cell array that moves across the imaging field in 3400 steps to yield resolution equivalent to a 9,180,000-pixel CCD. A complete exposure takes roughly three minutes.

The Lumina connects to the Mac's SCSI port and provides no internal image memory—the camera must always be tethered to a Mac. The Lumina accepts standard Nikon-mount lenses and has through-the-lens viewing, but the viewfinder objects appear upside-down, which makes it awkward to set up a shoot. An included Adobe Photoshop plug-in lets you adjust color balance and exposure and activate the scanning process.

You can use a Lumina on a copy stand as a substitute for a scanner; put a small light box on the copy stand's base and you can scan transparencies and negatives. But compared with scanners, the Lumina has some drawbacks. Lighting flat artwork to avoid glare and uneven illumination requires trial and error. Also, you must be careful to mount the Lumina so that its CCD's focal plane is exactly parallel to your copy stand's base; otherwise, you'll introduce distortion.

The Lumina seems best suited to photographers who want to generate high-quality images in the studio and may also want to do some scanning. It isn't perfect, but it is the least-expensive tool available for getting professional-quality digital results in the studio.
Comparing Image Quality

Images 1 through 8 represent raw Linotronic output—no retouching, no color correction—from the electronic files generated by each of the cameras reviewed. San Francisco-based photographer Stan Musilek tested each camera using its highest image-quality level under the same studio conditions: flashes off; continuous, flicker-free studio lighting to simulate daylight; cameras positioned roughly 4 feet from the still life; f/11 aperture (or as close as possible); 1/4-second exposure.

Musilek’s comments on the printed images and his experiences using the cameras are encapsulated in the following captions. The image’s original file size (before resizing) is also listed.

1. Apple QuickTake 100

Image 9, taken with the QuickTake 100, was manipulated in Adobe Photoshop by Jeff Sacilotto, Macworld’s editorial production manager. His goal was to approximate the quality of the 4-by-5 film transparency (image number 10). Sacilotto was able to correct the QuickTake image’s color so that it more closely resembled the original image. But Photoshop’s Sharpen filter couldn’t enhance the QuickTake photo’s image detail to the same level as the transparency.

2. Canon RC-570

When viewed on screen, the Canon still-video images weren’t as good as those from the QuickTake, and the contrast of the printed image “was too far off.” File size: 849K.

3. Dycam Model 3

Musilek had difficulty turning off the camera’s flash. “We had to tape over it; there was no other way to turn it off,” he said. The final image “didn’t look much better than a photocopy.” File size: 531K.

4. Eastman Kodak DCS 200

The image needs some color correction, but the large files generated by the DCS 200 give the user “plenty of color information to work with.” File size: 4.41MB.

5. Fujix DS-100

Musilek and his staff “had problems with the Fuji’s focus. We used its autofocus, but the images looked soft, so we reshoot it using manual focus, and it still didn’t come out that sharp.” The resulting image “could be sharpened” in Photoshop, “but it wouldn’t really be worth it.” File size: 915K.

6. Leaf Luminar

The Leaf captures images just as a scanner does, in three passes; as a result, “it took 14 minutes to get one exposure.” The final image “needs a little color correction—it’s a bit too green—but otherwise it’s very sharp and detailed.” (Tests were performed on a preproduction model.) File size: 20.5MB.

7. Logitech FotoMan Plus

The Logitech and Dycam cameras produce images that are “OK” if reproduced in real-estate fliers or as small images in newsletters. But the QuickTake costs about the same and produces good color images, Musilek noted. File size: 175K.

8. Sony MVC-7000

“I’m surprised at how well it printed, given the file’s low resolution. I’d lower the contrast a bit in Photoshop, but that’s about it.” For images that will “live on screen,” in multimedia CD-ROMs or presentations, the Sony is “the best camera.” File size: 865K.
One drawback to storing images in memory is the need to transfer them to the Mac when you reach the camera's capacity; once the memory is full, you can't take more photos until you free up some storage space. (This doesn't apply to the Fujix DS-100; when its memory card is full, eject it and insert another.)

The Apple and Fuji cameras provide multiple image-size options. The QuickTake 100, for example, holds either 8 photos at 640 by 480 pixels or 32 photos at 320 by 240 pixels. The Fujix DS-100 lets you delete individual images to free up memory for new ones. With the Apple, Dycam, and Logitech cameras, you have to delete all the images to free up memory.

To reduce storage requirements, the Dycam, Logitech, and Apple cameras compress one image as soon as you take it. The Logitech and Dycam models require roughly ten seconds to compress one image and become ready to take another.

The QuickTake 100 is ready much faster—generally within a few seconds (the exact time depends on the image). By comparison, the Fujix DS-100 and Canon RC-570 offer continuous-photo modes in which you can capture two images per second.

The Sony and Canon cameras store images on 2-inch floppies that hold up to 25 or 50 images, depending on whether you shoot in frame or field modes. Frame mode provides better image quality by...
Focus on Electronic Cameras

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Company's Suggested Price</th>
<th>Lens Type</th>
<th>Minimum Focus Distance/ F-Stop Range</th>
<th>Shutter Speed Range (in seconds)</th>
<th>Effective ISO Rating</th>
<th>Built-in Flash/ Recycle Time (in seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple Computer</td>
<td>QuickTake 100</td>
<td>$749</td>
<td>fixed focus; not interchangeable</td>
<td>4'/f2.8-f16</td>
<td>1/50-1/15</td>
<td>85</td>
<td>yes/7</td>
</tr>
<tr>
<td>Dycam</td>
<td>Dycam Model 3</td>
<td>$695*</td>
<td>fixed focus; not interchangeable</td>
<td>3'/f4.5</td>
<td>2/15-1/30</td>
<td>200</td>
<td>yes/7</td>
</tr>
<tr>
<td>Eastman Kodak</td>
<td>DCS 200*</td>
<td>$9995</td>
<td>autofocus or manual focus; interchangeable</td>
<td>3'/f2.2-f12</td>
<td>4-7000</td>
<td>50-400</td>
<td>no/NA</td>
</tr>
<tr>
<td>Fuji Photo Film</td>
<td>Fuji DS-100</td>
<td>$3200</td>
<td>autofocus, zoom</td>
<td>1.18'/f2-f11</td>
<td>1/4-1/50</td>
<td>100</td>
<td>yes/3</td>
</tr>
<tr>
<td>Leaf Systems</td>
<td>Lumina</td>
<td>$7500</td>
<td>manual focus; interchangeable</td>
<td>NA*</td>
<td>NA</td>
<td>NA</td>
<td>no/NA</td>
</tr>
<tr>
<td>Logitech</td>
<td>FotoMan Plus</td>
<td>$799</td>
<td>fixed focus; not interchangeable</td>
<td>NA*</td>
<td>NA</td>
<td>NA</td>
<td>no/NA</td>
</tr>
<tr>
<td>Still-Video</td>
<td>Canon USA</td>
<td>RC-570</td>
<td>autofocus, zoom; not interchangeable</td>
<td>1.8'/f2.5-f2.7</td>
<td>1/50-1/30</td>
<td>70-140</td>
<td>yes/0.3</td>
</tr>
<tr>
<td>Sony Electronics</td>
<td>MVC-7000</td>
<td>$8000</td>
<td>manual focus; zoom; interchangeable</td>
<td>1'/f1.8-f12</td>
<td>1/4-1/50</td>
<td>100-800</td>
<td>no/NA</td>
</tr>
</tbody>
</table>

NA = not applicable  * The smallest number represents the maximum number of high-resolution images the camera can capture at one time.  + Recently replaced by the DCS-420.  f Lens not included.

Canon's transfer utility is the best of the bunch, offering features that let you add antialiased (smooth-edged) text to images, resize images, and even save a sequence of images as a QuickTime movie—a capability that lets you use the camera to make time-lapse movies.

Sony doesn't offer a transfer utility or Mac interface for the otherwise excellent MVC-7000—its video-out jack is the only way to move images to the Mac. The camera is superb, however, for images that will be viewed on a monitor, and it also has the unique capability of being able to work as a video camera. Connect the MVC-7000 to a video cassette recorder and record full-motion video. Connect it to a TV monitor and you have a closed-circuit TV system. Attach it to an AV Mac or a frame grabber and you can digitize live video. Its live-video capabilities make the MVC-7000 very appealing for QuickTime and video work.

The Camera Angle

Enough of CCDs, transfer utilities, and video jacks—how do these things stack up as cameras? The low-end and midrange units compare to typical auto-everything 35mm cameras, providing built-in flash units and using noninterchangeable lenses. The Dycam and Logitech cameras are the simplest, each sporting just one button: the shutter release. The remaining cameras in this category provide additional controls for disabling the automatic flash, activating self-timer mode, and choosing an image-quality mode. The settings of these functions appear on a small display screen, which also displays low-battery warnings and other messages.

Canon's RC-570, Fuji's DS-100, and Sony's MVC-7000 provide zoom lenses, the rest provide fixed-focal-length lenses that are roughly equivalent to a normal or slightly wide-angle lens on a 35mm camera. The Fuji DS-100 is the only midrange camera tested that provides through-the-lens viewing—you see exactly what the CCD will record. The remaining low-end and midrange cameras canning two interlaced fields from the CCD, but uses twice the disk space in the camera. You can mix image modes on a single floppy and delete individual images. And when a floppy fills, you can eject it and insert a new one.

The Kodak DCS 200 is the only camera tested that accepts an optional internal hard drive and connects to an external SCSI drive. The model I evaluated had an 80MB hard drive capable of storing up to 50 images. (The new DCS 420 uses PCMCIA storage instead.)

The primary drawback of storing images on floppy or hard drives is that the drives can fail from too much physical abuse. Disk drives also require more power than memory chips, and this means less time between battery charges if you frequently insert and eject disks or review your pictures.

From Camera to Mac

So how do you get images from the camera into the Mac—and how long does the transfer take? Depends on the camera. All of the cameras tested, except the Sony MVC-7000, include or accept cables and image-transfer utilities; the MVC-7000 relies on a video-input jack.

All the image-transfer utilities work similarly: a window displays thumbnail versions of the stored images; double-clicking on a thumbnail downloads the image. Some utilities have image-enhancement features such as brightness and contrast adjustments, but you'll want a program such as Adobe Photoshop for serious image editing.

For transferring images, the Canon RC-570 uses a NuBus card whose cable attaches to a connector in the camera's battery chamber. That the board requires a NuBus-equipped Mac means you can't transfer images to a PowerBook when you're on the road. On the plus side,
provide a separate viewfinder, which means at close shooting distances, you might accidentally chop off a head or miss part of the image. The viewfinders in the Canon RC-570 and Logitech/Dycam cameras provide lines that let you compensate for this parallax phenomenon; Apple's QuickTake 100 does not.

Each of the low-end and midrange cameras is compact enough to fit in a briefcase. The Apple QuickTake 100 earns extra points for using standard AA batteries. The camera includes three rechargeable NiCad batteries, but if you lose them or can't wait for a recharge, you can use standard AA alkaline cells.

Canon and Fuji use proprietary rechargeable batteries, so be sure to take some extras along for extended photo shoots. All of the cameras tested can also operate from AC power when used with their battery chargers or adapters. (The QuickTake 100 uses the same AC adapter as a PowerBook.)

The Canon RC-570 loses points for its poor battery-chamber design. It's easy to insert the battery upside down—a mistake you won't catch until you replace the removable door and try unsuccessfully to turn the camera on. The fact that the door is removable—therefore easy to lose—is another drawback, especially since you have to remove the door and set it aside when using the SV Mac digitizing board.

The Sony MVC-7000 and the Kodak DCS 200 have the same amenities found on a 35mm SLR camera. Both accept a variety of lenses designed for Nikon or Canon bayonet mounts. (The Kodak DCS 200 actually uses a Nikon 8008 body.) Both provide through-the-lens viewing, hot shoes for attaching flash units, and center-weighted or spot metering options. Unlike the other cameras, both also allow you to specify a desired ISO rating in order to control depth of field (the distance range within which objects will be in focus).

The Sony MVC-7000 is a sumo-size camera that weighs nearly 6 pounds, including the 8mm-to-48mm zoom lens that's standard equipment. The DCS 200 is more manageable, weighing 4 pounds and sporting rounded contours that make the camera more comfortable to hold.

The Last Word
Who should consider the current crop of cameras? Low-end and midrange models are best for business and industrial applications: real-estate agents snapping houses for listing sheets and databases; insurance-claims adjusters recording dents and accident scenes; personnel departments snapping photos for ID badges; and any professional wanting a fast way to include images in documents such as reports, newsletters, and brochures.

In this league, the QuickTake 100 is the best. The Canon RC-570's image quality is inferior, but the camera's zoom lens, floppy drive, video-input jack, and the superb SV-Mac board and transfer utility make it a much more versatile system. Indeed, the ideal filmless camera would combine the RC-570's goodies with the QuickTake 100's image quality and superior industrial design.

The Fujix DS-100's image quality sits in between that of the QuickTake 100 and the Canon RC-570. The DS-100's memory cards eliminate broken floppy worries, and the camera provides a more sophisticated lens and SLR viewing. But the DS-100 is costly, especially considering you need the $2000 DP-100 Memory Card Processor to transfer images to the Mac. Don't bother with the Dycam or Logitech models; they cost roughly the same as the QuickTake 100 but render images that are infinitely inferior.

The high-end cameras are well suited to newspaper photojournalism, law-enforcement and military-documentation applications, scientific and medical imaging, and low-budget catalog and newspaper advertising photography. Of the two high-end models evaluated (the Kodak DCS 200 and the Sony MVC-7000), the DCS 200 is better, thanks to its smaller size and lower weight, its SCSI interface and optional internal hard drive, and image quality. With new and enhanced features, such as PCMCIA storage and faster image-capture speed, the new DCS 420 should be even better. The Sony MVC-7000's video features make it a strong contender for multimedia developers, however.

Regardless of the advantages digital and still-video cameras offer, don't expect them to supplant film anytime soon. Consider the components required: a computer with good graphics capabilities and lots of storage, color-calibration software, image-enhancement software, image-database software, and a continuous-tone printer. Throw in the expertise needed to use it all, and you're likely to have a new appreciation for the simple slogan that helped George Eastman build his photographic empire: "You push the button, we do the rest."
Seybold San Francisco.
It promises to be a real eye-opener.

Come to Seybold San Francisco this September and you’ll see some amazing things. Like the hottest new computer graphics and publishing solutions. The very latest in color and output technologies. Even multimedia, workflow, and presentation breakthroughs. All displayed by over 350 premier exhibitors.

Seybold also offers an unparalleled 3-day conference program, more than 65 in-depth sessions, 24 specialized courses, and a 2-day Quark symposium. Taught by industry experts, each course is designed to help you better use all these eye-popping technologies.

If you have anything to do with computer publishing, graphics, or communications, do not miss this event. It has everything you need to work faster and perform better. But don’t take our word for it. Come and see for yourself.

Conference is September 13-16 • Moscone Center • Call 800-488-2883 for information
Pollution Solution.

Energy

EPA POLLUTION PREVENTER

This symbol identifies energy-efficient computers that save you money and reduce air pollution by “powering down” when not in use.

Over 2000 computers, monitors and printers have earned the right to bear the Environmental Protection Agency’s Energy Star™ logo. These computers are so smart, they go to sleep when not in use and wake up with a simple touch of the keyboard or mouse. Energy Star™ Computers don’t cost any extra, will save money on your energy bill, and prevent pollution from electricity generation. Be part of the solution and look for this logo when you make your next computer purchase. To receive a list of available products call the Energy Star™ Hotline at 202 775-6650.

Buy It And Save.
Microsoft Reworks Works

MICROSOFT IS THROWING IN THE kitchen sink with its everything-under-one-roof package, Works—all for a street price that the company estimates at $99 (Microsoft products no longer have list prices). With version 4.0, Works has gone from an integrated suite of productivity applications to a collection of just about every kind of software you can imagine.

To version 3.0’s spreadsheet, word processor, database, communications, and paint tools, Works 4.0 adds an address book and calendar, a table editor, slide-show capability, and WordArt (a tool for distorting and playing with type), not to mention an equation editor, fonts and clip art, Bookshelf (a viewer for electronic books), and Encarta (a multimedia encyclopedia). However, the money saved on software will be quickly spent on hardware: Works 4.0 requires a minimum of 4MB of RAM—9MB if you install everything—and 5MB to 16MB of disk space.

In previous versions of Works, the spreadsheet, word processor, and database modules created separate files. In version 4.0, the modules take advantage of OLE 2.0 (implemented on the Mac through Apple events) to support embedding and editing documents inside other documents—for example, a chunk of spreadsheet inside a word processor file. Works 4.0 should be shipping now, and a Power Mac version will be available sometime this fall. Microsoft, 206/882-8080, 800/426-9400.—D.L.

Parade of PIMs

PORTFOLIO SYSTEMS IS GETTING ready to ship Day to Day, a calendar companion to Portfolio’s address book program, Dynoex; at the same time, a French company, ComposeTel, has set up shop here to market its Dynoex competitor, Souvenir, to Americans.

Day to Day provides day, week, and month views—and a year view for scheduling vacations—and can show an event’s text in a balloon, which saves you from having to open events while you scan your calendar. You can attach external files to events (for example, an agenda for a scheduled meeting); add banners across the top of events without obscuring their contents; and create event templates with preassigned priorities, categories, and so on. Dynoex, an extension that adds a minimen to providing Dynoex access from any application, is being superseded by a similar extension that adds access to Day to Day events.

Souvenir (French for remember) is unusual for an address book: it is an extension, so once installed, it is always open. It can search multiple Souvenir files for a record; copy multiple fields, such as addresses, to paste into letters or label templates; and adjust its autodial feature when you tell it what area code or country you are in.

Souvenir should be shipping for $99 as you read this. Day to Day should ship in September for less than $100, and a Power Mac version will ship soon after. ComposeTel, 415/327-0744; Portfolio Systems, 802/434-6400.—O.L.

Automated Interviewing

SENECIO SOFTWARE IS SHIPPING A suite of interview-design-and-execution programs that are equally suited for selling products and conducting surveys.
Put Your Calendar on the Desktop

Known for After Dark, the screen saver that covers up your data with flying toasters, Berkeley Systems is about to bring your data to the foreground with Expresso Calendar and Address Book, which can display your calendar as a Mac desktop pattern.

Expresso has features common to personal information managers, such as recurring events, drag-and-drop scheduling, configurable views, to-do lists, reminders, and envelope and label printing. Users can share files on a network while password-protecting personal events.

The desktop calendar is a static image rather than a live calendar, so to update it when you change your schedule, you must issue the FlashBack command. Expresso comes with 20 looks for customizing the appearance of calendars, and in October Berkeley Systems plans to offer an add-on with about 8 Trekkie looks from "Star Trek: The Next Generation."

Berkeley Systems says Expresso can import files from Now Up-to-Date and Now Contact, DateBook and TouchBase, Dynodex, and DayMaker. It lists for $69.99 and should ship in September; a native Power Mac version will be available several months later. Berkeley Systems, 510/540-5535.—JOANNA PEARLSTEIN

ACT 2.0 Leapfrogs Contact Management

While Symantec's contact-manager and work-organizing tool, ACT, doesn't include a kitchen sink (see "Microsoft Reworks Works," in this section), version 2.0 is full-featured enough that it could become the focus of many users' workplaces.

With its roots in sales automation, ACT (Activities, Contacts, and Time) performs tasks such as automatically scheduling a follow-up call after you send a letter, and compiling a history of activities for each person in your contact database. The 2.0 upgrade is geared primarily toward supporting workgroups: users can share both Mac and Windows ACT files over a network, send messages (such as the name and contact history of a person in the database) from ACT directly into E-mail using AOCE, and import each other's calendars when scheduling meetings. Version 2.0 can group contacts to, for example, create a special mailing list or project team. The upgrade also has full-featured database query capabilities, and it supports fax-merging with Faxoff. It can print in Day-Timer, Filofax, Day Runner, and Franklin formats (Symantec will sell paper for those formats), as well as many Avery label formats.

ACT 2.0 should ship in September in intelligent fat-binary format for 680X0 and native Power Mac installation. It will list for $249.95. Symantec, 503/345-3322, 800/441-7234.—D.L.

IN BRIEF

Blyth Expands Omnis

Blyth's Omnis 2.0, which should be shipping when you read this, includes a templating tool to simplify adding SQL access to a database; a graphing tool that lets end users explore and graph data in a live database; and direct support for Lotus Notes, Microsoft Mail, and a large selection of middleware products. Users can design and deploy databases on any mix of Mac, Windows, and OS/2 platforms, as well as several flavors of Unix. Omnis 2.0 is priced at $5000 for a developer kit with unlimited run-times to access one database; run-time pricing varies for access to multiple databases. A Power Mac version is scheduled for release in the fall. Blyth, 415/571-0222.

New Owner Updates

DAL In January, Independence Technologies took over Apple's database-connectivity middleware DAL (Data Access Language) and is upgrading both client and server versions to 1.5. The DAL 1.5 client's major enhancement is support for ODBC (Open Database Connectivity), Microsoft's standard database-access tool. Pricing for the client version starts at $149 per user; volume discounts are available. The DAL 1.5 server upgrade adds support for systems from DEC, IBM, and others, as well as for new operating systems and databases. DAL 1.5 server pricing depends on configuration. Independence Technologies, 510/438-2000.
Introducing the world's only true 600x600 dpi desktop color laser printer.

The QMS® magicolor Laser Printer gives you output resolution that's twice that of enhanced color inkjet and thermal wax transfer. Fast and networkable, the QMS magicolor™ Laser Printer also offers extremely low consumable usage and cost unmatched by any other printer in its price range, with new features for even less money. Here's your chance to polish your image. For more information on how the QMS magicolor Laser Printer can make your work shine or the ColorSpecialist nearest you, Call 800 392-7559 Dept. 4026.
Microsoft Word 6: Best and Worst

IF GERALDO EVER DOES A PROGRAM ON love/hate relationships, you can bet there will be a Microsoft Word user on the stage. The Macintosh world’s most popular word processor certainly isn’t the easiest to use, but it is (arguably) the most powerful. As I write this, Microsoft (206/882-8080) is preparing the most significant Word upgrade ever: version 6 (estimated street price $325), which should ship about the time you read this, such as the SE or the Power Book 4.0. Word 6 won’t run on a Power Mac; it requires 4MB of memory (8MB on a Power Mac) and between 5MB and 20MB of disk space, depending on the options you install. (By comparison, WriteNow 4.0 requires only half a megabyte of memory and 1.4MB of disk space.)

Part of the price for power is that Word 6 won’t run on 68000-based Macs, such as the SE or the PowerBook 100, and it requires 4MB of memory (8MB on a Power Mac) and between 5MB and 20MB of disk space, depending on the options you install. (By comparison, WriteNow 4.0 requires only half a megabyte of memory and 1.4MB of disk space.)

Another part of the price: Word 6 so differs from Word 5 that the first time I saw Word 6 was like finding my house completely remodeled by someone whose tastes I don’t share. But I’m getting used to it, and the aspects of Word 6’s design that I don’t like are offset by some genuine interface improvements and bone-crunching power. My love/hate relationship has only grown more torrid.

Although I am candid in this column about what I like and don’t like, this isn’t a review; the information here is based on prerelease versions of the program.

A Prettier Interface?

On a color or gray-scale display, everything in Word 6, from rulers to dialog boxes to pop-up menus, has a three-dimensional appearance—Microsoft should include 3-D glasses in the box. The dialog boxes themselves are bigger and busier. Most have a preview window that shows the settings you’ve chosen; gone is the Apply button that Word 5.1 used. Many dialog boxes also have file folder-like tabs that act as gateways to additional options—click on a tab, and its options appear (see “A Guided Tour of Word 6”).

The other big interface news is on-screen tool bars for nearly everything. The Font menu, for example, is gone—to choose a font, you use the Formatting tool bar. The ruler icons for changing paragraph justification are gone—you now use the Formatting tool bar. The Show ¶ command has become an icon on the Standard tool bar. Display all ten (!) tool bars at once on a standard 14-inch monitor and you can see roughly 2 inches of your document window. Fortunately, you’ll rarely need more than the Standard and Formatting tool bars, and you can customize tool bars to contain only those tools you actually use. And if, like me, you have trouble remembering which icon does what, you’ll appreciate Word 6’s ToolTips feature, which identifies a tool when you point to it—it’s like System 7 balloon help without the balloons.

Transition Tip: Interface

If you miss the Font menu, you can re-create one using the Customize dialog box’s Menus tab. While you have the Customize dialog box open, you might want to create one mega-tool bar with just the tools you use most often.

The Template’s the Thing

The single biggest difference between Word 6 and Word 5.1 is Word 6’s concept of document templates. If you’re a Word 5 veteran, you know that you can create stationery documents, which hold boilerplate text and formatting; glossary files, which store often-used text and graphics; and multiple settings files, which store customized menus and keyboard shortcuts. A Word 6 template combines the functions of stationery, glossary, and settings files into one file, and throws in some additional capabilities for good measure. A template can hold boilerplate text; glossary entries (renamed AutoText); and your customized keyboard shortcuts, menus, and tool bars.

Templates provide some powerful possibilities. Using Word 6’s macro language, you (or a consultant or in-house programmer) can create customized menus that supplement or even replace Word’s menus. A template for a weekly status report might have a menu called Assemble with commands to retrieve report contributions from coworkers and put them together in a formatted document; or a writer might create a template called Manuscripts that customizes Word’s menus to remove advanced formatting commands the writer never uses.

If you open several documents based on different templates, Word’s user interface can change dramatically as you switch from one document window to another—commands appear or disappear...
and keyboard shortcuts and tool bars change. It's a recipe for confusion.

**Transition Tip: Templates** Your Word 5 stationery documents will still work under Word 6—in fact, you can use them as foundations for templates—but inserting AutoText entries from the keyboard is different in the new version. In Word 5, you pressed #-backspace, then typed the shortcut name, then pressed return. In Word 6, you first type the entry's name and then press #-option-V. To convert a Word 5 stationery file for use with Word 6, simply open it under Word 6 (to see it in the Open dialog box, you'll have to select the All Files option from the List Files of Type pop-up menu).

**What You See, What You Get**

Word 6 lets you zoom in and out from 10 percent of normal size to 200 percent, and all features are available at any scale. Microsoft was obviously thinking of WordPerfect 3's zooming.

The page-layout and print-preview modes show some big changes. Page layout has a vertical ruler for adjusting the document's top and bottom margins by dragging them up and down. And page-layout view is the only place headers and footers appear in Word 6—gone are Word 5's Header and Footer windows. When you choose Header and Footer from the View menu, Word 6 switches into page-layout view; dims the body text in your document; moves the blinking insertion point into the page's header area; and brings up yet another tool bar, this one bearing icons for including the date and time, page numbers, and other information in the header or footer (see “Getting a Header”).

As for the print-preview mode, it's now live—you can type and edit text and move items around in the preview window. The print-preview window also supports zooming. Zoom out far enough and you can see multiple pages at once and drag items between them.

**Transition Tip: Headers**

I guarantee that Word 6's approach to headers and footers will irritate you. It's cumbersome to display a document in page-layout view just to add a header, especially on slower Macs. For complex documents, create your headers and footers before doing anything else—that way, you won't have to wait for Word to convert your document to page-layout view.

**Power Publishing Features**

Word 6 moves a step closer to being a full document-publishing tool in the league of Frame Technology's FrameMaker. Word now lets you create multicolumn pages with columns of unequal width, and it provides much better drawing features, including terrific tools for creating labels that identify portions of an illustration. Word's indexing and table-of-contents features are better than ever; besides being easier to use and offering a wider variety of formatting styles, they now let you create tables of authorities for legal documents and lists of figures. Word 6 even provides typographic niceties such as automatic kerning.

Most exciting are Word's automatic figure-numbering, caption-generating, and cross-referencing features. Take it from me: keeping track of figure numbers in a long manuscript is one of writing's ugliest chores. Adding a figure at the beginning of a chapter means renumbering the remaining figures and their references in the text. Word 6 automates all of this. Say your document contains the reference “See Figure 2-17 on page 54.” If you change the figure number and move it to a different page, Word 6 automatically updates the reference.

Word 6 also streamlines linking chapter files into a book or manual—a step that's necessary to generate an index or table of contents that spans a group of files. Word 5's arcane File Series dialog box has been superseded by a new type of document called a master document; like an Excel Workbook, a master document can contain the documents that constitute a complete publication.

**Transition Tip: Publishing**

If you've been preparing documents in Word and then importing them into Aldus PageMaker or QuarkXPress (or FrameMaker), try using Word 6 to do your page layout, too; once you go to a page-layout program, you can't take advantage of Word's automatic cross-referencing.

**Macro Mania**

One of Word 6's most impressive new features is its macro language, WordBasic. If you don't need to create new functionality and simply want to automate several tasks—opening a file, searching and replacing some text and some formatting, saving and then printing—you can use Word's macro recorder, which watches over your shoulder and records what you do. You can assign a recorded macro to a menu, to a tool bar, or to a keyboard shortcut.

**Transition Tip: Macros**

If you've been using CE Software's QuickKeys or Affinity Microsystems' Tempo to automate Word tasks, you can probably use WordBasic to perform the same tasks, as well as more-complex ones. When you catch yourself repeating a task, try recording it as a macro.

**Little Things that Count**

Word 6 is full of little enhancements.

**AutoCorrect**

AutoCorrect watches over your shoulder and corrects your mistakes as you work. It doesn't check the spelling of every word you type, but it does check for common blunders such as a word beginning with two capital letters, and it compares what you type to a built-in list of AutoCorrect entries, such as teh instead of the and separate instead of separate. You can add your own problem words to the list and use AutoCorrect to type often-used words or phrases for you automatically when you enter an abbreviation.
Power with Style

Joule™ Drives provide the powerful value and performance you need today.

There's a powerful difference in La Cie's Joule Drive that sets an unparalleled new storage standard.

True, Joule's stylish case won ID Magazine's silver medal design award, but inside is where the difference really counts. Here you have a choice of Quantum hard drives, SyQuest removables, or Optical drive mechanisms. All drives include the extra strength of up to 100 watt power supplies, built-in surge protection, digital active SCSI termination, 2 AC outlets, SCSI ID switching, up-front power switch and termination status LED, plus an exclusive built-in path to modular expansion!

Each Joule Drive is formatted and reliability tested, then shipped ready to plug and play including Silverlining disk management software (a $149 value), double shielded SCSI cable, power cable, and a superior warranty.

Joule Drives are only available factory direct from La Cie, a Quantum Company.

When you get so many benefits and value in a Joule, along with Fortune 500® stability, the choice is simple.

Call our toll-free number today for more facts or to order now.

"Finally a hard drive that grows with you. The best value today."
Bob Marchant
President, Agio Design

Quantum 3.5" Drive
340MB $359
540MB $499
1080MB $849
1400MB $999
SyQuest Removable
105MB $449
270MB $689
Optical Removable
230MB $1099

To order or for more information, call toll-free
800-999-1671
Mon.-Fri. 5AM-7PM & Sat. 8AM-NOON PST
International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.
UNFORGETTABLE.

Image shown is an actual nVIEW LCD image.

THE nVIEW® Z SERIES.

They won't forget your message.
You won't forget the applause. Project your next presentation directly from your computer in big, bold color images with nVIEW's new line of LCD projection panels.

Sleek, feather-light panels that are so easy to use, yet so durable, you can deliver presentations anywhere, anytime. With impact.

Put Our List On Your List

Our list is the Consumer Information Catalog. It's free and lists more than 200 helpful government booklets. So send for the free Catalog. It's the thing to do. Write:

Consumer Information Center, Dept. LL, Pueblo, CO 81009

A public service of this publication and the Consumer Information Center of the U.S. General Services Administration.

AutoCorrect at Work The AutoCorrect feature corrects common typos. You can also set it up to enter often-used text when you type an abbreviation.

Drag and drop Word 5's drag-and-drop editing was great for moving text or graphics within a document. Word 6 lets you drag them between documents.

The Spike This violent-sounding feature provides a multilevel Clipboard (it's named in honor of those desktop needles where old phone messages are impaled). The Word 6 Spike accumulates text and graphics on the Clipboard instead of overwriting what is already there, so you can move multiple items at once.

Multiple undos and redos You can undo or redo more than just your last action by using the undo and redo tools on the Standard tool bar.

Revision tracking Word 6 provides the best revision-tracking features I've seen in a word processor. When revision tracking is on, a vertical change bar appears in the left margin adjacent to revised lines, while Word underlines text you've added and draws a line through text you've deleted.

Should You Switch?

If you're a Word 5 user, should you upgrade to Word 6? If you have a 68000-based Mac, you can't—either stick with Word 5 or switch to a different program. This advice may also apply if you have a slower 68020- or 030-based Mac, such as the LC, LCx, or IIci. Try out Word 6 on a machine similar to yours to make sure you'll be happy with its speed.

If you have a reasonably fast Mac and enough hard disk space and memory—and if you do a great deal of word processing—by all means consider the Word 6 upgrade. You won't like the look and feel of the program at first, but as you become familiar with it (and as you customize it to restore the Word 5 keyboard shortcuts you've memorized), you'll realize it's the best Word yet.

Next month: Is Your Mac Secure?


156 September 1994 Macworld
Style with Purpose

Joule™
cable-free
modular storage
systems offer
advantages that
tower above
the rest.

The Joule system was
designed to meet a
powerful combination
of purposes. To provide
system expandability,
and module portability
in a space saving tower
that grows without desk-
top clutter, as
easy as 1,2,3.

Step One:
Start with a Joule base drive. The base unit
forms the foundation to
future growth or functions
independently. It includes a
hard disk or removable
drive, power supply,
digital active SCSI termi-
nation, surge protection,
AC outlets, shielded
SCSI cable, and connections
for a future storage system up to 28GB.

Step Two: To expand, simply stack extra
storage modules upon the other. Built-in con-
nectors eliminate cables and hassles.

Step Three: To remove a module,
simply unplug and plug without
cables, termination or SCSI ID
trouble. It's that simple.

The Joule System offers a com-
plete selection of storage modules
and is only available direct from La Cie - owned by
Quantum, a Fortune 500® company.

Joule has simplified the path to future storage.
It's up to you to take the first step. Just call our
toll-free number today for more facts or to order now.

Complete Storage Module Choices — Great Prices

<table>
<thead>
<tr>
<th>Size</th>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>85MB</td>
<td>2.5&quot; HD</td>
<td>$229</td>
</tr>
<tr>
<td>170MB</td>
<td>2.5&quot; HD</td>
<td>$399</td>
</tr>
<tr>
<td>256MB</td>
<td>2.5&quot; HD</td>
<td>$449</td>
</tr>
<tr>
<td>170MB</td>
<td>3.5&quot; Half Ht.</td>
<td>$259</td>
</tr>
<tr>
<td>270MB</td>
<td>3.5&quot; Half Ht.</td>
<td>$329</td>
</tr>
<tr>
<td>340MB</td>
<td>3.5&quot; Half Ht.</td>
<td>$399</td>
</tr>
<tr>
<td>540MB</td>
<td>3.5&quot; Half Ht.</td>
<td>$499</td>
</tr>
<tr>
<td>1GB</td>
<td>3.5&quot; Half Ht.</td>
<td>$649</td>
</tr>
<tr>
<td>1.4GB</td>
<td>3.5&quot; Half Ht.</td>
<td>$999</td>
</tr>
<tr>
<td>1.6GB</td>
<td>3.5&quot; Full Ht.</td>
<td>$2039</td>
</tr>
<tr>
<td>2GB</td>
<td>3.5&quot; Full Ht.</td>
<td>$2299</td>
</tr>
<tr>
<td>2.1GB</td>
<td>3.5&quot; Full Ht.</td>
<td>$1099</td>
</tr>
</tbody>
</table>

Innovative and compact. The Joule
system sets a new standard for plug
and play.

Bill Leppo, President
Leppo Instruments

To order or for more information, call toll-free Monday - Friday 5AM-7PM & Saturday 8AM-NOON PST
LaCie Limited 800-999-1671
International 503-920-8009 Fax 503-920-9100 (24 hrs.)
UK 0800-89-3023 Australia 0014-600-123-997
visa, MasterCard, C.O.D. and approved purchase orders accepted.
Circle 54 on reader service card
No matter what kind of work you do, hunting for addresses and phone numbers is a chore that you probably perform numerous times a day. Not so very long ago, a pocket-size address book was a convenient, if somewhat inflexible, place to record names and phone numbers. If that wasn't enough, you could staple business cards into a file—useful as long as your work never took you away from your desk. Today, however, you, your friends, and your colleagues are probably traveling on the job, working out of rental cars, hotels, your homes—even the office—and keeping in touch with each other through a constellation of electronic-mail and online addresses, fax and cellular numbers, remote-network access codes, and more. With the need for instant access to so many numbers, managing contact information on paper is more trouble than it's worth.

Fortunately, your Mac is an ideal tool for storing and retrieving lists of names, addresses, numbers, and other contact information. For this article, I looked at six dedicated contact managers: Address Book Plus, Dynodex, Intouch, Now Contact, Super QuickDex, and TouchBase Pro. (For capsule summaries of three upgrades that were in beta while I was writing this article, see “New Addresses.”)

In the past, most address book programs were meant to be used alone; if you also needed a calendar and a to-do list manager, you had to buy separate programs. And if you wanted both functions in a single package, you had to consider a full-blown personal information manager (PIM). But now vendors are making the choice more difficult by marketing separate contact managers and schedulers that can work together as a unit: Advanced Software’s Intouch, Aldus’s TouchBase Pro, and Now Software’s Now Contact can all exchange data with companion contact managers, yet all of them work just fine on their own. (Portfolio Software’s Dynodex will have a similar calendar before the end of 1994.)

Although PIMs often use more memory and take longer to learn than single-
function programs, they are more tightly integrated and avoid the hassle of setting up separate calendar and contact files. Also, the storage and memory demands of combined may outweigh even a bulky static information, but not much room for economical if you only need the functions or about function programs, they are more tightly extra numbers, say for are structured, storing and displaying dex, Now Contact, and TouchBase Contact manager s use two fundamentally Structured versus Free-form

Contact managers use two fundamentally different methods for entering and displaying data. Address Book Plus, Dynodex, Now Contact, and TouchBase Pro are structured, storing and displaying information—such as names, cities, and telephone numbers—in specific fields. Because every piece of data has its place, it may be difficult to accommodate special cases. For example, if your file has fields for two phone numbers and one E-mail address, you’re stuck if someone has an extra number, say for a cellular phone, or has an online account. You can circumvent this limitation by using the notes field provided by all four programs for storing information that doesn’t belong anywhere else, but then some information about your contacts won’t be in the right place when you print your address book. Address Book Plus’s notes field holds 2K, or about 300 to 400 words—plenty for static information, but not much room for notes on phone calls and correspondence. Dynodex’s notes field holds 5K; TouchBase’s and Now Contact’s, 32K.

The field-oriented approach supports features that outweigh its limitations, such as shortcuts that make entering data faster and more accurate. For example, Address Book Plus, Dynodex, and TouchBase Pro all let you define pop-up lists of cities or states to select from, so that once you get Conshohocken or Mississippi right in the pop-up list, you’ll get them right every time you create a new record that uses them (see “Pop-up Entry”). A similar and more efficient feature automatically scans new entries as you type—as soon as an entry matches an item from a predefined list, the software inserts the whole item. All the field-oriented programs except Now Contact can do this.

Automatic text-formatting is another benefit of field-based contact managers. For example, you can type quickly without bothering to hit the shift key; the program capitalizes the first letter of every word for you (all four programs let you disable autoformatting to accommodate special circumstances, such as foreign or company names). Similarly, if you’re fussy about the appearance of telephone numbers, Dynodex, Now Contact, and TouchBase Pro can format numbers automatically; only Dynodex and Now Contact let you edit and create new phone number formats, however.

Still, the field-based contact managers are probably not for you if you can’t stand forcing your information into fields. In addition, fields are limited in size—for example, TouchBase’s first-name field displays only about 12 characters at a time, even though it can store more. That means you could type in a contact’s name with his or her spouse’s name, for example—but you may not be able to see both names.

If you do opt for a field-based program, you’ll want to be able to tailor the fields to suit your data, rather than dismember your data to fit in the fields. TouchBase provides several user-definable text, date, and number fields, and Now Contact lets you specify up to eight custom fields for each contact. Dynodex and Address Book Plus are even more flexible, letting you change the name of any field (see “Open Fields”).

The Unstructured Approach

The alternative to field-based contact managers is exemplified by Intouch and Super QuickDex. Super QuickDex has only one field for everything—names, addresses, telephone numbers, and notes (see “Fast and Simple”). Intouch takes an intermediate route: it has two fields. If you want to print labels or use autodialing in Intouch, you must use one field for the name and address and the other field for phone numbers and notes (see “Free-form Data”).

A major benefit of free-form contact managers is that they cheerfully accept any text you throw into them. You don’t have to worry about how long an address is, as you do with field-based programs; you simply use as many lines as you need, and you can enter the information in any order that strikes your fancy.

Of course, free-form programs have disadvantages as well. For one thing, the lack of fields rules out shortcuts and automatic formatting during data entry, because the software can’t distinguish between a contact’s name and state, for example. The free-form approach also makes sorting the file tough.
Beyond the Basics

**Searching** All the contact managers let you search for specific character strings. However, Super QuickDex II scans for only one string at a time; you have to run a separate application called PrintDex II to do anything more complex. Intouch lets you restrict your search to either of its two fields, and you can look for records that do or don't contain the specified text. Because you cannot limit scans to specific fields, searching the unstructured files should, in theory, take longer than searching the structured ones, but in routine use, the programs are all so fast that it is not a practical consideration.

Of the field-oriented programs, TouchBase provides the most flexibility in defining searches. Its Quick Search option lets you scan a single field; choosing Full Search from a pop-up menu lets you specify any subset of fields to search, though selecting the fields is less convenient than it should be. You can also define compound searches using AND and OR operators. None of the competing contact managers offer as much flexibility in searching as TouchBase.

Two of the programs—Dynodex and Now Contact—let you search for names and numbers using a menu that appears in all applications, without actually opening the data file; you can even add your favorite contacts' names and numbers to the menu. Intouch provides similar functionality with a control panel called Snap, which lets you look for contacts without launching Intouch.

**Import/Export** All six contact managers let you import and export data, usually as tab-delimited text files. Not surprisingly, importing records is much easier with field-based programs, since you can specify exactly which fields the incoming data should go into. Importing text into QuickDex is especially frustrating, and your file may require extensive cleaning up afterward. Intouch comes with an import utility that vastly simplifies the process of transferring data from structured programs. Exporting unstructured records into either of the structured programs is equally problem-filled, however.

**Duplicate-Checking** Unless you are very careful, sooner or later your contact list will become littered with duplicate records. To help weed them out, both Dynodex and TouchBase provide special commands that locate duplicate entries for you automatically. With both programs, you have to specify which fields must match for two records to be considered duplicates. Unfortunately, Now Contact doesn't include a function to find duplicate contacts.

**File-Syncing** If you carry a copy of your contact list with you on a PowerBook and also keep a copy on your desktop Mac, you'll probably add and change records in both versions of the file. TouchBase and Dynodex can reconcile changes between the two data files. Of the two, TouchBase gives you more options for merging the two files. TouchBase also has a timesaving feature: it can create a file containing just the modifications you make to one version of the address book, which you can later import into the other version. File synchronization is absent from Now Contact.

**Viewing Data** All the programs except Super QuickDex can display data in a list and record—by—record. (You can display list views of Super QuickDex data files using PrintDex II.) TouchBase lets you toggle between list and detail views, but it does not let you display both at the same time. Its list view is especially easy to customize—you indicate which fields to display by selecting from pop-up menus at the top of each column (see "Easy Lists"). Now Contact provides the most flexible detail view, with six fixed-size blocks of data that you can rearrange to your liking (see "Fine Details").

**Creating Subsets** All the programs except Super QuickDex let you flag individual contacts, a handy way to isolate a subset of contacts for printing or export. Intouch and Address Book Plus also let you assign contacts to categories that you define; in TouchBase and Dynodex you can use custom fields to achieve a similar effect. Now Contact provides two schemes for organizing contacts: you can group contacts into categories as well as assign them keywords.

**Sorting Records** Sorting address data is easier with field-based programs than with the free-form programs because you can choose which fields to sort on. Both Super QuickDex (through PrintDex II) and Intouch let you sort their files, but to get satisfactory results you must be absolutely consistent about entering data in a standardized format—using the same number of lines for the address, and so on—which does away with the benefits of the free-form approach.
**Dialing**  All six programs can dial stored telephone numbers through the Macintosh speaker or through a modem, neither of which is convenient. Dynodex and TouchBase can also send dialing commands to other applications via Apple events. Overall, Super QuickDex is the most flexible for making long-distance calls that require dialing special access numbers and codes.

**Printing**  All the contact managers let you print subsets of your contacts in a variety of formats, but some programs are more flexible than others. Because contact data can be used in so many ways, you'll want control over what fields to print and where to place them, as well as what fonts and sizes to use.

<table>
<thead>
<tr>
<th>NEW ADDRESSES</th>
</tr>
</thead>
</table>

Three contact managers were not shipping or were in the middle of being revised as I was writing this article. These capsule summaries are based on testing the beta versions and interviewing the vendors.

**MacPhonebook 4.0**  MacPhonebook (Synex, 718/499-6293) is a field-oriented address book. Version 4.0 will provide control of font and font size in all fields, more printing options, a 32K notes field, more categories, and more import and export formats. MacPhonebook's interface is also being redesigned, but judging from the beta copy that I examined, the new interface is not promising.

**Souvenir**  Souvenir (ComposeTel, 415/327-0744) is a recent import from France that has sold well in Europe for several years. Souvenir is an extension, so it is always in RAM. Files can be shared over a network. Souvenir can copy multiple address fields to the Clipboard at once and print them as a label; it can also address documents created in Faxstif, Microsoft Mail, and other formats.

**TouchBase Pro 4.0**  The TouchBase upgrade (Aldus, 619/558-6000) promises a revamped interface and better integration with the DateBook Pro scheduler—for example, you'll be able to drag contacts from TouchBase into a calendar to schedule a meeting with those contacts. Version 4.0 lets you search for contact information without launching the program. Aldus claims that the new version of TouchBase will be much faster and will create much smaller files.

**Easy Lists**  In TouchBase you can specify which fields to display in the list view by selecting their names from pop-up menus at the top of each column.

**Free-form Data**  Intouch tries to straddle the fence between the formless void and structured data. If you diligently enter the telephone, address, and other information in the correct format, you'll be able to print labels and dial telephone numbers.

**Fine Details**  Now Contact's flexible detail view lets you set how many addresses, telephone numbers, and other kinds of data are displayed. Enough mix of features to merit an Editors' Choice award. Even so, an electronic contact manager is much better than a messy handwritten notebook. If you don't need to combine schedule and contact information, any of the products I've covered will do the job, although the current version of Super QuickDex is too primitive for my needs. If you're already using calendar software, I suggest using the companion address book program if one is available.

**The Last Word**  The ideal address book would adapt to my habits and preferences instead of compelling me to change the way I work. For example, it would learn how I format addresses and telephone numbers by watching how I type them. It'd also like competing products to share contact, schedule, and other personal information without cumbersome import/export procedures. And seamless connectivity to handheld devices like Apple's Newton PDA is essential if we ever hope to do away with paper address books entirely.

None of the products I reviewed are sufficiently advanced or offer a strong

---

**FRANKLIN N. TESSLER** is a Macworld contributing editor and a radiologist. He moved from California to the East Coast last year and is still updating his address book.
At $8,495 the Xerox 4900 is the world's most affordable color laser printer.

Introducing the Xerox 4900 Color Laser Printer, the newest member of the Majestik Color Series.

Now anyone can afford to put the productivity, impact, and power of Xerox Intelligent Color into any document, and they can do it from anywhere on the network.

You get 5 PPM color and 12 PPM b&w output, resolution up to 1200 x 500 DPI, patented Quad Dot Technology, Adobe PostScript Level 2 compatibility, and Xerox reliability.

Best of all, at this price, it's the color printer that won't leave you in the red.

For more information on the Xerox 4900 and an actual output sample, just give us a call at: 1-800-ASK-XEROX, ext. W01.

THE DOCUMENT COMPANY
XEROX

Circle 100 on reader service card
True Value From A Trusted Source

The Experts Agree
If you're looking for award winning performance at extremely affordable prices, maybe it's time you looked into a Mirror. The editors of Macworld, MacUser and MacWeek are all singing the praises of Mirror products, but we're really not surprised. After all, we design and build our products to impress the toughest critics of all—people like you who depend on them every day.

Mirror Means Product Innovation
With Mirror, you'll see the latest in technology because we're always adding new products to our line. Like our complete RAID disk array systems that provide you with continuous back-up capability for an amazingly affordable price. Or you can turn your desktop into a CD publishing house with our new CD-ROM Writer. It gives you multi-session capability for images, audio or any file you choose.

Mirror Has A Solution For Almost Any Need
Nine years ago, we introduced the first external floppy drive for the Macintosh, and today we carry a complete line of drives—internal and external hard drives, as well as Syquest, optical, DAT and CD-ROM drives. Our award-winning monitors come in a size and format to fit your need—we carry ten different styles up to 21", in both color and monochrome. Our Tornado video accelerator card does what our competitors' cards do, but for hundreds less. In addition, we have a complete line of desktop scanners that fit practically any application.

Superior Products, Affordably Priced
What keeps our customers coming back, though, is our exceptional value. You get all the performance of the higher-priced products, but you'll be amazed at how little you'll pay. Quality products, great prices, a 30-day guarantee and toll-free technical support—value you can trust from Mirror.

MIRROR
The Best Thing Next To Your Mac™

5198 West 76th Street, Edina, MN 55439 USA Fax: 612-632-0052 Tech Support: 800-323-9285

Circle 58 on reader service card
Quick Tips

Tips, Tricks, and Shortcuts

IN WORDPERFECT 2.1 AND 3.0, AS IN MOST word processors, formatting changes such as line spacing, tab settings, and margins take effect at the beginning of the paragraph containing the insertion point (or text selection). Sometimes you want to have changes not affect text before the insertion point, even though that text is in the same paragraph. Mark S. Eckert of Waipahu, Hawaii, discovered an undocumented feature of WordPerfect that lets you accomplish this with a custom macro, which you create as follows:

1. Close all open WordPerfect windows and choose Record from the Macro submenu of the Tools menu, bringing up the New Macro dialog box. Enter a name for the macro such as Formatting(Character) in the space provided, make sure the option Show Macro in Menu is checked, and click the New button. A window appears in which you can edit the macro.

2. In the macro-editing window, type Formatting(Character) and press return. WordPerfect then changes the word Formatting to bold because it’s a macro command, while the plain text in parentheses is a parameter of the command.

3. Click the Save button, and close the macro-editing window.

The macro you just created now appears in the Macro submenu of the Tools menu. Choosing the macro makes formatting changes take effect from the insertion point to the end of the section or document. To reset ordinary paragraph formatting, choose Preferences (Edit menu), click the Environment button, and choose Paragraph or Single Paragraph from the Format menu in the Environment dialog box. You may want to record these actions as a macro for setting ordinary paragraph formatting. (For a description of the Paragraph and Single Paragraph options, use balloon help.)

Easy Rebuilding Update

Like Martha Fullmer of Waupaca, Wisconsin, you may get a message saying the name Desktop is already taken when you try to rebuild the desktop of your hard drive by creating a folder named Desktop at the root level of the hard drive (as a tip last May suggested). This means your hard drive contains an invisible file named Desktop, in which the System 6 Finder keeps desktop information (System 7 keeps desktop information for hard drives in two other invisible files, Desktop DB and Desktop DF). The invisible Desktop file exists on every floppy disk and on any hard drive that has ever been used with System 6 and has not been initialized since then. System 7 also seems to create the invisible Desktop file on hard drives sometimes, although I can’t prove this.

You can work around the invisible Desktop file by making it visible with a utility program, or by replacing the invisible file with a visible document saved by Microsoft Word or other everyday programs. Use the Save As command to save any document with the name Desktop at the root level of the hard drive. Leaving a replacement Desktop file visible in the disk window (or discarding it and creating a Folder named Desktop) causes the Finder to automatically rebuild the hard drive’s desktop when you restart the Mac.

Internet Gateways

Q. How can I send E-mail from CompuServe to my friend on the Internet?  
Mark Chmarny via CompuServe

A. The table “E-Mail Interchange” lists the address formats to use for several commercial online services, including CompuServe. Be aware that some services charge for handling Internet E-mail. For example, CompuServe bills you $0.15 for the first 7,500 characters and $0.05 for each additional 2,500 characters in each Internet message you send or receive, but the standard pricing plan includes a $9-per-month E-mail credit. America Online and GEnie don’t charge extra for Internet E-mail. You can also use the Internet as a conduit through which to exchange E-mail between different online services.

Green Computing

Q. Our computer lab has a variety of Macs, ranging from an SE to a 660AV. All have screen savers. Is it safe to leave them running 24 hours a day? How much power do they consume?  
Shiban B. Dissanayake  
Chicago, Illinois

continues
E-Mail Interchange

<table>
<thead>
<tr>
<th></th>
<th>To Internet</th>
<th>From Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>America Online</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td><a href="mailto:jane@aol.com">jane@aol.com</a></td>
</tr>
<tr>
<td>AppleLink</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a>,internett</td>
<td><a href="mailto:jane@applelink.com">jane@applelink.com</a></td>
</tr>
<tr>
<td>AT&amp;T Mail</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td>&lt;<a href="mailto:jane@bxtmail.com">jane@bxtmail.com</a></td>
</tr>
<tr>
<td>BIX</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td>MAIL: to <a href="mailto:jane@bix.com">jane@bix.com</a></td>
</tr>
<tr>
<td>CompuServe</td>
<td>&gt;INTERNET:<a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td><a href="mailto:70370.702@compuserve.com">70370.702@compuserve.com</a></td>
</tr>
<tr>
<td>Delphi</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td><a href="mailto:jane@delphi.com">jane@delphi.com</a></td>
</tr>
<tr>
<td>eWorld</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td><a href="mailto:jane@eWorld.com">jane@eWorld.com</a></td>
</tr>
<tr>
<td>CEnote</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a>,internet</td>
<td><a href="mailto:jane@genie.com">jane@genie.com</a></td>
</tr>
<tr>
<td>MCI Mail</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td><a href="mailto:1234567@email.com">1234567@email.com</a></td>
</tr>
<tr>
<td>Newton Mail</td>
<td><a href="mailto:tarzan@jungle.com">tarzan@jungle.com</a></td>
<td><a href="mailto:jane@onlineapple.com">jane@onlineapple.com</a></td>
</tr>
</tbody>
</table>

If Tarzan were on the Internet and Jane had accounts on several commercial online services, they could exchange E-mail using the addresses shown here. Tarzan's Internet address is tarzan@jungle.com. Jane's address is jane@all.com on America Online, where it is 70370.702 (you must replace the comma with a period when sending mail to CompuServe from the Internet), and MCI Mail, where it is 1234567. The Internet can also be an E-mail conduit between commercial services. For example, if Cheetah had an account on America Online, Jane could send her mail at >INTERNET:cheetah@aol.com.

A

Switching off your system at night and starting it up again the next day is a hassle but doesn't materially affect the system's useful life. Leaving it on may very slightly benefit some electronic components but probably makes the picture tube and hard drive wear out a bit faster (even with a screen saver).

Power consumption ranges from a few watts for a PowerBook to a couple hundred watts for a Quadra 950 with a large color monitor. Turning off your computer (or other electrical device) nights and weekends cuts its power consumption by about 70 percent per year. You save money on electrical bills ($92 a year at $0.10 per kilowatt-hour for a 150w system) and reduce the air pollution that's a by-product of generating electricity. To learn more about these and other benefits of reducing computer power consumption, order document E93-20, "What an Energy Efficient Computer Can Do," for $4 from the Rocky Mountain Institute (303/927-3851).

A computer and monitor that bear the logo of the EPA's Energy Star program automatically reduce their power consumption to 60w or less (30w for the computer and 30w for the CRT display) when they're inactive. (Apple and other companies make Energy Star computers, monitors, and printers.) For example, a 150w Energy Star computer and monitor that are inactive half of each 10-hour weekday and on all the time would cost $67 less per year to operate (at $0.10 per kwh) than a conventional system. Turning off the Energy Star system nights and weekends would save another $37 per year. To get more information about the Energy Star program, call the EPA hotline (202/233-9114) or fax request line (202/233-9659).

Illustrator Clip Library

TIP Adobe Illustrator versions 3.0 and later have a little-known built-in library in which you can store art from an Illustrator drawing. To store a partial or complete illustration in the library, simply create a bounding rectangle around the artwork and send the rectangle to the back. Next select the rectangle and the artwork it encloses, and choose Pattern from the Object menu to bring up the Pattern dialog box. Click the New button and give the artwork a name. To keep your library items together, give them all names that start with lib. or another prefix you like. Click OK to store the artwork and dismiss the dialog box. After defining the pattern, you can de-

<table>
<thead>
<tr>
<th>COUNTING SIGNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you wish to count the number of positive, negative, or zero values in a range of spreadsheet cells, Rob Griffiths of Beaverton, Oregon, has a method you may find more intuitive than one in May's Quick Tips.</td>
</tr>
</tbody>
</table>

The basic method uses the SIGN function in conjunction with logical expressions, as shown in the top spreadsheet. The array formulas in cells C11:C13 count the number of positive, zero, and negative values in cells B3:C9. The logical expressions determine whether a value is positive (>0), zero (=0), or negative (<0). The SIGN function has a value of 1 if the logical expression is true, or 0 if false. The SUM function adds the 1s and 0s for the final tally. It's fairly obvious you must enter each formula in C11:C13 as an array formula—for example, by pressing ⌘-enter after you type the formula.

The bottom spreadsheet extends the basic method to calculate a quarterly subtotal of monthly sales that occurred in one of three regions. The range of cells used in the array formula at the bottom of the spreadsheet determines which months the subtotal includes. The array formula multiplies the value of a cell in that range by 1 if the cell contains data for the desired sales region; it multiplies by 0 if the cell does not contain data for that region. The value of a cell multiplied by 1 gets included in the subtotal calculated by the SUM function, and the value of a cell multiplied by 0 gets excluded. A logical expression determines (by checking the cell's row heading in column C) whether a cell relates to the desired region, and a SIGN function has a value of 1 if the logical expression is true, or 0 if false. The vertical range in the SUM and SIGN formulas must be identical (rows 5 to 12 here) or you get a #N/A result.

1 6 6  S e p t e m b e r  1 9 9 4  M A C W O R L D
AGFA TECHNOLOGY EXPOSITION

Three days that will change
the way you work
and the way you think

October 31–November 2, 1994
The World Trade Center
Boston
Agfa invites you to its first-ever Agfa Technology Exposition, a major graphic arts and publishing event that lets you see the state of the art—and the future of the art—in one place. If you’re a designer, photographer, printer, or publisher, this event is for you.

See the latest in technology.
See the most advanced equipment and breakthrough technologies from Agfa, a worldwide leader in imaging technology, film products—and now four-color digital printing. Joined by a select group of companies such as Apple, Adobe, Aldus, Sun, Silicon Graphics, and IBM, Agfa will show you the latest in computer platforms, digital photography, imagesetting, CristalRaster™ screening, scanning, image manipulation, animation, digital printing, and more.

Test the limits in Design Lab.
For designers and photographers, the Exposition features Design Lab—a hands-on lab staffed with a team of designers and specialists from leading companies. It’s a great chance to test the latest page layout, imaging, and digital darkroom software available.

A three-track seminar program.
A comprehensive seminar program with business, design and photography, and technology tracks will give you the chance to hear and participate in discussions on the ideas driving technological change in the graphic arts.

Take the next step.
Call 800.367.9822 in North America to register for the conference or receive more information. Outside North America, contact your local Agfa office or Agfa dealer. Call 800.221.3531 for more information about travel and hotels (in New York, 212.532.1660). Outside North America, contact your local Agfa office, or call 1.617.439.5001, for all information.

AGFA
The complete picture.
le the original artwork from its document—but don’t delete the document. Your library items, being custom patterns, are saved with the document they came from. If you delete the document (without first embedding your patterns into another document as described in the Illustrator 3.0 manual, or loading them into another document with the Import Styles command as described in the 5.0 manual), you will lose your patterns.

To use your stored artwork, choose Pattern from the Object menu, click the artwork’s name, and click the Paste button. All that’s left for you to do is delete the bounding rectangle.

To take full advantage of your new library, use the Import Styles command to save your patterns as a custom start-up file (as described in the Illustrator manual). This makes your library artwork part of every new Illustrator document. You can also use the Import Style command to load your library artwork from another Illustrator document.

**Hanan Rosenthal**
Providence, Rhode Island

**Making a TeachText Read Me Tip**
I have discovered a way to use Fast Find from Norton Utilities 2.0 to make TeachText documents that can’t be edited and have an icon that looks like the front page of the newspaper, similar to the Read Me files that come with software packages. After typing and saving the document in TeachText, use Fast Find to locate the document. Choose Get Info from the Fast Find menu to get information about the found TeachText document. In the dialog box that appears, select Settings from the list in the upper right corner. Change the Type option (in the Signature section of the dialog box) from TEXT to tiro (all lowercase letters). Click the Update button to put the change into effect. Click Done to dismiss the dialog box, then quit Fast Find.

**Donald Neyrinck**
Waukegan, Illinois

You can actually create the document in any word processor that can save in text-only format. If you do, you must make one more change in the Fast Find Get Info dialog box before clicking the Update button: change the Creator option to ttxt (all lowercase letters). In fact, you don’t even have to use Fast Find. You can use any program that can change a file’s Type and Creator settings, such as Apple’s ResEdit or the shareware program FileTyper.—L.P. [1]

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.

LON POOLE answers readers’ questions and selects reader-submitted tips for this monthly column. His latest book is Macworld System 7.5 Bible (IDG Books Worldwide, ’94).

---

**In fact, we’ll do it for you.** Introducing Open Sesame!, the world’s first intelligent software assistant for the Macintosh. Open Sesame! observes how you work, learns your repetitive patterns, and then offers to do them for you. Automatically.

**With a single click,** Open Sesame! will open and close related sets of folders, documents and applications, create and manage multiple Apple Menu and Desktop items, and perform routine maintenance, like rebuilding your desktop...automatically. So you can do more with fewer clicks.

**For example,** suppose that every time you start up your Macintosh you immediately open your mail program. Open Sesame! will observe this and offer to do it for you. It will even find more efficient ways for you to use System 7.0, like making aliases and systematizing automatically.

**Here’s what the critics say:** ‘One that knocks my socks off is called Open Sesame!...the simple fact is that Open Sesame! works smarter for me. It might just herald a new wave in mac software...The more you use it the better it gets.’ The Mac Manager, *MacWEEK*

“Macintosh users who like the flexibility of System 7 but tire of ‘tweaking’ their desktop and Apple menu items will appreciate Charles River Analytics Inc.’s Open Sesame!” *INFOWORLD*

Open Sesame! is available at these quality resellers: MacWarehouse 800-255-6227, EGGHEAD 800-EGGHEAD, The Mac Zone 800-248-0800, ComputerWare 800-326-0092.

To order direct, call 1-800-913-3535.

For more information, call 617-491-3474 or fax 617-868-0780.

**See us at Macworld Expo Booth #1724**

---

**AT WORK: QUICK TIPS**

---

**Making a TeachText Read Me Tip**
I have discovered a way to use Fast Find from Norton Utilities 2.0 to make TeachText documents that can’t be edited and have an icon that looks like the front page of the newspaper, similar to the Read Me files that come with software packages. After typing and saving the document in TeachText, use Fast Find to locate the document. Choose Get Info from the Fast Find menu to get information about the found TeachText document. In the dialog box that appears, select Settings from the list in the upper right corner. Change the Type option (in the Signature section of the dialog box) from TEXT to tiro (all lowercase letters). Click the Update button to put the change into effect. Click Done to dismiss the dialog box, then quit Fast Find.

**Donald Neyrinck**
Waukegan, Illinois

You can actually create the document in any word processor that can save in text-only format. If you do, you must make one more change in the Fast Find Get Info dialog box before clicking the Update button: change the Creator option to ttxt (all lowercase letters). In fact, you don’t even have to use Fast Find. You can use any program that can change a file’s Type and Creator settings, such as Apple’s ResEdit or the shareware program FileTyper.—L.P. [1]

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.

LON POOLE answers readers’ questions and selects reader-submitted tips for this monthly column. His latest book is Macworld System 7.5 Bible (IDG Books Worldwide, ’94).
Yes! Please Send Me More Information On the NEW PrimeraPro Color Printer!

Name _______________________________ Title _______________________________

Company Name __________________________________________________________

Address _________________________________________________________________

City __________________________ State _______ Zip__________________________

Phone (____) ____________________________ FAX (____) ________________________

Circle 174 on Reader Service Card
MacWorld/August 94
Any Questions?

If so, just call 1-800-327-4622. We'll tell you all about FARGO’s incredible new PrimeraPro® Color Printer. If you’re really into graphics, electronic photography or digital imaging, you’ll want to check out these specs:

- 600 x 300 dpi resolution—an industry first!
- Apple® LocalTalk® or parallel interface
- Optional Adobe® Postscript® Level 2
- Dual Dye-Sublimation/Wax Thermal Transfer

PrimeraPro is the perfect color printer for all of your comps, proofs, layouts, photos, illustrations, scientific and architectural renderings, 3D models, video captures, and final artwork. Print on plain laser paper, transparency film—even T-shirt and mug transfers!

For more information and FREE sample output, call 1-800-327-4622.
How can you maximize the potential of the Macintosh?

See the latest and best Macintosh products and services all under one roof? Learn how to put the Macintosh to work for you?

Discover all this and more at MACWORLD Expo/Toronto.

Become Part of the Canadian Macintosh Revolution

With companies presenting hundreds of the latest products in Macintosh technology, MACWORLD Expo/Toronto is the single best resource for learning how to harness the power of the Macintosh. Visit exhibits from the leading Macintosh vendors. Make practical decisions on how to configure your Macintosh system to meet your business or personal needs. Envision tomorrow's technology, under development today. At MACWORLD Expo/Toronto, the world of Macintosh all comes into view.

Discover the Creative Possibilities

At MACWORLD Expo/Toronto, make side by side comparisons of hundreds of Macintosh hardware, software, peripheral and service products. Have a question? Need an expert opinion? Our on-site Macintosh professionals lend their expertise to help you choose the products just right for your individual needs. We'll help you take your Macintosh to the max!

MACWORLD Expo/Toronto: October 18-20, 1994

The Macintosh is taking the Canadian market by storm! Isn't it time you became a part of the excitement? Join us at MACWORLD Expo/Toronto as we take over 130,000 square feet of exhibit space at the Metro Toronto Convention Centre. When you come to MACWORLD Expo/Toronto, you'll see uses and applications for the Macintosh in a variety of areas including: Networking, Spreadsheet Analysis, Databases, Education, Research, Word Processing, Accounting, Law, CAD/CAM, Forecasting, Design, Publishing, Illustration, Animation, Music, Programming, Entertainment and Multimedia. So plan to be in Toronto from October 18-20, and experience the Macintosh at its absolute best!

Pre-Registration Savings!

Now is the time to pre-register for MACWORLD Expo/Toronto. Return the following pre-registration form with your payment by September 7 and save $15 on all conference sessions and exhibits ($75 now vs. $90 cash only at the door). An Exhibits-only admission saves you $10 ($15 now vs. $25 cash only at the door).

And since your time is as valuable as your money, we'll send your admission badge early when you pre-register. Avoid the registration crowds and get a jump start on the exhibition!

Attending Made Easy


Attending MACWORLD Expo/Toronto is easy every step of the way! We offer a complete package of discounts and amenities that offer maximum flexibility and convenience.

Fly Air Canada and Save

Substantial savings are available when you fly Air Canada to MACWORLD Expo. As the official airline of MACWORLD Expo/Toronto, Air Canada is again pleased to offer discounts of 15% to 50% on certain fares.** Dial 1-800-361-7585 and ask for Event #CV 947390. (**Subject to applicable fare restrictions.)

Car Rental Discounts from Hertz

If you're planning to rent a car, you'll get a great rate from Hertz. Call 1-800-654-2240, ask for Convention #13628 and tell the reservations operator you're attending MACWORLD Expo.

Services for the Physically Challenged

We're committed to ensuring our physically challenged attendees receive all the services they need to make their show visit enjoyable. Call us at 800-265-3585 for details.

Pre-recorded Information

Any questions? Listen to pre-recorded information about MACWORLD Expo/Toronto 24-hours, seven days a week. Call the MACWORLD Expo Information Hotline at 905-566-5733.

Hotel Accommodations

Participating hotels in the Toronto area are offering MACWORLD Expo discounts. To receive the preferred rate, call one of the hotels listed on the next page and mention you'll be attending MACWORLD Expo. There are a limited number of rooms at the preferred rates and they sell-out quickly. Make your reservations now for the best selections. Prices reflect single and double occupancy. If you are reserving 10 or more rooms, you must supply the hotel with a rooming list and a non-refundable deposit for the first night, no later than September 5, 1994.

Conference Hours

October 18: 10:30 a.m. - 7:00 p.m.
October 19: 11:00 a.m. - 5:00 p.m.
October 20: 11:00 a.m. - 5:00 p.m.

Show Hours

October 18: 12:00 noon - 7:00 p.m.
October 19: 10:00 a.m. - 5:00 p.m.
October 20: 10:00 a.m. - 5:00 p.m.
a. The PowerPC Stream
Hailed as the next generation of computing, the PowerPC — a hundred times more powerful than the original 128K Macintosh — promises to provide a panorama of solutions and virtually untold computing capability.
- What Power Macs Deliver
- Navigating the PowerPC Upgrade Path
- Managing the Power Mac
- How Can Developers Take Full Advantage of PowerPC?

b. The Publishing Stream
A rich collection of intensely useful Macintosh design, prepress, and publishing tips, plus discussions and demonstrations of creative and technological breakthroughs — presented by some of the most respected figures in the industry.
- Creative Imaging with the Mac
- Digital Photography with the Mac
- High-End Colour Prepress
- Images to Film
- Short-Run On-Demand Colour Publishing
- A Practical Guide to Trapping
- Frequency-Modulated Screening

c. The Multimedia Stream
Invaluable how-to's, tips, and guidelines on using your Mac to create exceptional-quality productions and presentations with both high-end and low-end multimedia tools.
- A Beginner's Guide to Publishing a CD-ROM
- An Overview of Authoring Tools
- Developing Interactive Titles
- Multimedia in Training
- Non-Linear Editing
- Intro to High-End Interactive Multimedia
- Intro to Professional Desktop Video
- Mastering Animation

d. The Networking/Connectivity Stream
How users are enhancing communications and maximizing the efficiency of their networks, plus insights on what lies ahead in Macintosh connectivity.
- The Future of Connectivity
- Integrating Macs into Multiplatform Networks
- Client/Server in a Multivendor Environment
- PowerTalk/PowerShare
- The TCP/IP Report
- Maximizing the Internet

e. The Getting-Started Stream
Practical, focused, step-by-step approaches and guidelines for those who need a concentrated course of beginner's how-to's on Mac technologies and techniques.
- Beginning Mac: Visual Clues
- Beginner's Guide to Multimedia
- Beginner's Guide to the Internet
- Getting Started with Telecommunications
- Getting Started with Font Technology
- CD-ROM for Users: Beginner's Guide

f. The Advanced User Stream
Veteran users share their expertise and insider's tricks for getting absolutely the most productivity and power from your Macintosh.
- Font Management
- Power User's Guide to the PowerBook
- Customizing Your Mac
- Resolving System Conflicts

g. The Education Stream
An excellent opportunity for educators, administrators, and students to show and be shown new and classic examples of how the Macintosh positively shines as a teaching tool.
- The Mac in Science/Technology
- Telecommunications
- How to Set Up a Home Office
- Starting Your Own Successful Desktop Publishing Business
- Making the Most of PIMS

h. The Programmer/Developer Stream
For in-house developers, veteran independents, and novice Mac techies alike: the hottest breakthroughs and innovations, plus solid advice from reliable sources.
- OpenDoc
- Programming the Newton
- AppleScript

i. The Advanced User Stream
Whether you're operating a smaller-size company — or running a business out of your home — or doubling the power of your work environment with remote office in your home — your needs are different than organizations with hundreds or thousands of employees!
- How to Set Up a Home Office
- Starting Your Own Successful Desktop Publishing Business
- Making the Most of PIMS

j. The Special Interest Group Stream
Sessions for "birds of a feather" looking to compare Mac notes with others a similar setting — to solve special problems, to see how colleagues across the continent are getting more mileage out of the Mac, and to develop an invaluable "user network."
- The User Group Forum
- The Mac in IS
- The Mac in the Law Office

k. The Application Workshop Stream
Intensive training sessions on some of the most popular Macintosh applications.
- Microsoft Word
- QuickTime
- HyperCard
- Aldus PageMaker
- Advanced Macintosh
- Microsoft Excel
- Claris FileMaker Pro
- Adobe Photoshop

Special Added Attractions at MACWORLD Expo/Toronto:
- MaciS/Pacific Resource Centre
- MacSciTech Resource Centre
- UGWUMP: User Group Welcoming Unwinding Meeting Place
# Registration Form

**Pre-register by September 7 and Save $10 to $5**

## Participating Hotels

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Room Rate</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowne Plaza Toronto Centre</td>
<td>$120</td>
<td>(416) 597-1400</td>
</tr>
<tr>
<td>Holiday Inn on King</td>
<td>$109</td>
<td>(416) 599-4000</td>
</tr>
<tr>
<td>Royal York</td>
<td>$119</td>
<td>(416) 368-2511</td>
</tr>
<tr>
<td>Sheraton Centre Toronto</td>
<td>$118</td>
<td>(416) 361-1000</td>
</tr>
<tr>
<td>Toronto Hilton</td>
<td>$110</td>
<td>(416) 869-3456</td>
</tr>
</tbody>
</table>

## Please register me for:

- [ ] Package One $75. Conference sessions* and exhibits. Pre-register by September 7 ($90 cash only at the door). Includes GST $4.91

- [ ] Package Two $15. Admission to exhibits only. Pre-register by September 7 ($25 cash only at the door). Includes GST $0.98

## Please send my registration badge and further information to:

<table>
<thead>
<tr>
<th>First Name</th>
<th>Middle Initial</th>
<th>Last Name</th>
<th>Street Address</th>
<th>City</th>
<th>Province</th>
<th>Postal Code</th>
<th>Country (Other than Canada)</th>
<th>Telephone</th>
</tr>
</thead>
</table>

If mailing to company address: (If mailing to your home address, leave the next two lines blank).

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Middle Initial</th>
<th>Last Name</th>
<th>Address 1</th>
<th>Address 2</th>
<th>City</th>
<th>Province</th>
<th>Postal Code</th>
<th>Country</th>
<th>Telephone</th>
</tr>
</thead>
</table>

- [ ] Cheque enclosed (make payable to MACWORLD Exposition) Amount $ ____________

- [ ] Master Card [ ] Visa [ ] American Express Amount $ ____________

<table>
<thead>
<tr>
<th>Account Number</th>
<th>Expiration Date</th>
<th>Card Holder Signature</th>
</tr>
</thead>
</table>

If card holder is other than registrant, please print card holder's name below:

<table>
<thead>
<tr>
<th>First Name</th>
<th>Middle Initial</th>
<th>Last Name</th>
<th>Address 1</th>
<th>Address 2</th>
<th>City</th>
<th>Province</th>
<th>Postal Code</th>
<th>Country</th>
<th>Telephone</th>
</tr>
</thead>
</table>

Cash only at the door. After September 7, you must register at the show.

*Credit cards will be processed in U.S. Dollars. Dollar amount will not exceed stated Canadian registration fee.

## Please check the appropriate information:

<table>
<thead>
<tr>
<th>YOUR INDUSTRY OR PROFESSION</th>
<th>SIZE OF YOUR ORGANIZATION</th>
<th>WHICH PERSONAL COMPUTER(S) DO YOU OWN/USE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(choose only one)</td>
<td>(choose only one)</td>
<td>(choose all that apply)</td>
</tr>
<tr>
<td>1. [ ] Accounting/Finance</td>
<td>37. [ ] Under 50</td>
<td>43. [ ] Macintosh Plus/SE/SE30</td>
</tr>
<tr>
<td>2. [ ] Architecture/Construction</td>
<td>38. [ ] 50 - 99</td>
<td>44. [ ] Macintosh Classic Series/LC Series</td>
</tr>
<tr>
<td>3. [ ] Art/Design/Creative Services</td>
<td>39. [ ] 100 - 499</td>
<td>45. [ ] Macintosh Powerbook</td>
</tr>
<tr>
<td>4. [ ] Arts &amp; Entertainment</td>
<td>40. [ ] 500 - 999</td>
<td>46. [ ] Macintosh II Series</td>
</tr>
<tr>
<td>5. [ ] Communications/Printing/Publishing</td>
<td>41. [ ] 1,000 &amp; over</td>
<td>47. [ ] Macintosh Performa Series</td>
</tr>
<tr>
<td>6. [ ] Computer Reseller/VAR/VAD</td>
<td>42. [ ] Does Not Apply</td>
<td></td>
</tr>
<tr>
<td>7. [ ] Consulting</td>
<td>43. [ ] Other</td>
<td></td>
</tr>
<tr>
<td>8. [ ] Corporate/General Management</td>
<td>44. [ ] Does Not Apply</td>
<td></td>
</tr>
<tr>
<td>9. [ ] Distributor/Dealer/Retailer/Service</td>
<td>45. [ ] Does Not Apply</td>
<td></td>
</tr>
<tr>
<td>10. [ ] Engineering/R&amp;D</td>
<td>46. [ ] Does Not Apply</td>
<td></td>
</tr>
<tr>
<td>11. [ ] Government/Military</td>
<td>47. [ ] Does Not Apply</td>
<td></td>
</tr>
<tr>
<td>12. [ ] Health/Medical Services</td>
<td>48. [ ] Macintosh Centris Series</td>
<td></td>
</tr>
<tr>
<td>13. [ ] College/University</td>
<td>49. [ ] Macintosh Quadra Series</td>
<td></td>
</tr>
<tr>
<td>14. [ ] Elementary/High School</td>
<td>50. [ ] Macintosh Workgroup Series</td>
<td></td>
</tr>
<tr>
<td>15. [ ] Legal Services</td>
<td>51. [ ] IBM PC or compatible</td>
<td></td>
</tr>
<tr>
<td>16. [ ] Manufacturer (Computer Industry)</td>
<td>52. [ ] Other</td>
<td></td>
</tr>
<tr>
<td>17. [ ] Manufacturer (Non-computer Industry)</td>
<td>53. [ ] None</td>
<td></td>
</tr>
</tbody>
</table>

*MACWORLD Expo conference sessions are on a first-come, first-served basis with no guaranteed seating and are subject to change without notice. All registration fees are nonrefundable.

Send completed form, with check, money order or credit card information to: MACWORLD Expo/Toronto, 4257 Sherwoodtowne Blvd., Mississauga, Ontario L4Z 1Y5, Canada

---

Completing the Pre-Registration Form, please choose your package and fill out this form completely. The pre-registration deadline is September 7; registration forms received after September 7 will be returned unprocessed. Incomplete forms will be returned. Use one form per person: make photocopies for additional people. (Purchase orders cannot be accepted. All registration fees are non-refundable.) Payment is by credit card or check. Do not staple check to form. Send completed forms to:

MACWORLD Expo/ Toronto
4257 Sherwoodtowne Blvd.
Mississauga, Ontario L4Z 1Y5

Canadian and U.S. Attendees. All Canadian and U.S. attendee badges will be mailed on or about September 30. Be sure to check the box indicating where your badge should be sent.

International Attendees. All non-Canadian and non-U.S. badges will be held for pick-up at the International pre-registration desk beginning October 18 at 8:00 a.m.

---

*MACWORLD Expo conference sessions are on a first-come, first-served basis with no guaranteed seating and are subject to change without notice. All registration fees are nonrefundable.
ATM LANs Will Run Lightning-Fast

By now, most speed freaks running bandwidth-hungry applications such as full-motion video, CD-quality audio, and high-speed data communications have heard about asynchronous transfer mode (ATM), an emerging technology designed to support simultaneous transfer of data, audio, and video at speeds from 51 Mbps to 1.2 Gbps.

If you're hoping to connect your Macs into an ATM-based LAN, you'll be glad to hear that Macs are about to join Sun and Silicon Graphics workstations and Microchannel- and EISA-bus PCs as computers that can link up via ATM.

Fore Systems, one of the pioneers of ATM LAN technology, is developing NuBus adapter cards that can be used along with the company's ForeRunner ASX-100 ATM switch to set up ATM workgroup LANs. More than a dozen vendors have announced ATM LAN switching equipment, but Fore is the only one so far to develop a NuBus adapter.

Two versions of Fore's NuBus card should be available in September. The NBA-200/125 NuBus adapter ($1700) will deliver 100 Mbps to a user's desktop; the NBA-200/OC3 NuBus adapter ($1900) promises a speed of 155 Mbps. Both will support TCP/IP protocols, so MacTCP applications should operate without modification over the network, according to Fore. The NBA-200/125 and NBA-200/OC3 can be used with either multimode fiber or Category 5 unshielded twisted-pair cabling.

Several companies, including Fore, Newbridge Networks, and Efficient Networks, have announced plans to develop PCI-bus ATM adapter cards for the next generation of Power Macs, which Apple is expected to start shipping in 1995. Fore Systems, 412/772-6600; Newbridge Networks, 703/834-3600; Efficient Networks, 214/991-3884.—MARSHA STRIZIC

Security Card Locks Networks

Shiva Corporation has incorporated Security Dynamics' network security software into its LanRover line of remote access servers. The security system, which prevents unauthorized users from accessing a network, has two parts: ACE/Server software that resides on the server, and the SecurID card and personal ID number (PIN) issued to each user.

The SecurID card, a credit-card-size device, emits a continually changing code that the ACE/Server software recognizes, and then the user enters the PIN. If all the numbers check out, open sesame; if not, access is denied. Products already using the system include Apple's ARA 2.0, Xylogics' Annex servers, Cayman Systems' GatorLink ARA server, and Telebit Corporation's NetBlazer line. Shiva Corporation, 617/270-8300; Security Dynamics, 617/547-7820.—NANCY E. DUNN

AT&T Links LANs

A partnership between AT&T and Novell promises to yield a new connection service in the first half of 1995 that will make it easier to exchange messages and files with those beyond your private data network. Through a single connection, the AT&T NetWare Connect Service will give its users access to existing services, such as AT&T EasyLink and the Internet, plus new applications, including information retrieval and elec-
tronic commerce. The first new application will be AT&T Network Notes, a multimedia service based on Lotus Development Corporation’s Lotus Notes; it will allow users at different locations and enterprises to collaborate electronically.

Novell NetWare’s directory services and security features will serve as the foundation for AT&T NetWare Connect Services. Access will be available over dedicated lines through the AT&T Inter-Span Frame Relay Service, and dial-up access will be available via AT&T’s Inter-Span Information Access Service. Net-Ware for Macintosh users will need to run IPX or TCP/IP protocol stacks. Further details on the service, such as pricing and support, have not yet been released. AT&T, 800/204-2764; Novell, 800/638-9273.—MARThA STRIZICH

Riding the Waves, Wireless

S TANDARDS FOR WIRELESS LANS ARE still at least a year away, but wireless connectivity options continue to increase.

The latest entry is born from an alliance between Xircom and Dayna Communications. Dayna’s wireless adapter ($600 to $700), based on Xircom’s Netwave technology, plugs into the serial port of any PowerBook, or into the LocalTalk port of a Newton MessagePad or Apple LaserWriter.

Coworkers can equip their portables with Netwave adapters and set up their own ad hoc wireless networks at speeds up to 2.56 Kbps; or they can tie in to the resources of a wired Ethernet LAN through wireless bridges called access points ($1500 to $1700 each).

The new Netwave adapter uses Xircom’s spread-spectrum radio technology to operate in the unlicensed 2.4-gigahertz frequency band. The device is powered by standard cellular phone batteries.

Adapters and access points are due in October from both companies. PCMCIA Netwave adapters for the PowerBook 500 series are scheduled to ship this fall. Xircom also offers Netwave adapters for DOS-based PCs. Dayna Communications, 801/269–7200; Xircom, 818/878–7600.—MARTHA STRIZICH

Asanté Hits the Road

WHETHER YOU’VE GOT A POWERBook or a Duo, Asanté Technologies can connect you to an Ethernet network when you’re on the road. The company’s Micro EN/SC SCSI-to-Ethernet adapter draws its power from the PowerBook’s ADB port via a pass-through connector. No SCSI cables are needed because an HDI-30 connector is built into the box, which measures 3 inches by 2 1/2 inches by 1 inch. The Micro EN/SC lists for $369 with ports for both 10BaseT and thin Ethernet. A 10BaseT-only version, the Micro EN/SC-10T, is also available for $299.

The NetDock ($259) plugs into a PowerBook Duo’s docking connector and provides a 10BaseT connector and an ADB port. Both the NetDock and the Micro EN/SC should be available by the time you read this. Asanté, 408/435–8388.—CAMERON CROTTY

Farallon Shrinks PhoneNet, Expands Ethernet

ETHERNET IS THE NETWORK OF the nineties, but for quick, easy, and cheap, it’s still tough to beat LocalTalk. Playing to both markets, Farallon Computing is introducing a compact version of its PhoneNet StarController, along with the Starlet line of unmanaged 10BaseT hubs.

The preterminated PhoneNet Pocket Connector, smaller than a keychain, plugs into the 8-pin serial port found on any LocalTalk device, including PowerBooks, Newton MessagePads, and peripherals. Users get a single jack into which they plug a LocalTalk network cable. The PhoneNet Starter Kit ($249.99) includes two Pocket Connectors and a 7-foot PhoneNet cable—all the hardware you need to set up a two-node LocalTalk network. A single Pocket Connector goes for $17.99.

The 10BaseT Starlet hubs come in 4-, 8-, and 16-port sizes and feature both RJ-45 repeater ports and thin Ethernet ports for connecting the hubs or linking them to a larger network. Available in July, the hubs will have suggested retail prices of $219 for 4 ports, $299 for 8 ports, and $699 for 16 ports. In related news, the company also announced the Ether 10-T StarController/557T, a managed 10BaseT hub that features 12 RJ-45 ports. The StarController/557T ships with StarCommand management software and lists for $1399. Farallon, 510/814–5100.—CAMERON CROTTY

IN BRIEF

Wireless Network Service Debuts Metricom is harnessing its Micro Cellular Data Network wireless-communications technology in a subscriber service, called Ricochet, that is to be announced at the end of June. With a maximum speed of 77 Kbps, the service promises to be considerably faster than other offerings. Metricom offers installation and maintenance of its spread-spectrum radio transceivers as part of the Ricochet service, for a monthly fee that will start at less than $5 per user. Each node on the wireless net requires a $495 Metricom wireless modem. 408/399–8200.

Power Server Apps More PowerPC-optimized network applications are on the way, including Meeting Maker XP 1.3, a group-scheduling application from On Technology (from $75 per user; 617/374–1400); KeyServer 3.2, a software-license-management package from Sassafras Software ($30 to $55 per user; 603/643–3351); and TeleFinder Group Edition Host 3.3, a BBS-management package from Spider Island Software ($425; 714/669–9260).

Network Printers See details on new printers in “600-dpi Printer Wars” in the main News section of this issue.

MACWORLD September 1994 175
Introducing Mini EtherPrint. Up To 8 LocalTalk Connections, New Compact Size.

Connecting LocalTalk printers and other devices to Ethernet has never been easier or less intrusive. The reason? Dayna, the very company that pioneered the technology with EtherPrint®, has made a small improvement that promises big benefits.

It's called Mini EtherPrint, and it's the ideal way to provide a simplified Ethernet connection for as few as 1 or 2 LocalTalk printers to as many as 8 LocalTalk devices of any variety.

Mini EtherPrint connects to your printer with no set-up routines or start-up sequences. Just plug and print. For easy trouble-shooting, we've included power, activity and link status lights, as well as a handy reset switch. And if there's a power outage, Mini EtherPrint will restart and restore its connections automatically.

We also include Securlt™ protection software to prevent unauthorized access to network modems, color printers or other LocalTalk devices.

Mini EtherPrint may be the smallest connector around, but it offers the biggest cost advantages. A competitive price per connection, Lifetime Warranty and 24-Hour Replacement Program make our value especially tough to beat.

Prove to yourself that the challenge of connecting more LocalTalk devices to your Ethernet is smaller than you thought. Choose Mini EtherPrint from Dayna. For more information, call 800-443-2962 ext. 538 or use our 24-hour FAX Response System.

FAX Response: 801-269-7340, Doc.#1303

©1994 Dayna Communications, Inc., Sorenson Research Park, 849 West Lavoy Drive, Salt Lake City, UT 84123

Circle 161 on reader service card
Electronic Software Distribution

Trying to manage software distribution for a network of Macintoshes can be a nightmarish experience. Every software update, virus patch, or bug-fix is multiplied because you have to install these programs on one Mac and then repeat the same laborious process for all the other machines along the network, typically after hours so you don't interfere with everybody's ability to get their job done.

You juggle extensions, applications, and system software to make sure all the pieces fit together and run properly for all machines. Throw in users' enthusiasm for the latest technology, mixed with a dash of perceived need for the latest features, and you'll stay quite busy preventing the soup from boiling over.

Even an incident as minor as one overeager user upgrading an application before everyone else, can stir things up by automatically updating shared documents to a format other users can't read.

Fortunately, at least nine electronic software-distribution (ESD) applications are available for Mac networks: Apple's Installer 3.4 and 4.0, Sonic Systems' Radar 4.0, Helios USA's netOctopus 1.2, Wave Research's FileWave 2.0, On Technology's StatusMac 3.1, Symantec Corporation's Installer Pro 1.0 and NetDistributor Pro 2.0, and TechWorks' GraceLAN Network Manager 1.1.1 and Update Manager 3.1.1.

These programs let system administrators configure and update software for hundreds of Macs in one fell swoop, without ever leaving the desk—a big help, especially on networks that span multiple, geographically separate offices. But technical limitations, practical concerns, and even cultural issues might make ESD programs inappropriate for your office.
ESD to the Rescue
Most ESD applications consist of a few simple pieces. A profiling component, which runs on the administrator's Mac, communicates with client extensions on the users' machines. The resulting profile tells you what versions of which programs are present on each Mac client on the network. A package generator or script-writing module helps you assemble the files to be distributed (in some cases, compressing the contents) and helps you lay down the rules about who gets what file and when. The program then transmits the update to all client Macs, according to a schedule determined by the administrator; client Macs receive the update via the client system extension.

In instances where you have a roving work force, you may need a store-and-forward updating scheme like that of Helios's netOctopus, which uses the PowerTalk messaging system that is part of the Apple Open Collaboration Environment (AOCE) in System 7 Pro. With this feature, not all Macs have to be on and free at the very instant you send out an update. So you can update wandering PowerBook users, catching them when they pass through the office or when they connect to the network remotely.

For stationary Macs, some distribution programs, such as Radar, let you select target Macs from a list. Others—StatusMac, for example—let you write custom installation scripts that selectively install applications based on attributes of each machine: the Mac type, speed, and memory, plus what programs and versions are already present.

The scripting functions in many ESD applications can help make a network manager's job much easier. Without them, you have to send a single update blindly to all Macs, ignoring the various system configurations present, or you have to tailor the configuration for each Mac and send updates individually. If you know, for instance, that version 3.0 of SuperDuper-Utilities causes crashes under System 7.0.1 on 68030-based Macs running MegalNIT, your script could omit these machines when you install that version officewide.

Some ESD applications support installation scripts written for Apple's own Installer program, so you don't have to create custom scripts to install applications and Apple updates.

Keep in mind, though, that not all of these programs can update system files, meaning that when you need to do so, it's back to square one: sneaker net and individual-Mac installations. In fact, some ESD product vendors—TechWorks, for one—list their product's inability to update system files as an advantage. Their position is that they're taking some of the worry and hassle out of a network manager's job because remote updating of system software is more likely to interrupt users. On the other hand, Installer Pro, FileWave, Radar, and Apple's Installer can and will let you automate system software updates.

The more flexible ESD programs have proprietary scripting systems that let you adapt installations for your particular site, based on your own knowledge. The most powerful programs support conditional-branching script commands so you can distribute a single package that does different things on different Macs. Apple's System 7.5 will be an equalizer in this regard (for more on the new System, see the article "System 7.5," in this issue). With its scriptable Finder, 7.5...
will eventually allow most ESD programs to do custom installs using AppleScript scripts instead of their own language. Helios's netOctopus, which already supports AppleScript, may be one of the first to do just this.

**Push and Pull: Alternatives and Trade-offs**

When you supply users with a serverful of Installer scripts and tell them to upgrade when they choose, you're offering what is known as a pull update, where users run the updating program from their Macs and the installer "pulls" the new software over to each machine at the user's request.

ESD programs, on the other hand, specialize in the push style of update, where you as the administrator broadcast the update, "pushing" it onto the users, in some cases before they're ready for it or at a time when they need the Mac to remain in uninterrupted operation.

The pull approach gives users more flexibility and lets them do some of the work for you. But you can easily end up spending a lot of time supporting users and troubleshooting conflicts between Macs running different versions of programs and operating systems. After your pager beeps with a call about the same problem for the fifth consecutive time, you're likely to become a proponent of the push approach, where you can, in one click, send the update far and wide. And stop it, if necessary, with another click.

Some people on your network may dislike the very idea that the client-side extension installed on their Macs by ESD programs gives you, the administrator, a virtual porthole into their system: you can see what programs they run, tinker with their settings, and restart their Macs without notice (if you so choose).

Sonic Systems' Radar 4.0 gives users some control. They can set passwords in the Radar Responder that limit how much of their hard disk contents you can see. Other programs, including StatusMac, let users refuse system updates they don't want, or postpone them so their system doesn't bog down or restart while they're in the middle of an important task.

Most client-side extensions don't slow down Macs noticeably, except when the extensions are actively installing something. Some, like Wave Research's FileWave, quietly copy files one piece at a time during idle moments, so the distribution process doesn't interfere with foreground applications. In general, if you set updates with your site's schedules in mind, and remind users not to shut down their machines at the end of the day, installations can be fairly unobtrusive.

If you're running any ESD programs, make absolutely certain that your network is physically secure and that you use the password options on the clients. Otherwise, a virus could hitch a ride on the distribution mechanism and infect your entire network in minutes.

**The Last Word**

In deciding whether to use electronic software distribution, take into account your corporate culture: if people are used to controlling and configuring their own Macs, the protests you have to endure may not be worth the effort. Consider relying on just a network-assets monitoring system that can look but not touch. If the Macs on the network don't use a standard set of applications, you can use ESD programs, but you'll spend a lot of time creating subgroups to receive particular updates and writing installer scripts.

You also need to consider whether the time you save will be worth the cost of the programs, which can run $215 or more for ten users (see the table, "Electronic Software-Distribution Packages").

If you manage a public-access facility, such as a campus computer lab or a service bureau, the challenge becomes one of regularly restoring all the systems to a clean, original condition. This isn't always easy when users (especially students) often reconfigure systems, install fonts and extensions, inadvertently leave viruses, and otherwise tinker with things.

In such a situation, the ability to simply refresh System Folders from a master copy on one machine is very helpful. Apple's now-discontinued Likewise product gave users that choice. The company says it will add that feature to a future version of At Ease for Workgroups. Of course, updating the System Folders of an entire computer lab at one time may temporarily bog down the network, but it also saves you from worrying about details.

If you have users calling in over relatively slow links, such as Apple Remote Access connections, to receive updates, make sure the ESD program you use compresses data, uses efficient network protocols, and sends only the pieces necessary for an upgrade. Some programs—for example, Symantec's Installer Pro—copy the entire set of files to the client and then run the installer scripts locally.

If your network is large (500 or more users), then the time the ESD package will save you far outweighs the cost. Ditto if you have even a small network with users in different geographic locations, where driving time, gas, traffic hassles, or maybe even plane fare would be part of the cost. So if you've got more Macs to configure than hours in the day, consider ESD as a way to keep your users happy and current without breaking a sweat.

---

**CONSIDER IF THE TIME SAVED IS WORTH THE PROGRAMS' COST**

| Runs Installer Scripts | Supports Conditional Scripts | Supports Deferred Installs | Client Can Postpone Install | Sends Only Required Pieces | Price
|------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|------|
| ✓                      | ✓                           | ✓                         | ✓                         | ✓                         | free
| ✓                      | ✓                           | ✓                         | ✓                         | ✓                         | $1045
| ✓                      | ✓                           | ✓                         | ✓                         | ✓ ³                      | $795
| ✓                      | ✓                           | ✓                         | ✓                         | ✓ ³                      | $499
| ✓                      | ✓                           | ✓                         | ✓                         | ✓                         | $470
| ✓                      | ✓                           | ✓                         | ✓                         | ✓                         | $470
| ✓                      | ✓                           | ✓                         | ✓                         | ✓                         | $795
| ✓                      | ✓                           | ✓                         | ✓                         | ✓                         | $495
| ✓                      | ✓                           | ✓                         | ✓                         | ✓                         | $895

³ Network administrator defines required pieces. ⁴ Product can do conditional distribution.

---

* Raines Cohen, a co-founder of BMUG, does freelance writing, editing, and electronic publishing from his Alameda, California, home. He can be reached at RainesC@eWorld.com and AppleLink (RAINES).
Follow the Logo to Power Macintosh!

Macworld is the Power Macintosh expert. We help you track the latest Mac developments, trends, and product announcements. To find Power Macintosh coverage, and to find it fast, just follow the logo in News and New Products.
Name: Noah Cohen
Title: MIS Analyst
Age: 25
Hobbies: Mountain biking, volunteer work, homebrewing, guitar
Favorite Band: The University of California Marching Band
Favorite Artist: Matisse
Favorite Book: Exodus
Favorite Color: Amber
Favorite Shape: Pint glass
Favorite Publication: "Macworld. It has everything I need: great opinions, insightful letters, and thorough analysis. Macworld arrives with the answers I am looking for—and the back issues make for great reference material."
Welcome to the monitor capital of the world. Where just the right CRT or LCD display is waiting for you.

Take our new high-resolution, flicker-free, 17-inch Super VGA “green” monitors. A low 0.26mm dot pitch makes images crystal clear. And viewing is easier on your eyes and body thanks to a special flat, square, anti-glare, anti-reflection, anti-static screen; low MPR II radiation standards and handsome ergonomic design.

Their larger size and controllability make them ideal for complex Windows*, Mac* and SPARC* applications.

They’re easy on your pocketbook too. And not just because of their low initial price and two-year warranty. When “on” but inactive, power consumption goes down from 130 watts to less than 5 watts. Imagine the cost savings if you had ten monitors. Or a thousand.

For even bigger shows, our low-cost LCD projection panel can turn your whole wall into a computer monitor. It’s flicker-free, shows millions of colors and comes complete with on-screen menus, freeze frame and enlargement capability, a patented overhead projector light blocker, wireless remote control and its own rugged carrying case.

More than one million CTX monitors were purchased by computer professionals in the U.S.A. last year. Call us today and find out why.

For full-time low power, no radiation and even more versatility, check out our handsome, new LCD monitors.

Their active-matrix displays provide bright, sparkling color (and b/w) even when viewed from wide angles. They weigh less than six lb. and can even be wall mounted.

We just make great monitors.


Circle 38 on reader service card.
Alternative Battery Strategies

By Cary Lu

By far the single most common complaint about all laptop computers is their short battery life. Internal batteries run for one to four hours, depending on the PowerBook model and how it’s used. But even four hours isn’t long enough to last through a flight from Los Angeles to New York, much less an overseas flight.

One alternative is to carry several batteries, although you must plan their use systematically. First, label each battery so you can tell them apart. You’ll have to keep track of which battery is charged and use each battery in turn. Before changing batteries on a PowerBook 140 through 180, you must either shut the PowerBook down or put it to sleep while a small temporary power supply is plugged into the AC adapter connector. These temporary power supplies use a 9-volt battery and are available from many companies; the Lind Memory Saver ($10.95) has the best design. As long as it’s in sleep mode, a PowerBook 100 doesn’t need a temporary power supply when you’re changing batteries.

To charge multiple internal batteries successively for a 100-series PowerBook, you have to plan carefully. A fully depleted nickel-cadmium (NiCad) battery takes 3 to 4 hours to reach an 80 percent charge and 6 to 8 hours to fully charge—if you are not using your PowerBook. Two batteries take 12 to 16 hours for a full charge, and you have to be there at the midpoint to change the battery. Three batteries take 18 to 24 hours to charge; set an alarm clock for the battery changes.

The only way to streamline the process is to use an external battery charger. These don’t save much time, since they typically take about 10 hours to charge two batteries simultaneously, but you don’t have to change batteries. Chargers are bulky and need an AC adapter; some do not come with one but use Apple’s PowerBook AC adapter instead. Note that you won’t be able to charge batteries and use the PowerBook at the same time—unless you carry a second AC adapter.

The 200-series (Duos) and 500-series PowerBooks can handle multiple batteries more gracefully. Like the PowerBook 100, neither series requires a temporary power supply for changing batteries during sleep mode. A Duo can charge a battery in 2.5 hours; a 500-series PowerBook can charge two batteries simultaneously in 2 hours.

External Batteries

For a 100-series PowerBook user, the alternative to multiple batteries is an external battery. The special charger needed by some units adds to the traveling weight (see “External Batteries”).

How long can you run your PowerBook on these batteries? The table shows the capacity of the batteries in watt-hours and the relative capacity compared with Apple’s internal battery. For example, a battery with a relative capacity of 1.7 will last roughly 1.7 times as long as an internal battery. Since an external battery is always used in conjunction with an internal battery, the two batteries together will last 2.7 times as long as the internal battery alone. Thus, if you got 1 hour out of an internal battery, you can now get 2.7 hours; if you got two hours, you can now get 5.4 hours. The exact battery life will vary, of course, depending on how you use your PowerBook.

Nearly all of these external batteries use lead-acid cells, a tried-and-true technology. Lead-acid batteries are easy to manage; you can charge them at any time without having to run them down first. (To protect the environment, return worn-out lead-acid batteries to the manufacturer for recycling.)

Recharging Batteries

The recharging times quoted by the battery companies are not comparable, and so I did not list them in the table. Some companies calculate the time it takes to recharge both the external and internal batteries using one of the most common AC adapters. Others measure only the external battery recharged with Apple’s highest-capacity AC adapter (shipped with the PowerBook 165c and 180c) and consider an 80 percent charge as good as a full charge. As a general rule, recharging an internal and an external battery for 100-series PowerBooks takes between 6 and 12 hours.

Continues
External Batteries

<table>
<thead>
<tr>
<th>Batteries for 100-Series PowerBooks</th>
<th>Capacity (watt-hours/relative)</th>
<th>Price</th>
<th>Battery Size (in inches)</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AER Power 20&lt;sup&gt;a&lt;/sup&gt;</td>
<td>240/13.8</td>
<td>$748.00&lt;sup&gt;1&lt;/sup&gt;</td>
<td>11.6 × 6.8 × 3</td>
<td>6 + 2.2 lbs&lt;sup&gt;a&lt;/sup&gt;</td>
<td>After 20 recharges, replacement battery $399</td>
</tr>
<tr>
<td>Apple internal</td>
<td>17.4/1</td>
<td>$65.00</td>
<td>4.3 × 4.1 × 1</td>
<td>0.9 lb</td>
<td></td>
</tr>
<tr>
<td>BTI Industrial MC-180s</td>
<td>48/2.8</td>
<td>$259.00</td>
<td>8.8 × 3.5 × 2.2</td>
<td>3.5 + 1 lbs&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Large brick; includes car battery-charging cord</td>
</tr>
<tr>
<td>BTI SlimPack MC-180S</td>
<td>38/2.2</td>
<td>$169.95</td>
<td>11 × 6 × 0.5</td>
<td>2.5 lbs</td>
<td></td>
</tr>
<tr>
<td>BTI SlimPack MC-190S&lt;sup&gt;a&lt;/sup&gt;</td>
<td>60/3.4</td>
<td>$300.00</td>
<td>11 × 6 × 0.6</td>
<td>3 lbs</td>
<td></td>
</tr>
<tr>
<td>Lind Auxiliary &quot;D Cell&quot; Power Pack</td>
<td>60/3.4</td>
<td>$79.95</td>
<td>11.5 × 2.8 × 1.4</td>
<td>3 lbs with batteries</td>
<td>Uses 8 alkaline D cells; not enough current for color PowerBook; 0.5 lb empty</td>
</tr>
<tr>
<td>Lind Auxiliary Power Pack APP-2</td>
<td>60/3.4</td>
<td>$99.95</td>
<td>7.5 × 4.5 × 2.5</td>
<td>5 lbs</td>
<td>AC adapter, includes car battery-charging cord</td>
</tr>
<tr>
<td>Lind Portable Power Pack APP-102</td>
<td>95/3.2</td>
<td>$199.95</td>
<td>11 × 6.3 × 1</td>
<td>4 lbs</td>
<td></td>
</tr>
<tr>
<td>Technoginn PowerPlate Mini 3</td>
<td>30/1.7</td>
<td>$169.95</td>
<td>9.4 × 5.7 × 0.5</td>
<td>1.7 lbs</td>
<td></td>
</tr>
<tr>
<td>Technoginn PowerPlate 3x</td>
<td>30/1.7</td>
<td>$239.95</td>
<td>11.3 × 9.3 × 0.6</td>
<td>2.5 lbs</td>
<td>Replacement battery $100</td>
</tr>
<tr>
<td>Technoginn PowerPlate 5x</td>
<td>60/3.4</td>
<td>$299.95</td>
<td>11.3 × 9.3 × 0.95</td>
<td>4 lbs</td>
<td>Replacement battery $160</td>
</tr>
<tr>
<td>Technoginn PowerPlate SXL&lt;sup&gt;a&lt;/sup&gt;</td>
<td>60/3.4</td>
<td>$329.95</td>
<td>11.3 × 9.6 × 0.4</td>
<td>3 lbs</td>
<td>Can condition NICad; replacement battery $160</td>
</tr>
<tr>
<td>VST ThinPack</td>
<td>30/1.7</td>
<td>$159.95</td>
<td>9.4 × 5.6 × 0.4</td>
<td>1.5 lbs</td>
<td>Replacement battery $79</td>
</tr>
<tr>
<td>VST ThinPack Plus</td>
<td>60/3.4</td>
<td>$279.95</td>
<td>11.2 × 9.4 × 0.4</td>
<td>3 lbs</td>
<td>Replacement battery $159</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Batteries for Duos</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Type 3 internal</td>
<td>18/1</td>
<td>$75.00</td>
<td>4.8 × 3.5 × 1</td>
<td>0.9 lb</td>
<td></td>
</tr>
<tr>
<td>BTI SlimPack MC-2005</td>
<td>38/2.8</td>
<td>$299.95</td>
<td>11 × 6.0 × 0.5</td>
<td>2.5 + 1 lbs&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Has special charger</td>
</tr>
<tr>
<td>Lind Auxiliary &quot;D Cell&quot; Power Pack for Duo</td>
<td>60/3.3</td>
<td>$79.95</td>
<td>11.5 × 2.8 × 1.4</td>
<td>0.5 lb empty; 3 lbs with batteries</td>
<td>Works with Color Duos</td>
</tr>
<tr>
<td>Lind Portable Power Pack APP-202</td>
<td>55/3</td>
<td>$229.95</td>
<td>11.2 × 6.8 × 1.1</td>
<td>4 + 1.25 lbs&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Has special charger</td>
</tr>
<tr>
<td>Perfit Duo PowerPack&lt;sup&gt;a&lt;/sup&gt;</td>
<td>55/3</td>
<td>$199.00</td>
<td>8 × 5 × 1</td>
<td>3.2 lbs</td>
<td>Replacement battery $60</td>
</tr>
<tr>
<td>Technoginn PowerPlate 4x Duo&lt;sup&gt;a&lt;/sup&gt;</td>
<td>42/2.3</td>
<td>$299.95</td>
<td>10.8 × 8.1 × 0.4</td>
<td>2.6 lbs</td>
<td>Replacement battery $160</td>
</tr>
<tr>
<td>VST ThinPack Duo&lt;sup&gt;a&lt;/sup&gt;</td>
<td>50/2.8</td>
<td>$299.95</td>
<td>10.6 × 8 × 0.4</td>
<td>2.7 lbs</td>
<td>Replacement battery $169</td>
</tr>
</tbody>
</table>

<sup>a</sup> Scheduled for shipment by summer 1994.  <sup>1</sup> Battery plus special charger. (All information supplied by manufacturers.)<sup>1</sup> Estimated. Sources: Technoginn, 513/321-177, 800/305-7936; Lind, 612/937-6303, 800/659-5996; BTI, 213/728-7874; VST, 508/287-4600; AER, 404/433-2127; PerFit, 303/530-7333.

**Some Unusual Power Sources**

Three power sources don’t follow the usual patterns. Lind makes a battery case that takes eight alkaline D cells, the same ones used in flashlights. The alkaline cells are disposable, so the cost of operation is fairly high. But you can carry spare D cells when you have no power source for charging a battery.

One unusual yet obvious way to get power is from the sun. The $369 SunPack Super Charger from Keep It Simple Software (406/442-3559, 800/327-6882) unfolds into an 18%-by-32-inch solar panel with a cable for attaching to a 100-series PowerBook. On a sunny day, this panel can run a PowerBook—even a color model (using a few energy-saving practices)—entirely on solar power. It can also charge an internal battery in a day. The half-size $189 SunPack cannot develop enough power to fully operate a PowerBook, but it can extend battery life on a monochrome PowerBook by several hours. The SunPack needs two sunny days to charge an internal battery.

Zinc-air batteries have been common for many years in very heavy-duty applications, such as unattended warning-light buoys in harbors, and in tiny hearing aids. Currently, these batteries are not rechargeable, but AER Energy Resources has been developing a rechargeable zinc-air battery for computers. The prototype Power 20 battery is heavy, and you have to carry both a special charger and a PowerBook voltage adapter, but AER says it will run a monochrome PowerBook continuously for 20 hours. This very expensive battery is good only for 400 total hours of operation; you then have to buy a new one. And the AER battery is not in production yet. Other proposed zinc-air batteries from companies such as Matsi are many months away from even a prototype.

Toshiba has begun shipping a lithium-ion battery for its Portégé computer, a DOS laptop. The lithium-ion technology is the most promising for the near term, since these batteries boast about 70 percent more energy per pound than nickel–metal-hydride (NiMH) batteries. The power-management circuits in the 500-series PowerBooks could work with a future lithium-ion battery, but for now such batteries are in short supply and quite expensive.

**Making a Choice**

For the longest run-time operation of a PowerBook at the lowest cost, Lind’s little-known Power Pack APP-2 is a bargain. It’s an older, somewhat inelgant design (weighing in at a hefty 5 pounds) that takes 12 hours to recharge—longer than the 60-watt-hour competition—but it sells for less than half the price.

For a monochrome PowerBook, I’d choose one of the thinnest models for the most portability. For a color PowerBook, you really need a heavy battery—one reason to avoid a color model unless absolutely necessary. ☞

CARY LU is a Macworld contributing editor who covers mobile- and remote-computing issues in this monthly column.
LIMITED TIME FREE OFFER!

YES! I want to get organized quickly and easily!

☐ Please send me Now Contact
☐ Please send me Now Up-to-Date
☐ Or, please send me both!

Recognized as "Best of Category" by MacWorld & MacUser

Here's how it works: All you pay is $9.95 for shipping and handling ($15.95 for both) and we'll send you the product of your choice to put to the test. If, for any reason, you're not satisfied with the product at the end of 30 days, contact us to return it and you pay nothing more. If you're delighted with the product, simply keep it and we'll charge your credit card only $49.95 for either Now Contact or Now Up-to-Date, or only $69.95 for both. That's over 50% off the suggested list price!

Call 800-689-9411 or fax this card to 800-669-1708. Hurry—this offer expires September 15, 1994!

Name

Shipping Address

City State/Province Zip/Postal Code

Credit Card Number Expiration Date

Signature Daytime Phone
Ah, it's been an Academy Award performance. That confident smile and firm handshake covering up the fact that you're just one more lost memo, forgotten name and misplaced schedule away from total disaster.

Well, now you can actually be that buttoned-up dynamo you've been pretending to be. Introducing Now Contact™, the most complete contact manager that, together with award-winning Now Up-to-Date™, creates the ultimate personal organizer.

Since it's no use getting organized if you can't find stuff faster, Now Contact gives you instant access to all your names, numbers and addresses, retrieving information far faster than any competitive product.

Complete with built-in word processor, it also makes printing labels, faxes, and form letters painless.

Now Up-to-Date schedules events, sets reminders, manages to-do lists, prints calendars and keeps all your associates informed. Combine it with Now Contact and you'll have a complete record of all correspondence and appointments with your contacts.

So, how productive would you be if you were as organized as you've been pretending to be? Get Now Up-to-Date and Now Contact and find out. Or pick up the phone and call us today for more information at 1-800-689-9411.

Put it on your to-do list right away.

That is, of course, if you can even find it.

Now you can get as organized as you pretend to be.

* Here's how it works: All you pay is $9.95 for shipping and handling ($15.95 for both) and we'll send you the product of your choice to put to the test. If, for any reason, you're not satisfied with the product at the end of 30 days, contact us to return it and you pay nothing more. If you're delighted with the product, simply keep it and we'll charge your credit card only $49.95 for either Now Contact or Now Up-to-Date, or only $69.95 for both. That's over 50% off the suggested list price! Call 800-689-9411 to order today. Hurry - this offer expires September 15, 1994! NowSoftware, Inc., 921 S.W. Washington, Suite 500, Portland, OR 97205-2023.
This New Wireless Network Will Have You Bouncing Off The Walls Instantly And Effortlessly.

Plug and play takes on new meaning with the Photonics COOPERATIVE* Transceiver. Using the latest in wireless infrared technology, it lets you create a portable network. So you can instantly access all your network resources — share files, synchronize calendars, print documents, send e-mail, whatever — without the hassles of hard-wiring. You can even use our access unit to bridge to an existing Ethernet network.

COOPERATIVE uses diffuse infrared signals that bounce off walls, ceilings, furniture, and floors to instantly "connect" Macs, PowerBooks, Newtons and peripherals like Hewlett-Packard DeskJet and Apple LaserWriter printers. There's no problem with signal blockage. No need to "aim." It's totally secure. Incredibly power-efficient. And it's so safe, there are no FCC or global restrictions on its use. COOPERATIVE is transparent to AppleTalk and LocalTalk, so there's no software to install or figure out. You can set up anytime, anywhere. It's ideal for mobile users, for use in conferences, classrooms and shared offices, or for creating temporary networks — even on airplanes. And you can easily access wired LocalTalk and Ethernet networks.

Call Photonics at 1-800-628-3033 today for your free wireless networking white paper and find out how COOPERATIVE can get you connected instantly and effortlessly.

PHOTONICS
Instant Wireless Networking

©1994 Photonics Corporation; 2940 North First Street, San Jose, CA 95134. Cooperative and the Photonics logo are trademarks of Photonics Corporation. Other brand and product names are trademarks of their respective holders.
BUSINESSPEOPLE USE THE MAC to predict the future all the time. They call it budgeting, making projections, forecasting. Makes ya think: if we trust the computer to see into our company's futures, then why shouldn't it be able to foretell our futures? Wouldn't it be nice to know how things are going to turn out? Five years from now, will this investment work? Will this marriage work? Will this PowerBook work?

America's programmers have supplied us with numerous ways to take a peek behind the heavy curtain of destiny. Astrology, tarot, and even the Book of I Ching have found their way onto our modern hard drives. Can these blendings of ancestral art and contemporary computing really provide insight into ourselves and our fates? To find out, all you need is a moment of quiet meditation; a still, steady candle-flame of faith; and maybe a 300-kilobytes-per-second CD-ROM drive.

Io Graphic Astrology

Actual astrology—as opposed to the fortune-cookie-esque newsletter blurbs—involves two steps. The first is pure astronomy; you calculate a chart that plots the precise positions of the planets at the place and time of your birth. The Mac is great at this; it performs in two seconds what took the ancient Egyptians weeks to scratch into the dust.

The second half of the astrologer's task is more mystical: to interpret the chart, gauging the impact of each planet's position on the subject's life and times. The Mac isn't such a hotshot here—the best it can do is cough up a set of prewritten blurbs, revealing your fate one planet at a time.

That's probably why the expensive, frighteningly complete Io series of programs-pros is sold in modules (Time Cycles Research, 203/444-6641). Io Education ($295), the cornerstone of the series, does only the diagrams. Its vast arsenal of charting features accommodates every conceivable subsect of astrological belief—Placidus, Porphyry, Heliocentric, and dozens of others—and an even huger number of chart styles.

Io HoroScope, Io Forecast, and Io Relationship ($249.50 each) aren't big on charting, but they do provide written reports on your daily, future, and romantic/partnership outlooks, respectively. The text ranges from sweeping and touchy-feely ("Pisces represents the final stage in the evolution of man and his place in the universe") to the impressively specific ("Swelling and sore feet are common complaints"). You can also buy the American Atlas and International Atlas modules ($195 each or $295 for both), which let you enter your birthplace by clicking on a map rather than typing in the latitude and longitude.

Thanks to a special laser font, the Io programs' star-chart printouts are (forgive me) truly stellar. This software is pricey, and it presumes that you already know astrology. But if you're a pro, then Io, Io, it's off to work you go.

Astrology Source

The programming of this $59.95 CD-ROM needs work. It's HyperCard-slow; some features occasionally stop working; font problems spring up; sounds drop out; the manual is puny, DOS-oriented, and unhelpful, with no instructions for interrupting the numerous narrated slide shows; and as is typical of Multicom discs, no phone number to call for help appears anywhere in the package. (My revenge: it's 206/622-5530.)

With all that off my chest, I'll shock you: I dug this disc. Astrology isn't exactly child's play; you can talk to an astrologer for five minutes withoutfieldnameing phrases like "Your quincunx is trine with the ephemeris." Astrology Source, of all the astrology products I tried, is the only one that teaches this technical topic to the tyro.

Perfect example: Once it knows the time and place of your birth, Astrology Source displays your chart. You can click on a planet in the diagram and hear a voice explain that planet's bearing on the overall divination. In other words, you not only get your fortune told but also learn the rationale behind it. The readings themselves are too safe (they're of the "You enjoy ice cream; you dislike torture" school), but otherwise, Astrology Source has a nice approach—equal parts entertainment and scholarship.

Visions 1.02

Since I'm scarcely a starstruck astrology scholar, I showed my software to a guy who's studied astrology for 40 years. He surprised me by fervently championing Visions—the simplest, cheapest, least-fledged program of them all ($39.95; continues...
Vision is terrifically written—both the "fortunes" and the manual. But it's in black and white, and the chart is oversimplified to the max, eliminating such usual elements as asteroids, cusps, and even the constellations themselves. And when I calculated my sister's chart, I caught Vision in a blatant contradiction.

But since then, the program has spooked me several times. Its predictions are so specific that, when they're right, my hairs stand on end. Take last Monday. I had to make a one-hour trip to a computer store to test new Mac models. Just my luck: I managed to just miss both the bus out and the bus back. As I waited grumpily for the next bus home, I ran Visions on my PowerBook. This is exactly what it said: "You should be extremely careful if your work requires travel, and you should take unexpected events in stride." Gulp.

**Synchronicity 3.0.6**
The *I Ching* (pronounced *eh ching*) is an ancient book filled with ancient metaphorical paragraphs. To get your divination, you're supposed to toss three coins three times, taking note of the heads-tails patterns that emerge. (The more authentic method calls for a bunch of yarrow stalks, but I couldn't find any at the Stop-n-Shop.) You look up that particular pattern in the book and read a little passage about threatening rain clouds, or battle tactics, or docile mares. And you apply that reading to the question you want answered.

Synchronicity is a computerized version of the *I Ching* ($59.95; Visionary Software, 503/246-6200). In the translation to silicon, some of the primitive earthiness may have been lost: instead of tossing yarrow twigs, you press keys on your keyboard. And to indicate that you've sufficiently relaxed your muscles, focused your mind, and let your spirit roam free, you, well, you press return.

On one hand, Synchronicity is artistically done. The colors are rich, the background sounds of a gurgling spring are soothing, and that gorgeous, graceful font—what is that font?

On the other hand, even the astrology programs go farther out on a limb than Synchronicity. I mean, it can hardly go wrong with "What is already established needs to be carefully tended...what is incomplete should be finished." This program might be fun at a cocktail party, but I wouldn't schedule surgery with it.

**Virtual Tarot 1.0**
Tarot, of course, is another ancient system of fortune-telling, using an ornate 78-card deck. The cards' order, their identity, and their orientation (right-side up or down) all play roles in the reading.

The word *tarot* rhymes—depending on whom you ask—with either *sparrow* or *perrot*. On this CD-ROM ($69.95; Virtual Media Works, 408/739-0301), the QuickTime movie hosts favor the third pronunciation. They also favor a mirthless, almost holy tone, accompanied by spacey New Age music.

Otherwise, the Virtual Tarot disc is masterfully engineered. Help and navigation buttons are ever-present. The program's graphics, styled after the covers of *Omni* magazine, are lush and professional. The disc takes pains to cover the history and philosophy of tarot.

To consult Virtual Tarot, you click on the deck to place cards; the dirty work—remembering the layouts, what each position means, what each card means—is all done for you. Just click on a card to hear a narrator explain its meanings. You'll probably find tarot predictions either especially intriguing or especially pointless, depending on your taste for ambiguity. When I asked how I'd do financially next year, this answer came back: "A man, 18 to 40, who is emotionally distant." Aha.

Ultimately, Virtual Tarot's best feature is that it explains tarot without preaching it; you can be an utter nonbeliever and still enjoy the disc. Its careful organization, smooth operation, and lustrous graphics make it a virtual delight.

**The Upshot**
Your enjoyment of any future-tense software depends on how seriously you take these ancient arts. If you're the type who reads your newspaper horoscope for kicks, you'll probably find that Visions strikes the nicest balance between fun and fortune-telling. The CD-ROMs, such as Astrology Source and Virtual Tarot, are ideal for learning more about this stuff. And if you're a real astro-scholar—somebody who scoffs at computerized interpretation—get *Io Edition*. My prediction: you'll thank your lucky stars.

---

Contribution editor DAVID POGUE is the author of the number one Mac book, *Macs for Dummies* and its companion, *More Macs for Dummies* (IDG Books Worldwide). He lives in Manhattan, where stars have not been visible in the sky since 1958.
Now your everyday purchases can save you money on Apple products.

The new Apple Citibank card earns you rebates of up to 5% — good toward Apple products. Plus, your first year of membership is free. Just fill out the application below.

---

### YES, I want to earn rebates of up to 5% toward the purchase of Apple products.

Select one: [ ] MasterCard®, [ ] Visa®

---

#### Please Tell Us About Yourself

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Or Town</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td></td>
</tr>
<tr>
<td>Zip Code</td>
<td></td>
</tr>
<tr>
<td>Years At Address</td>
<td></td>
</tr>
<tr>
<td>Own Home</td>
<td>[ ]</td>
</tr>
<tr>
<td>Own Condo/Co-op</td>
<td>[ ]</td>
</tr>
<tr>
<td>Rent</td>
<td>[ ]</td>
</tr>
<tr>
<td>Live With Parents</td>
<td>[ ]</td>
</tr>
<tr>
<td>Mother's Maiden Name</td>
<td></td>
</tr>
<tr>
<td>Home Phone Number And Area Code</td>
<td></td>
</tr>
<tr>
<td>Name Home Phone Is Listed Under</td>
<td></td>
</tr>
<tr>
<td>Previous Home Address, Number And Street</td>
<td></td>
</tr>
</tbody>
</table>

---

#### Please Tell Us About Your Job

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Name Or Employer</td>
<td></td>
</tr>
<tr>
<td>Position</td>
<td></td>
</tr>
<tr>
<td>Years At Job</td>
<td></td>
</tr>
<tr>
<td>Business Phone Number And Area Code</td>
<td></td>
</tr>
</tbody>
</table>

---

#### About Your Income

You do not have to include alimony, child support, spouse's income, separate maintenance or other income unless you want us to consider it in connection with this application. Your total yearly income from all sources must be at least $12,000 to be considered for card membership.

<table>
<thead>
<tr>
<th>Yearly Income Sources</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your Total Personal Yearly Income</td>
<td></td>
</tr>
<tr>
<td>Other Yearly Household Income</td>
<td></td>
</tr>
<tr>
<td>Other Yearly Income Sources</td>
<td></td>
</tr>
</tbody>
</table>

---

#### Would You Like An Additional Card At No Charge?

If Yes, Print The Name Of The Additional Cardmember (First, Middle, Last)

---

#### Please Tell Us About Your Computer Use

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do You Own A Computer?</td>
<td>[ ] Apple □ Other □ None</td>
</tr>
<tr>
<td>Do You Use Your Computer At? (Check Those That Apply)</td>
<td>[ ] Home □ School □ Business</td>
</tr>
</tbody>
</table>

---

#### Please Sign This Authorization

I certify that I meet the requirements of the Citibank credit terms and conditions on other side. Please allow 30 days to process this application.

Applicant's Signature: [ ]

Date: [ ]
Turn your everyday credit card purchases into big savings on Apple hardware and software.

Earn rebates of up to 5% — good toward the purchase of Apple products. Now, it's easy to earn big savings on Apple products. Just use the Apple Citibank card for everyday purchases, and you'll earn Apple Rebates of up to 5%. Then, use your rebates toward the purchase of a PowerBook® computer, Newton™ MessagePad™, At Ease™ software or other Apple products. You can accumulate rebates of up to $500 in any year — up to a maximum of $1,500 over any three-year period.*

Find your best price on Apple products. Then use your rebates to save even more. Just shop at any authorized Apple dealer. Once you find your best price on Apple products, you can use your rebates to save even more. So you'll know you're getting the best deal on Apple hardware, software and peripherals.

No fee first year and a competitive APR.
The Apple Citibank card has a low, variable annual percentage rate (APR) of 16.65%. What's more, there's no annual fee for your first year.*

Apply now and earn Apple Rebates of up to 5%. And all the service you'd expect from Citibank. With the Apple Citibank card, you get more than Apple Rebates. You get all the service and security of the nation's leading credit card company. So apply for your Apple Citibank card today. Just complete the application on the reverse.

*See below for details. Certain conditions apply.

Now, it's easy to earn big savings on Apple software or other Apple products. You can accumulate rebates of up to $500 in any year — up to a maximum of $1,500 over any three-year period.*

Find your best price on Apple products. Then use your rebates to save even more. Just shop at any authorized Apple dealer. Once you find your best price on Apple products, you can use your rebates to save even more. So you'll know you're getting the best deal on Apple hardware, software and peripherals.

No fee first year and a competitive APR.
The Apple Citibank card has a low, variable annual percentage rate (APR) of 16.65%. What's more, there's no annual fee for your first year.*

Apply now and earn Apple Rebates of up to 5%. And all the service you'd expect from Citibank.

With the Apple Citibank card, you get more than Apple Rebates. You get all the service and security of the nation's leading credit card company. So apply for your Apple Citibank card today. Just complete the application on the reverse.

*See below for details. Certain conditions apply.
The Vision Thing

Dreams and pragmatism at the new Apple

As Apple lost its vision?

I've been amazed this year, while speaking to journalists, user groups, and callers on talk radio, at how many people accept this loss as a foregone conclusion—what vision?—and instead jump to the next question, "Is Apple going to die?" The latter question is easy to answer: Not in the foreseeable future.

Apple is still a cash-rich company with lots of great products, and it can probably afford two truly major screwups before it gets into serious trouble. The apparent success of the Power Macs has temporarily stilled some of that Apple-is-going-to-die talk.

The Vision Thing is another matter. There is, of course, a generally accepted dogma about the question. It goes like this: Apple has always been a company whose success rested on how well it tempered visionary leadership with tough business skills. Steve Jobs, who was pure vision, had to hire a nuts-and-bolts guy from Pepsi, John Sculley, to reach vision equilibrium. When Sculley ditched Jobs there was a distinct vision shortage, so for a while Sculley relied on the futurisms of Jean-Louis Gassée (who once said that the Apple II smelled like infinity, thereby ensuring his place in the Vision Hall of Fame).

Then Sculley decided that he was a visionary, and went around the world making speeches about knowledge navigation and PDAs. Eventually, Apple's board of directors decided that Sculley was too visionary and pulled the plug on him. His replacement was Michael Spindler, who was headlined in a recent Forbes article as "Apple's Mr. Pragmatist." Thus leaving Apple without a designated visionary.

This is a problem for Apple more than any other company because Apple's crown jewel, really, is its vision. It's as if the corporate engine is tuned to run on fumes. Apple's mission statement has been essentially unchanged since the company's formal inception in 1977: in the words of Mr. Pragmatist, this mission is "making the promise of powerful technology available to individuals in a meaningful, exciting, and affordable way." (The company's record is rather spotty on that last count.) But there are literally hundreds of companies with virtually identical missions. Apple has won its cachet by its unspoken mission—to make computers so easy to use that it seems magical, to perform high-tech miracles that solve problems you didn't even know you had, to blow people's minds by doing what others say can't be done. Apple has always benefited by its reputation as a liberating force, the cavalry that arrives just in time to rescue us from inadequate, kludgy, or downright boring technology.

With other companies, vision is a finishing touch, a carnation in the corporate lapel. With Apple it's just about the whole suit of clothes. True, nobody buys computers simply because the company is visionary. But when you have as small a market share as Apple does, there has to be a compelling reason for customers to even consider looking toward Cupertino. For Apple, the vision has always been quite directly tied to its product: a five-second glimpse of the desktop revealed why Macintosh was different from its competitors. But now that Windows, the ersatz Mac Operating System, is ascendant (and its successor Chicago is looming as even tougher competition), it's obvious that Apple needs an infusion of vision. Is it there?

Mr. Pragmatist

I went calling on Apple to find out. Who, I asked, will tell me about Apple's vision? The spokesperson I contacted told me that the best person would of course be Michael Spindler. But Spindler was too busy to speak during my time frame, and they would connect me to someone else.

Still, the very thought was intriguing—Mr. Pragmatist, now weighing in on vision. Was he about to do a Sculley? Would we see him at the next Macworld Expo, sending QuickTime videos on a wrist communicator and commanding software agents to seek and destroy Bill Gates? Probably not. During Spindler's big speech at the March Power Macintosh launch, which was set up as sort of a State-of-the-Apple report, he intermittently tipped his hat toward the Vision Thing—a "start of a new era" here, a "welcome to the future" there, and even an occasional "you will see us offering break-through innovations." But he performed none of the whizbang demos of future-tech that his predecessors reveled in.

Spindler began by posing an important but hardly challenging statement: "We believe many customers are asking the question, How can we get more out of our investments in personal computers?" The answers, which included "applying technology to new ways of working," and changing personal computers to make them "more useful and relevant, and less costly to manage and maintain," were hardly the stuff of "Star Trek." Though he did mention some innovations, like Open Doc (more on that later) and even an interface continues.
Neali's Law

So maybe it was just as well that we avoided the embarrassing circumstance of an interview that focused on vision. Instead, I talked to the one person on the Apple corporate staff who might be a dark horse for house visionary. This was David Nagle, who is now senior vice president and general manager of the AppleSoft division but formerly fronted Apple's high-frontier Advanced Technology Group. Nagle at first made a joke about my quest—"You want to see if we're having visions?"—but then got right to the meat of the matter. I think he knows how important the issue is to Apple's future.

"Our vision is still the same in spirit as it was in the early 1980s," he told me. "To provide a credible alternative to standard solutions in the personal computer. We've always had a passion for systems that are designed for people." Nagle claims that with the Power Mac, Apple has moved to the unfamiliar but felicitous role of price/performance leader. But he's aware that that role is not enough and that the Windows phenomenon has taken its toll on the luster of the Mac. Nagle says the Power Mac has restored some of that luster, but it's clear he knows that the test will come on the innovations Apple adds to its new generation of Macintoshes.

One of these innovations, he says, deals with the information superhighway, particularly the Internet. Nagle didn't mention the suggestions of this columnist but did say that Apple was working hard to make the company synonymous with the Internet explosion. "The Internet has become a very interesting worldwide information network, but the main problem is that it's incredibly hard to use—I think we can lead in making it usable," he says. "I would like Apple to be the company that's making the vision real, and we're working on that now."

But the real cornerstone to Apple's vision in the mid-1990s, according to Nagle, is Open Doc, which in his words is "a vision to change the fundamental nature of application software." Open Doc is a standard wherein Apple and just about everybody in the industry—with the glaring exception of Microsoft—has agreed to a new, modular way of writing applications. Unlike the bulky, kitchen-sink approach where every word processor or spreadsheet has millions of features, Open Doc applications would be stripped down. Users could then customize applications with their choice of many small components. Libraries of small components—spelling checkers, table generators, indexers, and so on—could be plugged into any sort of application. Eventually, all the software on your desktop would be like the tools on your desk—to work on a document, you'd simply grab the virtual pen, paper clip, paintbrush, or ruler as you needed it.

But is this the sort of earth-shaking change that Apple's popularization of the graphical interface represented? Nagle claims it is, that this innovation is significant on that broad level. He cites Open Doc's interoperable nature: "Today, with different platforms, you have a library of books, but different sets of books require different glasses to read them. Open Doc provides a common library."

Giddy Up

As welcome as that advance would be, my heart was failing to quicken. I guess that's the difference between pragmatism and vision. In the religious tradition, if somebody has a vision and stands shaking in the front of the church to describe it, it sounds as though they've experienced an internal earthquake. They've had a conversion experience, and nothing is the same. Likewise, when Apple's former visionaries described how their silicon-based hallucinations soon would be shipped with the Apple logo, your mouth flew open and you wanted to shout, "Yes! Yes, I want this!" It would change the way you worked, the way you thought, the way you looked upon the universe in its glory. Not, "Gosh, this makes sense and I look forward to evaluating it as a means of enhancing my personal computer investment."

Still, Nagle insists that the vision gap is illusory. Inside Apple, he reports, feelings are running as high as ever. "I've been at Apple five and a half years," he told me. "You know, I was a scientist for many years, and in that situation, when something in a lab is going very well, you get a period in which people are so excited they are almost giddy. We have that level of excitement here. Maybe not everywhere, but with people working on things like Open Doc. People literally giddy with excitement. This isn't everyone in the company, but that's all right—you can't have everyone running around giddy."

Somehow, I suspect excess giddiness is the least of Apple's problems.
MORE DOTS LESS DOLLARS

$599
- 2400 dpi resolution
- Free Photoshop LE
- Free OmniPage OCR

$1199
- 2400 dpi resolution
- Free Transparency Adapter
- Free Full Photoshop
- Free OmniPage OCR

$1999
- 9600 dpi resolution
- Free Transparency Adapter
- Free Full Photoshop
- Free OmniPage OCR
- Free Kai's Power Tools

Get More For Your Money With High-Res Desktop Scanners From Relisys.

More dots per inch. Whether you're talking true hardware resolution or enhanced resolution, there isn't a scanner available that gives you more "dots per dollar" than Relisys.

More Quality. Relisys' dust-free Cold Scan Technology gives you unprecedented accuracy.

More Value. Every Relisys scanner comes bundled with a bunch of free software, like Adobe Photoshop, Caere Omni Page Direct OCR and more. Some models even include a free transparency adapter!

All this and more at prices that are about half as much as you'd expect to pay.

order direct
1-800-944-8855

Customer Support Hotline:
800-677-3888

Express Direct, 1801 W. Larchmont Ave., Chicago, IL 60613

These offers expire August 31, 1994. Prices subject to change without notice. A 25% surcharge applies to American Express purchases. All returned orders may be subject to a minimum 5% restocking fee plus return shipping. Call for manufacturer's RMA before returning. Software, unless defective, cannot be returned after it has been opened.

Circle 262 on reader service card
CD-ROM EXPO & CONFERENCE
OCTOBER 5-7, 1994
WORLD TRADE CENTER • BOSTON, MASSACHUSETTS

Information—At Your Fingertips

CD-ROM delivers a world of information on a disc... information that can sharpen your competitive edge — save thousands of man-hours — increase productivity — slash costs — and bolster your bottom line.

CD-ROM Expo is a complete exhibition and conference, giving you an up-close look at a panorama of products and services, and steering you toward the brightest opportunities in CD-ROM publishing and CD-ROM power usage. Here you’ll learn about the most useful CD-ROM hardware, software, and services — along with applications for training, sales, marketing, advertising, technical support and documentation, records management/archiving, and much more. If your organization’s goal is profitability, productivity, or both — CD-ROM Expo will guide you there, by showing you how to put the enormous power of multimedia, digital video and the entire optical publishing industry to work for you!

Across All Platforms

Hundreds of exhibits and a choice of two complete Conference Programs will help you explore the potential of CD-ROM on all platforms and formats — and provide pointers on how to keep from drowning in this sea of opportunity.

Two Great Conference Programs

THE DYNAMICS OF CD-ROM AND DIGITAL PUBLISHING A solid overview for managers and entrepreneurs interested in strategizing CD-ROM production and sales, as well as maximizing the use of CD-ROM in their organizations.


THE DIGITAL VIDEO SYMPOSIUM It’s an opportunity to attend full-day seminars and learn from the experts how to create an interactive training CD, put together a professional presentation, incorporate animation, sound and graphics elements, use digital video in CD-ROMs, what you need to know about platform development issues, and what the agency of the future needs to know.
Pre-Register Now For Super Savings

all directly and mention "CD-ROM Expo" when making reservations at these participating hotels:

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Phone Numbers</th>
<th>Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston Park Plaza Hotel</td>
<td>64 Arlington Street, Boston, MA 02116</td>
<td>(617) 226-2000</td>
<td>$125-$135</td>
</tr>
<tr>
<td>Colonial</td>
<td>120 Huntington Avenue, Boston, MA 02116</td>
<td>(617) 474-7000</td>
<td>$175-$190</td>
</tr>
<tr>
<td>Holiday Inn Boston/Government Center</td>
<td>5 Blossom Street, Boston, MA 02114</td>
<td>(617) 742-7530</td>
<td>$149-$165</td>
</tr>
<tr>
<td>Hyatt Regency Cambridge</td>
<td>575 Memorial Drive, Cambridge, MA 02139</td>
<td>(617) 492-1234</td>
<td>$165-$185</td>
</tr>
<tr>
<td>Le Meridien</td>
<td>250 Franklin Street, Boston, MA 02110</td>
<td>(617) 431-1900</td>
<td>$195-$195</td>
</tr>
<tr>
<td>Swissôtel Boston</td>
<td>One Avenue de Lafayette, Boston, MA 02111</td>
<td>(617) 421-2600</td>
<td>$145-$165</td>
</tr>
</tbody>
</table>

Pre-Register by September 9 and save up to $100

Choose your package:
- Package A: $595.00 (pre-registration by September 9)
- Package B: $15.00 (after September 9)

Save $10-$100 off the on-site registration price when you pre-register. Save time, money, and avoid the crowds, by filling out the registration form below and mailing it before September 9.

Make sure you select the appropriate package and mail your form to:

CD-ROM Expo & Conference
P.O. Box 4010
Dedham, MA 02027

Call For
800-945-3313

Exhibition Hours
October 5-6
10:00am-5:00pm
October 7
10:00am-3:00pm

Conference Hours
October 5-6
8:30am-5:00pm
October 7
8:30am-3:00pm

Pre-Register and Save!
REMOVABLE OPTICAL DISK SYSTEM
8 MB/Sec Data Transfer Rate - 5.2 Gigabyte Capacity

Finally a storage system that can store it all. Introducing Pinnacle’s Patent Pending Orray™ technology.

The Pinnacle Orray™ is the world’s first optical drive system to utilize multiple heads and multiple disks - similar to hard disk technology. The Orray™ can perform as fast as most hard disk drives, with the added benefit of removable, reliable, inexpensive optical media. Each color-coded media set holds up to 5.2 Gigabytes of data.

FEATURES
- Patented multi-head/multi-channel
- High sustained data rates
- Multi-parallel RISC processor system with 100 MHz of processing power
- Intelligent FAST SCSI-2 processor
- System appears as a standard SCSI direct access drive
- Flash EPROM for on-site firmware upgrades
- Inexpensive removable optical media sets
- Front panel display and keypad for diagnostics and device settings
- Plug and play for MAC, PC, Sun, HP, Silicon Graphics and others

With its multi disk/multi channel architecture, speeds can be achieved to store all types of data... Digital Video, Digital Audio, Graphics/Prepress, Color Imaging, Animations, Databases, Server Applications.

The versatility of the Pinnacle Orray™, with its intelligent RISC processor controller, allows for operation in multiple environments. In streaming mode the Orray™ can be used for Digital Video or Digital Audio with a sustained data transfer rate up to 8MB per second. In transaction mode the Orray™ can be used as a file server or database storage system with its advanced intelligent segmented caching controller (up to 64MB of RAM). Multiple transactions can be executed quickly and much faster than traditional hard disk arrays on a network. All settings including operational modes, SCSI addresses, and status indicators are controlled and viewed from a front panel LED for easy access and identification.

The Pinnacle Orray™ is the future of data storage. For more information or to order call: 800.553.7070

Pinnacle Micro
THE OPTICAL STORAGE COMPANY®
19 TECHNOLOGY • IRVINE, CA 92718, USA • (800) 553.7070 • INT'L (714) 727-3300 • FAX (714) 727-1913

Trademarks: Orray of Pinnacle Micro, Inc. All trademarks and registered marks to their respective owners.

Circle 178 on reader service card
Where Are They Now?

An update on seven troubled companies and how to find support

RECENTLY I'VE RECEIVED inquiries from readers asking about the status of several Macintosh companies. In response to those requests, here's an update on Applied Engineering, Business Sense, Dove Computer Corporation, Golden Triangle, Pastel Development Corporation, Saturea Corporation, and Thunderware. Golden Triangle and Thunderware are in business and selling products. Read on for details on those companies and the rest.

Open for Business

The developer of TimesTwo, Golden Triangle, fell on hard times earlier this year but is "very much in business, selling and supporting Times Two 2.0 and DiskTwin and developing new products," said company president John A. Hamon. In March the San Diego–based company laid off its employees temporarily, and in April it cut the price of its TimesTwo 2.0 driver-level compression package to $59 from its original $149. Golden Triangle has reorganized to reduce staff and expenses and to resolve debt. Currently the company has six full-time employees.

Hamon says, "The compression market literally evaporated last autumn." He traces his company's problems to several factors, including the decline in hard disk prices, public mistrust of compression, and problems with the first versions of compression software from Golden Triangle and others. Despite those setbacks, Golden Triangle continues to promote TimesTwo 2.0 and remains committed to the Mac market.

Longtime Apple developer Thunderware is probably best known among Macintosh users for its LightningScan, the first hand-held scanner for the Mac. The small company is still in business but is functioning "at the most rudimentary level," according to Victor Bull, the company president and a co-owner. "We have not yet pulled the plug. We didn't go bankrupt. We wanted to pay our suppliers and our employees."

Most employees have been laid off, and the company is conducting business by fax at 310/254-3047, including arranging to repair products under warranty. As of June, Thunderware continues to sell products, including software upgrades, based on availability.

Missing in Action

According to an attorney representing Pastel Development Corporation, the New York–based company is negotiating a sale of its assets and has not filed for bankruptcy. The attorney could not confirm whether the company was still selling or supporting its popular DayMaker personal information manager. A woman reached in May at one Pastel phone number said the office had been closed. At press time, the company's office telephones had been disconnected.

Out of the Running

Dallas-based Applied Engineering billed itself as "Apple's oldest and largest third-party developer." It began business in 1979 and closed its doors this spring. AE's product line included accelerator boards, a 16-bit video board for LCs and Performas, and two PowerBook battery charger-conditioners.

Lind Electronic Design of Minneapolis (612/927-6303) has said it will provide technical support and repair services on AE battery chargers purchased before May 1993. According to Lind, it supplied AE with those chargers until that time and sells the same models under its own name. (A company called Interex bought the remaining stock of battery chargers from AE and is reselling them under its own name. Interex can be reached at 316/524-4747.)

Business Sense was formed in April 1992 to market the accounting package called Business Sense (see Conspicuous Consumer, October 1992). It also bought the rights to distribute Dollars and Sense. At some point Business Sense became Software Developers Consortium. In April of 1994, company president Ted Wood posted a message in the Business Sense forum on America Online confirming that Software Developers Consortium was no longer in business and stating that he wanted to find buyers for the distribution rights to the programs.

John Weisberg of Resource Management Systems has volunteered to provide online technical support for Business Sense users through AOL (BizSense01), CompuServe (70673,166), and GEnie (J.WEISBERG2). Brian Lawson does the same for Dollars and Sense users on AOL (BizSense03). Dollars and Sense users can export their records to other programs, including Intuit's Quicken and Survivor software's MacMoney.

Just before it died, Software Developers Consortium alienated some Macworld readers by sending them unsolicited copies of Business Sense 2.3 and offering them a free ten-day trial. After that time, according to the direct-mail promotion, "you can choose to return it, or . . . if we don't hear from you, we'll send you an invoice for $399 which includes: FREE upgrades for the next 12 months, and a complete technical support program." (A Federal Trade Commission rule gives consumers the continues
right to keep unsolicited products without paying for them.)

Last fall Dove Computer shipped its final product, a portable printer. By December the company was effectively out of business, according to president Dave Valliere, although former employees said Dove sputtered into the spring. Company assets were sold to an investor that Macworld was unable to contact. The Wilmington, North Carolina–based company got its start in the Mac market by selling memory and later made a name for itself with a line of popular fax modems. In 1992 Dove filed Chapter 11 and never emerged from reorganization.

STF Technologies wrote the original software for Dove fax modems, and its Fastst' 3.0 software supports Dove products' fax capabilities, according to Steve Myers, STF vice president of product management. Delrina's FaxPro supports Dove fax modems, and other programs may as well, so Dove customers who simply want fax software that will be supported can move on. Unfortunately, neither STF nor Delrina supports the voice capability of the DoveFax-V modem.

Saturae Corporation was a promising storage newcomer in August 1993, when Macworld selected Saturae's Edge 1000r as an Editors' Choice for 1GB to 1.3GB drives (in the feature "Supersonic Storage"). The Cambridge, Massachusetts–based company went out of business in December 1993, according to one industry source. The phones are currently disconnected and Saturae was unable to locate a company representative for comment. One reader has written to chastise Macworld for recommending the Edge 1000r, since Saturae cannot honor the five-year warranties it advertised. That's a good point, but it's tough to foretell the future.

Foretelling the Future

In fact, thousands of businesses close down each year, and a number of them will be Mac-related enterprises as the market continues to mature and large companies squeeze out smaller ones. That's a shame, because innovative small companies often spur development in the computer industry. If no one trusted small companies, Apple might still be in a garage somewhere, and Bill Gates might be a college professor.

Large, established businesses tend to be more stable, but they're not immune to market forces or bad management, as these cases show. Unless you have a crystal ball, there's no easy way to predict a company's collapse or protect yourself from the fallout. Even large companies that run credit checks to analyze the financial stability of their customers get stuck with uncollectible debts every year—and they have resources far beyond those of individual consumers.

That said, using a credit card will help protect you from shaky companies. Companies in trouble sometimes charge credit cards for products that haven't shipped, then go out of business. So dispute any charge for a product you haven't yet received, and don't be lulled into passivity by the reassurances of the company that the product is on its way.

If a company does go under owing you money, immediately file a proof-of-claim form with the bankruptcy court in the area in which the company is located (the court clerk's office can send the form). That will help you if the company has any remaining assets and has actually filed for bankruptcy, although it's no guarantee that you'll see any greenbacks.

Being orphaned is no fun. But it's a risk we take as part of the wacky world of computing. If you need support for an orphaned product, a local user group, bullet-in board service, or national online service may be able to connect you with other users who've experienced the same problem and know a solution.

Research assistance by SUSANNE COURTEAU.

Send nominations for sainthood to Service Heroes, Macworld, 501 Second St., San Francisco, CA 94107, or via Internet (branscum@AOL.com). Conversely, drop Conspicuous Consumer a line if a company is ignoring you.
Signature Software
Personal Font™
The Original Cursive Handwriting Font
Version 1.1
Patent Pending

Font Technology Breakthrough!
Now you can add your own handwriting to the Font Menu! Signature Software's Personal Font is a custom font which can reproduce your handwriting - including the exact way that you shape and connect your letters. This unique patent pending technology will actually vary the shapes of your letters depending on the characters around them. No other font can do this!

PERSONALIZE YOUR CORRESPONDENCE
With Personal Font you can join the personal impact of your own handwriting with the convenience and power of your personal computer. Imagine running your spell checker on your handwriting! Use your word processor's cut and paste features to polish up your handwritten letters. Add a friendly handwritten P.S. note to your business correspondence. Or even sign your FAX-modem messages!

CREATE YOUR FONT TODAY!
For your own Personal Font, simply write the 86 words as well as the capital letters, numbers and punctuation found on the back of this page. From that sampling, Signature Software font designers will individually convert your handwriting into a custom font which duplicates the unique way you create each word - not just each letter. Your font will include your signature and will even have a name which you specify.

HANDWRITING FROM THE KEYBOARD.
Personal Font captures your handwriting at its best. Your font has the same style and character as your own handwriting - without the inconsistencies and inkblots! With your own Personal Font in the Font Menu you'll find yourself creating handwritten notes without hesitation - straight from your keyboard!

Since each order is custom, please allow two to four weeks processing time. If you're in a hurry, for an extra $25 Signature Software will ship your order within five working days.

Actual Handwriting vs. Personal Fonts:

Peter's actual handwriting:
Peter's Personal Font:
Peter Matthews - Toronto, ON

Colin's actual handwriting:
Colin's Personal Font:
Colin Johnson - Portland, Or

Your Personal Font can be installed and used as simply as an "ordinary" font. It appears in your menu and functions just like any other typeface in your computer.

System Requirements:
Mac - System 6.05 or higher
PC - Windows 3.1
Postscript printers or interpreters. On non-Postscript printers, characters will be disconnected, just as they appear on the screen.

Signature Software, Inc.
489 N. 8th St. Suite 201
Hood River, OR 97031
1-800-925-8840
1-503-386-3221

There's no other font like your Personal Font, and here's how to order!

ORDER YOUR FONT!
Send your completed form to:
Signature Software, Inc.
489 N. 8th St. Suite 201
Hood River, OR 97031

Because each order is custom please allow 2 to 4 weeks. Add $25 for 5 day processing. (48 hour processing is available.)

* Special handling includes personalized disk, personal test document and copy of original form.

NAME

COMPANY

ADDRESS

CITY

STATE

ZIP

COUNTRY

PRODUCT

CARD NUMBER

CARD EXPIRATION

PHONE

CARDHOLDER'S SIGNATURE

YES! Rush me my Personal Font in 5 working days for $25 extra

YES! Include SUPERscripts with my Personal Font order for the special bundle price of $139

For more info circle Reader Service Number 330 M4909
Name: ____________________________ Phone #: ____________________________

Signature Software
Personal Font
The Original Custom Cursive Handwriting Font

SAMPLE FORM INSTRUCTIONS
1. Write your signature within the Signature box. For best results, try to ensure that the signature fits within the box.
2. Write the words shown within each box using the broken lines as a base. Begin each word on the left side of the boxes. Characters can be connected or disconnected or a combination of both.
3. Write naturally and consistently. Practice first on a separate sheet of paper. Remember, what you write here will become the final font.
4. For best results use a rollerball or finetip pen. Do not use ballpoint pens or pencils!
5. Use the grid lines in the boxes as an aid to maintain consistent height and slant. Be sure capital letters are proportional to lower case letters.
6. Write your capitals normally. Consider the appearance of capitals when at the beginning of words AND when words are all capitalized. Don't forget the punctuation!

7. Name your font and complete the ordering information on the front of this form. Indicate PC or MAC on card!

NOTE: Strike out mistakes and write corrections nearby. Signature Software can even make changes after you receive your font!

NAME YOUR FONT!
The name must be seven alphabetic characters or less

Signature (your name) ____________________________

bowman

forgiven

jewishes

cybels

lysozyme

mojxe

novque

oxyfobe

polygyne

quote

rybema

waywhips

xylosse

yachtque

zigzag

cyclops
doubt

grocery

hydrodyke

ionize

jewishes

kagvels

lysozyme

mojxe

novque

oxyfobe

polygyne

quote

rybema

waywhips

xylosse

yachtque

zigzag

Copyright ©1994 Signature Software, Inc.
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

- **BLACK-AND-WHITE MONITORS, May 93**
  - Portrait monitor: 15-inch Gray Scale Portrait Display; Mirror Technologies, 612/633-4450; $399, with video-display board $549.
  - Two-page monitor: L-View MultiMode; Sigma Designs, 510/770-0100; $1099, with video-display board $1398. MD 202 Two Page Display; Mobius Technologies, 510/654-0556; $699; with video-display board $798.

- **COLOR MONITORS, Oct 93**
  - 16- and 17-inch: EgoView 17; Sigma Designs, 510/770-0100; $1349. MultiSync 5FG; NEC Technologies, 708/860-9500; $1355 (NEC's estimated dealer price).
  - Small Color Monitors, Jan 94
    - 14-inch display: Sony CPD 1430; Sony Corp. of America, 800/222-7669; $779.95. Nanao FlexScan F3140+V; Nanao USA, 800/800-9202; $799.

#### NETWORK HARDWARE

- **HIGH-SPEED FAX MODEMS, Oct 93**
  - Teleport Gold and Silver with Global Fax; Global Village Communication, 415/390-8200; Gold $499, Silver $429.

#### POWERBOOK TOOLS

- **Duo Docking Connectors, Feb 93**
  - PowerLink DeskNet; E-Machines, 502/646-6699; $699.

#### EXTERNAL HARD DRIVES, Feb 93

- Companion 120; APS Technologies, 800/874-1428; $599. PacketDrive 120MB; La Cie, 503/520-9000; $699.

#### INTERNAL FAX MODEMS, Feb 93

- PowerModem series; PSI, 408/559-8544; $195 to $495. PowerPort series; Global Village Communication, 415/390-8200; $229 to $499.

### Printers

- **COLOR PRINTERS, Aug 94**
  - Low-end ink-jet: DeskWriter 560C; Hewlett-Packard, 800/752-0900; $719.
  - Solid ink-jet: Phaser 300i; Tektronix, 503/682-7377; $999.
  - Thermal-wax transfer and color laser: Phaser 220; Tektronix, 503/682-7377; $999.
  - Dye-Sublimation Printers, Jul 94
    - Prepress proofing—tabloid size/fastest: Phaser 480; Tektronix, 503/682-7377; $14,995.
    - Prepress proofing—tabloid size/most complete: Rainbow, 3M, 612/733-1110; estimated street price of $20,000.
    - Prepress proofing—letter size: ProofPositive Full Page; SuperMac Technology, 408/541-6100; $799.
  - General publishing and business: Phaser IISDX; Tektronix, 503/682-7377; $999.

- **PERSONAL PRINTERS, Sep 94**
  - Ink-Jet: DeskWriter 520; Hewlett-Packard, 800/752-0900; $499.

- **WORKGROUP PRINTERS, Feb 94**
  - High-speed: Hewlett-Packard 4Si MX; Hewlett-Packard, 800/752-0900; $5499.

#### SCANNERS/IMAGE CAPTURE

- **ELECTRONIC CAMERAS, Sep 94**
  - Apple QuickTake 100; Apple Computer, 408/996-1010; $749.
  - Low-Cost Color Scanners, Nov 93
    - $1300 to $1600: La Cie Silverscanner II; La Cie, 503/520-9000; $1599. Hewlett-Packard ScanJet IIc; Hewlett-Packard, 800/752-0900; $1599.
    - Under $1300: IImation 600 Plus Color Scanner; Mirror Technologies, 612/633-4550; $1299.

- **OCR, Nov 93**
  - OmniPage Professional; Caere Corp., 408/395-7000; $999.

- **SYSTEMS/STORAGE**

- **DOUBLE-SPEED CD-ROM DRIVES, Jul 93**
  - Sheer speed: Pioneer DRM-504X; Pioneer, 800/444-6784; $1495.
  - Overall value: AppleCD 300; Apple Computer, 408/996-1010; $999.
  - Budget choice: NEC MultiSpin 38; NEC Technologies, 708/860-9500; $465.

- **HIGH-SPEED HARD DRIVES, Aug 93**
  - SCSI-2 adapter: QuickSCSI; PLI, 800/288-8754; $499.

- **MACINTOSH UPGRADES, Jun 93**
  - SE/30 accelerator (50MHz or 33MHz): Universal PowerCache; DayStar Digital, 404/967-2077; 50MHz $999 (with FPU), 33MHz $449 (without FPU).
  - LC and LC II upgrades: Macintosh LC III Logic Board Upgrade; Apple Computer, 408/996-1010; $599.
  - Mac II accelerators: Radius Rocket 2SI; Radius Rocket 33; Radius, 408/434-1010; 2SI $1199, 33 $2499.
    - Universal PowerCache series; DayStar Digital, 404/967-2077; $449 to $999.
    - 1IFs SCSI accelerator: QuickSCSI; PLI, 800/288-8754; $499.
    - Quadra static-RAM cache card: FastCache Quadra; DayStar Digital, 404/967-2077; $299 for Quadra 700 and 900, $449 for Quadra 800 and 950.

- **OPTICAL DRIVES, Dec 93**
  - 3½-inch: Epson OMII 5010; ClubMac, 800/258-2622; $599.
  - 5¼-inch: Sharp JY-750; ClubMac, 800/258-2622; $1829.
  - Infinity Max Optical 11m; Peripheral Land Inc., 800/288-8754; $4113.

- **VIDEO/DISPLAY**

- **24-BIT VIDEO CARDS, Apr 94**
  - Inexpensive acceleration: PrecisionColorPro 24XP; Radius, 408/434-1010; $199.
  - Full-featured acceleration: Thunder II GX; SuperMac Technology, 408/341-6100; $4499.

- **HIGH-END VIDEO EDITING, Jun 94**
  - Presentation video: MoviePak Pro Suite; Raster-Ops, 801/785-5750; $4199.
  - VideoVision Studio; Radius, 408/434-1010; $4499.
  - Corporate video (offline): Media Composer 400s; Avid Technology, 508/640-6789; $14,995.
  - continues
Editors’ Choice

Software

ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
Small-business systems: M.Y.O. B., Teleware, 201/586-2200; $199.
Home office/personal finance: MacMoney; Survivor Software, 310/410-9637; $119.95.

BUSINESS TOOLS

STATISTICS, Oct 93
Exploratory data analysis: DataDesk 4.1; Data Description, 607/257-1000; $595.
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; $79.99.

COMMUNICATIONS/NETWORKS

COMMUNICATIONS SOFTWARE, Aug 94
Basic connectivity: 2Term; David P. Alverson (no phone number available); $30.
Terminal emulation: Crosstalk for Macintosh; Digital Communications Associates, 404/442-4000; $195.
Internet exploration: VersaTerm; Synergy Software, 215/779-0022; $125.
HIGH-SPEED FAX MODEM SOFTWARE, Oct 93
FaxVisual, 816/886-9800; $79.

NETWORK CONNECTIVITY, Sep 93
NetWare for Macintosh; Novell, 801/429-7000; $495 for 5-user license to $2295 for 200-user license.

PROTOCOL ANALYZERS, Jul 94
EtherPeek, AG Group, 510/937-7900; $795.

SOFTWARE ROUTER, Jul 93
Apple Internet Router 3.0; Apple Computer, 408/996-1010; Basic Connectivity Package $499.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0022; $149.

GRAPHICS

3-D DESIGN, Aug 93
Price for performance: Ray Dream Designer 2.0.4; Ray Dream, 416/960-0165; $299; Alias Sketch 1.5; Alias Research, 416/362-9181; $995.
All-in-one solution: Infini-D 2.5; Specular International, 415/253-3100; $695; Stratavision 3D 2.6.1; Stratavision, 801/628-5216; $995.

CLIP ART’S GREATEST HITS, Jae 94
Overall collection: ClickArt Studio Series; T/Maker Company, 415/962-0195; $99.95 per volume; Electronic File subscription service; Dynamic Graphics, 800/255-8800; $67.50 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, 800/466-0334; $99.95 to $129.95 per volume; CD-ROM $499; Typographers’ Ornaments; Underground Grammarian, 609/589-6477; $25 per volume; ten TIFF albums $200; EPS volumes $50 each.

DRAW PROGRAMS (LOW-COST), Sep 93
Budget draw/paint: UltraPaint; Deneba Software, 305/566-6444; $79.
 Beginners’ program: Aldus SuperPaint; Aldus Corp., 619/558-6000; $114.95.
Overall: Canvas; Deneba Software, 305/566-6444; $399.

FONT BUYER’S GUIDE, Mar 94
Text-face collection: Type On Call CD-ROM; Adobe Systems, 415/961-4400, 800/682-3623; $99 (includes the ability to unlock two families from preselected packages) plus $25 to unlock individual faces or $69 to $179 for unlocking families.
Display/decorative-face collection: Fontek; Letterset, 201/845-6100; $39.95 per face.
Bargain collection: Monotype ValuePack; Monotype, 312/855-1440; $89 for 27 fonts.

IMAGE DATABASES, Oct 93
Aldus Fetch 1.0; Aldus Corp., 206/628-5739; $295.
Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1590; $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., 408/688-8800; $399.
Image-editing program: Adobe Photoshop 2.5.1; Adobe Systems, 415/961-4400; $895.

INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Feb 94
ClarisWorks, Claris Corporation, 408/727-8227; $299.

ONLINE SERVICES

ONLINE SERVICES, Aug 94
E-mail: America Online; America Online, 703/893-6288; basic monthly fee $9.95.
Reference: CompuServe; CompuServe Information Service, 614/457-0802; basic monthly fee $8.95.

ORGANIZATION/PRODUCTIVITY

CALENDARS, Jul 93
Alarm system: First Things First; Visionary Software, 503/246-6200; $79.95.
Smart Alarms Plus; JAM Software, 203/630-0055; $75.
All-around scheduler: Now Up-to-Date; Now Software, 503/274-2800; $99.
Meeting scheduler: Meeting Maker; On Technology, 617/374-1400; five-pack $495.

GRAPHING SOFTWARE, Aug 94
DeltaGraph Pro 3 3.0.4; DeltaPoint, 408/648-4000; $195.

SALES-AUTOMATION SOFTWARE, Oct 93
Contact Ease; WestWare, 619/274-5503; one user $395; five users $1495; CBE5, Collegiate Business Software, 512/345-9964; $495.

TEXT-RETRIEVAL SOFTWARE, Dec 93
Small system: On Location; On Technology, 617/374-1400; $129.
Multiterm system: Personal Librarian; Personal Library Software, 301/990-1155; $995.

PRESENTATION TOOLS

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Aldus Corp., 206/622-5500; $495.

UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
Application-independent document distribution: Common Ground; No Hands Software, 800/598-3821; $189.95.
Book-length documents: FrameReader; Frame Technology, 800/843-7263; $84.95.

PRINTING, Sep 93
PC-printer cable packages: PowerPoint; GDT Softworks, 604/291-9121; $149.

VIRUS KILLERS, Jul 94
Commercial software: Virex; Datawatch, 919/549-0711; $99.95.
Free software: Disinfector; free from online services.

VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, Jun 94
Virtual memory software: Virtual 3.0; Connectix Corp., 415/571-5100; $99.
Memory-boosting software: RAM Doubler 1.0.1; Connectix Corp., 415/571-5100; $99.
The only statistics package you'll ever need.

“For Mac-based statistical analyses and presentations, choose SYSTAT.”

P. Wayner, BYTE. 1·92

The most comprehensive and powerful statistics software for Macintosh now provides the most advanced multivariate general linear hypothesis program. Yet it remains the easiest to use—with a friendlier-than-ever interface.

New SYSTAT 5.2 for Macintosh enables you to perform statistical analyses you can’t do with any other Macintosh statistics program. It offers more advanced statistical procedures, more types of graphs, and greater data management capabilities.

More statistics, from basics to the most sophisticated

A full range of univariate and multivariate statistics—including multidimensional scaling and nonlinear modeling.

Basics include descriptive statistics, t tests, correlations, autocorrelations, simple regression, and frequency tables. With a few clicks you can turn each statistic into a graph.

SYSTAT offers the most advanced multivariate general linear hypothesis program available for Macintosh. SYSTAT can estimate and test any univariate or multivariate model including:

REGRESSION: simple linear, multiple linear, stepwise, polynomial, mixture, and weighted;

ANOVA (analysis of variance): one-way, two-way, factorial, nested, unbalanced, post-hoc tests, mixed, repeated measures, split plot, multivariate, means model coding;

MULTIVARIATE: discriminant analysis, principal components, canonical correlations.

Just point and click

SYSTAT is truly Mac-like. Just point and click: SYSTAT works with the pull-down menus, dialog boxes, icons, buttons and graphics tools you’re accustomed to on the Mac.

The most graphics

No other statistical or graphics package can produce all the scientific and technical graphs available on SYSTAT—nor surpass its ease of use. And you can save SYSTAT graphics and data in QuickTime™ movie file formats. Graphics options include:

• linear, quadratic, step, spline, polynomial, LOWESS, exponential, and log smoothing
• confidence intervals and ellipses
• scatterplot matrices
• single, multiple, stacked, and range bar graphs
• single and grouped box plots
• stem-and-leaf diagrams
• histograms
• log and power scales
• maps with geographic projections
• Chernoff faces
• pie charts
• contour plots
• control charts
• 3-D data and function plots
• complete color spectrum

For more information, upgrades, and demo disks phone:

708-864-5670

Circle 29 on reader service card

© 1993 SYSTAT, Inc.
If you think you just get some floor space, think again.

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/Canada—October 18-20, 1994
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.
**Star Ratings**

OVER 300 HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

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.

Vendors: 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, ACI US, 408/252-4444, S295. 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-fledged 4D. Oct 94
- Acrobat Exchange, Acrobat Distiller, Adobe Systems, 415/951-4400, a Mac-compatible word processor, 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
- Claris Impact 1.0, Claris Corp., 408/727-8227, S399. 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
- ClarisWorks 2.0, Claris Corp., 408/727-8227, S299. Integrated program has more features, is easier to use and faster, and has better integration among modules than other programs. Aug 93
- Common Ground 1.0, No Hands Software, 415/802-5800, S189.50. Simple, robust document-interchange system is the clear choice for modest document-distribution jobs. In tests, it worked easily with a Mac, but not so well with a different system. Oct 93
- Cricket Graph III 1.5, Computer Associates International, 516/342-6000, S129. Basic and foolproof charting program produces cleaner charts than Excel with little effort, although its feature set is fairly modest. Apr 94
- DeltaGraph Pro 3, DeltaPoint, 408/648-4000, S195. 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
- EasyFlow 1.1, Haven Tree Software, 613/544-6035, S229. The rough edges and distinctly Mac-like attributes of this flowcharting software reflect its DOS heritage, but on the whole it's easy to use. Sep 93
- Helix Tracker 1.0, Helix Technologies, 708/465-0242, S493. Well-designed workgroup-document manager has strong audit and annotation features; imposes just the right amount of administrative discipline. For large documents, however, Ethernet will look mighty attractive. Nov 93
- Lotus Notes 3.0, Lotus Development Corp., 617/577-8500, S455 per client. Well-organized, robust, and flexible business data system demands a full-time administrator, preferably with considerable program engineering experience, for effective use. Sep 93
- Map II 1.5, ThinkSpace, 519/661-4006, S395. Well-structured program has most of the functions of 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
- Marco Polo 2.0, Mainstay, 805/484-9400, S395. Inexpensive, easy-to-use product allows you or your groupware to archive and retrieve documents, whether in electronic or paper form. Queries are easy to construct and searches are handled quickly. Sep 93
- Market Master Manager 3.5, Breakthrough Productions, 916/265-0911, S935 to S1995. Sales automation software is designed to keep track of contacts, generate mailings, and make sure that leads don't fall through the cracks. It includes a remote module, but it has some odd user-interface features. Oct 93
- Micro Planner Manager 1.1, Micro Planning International, 303/757-2216, S695. When you require cross-project resource sharing and leveling for a reasonable price, this project-management software has the edge. It has a generally intuitive interface, though there's a steep learning curve for its advanced features. Nov 93
- Microsoft FoxPro for Macintosh 2.5, Microsoft Corp., 206/982-8080, S495. 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
- Office Tracker 1.1, Milum Corp., 512/327-2255, S195 to S995. The efficient user interface of this software sign-out board, in both single-user and networked versions, makes it easy to learn and use; but it has some minor flaws. Dec 93
- Pablo 2.0.1, Anodyne Computing, 613/548-4359, S695. Database-reporting tool is one of the most effective end-user data-reporting tools yet evolved. It 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
- Project Scheduler 5, Scitor Corp., 415/570-7700, S695. For most midrange project-planting, this program's many hits outweigh its few misses. It goes beyond the requisite scheduling options, with inflation factors and unlimited projects in memory, and it conforms to accepted standards, so you get consistent, predictable results. Aug 93
- TopDown 4.0, Kaetron Software Corp., 713/298-1500, S435. Flowcharting program's support for custom symbols, multiple palettes, 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
- Useful Voice Processor for Macintosh 1.1v7 (1.1v9), Useful Software Corp., 508/774-8233, S179.95. Dictation software lets you record and transcribe on a Mac. It has some useful features, but you must take uncommon care to avoid crashes. Dec 93

**COMUNICATIONS/NETWORKS**

- AccessPC 3.0, Insignia Solutions, 415/694-7600, S129.95. Utility translates most word-processor 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, Digital Communications Associates, 404/442-4000, S195. Connectable communications product has a feature set that well matches its competition. Still, the script editing is complex and you must manually enter phone numbers each time you use it. Apr 94
- Delrina FaxPro for Macintosh 1.0, continues
**BUYERS' TOOLS**

**Star Ratings**

Delrina Corp., 408/363-2345, $129. Fast, efficient fax software has an excellent address-book feature but also has some interface quirks and minor bugs. Feb 94

DOS Mounter Plus 4.0, Dayna Communications, 801/629-7200, $100. File-transfer and translation utility works with floppies, removable drives, and network volumes and supports wild cards in DOS extensions. Apr 94

EtherPeek 2.0.3, LocalPeek 2.0.3, 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 are a worthwhile investment. Jan 94

MacLink Plus/Translators Pro 7.5, DataViz, 203/268-0030, $149. If your PC files are in arcrix format, 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

On The Road 1.1, Connectix, 415/571-5100, $99. Helpful PowerBook look at what's hooked up to your computer and adjusts accordingly—for example, printing when a printer is available and otherwise deferring printing. It only supports some hardware, however, so check before buying. Dec 93

PowerShare Collaboration Servers, Apple Computer, 408/996-1010, $999. Before this collaboration software was ready for prime time, Apple needed 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. Aug 94

Silver Cloud 1.2, AG Group, 510/937-7900, $495. If you are administering 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, Aladdin Systems, 408/761-6200, $126. 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 1.01, 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 added-in PC card for your Mac is more efficient. Mar 94

SoftWindows 1.0, Insignia Solutions, 415/694-7600, $499. You can run Windows software on a Mac 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, 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 or 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, 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 more, albeit with greater complexity. Without printing, alarms, triggers, or true protocol support, this product misses the mark. Jun 94

VersaTerm 5.0, 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

**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

Aldus Fetch 1.0, Aldus Corp., 206/622-5500, $295. The rich feature set and network support of this image-cataloging software make it a clear winner. Although cataloging is slow, users have fine control of the depth and compression of thumbnails. Aug 93

FontMonger 1.5.7, Ares Software Corp., 415/578-9090, $149.50. Font-conversion utility provides cross-platform, cross-font conversion and makes it easy to create composite, subscript, superscript, and rotated characters. Sep 93

Fototune 1.1, Agfa Division of Miles, 508/656-5600, $795. Color-management software has a capable engine, but it's not the complete color management system Agfa touts. Invisible tech support and poor documentation were only part of the problem. Apr 94

FrameMaker 4.0, 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. May 94

Kodak ColorSense 1.0, Eastman Kodak, 716/253-0740, $499. Color-management system gives average users access to a reasonable level of color consistency at a reasonable price. It does not make color separations. Oct 93

Print Shop Deluxe, Braeburn Software, 415/382-4400, $50. Even the most ham-fisted can create professional-looking greeting cards, signs, banners, letterhead stationery and calendars with these plug-ins. They fit into most word processors and work well with some minor fixes. Aug 94

QuarkXPress 3.2, Quark, 303/894-3030, $759. This upgrade adds the ability to color images and is a must-have for professional color publishers who use Quark. For others, the enhancements are welcome but minor enough that they provide little incentive to upgrade. Nov 93

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**

The Cruncher, Davidson & Associates, 310/793-0600, $59.95. If you want to teach a child spreadsheet basics, this combination educational spreadsheet and business application will do the job. It's creative and easy to use, but slow. Aug 94

Grolier Multimedia Encyclopedia, Grolier 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 timeliness and some hierarchical snafus were slight problems. Jul 94


HyperStudio, Roger Wagner Publishing, 619/442-0522, $179.95. Hypermedia authoring tool supports color and many multimedia functions through easy-to-use dialog boxes, but the interface doesn't always follow Apple guidelines. Dec 93

MacGrade 1.5.5, Calid Software, 800/795-0641, $85 to $245. 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. The lessons are well paced, and the content is generally excellent and diverse. Jan 94

Small Blue Planet 1.2.1, Now What Software, 415/885-1689, $79.95. Nicely integrated collection of fascinating 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**

BlackJack Trainer, ConJelCo, 412/492-9210, $75. Learn the strategies you need to win at blackjack with this program. There are a number of trivial bugs, but they won't get in your way. Oct 93

Crystal Crazzy, Casady & Greene, 408/484-9228, $49.95. Ultra-glossy, superpolished version of the classic Crystal Quest is challenging and fun without being overly difficult. Each level of play retains some old elements, and adds some new ones to keep you on your toes. Jun 94

Daily Sports Quiz 1.0, DreamTime, 619/236-1341, $49.95. If you think you know a lot about sports and love to play trivia games, then this entertaining and informative game is for you. Oct 93

Falcon MC 1.0, Spectrum Holobyte, 510/522-1164, $69.95. Whether you're an armchair jet jockey or an experienced fighter pilot, you're bound to be impressed by the 4-bit color, enhanced graphics, and sophistication of this latest incarnation of the original Macintosh combat flight simulator. Dec 93

Firefall Arcade, Inline Software, 203/435-4995, $49.95. If you loved 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, $99.99. Take a diabolical New York cab ride 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 slow and the arcade sections are hard to control, but overall it succeeds. Jan 94

Indiana Jones and the Fate of Atlantis, LucasArts Games, 415/721-3394, $59.95. In this game, the whip-wielding archaeologist goes looking for continues...
WORK HARD.

Get Where You Need To Be.
MacUser called PopupFolder "absolutely spectacular" and said "it quickly becomes second nature." Why waste your time double-clicking through folders when you could be working already? Hold down the mouse button on any folder anywhere and use the popup menu to open or move any file!

Backup Better Than Ever.
Should your backup utility be simple, or powerful? Redux Deluxe is both! Want to just click the mouse and backup your whole hard disk? Want to backup just the files that changed? Or maybe you want to backup all spreadsheets older than three days every Friday night at 6. It's "powerful, flexible and easy to use," according to MacWEEK. Now bundled with StuffIt SpaceSaver compression utility.

Cool Icons For Hot Projects.
Ditch those boring desktop folders and icons — use Icon 7 to jazz up your icons with style! Its full color palette and graphics editing tools let you design your own custom icons. Or choose from over a thousand cool samples in our included libraries.

PLAY HARD.

Tickle Your Brain.
Three games, eight major awards, one low price! In Three Great Plays, we put our best brain-teasers together for your entertainment. Whether you're into Cogito marbles, Tessereae tiles, or 3-in-Three riddles, we've got hours of fun for your whole family.

Save The World.
Okay, Stormlord — the evil minions of Tarom have invaded your beloved Llyn Cerrig homeland. Will you stand by as the fairies are destroyed? If you're into rich side-scrolling graphics, fantastic sound effects, and axe-wielding Norsemen heroes, you gotta get Deliverance.

Don't Get Burned.
Don't feel pressured, but your first mission could be your last. Firefall Arcade's ferocious fireworms and powerful enemy weapons want to eat you for lunch; fortunately, you're sharp enough (we hope) to snatch the powerups that give your ship the edge. There's arcade style 3-D rendered animation and a cool soundtrack to top it all off.

For work or play, call Inline for the largest selection of award-winning titles! All our titles are available from your favorite software reseller, or you can call us direct!

Call NOW For A Free Catalog! VARS And Resellers Welcome!
800-453-7671 800-775-8300

5-packs, 10-packs and site licenses also available. Call for details.

Inline Software, 800 West Cummings Park, Woburn, MA 01801 phone (617) 935-1515 fax (617) 935-1515.

SEE US AT MACWORLD EXPO BOOTH #5234 WTC Circle 203 on reader service card
Star Ratings

Atlantis and finds its armature to the gills with magical technology and Nazi stooges. If you're not bothered by the story's astonishing sexism, you'll find it diverting. Oct 93

The Journeymen Project 1.0 (1.2), Presto Studios, 619/689-4895, $79.95. Interac-

tive science-fiction epic on CD-ROM is a work of art. The scenes are rich with painstakingly detailed graphics, elabo-

rate models, and subtle textures, but the sluggish pace may leave you impatient and bored. Sep 93

Myst 1.0, Broderbund Software, 415/382-4400, $59.95. The smooth pacing of actions and

sounds in this beautiful CD-ROM game give it a dreamlike

quality. This is a game that's been polished until it shines.

Mar 94

Seven Days in August, Time Warner Interactive Group, 818/955-9999, $59.99. Com-
pelling, interactive documentary on CD-ROM cuts a slice from history and offers August 10 through August 16, 1961 (the building of the Berlin Wall), to viewers in a way that truly
evokes the period. Oct 93

SimCity 2000, Maxis Software, $10/254-9700, $69.95. In essence, your goal with this

marvelous city-simulation software is to build a city and run

it successfully. The game is fascinatingly complex, but it's simply
to use, and the elaborate graphics are so lovely that

it's even fun just to watch. Jun 94

Spectre Supreme, Velocity Development, 415/274-8840, $69.95 to $89.95. The

pleasure of this game comes not in high scores, but in the

almost addictive sense of control you get from moving your

tank around the screen. It's so much fun that it's even fun when

you lose. Dec 93

Spin Doctor, Callisto Corp., 508/655-

0707, $59.95. In the tradition of the best Macintosh

games, this game tests your wits and reflexes alike. It's part

strategy game, part kinetic sculpture. Jun 94

V for Victory: Utah Beach, Three-Sixty

Pacific, 408/879-9144, ext. 23, $59.95. The post-

D-Day conquest of Normandy is re-created in this game; its

strength is the way it blends easy play with complicated

strategy. Some bugs exist. Oct 93

FINANCE/ACCOUNTING

Andrew Tobias' TaxCut 1993, MECA

Software, 203/255-1441, $79.95. The free-form

approach and flexible menus of this tax-preparation

software make filling out your tax return a smooth, almost

relaxing process. The only state versions available are Cali-

fornia and New York. Apr 94

ExpensePlus 1.0, State of the Art,

714/753-1222, $139.95 to $159.95. Software uses

a Newton MessagePad to record expenses, then sends the
data to a Mac to create and print expense reports. While

it's a real time-saver, you'll need AppleScript expertise to

modify the expense reports. Apr 94

Financial Competence 1.5, Competence


tutorial explains how financial statements are compiled and

how they relate to each other, but you could learn the same

things from a book, faster and for less money. And that

might be the more financially competent thing to do. Jul 94

MacInTax 1993, ChipSoft, 602/295-

3110, $69.95. Tax-preparation software provides a

reasonably detailed manual and a reliable, structured inter-

face for building your tax return. Its inability to accept figures

containing amounts in cents or round off to whole dollar

amounts will frustrate some users. Apr 94

MacInTax Tax Planner, ChipSoft, 602/

295-3110, $19.95. Software allows you to construct a

five-year forecast of your tax liability, projecting tax figures

through 1997 in a concise summary format. If you have a

tax preparation program, you can do the same thing by

creating alternative tax returns. Apr 94

MacInTax Tax Savings Guide, ChipSoft,

602/295-3110, $19.95. Simple, straightforward col-

lection of well-written, fully indexed tax tips and suggestions

is designed to help you better understand your tax return

and reduce your tax liability. Although strong in content, it
doesn't allow you to copy and paste, export as a text file, or

even print. Apr 94

MacMoney 4.0, Survivor Software,

310/410-9527, $89.95. Personal-finance software has

new and improved features that will please longtime users,

but it hasn't kept up with the leaders in the field and won't

win many new converts. Jul 94

Managing Your Money 6.0, Meca Soft-

ware, 800/820-7457, $79.95. Personal-finance

program does a good if somewhat roundabout job of keep-

ing track of your total financial picture. Although it isn't as

easy to use as the competition, it excels in tax, investment,

and financial planning. Jun 94

Quicken 4, Intuit, 415/858-6095,

$69.95. Personal-finance software is powerful and easy
to learn, even for a financial neophyte. Although slower

continues

Fusion Digital Media™

presents...

A comprehensive high quality series for

multimedia development

Build superior multimedia productions

with the Fusion Digital Media® Library. Choose from an exciting array of original and

artistically enhanced digital images, custom composed music scores, high quality

compilation QuickTime Movies, and More!

With every Digital Media

Library CD you get...

400 Original and Artistically

Enhanced Images

High Quality QuickTime Movies

Dynamic Morphs

Custom-Composed Music Scores

Navigational Elements

Instructive Demos

Plus these free search and

translation tools...

• DeBabelizer® Lite LE (Mac Only)

• Kodak Image Browser

• Fusion Digital Media®’s exclusive

Digital Image Text Pad® (Mac Only)

• Movie Player

• Windows Video Player

• Enhanced Quicktime MOV’s as a single disk-roots.

• Windows and Mac for design flexibility.

$79.95 for Individual Volumes Special Discount $329.95 for Entire Library

Call now to order 1 800 910 0222

the digital media library

2 0 8 September 1994 MACWORLD Circle 274 on reader service card
Now You Can Cover the World

With The Macworld Global Network.

With the Macworld Global Network, you can start covering the world. Because Macworld reaches over 3 million people in over 20 countries. Now that's market reach. So, if you're interested in expanding your sales to the world, then call the Macworld Global Network, today.
Graphic programs have added enough new features to more than worth the price of admission. Aside from some editing functions of this powerful draw program make it financially wise, you would experience with computer graphics, the abundant, experienced Mac artists to jump up and down. But 408/727-8227, 415/332-4343, $299. Bitmap graphics-conversion software supports a huge number of file formats and can work wonders. If you spend any significant time dealing with file conversion, you should have this program. Nov 93

DeBabelizer Lite 1.0, Equilibrium Technologies, 415/332-4343, $129. Bitmap 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 may be worth the fairly high price, particularly for architectural-design conceptualization. May 94

Generic CADD 2.0, Autodesk, 206/487-2233, $495. Competent, midlevel 2-D drafting program has a well-executed Mac interface, a good complement of tools, and a sprinkling of high-end features, such as floating-point precision. Aug 93

Infini-D 2.5.1, 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 and quick operating speed. Feb 94

Kai's Power Tools 2.0a, 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, the ways you can apply them, and the artwork you can create. May 94

Koyin Fractal Studio 2.02, Koyin Software, 314/878-9125, $149.95. 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

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 interesting 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

Paint Alchemy 1.0, Xaos Tools, 415/487-7000, $99. For the price, these plug-in graphics continues

Multi-Ad Search* is an image catalog and retrieval system. Multi-Ad Creator* is a versatile display-ad layout program.

When used together, Search supports the Creator "Place" Event, allowing you to select images and instantly place them in the Creator Files Palette.

Search and Creator—success has never been so sweet.
Congratulations to the Winners of the 9th Annual Computer Press Awards!

Best Computer Magazine (Circulation more than 100,000)

Best Computer Newspaper (Circulation more than 100,000)

Best News Story in a Computer Publication (“DOS 6.0” by Stuart Johnson, Doug Barney and Kevin Strehlo)

Best Advanced How-to Book: Systems

Best Introductory How-to Book: Software

Once again, IDG dominated the annual Computer Press Awards, winning more awards than any other publishing company. If you’re looking for editorial excellence in information technology publications, IDG is where you find it.

IDG International Data Group
Where you find I.T.
effects are a tremendous value that both casual users and professional artists can use to design a little chaos into their work. May 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 gleefully wacky. Jul 94

★★★★ PowerDraw 4.0 (5.0), Engineered Software, 910/299-4843, $795. The best new feature of this polished 2-D drafting program is an open architecture that supports modules that let you customize the program with application-specific tools, floating palettes, and menu commands. Sep 93

★★ Ray Dream Designer 3.0.3, Ray Dream, 415/960-0768, $349. Although this 3-D-illustration software remains a professional artist can use to design a $39.95.

★★★★ Architectura 1.0-4, Natural Graphics, 916/624-1436, $149. Landscape rendering and animation software uses U.S. Geographical Survey data to create remarkably realistic 3-D representations of terrain. Its flaws are few, and our reviewer recommends it. Aug 94

★★★★ Showplace 2.0, Pixar, 510/236-4000, $495 to 695. Adequate, entry-level, 3-D modeler is suitable for illustration and other graphic arts applications. This version offers improved access to MacRenderMan, one of the best renderers around, plus plug-in modeling tools. Apr 94

★★★★ StrataVision 3d 2.6.3, Strata, 801/628-5218, $995. 3-D program includes 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 1.0, Strata, 801/628-5218, $1495. If you need a well-balanced, all-in-one 3-D modeling, rendering, and animation solution, this application is an excellent choice. Mar 94

★★★★ Transwiter Pro 1.0 (1.51), TechPool, 216/291-1922, $395. Remarkable graphics-conversion software can read PostScript files and convert them to a variety of formats. As you might expect of a program that attempts to fill such a tall order, its conversions are not always flawless, but it can be a lifesaver nonetheless. Nov 93

★★★★ Typeistry 2.0, Pixar, 510/236-4000, $299. An approachable interface, animation support, and outstanding Renderman rendering technology make this 3-D-type-render a popular choice. This version improves on the original, but still lacks canned positioning effects. Jun 94

★★ upFront 2.0, Alias Research, 416/362-9181, $299. Capable modeler is something of an acquired taste. However, take the time to learn it and you’ll find useful, if unconventional and demanding, tools that are well suited for architectural modeling. Jan 94

MATH/SCIENCE

★★★★ Alchemly II, Tripos Associates, 312/647-1099, $950. Molecular-modeling software can model decapeptides and DNA fragments, in addition to the expected small molecules, with refreshing alacrity on a Mac IIci or better. Sep 93

★★ Cadecuss Science Review Macintosh Project 1.0, Scientia, 617/776-3427, $150 to $250. If you’re taking the MCAT, you’d be nuts not to buy this interactive science review. With proper use, its 9MB of files are certain to improve your score. Apr 94

★★★★ CSC ChemOffice 2.0, Cambridge Scientific Computing, 617/491-6862, $995 to $1595. 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

★★★★ (ft) 6 Lascaux Graphics, 602/299-0661, $115. The main problem this math software attacks is four-dimensional visualization. It costs slightly more than a textbook, making it a great educational bargain. Sep 93

★★★★ InStat 2.01, GraphPad Software, 619/457-3909, $95. For scientists who have limited statistics backgrounds, the chatty clarity of this lab-oriented statistics software’s help screens will be invaluable, while the limited variables and minimal graphics won’t be a problem. Nov 93

★★★★ Mathematica 2.2, Wolfram Research, 217/398-0700, $595. The one essential program in science and mathematics adds a function browser that makes the program as easy to use as it is simple, as well as improvements to computational routines. Sep 93

★★★★ QC Tools 1.0, Abacus Concepts, 510/540-1949, $245. Quality-control tool kit for StatView appears to introduce a slight slowdown in program response, but is generally well designed, well documented, and suitable for quality-control neophytes as well as professionals. Jan 94

★★★★ Resampling Stats 1.0, Resampling Stats, Inc., 703/522-2713, $225. Innovative statistics software has proved itself to be a superior teaching tool in numerous classroom tests. If you have any interest in statistics, you should give this admirably straightforward approach careful consideration. Jun 94

★★★★ SerePlot 2.1.3, Scientific Visions, 510/593-0317, $135. If you have piles of data and don’t need animated, exploding bar-charts but is generally well designed, well documented, and suitable for quality-control neophytes as well as professionals. Jan 94

★★★★ SpyglassTransform 3.0 (3.01), Spyglass, 217/355-6000, $595. Visualization-software visualization-software can access data stored in every common format, offers some useful presentation-graphics features, and includes a programmable language with a large range of built-in, high-level scientific functions. Sep 93

★★★★ StatView 4.01 (4.02), Abacus Concepts, 510/540-1949, $995. If your work uses statistics for decision support rather than abstract analysis, and you regularly have to present your results to non-statisticians, this is the statistics package for you. Oct 93

★★★★ Sum Total 1.01, Concurrent Engineering Tools, 602/464-8208, $99.95. Exceptional calculator utility is packed with advanced features, including a mode that lets you sample colors and use the numerical color values in calculations. The convenient palette approach causes a distinct time-lag in menu operations. Oct 93

★★★★ Turing’s World 3.0, CSLI Publications, 312/568-1550, $19.95. Computer-science educational software lets you investigate some fundamentals in computing at an almost unbelievable bargain price. Feb 94

★★★★ Visualization of Natural Phenomena, Telos/Springer Verlag, 408/249-9314, $59.95.

CD-ROM introduction to applying all aspects of computer graphics to scientific imaging covers all disciplines and offers definitive analysis of methods. No other source covers this much material, at this level of clarity. Jan 94

ORGANIZATION/PRODUCTIVITY

★★★★ Assign 1.1, Common Knowledge, 415/325-9900, $349. This personal information database’s flexible, intuitive approach to data-handling makes it an excellent tool for storing all kinds of day-to-day information. May 94

★★★★ CalendarMaker 4.0, CE Software, 515/224-1995, $59.95. Polished, intuitive calendar-making program is straightforward, with a variety of options for customizing your calendar. Some features can be cumbersome. Oct 93

★★★★ ClenTrac 1.7.1 (1.7.2), Whiskey Hill Software, 415/851-8702, $135. Easy-to-use, HyperCard-based contact-management software performs as billed, but fails to inspire much enthusiasm. Aug 93

★★★★ Contact Ease 2.0 (2.0.2), WestWare, 619/274-5053, $395 to $1495. Contact-management and sales-automation software helps salespeople keep in touch with contacts, makes it easy to generate letters, and maintains detailed records of activities. It has a few quirks but is overall a good program. Aug 93

★★★★ DateBook and TouchBase Pro Bundle, Aldus Corp. Consumer Division, 619/558-6600, $149.95. Calendar and contact manager offer a superior combination of integration, usefulness, and features. If you want to get organized, make sure you look at this dynamic duo. Feb 94

★★★★ DateView 1.0.1, Advanced Software, 408/733-0745, $99.95. If you’re willing to sacrifice some features to get simplicity and speed, this calendar/to-do manager makes sense. It integrates with in Touch contact manager. Aug 94

★★★★ Full Contact 2.01, FIT Software, 408/562-5990, $169. Personal information manager can handle, with speed and style, tasks that would choke other products, but frequently, using it feels like a full-time job. Feb 94

★★★★ In Control 2.0, Attain Corp., 617/776-1110, $89.95. The best features of an outlining program are combined with those of a database, making it easy to sort, search, organize, and print your to-do list. Aug 93

★★★★ Now Contact 1.0 (1.0.1), Now Software, 503/274-2899, $59. This contact manager has some innovative features and could easily become the top address-book program for the Mac by adding some features such as file reconciliation. Mar 94

★★★★ Power Team 1.0, ProVue Development Corp., 714/892-8199, $149.95. Personal information manager consists of seven modules: Phone Book, Calendar, Correspondence, Checkbook, Calculator, Expense Report, and Mailing List. It has some bugs, but the data entry features are excellent. Oct 93

★★★★ Rae Assist 1.0.2, Rae Technology, 408/725-2850, $199. Although this personal information manager offers some fresh ideas, including automatic linking of company and contact information, it’s too big and too slow. Jan 94

★★★★ TimeSquare 1.0, Team Building Technologies, 514/278-3010, $149. Fast, flexible, network calendar program has lots of handy features, but it’s missing a few as well, such as multiday events and label grouping. Aug 94

continues
Enter e·World™ now with your free starter kit.

I'd like to know more about the exciting, new on-line service from Apple.
Please send me the eWorld starter software package—a $19.95 value—free.

Name

Company

Home Address

Apt./Suite #

City

State

ZIP

Phone (

Check one:

☐ 1.4MB Disk

☐ 800K Disk

23MW994

©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyright © in the name of Apple Computer, Inc. Offer does not include on-line charges. Offer expires 12/31/94. To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 6.0.7 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.
Introducing the on-line service for people who have never tried one. And for people who have.

Welcome to e•World

Enter e•World™ now with this free starter kit.

If you've ever tried another on-line service, you'll notice the difference in eWorld immediately. The brilliant graphics are the kind you'd only expect from Apple. And the familiar interface makes it easy to go wherever you choose and find whatever you need.

eWorld puts you in touch with a global community of Macintosh users and with people on other electronic mail services, including the Internet. It's also the best place to get the most in-depth Apple product and support information. And whether you want to access key business information or conduct on-line meetings from anywhere, eWorld is the right place to be.

There are hundreds of other reasons why you'll want to try eWorld. But rather than tell you about them, we'd like to show you. Just send for your free eWorld starter kit, including software and special registration information so you can sign on immediately. And get ready to enter a world like no other.

I'd like to know more about the exciting, new on-line service from Apple. Please send me the eWorld starter software package — a $19.95 value — free.

Name
Company Name
Home Address
City
State
ZIP
Phone

Just return this coupon to:

eWorld Starter Kit
Apple Computer, Inc.
P.O. Box 4493
Bridgeton, MO 63044-9718

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted in the name of Apple Computer, Inc. Offer is subject to change without notice. Offer valid only in the U.S. and the District of Columbia. Offer expires 12/31/94. Apple is not responsible for lost, late, or misdirected mail. Please allow 4-6 weeks for delivery. Offer does not include on-line charges. Offer good while supplies last. NOTE: To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 6.0.7 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.
a subset of Unix-like commands for the Mac environment could be an insatiable package.

** Macintosh Common Lisp 2.0 (2.0.1), APDA, 716/871-6555, $495. Anyone who likes pro-
gramming in LISP will be pleased with the environment provided by this version of the standard dialect and its ex-
tensive debugging and interface-building facilities. Oct 93

** Object Master for Think C and C++, ACI US, 408/252-4444, $255. Object-oriented de-
velopment environment is full of goodness and will pay for itself in about a week due to increased programmer pro-
ductivity. Apr 94

** Power Packs 2.0, NDG Phoenix, 301/718-8880, $225. Programmers' tool kit for 4th Dimen-
sion provides 280 external procedures to improve custom applica-
tions and exploit System 7 features. Don't expect any quick fixes for 4D's less-than-blttering performance in most areas, though. Oct 93

** Smalltalk/V for Macintosh 2.0, Digital, 714/513-3000, $495. Object-oriented de-
velopment system is now even more viable for commer-
cial projects, while Digital's customer support and documentation set a standard other vendors should emu-
late. Feb 94

** Soft Polish 1.1, Language Systems Corp., 703/478-0181, $295. Program-quality-assurance utility
systematically checks the resources in a program's interface against a huge laundry list of errors. It's programmed
for anyone who hopes to produce a commercial Mac application. Sep 93

** SourceSafe 2.1, One Tree Software, 919/213-2300, $295 to $1195. Solid, relatively easy-
to-use product handles program-development administrative tasks, including version control, for multiproject
programs being created by groups. Sep 93

** Symantec C++ for Macintosh 6.0, Symantec Corp., 408/253-9600, $499. If you like Think C, you'll like this software-development system, too. For the Mac, it's an excellent opportunity to catch a new wave in programming. Nov 93

** VIP BASIC 1.0.1, Mainstay, 805/484-9400, $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, Mainstay, 805/484-9400, $495. If you've mastered the rudiments of C, this programming-code 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

** AppleSearch 1.0, Apple Computer, 408/996-1010, $1799. Although it has some rough edges,
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

** Attic Vista 1.0, Attic Software, 303/498-6100, $69.95. Commercial print output appli-
cation automatically drafts 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 2.01 (2.0.4), Automap, 206/455-3522, $99.95.
Mapping software tells you how to get where you're going better than any other map, atlas, or software our reviewer
has seen. Although screen redraw is slow, it's worth it for

### UTILITIES

** Apple FAX, Apple Computer, 408/996-1010, $1799. Although it has some rough ed-
ges, 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

** DriveShare 1.0, CasaBlanca Works, 415/461-2227, $129.95. This utility allows users to share a removable drive over a network. It's most useful if your network consists of both System 6 and System 7 users. As its advantages over System 7 file sharing are slight.

** LapLock PB 1.0, Symantec/Fifth Generation Systems, 504/291-7221, $59. PowerBook security software balances robust security with simplicity and ease of use. It's much harder to crack than most PowerBook utility collections' security features, and will keep out all but the most determined. Jan 94

** The Disney Collection Screen Saver, Berkeley Systems, 510/540-5535, $49.95. Mickey, Goofy, Peter Pan, Ariel, and other Disney favorites cavort around your screen with this screen saver that in-
cludes 16 different modules. Mar 94

** DriveTech 1.0, MicroMat Computer Sys-
tems, 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.

** DupLocater 1.03, Midnight Software, 303/933-1013, $99. For new Macintosh users who
don't have a general utility, such as scripting, but some functions work erratically or not at all. As you wonder why it isn't built into the Mac's system software, this utility collection a problem for computers with limited memory, as it requires frequent restarts. Aug 93

Makefiles 1.0, Dayna Communications, 801/269-7200, $129. Powerful backup and archiving software has an improved interface and scripting capabilities, and works well for all levels of users. Sep 93

Retrospect Remote 2.0, Dantz Development Corp., 510/253-3000, $449. Utility allows fast, automatic backup of networked Macs to a central Mac with a backup device. It worked flawlessly in our reviewer's tests. Sep 93

SafeDeposit 1.2, Dayna Communications, 801/269-7200, $189. Automated backup program is easy to set up but slow. Also, unattended backups must be restarted from scratch if disk space runs short and a new disk isn't inserted. Sep 93

SafeFinder 1.0, Olduvai Corp., 305/670-1112, $129. Many thoughtful improvements have been added to this collection of utilities, which is now better integrated, more logically designed, and still an excellent deal for your dollar. The new snapshot feature, however, is awkward and inconvenient. Aug 93

Open Sesame 1.02 (1.1), Charles River Analytics, 617/491-3474, $99. Utility automates Finder operations, such as opening and closing files, with-out resorting to macros or scripts. It has an elegant interface, but people with strict work habits are more likely to find its suggestions worthwhile than are those who don't follow a routine. May 94

Optimem 1.4.1, Jump Development Group, 412/681-6299, $129. Systemwide memory manager monitors RAM use and allocates RAM where it's needed. Works best with software that handles minimum-memory situations effectively. Mar 94

PopupFolder, Inline Software, 203/435-4995, $59.95. Finder utility is so handy and easy to use, you wonder why it isn't built into the Mac's system software. On the other hand, it's sluggish when readying pop-up menus for every folder. Aug 94

PowerMerge 2.0, Leader Technologies, 714/757-1787, $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

Power To Go 2.0, Claris Corp., 408/727-8227, $99. PowerBook utility collection has a unique slant—including a floating palette that can display battery-life estimates—that keep it above the also-rans. It does lack features of similar products. Dec 93

ProFiles 1.0, Dayna Communications, 801/269-7200, $129. Unusual new utility lets you group related folders and files 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, $169. The simple, unintrusive interface of this macro-building utility allows you to build a set of useful shortcuts quickly. Mar 94

RAM Doubler 1.0.1, 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 Deluxe 2.0.2 (2.5), Inline Software, 203/435-4995, $79.95. Easy to learn and relatively simple to use, this backup program has some powerful features, such as scripting, but it doesn't have a compression option. Jan 94

Retrospect 2.0, Dantz Development Corp., 510/253-3000, $249. Powerful backup and archiving software has an improved interface and scripting capabilities, and works well for all levels of users. Sep 93

SafeFinder 1.0, Olduvai Corp., 305/670-1112, $129. Inobtrusive control panel periodically saves all of your keystrokes, but requires System 7.1 and offers no clear-cut advantages when compared with other text-recovery programs. Oct 93

SAM 3.5.8, Symantec Corp., 408/253-9600, $99. Efficient, thorough virus-protection software slows down system start-up and application launching, but this program is worthwhile investment for anyone who exchanges or downloads files. Mar 94

ScreenScapes 1.0.1, Kiwi Software, 805/685-4031, $44.95. With more than 600 desktop patterns—and a suite of well-designed modules to transform those patterns—this fun and frivolous utility fills desktop-pattern design to new heights of elegance. Nov 93

Square One 1.5.2, Binary Software, 310/582-8293, $74. Flexible, attractive icon-based file launcher provides infinitely customizable palettes, including one that displays active applications. The application will consume 400K of your system memory. Aug 93

Stacker for the Macintosh 1.0.1, Star, the Data Compression Company, 619/431-7474, $149. As long as you pay attention to the capacity of your hard drive, this driver-level compression product performs reasonably well, except for its slow hard drive read/ write speed. Oct 93

Star Wars Visual Clips, Sound Source Unlimited, 803/494-9996, $98.95. Control panel lets you play QuickTime movie clips from Star Wars at system events. If you have the money, the hard drive space, and the RAM, this is the kind of totally cool toy that will make you wonder why you love your Mac. Sep 93

Tempo II Plus 3.0.9, 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

Toner Tuner 1.0.3, Working Software, 408/423-5696, $24.95. Inexpensive, incredibly useful extension adds a sliding bar to print dialog boxes allowing you to adjust the amount of toner applied to each print job. If you can't save trees, you can at least save toner. Dec 93

ultraShield 1.252 (2.0), usr EZ Software, 714/756-5140, $149. Sophisticated security product combines practically every feature you might need into an integrated package, including a lightning-fast version of the U.S. government data-encryption standard. Dec 93

UnderWare 1.0.1, Bit Jugglers, 415/968-3908, $59.95. Inspired, silly fun 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, 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

Virtual 3.0.1, Connectix Corp., 415/571-5100, $99. If you need to eke out as much virtual memory speed as possible, this utility may be a useful tool. For system 6 users who want virtual memory, it's the only game in town. Sep 93

VirtualDisk 1.1a, Continuum Software, 206/695-8136, $69. Rapid disk cataloguing; fast, efficient label-printing; and an excellent disk-copy utility make this software package a wonderful value. Jul 94

Working Watermarker 1.02, Working Software, 408/423-5696, $49.95. Simple, useful system extension allows you to print or fax text and/or graphics "watermarks" in the background of virtually any document. Although it has imperfections, it's earned a permanent spot in our reviewer's System folder. Jan 94

continues
Star Ratings

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 singing, and intonation. The interface is nonstandard, but it's logical and easy to learn. May 94
★★★★★ Finale 3.0.1, Coda Music Technology, 800/843-2066, $749. Updated music-notification software is now infinitely more pleasant to use. Its comprehensive feature set makes it the standard against which all other music-notification products must be judged. Dec 93
★★ MacInteors, Microspot, 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
★★ Musicshop 1.0, Opcode Systems, 415/856-3333, $149.95. MIDI sequencer is an excellent choice as a first sequencer. It’s powerful enough to satisfy the needs of most MIDI users. Oct 93
★★★★ Sailing Master 1.1, Starboard Software, 313/662-4393, $64.99. Though the slow speed and jerky motion point to less-than-polished programming, this sailboat-racing simulation offers good tactical play and is fun—well worth the price for sailing competitors. Nov 93
★★★★ WillMaker 5.0, Nolo Press, $150-549-1976, $69.95. Legal software quickly and easily automates the creation of wills, health-care directives and powers of attorney, and final-arrangement documents. It offers excellent support explanations, examples, and background. Jun 94

WRITING TOOLS

★★★★★ MacWrite Pro 1.5, 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
★★★★ MasterWord 5.1, Alki Software Corp., 206/386-2600, $99.95. The centerpiece of this package of add-on Microsoft Word commands is a set of customizable tool bars. Unfortunately, rough edges remain, including inaccuracies in the documentation and some features that don’t work as advertised. Aug 93
★★ The Oxford English Dictionary, Oxford University Press, Electronic Publishing, 212/679-7300, ext.7370, $589. CD-ROM dictionary contains 20 print volumes, including half a million words, but the flaws, omissions, and underfully and unforfayorably poor design are unbearable. Apr 94
★★★★ Random House Unabridged Dictionary, Random House Electronic Publishing, 212/572-2600, $179. The most comprehensive American-made 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
★★★★ Spelling Coach Professional 4.0.1, Deneba Software, 305/596-9644, $195. If you’re considering investing in reference software, this spelling checker, dictionary, and thesaurus is a relatively capable, if expensive, alternative. Oct 93
★★★★ Thunder 7 1.5.3, Baseline Publishing, 901/682-9676, $99.95. Stand-alone spelling checker and thesaurus interactively monitors your keystrokes and alerts you to potential errors as they are entered. The program quickly and transparently prevents you from making embarrassing typos. Nov 93
★★★★ WordPerfect for Macintosh 3. (30a), 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 O
★★★★ WriteNow 4.0.1, WordStar International, 415/382-8000, $119.95. Tidy word processor’s conservative use of memory (the application fits into a dainty 600K partition) and graceful interface will continue to win it enthusiastic fans. This version adds elegant table capabilities and several PowerBook-friendly features. Jun 94
★★★★ A Zillion KaJIion Rhymes 1.0, Eccentric Software, 206/628-2687, $49.95. Rhyming dictionary is quick, small, simple, and self-contained, but it only rhymes with the roots of search words (and ignores -ed, -s, and -ing endings). Nov 93

Hardware

INPUT DEVICES

★★★★ ArtZ ADB Tablet, Wacom Technology Corp., 206/750-8882, $449. Combining pressure-sensitive operation, manageable size, and a new pencil-thin stylus, this affordable digitizing tablet is perfect for artists looking for traditional-style control of their graphics programs. Aug 93
★★★★ Computer Crayon, Appoint, 510/463-3003, $49. The kid contingent’s verdict was a definite thumbs-up on this brightly colored input device that’s shaped like a thick pencil. The buttons can be hard for smaller children to press, and serious computer artists should still opt for a drawing tablet. Oct 93
★★★★ DrawingSlate, 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
★★★★ Gulliver, Appoint, 510/463-3003, $119. This diminutive mouse is hard to hold comfortably for an extended period, but it works well on almost any surface and is an acceptable option for PowerBook users. Oct 93
★★★★ PenDirect ADB, FTC Data Systems, 714/995-3900, $498. 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 Trenco Corp., 509/928-8000, $149. Input device integrates a trackball into a wrist pad. While the design is interesting, it’s not for everyone. Feb 94
★★★★ Wacom UD-1212R, Wacom Technology Corp., 206/750-8882, $749. Graphics tablet with pressure-sensitive stylus is easy to use and highly customizable, though it’s incompatible with AppleTalk and AppleTalk Remote. May 94

MISCELLANEOUS HARDWARE

★★★★ AC5100, Altec Lansing Consumer Products, 717/296-2818, $180. Lightweight powered speakers don’t sound as good as they should. There’s too much emphasis on the high end at the expense of the midrange, and they have noticeably. Dec 93
★★★★ AC5150, Altec Lansing Consumer Prod-
ucts, 717/296-2818, $150. Subwoofer rounds out the sharp tones of the AC5100, but the bass response is neither punchy enough nor loud enough, and the unit is about the size and weight of a concrete block. Dec 93
★★★★ AppleDesign Powered Speakers, Apple Computer, 408/996-1010, $79. Tall and curvy powered speaker set looks and sounds good and can produce uncomfortably high volumes without noticeable distortion, but the bare-wire-and-terminal connections aren’t user-friendly. Dec 93
★★★★ Apple Newton MessagePad, Apple Computer, 408/996-1010, $699. Although Apple released this personal digital assistant too early and marketing hype led to mistaken expectations, this is a very intelligent piece of work with an impressive variety of serious business uses. Dec 93
★★★★ Apple PowerCD, Apple Computer, 408/ 996-1010, $400. This extremely versatile and beautifully designed portable CD-ROM drive of impressive audio and Photo CD features, but if you’re a serious CD-ROM user, it’s too slow to satisfy. Jan 94
★★★★ Ear Phone Streamline AV, Jabra Corp., 619/622-0764, $169. As a hands-free telephony tool and as a replacement for the Apple PlainTalk microphone—this telephone/speech-recognition earpiece 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
★★★★ EMBARC, Embarc Communications Services, 407/364-2000, $395 plus fees. If you’re a PowerBook user who is frequently in places with no telephone and you need timely delivery of electronic news and E-mail, this portable wireless message service may prove useful, but the cost may be prohibitive to others. Sep 93
★★★★ G-Vox, Lynrus, 215/922-0880, $399, Hard-ware-software guitar-instruction package lets your Mac “hear” the notes you play on your guitar. Although the hardware works well, the software has some basic problems and doesn’t live up to the hardware. Apr 94
★★★★ PowerLink Presenter, E-Machines, 503/ 646-6699, $499. Simple, compact Dock dobble wobbles a bit when plugged in but provides fine support for a variety of displays, plus ports for ADB, floppy drive, and sound output. Nov 93
★★★★ Macintosh TV, Apple Computer, 408/996- 1010, $2079. As a computer, this combination computer-television-CD player is sleek but slow. You can get faster performance and better expandability from several less-expensive Performa models. Apr 94
★★★★ PowerLink Presenter, E-Machines, 503/ 646-6699, $499. Simple, compact Dock dobble wobbles a bit when plugged in but provides fine support for a variety of displays, plus ports for ADB, floppy drive, and sound output. Nov 93
★★★★ PowerBook, Technoginn, 513/321- 1777, $169.95 to $299.95. Line of long-lived, external PowerBook battery packs, each of which is three to five times as long as the usual PowerBook battery. Unfortunately, the System 7 power manager periodically alerts you that your battery is not charging and dims the screen though battery pack has hours of time left. Mar 94
★★★★ RCD-202, Pillow Micro, 714/727- 3300, $3995. Writtable CD-ROM drive is good for archiving data simply and inexpensively, but it’s incompatible with many hard drives. Mar 94
★★★★ ThinPack, VST Power Systems, 508/ 287-4600, $199.95. External battery pack for PowerBooks is compact, with a lightweight design. It comes with handy power-management utilities. Mar 94
poorly

Nov 93

dedicated a hard drive and at a reasonable price. Nov 93

abbling Its speed

greatly

Watermark Message Central 2.0.2, High Tide Software, 510/704-9927, $497. If you’re willing to pay a lot of money, you can find this highly sophis-
ticated voice-mail system supremely flexible. It includes a specially modified modem with voice chip, as well as fax software and telecommunications software.

TurboDialer, Advanced Software, 408/733-0745, $79.95. Automatic telephone dialer is a well-executed product, except for occasional computer noise that seeps into phone conversations. If you constantly dial phone numbers that are stored in your computer, this product will save you time and energy.

Yamaha YST-M10 Powered Monitor Speakers, Yamaha, 714/522-9240, $149.95. Powered speakers have a good balanced sound and a great volume range at an outstanding price.

MODEMS/NETWORK HARDWARE

AsanteHub 1012, Asante Technologies, 408/435-8388, $1299. This 12-port, 10BaseT Ethernet hub works right out of the box and is a premium device at a bargain price.

Cypress PhonePro 1.2, Cypress Research Corp., 408/752-2700, $349 to $950. By improving its integration with FaxPro and with PowerTalk and PowerShare, this powerful telephony software has greatly extended its business scope.

DataLink PB; Axcell Cellular Interface, Applied Engineering, 214/241-6060, $824. If you need a full-blown office on the beach, this PowerBook cellular-modem package with automatic answering machine is a well-executed solution. Each recorded second requires 35K of disk space.

EtherWave, Farallon Computing, 510/814-5000, $129. If you need to expand your network at a reasonable price with minimal fuss, get this Ethernet transceiver. Instead of providing only one 10BaseT twisted-pair jack, it includes a second jack that allows you to daisy-chain to another device through an additional 10BaseT line.

OneWorld Fax, Global Village Communication, 415/390-8200, $999. Easy-to-use network fax product lets an office share fax-sending resources without dedicating a hard drive and CPU, however, it can’t receive faxes and can’t queue more than one fax document at a time from a single CPU.

PerFit Port-A-Com, PerFit, 303/530-7333, $349. Compact, A8-powered, high-speed fax/data modem is difficult to configure, due to its Spartan and poorly organized documentation, but is still a solid product at a reasonable price.

SupraFaxModem 144PB, Supra Corp., 503/967-2400, $349.95. If you’re looking for a high-speed internal modem for your PowerBook, and you want to save a few bucks, this modem is worth considering. Disabling its fax software solved occasional transfer problems.

SupraFaxModem 288, Supra Corp., 503/967-2410, $349.95. This 28,800-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, 510/704-9927, $497. If you’re willing to pay a lot of money, you can find this highly sophis-
ticated voice-mail system supremely flexible. It includes a specially modified modem with voice chip, as well as fax software and telecommunications software.

PRINTERS

Address Express, CoStar Corp., 203/661-9700, $499. Flaky performance and system crashes plagued this envelope-and-label printer in our tests, but the print quality was good.

Apple Color Printer, Apple Computer, 408/996-1010, $234.9. If you need large-format color output, but not precision color-matching, this well-built printer is a reasonable choice, although it doesn’t support PostScript.

Apple Portable StyleWriter, Apple Computer, 408/996-1010, $499. Sleek, portable ink-jet printer weighs 4½ pounds and is a pleasure to use. It uses standard StyleWriter cartridges.

Brother HJ-400, Brother International, 908/356-8880, $369. Compact, 360-ppm ink-jet printer is fairly slow and does not allow background printing. Some large files require additional application memory to print correctly.

DeskWriter 310, Hewlett-Packard, 800/752-0900, $379 to $455. Versatile, low-cost ink-jet printer is a 4.3-pound, battery-powered portable. With its 60-page sheet feeder, it’s also a great desktop printer, and with a $49 color print cartridge, it offers inexpensive three-color printing. Mar 94

HP Laserjet 4ML, 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. Its advanced PC features may not be worthwhile for those who use Macs only.

LaserWriter Select 300, Apple Computer, 408/996-1010, $839. Inexpensive, low-capacity printer is networkable, and an excellent buy, despite a few weaknesses. Add a 4MB SIMM to take advantage of the amazing PhotoGrade capabilities, which allow the printer to generate 91 shades of gray.

LaserWriter Select 310, Apple Computer, 408/996-1010, $1099. This big, slow printer is a true Adobe PostScript printer with both Mac and DOS ports, but it’s not networkable or compatible with the Communications Toolbox. It can’t automatically switch ports, and it doesn’t have adjustable paper guides.

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.

microLaser Pro 600, Texas Instruments, 800/848-3927, $2148. Overall, this工作组 printer is fast and provides good print quality. The price is steeper than that of other products, but if you work in a busy office where a really fast printer makes everybody’s life easier, the higher price may be worth it.

MobileWriter P5, Mannessmann Tally Corp., 206/251-5524, $999. Fast, portable printer is currently the only PostScript portable available. While the print quality is quite good on glossy laser paper, it’s mediocre on inexpensive bond.

Notebook Printer II, Citizen America, 310/453-0614, $399. If weight and size are your biggest concerns in choosing a portable printer, and you print primarily in black and white, this thermal-fusion printer may be a good choice. If speed is all an issue, however, other options may be preferable.

Personal LaserWriter 320, Apple Computer, 408/996-1010, $959. If you have been holding out for a high-quality personal laser printer that is fast enough to share over LocalTalk, the small inconveniences of this 300-ppm printer are easily outweighed by its low price, good speed, and PostScript Level 2 support.

Phaser 200i Color Printer, Tektronix, 503/682-7377, $9595. This thermal-wax color printer is fast and compact, with versatile paper-handling features. TekColor image-enhancement technologies provide excellent output quality that is, however, poor on letterhead and inexpensive copier paper.

QMS ColorScript Laser 1000, QMS, 205/633-4300, $9999. 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 prices down and capabilities up.

Silentwriter 640, NEC Technologies, 508/264-8000, $800. With 3MB of RAM, PostScript Level 2 support, and a 6-pages-per-minute engine, this printer is a capable performer. Generally, it represents hassle-free printing, but it doesn’t handle single sheets of paper well.

Smart Label Printer Pro, Seiko Instruments, 408/922-5500, $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.

SCANNERS

Coolscan LS-10v, Nikon Electronic Imaging, 516/547-4200, $2600. Compact desktop scanner for digitizing images from 35mm transparencies is slow, but delivers images good enough for newsprint publications and some catalogs.

Epson ES-800C, Epson America, 310/782-0770, $1499; Macintosh interface kit $399. Flexible 400-dpi scanner offers a range of options, including one- or three-pass scanning, plus a full-featured, easy-to-use software package.

IX-4015 Color Image Scanner, Canon Computer Systems, 714/438-3000, $1169. The price of this color flatbed scanner is competitive, and its speed and excellent bundled software make it easy to use and a good choice for the small office. If you can get by without legal-size scans, it should serve you well.

LightningScan Portable, Thunderware, 510/254-6581, $459. PowerBook owners will find this hand scanner’s modem- or serial-port connection, lightweight, interlace, and total portability well worth the cost, although the scanner is incompatible with some desktop Macs.

Mirror 800 Plus Color Scanner, Mirror Technologies, 612/663-4450, $1299. Add the NuBus JPEG board ($300) and easy-to-use 35mm transparency scanning module ($599) and you get a nifty—if slow—desktop scanning package for a reasonable price.

ScanMaker 351, Microtek, 213/321-2121, $1999. Speedy 35mm film scanner accommodates loose film and delivers a good image, but the included software is weak.

SYSTEMS/STORAGE

DataPak 105, Mass Microsystems, 408/522-1200, $949 to $1049. Well-built 105MB Syquest drive comes with a decent, no-frills cartridge-formatting package and a copy of 7th Heaven. The preformatted cartridges have a lifetime warranty.

- Sep 93

MACWORLD September 1994 217
In dust rial
Inexpens ive
*** EtherDock, E-Machines, mechanism las t e d longer
$699. Heavy-duty Du o docking option is equipped with a full set of 11 ports, including an Ethernet port. The locking mechanism is alarmingly wobbly—although reliable enough to ensure a good connection. May 94

*** Expert Pad
memory, having everything Integrated into one professionals needed for adequate management. Jan 94 may fill the need for just in stall RAM

** HP Optical Disk Library 10LC, Hewlett-Packard, 800/752-0900, $9495. Optical jukebox may fill the need for 10 gigabytes of online storage, but its performance is poor, and the software lacks the features needed for adequate management. Jan 94

Infinity 105 Turbo, Peripheral Land, 510/657-2211, $9795. Small, light, quiet, inexpensive 105MB SyQuest drive is ingeniously packaged and ideal for both desktop and PowerBook use. Sep 93

LC 575, Apple Computer, 408/996-1010, $1699. For students and small-business professionals who want high power and the convenience of having everything integrated into one case, this 33MHz 68040 system is an ideal choice. Jun 94

Newton MessagePad 110, Apple Computer, 408/996-1010, $599. This is the personal digital assistant that Apple should have shipped in August 1993, with improved handwriting recognition, including deferred and letter-by-letter recognition. It also has more memory, longer battery life, and a more efficient design. Aug 94

*** NuTek Duet, NuTek USA Corp., 408/973-8799, $2996. Mac workalike is both a PC and a Mac in a single box, but because of many incompatibilities and problems, the Duet is not a computer anyone should consider using for serious work. Feb 94

OrangePC, Orange Micro, 714/779-2772, $1799. NuBus board has a DOS processor, letting you have your Mac and a PC, too. It's fairly well executed, though there are some minor problems. Oct 93

OrangePC Model 200 Series, Orange Micro, 714/779-2772, $1119 to $3237. If your goal is to get a Mac that runs Windows as fast as a PC, you can't get there from here. If your goal is to get business-level performance for carry-in, day-out use, these PC coprocessor cards are probably your best choice. Aug 94

PLI 2.4 GB MiniArray, PLI, 510/657-2211, $4815. Slick and elegant RAID drive worked beautifully in tests, but it costs more than other options and the QuickSCSI board is sensitive to minor SCSI problems. Apr 94

PowerBook 140 F/25 Upgrade, Digital Eclipse Software, 510/547-6101, $399. By changing the oscillator and adding an FPU, Digital Eclipse changes PowerBook 140s into 170s, minus the active matrix screen. While the upgrade seems expensive, it's the only way to extend the viability of a 140. Dec 93

PowerBook 180c, Apple Computer, 408/996-1010, 4/80 $4169. The active matrix screen of this color notebook computer is beautiful but so small that its usefulness is very limited. Sep 93

PowerBook Duo 270c, Apple Computer, 408/996-1010, 4/240 $3095. Notebook computer meets all the demands of power users; it weighs less than five pounds, features a color active matrix display, and offers longer battery life. The lack of a floppy drive can be inconvenient, though. Feb 94

Power Macintosh 6100/60, Apple Computer, 408/996-1010, base model $5189. Given its price and performance, this Power Macintosh is hard to resist. When developers offer in PowerPC format the software that most business users run daily, this should be a system that will give you power to spare. Jun 94

Power Macintosh 7100/66, Apple Computer, 408/996-1010, $2899. Midrange Power Mac makes an outstanding workstation whose power should last for several years. The price is nothing to take lightly, but this system delivers every dollar's worth. Aug 94

Power Mac 8100/80, Apple Computer, 408/996-1010, $4249. While this system doesn't quite offer the excellent price/performance ratio 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

Quadra 605, Apple Computer, 408/996-1010, 4/80 $979. Never before has Apple offered so much performance for so little money. The performance and price of this 040-based machine match those of a standard entry-level 486SX-based Windows PC. Mar 94

Quadra 800, Apple Computer, 408/996-1010, 8/230 $4679. Squat, yet curvy and attractive, this mini-tower system has fewer expansion opportunities than the Quadra 950, but just as much power. It's fast, slick, and moderately priced. Aug 93

RAM Doubler is an extension that works by reclaiming memory not being used. MacWEEK says "RAM Doubler couldn't be easier to use." It is the latest from Connectix, the Macintosh memory experts and makers of the award-winning CPU and MODE32.

RAM Doubler is affordable at $99 SRP with a 30-day money back guarantee. Get RAM Doubler wherever great software is sold.
Quadra 840AV, Apple Computer, 408/996-1010, 8/230 $4069. Technological tour de force uses a 40MHz 68040 and an AT&T 3210 digital signal processor, and is brimming with sophisticated speech-recognition and audiovisual technology. Beware of some hardware and software incompatibilities. Dec 93

SCSI MicroDock, Newer Technology, 316/685-4904, $175. Tiny Duo docking station is just under 4½ ounces and barely 5 inches long. It adds only an ADB port and a SCSI port—but both are useful. May 94

Sledgehammer2000FMF, FWB, 415/474-8055, $3179. RAID drive is both fast and expensive. Although it can be a bit noisy when accessing data, it's a good deal. Apr 94

SmartStack, Envisio, 615/628-6288, SmartSource $119; SmartModules $289 to $1379. The SmartStack line of modular storage peripherals may be neatly stacked on top of a common power supply to reduce desktop clutter and cabling problems. Sep 93

Turbo 040, DayStar Digital, 404/967-2077, $1899. This accelerator card is equipped with the fastest 68040 chip available and is as fast as or faster than any Macintosh in processor-intensive tasks. For the price, however, it may make more sense to trade up to a faster computer. Dec 93

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 less than $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

AudioVision 14 Display, Apple Computer, 408/996-1010, $769. Monitor integrates audio and video with built-in speakers that produce surprisingly rich, full-bodied sound. The display, while nice, is small for multimedia work. Dec 93

Dycam Model 3, Dycam, 818/998-8008, $895. Low-end, digital still camera is easy to use, and is a solid product if Instamatic grade gray-scale meets your image-quality requirements. Sep 93

Editing Aces Suite, RasterOps, 801/785-5750, $3899. Video professionals can record and play back full-screen movies in 24-bit color with 16-bit CD-quality sound with these products. Despite flaws, this package represents a step forward in QuickTime technology. Nov 93

Intelicolor Display/20, Radius, 408/434-1010, $3199. Although with its exceptional brightness and clarity this monitor would be a fine addition to any designer's desk, the included Intelicolor software, which lets you control the settings of your display, doesn't offer much added value. Apr 94

L-TV Portable, Focus Enhancements, 617/938-8088, $299. Sturdy, inexpensive, external TV-converter plugs into your Macintosh and converts video output to NTSC. It provided a crisp, clean image, but mild flickering and conspicuous thinness were persistent. Aug 94

L-TV Pro NuBus, Focus Enhancements, 617/938-8088, $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

MovieMovie, Sigma Designs, 510/770-0100, $349. This 7-inch NuBus video-capture board may be what you've been waiting for. The price is right, and the addition of on-board audio input is a plus, even if it is only mono. Dec 93

PaintBoard Turbo, RasterOps, 408/562-4200, $1499. Midrange video board supports 24-bit color on monitors up to 17 inches and resolutions as high as 1024 by 768 pixels. If you can live without changing resolutions on the fly, it's a reasonably good deal. Oct 93

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 bare 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

Simply TV, E-Machines, 408/541-6100, $439. Easy-to-install video card plugs snugly into a PDS 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

VideoToolkit 2.0.1, Abbate Video, 508/376-3712, $279. Despite a few rough edges, this is an attractive, inexpensive solution for those who need to catalog and edit videotapes on a budget. Sep 93

COPY SOFTWARE ILLEGALLY AND YOU COULD GET THIS HARDWARE ABSOLUTELY FREE.

Software piracy isn't just a crime. It's a shame. Because most people who do it aren't even aware that it's illegal. If you copy software that's protected by copyright, you could lose your job, face a civil suit, pay a $100,000 fine and possibly be imprisoned. So get the facts now. To request more information, contact the Software Publishers' Association at 1-800-955-7721. Because in a court of law, ignorance is one thing you won't be able to plead.

Don't Copy That Floppy

AM I SEEING THINGS, OR IS THIS AD HAUNTED? PICK A SQUARE AND STARE AT IT. SEE THE GHOSTLY DOTS ON THE WHITE LINES? THEY'RE NOT REAL. YOUR EYES CAN BE FOOLED. OUR MONITORS ARE THE EXCEPTION, THOUGH. THEY COME WITH AN ANTI-GLARE COATING FOR APPARITION-FREE IMAGES. FOR FURTHER ILLUMINATION, CALL 714-530-9984. COME SEE US AT MACWORLD EXPO IN BOSTON, BOOTH 437, BAYSIDE.

Circle 211 on reader service card

MACWORLD September 1994 219
We win. Yet people change times. And the Macintosh stays the same. But one thing changes: Technology.

The Macintosh continues to be a monthly publication. And the magazine is designed with style—clean layouts and illustrations rendered. It's also because illustrations generated by the Mac. Why do we keep winning awards? "Macworld is an outstanding mix of news and service," the Computer Press Association judges say, "especially by the Mac." And the Best Computer Magazine? It's because Macworld is an outstanding mix of news and service. "Macworld contains more opinion," its editors also say because journalism, humor and mix of news and service "Macworld is an outstanding publication," and the other monthly Macintosh product reviews than any other in the industry. Yet people change times. And the Macintosh stays the same. But one thing changes: Technology.
Your Road Map For The Information Superhighway—America Online

See other side for details about your FREE trial of America Online!

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*: 
DOS: 
Apple*: 

*To use America Online for Windows, you must have a 386 PC or higher, 4MB of RAM, a VGA monitor, a mouse, a modem, and a working copy of Windows 3.1.

Use of America Online requires a major credit card or checking account. Limit 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.

1-800-827-6364, Ext. 3831
Test Drive The Internet On America Online For 10 Hours, FREE.

The Internet Center: More Content, Less Confusing.
America Online's Internet Center combines the easiest navigation with the most comprehensive collection of Internet resources of all the major online services.

- Internet e-mail with no surcharges
- Widest variety of university, corporate, and regional Newsgroups
- Over two months' worth of Newsgroup archives
- Best Gopher and WAIS sites organized for easy access
- Improved reliability due to extensive Gopher caching
- Available at 2400 baud, 9600 baud, and now over TCP/IP—all at one price
- More USENET Newsgroups than any other service—over 11,000, including the entire alt.* groups
- All Internet Gopher and WAIS databases, and the fastest Veronica server, which is always available

Featuring Macworld® Online.
In addition to the Internet, enjoy the electronic version of Macworld magazine.

- Learn about upcoming articles and events before the next issue hits the newstands.
- Share your opinions and questions with the editors on lively message boards.
- Download software recommended by the Macworld editors.

Plus, hundreds of other features on America Online, including:

- NBC Online
- Unlimited e-mail
- The New York Times Online
- Stock and mutual fund quotes
- DC Comics Online
- Live conferences and events
- Over 100,000 downloadable files

Just mail the attached card or fax it to us at 1-800-827-4595. Or simply call 1-800-827-6364, Ext. 3831.
Fractal Design is bundling Kurta Francisco, Mouse cordless pen, tablet, driver software, and accessory more Information.

razzo, a new Photoshop plug-in for creating tilable price drops to (415/978-3241), or ClarisDaw 1.0 Claris Corporation Macworld Expo show specials available from 8/2 through 8/5/94 only.

Vendors and resellers desiring to have products and services included in this section are encouraged to contact the Streetwise Shopper editor with particulars.

BUNDLES

Ray Dream Designer 3.1 + Terrazzo Ray Dream is offering a $279 bundle consisting of Xaos Tools’ $199 Terrazzo, a new Photoshop plug-in for creating tilable textures and patterns, and its own $349 Ray Dream Designer 3-D-imaging software (Aug 93 “Depth-Defying Design” Editors’ Choice for version 2.0.4; Sep 92 for version 2.02). Call 800/846-0456 for more information and to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.

Virtus WalkThrough 1.1.3 + Virtus VR 1.0.1 Virtus Corporation is bundling its $195 WalkThrough (Jul 93 **), which provides interactive access to rendered 3-D scenes, with its $99 Virtus VR virtual reality simulator, which is Power Macintosh native, for $149. Call 800/847-8871 for more information. Offer expires 8/31/94.

COMPETITIVE UPGRADES
ClarisDraw 1.0 Claris Corporation is offering this brand-new $399 successor to MacDraw for $99 to users of MacDraw II or any other graphics programs. The upgrade price drops to $89 for MacDraw Pro users ($29 if they purchased MacDraw Pro after 6/1/93), who will be provided with over 75 additional features. Available direct or through resellers. Call 800/325-2747 for more information. Offer expires 11/30/94.

DiskFit Pro 1.1 Dantz Development is offering this $125 utility for backing up to removable drives (Apr 92 *** for version 1.0) to users of any other backup program. Call 800/225-4880 to order. Offer expires 9/10/94.

Panorama II ProVue Development is offering this $395 flat-file database (1993 World-Class: May 92 *** for version 2.0) in specially marked packages for $99.95 to users of competitive products such as FileMaker Pro, 4th Dimension, and Helix. Call 800/966-7788 for more information. Offer expires 12/31/94.

PowerLaunch II 1.7.d PowerLaunch II is offering this $35 application-launching palette program to users of Square One and AT Ease for $25. Version 1.7.d includes an unlimited palette set interface as well as new Finder Quickcap extensions. A trial version of PowerLaunch is available on several online services. Call 303/366-8327 for more information.

PowerPrint 2.5.1 GDT Softworks is offering this $149 printer-driver utility (Sep 94 ***: 1994 World-Class) for $75 to registered users of competitive products such as MacPrint and Crappertiser. PowerPrint makes more than 1000 PC-based printers Mac-compatible. Call 800/663-6222 for more information.

SPECIAL DISCOUNTS
addDepth 1.0.2 Ray Dream is offering this $149 graphics utility for enhancing 2-D images with 3-D effects (Aug 93 ***) for $49. Call 800/846-0456 for more information and to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.

Berkeley Systems Screen Savers Berkeley Systems is offering a 50% discount on any of these $49.95 screen savers: After Dark, The Simpsons, Marvel Comics’ X-Men, Launch Pad, and The Disney Collection. Call 800/344-5541, ext. 702, for more information and to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.

Collage 2.0: Infini-D 2.6 Spectral International is offering its $349 Collage image-compositing software (Jul 94 ***: version 1.0) for $199, and its $695 Infini-D 3-D design application (Jan 93 ***: version 2.0) for $399. Call 800/433-7732 to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.

ComputerEyes/RT 1.0.3 TeleEyes/Plus 1.0; TeleEyes/Pro 2.0.1 Digital Vision is offering its $599.95 ComputerEyes SCSI video frame-grabber for $472.97, its $449.95 TeleEyes/Plus Mac-to-TV converter for $305.97, and its $799.95 TeleEyes/Pro converter with genlock/overlay for $543.97. Call 800/346-0990 for more information and to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.

Conflict Catcher II 2.1; SnapMail Casady & Greene is offering its $79.95 Conflict Catcher II INIT-manager utility (Mar 93 *** for Conflict Catcher 1.0) for $35. Its $200 (five-pack) and $320 (ten-pack) SnapMail electronic-mail and messaging packages are also available for $95 and $150, respectively. Call 800/399-4920 to order, and 408/484-9228 for more information. Macworld Expo show specials available from 8/2 through 8/5/94 only.

KPT Bryce 1.0 HSC Software is offering an introductory price of $99 for this $199 application for designing and rendering 3-D landscapes in a completely new way. KPT Bryce comes with a CD-ROM containing hundreds of preset, fully rendered images for redesign, as well as a 360-degree panoramic plug-in-screen-saver module for Berkeley Systems’ After Dark. Call 310/392-8441 for more information and to order. Offer not to expire before 8/31/94.

MacHandwriter EPS Associates is offering Communication Intelligence Corporation’s $299 pen computing solution for $249. MacHandwriter consists of a 6-by-9-inch graphics tablet, cordless pen (a $125 pressure-sensitive pen is optional for $90), and handwriting-recognition software. Call 800/685-4387 for more information and to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.

Nirus 3.4 Nirus Software is offering a $90 discount on either of two editions of this multilingual word processor: the Limited Flag Edition (includes 9 languages) for $149.95, and the Complete Flag Edition (includes 18 languages) for $199.95. Available through MacConnection (800/800-0003). Macworld Expo show specials available from 8/2 through 8/5/94 only.

Norton DiskLock 3.0 Symantec Corporation is offering a special $99 introductory price on the new version of this $129 security software (Jan 94 ***: DiskLock 9.0.1, the PowerBook version); its $116.1 ten-user DiskLock Administrator package is available for $891. Call 800/441-7234 for more information. Offer expires 9/7/94.

Now Contact 1.1 Now Software is offering a special introductory price of $49.95 for the latest version of its $65 (estimated steel price) contact manager (Mar 94 *** for the 680X0 version) 1.0). On installation, users can choose between native Power Mac (company claims performance is boosted by up to four times for most operations) and 68000 versions. Call 800/237-3611 for more information. Offer expires 8/31/94.

Peachpit Press Books Peachpit Press, which specializes in desktop publishing and introductory guides, is offering a 20% discount on all of its computer books for the Macintosh. Call 800/980-8999 for more information and to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.

Peirce Print Tools 1.0; Smoothie 1.0 Peirce Software is offering its $129 Peirce Print Tools—a collection of printing utilities (including QuickDraw X) that provides watermarks, borders, cover pages, and print logs—for $49. Its $149 Smoothie utility for smoother on-screen text and graphics is also available for $49. Both products can be purchased together for $89. Call 408/244-6554 for more information and to order. Macworld Expo show specials available from 8/2 through 8/5/94 only.
The Only Guide You Need to Master the Mac Universe!

Macworld Complete Mac Handbook Plus CD, 2nd Edition is loaded with expert advice, product profiles and 100s of tips and techniques.

Here it is: the 800 page all-in-one handbook for all Mac users — beginners to experts, by Jim Heid, one of Macworld magazine’s most popular columnists. From word processing and desktop video, to printers and surge suppressors, this completely updated and expanded guide is your key to mastering the Mac universe. Features a Bonus CD-ROM with over 300MB of dazzling software.

"Required reading for the power user — and anyone who wants to be one." — Frank Cosanova, PowerPC Product Manager, Apple Computer, Inc.

Price: $39.95 USA/$52.95 Canada
800 pages

Order Risk-Free: 1-800-762-2974
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.

Yes! Please send me: I Wish to Pay by:

Macworld Complete Mac Handbook

IDG Books Worldwide, Inc.
155 Bovet Road, Suite 310
San Mateo, CA 94402
(800) 762-2974, (415) 312-0600
Fax (415) 338-1260
## 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>Reader Serv. No.</th>
<th>Phone</th>
<th>Page No.</th>
<th>Advertiser</th>
<th>Reader Serv. No.</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>37-40</td>
<td>Adobe</td>
<td></td>
<td></td>
<td>169</td>
<td>Fargo Electronics</td>
<td>172</td>
<td>800/327-4622</td>
</tr>
<tr>
<td>138-139</td>
<td>Adobe</td>
<td>209</td>
<td>800/662-3623</td>
<td>241</td>
<td>Focus Enhancements</td>
<td>201</td>
<td>800/538-4888</td>
</tr>
<tr>
<td>113</td>
<td>AEC Software</td>
<td>44</td>
<td>800/450-1982</td>
<td>135</td>
<td>Fujitsu</td>
<td>202</td>
<td>800/831-4094</td>
</tr>
<tr>
<td>43</td>
<td>Agfa</td>
<td>158</td>
<td>800/885-4271</td>
<td>10</td>
<td>GDT Softworks</td>
<td>32/42</td>
<td>800/663-6222</td>
</tr>
<tr>
<td>90</td>
<td>Agfa</td>
<td>159</td>
<td>800/885-4271</td>
<td>94</td>
<td>Graphtech</td>
<td>46</td>
<td>410/290-5114</td>
</tr>
<tr>
<td>167</td>
<td>Agfa Technology Expo</td>
<td></td>
<td></td>
<td>53</td>
<td>Hewlett Packard</td>
<td>11</td>
<td>800/264-7622</td>
</tr>
<tr>
<td>26</td>
<td>Agio</td>
<td></td>
<td></td>
<td>198</td>
<td>HSC Software</td>
<td>5</td>
<td>310/392-8441</td>
</tr>
<tr>
<td>244-245</td>
<td>Alliance Peripheral Systems</td>
<td>62</td>
<td>800/874-1428</td>
<td>26</td>
<td>Image Club</td>
<td>50</td>
<td>800/387-9193</td>
</tr>
<tr>
<td>50</td>
<td>Alsoft</td>
<td>98</td>
<td>800/278-0432</td>
<td>207</td>
<td>Irincode Software</td>
<td>203</td>
<td>800/453-7671</td>
</tr>
<tr>
<td>124-125</td>
<td>American Power Conversion</td>
<td>72</td>
<td>800/786-2208</td>
<td>13</td>
<td>Iomega</td>
<td>273</td>
<td>800/967-0326</td>
</tr>
<tr>
<td>8</td>
<td>Anthro</td>
<td></td>
<td></td>
<td>44</td>
<td>Apple Computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-7</td>
<td>Apple Computer</td>
<td></td>
<td></td>
<td>130-131</td>
<td>Apple Computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Apple Computer</td>
<td></td>
<td></td>
<td>213</td>
<td>Apple Computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Apple Computer</td>
<td></td>
<td></td>
<td>62</td>
<td>Attan Corporation</td>
<td>617/776-1110</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Berkeley Systems</td>
<td></td>
<td>800/268-0800</td>
<td>246-249</td>
<td>BottomLine Distribution</td>
<td>63</td>
<td>800/022-8721</td>
</tr>
<tr>
<td>194-195</td>
<td>CD ROM Expo</td>
<td></td>
<td>617/301-8000</td>
<td>82</td>
<td>CE Software</td>
<td>170</td>
<td>800/523-7638</td>
</tr>
<tr>
<td>168</td>
<td>Charles River Analytics Inc.</td>
<td>18</td>
<td>800/913-3535</td>
<td>15</td>
<td>Claris America Inc.</td>
<td>64</td>
<td>800/411-0222</td>
</tr>
<tr>
<td>180-190</td>
<td>Citibank</td>
<td></td>
<td>800/374-0999</td>
<td>9</td>
<td>Claris Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Claris Corporation</td>
<td></td>
<td></td>
<td>30</td>
<td>Claris Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>Claris Corporation</td>
<td></td>
<td></td>
<td>234-235</td>
<td>ClubMac</td>
<td>96</td>
<td>800/CUB MAC</td>
</tr>
<tr>
<td>49</td>
<td>CompuServe</td>
<td>66</td>
<td>800/948-8199</td>
<td>96-97</td>
<td>Computer Discount</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Warehouse</td>
<td>2</td>
<td>800/861-4COW</td>
<td>46</td>
<td>Connectix</td>
<td>191</td>
<td>800/950-5880</td>
</tr>
<tr>
<td>218</td>
<td>Connectix</td>
<td>188</td>
<td>800/950-5880</td>
<td>51</td>
<td>Corel Corporation</td>
<td>78</td>
<td>800/836-3729</td>
</tr>
<tr>
<td>230-239</td>
<td>CRA Systems Inc.</td>
<td>20</td>
<td>800/375-9000</td>
<td>182</td>
<td>CTX International</td>
<td>38</td>
<td>909/595-6146</td>
</tr>
<tr>
<td>47</td>
<td>Dantz Development</td>
<td></td>
<td></td>
<td>47</td>
<td>Dantz Development</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>176</td>
<td>Dayna Communications</td>
<td>161</td>
<td>800/433-2962</td>
<td>74</td>
<td>Delphi</td>
<td>173</td>
<td>800/695-4005</td>
</tr>
<tr>
<td>66</td>
<td>Delrina Technology Inc.</td>
<td>137</td>
<td>800/268-6082</td>
<td>18</td>
<td>Deneba Software</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>246</td>
<td>Digital Axis</td>
<td>83</td>
<td>800/747-7555</td>
<td>240</td>
<td>Direct Connections</td>
<td>121</td>
<td>800/572-4305</td>
</tr>
<tr>
<td>285</td>
<td>Educorp</td>
<td>157</td>
<td>800/843-9457</td>
<td>205-E</td>
<td>Engineered Software</td>
<td>12</td>
<td>910/299-4843</td>
</tr>
<tr>
<td>28-29</td>
<td>Epson America</td>
<td></td>
<td>800/950-EPSON</td>
<td>242-243</td>
<td>Express Direct</td>
<td>81</td>
<td>800/765-0020</td>
</tr>
<tr>
<td>104-105</td>
<td>Palomar</td>
<td></td>
<td></td>
<td>110-111</td>
<td>Palomar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>247</td>
<td>Pro Direct</td>
<td>135</td>
<td>800/524-9952</td>
<td>152</td>
<td>OMS</td>
<td>268</td>
<td>800/392-7559</td>
</tr>
<tr>
<td>92</td>
<td>OMS</td>
<td>269</td>
<td>800/392-7559</td>
<td>282-283</td>
<td>Quality Computers</td>
<td>263</td>
<td>800/777-3612</td>
</tr>
<tr>
<td>193</td>
<td>RelyFax/Express Direct</td>
<td>262</td>
<td>800/944-8855</td>
<td>199-200</td>
<td>Signature Software</td>
<td>300</td>
<td>800/925-8840</td>
</tr>
<tr>
<td>12</td>
<td>Slate of the Art Software</td>
<td>219</td>
<td>800/654-3415</td>
<td>123</td>
<td>Starsoft</td>
<td>99</td>
<td>918/583-4149</td>
</tr>
<tr>
<td>48</td>
<td>Strata</td>
<td>114</td>
<td>800/665-6855</td>
<td>253</td>
<td>SuperMicro</td>
<td>126</td>
<td>800/352-3415</td>
</tr>
<tr>
<td>203</td>
<td>Syssist</td>
<td>29</td>
<td>710/661-5670</td>
<td>14</td>
<td>ViewSonic</td>
<td>143</td>
<td>800/835-6100</td>
</tr>
<tr>
<td>66</td>
<td>Tektronix</td>
<td></td>
<td></td>
<td>68</td>
<td>ViewSonic</td>
<td>237</td>
<td>800/888-8583</td>
</tr>
<tr>
<td>163</td>
<td>Xerox Corporation</td>
<td>100</td>
<td>800/ASK-XEROX</td>
<td>54-55</td>
<td>WordPerfect Corporation</td>
<td>800/526-7820</td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>2D Expo</td>
<td></td>
<td></td>
<td>21</td>
<td>Xante Corporation</td>
<td>111</td>
<td>800/926-8839</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>163</td>
<td>Xerox Corporation</td>
<td>100</td>
<td>800/ASK-XEROX</td>
</tr>
</tbody>
</table>

**Turn to the Macworld Shopper on page 254 to find additional advertisers.**

---

**MACWORLD InfoFax**

For instant faxed back information, call 1-800-234-0455 enter extension 505 for New Software

---

**MACWORLD** September 1994 223
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.

<table>
<thead>
<tr>
<th>SOFTWARE</th>
<th>BUSINESS</th>
<th>NETWORKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC Software</td>
<td>113</td>
<td>CE Software</td>
</tr>
<tr>
<td>Atsoft</td>
<td>50</td>
<td>Photonics</td>
</tr>
<tr>
<td>Attain Corporation</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Delrina Technology Inc.</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Microsoft Corporation</td>
<td>199-200</td>
<td></td>
</tr>
<tr>
<td>Signature Software</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>State of the Art Software</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Statsoft</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Systat</td>
<td>203</td>
<td></td>
</tr>
<tr>
<td>WordPerfect Corporation</td>
<td>54-55</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UTILITIES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alsot</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Berkeley Systems</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Charles River Analytics Inc.</td>
<td>168</td>
<td></td>
</tr>
<tr>
<td>Connectix</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Connectix</td>
<td>218</td>
<td></td>
</tr>
<tr>
<td>Dants Development</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>GD Softworks</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Inline Software</td>
<td>207</td>
<td></td>
</tr>
<tr>
<td>Novell Software</td>
<td>185</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HARDWARE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boards</td>
<td>20</td>
<td>Orange Micro Incorporated</td>
</tr>
<tr>
<td>CD ROM</td>
<td>15</td>
<td>Chiron America Inc.</td>
</tr>
<tr>
<td>Educorp</td>
<td>285</td>
<td></td>
</tr>
<tr>
<td>SuperMicro</td>
<td>253</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMPUTER SYSTEMS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6-7</td>
<td>Apple Computer</td>
<td></td>
</tr>
<tr>
<td>Apple Computer</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Apple Computer</td>
<td>130-131</td>
<td></td>
</tr>
<tr>
<td>BottomLine Distribution</td>
<td>248-249</td>
<td></td>
</tr>
<tr>
<td>CRA Systems Inc.</td>
<td>238-239</td>
<td></td>
</tr>
<tr>
<td>Express Direct</td>
<td>242-243</td>
<td></td>
</tr>
<tr>
<td>Relysis/Express Direct</td>
<td>193</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIGITIZERS/SCANNERS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agfa</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Agfa</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Digital Axis</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td>Epson America</td>
<td>28-29</td>
<td></td>
</tr>
<tr>
<td>Fujitsu</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Microtek Lab, Inc.</td>
<td>114-115</td>
<td></td>
</tr>
<tr>
<td>Mirror Technologies</td>
<td>164</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CRA Systems Inc.</td>
<td>238-239</td>
<td></td>
</tr>
<tr>
<td>CTX International</td>
<td>182</td>
<td></td>
</tr>
<tr>
<td>Digital Axis</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td>Mirror Technologies</td>
<td>164</td>
<td></td>
</tr>
<tr>
<td>Mobius Technologies Inc.</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>NEC Technologies</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Panelight Display Systems, Inc.</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>TRAM Inc.</td>
<td>219</td>
<td></td>
</tr>
<tr>
<td>ViewSonic</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPANSIONS/UPGRADES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobius Technologies Inc.</td>
<td>83</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FURNITURE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agio</td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HARD DISKS/STORAGE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alliance Peripheral Systems</td>
<td>244-245</td>
<td></td>
</tr>
<tr>
<td>ClubMac</td>
<td>234-235</td>
<td></td>
</tr>
<tr>
<td>Direct Connections</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Ion</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>La Cie</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>La Cie</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>La Cie</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>Megahaus</td>
<td>252</td>
<td></td>
</tr>
<tr>
<td>MicroNet Technology, Inc.</td>
<td>2-3</td>
<td></td>
</tr>
<tr>
<td>Micro Inc.</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Micro Inc.</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Pro Direct</td>
<td>247</td>
<td></td>
</tr>
<tr>
<td>SuperMicro</td>
<td>253</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INPUT DEVICES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BC</td>
<td>Kensington Microwave Ltd.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MISCELLANEOUS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentum, Inc.</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MODEMS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Logicade Technology Inc.</td>
<td>86</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MULTIMEDIA</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Panwright Display Systems, Inc.</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NETWORKING</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dayna Communications</td>
<td>176</td>
<td></td>
</tr>
<tr>
<td>Focus Enhancements</td>
<td>241</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POWERBOOK</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kensington Microwave Ltd.</td>
<td>BC</td>
<td></td>
</tr>
<tr>
<td>VST Power Systems</td>
<td>85</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Printers</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fargo Electronics</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>CDT Softworks</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Hewlett Packard</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>NEC Technologies</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>OMS</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Tektronix</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Texas Instruments</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Xantech Corporation</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Xerox Corporation</td>
<td>153</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Services On Line</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Computer</td>
<td>213</td>
<td></td>
</tr>
<tr>
<td>CompuServe</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Delphi</td>
<td>74</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trade Shows/Conferences</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CD ROM Expo</td>
<td>214-195</td>
<td></td>
</tr>
<tr>
<td>Macworld Expo</td>
<td>294</td>
<td></td>
</tr>
<tr>
<td>Macworld Expo Canada</td>
<td>170-173</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MacAcademy</td>
<td>84</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthro</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Miscellaneous</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Computer</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mail Order</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alliance Peripheral Systems</td>
<td>244-245</td>
<td></td>
</tr>
<tr>
<td>ClubMac</td>
<td>234-235</td>
<td></td>
</tr>
<tr>
<td>Computer Discount Warehouse</td>
<td>96-97</td>
<td></td>
</tr>
<tr>
<td>Direct Connections</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Express Direct</td>
<td>242-243</td>
<td></td>
</tr>
<tr>
<td>Focus Enhancements</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>Mac Bargains</td>
<td>236-237</td>
<td></td>
</tr>
<tr>
<td>MacConnection</td>
<td>79-81</td>
<td></td>
</tr>
<tr>
<td>MacMall</td>
<td>227-233</td>
<td></td>
</tr>
<tr>
<td>MacWarehouse</td>
<td>250-251</td>
<td></td>
</tr>
<tr>
<td>MegaHaus</td>
<td>252</td>
<td></td>
</tr>
<tr>
<td>Pro Direct</td>
<td>247</td>
<td></td>
</tr>
<tr>
<td>Quality Computers</td>
<td>282-283</td>
<td></td>
</tr>
<tr>
<td>Relysis/Express Direct</td>
<td>153</td>
<td></td>
</tr>
</tbody>
</table>
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 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.)
   81 1000+
   82 999 - 100
   83 99 - 25
   84 Under 25

B. Which of the following computers are installed at this entire work-site?
   (Check all that apply.)
   85 Apple Workgroup Servers/
        Mac Quadra-series
   86 Mac Centris-series/II-series/LLCU Series/ Performa 600/400/Se 30
   87 Mac LC/II/Performa 430/405/440/200 Classic Series/S/Plus/512C/138K/Portable
   88 Mac PowerBook-series/Duo-series
   89

C. What is the total number of Macs installed at this entire work-site? (Check one.)
   90 500 or less
   91 499 - 100
   92 99 - 50
   93 49 - 10
   94 9 - 1
   95 None

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)
   96 500 or less
   97 499 - 100
   98 99 - 50
   99 49 - 10
   100 9 - 1
   101 None

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)
   102 31 Initiate/Determine need for product/capabilities/features
   103 22 Evaluate, recommend, or approve brands/models
   104 23 Evaluate, recommend, or approve purchase source
   105 24 Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)
   106 1 million or more
   107 999,999 - $500,000
   108 499,999 - $100,000
   109 99,999 - $50,000
   110 49,999 - $10,000
   111 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.)
   112 31 Business software (Word processing, spreadsheet, database, etc.)
   113 32 Networking/communications hardware and/or software
   114 33 Multimedia/AV hardware and/or software
   115 34 Mobile computing products (PowerBooks, peripherals, software, etc.)
   116

H. What is your primary job function?
   (Check one.)
   117 31 Computer Reseller/VAR/VAD
   118 32 MIS/IT/IS/Network Management
   119 33 Engineering
   120 34 R&D/Scientific
   121 35 Corporate/General Management
   122 36 Accounting/Finance
   123 37 Marketing/Sales/PR/Communications
   124 38 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 $24.00 for a 1-year (12 issue) subscription (U.S. only).

Expires Nov 17, 1994 51 September 1994

J M Bos
Dordt College
498 4th Avenue NE
Stout Center
IA 51250-1606

Free Macworld Shopper Information Card

For faster results just fax this sheet to +1-415-657-3445. Please indicate your fax number where indicated.

100 D L 00 D 16
$500,000
SIOO.OOO

NO RECYCLED PAPER
This Fine Consume Wate
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

Macworld
Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906
Creative Computers’ MacMall is the first full line...

Now you can order Apple® Macintosh® computers by mail.

Creative Computers’ MacMall announces a breakthrough partnership with Apple® Computer, Inc. that will forever change the way you buy Apple Macintosh® products. As the first Apple Authorized Catalog Reseller, Creative Computers’ MacMall brings you the same level of award-winning service and low pricing that has made us the #1 Apple Macintosh® Reseller in Southern California and the fastest growing Macintosh mail-order company. You can now purchase any Apple product by mail through our catalogs. You benefit from a full Apple warranty, toll-free technical support, helpful salespeople, and the peace of mind that comes with buying from a company that is an Apple Authorized Catalog Reseller. For a free copy of our giant catalog, call 1-800-222-2808 today or fill out the form below and we will send you one right away.

Look over the following pages for a sample of our great selection and pricing.

For a copy of our catalog, call

1-800-222-2808

Hours: Monday–Friday 5am to 7pm, Sat./Sun. 7am to 6pm (pst)
Monday–Friday 8am to 10pm, Sat./Sun. 10am to 9pm (est)

Send me a one year catalog subscription

Name
Address
City    State    Zip

Mail to: MacMall, Dept. MW, 2645 Matcups, Torrance CA 90710

FedEx® shipping only $3.00. *$3.00 offer applies to orders up to 100lbs, contiguous U.S. only.

Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc.
**Super BUY!**

**The HP Deskwriter Printer**

HP's most affordable high-quality printer

- Clear, sharp 600x300 dpi professional output
- Exclusive Resolution Enhancement Technology
- Grafical printing for domestic black ink
- 35 TrueType scalable fonts
- Built-in print spooler
- Three-year limited warranty

**HP Deskwriter 520 Printer**

HP's affordable high-quality black and color printer for the Macintosh computer.

- Clear, sharp 600x300 dpi professional output
- HP's exclusive Resolution Enhancement Technology
- Easy color printing with ColorSmart technology
- Prints up to 3 pages per minute, and an average of 4 pages per minute in color
- Resistant black and color ink cartridges for conversion black and color printing without switching cartridges
- 35 TrueType scalable fonts
- AppleTalk and serial interfaces

**HP Deskwriter 560C Printer**

- HP's high performance color laser printer

**HP Laserjet 4ML Printer**

- HP Resolution Enhancement technology and microfine toner produce the best 300dpi output available
- PostScript Level 2
- 35Adobe scalable fonts
- ISCC-based level B090KA processor
- 4MB RAM standard memory
- Macintosh and Windows PC compatible

**HP Laserjet 4MP Printer**

- True 600dpi resolution utilizing Resolution Enhancement technology and microfine toner
- PostScript Level 2
- 35Adobe scalable fonts
- ISCC-based level B090KA processor
- 6MB RAM standard memory
- Macintosh and Windows PC compatible

**HP SCANJET IIp Scanner**

- 300dpi, Grayscale Flashed Scanner
- 8 bit gray scale provides high quality reproduction
- New AutoTracing technology features makes third-party OCA software even more accurate
- Print-in-calibration optimizes settings for high-quality output
- Automatic exposure saves time and eliminates guesswork

**HP SCANJET IIX Scanner**

The high performance color/greyscale scanner that provides advanced features at a breakthrough price!

- Support image quality with 1600 DPI enhanced resolution, 600 DPI optical resolution
- 24-bit color allows you to recognize and scan over 16 million colors
- HP AutoPage for faster scans recognition
- Optional transparency adapter available
- Optional 50-page document feeder available
- One-year HP Express Exchange Warranty for 24-hour replacement service

**HP Deskwriter 310 Printer**

The new HP DeskWriter 310 printer, re-compressive printing for Apple Macintosh PowerBook® users.

- Crisp 300 dpi black print
- Optional color kit for amazing color output
- Fast - up to 3 pages per minute
- Comports and lightweight
- 35 scalable fonts built-in
- Background printing
- Optional rechargeable battery

**INCREDIBLE!**

**$198**

**$289**

**HP Deskwriter 520 Printer**

**$289**

**HP Deskwriter 560C Printer**

**$579**

**HP Laserjet 4ML Printer**

**$1029**

**HP Laserjet 4MP Printer**

**$1369**

**HP SCANJET IIp Scanner**

**$479**

**HP SCANJET IIX Scanner**

**$949**

**HP Deskwriter 310 Printer**

**$309**
**KENSINGTON**

**Turbo Mouse 4.0**
The highest rated Mac input device is also the most comfortable. Turbo Mouse 4.0’s large track ball is ultra smooth and gives you better and more precise control. Unique programmable software gives you control over the two over-sized buttons which customize acceleration and maximize performance.

**NoteBook Traveler Compact Case** $47
**NoteBook Traveler Executive Case** $100
**NoteBook Traveler Deluxe Case** $73
**Traveler Case Tote** $34
**Power Tree 10 Surge Protector** $17
**Power Tree 20 Surge Protector** $24
**Power Tree 50 Surge Protector** $45
**NoteBook Keypad** $79

Simply the Best Carrying Cases for PowerBook Computers

**TARGUS**

**Fabric Premier PowerBook** $34.99
**Univeral PowerBook Case** $189.99

**Consumer Technology Northwest, Inc.**

**The Presenter Plus**

High quality, extremely flexible, mobile computer-based presentations are as easy as a few simple connections with the Presenter Plus. With it's light weight computer interface, you can create high impact presentations on any standard television display. Plus it is compatible with both Macintosh and PC (windows, dos, os/2) systems for the ultimate flexibility.

Input: VGA DB-15, HDB 15 pin video cable adapter included (optional NTSC composite video (RCA video jack), Svides (S-VHS or HBB) plus VGA DB-9, allows simultaneous use of VGA monitor and television). Video: 24 screens including power color and cable accessories included. VGA in, cable, RCA composite cable, S-Vide cable. Macintosh video switch, Plug-in for TVP software, Video Dock for PC, Kensington monitor software for setting and aligning in Windows. Compatible with: Powerbook 160, 160x, 180, 180s, Duo with Dock, LIU, and Quicksilver Model.

**VividVision TM 20/20**

**20” Color Monitor**
- 20 inch Image CRT
- 31mm Dot Pitch
- 1280x1024 highest resolution
- Anti-static/antireflection coating
- EPA Energy Star Compliant
- Mac and PC compatible

**VividVision TM 17T**

**17” Color Monitor**
- 17 inch Trinitron® CRT
- 25mm Stripe Pitch
- 1120x750 highest resolution
- Anti-static/antireflection coating
- EPA Energy Star Compliant
- Mac and PC compatible

**PreciseColor 20V**...
**Color 21**...
**Two Page Display 20gs**...
**Two Page Display 21gs**...

MacMail Order Line: 310-222-5800
Offer Code: D4829M16
Order Status: 800-560-6800

**ORDER TOLL FREE**
800-222-2808

Call us for all your Apple Macintosh® Needs!

**Creative Computers**

**MacMail Your Mac Superstore!**

**VideoVision Studio**
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 drive. It extracts names solely inadvertently and stores it in the video for faster editing.

**Precision Color Pro 24XP Video Card**...

**Save $500!**
When you try MacVision Tools from a qualiﬁed computer’s board, we will pay you $500 toward a MacLein/Radius display.

**Radius LeMans GT Display Adapter**
plus FREE NEC® CD-ROM DRIVE!!!

**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. Compatible with most built-in video on Quadra Centris and PowerMac models, provides 832x642, and 1152x870 resolutions. Trinitron technology and adjustable color temperature makes most accurate color. It also meets the Swedish MPUR ergonomic guidelines, with an electromagnetic shield 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 applications. Exclusive Worry-Free Warranty.

**Precision Color 17**
New 17” color monitor with “on-the-fly” resolution switching from 480x480 to 1152x870. Digital controls for precise settings and superior 0.5mm dot pitch gives you quality you can see! Compatible with built-in video of Quadra and Centris in 16- and 24-bit modes. Ask about the Radius worry-free service warranty!

**After $100 Mail-in Rebate**

**Send mail orders to: MacMail Order Dept., 2656 Mariposa St., Torrance, CA 90503-6148**
The MacWaveMaker sets the performance standard for Macintosh inboard MIDI synthesis with sound quality good enough for pros. Whether you're composing, recording, film-scoring or creating multimedia presentations, the MacWaveMaker lets you do it with phenomenal Kurzweil sound. Just plug the MacWaveMaker into any NuBus Mac, drag and drop the drivers you need, and you're ready to make music with the hottest wave-table synth card on the market. The daughter card provides the way to even greater enhancements like timbral editing and a high-fidelity headphone amplifier.

- Auxiliary MIDI Port - pair (MIDI-in and MIDI-out/ thru)
- 7 card fits into any NuBus Mac
- 100% General MIDI Level 2 compatible
- Dual 18-bit D/A converters for CD-quality sound
- Kurzweil's SuperOrchestral patches (from their Mark 10/15 digital piano)
- MT2/CML2 compatible
- 337 melodic instrument sounds
- 15 different drum kits with more than 400 percussion sounds
- OMS, MIDI Manager and QuickTime 2.0 driver included

KURZWEIL

Add the highest quality wave-table synthesis to your QuickTime movies and other multimedia productions.

DaynaPORT Easy Net Transceivers
DaynaPORT Easy Net Transceivers provide an easy solution to connecting your Mac or any peripheral with an Ethernet port to a 10Base-T cable. The EasyNet transceivers measure only 2.3"x1.4" by .85" and only weighs .85" making them perfect for the portable network users. Easy to use and no software to install, just plug in and go. Backed by Dayna's lifetime warranty and free technical support.

- 10Base-T cable
- 7 card fits into any NuBus Mac
- 100% General MIDI Level 2 compatible
- Dual 18-bit D/A converters for CD-quality sound
- Kurzweil's SuperOrchestral patches (from their Mark 10/15 digital piano)
- MT2/CML2 compatible
- 337 melodic instrument sounds
- 15 different drum kits with more than 400 percussion sounds
- OMS, MIDI Manager and QuickTime 2.0 driver included

$5999

DanyaPORT Pocket SCSI/Link T
Ideal Ethernet connection for PowerBooks.
Pocket SCSI/Link T is a small, lightweight SCSI-to-Ethernet network connector for Macintosh computers. DaynaPORT, SCSI/LinkT features an innovative SCSI pass through solution with two SCSI ports, one D-Port and a DB35 port—allowing a connection to a desktop Mac or another PowerBook using only one cable. Three LED lights give feedback on power, activity and link status. The SCSI/Link T comes with a RJ45 connector for 10Base-cabling. SCSI/Link T features a PowerMite™ cable which supplies power using a Mac's ADB port instead of a power adapter.

$23499

Order Code: D482MG14

MORNING STAR Solutions, Inc.

C R A T I V E C O M P U T E R S

MACMALL

YOUR MAC SUPERSTORE!

CREATE THE MACMALL

ORDER TOLL FREE
800-222-2808
Call us for all your Apple Macintosh® Needs

MICROTEK

Better Images Through Innovation

ScanMaker III
Consider this: 36-bit, single-pass color scanning at an optical resolution of 4000x1200 dpi, interpolated up to 2400x2400 through software. Plus exclusive DCR color calibration and correction technology. PLUS: Full copy of Adobe Photoshop 2.5!

The NEW ScanMaker III scans in 36-bit color, capturing and outputting images at up to 12 bits per RGB color channel. Scans approximately 68.7 billion colors for smoother, more precise color gradations, detailed highlights and rich shadows, accurate midtones, and a full photographic dynamic range.

- 36-bit one-pass color scanner: 6000x200dpi true optical resolution
- Maximum document size 8.5"x14"
- Full copy of Adobe Photoshop 2.5
- Requires System 7 with at least 8MB RAM
- Optional Transparency Media Adapter and 50-sheets feeder available

$25899

ScanMaker IISP
The new single-pass ScanMaker IISP Color Flattened Scanner with DCR™, the most accurate color calibration system available for the desktop, is another price/performance breakthrough from Microtek.

Accurate color calibration – for more vibrant, saturated and truer color – was once only available at a premium price on high-end scanning equipment. Now, Microtek includes it with the very versatile and affordable ScanMaker IISP. It is also Apple ColorSync compatible.

- 24-bit single-pass scanner (scan as fast as 4 seconds for full color!)
- 1200 dpi (software interpolated) – true 300x600 optical resolution
- Bundled with Adobe Photoshop® 2.5 LE
- Includes DCR™ software and an ITB color calibration target
- Optional document feeder and transparency option available

$7989

ScanMaker IIR
A powerful, high-resolution color flattened scanner with 24-bit color and 600x1200 dpi optical resolution, plus DCR technology

The ScanMaker IIR offers vivid 24-bit-per-pixel color scans, plus DCR, Dynamic Color Rendering. The DCR system includes software and an industry standard color calibration target so that a custom scanner profile can be generated to produce more accurate color scans.

- 2400 dpi resolution (interpolated) – true 600x1200 optical resolution
- Maximum document size 8.5"x13.5"
- Includes Full Copy of Adobe Photoshop 2.5
- Apple ColorSync compatible
- Full grayscale scanning capability
- Optional transparency adapter and automatic document feeder available

$10889

ScanMaker II
With Fractal Design Sketcher 1.0

$3999

ScanMaker II
With Adobe Photoshop 2.5 LE

$5489

MacMall FAX Order Line: 310-222-5800
Order Status: 800-560-6890

L O W E S T P R I C E S ? Y E A H !
If you see a lower price advertised in this magazine, please call us and we'll do our very best to BEAT that advertised price!
We do it very fast!
With our sophisticated order entry, computerized warehouse and FedEx shipping system we get your order on its way the same day, so you can enjoy your purchase tomorrow!*

**3M**

Battery Technology, Inc.

**High Performance for your PowerBook.**

**Bти Slim Pack**

Compatible with PowerBook 100 to 180c, with typical runtime of 7 to 9 hours on 100 to 180c, no memory effect. Uses Apple AC adapter to charge. Compact (1.3 x 0.5") battery that weights approximately 2.1 lb. SimPack is maintenance free and has no memory effect. In powers Mac Duo 210 to 280c up to four times longer than Apple's original internal batteries. Five-litred LED charge indicator and comes with its own adapter for recharging.

**$149**

**SimPack for Duo**

SimPack for the PowerBook 100 is an external zero footprint (1.0 x 0.7") battery that weights approximately 0.6 lb. SimPack is maintenance free and has no memory effect. In powers Mac Duo 210 to 280c up to four times longer than Apple's original internal batteries. Five-litred LED charge indicator and comes with its own adapter for recharging.

**$239**

**High Capacity Battery**

Compatible with 140 to 180c models. 3.1 Ah capacity. LED indicator. Protective cap over quality gold-plated contacts. Quick-flick design. 1.5 LED charge indicator for six month warranty.

**$74**

**X-Pack for Message Pad**

Extended rechargeable power of up to 15 hours inside a great leather case with room for PCH-CIA cards. Checkbook. With AC adapter.

**$104**

**PowerCharger Plus for PowerBook**

Compatible with Apple and Bти batteries for 140 to 180c, includes both AC and cigarette adapter. Recharges in 1.5 hours. Twelve month warranty.

**$98**

**RapidCharger for PowerBook Duo**

Compatible with 100c to 170c, includes cigarette adapter. Uses the original Apple AC adapter. Recharges battery in about 45 minutes.

**$99**

**Mini AC Adapter for PowerBook**

**$59**

**PowerBook Starter Kit**

**$124**

**PowerKit for PowerBook**

**$159**

---

**SuperMac**

**Digital Film 1.6**

Digital Film 1.6 is the on-line digital-video system delivers desktop video editing and multimedia production in a single slot supports 30 frames per second for NTSC compatibility, with video capture up to 640x240 pixels (768x288 for PAL). Integrated hardware-accelerated JPEG compression makes it possible to record to disk at compression ratios up to 50:1. Includes on-board audio capability. Plus, integrated Thunder technology delivers 24-bit accelerated graphics on displays up to 82x642 resolution. Now PowerMac compatible and can be used with StarLight Network.

**E-Machine T16 II**

The T16 II displays outstanding color quality at multiple resolutions from 640x480 to large screen 152x580. incredibly sharp text and graphics. The T16 II is easy on the eyes.

**$1699**

---

**Quantum**

**Highest quality internal and external hard drives**

All Hard Drives include "FWE" Hard Drive Software

- **2.5" for PowerBook**
  - 170MB 17ms int. **$99**
  - 256MB 17ms int. **$149**

- **3.5" Low Profile**
  - 170MB 14ms int. **$79**
  - 256MB 14ms int. **$129**

- **3.5" Half-height Drives**
  - 1225MB 10ms int. **$299**
  - 2000MB 10ms int. **$399**

Installation of internal drives into your machine available for $25. Inquire for more information

---

**MacMail Your Mac Superstore**

**ORDER TOLL FREE**

**800-222-2808**

**Call for a special introductory price**

---

**CLARIS**

**Claris Draw**

The Next Generation of MacDraw Software

Claris Draw makes it easy to master any graphic task, offering all the advanced drawing tools you need to create compelling, professional-quality graphics. But that's just the beginning. You also get a wealth of powerful painting and image editing tools, advanced text handling, and presentation capabilities. And, floating palettes give you one-click access to dramatic effects like shadows, embossing, colors, gradiences and fill patterns.

Claris Draw also maximizes your productivity by offering seamless graphics compatibility with industry standard file formats including MacDraw and MacDraw Pro. And its underlying Claris Graphics Engine allows you to transparently share files with the new Claris Impact graphics engine from Macintosh and Windows. Claris Draw is the versatile new drawing standard for fast and flexible Macintosh graphics.

---

**Call For Special Introductory Price**

---

**Claris Organizer**

The Ultimate Personal Organizer

Claris Organizer takes the all-in-one approach to personal organization, eliminating the inconvenience of learning and separate contact and schedule management packages. Claris Organizer uniquely combines powerful personal organization features, such as: appointments with week, day and month views; auto-dialing and multiple field phone, e-mail and fax numbers; task lists that can be prioritized, sorted and checked off when completed; and notes that can be linked to appointments, contacts, and to do items. Claris Organizer provides all these advanced features while still retaining exceptional performance and compact size, requiring only 850KB disk space and 1 megabyte of RAM. Claris Organizer seamlessly integrates all this functionality within one easy-to-use application.

With the purchase of a CPU

**$69**

---

**OTHER GREAT CLARIS PRODUCTS**

- Claris Works 2.1: *$198*
- Claris Works 2.1 Competitive Upgrade: *$99*
- Claris Impact: *$499*
- Claris Impact: $263 for PowerMacintosh: *$499*
- Claris Impact: Competitive Trade Up: *$96*
- FileMaker Pro 2.1: *$263*
- FileMaker 2.1: *$263*
- FileMaker 2.1: Competitive Trade Up: *$177*
- Power To Go: *$177*
- Retriever 1.1: *$177*
- From Alice to Ocean CD: *$177*
- Brush Strokes: *$177*
- Safety Suite: *$177*
- MacProject Pro 1.5: *$399*
- Amazing CD: *$399*
- Amazing Animation 3.5: *$399*

---

Send mail orders to: MacMail Order Dept., 2645 Maricopa St., Torrance, CA 90103-3164

MacMail FAX Order Line: 310-222-5800

Offer Code: D482M14

Order Status: 800-560-6800

MAC WORLD September 1994 231
Virtus VR

Easy to use, Virtus VR is a great introduction to building 3D environments on your desktop. Create and define usable spaces by dragging, dropping and combining "rooms" to create your own scenes; or fly through and manipulate exciting scenes we have created for you. Sample galleries of furniture, people, windows, doors and many more provides objects you can "drag and drop" into your 3-D environments. Additional galleries provide new scenes, new objects and new textures to enable you to focus your VR application on your specific visualization needs.

Each Gallery includes exciting Virtus VR scenes and models, both 2D and 3D Galleries of objects, and 800+ palettes of textures relating to the particular Gallery theme.

Home Remodeling Gallery ........................................... "27" 65534
Science Fiction Gallery ................................................ "27" 65535
Interior Design Gallery ............................................... "27" 65536
Office Design Gallery ................................................. "27" 65537
Alphabet Rooms Gallery ............................................. "27" 65538
Archaeology Gallery .................................................. "27" 65539

ProPhone

These are the only Phonebooks on CD-ROM that allow users unlimited downloading of 80 million white and yellow page listings at no cost. Because of this unique unrestricted downloading advantage, PC Magazine's Jim Seymour calls these phonebooks "one of my favorite CD-ROM titles." ProPhone directories now have an exciting new mapping feature that will allow you to visualize the database you create on a map of the U.S! $9899

Select Phone

The leading reverse search Phonebook on CD-ROM lets you look up residential and business listings by any field; name address, telephone number, business heading or SIC code. Select Phone is a combination national phone book, 80 million name list, reverse phone directory, map program and a drop marketing utility all in one! Includes a certificate for a free upgrade! $17899

Free Phone

Contains all of AT&T's 250,000 toll free directory listings on a single CD-ROM $2499

Direct Phone

lets you search U.S. telephone directories by name. Direct Phone contains two CD-ROM discs, one with all the residential listings, and one with all the businesses. Includes a certificate for a free upgrade! $9899

ORDER TOLL FREE

800-222-2808

Call us for all your Apple Macintosh® Needs

Mac Mall has it all!

We do our best to carry just about everything!

VIRTUS Virtual Reality for the Desktop

Virtus WalkThrough

Virtus WalkThrough is the premium 3-D drawing and visualization program for the Macintosh™ computers that lets you walk through your ideas. The software's unique combination of object-oriented drawing and real-time 3-D graphics provides an interactive environment for prototyping designs of all types. Architects, graphic designers, illustrators, real-merchandisers, engineers, multimedia authors, and set designers can all create 3-D perspective views of their own creations with Virtus WalkThrough.

Virtus WalkThrough ...................... "117" 65531
Virtus WalkThrough Pro ............... "239" 65532

Mac Mall

YOUR MAC SUPERSTORE!

Call MacMall for Memory!

For the lowest prices on memory products for your desktop Macintosh or PowerBook, call us FIRST!

8-Bit 80ns SIMMs (30 pin)
1x8 80ns $47 2H74
2x8 80ns $87 60274
3x8 80ns $169 62239

32-Bit SIMMs (72 pin)
LC III, Performa, Contra, Quadra, Power Mac
4 MB 80ns $169 44648
8 MB 80ns $327 61770
16 MB 70ns $697 61271
32-Bit SIMMs (72 pin)
Quadra, Power Mac
4 MB 60ns $179 61103
8 MB 60ns $327 61105
16 MB non-composite $337 61242
32 MB non composite $1,449 61245

PowerBook 140, 145, 170
4 MB $165 61751
6 MB $265 65471

PowerBook 140, 145, 160, 180
4 MB $165 60770
6 MB $322 60774
10 MB $411 60776

PowerBook 150c, 180c
4 MB $179 61192
6 MB $279 61195
10 MB $419 61196

PowerBook Duo (all models)
4 MB $207 61197
8 MB $316 60394

PowerBook 520/540

4MB $245 60400
8MB $485 60407
16MB $935 60480
32MB $1,720 60489

Mac Video

256K VRAM $22 58381
512K VRAM $30 40488

 Pricing on memory modules can fluctuate on a daily basis. Please call for the latest prices.

$13999

Clear View Color 20/20

20" Color Display

The RasterOps 20/20 Multimode Color Display provides a full color two-page solution at an affordable price. An excellent value among 20-inch displays, this monitor is capable of supporting a wide range of scanning frequencies and can be used with a variety of display adapters. The RasterOps 20/20 provides ergonomic features designed to increase your productivity and working comfort.

- 31mm super fine dot pitch
- Support 640x480 to 1152x870
- Anastigmatic/haze coating
- Digital user controls
- 3-Year Limited Warranty

$17999

Clear View Color 20T

20" Color Display

- 31mm super fine dot pitch
- Supports 640x480 to 1280x1024 pixels
- Trinitron Tube
- Automatic deghosting
- Microprocessor controlled user-defeatable settings

$18999

Paintboard Lighting

"839" 64008

"779" 64009

MoviePak2 ProSuite

"3399" 64009

Paintboard Turbo XL .. "1128" 64008

American Visions

20th Century Art from the Roy R. Neuberger Collection

Ever walk around a museum and wonder what the artists were like? American Visions presents over 210 great works of art in full 24-bit color representing 40 American artists along with videos, photographs and narrative about the artists and their work. Watch Jackson Pollock paint and discover how Milton Avery broke the traditional palettes. Navigation by the collector and the artists reveal their thoughts on art, life and the process of creating. American Visions is a way to learn about 20th century masterpieces in the words of the artists themselves. Requirements: 680/630 Mac or better (GL2 or better), 256-color, 13" monitor, 5MB RAM, System 6.0 or later.

$5999

The Great Golf CD

Finally! An interactive CD that gives you a humorous and unique perspective on this most compelling sport. Learn about golf history, people, events, courses, great shots, and equipment. How many swings did Alan Shepard take when he played golf on the moon? Where are the most exotic courses in the world? Who really invented golf? Casual watchers and serious golfers alike enjoy listening to these golf stories while finding answers to these and other questions on The Great Golf CD.

And what about those surprises? Requirements: 680/630 Mac or better (GL2 or better), 256-color, 13" monitor, 5MB RAM, System 6.0 or later.

$4299

Greg LeMond's Bicycle Adventure

The ultimate bicycle voyage that you won't want to miss! Every trip is a different experience! There are hundreds of interactive screens covering diverse topics such as cycling, history, racing, touring, mountain bikes, environmental impact, people and equipment. Love yourself in vibrant images, exciting video, sensual and provocative sound. Hop on and take the ride of all time -- it's just a click away! Requirements: 680/630 Mac or better (Color Classic or better), 256-color, 5MB RAM, System 6.0 or later.

$4299

Mac Mall FAX Order Line: 310-222-5800
Order Status: 800-560-6800

MacMall has it all!

We do our best to carry just about everything!
VividQuest™
The Best in Removable Media

VividQuest 88MB drives provide you with unlimited storage space for your data with the flexibility of a floppy disk. Once you fill up one disk, just pop in a new one and your ready to go. Transporting documents has never been easier, just place your cartridge in any SyQuest compatible drive and you are ready to get back to business! Archive irreplaceable files with the confidence that your data will not be compromised. VividQuest 88MB internal and external drives also read and write to 44MB cartridges.

VividQuest 88MB $249.99
External Drive R/W 44MB
Mounting bracket and cartridge extra

VividQuest 88MB $299.99
Internal Drive R/W 44MB

Best Selling Software Titles

Aldus PageMaker 5.0 $1578
Aldus FreeHand 4.0 $1388
Aldus Persuasion 3.0 $1233
Alias Sketch 2.0 $549
Adobe Illustrator 5.5 $387
Adobe Photoshop 2.5.1 $78
Adobe Audition Bundle $159
Light Source OFOTO $198
Fractal Design Painter 2.0 $246
Fractal Design Dabbler 1.0 $147
Fractal Design Painter X1 $147
Specular Int Int. Infini-D $499
Specular College 1.01 $219
RayDream 3.0 $224
RayDream addDepth $122
RayDream JAG II $88
QuarkExpress 3.3 $599
Macromedia Director $794
Macromedia Macromedia $794
Macromedia Macromedia $794
Elastic Reality 1.1 for Mac... $99
Gold Disk Astound $248
Insignia SoftWindows 3.1 w... $199
Insignia SoftPC Pro 3.0 $95
Insignia RapidCD $169

Fax/Modems 28.8kbps
Your Choice!

270MB $669
200MB $897
105MB $697
88MB $669
44MB $647

Genuine SyQuest Cartridges

Lowest pricing on high quantity removable cartridges for any compatible SyQuest drive mechanism.

270MB $669
200MB $897
105MB $697
88MB $669
44MB $647

Executive Multimedia Kit 200ms

Features an external 200ms, SCI-2, 320kbps data transfer rate, 358KB buffer size CD-ROM drive and includes one CD title.

Basic Media 200ms Drive/External

$539.99

Executive Multimedia Kit 320ms

Features an external 320ms, SCI-2, 320kbps data transfer rate, 236KB buffer size CD-ROM drive and includes five CD titles.

Basic Media 320ms Drive/External

$409.99

Legend Executive Multimedia Kits

Now you can finally take advantage of your Macintosh as it was meant to be, full of light, sound and action with the Legend Executive Multimedia Kits. The ideal combination of high performance hardware and today's most exciting CD titles. Each kit includes a double speed, SCSI II, Kodak Photo CD Ready Drive, 20 watt Hi Fi Digital Stereo speakers and headphone/microphone headset. On keeping with our leading edge reputation we offer several drive choices and these titles selections:

Send mail orders to: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90403-5144
Circle 131 on reader service card
Quantum's hard disk drives are available in 2.5 and 3.5-inch form factors in storage capacities ranging from 85 megabytes to 2.1 gigabytes.

**LPS 270MB INTERNAL**

- **Capacity**
  - 170mb: $259
  - 256mb: $339
- **Price**: $239

**IN STOCK!**

- **Features**
  - 20ms access time
  - WriteCoche & DiSCache Firmware
  - Includes all necessary brackets and software

**Seagate**

- **3.5" HALF HEIGHT**
  - 1.9GIG ST1900N Hawk 2
  - Access Time: 9ms
  - Capacity: 160mb
  - Actual MAC Capacity: $1179
  - Internal: $1239
  - External: $1389

- **5.25" FULL HEIGHT**
  - 3.4GIG ST4340N Elite-3
  - Access Time: 1ms
  - Capacity: 275mb
  - Actual MAC Capacity: $1999
  - Internal: $2099
  - External: $4099

Seagate drives carry a ONE Year Warranty.

**NEC MultiSpin 3xp**

- **CD-ROMs**
  - **Capacity**
    - 1.2GIG: 900mb
    - 2.4GIG: 1800mb
  - **Price**: $199

**ClubMac Removable Hard Drives**

- **ClubMac 3.5" REMOVABLES**
  - Capacity: Internal/External
  - **Model**
    - ClubMac 44mb 5.25" (S055): $199
    - ClubMac 88c 5.25" (S0110C): $379
    - ClubMac 200mb 5.25" (S0200): $529
    - ClubMac 105mb 3.5" (S03105): $289
    - ClubMac 270mb 3.5" (S03270): $499

**ClubMac Optical Drives**

- **Ask About Our New 1.3 GIG Sharp Optical**
  - ClubMac (M2512A) 5.25") 230mb Fujitsu Optical
  - ClubMac (Y-750) 5.25") 650mb Sharp Optical
  - ClubMac (FT-800) 5.25") 1.3GIG Sharp Optical
  - MAXOPTIX TAHITI III (9400) 5.25") 1.3GIG Optical

- **Hewlett-Packard (CL1714T) 5.25") 1.3GIG Optical External Reader**
  - Capacity: 28ms

**ClubMac Tape Backups**

- **Model**
  - 2.0GIG ClubMac DAT DDS: 60mb, 90mb
  - 2.4GIG ClubMac DAT/DC DDS-DC: 60mb, 90mb
  - 4.8GIG ClubMac DAT/2 DDS-2: 60mb, 90mb, 120mb
  - 2.0GIG HP DAT DDS: 60mb, 90mb
  - 2.4GIG HP DAT/DC DDS-DC: 60mb, 90mb
  - 4.8GIG HP DAT/2 DDS-2: 60mb, 90mb, 120mb
  - 2.2GIG EXB-2050S 8mm: 112ms
  - 5.0GIG EXB-8505S 8mm: 112ms

**ClubMac CD-ROM Reader**

- **Model**
  - ClubMac 2X Speed CD-ROM Reader Dual Speed performance

**ClubMac Dual Speed**

- **Model**
  - ClubMac Dual Speed (External, 22mb access time)
  - The ClubMac CD-ROM reader comes with a ONE Year Warranty.

**ClubMac CD-ROM Bundle**

- **Model**
  - ClubMac CD-ROM Reader (External, 22mb access time)
  - The ClubMac CD-ROM reader comes with a ONE Year Warranty.

**ClubMac Removable Hard Drives**

- **Model**
  - ClubMac 3.5" REMOVABLES
  - ClubMac 5.25" REMOVABLES
  - ClubMac 3.5" REMOVABLES

**ClubMac Optical Drives**

- **Model**
  - ClubMac (M2512A) 5.25") 230mb Fujitsu Optical
  - ClubMac (Y-750) 5.25") 650mb Sharp Optical
  - ClubMac (FT-800) 5.25") 1.3GIG Sharp Optical
  - MAXOPTIX TAHITI III (9400) 5.25") 1.3GIG Optical

**Hewlett-Packard (CL1714T) 5.25") 1.3GIG Optical External Reader**

- **Model**
  - Hewlett-Packard (CL1714T) 5.25") 1.3GIG Optical External Reader
IF YOU SEE IT ••• CALL!
For the Best Deals Around!
1-800-619-9091

POWERPRO
601 80MHz Power PC Upgrade
• Risc-based 80MHz or 60MHz PowerPC Processor
• True plug and play design
• Genuine Apple PowerPC ROMs for 100% compatibility
• Add up to 128MB of additional memory to your system
Daystar #95351

CAIUSRA
ACUxRA 34 E 4-Megabyte RAM 
ACUxRA 144 + FAX""
LeMansGT
- Best performance of any interface in its class
- Custom ASIC circuitry for ultra-fast 32-bit Quickdraw acceleration
- Lifetime warranty with overnight replacement
- Multiple on-the-fly resolutions from 1152x870 to 640x480.

FREE! CD ROM Drive!
Until August 31, receive a free NEC Multispin 3xe CD ROM drive with the purchase of the LeMansGT or the PrecisionColor Pro 24X!

Price: $1799

Precision Color Display 21
- 21 inch flicker free flat square tube
- Adjustable color temperature settings
- Works with most Macintosh built-in video
- 10 square inches larger than 20 inch displays
- Microprocessor controls and user adjustments
- Multiple on-the-fly resolutions from 1360x1024 to 1024x768
- 0.28mm dot pitch - 15% sharper than a 20 inch Trinitron

Price: $1849

Special Bundle Pricing
- PrecisionColor Display/21 with LeMansGT
- PrecisionColor Display/21 with Pro 24X
- PrecisionColor Display/20V with Pro 24X

Volume Discounts Available!

PhotoBooster
- Twin AT&T 3210 Digital Signal Processors (DSPs) running at 66mhz.
- Accelerates over 50 Photoshop filters
- Up to 10 times faster than a Quadra 950

Price: $699

Precision Color Display 20V
- Supports multiple resolutions-on-the-fly including 1280x1024, 832x624 & 640x480.
- Works with most Mac built-in video
- Mac/PC compatible
- 0.31mm dot pitch
- Microprocessor user controls located on the front panel

Price: $1299
### HARD DRIVES FROM $270

**Fujitsu 1.2GIG External—$755**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Size</th>
<th>Access</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5GB</td>
<td>2.5&quot;</td>
<td>14MS</td>
<td>$315</td>
<td>$375</td>
</tr>
<tr>
<td>3.5GB</td>
<td>3.5&quot;</td>
<td>8.5MS</td>
<td>$695</td>
<td>$755</td>
</tr>
</tbody>
</table>

**Seagate**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Size</th>
<th>Access</th>
<th>Model</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2GIG</td>
<td>3.5&quot;</td>
<td>9MS</td>
<td>ST31200N</td>
<td>$790</td>
</tr>
<tr>
<td>2.4GIG</td>
<td>3.5&quot;</td>
<td>9MS</td>
<td>ST12400N</td>
<td>$1525</td>
</tr>
<tr>
<td>2.5GIG</td>
<td>3.5&quot;</td>
<td>8MS</td>
<td>Barracuda 2</td>
<td>$1640</td>
</tr>
<tr>
<td>3.4GIG</td>
<td>5.25&quot;</td>
<td>10MS</td>
<td>Elite 3</td>
<td>$2175</td>
</tr>
<tr>
<td>9.0GIG</td>
<td>5.25&quot;</td>
<td>11MS</td>
<td>Elite 9</td>
<td>$4295</td>
</tr>
</tbody>
</table>

**Conner**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Size</th>
<th>Access</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>330MB**</td>
<td>3.5&quot;</td>
<td>12MS</td>
<td>CFA340S</td>
<td>$330</td>
<td>$330</td>
</tr>
<tr>
<td>545MB**</td>
<td>3.5&quot;</td>
<td>12MS</td>
<td>CFA540S</td>
<td>$480</td>
<td>$480</td>
</tr>
<tr>
<td>1.0GIG</td>
<td>3.5&quot;</td>
<td>9MS</td>
<td>CFP1060S</td>
<td>$719</td>
<td>$719</td>
</tr>
</tbody>
</table>

**Quantum**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Size</th>
<th>Access</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0GIG</td>
<td>3.5&quot;</td>
<td>9MS</td>
<td>E1080S</td>
<td>$815</td>
<td>$815</td>
</tr>
<tr>
<td>2.2GIG</td>
<td>3.5&quot;</td>
<td>9.5MS</td>
<td>E2160S</td>
<td>$1359</td>
<td>$1359</td>
</tr>
</tbody>
</table>

**Hitachi**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Size</th>
<th>Access</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7GIG</td>
<td>5.25&quot;</td>
<td>12.8M</td>
<td>$1645</td>
<td>$1745</td>
</tr>
</tbody>
</table>

### OPTICAL DRIVES FROM $599

**1 YEAR WARRANTY**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Access</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>128MB</td>
<td>Ricoh</td>
<td>30MS</td>
<td>$599</td>
<td>$599</td>
</tr>
<tr>
<td>230MB</td>
<td>Fujitsu</td>
<td>30MS</td>
<td>$945</td>
<td>$945</td>
</tr>
<tr>
<td>650MB</td>
<td>Sharp</td>
<td>40MS</td>
<td>$1699</td>
<td>$1699</td>
</tr>
<tr>
<td>1.3GB</td>
<td>Sharp</td>
<td>40MS</td>
<td>$2099</td>
<td>$2099</td>
</tr>
<tr>
<td>1.3GB</td>
<td>Sony</td>
<td>40MS</td>
<td>$2299</td>
<td>$2299</td>
</tr>
<tr>
<td>2.0GB</td>
<td>Hitachi</td>
<td>40MS</td>
<td>$2799</td>
<td>$2799</td>
</tr>
</tbody>
</table>

**Tape Backup Systems FROM $499**

Includes Tape + Retrospect Software

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>256MB</td>
<td>Tandberg TDC 3660</td>
<td>$445</td>
<td>$499</td>
</tr>
<tr>
<td>520MB</td>
<td>Tandberg TDC 3660</td>
<td>$565</td>
<td>$625</td>
</tr>
<tr>
<td>1.3-2GIG</td>
<td>Archive 4320*</td>
<td>4MM</td>
<td>$839</td>
</tr>
<tr>
<td>1.3-4GIG</td>
<td>Archive Turbo*</td>
<td>4MM</td>
<td>$939</td>
</tr>
<tr>
<td>4.0-8GIG</td>
<td>Connors 4326 DDS-2</td>
<td>4MM</td>
<td>$1089</td>
</tr>
<tr>
<td>1.3-5GIG</td>
<td>Exabyte 8205</td>
<td>8MM</td>
<td>$1539</td>
</tr>
<tr>
<td>1.3-10GIG</td>
<td>Exabyte 8505</td>
<td>8MM</td>
<td>$2179</td>
</tr>
<tr>
<td>4.0GIG</td>
<td>Sony 5200 DDS-2</td>
<td>4MM</td>
<td>$989</td>
</tr>
<tr>
<td>4.0-6GIG</td>
<td>Sony 5000 DDS-2</td>
<td>4MM</td>
<td>$1129</td>
</tr>
</tbody>
</table>

**RAID Systems FROM $1399**

1.0 GIG RAID $1399
2.0 GIG RAID $1999
6.0 GIG RAID $3899

*Fastest RAID for Video Vision Users.
4.0 GIG Barracuda 2 RAID $4885

* 8100 Users! Turn your 1 gig into a 2 gig RAID for only $999

**MEDIA**

<table>
<thead>
<tr>
<th>Size</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>60M</td>
<td>Tape</td>
<td>$10</td>
</tr>
<tr>
<td>90M</td>
<td>Tape</td>
<td>$12</td>
</tr>
<tr>
<td>112M</td>
<td>Tape</td>
<td>$18</td>
</tr>
<tr>
<td>120M</td>
<td>Tape</td>
<td>$22</td>
</tr>
</tbody>
</table>

**Monitors**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sony</td>
<td>GDM-17SE1 17&quot;</td>
<td>$1059</td>
</tr>
<tr>
<td>Sony</td>
<td>GDM-2036S 20&quot;</td>
<td>$1899</td>
</tr>
<tr>
<td>RasterOps</td>
<td>Horizon 24</td>
<td>$2259</td>
</tr>
<tr>
<td>RasterOps</td>
<td>Paintbd Turbo</td>
<td>$1159</td>
</tr>
<tr>
<td>RasterOps</td>
<td>8XL</td>
<td>$459</td>
</tr>
<tr>
<td>RasterOps</td>
<td>Li</td>
<td>$339</td>
</tr>
</tbody>
</table>

**CD ROMS**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toshiba</td>
<td>4101</td>
<td>$320</td>
</tr>
<tr>
<td>Toshiba</td>
<td>3401</td>
<td>$439</td>
</tr>
<tr>
<td>Sony</td>
<td>CDU-561</td>
<td>$385</td>
</tr>
<tr>
<td>Rich</td>
<td>1000</td>
<td>$3299</td>
</tr>
</tbody>
</table>

*Direct Connections, 309 Executive Dr, Eden Prairie, MN 55344. **1 yr warranty, ***2 yr warranty. Can't ship, and use, P3's accepted. 30 day money back does not apply towards monitors.

Circle 121 on reader service card
Our EtherLAN Family Keeps Growing.
(But Our Prices Keep Shrinking!)

Plug Into On-Board Ethernet
FOCUS Enhancements transceivers allow you to use the on-board Apple Ethernet port in high-end Macs and Apple printers (AUI port), so you can take advantage of Ethernet speed without the additional purchase of an Ethernet network interface card. Each model attaches in seconds to a thinnet backbone or versatile 10BaseT network for plug-and-play speed and convenience. The Tr/FN-T, our 10BaseT transceiver, has one RJ-45 connector for standard twisted pair Ethernet connection. Includes a FREE 6-foot 10BaseT patch cord.

Easy Expansion For Smaller Networks
The EtherLAN Hub16 offers the same outstanding features as the Hub16, in a streamlined case that's perfect for smaller networks, workgroups, or expansions of larger networks. Equipped with eight 10BaseT ports and one thinnet port, it also has an extra RJ-45 crossover port for easy cascading of hubs. Like the Hub16, this convenient unit features auto-partitioning and auto-reconnect. Designed for easy, trouble-free use, it's simple to install, and requires no management software.

The Better Print Router
Easily bridge your LocalTalk LaserWriters to an Ethernet network. It works with any brand of LocalTalk-compatible network printer or other LocalTalk devices such as Macs. With a BNC connector for thinnet and RJ-45 for 10BaseT, you have the ultimate in network flexibility; includes an easy-to-use security and management utility. For a limited time, get a FOCUS PortobNet to connect your LocalTalk line to the EtherLAN Print. One free with any EtherLAN Print purchase. Choose the EtherLAN Print which supports two printers for $279.99 or the EtherLAN Print Plus which supports up to six LocalTalk devices for $399.99.

High Speed, High Value
Our EtherLAN boards now have enhanced performance, thanks to new Ethernet technology from SMC. With a new, more efficient driver, they will boost your speeds while maintaining complete compatibility with TCP/IP, DECNet and Netware. Features include unique, dynamically-allocated memory, and its own SNMP capability and a means to view network statistics from your Mac. Our auto-sensing dual-media cards allow you to quickly change from one Ethernet media to another without re-installing a board or restarting your Mac. Comes with a great performance measurement application, a $39 value, free!

Convenience and Value, Times 16
Compare the new EtherLAN Hub16 to other Ethernet hubs – it gives you the best value around, with the features and quality your larger network needs. In one easy-to-use, self-contained unit, the Hub16 provides 16 10BaseT ports and one BNC (thinnet) port. It offers auto-partitioning and auto-reconnect to bring a port back on line quickly once it's clear, and it requires no management software – just connect it and forget it! It installs quickly and easily in offices with an existing 10BaseT wall jack or BNC connection; separate brackets are available for mounting on a standard 19-inch rack.

Ethernet from any SCSI Port
Economical yet powerful, get up to speed and get onto the Ethernet network with the EtherLAN SC or SC-T. Fully compatible with 10BaseT and Thinnet networks, you will be up and running in a few minutes. PowerBooks, Classics, SE, IIsi, LC and others can travel at the high-speed lane at a bargain price. "Bottom-line Pick!" — Macworld 2/94

Over 30 Quality Ethernet Solutions To Choose From. Call FOCUS Enhancements!
We're not like the other
We go the extra

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
Free Catalog!

It’s here, and it’s free. Now you can get our new full color catalog featuring Express Direct’s full line of Macintosh systems and peripherals.

Send the new Express Direct Catalog to:

Name, Title

Company Name (if applicable)

Street Address

City, State, Zip

Daytime Telephone

For a FREE Catalog:
Simply fill out and mail this card, or call Express Direct at:

1-800-756-2333

Macworld/September
mail order companies.

mile for you.

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

Circle 81 on reader service card

MACWORLD  September 1994  243
Introducing the APS “I” Series

APS is proud to introduce technologically superior drives based on IBM mechanisms with MR-Head technology.

"In the fiercely competitive world of the humble desktop hard drive, nobody sweats the details more than APS. Elegant design, quality components, and rock-solid construction distinguish the compact APS SR 2000 Case."
— Editors of MacUser

SCSI Sentry™
Now you can "stop SCSI Voodoo" on your SCSI Chain, even when you're not ready to buy a new drive. Our new SCSI Sentry™ gives you all the benefits of APS’ acclaimed DATerm technology in the form of an external SCSI performance monitoring instrument.

Benefits
- Exclusive Digital Active Termination
- Provides Manual Termination Power
- Dramatically Reduces SCSI Retries
- Regulates SCSI Line Voltage
- Saves Bus Impedance Issues
- LED Activity Indicators Diagnostic Tool
- Easy Installation: Takes Seconds

APS HARD DRIVES

For your Mac or Power Mac

Model | Capacity | Internal | SR2000 1
--- | --- | --- | ---
APS Q 270™ | 257MB | $259 | $359
APS J™ | 260MB | 259 | 359
APS MX 290™ | 276MB | 229 | 329
APS MX 345™ | 324MB | 289 | 389
APS 340™ | 327MB | 279 | 379
APS I™ | 340MB | 299 | 399
APS Q 525™ | 516MB | 379 | 479
APS J™ | 522MB | 399 | 499
APS Q 540™ | 516MB | 399 | 499
APS J™ 770™ | 700MB | 499 | 599
APS MS 1.2AV™ | 965MB | 759 | 859

1001MB - 9000MB

Model | Capacity | Internal | SR2000 1
--- | --- | --- | ---
APS MS 1.2™ | 1001MB | $699 | $799
APS J™ 1.0 | 1003MB | 699 | 799
APS MS 410™ | 1002MB | 699 | 799
APS Q 1080™ | 1029MB | 749 | 849
APS MS 1.7AV™ | 1012MB | 999 | 1099
APS MS 1.7™ | 1483MB | 929 | 1029
APS J™ 1.6 | 1920MB | 1299 | 1399
APS Ms 1.7V™ | 2040MB | 1679 | 1779
APS J™ 1.7 | 2100MB | 1349 | 1549
APS MS 3.0G™ AV 2845MB | 1999 | 2199
APS MS 3.0G™ AV 2845MB | 2069 | 2269
APS ST 9™ | 8481MB | 4149 | 4349

POWERBOOK DRIVES

Model | Capacity | Internal | Companion II
--- | --- | --- | ---
APS P9 85™ | 80MB | $249 | $299
APS P9 170™ | 160MB | 279 | 299
APS T213™ | 20MB | 319 | 269
APS P9 250™ | 240MB | 359 | 309
APS T500™ | 324MB | 549 | 499
APS T520™ | 500MB | 699 | 699

PORTABLE STORAGE

The Perfect Home for your 2.5" PowerBook Drive Companion II Endosures AC/DC

$89 | $139

* Denotes length of manufacturer’s warranty
- External Case is Special Full Height Only and includes SCSI Support

APS Technologies

Great Products. Priceless Support!

1-800-874-1428

MW SERVICE HERO

244 September 1994 MACWORLD

520MB

$799

4 Hour Battery!
Get the Best: APS DAT

Only APS DATs bring you all the benefits of our SR 2000 enclosure with DATerm, Digital Active Termination At New Low Prices

APS HyperDAT
If you need high-speed backup (not the kind that ties your server up and slows down your network), you need the DDS-2 power of the APS HyperDAT! Back up locally at rates as high as 28MB per minute! Pack up to 10GB on a single tape! Best of all, your regular DDS and DDS compression tapes can be read in the APS HyperDAT, too!

APS DAT
The amazing APS DAT offers you great performance and reliability. Get up to 2.0GB on a 90 meter tape with backup speeds as high as 10MB per minute. All APS DATs include Retrospect, a $129 Value, Free!

APS HyperDAT
$1199

APS DAT
$799

CD ROM DRIVES
Model
Model
APS T4101
SR 2000
$299
439

MAGNETO OPTICAL
Model
Model
APS 128MB MO
Internal
SR 2000
$659
$799

APs 230MB MO
999
1099

APs 1.3Gig MO
2499

POWERBOOK STUFF

APs SCSI DOC
w/ PowerMerge Lite
$39

APs SCSI BOY
$19

APs PowerBalls (4 Pack)
$9.99

Circle 62 on reader service card

For more information, please visit our website at www.aps.com.
Wacom Digitizers
12" x 18" Tilt with 2 Handed Input Calligraphy/Cordless Pen
$659
Wacom #UD1218RM

12"x12" ........................................ $499
ARTZ/Painter 2.0 Bundle ........................................ $479
4"x5" - Compatible with Mac or PC ...................................... $199

PhotoShop 2.51 $199 FULL VERSION!
With purchase of Scanner or Wacom Tablet

UMAX Scanners
UMAX 630 - 600dpi ........................................ $589
UMAX 840 - 800dpi ........................................ $699
UMAX 1260 - 1200dpi ........................................ $999
UMAX 1200SE - 1200dpi/PhotoShop 2.51 ............... $2,179
PowerLook - including Transparency Adapter ............... Call
UMAX Transparency Adapter $439

Kodak ColorEase PS
Color DyeSub Printer/PS level 2 .................. $6,589
30-Day Satisfaction Guarantee!
One Year Free On-Site Service!
$940 in free supplies thru September!

20" Color Display $1,389
Multiscan, Multi-Res, Ikegami CN-20A
MacUser 4-Mice Rating!
24-bit Accelerated Video Card
Bundle $1,799

Radius 24x Pro ............... $1,199
CD-Writers
JVC, Kodak, Philips, Ricoh, Sony .................. Call
Sony CD Blank Media - 74 min. .................. $24

High Performance Drives
3.5" 128MB External Optical Drive w/Cartridge .............. $699
3.5" 230MB External Optical Drive w/Cartridge .............. $929
2GB DAT Tape Backup, External w/Retrospect 2.0 .............. $789
Quantum 166/268 AV Hard Drives ............... $1,499
Seagate Barracuda 4GB, 8mb access, fast/ wide SCSI ........ $2,369

TECHWORKS MEMORY Made in the USA

CD-Writers • JV, Kodak, Philips, Ricoh, Sony
Sony CD Blank Media - 74 min.

512-329-7001 800-521-6111 Fax 512-327-0921

17" Trinitron $769
Plug & Play with On-Board Video for the Quadras, AVs, Centris, LCIII, PowerMacs!!
WYSIWYG, 832x624, 26mm dot, 75Hz
1 Year Warranty
Dealers, call for volume discounts
$1,149 with 24-bit Accl. NuBus Card
$1,799 with TouchScreen & Software

OEM K1000 - including Jpegsparte _n% Adaeter

24-Month Satisfaction Guarantee!
One Year Free On-Site Service!
$940 in free supplies thru September!

20" Color Display

32-bit Accelerated Video Card

24-bit Accelerated Video Card

24-bit Accelerated Video Card

24-bit Accelerated Video Card

24-bit Accelerated Video Card
Quantum Best Byte for MACs

<table>
<thead>
<tr>
<th>LPS Series</th>
<th>GO Power Book Drives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>Capacity</td>
</tr>
<tr>
<td>170 MB</td>
<td>80 MB</td>
</tr>
<tr>
<td>270 MB</td>
<td>256 MB</td>
</tr>
<tr>
<td>340 MB</td>
<td>540 MB</td>
</tr>
</tbody>
</table>

LPS drives come with a 2 year warranty and are SCS 1 & 2 compatible. All drives are tested and formated with the latest SCSI manager 4.3 compatible software which is 100% PowerMax Compatible. LPS series drives have a 2 year warranty. External drives come complete with external termination and your choice of a double or single terminated cable.

Seagate

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Size</th>
<th>Access</th>
<th>RPM</th>
<th>Cache</th>
<th>Int</th>
<th>Ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 GB</td>
<td>ST11200N</td>
<td>3.5'</td>
<td>10ms</td>
<td>5400</td>
<td>512K</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>2.4 GB</td>
<td>BarraCuda 1</td>
<td>3.5'</td>
<td>8ms</td>
<td>7200</td>
<td>1024K</td>
<td>148</td>
<td>1545</td>
</tr>
<tr>
<td>4.2 GB</td>
<td>BarraCuda 4</td>
<td>3.5'</td>
<td>8ms</td>
<td>7200</td>
<td>1024K</td>
<td>Call</td>
<td></td>
</tr>
</tbody>
</table>

All Seagate drives listed have a 2 year warranty. External drives come with your choice of a double shielded system cable or a Daisy chain 50 cable as well as external termination. All drives come formatted and tested for a true plug and play solution. Please call our technical sales consultant for additional specifications, compatibility questions or a written quote.

MICRONICS

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Access</th>
<th>RPM</th>
<th>Cache</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 GB</td>
<td>M2210A</td>
<td>10 ms</td>
<td>5400</td>
<td>512K</td>
</tr>
<tr>
<td>1.7 GB</td>
<td>M2217A</td>
<td>10 ms</td>
<td>5400</td>
<td>512K</td>
</tr>
</tbody>
</table>

All drives come formatted and stocke with the latest SCSI Manager 4.3 compatible drive software. External drives come complete with your choice of a double shielded system cable or a 50/50 Daisy chain cable and external termination.

FUJITSU

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Access</th>
<th>RPM</th>
<th>Capacity</th>
<th>Warranty</th>
<th>Int</th>
<th>Ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>330 MB</td>
<td>M2622</td>
<td>9ms</td>
<td>4500</td>
<td>M26945A</td>
<td>8.5 ms</td>
<td>5400</td>
<td>512K</td>
</tr>
<tr>
<td>520 MB</td>
<td>M2624A/F</td>
<td>9ms</td>
<td>4500</td>
<td>M26945A</td>
<td>8.5 ms</td>
<td>5400</td>
<td>512K</td>
</tr>
<tr>
<td>1.2 GB</td>
<td>M26945A</td>
<td>8.5 ms</td>
<td>5400</td>
<td>M26945A</td>
<td>8.5 ms</td>
<td>5400</td>
<td>512K</td>
</tr>
</tbody>
</table>

TAPE BACKUP DRIVES

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Media</th>
<th>Int</th>
<th>Ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 GB</td>
<td>HP540A</td>
<td>4mm</td>
<td>1935</td>
<td>9985</td>
</tr>
<tr>
<td>3.5 GB</td>
<td>HP5480A</td>
<td>4mm</td>
<td>1110</td>
<td>1150</td>
</tr>
<tr>
<td>4-10 GB</td>
<td>HP5133A</td>
<td>4mm</td>
<td>1315</td>
<td>1365</td>
</tr>
<tr>
<td>20-50 GB</td>
<td>HP5153A &amp; Auto Tape Loader</td>
<td>3495</td>
<td>3595</td>
<td>3595</td>
</tr>
<tr>
<td>5-10 GB</td>
<td>Exabyte 8200</td>
<td>8mm</td>
<td>1485</td>
<td>1335</td>
</tr>
<tr>
<td>20-50 GB</td>
<td>Exabyte 106 &amp; Auto Tape Loader</td>
<td>CALL</td>
<td>CALL</td>
<td>CALL</td>
</tr>
</tbody>
</table>

EXTERNA CABINETS

<table>
<thead>
<tr>
<th>Model</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP540A</td>
<td>4mm</td>
</tr>
<tr>
<td>HP5480A</td>
<td>4mm</td>
</tr>
<tr>
<td>HP5133A</td>
<td>4mm</td>
</tr>
<tr>
<td>HP5153A &amp; Auto Tape Loader</td>
<td>3495</td>
</tr>
<tr>
<td>Exabyte 8200</td>
<td>8mm</td>
</tr>
<tr>
<td>Exabyte 106</td>
<td>8mm</td>
</tr>
<tr>
<td>Exabyte 106</td>
<td>8mm</td>
</tr>
</tbody>
</table>

Prices & Specifications subject to change. All trademarks are registered trademarks of their respective companies. No tax on mail orders. All returns are subject to a 15% restocking fee.
### Bottom Line Distribution

**1-800-622-3475**

**IntelliColor Multi 20E**...........$2065  
**Precision Color 17"/21" 999/2110**
- LeMans GT (NEW)..............1899  
**Precision Color 20V**...........1449  
**Precision Color Pro 24x**........1245  
**Precision Color Pro 24xP**........429  
**VideoVision Studio**
- Free NEC CD-ROM with purchase of selected items

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroWriter PS23</td>
<td>$679</td>
</tr>
<tr>
<td>MicroWriter PS65</td>
<td>$862</td>
</tr>
<tr>
<td>MicroLaser Pro600PS23</td>
<td>$1225</td>
</tr>
<tr>
<td>MicroLaser Pro 600 PS65</td>
<td>$1465</td>
</tr>
<tr>
<td>PowerStep40MHz Upgrade</td>
<td>$325</td>
</tr>
<tr>
<td>MicroWriter Toner</td>
<td>$45</td>
</tr>
<tr>
<td>MicroLaser Pro Toner</td>
<td>$159</td>
</tr>
<tr>
<td>1MB TI Pro Memory</td>
<td>$110</td>
</tr>
<tr>
<td>1MB TI Memory</td>
<td>$40</td>
</tr>
</tbody>
</table>

*Includes manufacturer's rebate*

**Texas Instruments**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infinity 88 External</td>
<td>$469</td>
</tr>
<tr>
<td>Infinity 200</td>
<td>$669</td>
</tr>
<tr>
<td>Infinity 270</td>
<td>$599</td>
</tr>
<tr>
<td>1.3GB Maxoptical</td>
<td>$329</td>
</tr>
<tr>
<td>Quick Array 1.0GB</td>
<td>$235</td>
</tr>
<tr>
<td>Quick SCSI F</td>
<td>$49</td>
</tr>
</tbody>
</table>

**PLI**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe Illustrator 5.5</td>
<td>$300</td>
</tr>
<tr>
<td>Adobe Photoshop 2.5.1</td>
<td>$499</td>
</tr>
<tr>
<td>Aldus Pagemaker 5.0</td>
<td>$499</td>
</tr>
<tr>
<td>Fractal Painter</td>
<td>$235</td>
</tr>
<tr>
<td>Fractal 2x</td>
<td>$78</td>
</tr>
<tr>
<td>Freehand 4.0</td>
<td>$369</td>
</tr>
<tr>
<td>Infini-D 2.6 PowerPC</td>
<td>$780</td>
</tr>
<tr>
<td>Macromind Director 4.0</td>
<td>$789</td>
</tr>
<tr>
<td>MS Excel 4.0</td>
<td>$279</td>
</tr>
<tr>
<td>MS Office 3.0</td>
<td>$410</td>
</tr>
<tr>
<td>MS Word 5.1</td>
<td>$280</td>
</tr>
</tbody>
</table>

**PLI**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quark 3.3</td>
<td>$549</td>
</tr>
<tr>
<td>Studio Pro</td>
<td>$879</td>
</tr>
<tr>
<td>Games</td>
<td>$51</td>
</tr>
<tr>
<td>Flying Nightmares PowerPC</td>
<td>$55</td>
</tr>
<tr>
<td>Iron Helix CD-ROM</td>
<td>$59</td>
</tr>
<tr>
<td>The Journeyman Project CD</td>
<td>$59</td>
</tr>
<tr>
<td>Myst CD-ROM</td>
<td>$51</td>
</tr>
<tr>
<td>PGA Tour Golf II</td>
<td>$60</td>
</tr>
</tbody>
</table>

**iOMEGA**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>128 MB</td>
<td>$799</td>
</tr>
<tr>
<td>230 MB</td>
<td>$899</td>
</tr>
<tr>
<td>1.3 GB</td>
<td>$2299</td>
</tr>
<tr>
<td>Internal PC Card</td>
<td>$149</td>
</tr>
<tr>
<td>PCCompare to SCSI Adapter</td>
<td>$199</td>
</tr>
</tbody>
</table>

**DGR Technologies Optical drives**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic 200MS Kit-1CD</td>
<td>$545</td>
</tr>
<tr>
<td>Basic 320MS Kit-1CD</td>
<td>$415</td>
</tr>
<tr>
<td>Executive 200MS-SCD's</td>
<td>$610</td>
</tr>
<tr>
<td>Executive 320MS-SCD's</td>
<td>$460</td>
</tr>
<tr>
<td>Kit Includes: double speed SCSI II, Kodak PhotoCD ready drive, 20 watt Hi-Fi Digital stereo speakers, headphone/microphone headset.</td>
<td></td>
</tr>
</tbody>
</table>

**DGR Technologies MultiMax**

Upgrade your LC, LCII, LCIII and Performa 400 with the **DGR LC MAX** or **MultiMax**. Increase the single expansion slot to four, add another hard drive and supplement your LC with an additional 40 watt power supply. Enter the world of MultiMedia with the DGR MultiMax equipped with a multi-session, double spin CD-ROM and amplified stereo speakers, you can access the vast library of CD-ROMs available or listen to your favorite music.

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MultiMax</td>
<td>$799</td>
</tr>
<tr>
<td>LC MAX</td>
<td>$299</td>
</tr>
</tbody>
</table>

**Special Offer this Month**

At Bottom Line We Speak Your Language Call Our International Sales Department  
(512)892-4070  
Fax (512)892-4455  
Español/ Française  
Deutsch

---

**DGR Technologies**

- 44MB External Drive $199
- 88c MB External Drive $399
- 200 MB External Drive $499
- 270 MB External Drive $499
- 44/88 MB Cartridge $57/69
- 200 MB Cartridge $85
- 270 MB Cartridge $65

---

**Bottom Line Distribution has the best software deals available!**

---

**Net 30 Terms**

**Custom Apple Configurations**

**No Surcharge on Credit Card Orders**

**Internet Access**

**Established 1985**

**One Hour Quote Response**
<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.4 Mac Package</td>
<td>$205</td>
</tr>
<tr>
<td>14.4 LC</td>
<td>$149</td>
</tr>
<tr>
<td>14.4 Powerbook</td>
<td>$219</td>
</tr>
<tr>
<td>28.8 Mac Package</td>
<td>$299</td>
</tr>
<tr>
<td>PowerPro 80Mhz 60/ Acc</td>
<td>$1,995</td>
</tr>
<tr>
<td>Turbo 040/40Mhz w/Cache</td>
<td>$949</td>
</tr>
<tr>
<td>DiiMOCache</td>
<td>$137/210</td>
</tr>
<tr>
<td>DiiMOCache 50MHz</td>
<td>$439/518</td>
</tr>
<tr>
<td>PowerPC 6100</td>
<td>$1,959</td>
</tr>
<tr>
<td>PowerPC 7100</td>
<td>$3,299</td>
</tr>
<tr>
<td>PowerPC 8100</td>
<td>$3,899</td>
</tr>
<tr>
<td>Q610 8/160 DOS Compatible</td>
<td>$1,759</td>
</tr>
<tr>
<td>Blackbird 520</td>
<td>$1,460</td>
</tr>
<tr>
<td>$240</td>
<td>$2,240</td>
</tr>
<tr>
<td>$252</td>
<td>$3,160</td>
</tr>
<tr>
<td>$302</td>
<td>$3,850</td>
</tr>
<tr>
<td>$450</td>
<td>$4,520</td>
</tr>
<tr>
<td>Bottom Line carries the full line of Apple products. Leasing available from $49/month. Custom configurations available.</td>
<td></td>
</tr>
</tbody>
</table>
FAXstf 3.0 Attention Fax Modem Owners!

Take advantage of all the FAXstf features! Includes: the ability to fax directly from most applications, multiple phone books, broadcast faxes, schedule faxes, gray scale printing support; Combine existing fax files to create a new fax; activity Log for tracking and filing fax history and much more! Item # COM 0216

$399.50

Revise & Convert! DocuComp II 1.07

Revise documents with ease! Compare files, scroll through them in synch, merge them, jump back and forth and much more! Item # DTP 0081

Word For Word 6.0

Award-winning program converts over 100 DOS, Windows and Mac formats. Retain features, convert characters and graphics in up to 3 pages per second! Item # COM 0226

$119.00

The Far Side Screen Saver

Gary Larson's The Far Side has been saving your day with laughter for years, and now it can do the same thing for your monitor. The Far Side Screen Saver Collection brings the unpredictable, off-beat humor of The Far Side to life through 14 full-color, incredibly detailed screen saver animation's. Publisher: Delrina

$27.00

The Flintstones® Screen Saver

Now the most successful animated series in the history of television is brought to life in The Flintstones® Screen Saver Collection from Delrina. Take a trip back in time to Bedrock™ to enjoy the crazy antics of Fred, Barney, Wilma, Betty, Dino™ and more, In 10 full-color, incredibly detailed screen savers. Publisher: Delrina

$24.00

The most affordable, full-function keyboard ever!
The Power User 105e Extended Keyboard

Work faster and easier with 105 keys, logically arranged for quick typing, cursor movement, and number calculations. The Power User 105e Extended Keyboard also features an ergonomic design. Item # INP 0336

$69.00

Build your future!

SimCity 2000

Incredible 3-D views in 256 colors, a multi-level interface, 64 levels of altitude, a musical soundtrack, brand new disasters, roads, highways, tunnels, parks, zoos, marinas, stadiums, and much more. Publisher: Maxis

SimCity 2000 Scenarios: Great Disasters ENT0675 $19.95

$39.95

Acquired for Power Macintosh

Adobe Illustrator™ 5.5

Adobe Illustrator™ 5.5 gives graphic artists, technical illustrators, and desktop publishers more features than ever! An expanded Pathfinder feature addresses trapping, import documents from other applications with Adobe Acrobat Exchange and Acrobat Distiller. New text features provide tabs, search and replace by font, spell checker, rows and columns, and much more. Includes a Deluxe CD-ROM with how-to movies, 180 Adobe fonts, clip art and more! Publisher: Adobe

$389.00

FOLDERBOLT/NIGHTWATCH II Bundle

Protect sensitive files! With bestselling FolderBolt, let others share your machine but not access, copy or alter folders or applications you choose, including the running system folder! Use NightWatch II to protect the hard drive itself. Limit user access to selected times, or days of week. Multiple locking options, including Token/Key. And much, much more! The combination is unbeatable! Publisher: Kent Marsh, Ltd.

Item # UTI 0338

$129.00

Upsgrade Now!!!

Ask for item # UPG 0085 to upgrade from Illustrator 5.0...Only $99!

Adobe Illustrator™ 5.5

Adobe Illustrator™ 5.5 gives graphic artists, technical illustrators, and desktop publishers more features than ever! An expanded Pathfinder feature addresses trapping, import documents from other applications with Adobe Acrobat Exchange and Acrobat Distiller. New text features provide tabs, search and replace by font, spell checker, rows and columns, and much more. Includes a Deluxe CD-ROM with how-to movies, 180 Adobe fonts, clip art and more! Publisher: Adobe

$389.00

SyQuest® Blowout!

Now you can order a 44MB Reversible SyQuest Drive for an incredible low price! Order the capacity you need, and the storage potential you deserve. Cartridge sold separately. Ask for Item # FRI 0977

Now only $199.00

PLUS

Get your first 44MB cartridge for only $29.95 when you buy the 44MB drive at the same time. (Total price $228.95) Item # BND 0361

Lightning-Fast—LOW PRICE!

Magnum 14.4 Data/Fax Modem

You won't find a better value anywhere! The Magnum 14.4 is manufactured under license by Hayes-<br>...
# Mac WAREHOUSE

1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

- **NEW FOR MAC!**
- **GET MICROSOFT ENCARITA**
- A Complete Multimedia Encyclopedia on ONE CD-ROM!
- **FOR ONLY $89!**
- Ask for item BND 0348 when you buy any CD-ROM Drive from us at the same time.

### BUSINESS & PRESENTATION

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0450</td>
<td>MacDraw Pro 1.5</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0451</td>
<td>MacPageMaker 5.0 Up</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0452</td>
<td>MacFireworks Publisher 3.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0453</td>
<td>MacFreeHand 3.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0454</td>
<td>MacIllustrator 3.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0455</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0456</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### SOFTWARE TOOLS

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0457</td>
<td>MacPaint</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0458</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0459</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0460</td>
<td>MacFreeHand 3.0</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### UTILITIES & PROGRAMMING

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0461</td>
<td>MacPaint</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0462</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0463</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### GRAPHICS & DESIGN

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0464</td>
<td>MacPaint</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0465</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0466</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### EDUCATIONAL & ENTERTAINMENT

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0467</td>
<td>MacPaint</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0468</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0469</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### UPDATES & DRIVES

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0470</td>
<td>MacPaint</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0471</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0472</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### POWERBOOK PRODUCTS

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0473</td>
<td>MacPaint</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0474</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0475</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### MESSAGES & NETWORKING

<table>
<thead>
<tr>
<th>Item code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada0476</td>
<td>MacPaint</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0477</td>
<td>MacPageMaker 5.0</td>
<td>99.95</td>
</tr>
<tr>
<td>Ada0478</td>
<td>MacPageMaker 5.0 Upgrade</td>
<td>99.95</td>
</tr>
</tbody>
</table>

### 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 the coupon. We'll start your free, one-year subscription to the MacWAREHOUSE catalog with the next issue.

To order by Midnight - 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: 908-965-9279
CompuServe Code: GOMP
NEW! Express Customer Service Number: 1-800-925-6227

FREE CATALOG SUBSCRIPTION

MW0994

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to:
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name: 

Address: Apt.

City: State Zip

(Expect to receive your first issue within 4-6 weeks).

©1994 MacWAREHOUSE, Inc. MacWAREHOUSE is a division of MicroWarehouse, Inc. MacWAREHOUSE and MicroWAREHOUSE are registered trademarks of MicroWarehouse, Inc. All availability and prices subject to change without notice. Apple, the Apple logo, Mac, and Macintosh are registered trademarks of Apple Computer, Inc.
MegaHaus is your #1 source for Quantum drives.
- Low price guarantees on all Quantum drives!
- Same day shipping on most orders!

1 HARD DRIVE FOR MAC!

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>RPM</th>
<th>Buffer</th>
<th>Why</th>
<th>Model Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>170MB</td>
<td>17ms</td>
<td>3600</td>
<td>32K</td>
<td>2yr</td>
<td>ELS170S</td>
<td>$179</td>
</tr>
<tr>
<td>270MB</td>
<td>12ms</td>
<td>4500</td>
<td>128K</td>
<td>2yr</td>
<td>LPS270S</td>
<td>$254</td>
</tr>
<tr>
<td>340MB</td>
<td>12ms</td>
<td>4500</td>
<td>128K</td>
<td>2yr</td>
<td>LPS340S</td>
<td>$275</td>
</tr>
<tr>
<td>540MB</td>
<td>12ms</td>
<td>4500</td>
<td>128K</td>
<td>2yr</td>
<td>LPS540S</td>
<td>$374</td>
</tr>
<tr>
<td>1080MB</td>
<td>9.5ms</td>
<td>5400</td>
<td>512K</td>
<td>5yr</td>
<td>EMP540S</td>
<td>$509</td>
</tr>
<tr>
<td>1440MB</td>
<td>9.5ms</td>
<td>5400</td>
<td>512K</td>
<td>5yr</td>
<td>EMP144OS</td>
<td>$900</td>
</tr>
<tr>
<td>2160MB</td>
<td>9.5ms</td>
<td>5400</td>
<td>512K</td>
<td>5yr</td>
<td>EMP2160S</td>
<td>$1199</td>
</tr>
</tbody>
</table>

Includes formating software and cables. We stock multiple bay enclosures for custom configurations.

OPTICAL DRIVES
- High performance optical drives.
- Ask for your free "Dare to Compare" specification brochure.
- Includes SCSI Manager 4.3 compliant driver, cables, and a free disk.

- Pioneer CD ROM CHANGERS
  - Free Federal Express 2 Day Air (within continental US, expires 9/30/94)
  - No more changing disks over and over.
  - Low price guarantee on Pioneer!
  - Requires only 1 SCSI ID number.

- Power HD™ NOW AVAILABLE
  - Hard Drives fine tuned specifically for Power Macintosh computers.
  - Includes SCSI Manager 4.3 compliant driver for best performance.

MICROPOLIS
- New AV series hard drives are specifically designed for enhanced digital video and audio performance in applications such as multimedia, desktop publishing, and video editing.
- We will beat any advertised Micropolis price.

1-800-786-1184

Quantum™ MegaHaus is your #1 source for Quantum drives.
- Low price guarantees on all Quantum drives!
- Same day shipping on most orders!

SyQuest is your #1 source for Syquest drives.
- Low price guarantee on all Syquest drives!
- 1 FREE cartridge with each drive!
- 5 year warranty on all cartridges!
- Same day shipping on most orders!

MegaHaus\’s Low Price Guarantee on Pioneer:
- Low price guarantee on Pioneer!
- Includes SCSI driver for best performance.

1080MB Capacity Model Internal External

PIONEER
- Includes Retrospect 2.1, 1 tape, and cables.
- Includes drive software with music play, $25 Photo CD processing coupon, and cables. Multi Drive CD Towers in stock!

SIIUI!tt

300MB Capacity Model Internal External

DRM604X, DRM602X

230MB Capacity Model Internal External

SSS230

• FREE SYQUEST 320MB SSS230 Capacity Model Internal External

1000MB Capacity Model Internal External

• FREE SYQUEST 540MB PHD540 Capacity Model Internal External

1750MB Capacity Model Internal External

PsyQuest

- Includes formatting software, 1 disk, and cables.
- 2 year warranty on drive and case!
- 1 FREE cartridge with each drive!

- Includes formatting software, 1 disk, and cables. Multi Drive DAT Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!

- Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

- Includes formatting software, 1 disk, and cables. Multi Drive CD Towers in stock!
LEASE YOUR NEXT SYSTEM FROM **SUPERMICRO**!

Get the system you need now—with zero down and low monthly payments! Call SuperMicro to find out all the advantages leasing has to offer.

**QUADRA 840AV SUPERSTATION**

- Quadra 840AV 40MHz 040 processor
- 72MB RAM, internal 2.0GB disk array, extended keyboard
- Dual spin CD ROM drive
- SuperMac Pressview 21† monitor
- PDQ’s, 1152 x 870 video card
- Image processing multifunction drive:
  - 650MB optical and SyQuest 88c in one enclosure

**QUADRA 840AV VALUE STATION**

- Quadra 840AV 40MHz 040 processor
- 72MB RAM, ext. keyboard
- 1.2GB internal hard drive
- Dual spin CD ROM drive
- Radius PrecisionColor 17” monitor
- SuperMac PDQ’s 24-bit, 1152 x 870 video card
- Image processing multifunction drive:
  - 650MB optical and SyQuest 88c in one enclosure

ONLY $399 PER MONTH

6100/60AV POWERPC

- Power Macintosh 6100/60AV w/external CD-ROM drive
- 40MB RAM, 40MB internal hard drive, ext. keyboard
- 17” color monitor, 264p
- External SyQuest 200MB with cartridge
- Sony 3D-2090 digital tape backup system with tape
- Kente Acel-Writer 8100 600 x 600 dpi printer, 12MB
- MicorTek i5IF 300 x 600 dpi flatbed laser printer

ONLY $290 PER MONTH

**MICROTEK**

- Available in storage capacities from 128MB to 1.3GB
- Komag’s fully formatted and certified optical cartridges come with a lifetime warranty from the world’s largest computer hard disk manufacturer.

MICROTEK SCANNERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ScanMaker Iris</td>
<td>$1005</td>
</tr>
<tr>
<td>ScanMaker Iris JR</td>
<td>$795</td>
</tr>
<tr>
<td>ScanMaker II</td>
<td>$2529</td>
</tr>
<tr>
<td>Transparent Media Adapter</td>
<td>$599</td>
</tr>
</tbody>
</table>

FREE Shipping—Forever!

Become a SuperMicro Preferred Customer and never pay for shipping again. Here’s how:

1. Place an order with SuperMicro for 10 or more cartridges. You can mix and match from any size SyQuest or Optical cartridges at our low MacWorld prices.
2. Make your payment to SuperMicro in the form of a cashier’s check or money order.

Receive FREE Federal Express 2nd day shipping for your cartridges this time, and for every order you place with SuperMicro in the future, regardless of the size or weight of your packages.

**TAPE DRIVES**

- Sony DAT $22 Maxell 8mm $19

5.25” Optical Drives: Disc 650MB $1195

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>disc 650</td>
<td>594650MB</td>
<td>$1195</td>
</tr>
<tr>
<td>Ricoh-9200 EX</td>
<td>594500MB</td>
<td>$1699</td>
</tr>
<tr>
<td>MaxOpt-Tahiti III</td>
<td>594108GB</td>
<td>$2299</td>
</tr>
<tr>
<td>MaxOpt-Tahiti III</td>
<td>594100GB</td>
<td>$2299</td>
</tr>
<tr>
<td>Sony-650</td>
<td>594650</td>
<td>$1899</td>
</tr>
<tr>
<td>PMO-13GB</td>
<td>595103GB</td>
<td>$2799</td>
</tr>
<tr>
<td>Sony 3.5GB</td>
<td>595102GB</td>
<td>$2799</td>
</tr>
</tbody>
</table>

3.5” Optical Drives: Panasonic 128MB $689

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>disc 3M</td>
<td>394650MB</td>
<td>$795</td>
</tr>
<tr>
<td>Sony 3.5GB</td>
<td>595103GB</td>
<td>$1195</td>
</tr>
</tbody>
</table>

5.25” Cartridges

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Komag 3.5”-128MB</td>
<td>$299</td>
</tr>
<tr>
<td>Komag 3.5”-256MB</td>
<td>$49</td>
</tr>
<tr>
<td>Komag 3.5”-512MB</td>
<td>$99</td>
</tr>
<tr>
<td>Komag 3.5”-1.3GB</td>
<td>$109</td>
</tr>
</tbody>
</table>

Purchase $400 more and get Adobe Photoshop 5.5 Full bundled version for $295

**800-352-3415**

Circle 126 on reader service card

800-352-3415

We Specialize in Image Processing

385 Van Ness Ave. #110, Torrance, CA 90501

1-310-782-5760 International • 1-310-597-9511 Fax

MACWORLD September 1994 253
<table>
<thead>
<tr>
<th>Category</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESSORIES</td>
<td>273</td>
</tr>
<tr>
<td>Covers</td>
<td></td>
</tr>
<tr>
<td>Computer Mouse Pads</td>
<td></td>
</tr>
<tr>
<td>Disksates</td>
<td></td>
</tr>
<tr>
<td>BUSINESS TOOLS</td>
<td>254-256</td>
</tr>
<tr>
<td>Bar Code</td>
<td></td>
</tr>
<tr>
<td>Credit Authorization</td>
<td></td>
</tr>
<tr>
<td>Point of Sale</td>
<td></td>
</tr>
<tr>
<td>Real Estate</td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td>EDUCATIONAL &amp; RECREATIONAL</td>
<td>274-275</td>
</tr>
<tr>
<td>Astrology</td>
<td></td>
</tr>
<tr>
<td>College Guide</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>Music</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>GRAPHICS</td>
<td>276-278</td>
</tr>
<tr>
<td>3D</td>
<td></td>
</tr>
<tr>
<td>CAD/CAM</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>272</td>
</tr>
<tr>
<td>Battery Charger</td>
<td></td>
</tr>
<tr>
<td>PowerBook Accessories</td>
<td></td>
</tr>
<tr>
<td>MULTIMEDIA &amp; CD-ROM</td>
<td>275-276</td>
</tr>
<tr>
<td>Quicktime Flipbook</td>
<td></td>
</tr>
<tr>
<td>NETWORKING &amp; COMMUNICATIONS</td>
<td>273</td>
</tr>
<tr>
<td>BBS</td>
<td></td>
</tr>
<tr>
<td>PROGRAMMING &amp; UTILITIES</td>
<td>245</td>
</tr>
<tr>
<td>Data Compression</td>
<td></td>
</tr>
<tr>
<td>Languages</td>
<td></td>
</tr>
<tr>
<td>SERVICES &amp; SUPPLIES</td>
<td>279-280</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>On-Line Services</td>
<td></td>
</tr>
<tr>
<td>Prepress Services</td>
<td></td>
</tr>
<tr>
<td>Slides</td>
<td></td>
</tr>
<tr>
<td>SPECIALIZED MARKETS</td>
<td>278</td>
</tr>
<tr>
<td>Languages</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td></td>
</tr>
<tr>
<td>SYSTEMS &amp; PERIPHERALS</td>
<td>256-267</td>
</tr>
<tr>
<td>Printers</td>
<td></td>
</tr>
<tr>
<td>UPGRADES &amp; MEMORY</td>
<td>267-272</td>
</tr>
<tr>
<td>Accelerators</td>
<td></td>
</tr>
<tr>
<td>ACCOUNT MANAGERS</td>
<td></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></td>
</tr>
<tr>
<td>Clayton Haberman</td>
<td>415.978.3132</td>
</tr>
<tr>
<td>OVER 1/2 MILLION ACTIVE BUYERS</td>
<td></td>
</tr>
<tr>
<td>FIND WHAT THEY ARE LOOKING FOR</td>
<td></td>
</tr>
<tr>
<td>IN THE MACWORLD SHOPPER SECTION.</td>
<td></td>
</tr>
<tr>
<td>Bar Code Headquarters</td>
<td></td>
</tr>
<tr>
<td>Bar Code Readers</td>
<td></td>
</tr>
<tr>
<td>Portable Readers</td>
<td></td>
</tr>
<tr>
<td>65 PostScript Type 1 Bar Code Fonts</td>
<td></td>
</tr>
<tr>
<td>As easy to use as Times or Helvetica</td>
<td></td>
</tr>
<tr>
<td>Use in any program with a font menu</td>
<td></td>
</tr>
<tr>
<td>Code 39, UPC/EAN, Code 128, Interleaved 2 of 5, PostNet with FIMS</td>
<td></td>
</tr>
<tr>
<td>Not HyperCard Dependent</td>
<td></td>
</tr>
<tr>
<td>Simple, Easy-to-Use, Plug &amp; Play!</td>
<td></td>
</tr>
<tr>
<td>Generate film masters in Quark, etc.</td>
<td></td>
</tr>
<tr>
<td>Comes with Sequencer™ DA</td>
<td>$199</td>
</tr>
<tr>
<td>$199 includes our DA, and All Fonts</td>
<td></td>
</tr>
<tr>
<td>Call the Bar Code Experts</td>
<td></td>
</tr>
<tr>
<td>800·345·4220</td>
<td></td>
</tr>
<tr>
<td>or call 408·458·9938</td>
<td></td>
</tr>
<tr>
<td>FAX 408·458·9964</td>
<td></td>
</tr>
</tbody>
</table>
The Experts Choice for Barcoding!

**Barcode Generation**
- MacBARCODA
  - With a color option that works
  - All the vital features for safe, high-quality barcode production. All the popular barcode types. Compatible with all major page-makeups and graphics software. The highest precision barcoding package available for the Mac.

**Barcode Readers**
- Bar code data collection for the Mac or PC
- Works with any software package. All major bar code readers supported.
  - Wandel Reader $255
  - Laser Reader $495

Computalabel 800-289-0993
28 Green Street, Newbury MA 01951 Fax 508-452-9198

---

**Cash On Your Screen!**
Credit Card Authorization & Electronic Deposit

MacAuthorize™
- Automatically authorizes and deposits all credit card sales—individually or in batches
- Save time and money, eliminate credit terminals
- Certified on all major bank networks
- Handles all credit cards plus check guarantee
- Supports Apple Events & Import/Export
- Supports card readers & receipt printers
- Instant totals, discount rates, printed reports, etc.
- Database and file searching
- Many more features

POS Credit Developers since 1981
800-4-TELLAN • 408/274-1110 • Tellan Software, Inc.

---

**SYNEX**
Bar Code Pro™
Desk accessories, QuarkX™ or PageMaker™ add-ons, or fonts create bar code graphics in color. Bar Code Pro™ is an easy-to-use solution for packaging design, labeling, libraries, inventory, or publishing. Versions: UPC, EAN, ISSN, ISBN. 128.

POSTNET/TIM, Codabar, MSI, ITF, Pharmacodes

---

**Take Control**
Complete Systems Start at $2,799

Taking control of your business is easy with a system that has been designed and proven by thousands of retailers just like you. POS-IM provides full POS and Inventory Management functionality with the features you need at an outstanding price.

Ensign Systems, Inc.
(801) 546-1616

---

**MacLandlord $399**
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 2249
Dearborn, MI 48121
313/562-6471

---

**The Recognized Macintosh Bar Code Experts**

- Unimac-Scan 360 ADB Bar Code/Id Reader $369
  - Industry's only lifetime warranty
  - Complete with wand & bar code printing software
  - Compatible with all Macs from 128K to current models
  - Inventor of keyboard interface bar code reader for Macintosh.
- PDCS-300 Portable System $999
  - Includes wand, communications software, cable, battery & AC adapter.
  - 256K storage (128K RAM & 128K Flash EPROM) upgradeable to 1 meg.
  - Data collection program included - Inexpensive program generator

30-Day Money-Back-Guarantee on All Products
Established 1976 - Newton Software and Software Available Now! Discounts for Realtors, 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

---

**Point of Sale/Inventory Control Software & Hardware for**
- Retail
- Manufacturing
- Service Industry
- Government

New Bar Code Readers for the Newton
New Time Clock Software and Hardware
New Barcode Magnetic Stripe Readers
Receipt Printers • Cash Drawers
Credit Card Auth. & Deposit Software
call or fax for a FREE CATALOG
(800) 622-7670
(618) 958-0570 Fax (618) 958-0514

P.O.S. DIRECT

---

**Your Business Tools**

**Fast MAIL ORDER Distribution POINT-OF-SALE SYSTEMS**
- ORDER ENTRY
- BARCoding
- INVOicing
- FAST CASH RETAIL
- CREDIT CARD PROCESSING
- PURCHASE ORDER
- INVENTORY CONTROL
- DEMO available

EEG Companies Inc
800 - 508 - 4444
TEL 508-633-6911 SEE US AT
FAX 508-600-1877

---

**Macworld Shopper**

Macworld September 1994 255
## PageMaker 5.0 '250 With Purchase of each PowerMac

**Power Macs 8100, 80MHz**
- 8MB/400 MB HD ............ 3649
- 16MB/16G HD/Apple CD .... 4749
- 16MB/500 MB/SoftWindow 4499
- 40MB/1G/Sygent 200MB/Ext. Key .... 5799
- 136MB/2.4G/SuperMac Press View 21/CD.... 12977

24 bit Color with Display Resolution of 1152x870

**Power Macs 7100, 66MHz**
- 8MB/250 MB HD ............ 2595
- 16MB/500 HD/Apple CD .... 3434
- 24MB/1G/Sygent 883/Ext. key .... 4177
- 40MB/1G/Sony 17SE/Apple CD/2mb Vram ... 5699

16 bit color with Display Resolution of 832x624

**Power Macs 6100, 60MHz**
- 8MB/160 HD/Apple CD ....... 1895
- 16MB/500 HD/Apple CD .... 2566
- 8MB/160HD/Apple Color Plus & CD/Ext. key .... 2222
- 16MB/500 HD/Apple CD/17/Ext/Key .... 3569

**PowerBooks 520 / 520C**
- 4MB/160 HD ....... 2127/2718
- 8x240/19,2 Modem .... 2988/3535
- 20MB/320 MB HD ....... 3298/3839
- 12x320/19,2 Modem .... 3234/3825

**PowerBooks 540 / 540C**
- 12MB/240 HD ....... 3347/4735
- 8x240/19,2 Modem .... 3572/4950
- 20MB/320 MB HD ....... 4095/5447

**DOO 280 / 280C**
- 4MB/240 MB/CD ....... 2466/3299
- 8x240/19.2 Modem .... 3198/4122
- 20MB/320 MB HD ....... 3737/4422
- Duo Dock II ....... 866
- GV PowerPort Memory ....... 344

**Apple Printers**
- Select 310/220/350 ........ 799/959/1499
- StyleWriter II/Color .... 299/595
- Portable StyleWriter .... 405

**Apple Monitors, Keyboards**
- 20"/17 Multiscan .... 187/998
- 14/16 Color Display .... 399/799

**Quadra 340/440**
- 6MB/230/CD/260 ....... 2955
- 16MB/500/CD ....... 3395
- 24MB/1G/CD ....... 3845

**Quadra 650/660AV**
- 6MB/230/CD/260 ....... 2222/1615
- 16MB/500/CD ....... 2722/2119
- 24MB/1G/CD ....... 3195/3999

**Call for the lowest price on PowerBooks 145, 160, 165c, 160c, 180c**
- DayStar Upgrade Products with PowerPC
- ROM/For Quadra 650, 700, 800, 900, 950
- 66 Mhz/PowerPro 601 .... 1444
- 86 Mhz/PowerPro 601 .... 1899
- 1GB Cache for PowerPro 499

**Extra's**
- PowerBook Level 2 Cache 256K .... 279
- 610 Dos card .... 288

*All Returns are subject to restocking fee, must be in original package, condition & needs an RMA*
*All Prices are refundable when Discount any other new offer is 2% more*
*9240 CANBE AVE. UNIT #108 RESCDA CA. 91335 *
*Prices are subject to change without notice*
**SYSTEMS & PERIPHERALS**

**1-800-929-9333**

<table>
<thead>
<tr>
<th>SuperMac 20 TXL</th>
<th>$1299</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperMac 21TXL</td>
<td>$2049</td>
</tr>
<tr>
<td>SuperMac PressView 21&quot;</td>
<td>$2999</td>
</tr>
<tr>
<td>Smart Touch 17 W/Int.</td>
<td>$2299</td>
</tr>
<tr>
<td>SuperMac 17T</td>
<td>$969</td>
</tr>
<tr>
<td>SuperMac Monitors</td>
<td></td>
</tr>
<tr>
<td>SuperMac Monitors Are Switchable 110/220 Volt</td>
<td></td>
</tr>
</tbody>
</table>

**Accelerate your system performance by 20% adding a video card rather than using built in video!**

| Thunder II GX 1600/1360 | $2949/2199 |
| Thunder II GX 1152 | $1999 |
| Thunder II/8/Upgrade | $1399/699/249 |
| ThunderStorm F/Photoshop | $349 |
| SuperMac Digital Film | $1099 |
| VideoSpigot/Spigot & Sound | $99/249 |
| Spectrum 24 Series IV/24PDQ | $599/749 |

**Software**

| Adobe Illustrator V5.5 | $379 |
| Adobe Photoshop V2.5.1 PPC | $599 |
| Aldus Freehand V4.0 | $399 |
| Aldus PageMaker V5.0 | $449 |
| Aldus Persuasion V3.0 | $325 |
| Apple Search | $1499 |
| Apple Share V4.0 | $1499 |
| Canvas V3.5 | $265 |
| Claris FileMaker Pro V2.1 | $265 |
| ClarisWorks V2.1 PPC | $195 |
| Macromedia Director V4.0 | $849 |
| Microsoft Excel V4.0 | $299 |
| Microsoft Office V3.0 | $419 |
| Includes Excel, Mail, PowerPoint, Word |
| Microsoft Word V5.1 | $299 |
| QuarkXpress V3.3 | $299 |
| Retrospect Remote V2.1 | $259 |
| SoftWindows V1.0 3.5/"CD | $319 |
| All MAC & PC Software Available |

**Scanners**

| Microtek Scanner IIIx1E | $625/899 |
| Scanner III/II | $1099/249 |
| Scanner IIG/IISP | $479/769 |
| Scanner 35T | $1349 |
| Automatic Document Feeder | $425 |
| Transparent Media Adapter | $649 |

**Hard Drives**

| Quantum 80/230 3.5" | $99/220 |
| 270/340/540 3.5" | $250/280/389 |
| 1.8/4.1/2.1GB | $699/899/1319 |
| 40/80 2.5" F/PowerBook | $79/145 |

**Memory**

<table>
<thead>
<tr>
<th>Mac II 30-Pin Simms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1x8-80/2x8-70ns</td>
<td>$49/90</td>
</tr>
<tr>
<td>4x8-70ns</td>
<td>$149</td>
</tr>
<tr>
<td>16x8-70ns</td>
<td>$380</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mac II 72-Pin Simms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1x32-80/60ns</td>
<td>$4MB $149/159</td>
</tr>
<tr>
<td>2x32-60ns</td>
<td>$8MB $285/295</td>
</tr>
<tr>
<td>4x32-70/60ns</td>
<td>$16MB $540/550</td>
</tr>
<tr>
<td>8x32-70/60ns</td>
<td>$32MB $1149/1195</td>
</tr>
<tr>
<td>PowerBooks Memory</td>
<td></td>
</tr>
<tr>
<td>PowerBook 160, 165, 180</td>
<td></td>
</tr>
<tr>
<td>4/6/8/10MB</td>
<td>$159/229/295/369</td>
</tr>
<tr>
<td>PowerBook 165C, 180C</td>
<td></td>
</tr>
<tr>
<td>4/6/8/10MB</td>
<td>$159/229/295/369</td>
</tr>
<tr>
<td>PowerBook 520C, 540C</td>
<td></td>
</tr>
<tr>
<td>4/8/16/32MB</td>
<td>$209/389/749/1449</td>
</tr>
<tr>
<td>DUO's 4/8</td>
<td>$195/329</td>
</tr>
<tr>
<td>12/14/20/28MB</td>
<td>CALL</td>
</tr>
<tr>
<td>PowerMac Cache 256K</td>
<td></td>
</tr>
<tr>
<td>$249</td>
<td></td>
</tr>
<tr>
<td>Mac FPU for Duo Dock &amp; LCII</td>
<td></td>
</tr>
<tr>
<td>$29</td>
<td></td>
</tr>
</tbody>
</table>

---

Orders Only

**1-800-929-9333**

**SuperMac 20 TXL**

- 1152x768 Res., 20" Trinitron
- PC or MAC, STD972TXL

**SuperMac 21TXL**

- 1600x1360 Res., 21" Trinitron

**SuperMac PressView 21"**

- 1360x1024 Res., 500K White Point W/Calibrator Pro, PV2101

**Smart Touch 17 W/Int.**

- $2299

**SuperMac 17T**

- $969

**SuperMac Monitors**

- Switchable 110/220 Volt

---

**Supplementary Information**

- Orders Only 1-800-929-9333
- All prices reflect C.O.D. orders only & are subject to change without notice!
- We honor AMEX, MC, & VISA.
- Factory Refurbished w/Warranty

---

**Contact Details**

- International Sales (818)787-3282
- FAX (818)787-5555
WE SPECIALIZE IN CUSTOM MADE CONFIGURATIONS

CIRCLE 496 ON READER SERVICE CARD
<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerMac 8100/80 16MB</td>
<td>$2999.00</td>
</tr>
<tr>
<td>PowerMac 8100/80 32MB</td>
<td>$3699.00</td>
</tr>
<tr>
<td>PowerMac 8100/80 48MB</td>
<td>$4399.00</td>
</tr>
<tr>
<td>PowerMac 8100/80 64MB</td>
<td>$5099.00</td>
</tr>
<tr>
<td>PowerMac 8100/80 128MB</td>
<td>$6399.00</td>
</tr>
</tbody>
</table>

**Call for most recent prices!**

---

**PowerBook 1000c**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBook 1000c</td>
<td>$5999.00</td>
</tr>
<tr>
<td>PowerBook 1000c</td>
<td>$6999.00</td>
</tr>
<tr>
<td>PowerBook 1000c</td>
<td>$8499.00</td>
</tr>
</tbody>
</table>

---

**Printers & Peripherals**

<table>
<thead>
<tr>
<th>Printer Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>LaserWriter 5000</td>
<td>$2999.00</td>
</tr>
<tr>
<td>LaserWriter 5000</td>
<td>$3499.00</td>
</tr>
<tr>
<td>LaserWriter 5000</td>
<td>$3999.00</td>
</tr>
<tr>
<td>LaserWriter 5000</td>
<td>$4499.00</td>
</tr>
<tr>
<td>LaserWriter 5000</td>
<td>$4999.00</td>
</tr>
<tr>
<td>LaserWriter 5000</td>
<td>$5499.00</td>
</tr>
<tr>
<td>LaserWriter 5000</td>
<td>$5999.00</td>
</tr>
</tbody>
</table>

---

**RADIUS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius Quattro</td>
<td>$2999.00</td>
</tr>
<tr>
<td>Radius Quattro</td>
<td>$2999.00</td>
</tr>
<tr>
<td>Radius Quattro</td>
<td>$2999.00</td>
</tr>
<tr>
<td>Radius Quattro</td>
<td>$2999.00</td>
</tr>
<tr>
<td>Radius Quattro</td>
<td>$2999.00</td>
</tr>
<tr>
<td>Radius Quattro</td>
<td>$2999.00</td>
</tr>
<tr>
<td>Radius Quattro</td>
<td>$2999.00</td>
</tr>
</tbody>
</table>

---

**Leasing available!**

FOR BUSINESSES ONLY!
### New Microsoft Office - $149.00
Includes Microsoft Word, Excel, Powerpoint & Mail
ONLY $99.00 with Purchase of CPU

### NEW NEC CD-ROM DRIVE - $99.00
Includes Over $200 Software Free:
- T/Maker Clickart 2000 (Over 2000 EPS Images)
- FWB CD-ROM Toolkit & The Merchant

- BUY THE NEC CD-ROM DRIVE & MICROSOFT OFFICE ON CD-ROM FOR ONLY - $199.00

### New Microsoft Works (Integrated Software) Super Sale! $49.00

### Includes:
- 8MB RAM/160MB Hard Drive
- Internal Apple 300i Plus CD Drive
- Macintosh Color Trinitron 14" Apple 1.4MB SuperDrive
- 1MB VRAM (32,768 Colors)
- 33-MHz 68LC040/32-Bit Data Bus
- Built-in Stereo Speakers & Mike

### SYSTEM SPECIAL
**Apple’s First All-in-One 040**
New Mac LC 575
**$1,699.00**

### Mac IIvx 4/0
(Factory Refurbished)
PowerPC Upgradeable!! $699.00

### New LaserWriter Select 310
(Postscript, 300 dpi, 5 ppm) $499.00

### Epson Color Scanner
300 dpi, 256 Color Single Pass Flatbed $499.00

### New Apple 16" Color Monitor
- New Extended Keyboard $89.00
- New Ext. Hard Drive Enclosures $69.00
- Power Mac, PowerBook, Duo's In Stock

**WE CARRY THE LATEST MODELS - CALL FOR PRICES**

### USED

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac Plus</td>
<td>$199.00</td>
</tr>
<tr>
<td>Mac SE (800K)</td>
<td>$225.00</td>
</tr>
<tr>
<td>Mac SE/30</td>
<td>$479.00</td>
</tr>
<tr>
<td>Mac Classic</td>
<td>$459.00</td>
</tr>
<tr>
<td>Mac II</td>
<td>$199.00</td>
</tr>
<tr>
<td>Mac IIi</td>
<td>$529.00</td>
</tr>
<tr>
<td>Mac IIcx</td>
<td>$399.00</td>
</tr>
<tr>
<td>Mac IIi</td>
<td>$579.00</td>
</tr>
<tr>
<td>EMAC SE or SE/30 ETHERNET BD</td>
<td>$15.00</td>
</tr>
<tr>
<td>POWERBOOK CORDURA CARRYING CASES</td>
<td>$25.00</td>
</tr>
</tbody>
</table>

### DEALS
**Software Special Bundle Includes:**
- Write Now, Faxmania
- American Heritage Dictionary,
- Grammatik Mac, Correct Quotes,
- and ClickArt Holidays

**All For Only** $25.00

### Prices listed may not be current market value...

**1-800-729-7031**

**WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT**

**Call for latest updated pricing**

**Returns at discretion of Mgmt. 15% Restocking fee.**
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.

**Computer Systems**

- PowerMac 6100/60 6100/60... $1799
- PowerMac 8100/160 8100/160... $2569
- PowerMac 7100/60 7100/60... $2599
- PowerMac 7100/60 7100/60... $3333
- PowerMac 7100/80 7100/80... $3999
- Workgroup 7100/100... $4299
- Quadra 604AV 16/24 604AV 16/24... $1997
- Quadra 609AV 12/160 609AV 12/160... $2899
- PowerBook 580C 12/160 580C 12/160... $2212

**Peripherals**

- Apple 14" Color Trinitron Monitor... $399
- 17" Color Monitor... $439
- SuperMac 211 Trinitron Monitor... $799
- Sony, SuperMac, NEC, Radius, and Vision... $999
- Hasselblad 555 Df... $4910
- Tintnetra Printers... $929
- UMAX 484 Scanner... $1499
- HP 1100 Scanner... $1999
- UMAX PowerBook w/240MB... $1375
- SuperMac Digital Film... $2195
- HP Scanjet HI Scanner... $479

**Software & Hard Drives**

- Now Utilities Software... $74
- CD Rom Preloaded Bundle... $129
- Adobe Illus 5.5 for PowerMac... $399
- FWB External Seysed 44/88... $485
- Systst 230 Mt, External Drive... $988
- External 240MB, Drive w/FW8... $329
- External 540MB, Drive w/FW8... $499
- Microsoft 2GB Array... $599
- FWB Sidekickformer 420MBFW8... $1399

**Quadra 605 Intro System**

- Includes: BMB, RAM, 160 hard drive, Apple 14" Color display, extended keyboard, Configure, Quickdraw, Adobe, Redo, Full Contact, Common Sense, WOS, Watermark, American Heritage Dictionary, Powerbank, FLB, our Incredible Power Warranty Package...

**PowerMac 8100AV Video System**

- This complete system includes: 40 megabytes Ram, 1 gigabyte super fast hard drive, extended Apple Color Display, extended keyboard, "17" Trinitron display, Color for Incredible Power Warranty Package...

**Quads/Power Mac**

- Quadra/Power Mac... $1799
- PowerBook/Power Mac... $2569
- PowerBook/Power Mac... $3999
- PowerBook/Power Mac... $4299
- PowerBook/Power Mac... $2212

**Hardware/Software**

- PowerMax 8100AV Video System...

**Contact Information**

- 1-800-909-7879
- 1-413-436-7879
- 1-800-323-2710
- Fax: 1-503-232-7101
- 800-844-3599

**Systems & Software**

- Systems & Software

**Contact Information**

- 1-800-909-7879
- 1-413-436-7879
- 1-503-232-7101
- Fax: 1-503-232-7101

**Systems & Software**

- Systems & Software

**Contact Information**

- 1-800-909-7879
- 1-413-436-7879
- 1-503-232-7101
- Fax: 1-503-232-7101

**Systems & Software**

- Systems & Software

**Contact Information**

- 1-800-909-7879
- 1-413-436-7879
- 1-503-232-7101
- Fax: 1-503-232-7101
A new Macintosh SX-29000 Fast 600 dpi Laser Printer is available. It combines high-quality, high-performance characteristics. The printing engine is the popular Canon S4—the same 8 ppm printing mechanism used in the most popular laser printers.

- 2MB RAM expandable to 16MB
- AMD RISC processor
- 830 x 830 dpi equivalent gray scale
- PostScript language compatible with 38 built-in scalable fonts using PhoenixPage

Other features include:
- Continuous active ports for use with both ICs and Macs
- Automatic PCI and PostScript emulation switching
- SCSI port for harddrive based font library

Order Toll-Free 1-800-225-6116
3481 Arden Road, Hayward, California 94545

CIRCLE 533 ON READER SERVICE CARD
CIRCLE 444 ON READER SERVICE CARD
CIRCLE 483 ON READER SERVICE CARD

SYSTEMS & PERIPHERALS

---

**Microplex Hard Drives**

- 4410 1/2 (8.89 cm) 3-1/2" drive $989/$999
- 4420 1/2 (8.89 cm) 5-1/4" drive $989/$999

All Microplex drives carry a 5 year Warranty.

**Compu-HD Special**

- $1299 Compu-HD 1/2 (3.65 cm) 7200 RPM 1.2 GB drive
- $1499 Compu-HD 1/2 (3.65 cm) 7200 RPM 2.4 GB drive

**Quantum 5400 BLOWOUT!**

Brand New Quantum 5400 drive now available at a supplier's list price.

**Quantum 5400 Drive**

- 172mb (11ms) 5400 RPM 3.5" drive $549/$599
- 340mb (11ms) 5400 RPM 3.5" drive $699/$749
- 1440mb (18ms) 5400 RPM 3.5" drive $1299/$1399

**Mac Peripherals & Upgrades**

- PowerMac 6100/750 200MHz accelerator for non-Apple Macs $299
- PowerMac 6100/750 100MHz accelerator for Apple Macs $399
- Apple CD-ROM External $1299

**Memory & Expansion**

- 142mb 168-pin SIMM $129/$139
- 340mb 168-pin SIMM $149/$159
- 142mb 300-pin SIMM $179/$189
- 256mb 300-pin SIMM $229/$239

**PowerMac Systems**

- PowerMac 8100/630 256MB CD $1499
- PowerMac 8100/630 512MB CD $1999
- PowerMac 8100/630 1GB CD $2499

**Other PowerMac Configs Available for $2950**

- PowerMac 8100/140 1.1GHz $499
- PowerMac 8100/140 1.3GHz $499

**We Have Blackbird Memory!**

All memory has a Lifetime Warranty.

**Memory Expansion Options**

- 142mb 168-pin SIMM $129/$139
- 340mb 168-pin SIMM $149/$159
- 142mb 300-pin SIMM $179/$189
- 256mb 300-pin SIMM $229/$239

---

**Drive Multiple Monitors With 1 Macintosh!**

FREE CATALOG! Use 800-742-8324
Canada: 800-626-7801
NETWORK TECHNOLOGIES INC
1275 Donner Drive, Aurora, OH 44202

**The SX-29000 Fast 600 dpi Laser Printer!**

- $1295 includes one toner cartridge
- Simultaneous active ports for use with both ICs and Macs
- Automatic PCI and PostScript emulation switching
- SCSI port for harddrive based font library

Order Toll-Free 1-800-225-6116
3481 Arden Road, Hayward, California 94545

---

**External Drive Housing**

- Full Height $145.00
- Half Height $99.00
- 3.5" Mini Housing $89.00
- 2.5" Pocket Housing $99.00

- Closed or Open Front Bezel
- Includes F/WB Software & all necessary cables
- 110/220 VAC Auto Switching Power Supply
- Full Height Cabinet will hold (2) 3.5" or (2) 2.5" HH Drives

**DataMax**

- 800-321-4962
- 20211 Division Dr. #220
- Irvine, CA 92602
- Fax 714-565-9377
- 949-931-2234
- M/C/VISA AE/AMEX

---

Somehow, Macs are capable of running several programs at once. The SX-29000 Fast 600 dpi Laser Printer is one of the many peripherals that can help you do this. It uses the same printing mechanism as the popular Canon S4, and it can print at an amazing 600 dpi. With its high-speed 2MB RAM, you can easily handle even the most complex tasks. Plus, it includes all necessary cables for easy setup. Whether you're a student, a professional, or just looking to upgrade your home office, the SX-29000 is the perfect addition to your Macintosh system. So why wait? Order yours today and start printing like never before!
New-Used Macs/Parts/Upgrade

UPGRADES

- Upgrade Classic 4/40 to 499.
- Upgrade Classic II 4/40 to 499.
- Upgrade Il 1/40 to 350.
- Upgrade Ii o/0 to 699.
- Upgrade Ilx 4/40 (New) to 949.
- Upgrade Quadra 700 4/70 to 1399.
- Upgrade Quadra 900 0/0 to 1799.
- Upgrade Quadra 950 0/0 (New) to 2599.
- We Buy Macs!

Cases

- Mac II Power & supply $199.
- Mac Ilx $199.
- Mac SE $299.
- Mac Classic $359.
- Mac LC $129.

SYSTEMS

- Basic Color $169.
- Color Plus (NEW) $299.
- Portrait $299.
- Color Portrait $299.
- Radian 12 Mono $169
- Radian 12 Color $199
- Radian 12 Color Plus (NEW) $299.

PowerBooks

- 100 440 to 699.
- 140 440 to 899.
- 160 440 to 1099.
- 170 440 to $1199.
- 140/170 Battery $49.

We Buy Macs!

- Mac II Power & supply $199.
- Mac Ilx $199.
- Mac SE $299.
- Mac Classic $359.
- Mac LC $129.

Shreve Systems

1200 Marshall St Shreveport LA 71101
FAX 318-424-9771 Tech 318-424-7987

800-227-3971

CIRCLE 425 ON READER SERVICE CARD

C.R.I. INC.

Best Selection...Best Service!

1 800 275-9924

IN NY 516 737-0800, FAX 516 737-0923

POWERPC & NEW POWERBOOKS ARE HERE!

- Mac SE $299.
- Mac Classic $359.
- Mac LC $129.

POWERBOOKS

- 100 440 to 699.
- 140 440 to 899.
- 160 440 to 1099.
- 170 440 to $1199.
- 140/170 Battery $49.

Specials

- LC4/80 $499.

9 Track Tape Subsystem for the Macintosh

- Exchange data files between the Mac and any microcomputer using IBM compatible 1600 or 6250 BPI 9-track tape.
- Unit can also be used for disk backup. Transfer rate is up to 8000 tapes per minute via your SCSI interface. System includes, tape drive, software, and complete documentation. For more information call us today!

CIRCLE 474 ON READER SERVICE CARD

CIRCLE 445 ON READER SERVICE CARD

WE BEAT ANY PRICE!

SAMSUNG

DISPLAYS, SCANNERS,
PRINTERS, MODEMS,
DEALERS AND INTERNATIONAL SALES OK

800-822-5557
(818) 225-9327
FAX
(818) 225-8827

22831 Ventura Blvd., Suite 228
Woodland Hills, CA 91364

CIRCLE 540 ON READER SERVICE CARD

9 Track Tape Subsystem

For the Macintosh

- Exchange data files between the Mac and any microcomputer using IBM compatible 1600 or 6250 BPI 9-track tape.
- Unit can also be used for disk backup. Transfer rate is up to 8000 tapes per minute via your SCSI interface. System includes, tape drive, software, and complete documentation. For more information call us today!
**DIGITAL VIDEO HEADQUARTERS**

Your #1 Source For

- Video Vision Studio 2.0 Power PC Ready
- Radius Studio Array Blistering SCSI
- LeMans GT Fastest 24 bit Color Around

Highest Quality Loviel Peripherals

- 5X CD-ROM NEC Mechanism/FWB Software/Titles and Speakers $399
- Lighting 85 & 170 MB Hard Drives Quantum LP3/Software $119/189
- Lighting 2.5 GB Seagate Barracuda 1/7200 rpm/Fast! $1,739
- Lighting 9 GB Hard Drive Seagate Elite B/Storage Champ! $3,999

5599 W. 78th St.
Minneapolis MN 55439
800-688-3696
Free Tech Support
Visa/MC/Discover

**ACCELERATORS/FPUs**

Double the Speed of Your Quadra or Centris 610!

- 40MHz 68040 Centris 610 $229/399
- 50MHz 68040 Quadra 610 $399
- Modbus SpeedStud 25MHz $389/549
- 33MHz w/128K cache $489/589
- 25MHz 68030 68LC040 cache LC $99
- 25MHz 68030 68LC040 cache LCII $129
- 33MHz 68030 Max II, Ilx $188
- Apple Cache Card 68010 $49
- Cache Card 25K PowerMac $249
- 68040-25 PPU 605s/610, LC75 $249
- 68040-33 PPU LC75/757/7/8 $299
- Apple 6040/2/4/5 $129/178
- 68882 PPU LC III, Duo, etc. $39/49
- 68851 PMU w/Moda 32 Max II $99

**SOURCE INTERNATIONAL**

Silicon Valley's First Choice for Computer Memory

(415) 323-6059
Fax (415) 326-3552

**DBI MEMORY**

MAC SIMMS: 1MB-32MB QUADRA POWER PC VIDEO UPGRADES POWERBOOKS/DUOS NEWTON CARDS KINGSTON MEMORY NOBODY BEATS OUR PRICES!!

1-800-368-7995
203-481-0750 FAX 203-481-6385
WE BUY EXCESS INVENTORY

**MEMORY TRADERS**

WE BUY USED MEMORY

256K 512K 1MB 2MB 8MB 4MB 16MB 32MB
ANY QUANTITY - ANY SPEED WORKING OR BROKEN

256K 512K 1MB 2MB 8MB 4MB 16MB 32MB
POWERBOOK 2.4MHZ POWERPC POWERBOOK 4MB-10MB YRAM IIIFX SIMMS

7215 Arlington Road, Suite 202
Bethesda, MD 20814-1

301-313-7907 301-313-7807
FAX 301-907-7542

**MACWORLD SHOPPER**

**UPGRADES & MEMORY**

**SYSTEMS & PERIPHERALS**

**NuBus Expansion Chass"**

- External chassis add 4 or 8 more NuBus option card slots to your Macintosh
- Compatible with the Mac II, Centris, & Quadra models, & Power Mac 6100
- Provides slots for applications:
  - Multi-media, video production
  - Signal/image processing
  - Data acquisition/industrial control, multi-processors

Expand NBI and Expand NBIe can complete with NuBus slots, power supply, SCSI support, interface card, and cable. Priced from $795 to $1795.

Second Wave Inc.
The Expansion Chassis Company
2525 Wellingwood Dr. Blvd., Austin, TX 78746 Phone: 512-329-9283 FAX: 512-329-9299

**PRICE BREAKERS**

MITSUBISHI COLOR MONITOR

FG6601 $345.00
32" x 24" View
Resolution 832 x 624
Dot Pitch 0.26mm
Colors Millions

25 Beta Ct., San Ramon, CA 94583
800-639-1031

**SIMMONS TECHNOLOGIES**

Serving Mac Users Since 1986

1-800 Sky Park Circle, Irvine CA 92714
714-261-2800

Visi/MC No Surcharge; Gov't/Corp./Educ. P.O.
One year min. warranty on all products.
**DiiMOCache**

50MHz Accelerator $445

**Call now! We have all sizes of memory for the new Blackbird PowerBooks!**

### Standard SIMMs

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MB</td>
<td>from 35.00</td>
</tr>
<tr>
<td>2 MB</td>
<td>75.00</td>
</tr>
<tr>
<td>4 MB</td>
<td>140.00</td>
</tr>
<tr>
<td>8 MB</td>
<td>309.00</td>
</tr>
<tr>
<td>16 MB</td>
<td>569.00</td>
</tr>
</tbody>
</table>

### Video RAM

- 4 Bit to 8 Bit Upgrade (Mac II/IIx cards) $24.00
- 256K Quadra 700/900, Performa 46X VRAM $18.00
- 256K Quadras, LC 520 VRAM $19.00
- 256K Centris, LCIII, Performas VRAM $19.00
- 512K VRAM for LC, LCII, IIx, IIfi, DuoDock, and Performas $36.00

### 68882 FPU Boards

- 25 MHz for Macintosh LC $55.00
- 20 MHz w/2 slots for Mac IIfi $119.00
- 25 MHz for Mac Classic II $55.00

### Cache Cards, Etc.

- 128K Cache Card for LCIII and Performa 450 $159.00
- 64K Cache Card $159.00
- IIfi 64K Cache Card $125.00
- IIfi 2-slot card and 68882 $119.00

### Math Coprocessors

- 68882 16 Mhz FPU $39.00
- 68882 20 Mhz FPU $45.00
- 68882 25 Mhz FPU $49.00
- 68882 33 Mhz FPU $59.00
- 68882 50 Mhz FPU $99.00
- 68881 16 Mhz FPU $45.00

### Miscellaneous

- 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 PMMU $89.00
- 1 MB $89.00
- 2 MB $140.00
- 3 MB $215.00
- 4 MB $319.00
- 5 MB $499.00
- 6 MB $699.00
- 8 MB $999.00
- 10 MB $1299.00
- 12 MB $1599.00
- 14 MB $1899.00
- 16 MB $2199.00

**SAVE MONEY! Peripheral Outlet will buy back your old memory at great prices! Call for details.**

**NEW PRODUCTS!**

**Prices Changing Daily—Call for Best Prices!**

**PowerBook Memory**

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 MB</td>
<td>$89.00</td>
</tr>
<tr>
<td>8 MB</td>
<td>$140.00</td>
</tr>
<tr>
<td>16 MB</td>
<td>$215.00</td>
</tr>
<tr>
<td>32 MB</td>
<td>$319.00</td>
</tr>
</tbody>
</table>

### PowerBook Memory

- 100 $499.00
- 140 $1299.00
- 160 $1599.00
- 180 $1899.00
- 200 $2199.00

**DiiMOCache 50MHz 68030 Accelerator without FPU $445.00 with FPU $519.00**

### Newton PDA Upgrade Products

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>512K Static RAM Upgrade $125.00</td>
<td></td>
</tr>
<tr>
<td>1 MB Static RAM Upgrade $169.00</td>
<td></td>
</tr>
<tr>
<td>2 MB Static RAM Upgrade $289.00</td>
<td></td>
</tr>
<tr>
<td>2 MB Flash Card Upgrade $259.00</td>
<td></td>
</tr>
<tr>
<td>4 MB Flash Card Upgrade $425.00</td>
<td></td>
</tr>
<tr>
<td>8 MB Flash Card Upgrade $749.00</td>
<td></td>
</tr>
<tr>
<td>16 MB Flash Card Upgrade $1375.00</td>
<td></td>
</tr>
</tbody>
</table>

**68040 PROCESSOR W/FPU AS LOW AS $249.00**

(25MHz, w/ non FPU type processor trade in $299.00 w/out trade)

For the Centris/Oquadra 605, 610, 650, and 660AV, and the Performa 475/476 and LC 475.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>33MHz for Quadra 650 &amp; LC 575</td>
<td>$399.00</td>
</tr>
<tr>
<td>40MHz</td>
<td>$699.00</td>
</tr>
<tr>
<td>Heat Sink $19.00</td>
<td></td>
</tr>
</tbody>
</table>

**Due to volatility in the market all prices and availability are subject to change without notice.**
# Xtra REASONS TO BUY FROM MAC Xtra...

## MEMORY UPGRADES

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1X8X80</td>
<td>$38</td>
</tr>
<tr>
<td>2X8X80</td>
<td>$77</td>
</tr>
<tr>
<td>4X8X80</td>
<td>$138</td>
</tr>
<tr>
<td>4X8X80 II/IX</td>
<td>$155</td>
</tr>
<tr>
<td>16X8X80 (Low Profile)</td>
<td>$619</td>
</tr>
<tr>
<td>16X8X80F</td>
<td>$41</td>
</tr>
<tr>
<td>4X8X80F</td>
<td>$155</td>
</tr>
<tr>
<td>16X8X80FX</td>
<td>$629</td>
</tr>
<tr>
<td>4MB 72Pin(72NS/60NS)</td>
<td>$149/$151</td>
</tr>
<tr>
<td>8MB 72Pin(70NS/60NS)</td>
<td>$293/$298</td>
</tr>
<tr>
<td>16MB 72Pin(60 NS)</td>
<td>$599</td>
</tr>
<tr>
<td>32MB 72Pin(60 NS)</td>
<td>$1199</td>
</tr>
</tbody>
</table>

## SYQUEST MEDIA

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>88MB 1-4/5-9/10+ Pre-Formated</td>
<td>$69/$68/$67</td>
</tr>
<tr>
<td>88MB Pre-Formated</td>
<td>$75</td>
</tr>
<tr>
<td>200MB 1-9/10+ Pre-Formated</td>
<td>$79/$77</td>
</tr>
<tr>
<td>105MB 1-9/10+</td>
<td>$62/$60</td>
</tr>
<tr>
<td>270MB 1-9/10+</td>
<td>$65/$63</td>
</tr>
</tbody>
</table>

## MODEMS

- Prometheu's Powerbook 14.4 Int. $244
- Powerbook Home Office 14.4 Int. $279
- Home Office 14.4 Ext. $210
- Zoom
  - Zoom AMX 2400 $62
  - Zoom 16 MB/32 MB S/R Fax $116
  - Zoom VFX 14.4 v.32bis S/R Fx $169
- Hayes
  - Accura 144-Fax 14.4 Mac $164
  - Optimus 144-Fax 14.4 Mac $403
  - Optimus 144-Fax 14.4 Pocket $303
- Qtiain 288 VPC+FAX Mac $449
- US Robotics
  - Sportster 28.8 Mac & Fax $232
  - Sportster 14.4 Mac & Fax (US) $142
  - Sportster 2400 Mac & Fax $135

## NETWORKING

- Dayton
  - DaynaPort Pocket SCSI/Link/T $231
  - DaynaPort SCSI/Link $247
  - DaynaPort SCSI/Link Powerbook T $286
  - DaynaPort TRX (Friendly Net Adapter) $54
  - DaynaPort E/T-Nubus $104
  - DaynaPort LGC-T Mac LC Card $99
  - DaynaPort E/S-E Mac SE Card $143
  - DaynaPort E/S-T Mac ISIS/30 $143
  - DaynaPort Min Hub 3 10Base T $140
  - DaynaPort Min Hub 10Base T $193
- Fairalron
  - Ether/Wave Nubus Card $99
  - Ether/Wave LC Card $99
  - Ether/Wave Mac Powerbook Adapter $278
  - Ether/Wave Printer Adapter $278
  - Ether/Wave Mac Powerbook Adapter $278
  - Ether/Wave Mac Printer Adapter $278
- Telco Mac LC-7 $170
- Telco Mac LC-1 $170
- TonerNet Connecter $26

## DRIVES

- Xtra Drives
  - SyQuest 44/86MB w/Cart. $289/$439
  - SyQuest 200MB w/Cart. $579
  - SyQuest 105/270MB w/Cart. $429/$579
  - 128MB Optical 30s w/5 Disks $995
  - CD-Rom Photo CD 2x $299
  - 8GB DDS D2 Data $1259
- MicroNet
  - In/Ex 170MB Fast SCSI-2 $264/$288
  - In/Ex 340MB Fast SCSI-2 $347/$382
  - In/Ex 1GB Fast SCSI-2 $940/$978
  - External 2.5GB Fast SCSI-2 $252
  - In/Ex 160MB Optical Drive $904/$1184

## ACCELERATORS

- Daystar
  - Turbo 040 33MHz w/Cache $795
  - Turbo 040 40MHz w/Cache $999
  - Turbo 040 128xCache $115
  - Daystar 033/333 w/FP $275/$357
  - Daystar 030 50/50 w/FU $415/$537
  - Daystar PowerPRO Cards CALL

## WIFI CARDS

- Radius
  - Precision Color 8XJ Nubus $461
  - Precision Color PRO 24XN Nubus $768
  - Precision Color PRO 24XP Nubus $768
  - Full Page Display GS 15" Mono $296
  - PhotoBooster for Rocket $65
  - PhotoBooster 6040-66 $75
  - SuperMac
    - Spectrum 24 Series V Nubus $380
    - Spectrum 24 POQ Nubus $510
    - Spectrum 8 Series III Nubus $382
    - Video Spigot Nubus 24bit-DAC $243
    - Thunder II Light Nubus 1152x870 $1,701

## PRINTERS

- SuperMac
  - Proof Positive full Page Color $6,805
- Hewlett Packard
  - Deskwriter C/580C (Color) $407/$604
  - Deskwriter 310/520 (Mono) $307/$382
- Call for HP Printer Supplies CALL
- Texas Instruments
  - MicroWriter Basic L.E.D. 5ppm $524
  - PS9355 L.E.D. 5ppm A4 $694/$636
  - PRO PS23/65 8ppm $1,398/$1,572

## XTRA MEDIA

- Verbatim
  - Verbatim 128MB Optical $30
  - Verbatim 650 Optical $85
  - Verbatim 3GB Optical $112
  - Samsung
    - Samsung 1280MB Optical $30
    - Samsung 650MB Optical $30

## PHONES

- MasterCard, VISA & Discover NO Surcharge
- Prices subject to change
- Returns subject to approval & restocking fee
- 7:00 AM - 6:00 PM M-F & 9:00 AM - 4:00 PM Sat - PST
- 10757 Bellevue Way N.E. Suite 114
  Bellevue, WA 98004 • Phone: (206) 455-0766
  Fax your order 24 Hours a day! (206)455-3448

Overnight Delivery - $7 and up / UPS Ground - $6 and up

1-800-553-4230
**POWERPC MEMORY $145**

**POWERPC, CENTRIS, QUADRA, LC III**

- 4MB-70ns / 4MB-60ns: $145 / $145
- 8MB-70ns / 8MB-60ns: $294 / $300
- 16MB-60ns non-composite: $615
- 32MB-60ns: $1212

**STANDARD 30 PIN MEMORY**

- 1x8x80: $40
- 4x8x80 (IIIX): $155
- 2x8x80: $77
- 4x8x80 (IIIX): $157
- 4x8x70: $79
- 8x8x70: $349
- 4x8x70 (Low Profile): $145
- 8x8x70 (IIIX): $353

**PRINTER MEMORY**

- LaserWriter 810 4MB / 8MB: $309 / $349
- HP 4, 4m 4MB / 8MB: $179 / $339
- TI PS17+35 1MB: $147 / $156

**POWERBOOK MEMORY**

- PB140-170-4/6: $147 / $125
- PB160-180-4/6/8/10: $119 / $129 / $159
- PB165C-180C-4/6//8/10: $155 / $132 / $139 / $140
- DUO 210 - 280C 4/6/8/16: $169 / $205 / $500
- DUO 210 - 280C 12/14/20/28: $199 / $955 / $932 / $1430

**POWERBOOK ACCESSORIES**

- Battery Charger / Conditioner: $75
- Long Life Battery 140-170c: $69
- Automobile Adapter 100-180 / DUO: $50
- Newer Technology DUO Micro Dock SCSI / Color: $135 / $259
- Rasterops DuoMate 8 / 16 SC: $269 / $559

**VIDEO RAM / FPU'S ETC...**

- Video RAM 256K / 512K: $20 / $58
- 16MHz LC - Classic II: $50
- 16MHz Color Classic: $49
- 28MHz LC III: $69
- 35MHz Performa 600 / Duo Dock FPU: $65
- Centris FPU: $319
- MicroMac SIMM Doubler / SIMM Changer: $137 / $98

**MEDIA**

- SONY
  - 1.3 / 1.2GB Optical: $119
  - 600 / 600MB Optical: $109
  - 128MB 8.5 Optical: $46
  - SONY Floppy Disks
    - 3.5 DD / 3.5 HD: $7.50 / $12
    - 3.5 HD Pre-Foreamed: $13.50
  - SONY CD-R
    - 650MB/74 Min: $25
    - 553MB/63 Min: $23
  - SONY 4mm DAT
    - 4MM 60M 1.3GB: $13
    - 4MM 90M 2GB: $15
    - 4MM 120M 4GB: $24
    - Cleaning Cartridge: $12.50
  - SONY 8mm DAT
    - 8MM 15M 600MB: $12
    - 8MM 54M 24GB: $14
    - 8MM 12M 5GB: $16
    - Cleaning Cartridge: $28

**OTHER MAC NEEDS**

- Action 2-Button ADB Mouse: $45
- Datadisk Mac 101 Keyboard: $129
- Keytronics Keyboard 101: $129
- Kensington Turbo Mouse: $106
- Costar Stingray Turbo Mouse: $95
- Port Juggler Serial Switch: $79
- Wacom ARTZ Tablet: $315
- Wacom 12 x 12 Digitizer: $699

**SYQUEST 270MB CARTRIDGES $65**

- SyQuest 4MB Cartridge 1-4/5-9/10+: $59 / $58.50 / $57.50
- Pre-Formatted: $65
- SyQuest 88MB Cartridge 1-4/5-9/10+: $99 / $69 / $67
- Pre-Formatted: $75
- SyQuest 105MB Cartridge 1-4/5-9/10+: $62 / $61 / $60
- SyQuest 200MB Cartridge: $79
- SyQuest 270 MB Cartridge 1-4/5-9/10+: $65 / $64 / $63

**MODEMS**

- Super v.32bis S/R Fax 14.4 w/ C & S: $225
- Super v.32bis S/R Fax 14.4 w/ C & S: $225
- Super V Mall Upgrade (V32 bis $225 model): $69
- Super v.32bis S/R Fax 14.4 LC w/ C & S: $59
- Super 2400 Modem ONLY: $119
- Super 2400 Modem S/R Fax 9600 w/ C & S: $119
- Super 32bis PowerBook 14.4: $299
- Super 28.8 External w/ C & S: $325
- Global Village OneWorld Fax 1 line / 2 line: $589 / $1299
- Global Village OneWorld Remote Access Server: $1639
- Global Village Teleport / Powerport (Bronze) 24/96/48: $67
- Global Village Teleport / Powerport (Gold) 14.400: $279
- Global Village Teleport / Powerport (Mercury) 19,200: $329
- U.S. Robotics Sportster 14.4 S/R Fax: $237
- Prometheus PowerBook 14.4 w/ Voice: $509
- Zoom Pocket 14.4 w/ Voice: $239
- Zoom 14.4 w/ Voice: $189
- Zoom V. fast 28.8 modem: $249

**VERBATIM AS LOW AS $23**

- 128MB 3.5 Optical: $18
- 128MB 3.5 Optical, Apple Format: $36
- 256MB 3.5 Optical: $59
- 600 / 600MB 5.25 Optical (512 b/s / 1024 b/s): $85
- 12 / 1.3GB Optical (512 b/s / 1024 b/s): $112
- DC2000 with QIC40: $14.90
- DC2080 with QIC30: $16.90
- DC2120 with QIC30: $18.50
- 4mm 90m / 60m: $11.50 / $9.50
- 8mm 112m: $10

**CALL US TODAY**

- WE ALSO CARRY FARALLON & DAYNA NETWORKING PRODUCTS, CABLES, PRINTER SUPPLIES, KEYBOARDS, MICE, SCANNERS, ... FAX 206-454-7302
- Educational Government: 1-800-848-1424
- Fortune 1000 Companies: 1-800-848-1418
### Scanners / Printers

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP IICX</td>
<td>$999</td>
</tr>
<tr>
<td>HP III</td>
<td>$799</td>
</tr>
<tr>
<td>UMAX UC630 FS/LE</td>
<td>$769</td>
</tr>
<tr>
<td>UMAX UC840</td>
<td>$999</td>
</tr>
<tr>
<td>UMAX 1260</td>
<td>$1349</td>
</tr>
<tr>
<td>Microtek ScanMaker 1G</td>
<td>$499</td>
</tr>
<tr>
<td>Microtek ScanMaker II</td>
<td>$629</td>
</tr>
<tr>
<td>Microtek ScanMaker II SDF</td>
<td>$659</td>
</tr>
<tr>
<td>Microtek ScanMaker IDE</td>
<td>$925</td>
</tr>
<tr>
<td>Microtek ScanMaker IIE</td>
<td>$1299</td>
</tr>
<tr>
<td>Microtek ScanMaker 35T</td>
<td>$1398</td>
</tr>
<tr>
<td>Nikon Coolscan</td>
<td>$209</td>
</tr>
<tr>
<td>Citizen Notebook II Color Printer</td>
<td>$79</td>
</tr>
<tr>
<td>Notebook II Ni-cad Battery Pak</td>
<td>$69</td>
</tr>
<tr>
<td>Labelwriter II PLUS</td>
<td>$240</td>
</tr>
<tr>
<td>GCC Write Impact</td>
<td>$499</td>
</tr>
</tbody>
</table>

### Networking

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoniC Ether 10T/Thin-11/LC</td>
<td>$92</td>
</tr>
<tr>
<td>Sonic Micro SCSi PowerBook</td>
<td>$237</td>
</tr>
<tr>
<td>Sonic FriendlyNet 10T/Thin</td>
<td>$93</td>
</tr>
<tr>
<td>Sonic Starbase T9</td>
<td>$198</td>
</tr>
<tr>
<td>Sonic HubLite 5 port</td>
<td>$145</td>
</tr>
<tr>
<td>Sonic PowerBridge</td>
<td>$92</td>
</tr>
</tbody>
</table>

### Monitors / Video

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaintBoard Lightening</td>
<td>$885</td>
</tr>
<tr>
<td>PaintBoard Professional</td>
<td>$1799</td>
</tr>
<tr>
<td>PaintBoard 8L/120&quot;/16&quot;/13&quot;</td>
<td>$339</td>
</tr>
<tr>
<td>24STV</td>
<td>$765</td>
</tr>
<tr>
<td>24MX</td>
<td>$499</td>
</tr>
<tr>
<td>Movie Pak 2 Pro Suite</td>
<td>$4379</td>
</tr>
<tr>
<td>RasterOps Clearview</td>
<td>$549</td>
</tr>
<tr>
<td>RasterOps Color 17&quot; Monitor</td>
<td>$949</td>
</tr>
<tr>
<td>RasterOps 20&quot; MultiScan</td>
<td>$499</td>
</tr>
<tr>
<td>RasterOps Color Display</td>
<td>$1619</td>
</tr>
<tr>
<td>RasterOps 20F</td>
<td>$549</td>
</tr>
<tr>
<td>RasterOps Color Monitor</td>
<td>$949</td>
</tr>
</tbody>
</table>

### Customer Service Guaranteed

- Depend on LLB for Quality, Service, and Value
- Airborne Express Overnight $5 and up
- First quality New, Brand Name products
- P.O.'s accepted upon approval
- All major credit cards accepted with no surcharge
- Credit card not charged until order is shipped
- Orders received before 7:30 pm Eastern time weekdays shipped same day
- We expect delivery to most countries in the world
- All returns require approval and are subject to a restocking fee
- Prices subject to change
- Open 7 am to 6 pm M-F, 9 am to 4 pm Saturdays

- E-Machines Futura IBX, $949
- E-Machines Utima LX, $929
- Sony 75SE1, $1249
- Sony GDM 2010, $2039

### Contact Information

- The LLB Company, Inc.
- 300 120th Avenue NE, Bldg 1, Suite 120, Bellevue, WA 98005, (206) 454-7258
- 1-800-848-8967

### MACWORLD September 1994

- Page 271
### Mac Memory, Call for Lowest Price

**New Power PC Memory**

<table>
<thead>
<tr>
<th>Pin Size</th>
<th>Memory Type</th>
<th>Power Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Pin SIMMs</td>
<td>256K VRAM</td>
<td>100</td>
</tr>
<tr>
<td>1X8-80/70</td>
<td>1MB DIPS</td>
<td>140,145,170</td>
</tr>
<tr>
<td>2X8-90/70</td>
<td>1MB DIPS</td>
<td>160,165,180</td>
</tr>
<tr>
<td>4X8 PAL</td>
<td>256K VRAM</td>
<td>165C, 180C</td>
</tr>
<tr>
<td>4X8 FX</td>
<td>VRAM Sets</td>
<td>DUO 210,230,250,270C</td>
</tr>
<tr>
<td>8X8-70</td>
<td>1MB VIDEO ZIPS</td>
<td>68882-25, 68882-33</td>
</tr>
<tr>
<td>16X8-70</td>
<td>PMMU Chips</td>
<td>Power Book</td>
</tr>
</tbody>
</table>

**Power Book**

<table>
<thead>
<tr>
<th>Memory Type</th>
<th>Power Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal</td>
<td>68882-25</td>
</tr>
<tr>
<td>4MB, 6MB, 8MB, 10MB</td>
<td>68882-33</td>
</tr>
<tr>
<td>14MB, 20MB, 28MB</td>
<td>Power Book</td>
</tr>
</tbody>
</table>

**Memory for All Printers**

- Use with Macworld, Booth #612
- Chargers - Conditioners: 7 models available ($49.95 - $199.95)
- Automobile Power Adapters: 23 models available ($49.95 - $99.95)
- Auxiliary Power Packs: 6 models available ($79.95 - $229.95)
- PowerBook NiCd Batteries ($59.95)

**Call** 800-897-8994

**Fax-On-Demand** (612) 927-6741

**Lind Electronic Design, Inc.**

6414 Cambridge Street • Minneapolis, MN 55426
Tel: (612) 927-6303 • Fax: (612) 927-7740

---

**PowerBook Upgrade**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>250MB</td>
<td>$319</td>
</tr>
<tr>
<td>170MB</td>
<td>$279</td>
</tr>
</tbody>
</table>

**Dynamic Engineering**

- PowerBook & Duo Accelerators
- Portable Products
- Memory, HDD, Battery

**WANTED:**

- **Top $$$ Paid** (Dealors welcome)
- 256K-512K-1MB-2MB PB

**Contact**

- (310) 459-4591
- FAX (310) 454-8474

---

**PowerBook Accessory**

- For 100, 200, 500 Series
- Correct "Memory Effect"
- Compute in Your Car
- Increase Compute Time
- Charge and Condition Batteries

**See Us at MacWorld, Booth #612**
Mac Networking Made Easy

- Convert your MAC from AUI connector to 10Base-T or 10Base-2
- No need to purchase proprietary Apple coaxial cables
- LED's for easy network management
- Install in minutes

For more Information Call us Today at:
800-346-6668 Dept. MW402

Circle 597 on Reader Service Card

COMPUTERWORLD's "5th Wave" Cartoon Mouse Pad

COMPUTERWORLD brings humor to a mouse pad featuring a cartoon from "The 5th Wave" series by Rich Tennant. Not available in stores, this colorful foam-backed pad will keep your mouse clean and protect your desktop. Best of all, it's only $4.99*. Send your name, address and check or money order to COMPUTERWORLD, P.O.Box 9171, Framingham, MA 01701, Attn: Product Fulfillment. For credit card orders, call 1-800-343-6474.

*In U.S., for each unit ordered, add $1.25 for postage and handling; orders outside U.S. add $2.50 each. Residents of MA, CA, GA, NJ, and DC add applicable sales tax. Canada residents add G.S.T.

Circle 435 on Reader Service Card

LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Circle 453 on Reader Service Card

NETWORKING & COMMUNICATIONS

HIC-123 Combination Punch & Bind
- Binds up to 11" in length & 1/8" thick
List Price $299.00 Only $90.00

PROBIND-19
- Binds up to 11" in length and 1/2" thick
- Full Two Year warranty
List Price $590.00 Only $185.00

Circle 578 on Reader Service Card

ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Circle 455 on Reader Service Card

Circle 597 on Reader Service Card

Circle 463 on Reader Service Card

Circle 445 on Reader Service Card

Circle 519 on Reader Service Card

Circle 487 on Reader Service Card

Circle 393 on Reader Service Card

Circle 321 on Reader Service Card

Circle 253 on Reader Service Card

Circle 181 on Reader Service Card

Circle 111 on Reader Service Card

Circle 41 on Reader Service Card

MACWORLD September 1994 273
AMEX

•

25 West about Family Heritage Bundle.

WP/Table

•

Genealogy. New Version 3.3! Most full and easy genealogy program on Mac. Rated Satisfaction guaranteed.

MATHCAD 3.1 $169 MINICAD = 5 $249 MORPH 2.0 $195 RAY DRM DESIGNER 3.0 $185 SOFT WINDOWS 1.0 $249 RADIUS ICD 20* MONITOR $2099

Mexico City Software 11666 Sunset Ave NE
Kirkland, WA 98033
Fax (206) 494-3246

Queens
Box 216
Lexington MA 02173
167/641-2830
800/687-ROOT

GRADING MACHINE

GRADING MADE EASY!
Grade Machine is fast, flexible and easy to learn! Design custom reports, narrative comments, graphs and much more. New special features for elementary, secondary, and college. Affordable site licenses and multi-teacher packs available. Networkable. Rated Top Productivity Program by teachers—Electronic Learning Labs, 49°F, p.7

Still only $79 - 65% off
MP Deluxe Edition adds saving charts, comments, Spanish reports & more.

Call (800) 795-0049 in order yours today!

Circle 513 on Reader Service Card

NEW REUNION

the family tree software
The highest rated genealogy program for the Macintosh is new and improved!

New Reunion 4.0 no longer uses HyperCard! It's much faster at organizing your family information and images. It creates graphic tree charts and forms, family group sheets, indexes, calendar, family histories, book- style Register and Almenhaladon, reports, cased pad, and mailing lists. Reunion also links and displays color pictures, shows how you're related to others, sources records, provides custom fields for information unique to your research, calculates the day of the week you were born, imports and exports data, and much more.

Call MacConnection to order: 1-800-334-4444
For a tear sheet brochure and sample printed lists, contact: MacConnection

Leister Productions
P.O. Box 280, Mechania, PA 17055
Phone 717-401-8271, 717-401-4733

ComputServe 72100,105 America Online LeisterPro

Circle 456 on Reader Service Card

Bible Book Store On Disk
Full Featured, Fast and Friendly Bible Study software. As the leader in Bible Study software since 1981 we have continued to listen to our customers and provide them with the tools they need. We offer the most comprehensive line of Bible study tools available. Call for FREE catalog.

Bible Research Systems 2013 Wells Branch Pkwy #304 Austin, TX 78726 800/423-1228 512/251-7541

Bible Explorer
New exploration tool for high school sophomores on up hoping to get a bachelor's degree. All majors (770+) and foreign lang. (100+ incl). Choose majors by career path, course title, subject area or any word(s). Choose schools (1750) by major, state, region, ethnic %, cost, size, religious affiliation, etc. Browse, search, select, list, sort and print. Macs with drives needed. $59.95 (+ $3.00 postage).

Insearch, PO Box 14337 Albuquerque, NM 87191 1-800-883-0123

Macworld

Software Discounts Up to 80%!
*Full Packages* (Students-Teachers-Schools) *Latest Version*

QuarkExpress 3.3 $249 PageMaker 5.0 $249
AutoCAD Rel.12 $199 Strata StudioPro $495

FileMaker Pro 2.1 $149 Director 4.0 $598 FrameMaker 4.0 $219
WordPerfect 5.0A $99 Premiere 3.0 $249 Codá Finale 3.0l $250
SoftWindows 1.0 $239 Claris Works 2.1 $149 Friendal 4.0 $249
Fractal Painter 2.0 $179 Kali's Power Tool 9 $99 Morph 2.0 $139
Statistics/Mac $695 Swivel 3D Pro $270 Authorware 2.0 $145
Mathematica 2.2 $199 StrataVision 3D $250 MiniCAD+S $250

Much more...Call for other popular titles...P.O.,'s from schools welcome!

Orders (800) 377-9943
Software Plus Academic Inc.
50 E. Palace Ave. #200, Englewood, NJ 07631
Fax (212) 569-0330

Circle 536 on Reader Service Card

Music For The Mac
The full scale of Products

From instructional music software, like our own Compose Yourself, to the intricacies of Hard Disk recording.

Authorized dealer for Codá, Digidesign, E-MU, Mark of the Unicorn, Opcode, Panasonic, Ramsa, Roland, Steinberg tones and more. Expert advice before you buy, and full tech support after you purchase!

Call the Experts at
1-800-MAC-BEAT or 505-473-4929 fax: 505-473-4647
Free Catalog Available!

Circle 572 on Reader Service Card
EVERYBODY NEEDS A BODY, SOMETIME

**B**oodySHoTS is an exciting new CD-ROM series of high-resolution photos of people in theme-specific poses. This ROYALTY FREE resource is available for all your desktop publishing requirements. Each **B**oodySHoTS CD contains more than 300 24-bit color TIFF images, all shot with a white background. **B**oodySHoTS is available for Macintosh® or PC computers. Call (800) 800-8560 or fax (804) 758 4512.

Digital Wisdom, Inc., P.O. Box 2070, Tappahannock, VA 22560
New, Lower Prices

Adams List

$27.95

All Fonts Ship

Same Day

$20.95

$14.50

$10.95

$8.00

Call for Free Catalog

Fonts in a Flash

(900) 435-1303

30% - 40% Central, M-F

35% Off

Overnight Delivery

(900) 427-0420

50% Off

No Surcharge

Call for Free Catalog

THE ONLY FAST, EASY, ECONOMICAL WAY TO CREATE LARGE-FORMAT PRINT JOBS.

• Fast, no waitup to 10,000 square feet
• Import EPS, TIFF, Adobe PostScript, or work
• Drives any PostScript printer
• Fixed, custom and automatic file sizes
• Variable panels, margins, gaps, art, bleed, overlays
• Hundreds of professional preformed production tools

Supported by a network of service bureaus nationwide for info call: (800) 338-2222 or fax: (617) 338-2223

Now at MicroWarehouse - 1-800-255-6277

THE HOEST CARTOON TYPEFACE

USED IN "THE LOCKHORN" & "WHAT A GUY" COMIC STRIPS.

INCLUDS: HOEST REGULAR, ITALIC, BOLD & BOLD ITALIC.

ONLY $29.95 CHECK/M.O. PLUS $5.00 SHIPPING & HANDLING AVAILABLE EXCLUSIVELY FROM:

WM. HOEST ENTERPRISES
P.O. BOX 1425
HUNTINGTON, NEW YORK 11743
(516) 547-0778 PHONE/FAX!

Sometimes Its Best To

Sweat The Details And

With A Graphic Translator

Like CADMOWER...

Its All Details!

We couldn't call a release this big a 3.5. Kandu went into hyperdrive and didn't stop until CADMOWER 4.0 was ready to ship. We missed both our deadline and our release number, but took the time to create something really worthwhile for our customers.

The new CADMOWER is faster, plus:

• All New Editing Dialogs
• Task Specific Output Controls
• A Scripted Batch Processor
• Ångstroms to Astronomical Units Translation Accuracy
• New EPSF Readers For AutoCad v. 12, Gplot, & Pro
• Engineer (Vector)
• Five New Integrated Forms, ClarisCad, Wavefront (.OBJ)

Circle 566 on Reader Service Card

CIRCLE 541 ON READER SERVICE CARD

CIRCLE 418 ON READER SERVICE CARD

CIRCLE 419 ON READER SERVICE CARD

CIRCLE 533 ON READER SERVICE CARD

CIRCLE 431 ON READER SERVICE CARD

CIRCLE 566 ON READER SERVICE CARD

CIRCLE 486 ON READER SERVICE CARD

CIRCLE 415 ON READER SERVICE CARD

CIRCLE 540 ON READER SERVICE CARD


**GRAPHICS**

**SPECIALIZED MARKETS**

**It's Your Image!**

Award-winning Stock Photos on CD-ROM. Call for a Starter Kit, now only $29.

- Model and photo released for immediate use - royalty free.
- High-resolution, color-corrected for CMYK separation or B & W output.
- Indexed printed catalogs.
- Over 3,800 images available with new volumes released every quarter.

Take advantage of the Starter Kit Summer Special: 2,800 low-res images plus 25 high-res images for only $29.

In includes printed catalogs of Volumes 1-12.

**PHOTODISC**

T (800) 528.3472
F (206) 441.9379

---

**Medical Office Mgmt**

TessSys tem 3TM is a complete system for insurance processing, patient billing, accounts receivable, patient transactions, report generation & much more. Single/multi doctor, single/multiuser. Flexible & very easy to learn. Option a l eaticlaimson.

From $2,995. New practice discounts available.

Call Today!

Tess Data Systems, Inc.
14340 Toey Chase Blvd, Ste 340
Houston, TX 77014-102

800/216-TESS - Sales
713/440-9995, 713/440-6526 Fax

---

**Japanese Language Kit** $249

Qualitas Trading Co.
2020 Durant Avenue, Berkeley, CA 94704
Phone: (510) 848-8080 Fax: (510) 848-8008

---

**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!

---

**James Heisig’s**

Remembering the Kana

Learn Japanese hiragana and katakana in 6 hours.

- Both the hiragana and the katakana presented in one package for Mac.
- Prints several types of flashcards and grid paper for review.
- Digitized sound lets you hear the pronunciation of each kana and all examples.
- On-screen flashcard review of the hiragana and katakana.
- Background information on the history and grammatical usage of the kana.

Does NOT require KanjiTalk or the Japanese Language Kit.

Imaginier America Inc., 15317 NE 99th St., Redmond, WA 98052
Tel: 206 887 5790 Fax: 206 887 5792

---

**Care4th® PRO**

An ELECTRONIC MEDICAL RECORD SYSTEM and DATABASE with full printout support.

Imagine your entire medical record shelf & much more in a lap or desktop Mac! Utilize clinical data in ways you could never have imagined. In 40 states and abroad, Care4th® Pro is the gold standard. Single & network versions available; starting well under $3000!

Med4th Systems, Ltd.
716 East Carlisle Avenue
Milwaukee, WI 53217
414/963-1985 Voice and Fax

---

**For the best values in MAC SCIENTIFIC & TECHNICAL SOFTWARE**

Call for a free catalog:

1.800.622.3345

---

**Macworld Shopper**

Macworld

September 1994

---

**Japanese Kana Learning Software**

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!

---

**Japanese Language Kit** $249

Qualitas Trading Co.
2020 Durant Avenue, Berkeley, CA 94704
Phone: (510) 848-8080 Fax: (510) 848-8008

---

**Care4th® PRO**

An ELECTRONIC MEDICAL RECORD SYSTEM and DATABASE with full printout support.

Imagine your entire medical record shelf & much more in a lap or desktop Mac! Utilize clinical data in ways you could never have imagined. In 40 states and abroad, Care4th® Pro is the gold standard. Single & network versions available; starting well under $3000!

Med4th Systems, Ltd.
716 East Carlisle Avenue
Milwaukee, WI 53217
414/963-1985 Voice and Fax

---

**For the best values in MAC SCIENTIFIC & TECHNICAL SOFTWARE**

Call for a free catalog:

1.800.622.3345
You've tried Norton™, You've tried MacTools™ & Still No Data!

CPR&RS™ will go where no software utilities has gone before! With state of the art techniques & proprietary software CPR&RS™, will surgically remove your data, without the hassle of filling out any unnecessary forms.

CPR&RS™ services are recommended by most Major Hard Drive Manufacturers, System Manufacturers as well as the U.S. Dept. of Defense. We have a 98% Success rate on all Storage Devices & Operating Systems.

CPR & RS, Inc.
11440 Okeechobee Rd. Suite 201
Royal Palm Beach, FL. 33411
800-765-9292
407-795-7266

"We tried all the utilities and nothing worked. Total Recall recovered 100% of our data and returned it the same day. These guys are amazing!" — R.H. Dataviz, Inc.

CIRCLE 452 ON READER SERVICE CARD

THE ULTIMATE BBS
FREE ACCESS
NO CREDIT CARD NEEDED

• Talk with Singles/Couples
• Over 100,000 GIF, Shareware, Windows/DOS Files—updated daily!
• Unlimited Downloads • Call NOW!

USE YOUR MODEM TO DIAL
1-809-474-1197
Callers must be 21 or older! Long distance rates apply.

CIRCLE 464 ON READER SERVICE CARD

MAC REPAIR
Mac Shop Northwest

• Apple™ Certified Technicians
• One-Day Service Turnaround*
• High Tech Repair & Data Recovery
• Up to 75% below Dealer Rates
• Component-Level Repairs
• Expert Advice and Prices by Phone
• Power Supplies & Logic Boards*
• Lifetime Repair Warranty*

SPECTRUM WEST, INC.
15500 S.W. JAY ST.
BEAVERTON, OR 97006
PHONE: 503-626-2420
FAX: 503-626-2449
MODEL: 503-677-3774
1-800-444-9455

CIRCLE 462 ON READER SERVICE CARD

CIRCLE 460 ON READER SERVICE CARD
Now You Can Cover the World

With The Macworld Global Network.

With the Macworld Global Network, you can start covering the world. Because Macworld reaches over 3 million people in over 20 countries. Now that’s market reach. So, if you’re interested in expanding your sales to the world, then call the Macworld Global Network, today.
Guaranteed lowest prices every day!

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!

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, product reviews, and now, to read how they can best meet the challenges of Goals 2000. Enhance is free! Just clip and mail this order form.

Name _____________________________
Address ___________________________
City _____________________________ State ______ Zip __________
Phone (_____ ) __________________________
Occupation: [ ] Educator [ ] Other
Title ___________________________

Find out what makes Quality Computers the leader in Educational Technology across America!
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, a 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 SpeechManager™, MacinTalk 2™, and MacinTalkPro 2™
- High-quality synthesized speech with realistic inflection and tone
- Speaks notification boxes from the Finder

SmartVoice .................. $49.95

SPEECH BONUS PACK

- More fun & power

MENTION THIS MACWORLD AD AND RECEIVE ANOTHER GREAT DEAL ON OUR SPEECH BONUS PACK!

INCLUDES:
- 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! Start, stop, and rewind instantly—far better than any conventional tape recorder! You can store hours of recordings (limited only by hard drive space). Imagine what PowerBook owners can do with this technology!
- Alice—a wisecracking talking psychiatrist with an attitude. Match wits and insults as Alice gives you absolutely no help at solving your petty personal problems. Its animated talking head will "mouth" the words from your Mac!
- Almost 3 MEG of full electronic text versions of famous novels, including 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 rewrite it. Welcome to the future.

Because of the incredible amount of material in the Speech Bonus Pack, we normally sell it for $89.95. But if you order SmartVoice, you can get the Bonus Pack for $29.95

MENTION CODE MW74 WHEN ORDERING

FREE CD-ROM W/EVERY ORDER!

1-800-777-3642

Circle 263 on reader service card
Quality Computers™
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

EDUCATIONAL DEVELOPMENT FOUNDATION
A Not-For-Profit Corporation
GAMES

Spaceship Warlock #D1563

$19.95

(Originally $39.95)

- Offer valid with purchase.
- Limit 1 per customer.
- While supplies last.
- Not available in Alaska or Hawaii.

661 Action Aliens & Astronauts...$79.95
1467 Better Dead 49.95
50027 Chaos Continuum 29.95
50030 Critical Path 49.95
50149 Darkened 44.95

ENTERTAINMENT/GENERAL

Rosebowl's Greatest Hits #DI711

$12.95

(Originally $29.95)

- Limited to stock on hand.

1300 EDUCORP Starware 2-CDs...$149.00
1642 Family Doctor 47.95
50291 Movie Select 37.95
50403 Maus 37.95
1470 How Computers Work 53.95

Sports Illustrated Sports Almanac #1840

$14.95

(Originally $19.95)

- Limited to stock on hand.

Game ROOM + #D1611 100 Starware game titles...

$19.95

(Originally $39.95)

- Limited time offer.

50460 Flying Nightmares 44.95
1476 Hell Cab 45.95
2084 Iron Helix 59.95
2009 Journeyman Project 49.95
50066 Jump Raven 44.95
50080 Multihole Masterpiece 34.95

EDUCATION & BUSINESS

Midnight Stranger + #S0316, $59.95

"This is a landmark product that should be in the Smithsonian Institution." Glenn Colyer, SF/SF

Adults Only. A strange night out in a gritty urban environment.

The 7th Guest #D50135

$49.95

(Originally $79.95)

- Limited time offer.

50107 Mystic 49.95
50438 Rebel Assault 49.95
50439 Specr VR 49.95
50075 Tahr Gold 39.95
1900 Who Killed Sam Burns? 19.95
50046 Wrath of the Gods 49.95

KIDS

1024 ABC Songbook + 37.95
2076 Animal Alphabet 29.95
1667 Benjamin Bunny 19.95
50348 CD-ROM Coloring Book 24.95
50398 Forever Growing Garden 37.95
50405 Gus Goes to Cybertron 37.95
1850 Just Grandma & Me 39.95
50436 Kids' Studio 39.95
50302 Peter Pan Adventure 39.95
50109 The Tortoise & The Hare 39.95
50336 Willy Wabbit Magic Tricks 22.95
1962 Word Tales 27.95

DIP Desktop Publishing

1000 Fonts + #D2067 Over 1,000 Starware & PD formats...

$19.95

(Originally $39.95)

- Limited time offer + 1 per customer.

1690 Aviation Photo Disc + 23.95
50048 Best of People in Business + 79.95
1297 Creative Backgrounds & Text + 79.95
50073 Design Toolkit Pro + 79.95
5029 Clip Art Sampler + 9.95

CD-ROM DRIVES & BUNDLES

CD Technology T3401 Porta Drive #1824

Access Time: 190 ms. Double speed.

$39.95

- Limited time offer.

Part # CD-ROM Drive Alone Bundle
1624 CD Tech 369.00 620.00
945 Nec 36x 456.00 799.00
944 Nec 36x 389.00 639.00
978 Pioneer 1,299.00 1,499.00
5028 Plextor 425.00 649.00

Add an "A" in front of part # for the bundle.

More bundles available, call.

GENERAL

1 Photograph To Remember #D1774

$9.95

(Originally $19.95)

- Limited time offer.

THE MULTIMEDIA PIONEER® Prices subject to change with notice. Dealer inquiries welcome. See us at the Boston Macworld Expo Booth #1206 and save!

EDUCORP WILL BEAT ANY ADVERTISED PRICE ON CD-ROM PRODUCTS. The Kodak Photo CD logo is a trademark used under license.

EDUCORP CATALOG W29 7434 Trade Street • San Diego, CA 92121-2410 Info: 619-536-9999 Fax: 619-536-2345

Foreign customers send $4 p/h. With any purchase you'll get EDUCORP's informative newsletter free.

Circle 157 on reader service card.
Doing Hollywood

Finally, a reason to get on the information superhighway

At last, I've found something good about the information superhighway (aside from providing computer columnists with topics to write about): it's a wonderful opportunity for Macintosh multimedia mavens to make money off Hollywood. Hollywood's got content, but they need you to make it a digital reality. The biggest barrier to closing a deal with these folks, though, is understanding their culture and values (I use the terms culture and values loosely).

They are not like us; they're not fascinated with how the polar bears in the Coke commercial were animated. They are more interested in who Michael Ovitz just signed as a client, or whether Roseanne and Tom are staying together.

So sign off from America Online, put down your copy of Zen and the Art of Resource Editing, turn off Don Crabb's Macintosh television show, and give this column your full attention. I'm going to give you a five-minute lesson in doing business with Hollywood.

You Are What You Ride

First off, hire a limo. For one thing, in Hollywood even the pets of stars have limos. For another, your rental car will be robbed. On my last trip to Hollywood, my rental car was broken into twice in three days. Try getting a limo with a gold-plated hood ornament; chrome wheels; and a television, bar, and cellular phone in the back. Custom license plates like 2BA-STAR or MOGUL 1 are a nice touch.

Stay at the Shangri-la Hotel. Staying at a national chain like Hilton, Sheraton, or Hyatt is passé. The Shangri-la is clean, reasonably priced, and hip enough to show what you know. Your host may even be able to drop you off on the way back to his or her house in Malibu. (If you stay at the Shangri-la, leave your PowerBook at home; the hotel's phone system doesn't like modems.)

Bring a cellular phone. You don't have to use it; just carry it with you. Unlike limos, the smaller the phone, the better. Try to arrange for "crisis" calls while you're in meetings. When the phone rings, listen for a bit and say, "Throw the Sculley message away. I'll call William Morris back tomorrow. Call Gates at home and tell him breakfast at my place is fine. Tell Diller he can afford to buy an evaluation copy."

Dress to Excess

Design a new business card. (Finally—a document that a 4MB Macintosh can handle.) Make sure there's a cellular phone number on the card. If you don't have one, fake it. No one is going to call you anyway. And if they do, hearing the recording "The CellularOne customer you have called is unavailable or has traveled outside the coverage area" will reassure the Hollywood mogul that you're busy cutting deals around the country.

Also, have your information printed in Japanese on the reverse side—intimating that you do business regularly in Japan. It can cost hundreds of dollars to get the information translated and type-set, so just copy random characters from your favorite Japanese restaurant's menu if you have to. If someone calls you "Mr. Ahi Belly," though, you're in trouble.

Dress up. Wear only clothes from companies whose names end in vowels. (The proper name for my favorite jeans manufacturer is Levi-Strauss, not Levi, so 501s don't cut it.) Be sure to properly accessorize. Rent a Rolex President for the trip if you don't have a convincing knockoff. A Range Rover lapel pin and a dress shirt with French cuffs and Ferrari-logo cuff links would help, too.

Hollywood Business Etiquette

Pay attention to people's titles. It doesn't matter how ignorant a president, vice president, or director sounds—these are the clowns that sign the checks and pose for the pictures. It doesn't matter whether their technical people (if they have any) like your product, because they won't be asked. Find the person who looks like he or she has been surgically morphed the most times. There's the power.

Talk about golf, Tony Robbins, and Viacom. (If you're with women, substitute Marianne Williamson for Tony Robbins.) This sentence will cover everything: "I was trying out my new Pings at Pebble Beach with a buddy who had just heard Tony Robbins speak, and he told me that Viacom is the only thing that can stop the Japanese from buying up all of Hollywood." You don't have to understand any of this. Just do it.

When in Rome

One final suggestion—be greedy. There are two reasons: first, whomever you're dealing with will be, and second, Hollywood may have distribution and marketing, but you have technology. Let's face it, their idea of a user interface is VCR Plus. You can get distribution and marketing in New York or Tokyo. They can get technology only from you.

Guy Kawasaki's views are his own and only sporadically represent those of Macworld. His latest book is Hindsight (Beyond Words Publishing, 1994). He has investments in Bit Jugglers, Global Village Communication, Bookmaker Corporation, and others. He can be reached at Kawasaki@radiomail.net.
Introducing the MultiSync® Value Series Monitors.
The affordable solution for those who make your business run.

They’re the people you count on to get the job done. From secretaries to shipping, they need all the help you can give them. Luckily, the 15” (13.8” diagonal viewable area) MultiSync® 3V and the new 14” (13” diagonal viewable area) MultiSync 2V work with the latest Macs and give you the great colors and sharp display you’d expect from NEC. They support multiple resolutions and let you switch between them with NEC’s DPI-on-the-Fly® software. You also get a monitor that’s MPR II compliant and has a 3-year limited warranty. It’s more than you’d expect at such a great price. But then again, you’re probably used to getting the most for your money. Questions? Call 1-800-NEC-INF0. Or, for information via fax, call 1-800-366-0476 and request our Mac products catalog #4. The easiest monitors to live with for hours and hours: Ours.

Optional cable adapter required for Macintosh connection and DPI-on-the-Fly software available free from NEC. MultiSync is a registered trademark of NEC Technologies, Inc. The Energy Star emblem does not represent EPA endorsement of any product or service. ©1994 NEC Technologies, Inc.
Fifteen hours today.
Sixty-five overnight packages. Tonight.
Ten hours per day.
One hundred and thirty words per minute.
Introducing the NoteBook Traveler® Leather Carrier.

Never have so many compartments, pockets, pouches, dividers, holders & folders looked so good.

It all starts with the finest leather.

While others use a combination of leather and vinyl on the outside, Kensington uses only 100% full-grain premium quality leather.

The look is rich and luxurious.

While other cases may feel stiff and unnatural, our case feels smooth and soft.

Stitching and detailing are subtle. Seams are carefully hidden. And the color is a classic matte black.

Open it up and you’ll find two large padded compartments, numerous inner pockets, pouches, dividers, accordion-style file storage, two disk holders, a business card holder, and more.

And the NoteBook Traveler Leather Carrier is as rugged on the inside as it is elegant on the outside. No other case even comes close in terms of materials, workmanship and overall quality.

It’s a quality we stand behind with the unique Kensington Satisfaction Guarantee. That means our case has a lifetime warranty. And it means you have a no-risk 60-day trial.

The NoteBook Traveler Leather Carrier is one of six computer cases Kensington offers. So whether you’re traveling for a day or a month, one of our cases will be just right for you.

For more information, call 800-535-4242. Outside the US and Canada, 415-572-2700. For information by fax, call either number and enter 82, then request document 600.