Price War: Power Mac vs. Pentium, Page 39

A U G U S T 1 9 9 4 THE MACINTOSH® MAGAZINE \$3.95 Canada \$4.95

Power Mac 7100

A ★★★★★ Winner for under \$2900, Page 58

Mac Online Guide

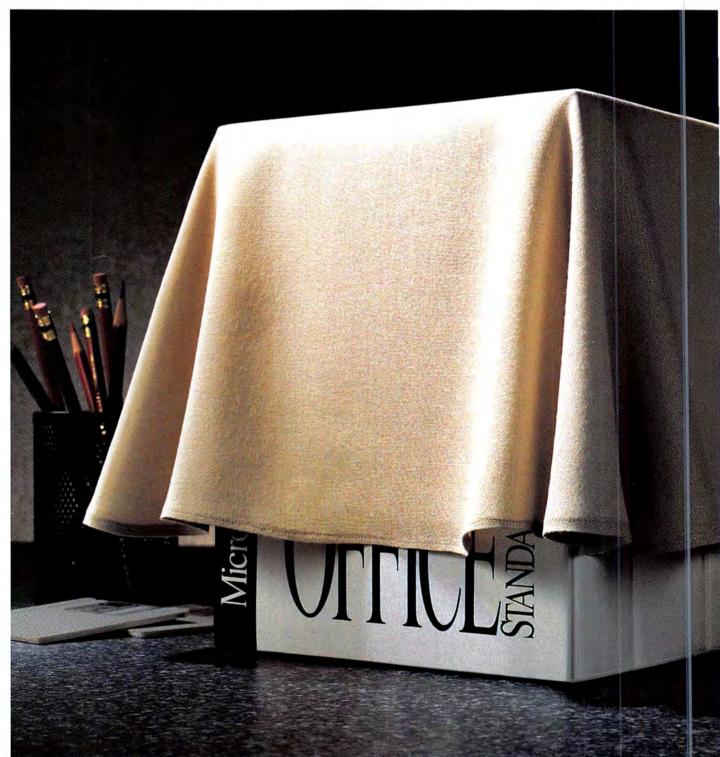
- Pick the Right Service
- Select the Best Software
- Download Stock Photos

Color Printers

16 Inexpensive Models
Lab Tested



POWER MACINTOSH RUNS FAST WIT IN STOCK. JUST WAIT TILL YOU SEE IT



*Offer good only in the 50 United States. © 1994 Microsoft Corporation. All rights reserved. Inside the 50 United States, call (800) 426-9400. For information only: In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsoft Corporation. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc.

H THE MICROSOFT PROGRAMS NOW WITH OUR PERFORMANCE PACKAGE.



subsidiary or (206) 936-8661. Microsoft and PowerPoint are registered trademarks of

While it's true that the Power Macintosh" will zip right along with current programs, it'll perform even better with the next version of Microsoft* Office for the Macintosh.

The programs in the Microsoft Office will not only take advantage of the power and speed of Power Macintosh, they'll also work together. Seamlessly. Effortlessly.

In other words, you'll have a suite of full-featured business programs so well integrated that they act as if they were one program.

But it doesn't stop there. These programs have built-in intelligence that senses what you want to do and helps you do it.

Isn't this something you want?

If so, you really should consider

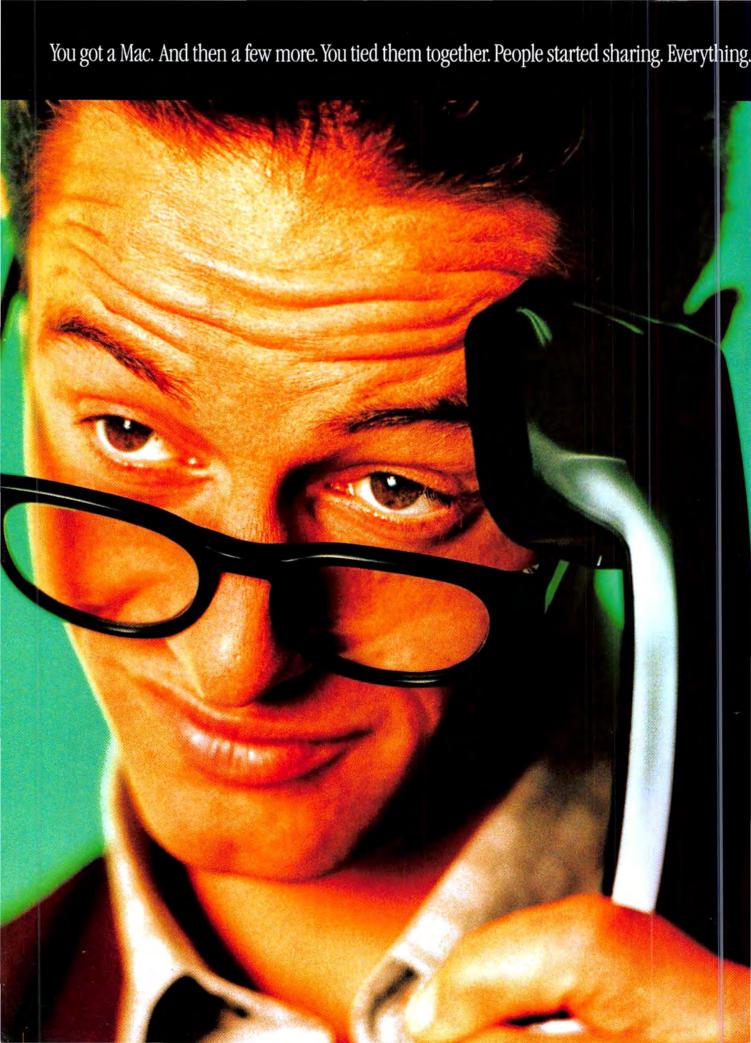
Microsoft Office. Far and away, it's
the best way to get the most out of
the new Power Macintosh.

But we warn you, you'd better fasten your seat belt.

Pick up Microsoft Office for Macintosh now. And we'll send you the new version for Macintosh or Power Macintosh at no charge when they ship in the near future.







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

an inexpensive connector into the back of a Mac, 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 net-

work? 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, users won't wait forever for your overworked LaserWriter printers. With FileWave software, you can distribute new programs and upgrades from the server, without trekking from Mac to Mac. With Dantz Retrospect Remote, you can back up every system on the network—both clients and servers—automatically. While with Apple 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.

For the name of your nearest authorized Apple reseller, simply pick up the phone and dial 800-538-9696, ext. 430.

Get your hands on a new Workgroup Server today. And discover the power you need most for your workgroup environment. The power to be your best."



MACWORLD THE MACINTOSH® MAGAZINE AUGUST 1994

Special Online Issue

All aboard the online express! *Macworld*'s guided tour of all things online brings you advice on new technologies and resources, what works (and what doesn't), how to connect, and where to go once you're there.

90 Macworld's Guide to Online Services

BY JOANNA PEARLSTEIN Macworld rates five commercial services on features, price, and Internet access.

94 How to Ride the Internet

BY JOANNA PEARLSTEIN Strategies for accessing the Internet.

100 Pick the Right Communications Software

BY MEL BECKMAN Macworld evaluates 11 popular communications packages that will have you zipping along the infobahn in no time.

102 How to Buy a Modem

BY CHARLES SEITER Clear advice on choosing the best modem for your needs.

124 Searching for Stock Photos Online

BY JIM BENSON Online image databases are revolutionizing the way designers work with stock photography. We evaluate three online image services.

163 The Desktop Critic

BY DAVID POGUE First-class bulletin boards.

167 The Iconoclast

BY STEVEN LEVY Online shopping misses the point.

Our definitive guide to online products and services starts on page 90.

Features

108 Color Printers for Every Budget



BY JIM HEID Macworld Lab tests 16 ink-jet and thermal-wax color printers and finds quality color at bargain prices.

News

- 33 MacBulletin
- 34 News Taligent's cross-platform OS • Low-cost MultiSync monitor • La Cie's modular drives, and more
- 39 Power Mac News Power Mac, Pentium price comparisons Late software update Power Watch: MacWrite Pro, RAM Doubler, and more
- 45 New Products

Opinion

19 State of the Mac

BY ADRIAN MELLO Beyond the success of the Power Mac.

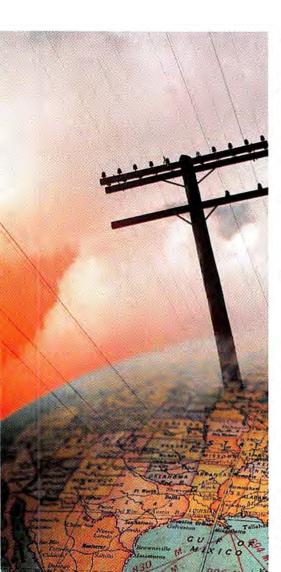
25 Letters

171 Conspicuous Consumer

BY DEBORAH BRANSCUM Where to turn for Macintosh repair.

252 Wise Guy

BY GUY KAWASAKI Creativity between the covers.





Macworld Lab tests 16 color printers, page 108.

Graphics

- 118 News New Adobe font licensing . SprintScan 35 slide and film scanner • ReadySetGo goes GX, and more
- **Expert Graphics** 122 BY CATHY ABES Graphics professionals share their secrets.

At Work

- 128 News FileMaker gears up for the network . Face-lifts for Timeslips, LapTrack • Smarter OCR, and more
- 131 **Working Smart** BY JIM HEID Useful Mac telephone schemes.
- **Graphing beyond Excel** BY CHARLES SEITER In business and science, a graph can show your data to best effect. We pick the winners from 11 professional graphing packages.
- 143 **Quick Tips** BY LON POOLE Tips, tricks, and shortcuts.

Networks

- 150 News Faster workgroup server applications • Easy ARA • Network faxing, and more
- 152 **Connect Your LANs** BY MARTHA STRIZICH to hook your LANs together without spending a fortune? Public data services are the new way to keep your business in touch.
- **PowerBook Notes** 157 BY CARY LU Answers to frequently asked questions.

Buyers' Tools

- 173 **Editors' Choice** Top picks from our comparative articles.
- 177 **Star Ratings** More than 300 product-review summaries.
- 187 Streetwise Shopper Hardware and software bargains: discounts, bundles, upgrades.

La Cie's Joule-sleek new modular drives, page 34.



How to Contact Macworld 14



August 1994, Volume 11, Number B. Murworki (ISSN 0741-8647) in pub-shed monthly by Marworld Communications, inc. Editoral and business offices 501 Score 51, San Francisco, CA 9470-7, 1457-243-9055. Subscrip-tion orders and requires should be directed to 301/447-9430. Subscription restmans 250 for 12 issues, 560 for 24 issues, and 500 for 16 issues. For significant certain are 350 for 12 issues, 560 for 24 issues, and 500 for 16 issues. For significant for postage for Canada and Mexicos subscribes. Add 50g per year for postage to all other countries. Second-data postage pad at 5an Francisco, Caldorna, and at additional making offore. Postmaster: Even additions and soldiers schanges to Mic-world. P.O. Box 54529, Boulder, CO 80323-4529. Printed in the U.S.A.

ON THE COVER Photograph by Mark Johann.

Reviews

- Power Macintosh 7100/66 Macintosh computer
- Power Macintosh 8100/80 Macintosh computer
- Newton MessagePad 110 Personal digital assistant
- OrangePC Model 200 Series PC coprocessor cards
- 63 SoftWindows 1.0 Windows emulation
- WordPerfect 3.0a Power Macintosh update
- 65 MetaFlo' Graphics utility
- 66 PowerShare Collaboration Servers Collaboration software
- 71 OneWorld Fax Fax server
- 71 ProFiles 1.0 File-management utility
- 73 L-TV Portable; The Presenter Plus Mac/PC Video adapters
- 73 L-TV Pro NuBus; Simply TV Internal video adapters
- 75 SupraFaxModem 288 Fax modem
- 77 DiskDoubler 4.0 File-compression program
- 77 Full Contact 2.01 Personal information manager
- 79 Scenery Animator 1.0.4 Landscape software
- Koyn Fractal Studio 2.02 **Educational software**
- The Cruncher **Educational spreadsheet**
- 83 PopupFolder Finder utility
- 83 DateView 1.0.1 Calendar/to-do manager
- 84 DeBabelizer Lite 1.0 Graphics-conversion software
- 85 TimeSquare 1.0 Scheduling program
- 87 Icon Mania 1.0 Icon-editing utility
- PowerMerge 2.0 File-synchronization software

THE EPSON ES-800C
PRO/MAC. A SCANNING SYSTEM
SO ADVANCED, THERE ARE ONLY
TWO WAYS TO IMPROVE IT.



We talked to the pros when we designed the EPSON ES-800C Pro/Mac to make it the most advanced professional color scanning system in its class. The 1600 dpi ES-800C comes with the full version of Adobe PhotoShop, Kai's Power Tools, one and three pass scanning, dual cpu connectivity, plus built-in color and gamma controls. It's the best

equipped, best value professional scanner you can buy.

How do you improve on a scanner this great? By adding more free software and a \$50 rebate. Now, for a limited time, buy an EPSON ES-800C Pro/Mac and you'll get a free copy

EPSON ES-800C PRO/MAC

ES-800C Scanner
Adobe Photoshop 2.5
Kai's Power Tools
SCSI cable & terminator
Two-way connectivity
Built-in Color &
Gamma Controls

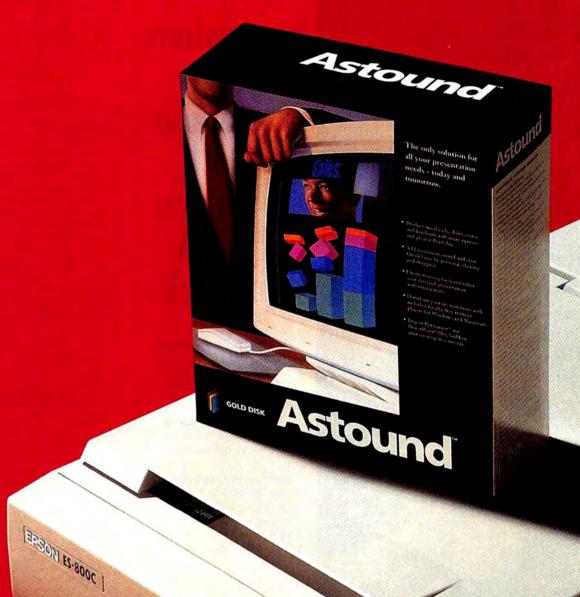
of Astound, the Eddy Award-winning multi-media presentation package, a \$399 value, plus a \$50 scanner rebate*. That's one advanced scanner deal.

For more information about the ES-800C Pro/Mac, our other scanners for Mac- Astound 1.0 intosh or PCs, or our complete line of lasers, ink jets, and other technologically

advanced computer products, visit your local EPSON dealer or call the EPSON Connection (1-800-BUY-EPSON). Ask for the special offer that makes the most advanced scanner in the business even better.

Adobe PhotoShop, Kai's Power Tools and Astound are trademarks or registered trademarks of Adobe Systems, HSC Software, or Gold Disk respectively. EPSON is a registered trademark of SEIKO EPSON CORP. © 1994 EPSON AMERICA, INC., 20770 Madrona Ave., Torrance, CA 90503. For dealer referral or warranty details, call 800-BUY-EPSON (800-289-3776). In Canada, call 800-GO-EPSON. For Latin America, 305-265-0092.

^{*} HOW TO GET YOUR REBATE/SOFTWARE: 1) Buy an EPSON ES-800C Pro/Mac between 5/1/94 and 7/31/94. 2) For rebate/software details and form, call the EPSON Connection, 1-800-BUY-EPSON, or see your local EPSON dealer. Note: software value is manufacturer's suggested retail price.



MORE FREE SOFTWAR AND A \$50 REBATE

EPSON°

Somewhere Over Colorado You'll Wish You Had A SlimPack.

Introducing the Battery Technology SlimPack. Providing up to 10 hours of PowerBook power for as low as \$169.95.

If you're a PowerBook owner you know that helpless feeling, when your screen goes dim at 35,000 feet and your report goes unfinished.

Now there's a solution to PowerBook power shortages... the SlimPack from Battery Technology. It's provides up to fives times as much usage time as Apple's internal battery. That's about ten hours for owners of black and white PowerBooks and about five hours for color PowerBooks.

The SlimPack works with almost all PowerBooks. And at just 2.5lbs., with a zero footprint design, and LED "fuel gauge", the SlimPack is convenient to use and easy to store It's affordably priced at just \$169.95 for models 100-180c which is about 40% less than similar competitive units. A Duo version sells for \$299.95.

All Battery Technology products including the SlimPack, and our popular Extended Power Replacement Battery and Quick Charger/ Conditioner can be purchased from leading resellers and mail order houses. For more information call Battery Technology direct at

1-800-982-8284.

Battery Technology Product Pricing

ITEM	MODEL#	PRICE	
PB 100 BATTERY	MC-100	559.95	
P8 140-180c BATTERY	MC-170	\$69.95	
CHARGER FOR PB 140-180c	MC-CHR	\$129.95	
RAPID CHARGER FOR DUO	MC-SC200	\$149.95	
AUTO POWER ADAPTOR	MC-AP100	599.95	
SLIMPACK EXT. BATTERY	MC-180S	\$169.95	
SLIMPACK DUO	ME-SC200	5299.95	
STARTER PACK (BATTERY/CHARGER)	WC-KIT	\$149.95	



BATTERY TECHNOLOGY, INc.

The World Leader in Laptop Power Accessories.

Macworld

MACWORLD COMMUNICATIONS, INC.
CHIEF OPERATING OFFICER
MACWORLD MAGAZINE
ASSISTANT TO THE PRESIDENT AND COO
DIRECTOR OF FINANCE
DIRECTOR OF HUMAN RESOURCES
DIRECTOR OF CORPORATE INFORMATION SYSTEMS
INFORMATION SYSTEMS MANAGER
CORPORATE BUSINESS MANAGER
ACCOUNTING/OPERATIONS MANAGER
ACCOUNTING/OPERATIONS MANAGER
SENIOR FINANCIAL ANALYST
MISSINGS FINANCIAL ANALYST
MACKET MACKET MANAGER
SENIOR FINANCIAL ANALYST
MACKET MACKET MANAGER
MACKET MANACIAL ANALYST
MACKET MACKE

Vicki Peilen Shelly Ginenthal s Walter J. Clegg Rick Valdez Christina W. Spence Pat Murphy Michelle Reves

James E. Martin

Colin Crawford

Yuen Yeh

Madeleine Buckingham

MACWORLD is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 194 computer publications in 62 countries. Forty million people read one or more International Data Group publications each month. International Data Group's publications include: ARGENTINA'S Computerworld Argentina, Infoworld Argentina, ASIA'S Computerworld Hong Kong, PC World Hong Kong, Computerworld Southeast Asia, PC World Singapore, Computerworld Malaysia, PC World Malaysia, AUSTRALIA'S Computerworld Australia. Australian PC World, Australian Macworld, IDG Sources, Reseller, Network World, Mobile Business Australia; AUSTRIA'S Computerwelt Oesterreich, PC Test; BELGIUM'S Data News (CW); BRAZIL'S Computerworld, Game Power, Super Game, Gamepro, Mundo IEM, Mundo Unix, PC World, BULGARIA'S Computerworld Bulgaria, Ediworld, PC & Mac World Bulgaria, Network World Bulgaria; CANADA'S Direct Access, Graduate Computerworld, InfoCanada, Network World Canada, CHILE'S Computerworld, Informatica; COLOMBIA'S Computerworld Colombia, CZECH REPUBLIC'S Computerworld, Elektronika, PC World; DENMARK'S CAD/CAM WORLD, Communications World, Computerworld Danmark, LOTUS World, Macintosh Produktkatalog, Macworld Danmark, PC World Danmark, PC World Produktguide, Windows World, ECUADOR'S PC World, EGYPT'S Computerworld Middle East, PC World Middle East: FINLAND'S MikroPC. Tietovijkko. Tietoverkko: FRANCE'S Distributique, Golden Mac, InfoPC, Languages & Systems, Le Guide du Monde Informatique. Le Monde Informatique, Telecoms & Reseaux, GERMANY'S Computerwoche, Computerwoche Focus, Computerwoche Extra, Computerwoche Karriere, Information Manage ment, Macwelt, Netzwelt, PC Welt, PC Woche, Publish, Unit: GREECE'S Infoworld, PC Games, HUNGARY'S Alaplap, Computerworld SZT, PC World, PC Virlag, INDIA'S Computers & Communications; IRELAND'S Computerscope (Computerworld); ISRAEL'S Computerworld Israel, PC World Israel, ITALY'S Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC World Italia; JAPAN'S Information Systems World, Computerworld Today, Nikkei Personal Computing (PCW), Macworld Japan, SunWorld Japan, Windows World, KENYA'S East African Computer News; KOREA'S Computerworld Korea, Macworld Korea, PC World Korea; MEXICO'S Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico, MacWorld, Mundo Unix, PC World, Windows, THE NETHERLANDS' Computable (CW), Computer! Totaal, LAN Magazine, MacWorld; NEW ZEALAND'S Com puter Listings, Computerworld New Zealand, New Zealand PC World, NIGERIA'S PC World Africa; NORWAY'S Computerworld Norge, C/world, Lotusworld Norge, Macworld Norge, Networld, PC World Ekspress, PC World Norge, PC World's Product Guide, Publish World. Student Data, Unix World, Windowsworld, IDG Direct Response; PANA-MA'S PC World Panama; PERU'S Computerworld Peru, PC World, PEOPLE'S REPUBLIC OF CHINA'S China Computerworld, China Infoworld, China Network World, PC World China, IDG Shenzhen's Computer News Digest, Electronics International, IDG HIGH TECH Beijing's New Product World, PHILIPPINES' Computerworld, PC World; POLAND'S Computerworld Poland, PC World/Komputer; PORTUGAL'S Cerebro/PC World, Correio Informatico/Computerworld, MacIn; ROMANIA'S PC World, Computerworld; RUSSIA'S Computerworld Moscow, Mir-PC, Sety, SLOVENIA'S Monitor Magazine; SOUTH AFRICA'S Computing S.A., Network World S.A., Computer Mail, SPAIN'S Amiga World, Computerworld Espana, Communicaciones World, Macworld Espana, NextWorld, PC World Espana, Publish, Sunworld, Super Juegos Magazine (GamePro), SWEDEN'S Attack. ComputerSweden, Corporate Computing, Lokala Natverk/LAN, Lotus World, MAC&PC, Macworld, Mikrodatorn, PC World, Publishing & Design (CAP), Dataingenjoren, Maxi Data, Windows World, SWITZERLAND'S Computerworld Schweiz, Macworld Schweiz, PC & Workstation, PC Katalog, TAIWAN'S Computerworld Tawan, Global Computer Express, PC World Taiwan, THAILAND'S Thai Computerworld, TURKEY'S Computerworld Monitor, Macworld Turkiye, PC World Turkiye; UKRAINE'S Computerworld; UNITED KINGDOM'S Computing/Computerworld. Connexion/Network World, Lotus Magazine, Macworld, Sunworld, UNITED STATES' AmigaWorld, Cable in the Classroom, CD Review, CIO. Computerworld, Desktop Video World, DOS Resource Guide, Electronic Entertainment Magazine, PlayRight, Power PC World, Federal Computer Week, Federal Integrator, GamePro, IDG Books, InfoWorld, Info-World Direct, Laser Event, Macworld, Multimedia World, Network World, NeXTWORLD, PC Letter, PC World, Publish, SunWorld, SWAT-Pro, Video Event; VENEZUELA'S Computerworld Venezuela, Micro-Computerworld Venezuela; VIETNAM'S PC World Vietnam.

CREATIVE FORCES ARE DRAWN TO THE VIEWSONIC 17



20480 Business Parkway Walnut, CA 91789 Tel: (800) 888-8583 or (909) 869-7976 Fax: (909) 869-7958

17 CRCs yield 15.5" to 15.7" diagonal viewable screens.

All products and brand names are registered trademarks of their respective companies.



View Sonic
See The Difference!"

Circle 237 on reader service card



Circle 114 on reader service card

Macwo

EDITOR-IN-CHIEF

Dan Muse Carol Person

Jane Lagas Galen Gruman

Dan Littman

James A. Martin

Lauren L. Black

EDITORIAL

Deborah Branscum EXECUTIVE EDITOR SENIOR EDITOR/FEATURES SENIOR EDITOR/REVIEWS DIRECTOR OF EDITORIAL OPERATIONS SENIOR ASSOCIATE EDITOR/FEATURES SENIOR ASSOCIATE EDITOR/AT WORK SENIOR ASSOCIATE EDITOR/GRAPHICS SENIOR ASSOCIATE EDITOR/NEWS SENIOR ASSOCIATE EDITOR/FEATURES ASSOCIATE EDITOR/GRAPHICS ASSOCIATE EDITOR/REVIEWS ASSOCIATE EDITOR/NETWORKS ASSOCIATE EDITORS/LAB ASSISTANT EDITORS

Tom Moran Charles Piller Cathy E. Abes Marjorie Baer Elizabeth Dougherty Mark Hurlow, Tim Warner Suzanne Courteau,

Jim Feeley, Joanna Pearlstein ASSISTANT EDITOR/NEW PRODUCTS Cameron Crotty

ASSISTANT EDITOR/ONLINE Paul J. Devine Wendy Sharp ASSISTANT EDITOR/DEVIEWS ASSISTANT EDITORS/LAR Matthew R. Clark, Danny Lee ADMINISTRATIVE ASSISTANTS

Matthew Hawn. Lyn Taylor

ASSISTANT TO THE EDITOR-IN-CHIEF Susan P. Grant-Marsh Robert C. Eckhardt, Erfert Fenton, CONTRIBUTING FOITORS Jim Heid, Guy Kawasaki, Steven Levy, Cary Lu, Deke McClelland, Tom Negrino, David Pogue, Lon Poole, Steve Roth, Charles Seiter,

INTERNATIONAL EDITORS

Osmund Iversen, Australia, 011 61 2 439-5133; Marianne Fajstrup, Denmark, 011 4536 44 28 00; Michael Thevenet, France, 011 33 1 49 04 79 00; Stephan Scherzer, Germany, 011 49 89 3 60860: Enrico Lotti, Italy, 011 39 2 58 011660; Osamu Honma, Japan, 011 81 3 5276-0541; Shin Cho. Korea, 011 82 2 579-8031: Paul Molenaar, Netherlands, 011 31 23 354554; Toraly Ostvang, Norway, 011 472 264 7725; Alvaro Ibariez, Spain, 011 34 1 319 4014; Nicklas Martsson, Sweden, 011 46 8667-9180; Roger Bataillard, Switzerland, 011 41 1 55 1077; Cemal Balci, Turkey, 011 90 1 279 1180: Peter Worlock, United Kingdom, 011 4471 831-9252

Suzanne Stefanac, Franklin N. Tessler

COPY EDIT AND **EDITORIAL PRODUCTION**

MANAGING EDITOR Charles Barrett ASSISTANT MANAGING EDITOR Ruth Henrich leff Sacilotto **EDITORIAL PRODUCTION MANAGER** SENIOR COPY EDITOR Katherine L. Ulrich COPY EDITORS D. Jacqueline Kan, Paul King PRODUCTION EDITORS Lisa Brazieal, Doreen Engelmann

ART AND DESIGN

Dennis McLeod DESIGN DIRECTOR Joanne Hoffman Leslie Barton SENIOR DESIGNER SENIOR DESIGNER/INFORMATIONAL GRAPHICS Arne Hurty ASSOCIATE ART DIRECTOR Kent Tayenaka Sylvia Benvenuti ASSISTANT ART DIRECTOR Hae Yuon Kim ASSOCIATE DESIGNER Tim Johnson Martha Katt SENIOR DESIGN ASSOCIATE Belinda Chlouber DESIGN ASSOCIATE

EXPLORE the INTERNET!



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 **MCW948**

Offer applies for new members only. A valid credit card is required for immediate access. Other restrictions apply. Complete details are provided during the toll-free registration.

Attention Current Internet Users: See what DELPHI can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.

RREE

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.



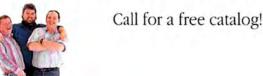
Questions?Call 1-800-695-4005. Send e-mail to INFO@delphi.com



AnthroCart's!

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!





Lifetime Warranty



Lots of choices.



800-325-3841

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

GSA contract no. GS-OOF-5040A. Available for OEM applications. Prices from \$159.00 Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

Macworld

ADVERTISING SALES

Shannon D. Dolan VICE PRESIDENT/ASSOCIATE PUBLISHER (415/243-0505) BUSINESS MANAGER/AD SALES Lisa Buckingham (415/974-7344) Cherie La France NO. CALIFORNIA (SAN JOSE, SOUTH) (415/978-3276) Nazy Farhang (415/978-3257) SALES ASSOCIATE NO. CALIFORNIA (MARIN), WASHINGTON. Stephen McGill (415/978-3155) OREGON, WESTERN CANADA SALES ASSOCIATE Edward Ramirez (415/978-3192) SOUTHWEST REGIONAL MANAGER Nancy Coy (714/250-1307) Molly Shank SO. CALIFORNIA SALES ASSOCIATE Selin S. Gabriel EASTERN/MIDWEST REGIONAL MANAGER Joan Kelly

NEW ENGLAND, FLORIDA Paul Bonarrigu
SALES ASSOCIATE Luanne Newman
MIDWEST/TEXAS Lisa Ladle
(708/827-4477)

SALES ASSOCIATE Kathy Poppenhagen
MID-ATLANTIC/SOUTHEAST (201/587-0090)
SALES ASSOCIATE Cathy Langhaar
MANAGER DIRECT RESPONSE SALES
Beverly Schneider
(415/978-3138)

ACCOUNT MANAGERS/MAIL ORDER Marsha K. Bowen (415/974-7413) Wendi A. Smith

(415/978-3117)
MACWORLD SHOPPER 800/888-8622
Niki Stranz (415/978-3105)

Niki Stranz (415/978-3105) Carol Johnstone (415/978-3152) Shannon Smith (415/974-7414)

(508/872-8600)

MACWORLD GLOBAL PRODUCT SUPPORT CENTER

DIRECTOR OF MARKETING AND
COMMUNICATIONS
Kimberlee A. Lueden
TECHNICAL MANAGER
Chip Carman

MARKET RESEARCH

VICE PRESIDENT/DIRECTOR OF RESEARCH

MARKET RESEARCH MANAGER

Linda Lawrence
RESEARCH SERVICES COORDINATOR

Jason Douglas

MARKETING

MARKETING DIRECTOR Cynthia Kora
MARKETING MANAGER Anne Nichols
MARKETING COORDINATOR Rhona Hamilton

CIRCULATION

DIRECTOR OF CIRCULATION Angelina Beitis SINGLE-COPY SALES DIRECTOR George Clark Lori Hitchcock CIRCULATION MANAGER Martin Garchar NEWSSTAND SALES MANAGER SUBSCRIPTION MANAGER Elizabeth Jensen DIRECT MARKETING MANAGER Jenifer Carin PROMOTION MANAGER Kelvin Gec Dalia Schwartz NEWSSTAND COORDINATOR SUBSCRIPTION COORDINATOR Deirdre Dugan 800/288-6848 SUBSCRIPTION INQUIRIES

PRODUCTION

VICE PRESIDENT/DIRECTOR OF MANUFACTURING
PRODUCTION MANAGER

BILLING INFORMATION MANAGER

AD TRAFFIC COORDINATOR

DTP COORDINATOR

ANNE Foley
Cynthia Mazzola
So Fong Yip
AD TRAFFIC COORDINATOR

Clayton Habetinan



True Value From A Trusted Source.

Most computer vendors would lead you to believe that value is nothing more than a low price. At Mirror, we don't compromise quality to give you a great price.

Expert Engineering You Can Rely On!

ATISFACTION GUARANTEE From hard drives to video cards, scanners to monitors, every Mirror product is designed from the ground up to give you the performance you demand and reliability you deserve. All for a price that leaves our competition scratching their heads in wonder. And they aren't the only ones.

Critically-Acclaimed Value!

Time and time again, Mirror amazes the toughest critics in the computer press. In November of 1993, MacUser reported that the Mirror Coolscan is "an impressive slide scanner that



MACWORLD compares favorably with scanners costing considerably more." That same month, Macworld awarded the Mirror Color Scanner its coveted Editors' Choice award calling it "a bargain." In

awarding Mirror an Editors' Choice for our Full-Page Display, Macworld made note of Mirror's "excellent value" (May, 1993).

Toll-free Technical Support.

What makes our low prices and expert engineering even more of a value is our toll-free technical support number.

Whether it's before or after your purchase, we're here to answer any questions you have. And the phone call is on us-toll-free. It's one more reason why people are choosing Mirror for its unbeatable value.



Famous 30-Day Money-Back Guarantee!

You'll find the same caliber of engineering and value in every product we sell. We'll prove it, too. Simply call Mirror and place your order today. In 30 days, if you aren't standing along side the industry critics and

applauding our value, simply return your order

for a full refund. No questions asked.

Toll Free • 24 Hours

		Media, M	DA		
Product	Price	Storage	Int	Ext	
Full-Page	\$399	170 MB (Q)	\$199	\$249	
Two-Page Monochrome	\$499	340 MB (Q)	\$309	\$369	
Two-Page Grayscale	\$699	520 MB (F)	\$549	\$629	
14" Color	\$349	540 MB (Q)	\$519	\$599	
14" Trinitron	\$499	1.1 GB (I)	\$799	\$849	
15" Color Portrait	\$799	1.1 GB (Q)	\$929	\$989	
17" Trinitron	\$999	1.1 GB (F)	\$899	\$949	
20" Color	\$1399	1.1 GB (S)	\$869	\$929	
20" Trinitron	\$1999	1.9 GB (S) 'Cuda	\$1549	\$1649	
ProView 21" Color	\$2099	2.1 GB (I)	\$1459	\$1529	
Tornado Graphics Card	\$699	2.4 GB (S)	\$1549	\$1649	
ChargeCard Accelerator	\$599	2.4 GB (S) 'Cuda	\$1899	\$1999	
Tornado & ChargeCard	\$1199	3.4 GB (S)	\$2149	\$2249	
600 dpi Color Scanner	\$799	CD-ROM	n/a	\$299	
800 dpi Color Scanner	\$999	128 MB Optical	n/a	\$799	
1200 dpi Color Scanner	\$1499	2.1 GB DAT	n/a	\$799	
Coolscan Slide Scanner	\$1999	Removable Drive	es	Call	

Exceptional selection... award-winning engineering...unbeatable prices... top-notch service...toll-free technical support. There's only one place to get value like this: Mirror.





Upgrade to 2.5 and Get the Power of Color!

Why you should upgrade from Grappler upgrade from urapport or MacPrint, for \$75.

PowerPrint 2.5 is much faster access to color printers like the Canon BIC-600 and the HP Desklet 550C Plus features like better quality background printing and greater compatibility.

Current owners of PowerPrint can upgrade for \$35.

And get 32-bit color and gravicale printing, print preview and support for new printers.

Now you can print from your Macintosh to over 1,000 PCcompatible printers.

On the road with your PowerBook? At home using an old PC printer? 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 True Type and Adobe TypeManager fonts.

Also available in network versions.

PowerPrint/LT™ for LocalTalk™ networks. PowerPrint/NW™ for Novell NetWare printing services.

Call 800-330-8233 r more information, contact your local

GDT Softworks, Inc. 4664 Lougheed Highwa 4664 Lougheed H Suite #188 Burnaby, BC Canada V5C 687

800-330-8233 604-291-9121 604-291-9689 (fax) AppleLink:GDT.MKT

DUMbbhb

product names are trademarks registered trademarks of their

End users circle 32 on reader service card Dealers circle 42 on reader service card

HOW TO CONTACT MACWORLD

SURSCRIPTION OUESTIONS

Mainland USA All other locations or write Subscription Services 800/288-6848 303/447-9330

P.O. Box 54529 Boulder, CO 80322-4529

MACWORLD ON AMERICA ONLINE

Macworld subscribers can contact Macworld editors online via the Macworld area on America Online. The area features reviews, news, new-product announce-ments, version information, a database of products. and Macworld-sponsored message boards and conferences. Several of our editors log on regularly. To obtain a free America Online software kit, call 800/227-6364, extension 5254.

MACWORLD IN MICROFORM

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346: 313/761-4700

BACK ISSUES OF MACWORLD

Write to Back Issues of Macworld, c/o Snyder Newell, Inc., P.O. Box 7046, San Francisco, CA 94120-9727; \$6 per issue (\$20 overseas). Prepayment in U.S. funds necessary. Make checks and money orders payable to Macworld Magazine.

MACWORLD EDITORIAL

MAIL OR COURIER Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Fran-cisco, CA 94107; 415/243-0505.

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 turkeys (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. 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).
REPRINTS AND PHOTOCOPY PERMISSION 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.

David Bunnell

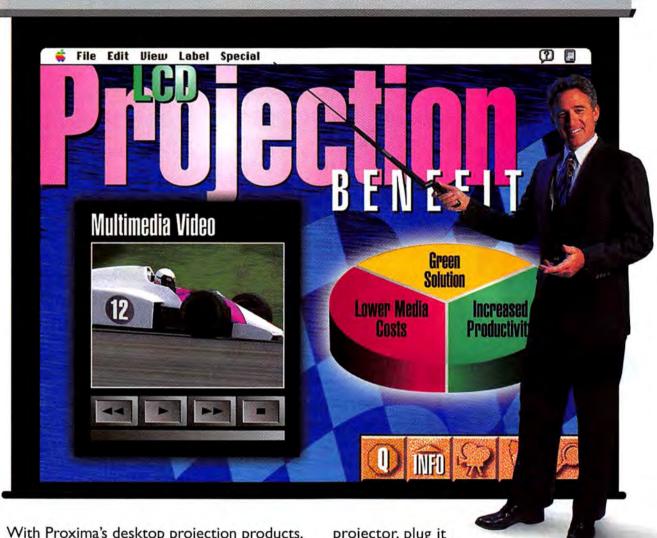
Andrew Fluegelman 1943-1985

Macworld is a publication of Macworld Communications, Inc. Macworld is an independent journal not affiliated with Apple Computer, Inc. Macworld, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, Desktop Critic, Quick Typ. Star Ratings, and Conspicuous Consumer are registered trademarks of International Data Croup, Inc. Consumer are registered trademarks of international Data Cropp, inc. Power PC World is a trademark of IDG. Inc. APPLE, the APPLE LOGO, MAC, and MACINTOSH are registered trademarks, and MACIETTER and POWERBOOK are trademarks of Apple Computer, inc. Printed in the United States of America. Copyright © 1994 Macworld Communications, Inc. All rights reserved. Macworld is a member of IDG Communications, the world's largest publisher of computer-related information.





Introducing Proxima's Portable 10-Foot Monitors



With Proxima's desktop projection products, you can now project computer and video images as large as 25 feet! And that means you can take

advantage of the productivity-enhancing power of your personal computer to make your presentations, business meetings, training, and interactive workgroup sessions more effective.

Simply connect a Proxima
Desktop Projector™ to
your PC or Mac and
instantly deliver dynamic
color graphics...crisp data...
brilliant video. Or place
one of our LCD projection
panels on an overhead

projector, plug it into your computer, and—

presto!—the benefits of the giant screen are yours.

From our MultiMode® and active-matrix Ovation™ projection panels to our dazzling new Desktop Projectors and our remarkable Cyclops® cordless-mouse pointer, Proxima has created

a whole new way to showcase your ideas and imagination—starting at less than \$1,600!

So call us for more information.

CALL NOW TOLL-FREE **1-800-447-7694**

PROJECTING THE POWER OF YOUR COMPUTER IN THE MEETING ROOM.™

DESKTOP

PROJECTION

Proxima Corporation 9440 Carroll Park Drive, San Diego, CA 92121-2298, (619) 457-5500. In Europe: Horsterweg 24, 6191 RX Beek, The Netherlands, +31-43-650 248. Proxima, MultiMode, and Cyclops are registered trademarks and Ovation. Desktop Projector, and Desktop Projection are trademarks of Proxima Corporation. Other trademarks are the property of their respective owners.

LA CIE'S SUMMER

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.



Quantum drives 170MB-540MB: 2 year warranty Quantum drives 1080MB & up: 5 year warranty

170MB \$199 \$259 270MB \$269 \$329 340MB \$299 \$359 540MB \$399 \$499 1080MB \$749 \$849 1400MB \$1099 \$1159 1650MB \$ \$1979 \$2039 1800MB \$1199 \$1259		Capacity	Internal	Tsunami
340MB \$299 \$359 540MB \$399 \$499 1080MB \$749 \$849 1400MB \$1099 \$1159 1650MB \$ \$1979 \$2039		170MB		\$259
540MB \$399 \$499 1080MB \$749 \$849 1400MB \$1099 \$1159 1650MB \$ \$1979 \$2039		270MB	\$269	\$329
1080MB \$749 \$849 1400MB \$1099 \$1159 1650MB \$ \$1979 \$2039		340MB	\$299	\$359
1400MB \$1099 \$1159 1650MB \$ \$1979 \$2039	HO	540MB	\$399	\$499
1650MB s \$1979 \$2039	H	1080MB	\$749	\$849
	NE	1400MB	\$1099	\$1159
y <u>1800MB</u> \$1199 \$1259		1650MB S	\$1979	\$2039
	h	1800MB	\$1199	\$1259

Capacity	Internal	Tsunami
2000MB s	\$1919	\$1979
2050MB s	\$2269	\$2329

S=Seagate mechanism (1 year warranty)

PowerBook	Drives	(2.5"	Internal)
85MB		Ś	199

OOMB	7.22
170MB	\$259
256MB	\$349

LaserWriter 630 installation kit available

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

Drive Internal External 88C MB 5.25" \$399 \$459 200MB 5.25" \$559 \$599 105MB 3.5" \$349 270MB 3.5" \$599

44MB 88MB 105MB 270MB 200MB Cartridges \$69\$99\$79\$99\$109

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

CD-ROM Drives

Drive External Toshiba Dual Speed \$639

Optical Drives

Drive | Internal | \$1009 | \$230MB | \$230MB | \$59

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

DAT Drives

Drive	Internal	External
5.0GB DAT	\$1099	\$1159
TurboDAT	\$1299	\$1359

Tape Drives

Drive	Internal	External
155MB	W. 10 C. 10	\$569
600MB	\$729	\$789

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

"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 applicables. Joule, ZFP, Tsunarii, PocketDnce, PocketDnce, Silvenscanner, Silvens

CLEARANCE SALE!

CLOSEOUTS!

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

Capacity	External
40MB	\$89
80MB	\$119
100MB	\$149
120MB	\$199
200MB	\$249
400MB	\$369
525MB	\$449
1000MB	\$799
1200MB	\$929

*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

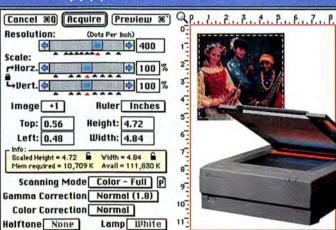
COLOR SCANNING SOLUTIONS

SILVERSCANNERII





"...Fast and a pleasure to use, ...Produced high-quality printed images with good resolution, and its documentation was tops." Mocworld, November 1993



Silverscanner II makes scanning as quick, painless and productive as possible. With features like dynamic color preview (16 sec.), magnify in preview, proof in preview, savable scan settings, up to 400% scaling in 1% steps and up to 1600 dpi in 1 dpi steps—all in one pass. It's easy for the beginner and powerful for the advanced user. And it's Macworld's Editor's Choice.





All Silverscanners come with our powerful Silverscan software, Color It! image editing software and Read-It O.C.R. Pro.

Basic Bundle	\$1599
Basic Bundle Plus Cachet	\$1899
Bundle Plus Cachet & ColorStudio	\$1999
Bundle Plus Photoshop*	\$1999
Optional Transparency Attachment	\$799
Optional Sheet Feeder Attachment	\$499

While supplies last. Does not include Color It!



To order or for more information, call toll-free

800-999-0182

Mon.- Fri. 5 a.m.-7p.m. & Sat. 8 a.m.-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.*

THE CRITICS WOULD TELL YOU NOW UTILITIES MAKES YOUR MAC FASTER AND EASIER TO USE.



THAT IS, IF THEY WEREN'T STILL SPEECHLESS.

Now Utilities

Now Utilities has won so many top awards lately, the critics almost seem awestruck. But when they do speak, you'll find their comments echo those of author/consultant Bob LeVitus, who calls Now Utilities "a must have for

any serious System 7 user." Why all the fanfare? Because Now Utilities

Lject Desitop Open

Easy instant access.

makes your Macintosh so much faster and easier to use.

SAVES TIME.

Now Utilities saves time by giving you instant access to

frequently used files and folders. No more time wasted digging through endless folders in the Finder. You navigate your hard drive faster because you can open items directly from submenus in the Apple menu, assign key-

board shortcuts to any Aber The Barrens menu item, and locate misplaced files in a flash. Even if they've been compressed or archived. What's more, you can reuse boilerplate items of any type in any application,

Finds files fast.

and organize, view and store graphics, text, sounds and QuickTime movies.

MORE CONTROL.

Now Utilities puts you in control. If you use Times the most, just drag it to the top of the Font menu. Fonts appear in their actual

typefaces, so you choose the right font the first time. You can also arrange extensions and control panels in the order they work best. and link together extensions that require each other.

KEEPS YOU GOING.

No more lost work if you lose power: Now Utilities automatically saves your work at any interval you specify. You can even save every keystroke to a special backup file. If your Mac crashes at startup, Now Utilities turns off the cul-

Dep 45	*026
Previous Part Plantings Earl Age CO-8 AT Colonia Co-80 CO-80 AT Colonia CO-804 AT Colonia Colo	WILNYS House 402
Fre Sharry Enterpoint Foreign File Access Opini Fresh 1 6 1 Applico Speed Surfait Cente Surfait Reuf Sings	Fiel Control Parall Serv 6/8: Liceton, Control Paralle Hemony (ETC of System Heap Links Fort Hemo Hoddfers)
Charles Brown and FurCarter FurCarter FurCarter FurCarter FurCarter FurCarter FurCarter FurCarter OutsCortact*	Standar Digit: Effective ND

Puts you in control.

prit, so you get back up and running. It's even a onestop source of system information, perfect for dealing with Tech Support questions for any of your soft-

ware. To order Now Utilities today for just \$89.95*, a \$40.00 savings off the list price, call us directly at 1-800-237-2078. Or

see your local reseller. We're certain you'll become a satisfied critic yourself.



^{*}Dealer prices may vary. For 50-packs and site licensing information call 503-237-3611, ext. 131. 🛇 Now Software, Inc., 921 SW Washington, Suite 500, Portland, Oregon 97205-2823.

Beyond the Power Macs

Charting a course for Apple's continued success

NDER THE SURFACE OF THE Macintosh market the twin streams of optimism and doubt flow perpetually. The brilliance and refinement of the Macintosh design continue to inspire users. At the same time, the foreboding mass of the PC market, roughly ten times the size of the Mac market, always seems to raise doubts about the

Mac's long-term survival. Ten years have passed since the Mac's introduction, and these currents continue to ebb and flow. The introduction of the Power Macs is a major milestone. It's time to reexamine the challenges facing Apple.

The Power Mac Success

Ninety days after the introduction of the Power Macs, it appears that Apple has done a phenomenal job of managing the transition to the PowerPC architecture. The machines are selling extremely well, and Apple has by and large kept up with demand. The Power Macs offer an unprecedented price/performance value. According to a Macworld price survey, two of the three Power Mac models (the 6100/60 and 7100/66) meet or exceed the price/performance of similarly configured Intel Pentium-based PCs (see Power Mac News, this issue). And there are no major software-compatibility problems, a remarkable achievement considering the changeover to RISC. This is the first time a mainstream personal computer platform has converted architectures and maintained the usability of and investment in the installed base of applications. By early autumn most major Mac applications will be available in native Power PC versions, which means more users will buy Power Macs without hesitation. Furthermore, by successfully partnering with IBM and Motorola to create the PowerPC processor family, Apple has demonstrated that it can build and sustain strategic alliances of a scale necessary for its future survival.

But despite the reinvigorated hope that the PowerPC has provided for the Macintosh, more challenges lie ahead. And since optimism and doubt about the Mac go hand in hand, let's anticipate some of the doubts. The impending introduction of Chicago (the next version of Microsoft Windows) will test whether the Mac offers enough unique value to users for them to swim against the DOS/Windows tide. As always, Mac and PC users will spend many fruitless hours arguing their convictions. What must Apple do to put these arguments to rest? The answer is not new: Apple must continue its quest to significantly increase its market share while strengthening the unique advantages of the Macintosh.

Licensing-Again

The perennial doubts about the Mac's survival continue because there are so many more DOS and Windows machines. To lessen doubts and gain lever-

age in the marketplace, Apple must make two major moves to increase its percentage of the market. The first move is to work toward a standard hardware platform, and the second is to license the Mac Operating System. It would have been a mistake for Apple to have licensed the Mac OS in the last few years, because the company was not prepared to live on lower margins and could not have withstood competition from less-expensive Mac clones. In hindsight, Apple's previous opportunity to license was three or

four years ago, before Windows had really established itself, and the Mac was still unique. But now that Apple has cut its operating costs, dropped the Mac's prices, and improved the Mac's performance, the company has another opportunity to license the Mac, and it must take the plunge in a big way. Although there are still some compelling financial reasons not to create competition by licensing the Mac OS, the fear of lowered profits should be offset by the opportunity to be a survivor in the market-share wars.

To create a standard hardware platform, Apple needs to work closely with IBM on the PReP specification for PowerPC-based microcomputers, to make sure that complete Macintosh capability can be added to PReP-compliant machines. Sources inside and close to the

two companies indicate that these efforts are continuing. Both companies stand to benefit from promoting broad support for a PowerPC-based platform. The result of these two major players' combined efforts in the PC market will be that people will listen and reconsider this alternative to the Intelbased platform. IBM is also more capable of selling into major corporations, which would complement Apple's sales and add key customers to the installed base. On the second point, Apple should also offer IBM an OS license that's

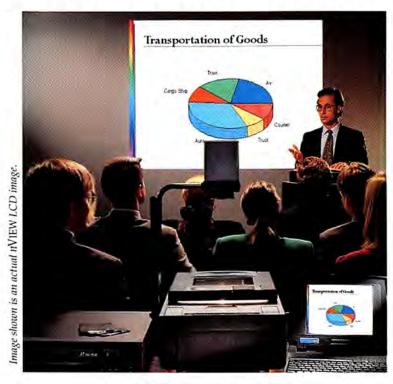
attractive enough to overcome any Big Blue reluctance to sell Macintosh OS-based machines to its business customers. Increasing the number of PReP-compliant computers doesn't guarantee that these machines will all be running the Macintosh OS. However, the Mac OS is the only operating system that has a large number of users and mainstream desktop applications and can run on the PowerPC. This gives Apple—and would give IBM—a big advantage.

continues

Apple should also license its OS to one leading PC maker in addition to IBM. Apple doesn't have to license to everyone right away, but sewing up a second license with a firm like Compaq or Dell would greatly affect the perception of the Macintosh architecture and provide access to new customers. Apple will probably have to offer a very attractive deal to this company to convince it to invest in a new market, but Apple should do whatever it takes. Licensing a major clone-maker

besides IBM would hold the attention of new customers and developers. The two main dangers are that Apple would lose some sales, and licensing would complicate the evolution of Apple's technology. But Apple would also gain (licensed) sales it would not have otherwise made: it must be willing to lose some hardware sales, in order to grow its market overall. It is now time for Apple to make a bold move and embrace some risk to boost its momentum.

UNFORGETTABLE.



THE *n*View 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. All-in-one projection panels are easy to setup with built-in audio, unique Presentation Control and the versatility to connect up to four sources

simultaneously.

See it. Hear it. Feel it. Unforgettable presentations everytime.

Enjoy the applause! For more information call 1-800-736-8439 or 804-873-1354.

*n*View

VISIONARY DISPLAY TECHNOLOGIES

nVIEW products are manufactured under U.S. Patent #4,763,993; #4,976,536; #5,153,621; #5,150,238; #5,277,871; and 5,255,029. Other and foreign patents pending. nVIEW and ViewFrame are registered trademarks and MediaPro, Luminator and nSIGHT are trademarks of nVIEW Corporation.

Circle 117 on reader service card

Innovation

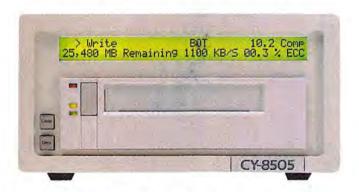
Whatever Apple does, it must maintain the identity of the Macintosh. The Mac has always been unique, special enough that people are willing to go against the tide and buy one. There is tremendous pressure to buy the same system that most other people use. For instance, if you work in a large organization that uses mostly DOS and Windows computers, your MIS manager probably would rather not have to support Macs. As long as Apple owns a significantly smaller share, it needs to differentiate the Mac with unique features. Otherwise users and companies will likely migrate to the most commonly used platform.

The problem is that the Mac is not as obviously different as it once was. People who haven't spent much time with a Mac can't see a big difference between Windows and the Mac (anyone who uses the acronym GUI-pronounced gooey-is suspect). With the introduction of the Chicago version of Windows, the distinction between the Mac and Windows interfaces will likely blur even further. You have to spend some time using a Mac to appreciate the difference in quality. Then major differences in usability become apparent. But the difference is no longer evident at a glance, and both share many of the same applications.

Apple must evolve the Mac so that customers can tell at a glance that it is unique. This will require an interface and applications that provide an engaging new dimension. Apple must integrate video and sound into the system so thoroughly that users interact with them as second nature-not simply as novelties or specialized applications. Apple should also design the Mac to be the preeminent platform for communications. People are spending an increasing percentage of their time managing E-mail, faxes, voice mail, online communications, presentations, file transfers, and other forms of communication. If the Mac were clearly better at unifying and simplifying all of this activity it would have a big advantage.

Perhaps most important of all, Apple must convince developers that the Mac offers unique opportunities for success. In the end it will be the creativity and vision of developers that drive the next wave of compelling applications. The developers must have the proper tools and a foundation upon which they can innovate. Instead of spending countless dollars on ancillary businesses such as the Newton, Apple should commit major funds to encourage and support its Macintosh developers. They have always been a key to Apple's success, and they are the likely source of Apple's long-term survival. **m**

OUR 25 GB TAPE DRIVE JUST HIT A NEW HEIGHT.



It's smaller; yet our new CY-8505 backs up the largest Macintosh computer systems and networks, unattended.

How? Optional data compression boosts the 5 GB capacity to up to 25 GB. And it's fast – able to write data at speeds of up to 90 MB per minute. Such high performance means huge savings in manhours and

media costs. Best of all, the MTBF rate of 80,000 hours gives you data reliability you can depend on.

The CY-8505 features software that lets you schedule full or incremental backups to run any time, day or night. A directory of files is stored on the disk, making it fast and easy to restore. A backlit status display gives you command under execution, compres-

sion ratio, transfer rate, tape remaining and more in a clear, easy to read format.

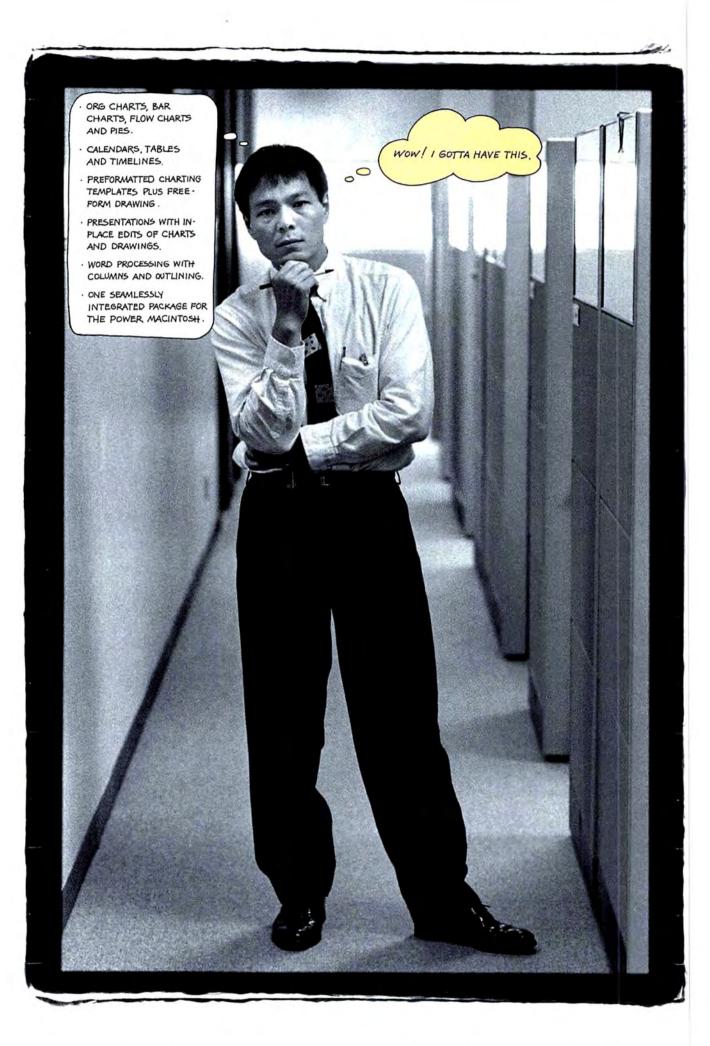
In short, you won't find a more advanced, more reliable solution on the market.

What's more, we back this turnkey solution with a two year warranty that includes responsive service and support from our in-house staff.

For more information, call today at (804) 873-9000.

TRUE CO	MPATIBILI	TY WITH	ICL	Novell OS/2	Prime Pvramid	Texas Instruments
Alliant	AT&T	DEC	Intergraph Macintosh	PS/2	Sequent	Unisys Ultimate
Alpha Micro	Basic-4	Gould/Encore	McDonnell Douglas	Parallel Port	Silicon Graphics	Wang
Altos	Concurrent	HP	Motorola	Pertec	STC	— and more
Apollo	Convergent	IBM	NCR	PICK	Stratus	
Arix	DataGeneral	IBM PC	NeXT	Plexus	Sun	





Think of it as a whole new way of looking at your business.

Some people look at business and see an endless progression of boring, unproductive meetings.

Others look at it and see an endless progression of opportunities. Opportunities to build consensus between colleagues. To sell new ideas. And advance their careers.

Which way do you see it?

That could depend on the tools you use to prepare for those meetings. Which is a good reason to look at ClarisImpact software from Claris. And at the new Power Macintosh computers from Apple.

It's eight packages in one.

As you've probably heard, the Power Macintosh paves the way for a new generation of powerful business applications.



Powervel by the new PowerPC chip, Power Macintosh computers run blazingly fast, while providing the expandability, compatibility and AV options you need to embrace the future, today.

Applications like ClarisImpact 1.0. What makes it so powerful? For starters, buying ClarisImpact is like buying eight sophisticated business graphics programs for the price of one.

Just fire it up, and you can create org

CLARIS'

charts to document the everchanging corporate hierar-



chy. And create flow charts to simplify the most complex of processes.

You can build timelines to help everyone get their work done on time. Create calendars to help workgroups coordinate that time. Draw pictures more powerful than words. Cook up pie charts. Build bar charts. And more.

You can even build on-screen presentations, slides, handouts and overheads.

And refine your reports with the integrated, full-featured word processor.

It's one of a kind.

Unlike other business graphics solutions, ClarisImpact is fully integrated. Which means combining text and graphics is a snap. Editing your images is every bit as easy—you never even have to leave the document you're working on.

Since you're using just one program, you only have to learn one user interface.

And because ClarisImpact was designed for businesspeople, not artists, it includes 2,400 useful clip art images and a wide variety of preformatted templates to help you make your points most effectively.

No other business package gives you so much. For that matter, no package of its kind is optimized for the Power Macintosh, either.

So you can get everything done faster. And easier. The Power Macintosh way.

It's Power Macintosh fast.

As you'd expect from any computer named Macintosh', the Power Macintosh runs thousands of powerful, off-the-shelf business programs.

But that's just the beginning.

At the heart of every Power Macintosh is a PowerPC~601 microprocessor, the first of a new family of ultra-high-performance RISC chips developed in a unique collaboration between Apple, IBM and Motorola.

Which means software rewritten to take advantage of this chip runs blazingly fast—faster than the same software would run on a Pentium-based PC.*





With eight charts and graphics modules in one integrated package. ClarisImpact gives you everything you need to make your business look its best.

Which also means ClarisImpact running on a Power Macintosh is, quite simply, one of the fastest business graphics packages you can find.

To try ClarisImpact, call Claris at 800-544-8554, ext. 322, for a free demo disk.*

For the name of your nearest authorized Apple reseller, call 800-732-3131, ext. 600. And discover the power in the new Power Macintosh. The power to be your best.* Apple

Introducing ClarisImpact for Power Macintosh.

Newton coune cts. 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.

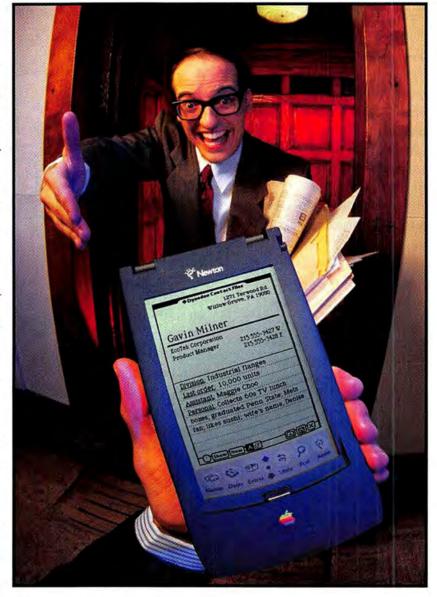
With the Newton Connection Kit 2.0 for Macintosh," you can exchange information with your Macintosh, as well as with a range of popular Mac" software, such as ACT! contact manager, Lotus 1-2-3, Excel and Microsoft Works.*

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.













Doursloading, updating and backing up information between your Newton and your computer is as easy as plugging in.



1 9 9 4

Letters

On Copyright

UCH! A NOTICEABLE OMISSION from the "How to Avoid Copyright Conundrums" sidebar regarding photographic images hurt ("Are You Breaking the Law?," May 1994). If your project required music with vocals, would you sing it yourself because you own a cassette recorder? Would you make up your own typeface because you know how to write letters of the alphabet? Or print a brochure yourself because you have a copier? Yet you advise readers that the next time they need a photograph as a source for an illustration, they should shoot it themselves with a 35mm camera. Casual familiarity with common devices imparts neither technical nor creative proficiency.

How about this helpful suggestion instead: Hire a real photographer! Your copyright usage needs can be a part of the discussion right from the start, and a good professional photographer will deliver professional results.

Peter Billard Glastonbury, Connecticut

Undoubtedly, there are many situations in which you need the services of a professional photographer. On the other hand, I spoke to several illustrators who have begun taking their own photos of simple objects—a bridge, a park bench, a boat—and incorporating and manipulating those images into larger, computer-generated illustrations. To follow Mr. Billard's line of comparison, hiring a professional photographer, when all you need is a usable image, is like hiring an accountant to fill out the 1040EZ form.

—James A. Martin

FOUND YOUR ARTICLE ON THE USE of copyrighted material (a subject that has mostly been overlooked by the computer media) interesting. You wrote that "depending on how an image from an old magazine is used, the likelihood that someone would recognize the original work and contest its reuse today is probably low." It is very distressing to me to



hear that it is a bad idea to steal someone's work only if you are likely to be caught.

The law is clear: a photographer's work is covered under copyright from the moment the photographer presses the button. Like most photographers, I enjoy seeing my work in print, and therefore my usage prices are usually reasonable. It is certainly not a game to see if you can use someone else's work without getting caught.

Thanks for your article—it's a start.

Ray Hunold

San Francisco, California

I quoted experts who believe it's unlikely that an insignificant portion of an image lifted from an old magazine, then manipulated and collaged into a new illustration, will become the source of a copyright-infringement case. However, I also clearly stated in several places that it's always best to get permission to use someone else's image.—J.A.M.

LTHOUGH I'M A FIRM BELIEVER IN copyright protection, I would hardly look to the royalties on digital audiotape (DAT) players for "inspiration." The reality is that amateur musicians who use DAT for creating their own music are forced to pay a "royalty" to established

performers who already have legitimate avenues for royalty collection (BMI and ASCAP). What will be next? Will the Software Publishers' Association lobby for a disk tax to compensate for possible software piracy?

Greg Scheer Wilkinsburg, Pennsylvania

PowerPC Bits

Maybe not, depending on the monitor you choose. The on-board video of the Macintosh Quadra/Centris 610 supports monitors up to 21 inches in 8-bit color, and up to 16 inches in 16-bit color; but the Power Mac 6100's on-board video maxes out at 8-bit color on a 16-inch monitor.

If your monitor is larger than 16 inches, you must buy either a NuBus card or a smaller monitor. Sign me: Not Ready to Downgrade.

Gary Van Handel Houston, Texas

AM EXTREMELY DISAPPOINTED BY the packaging of the Power Macs. We have a new level of computing power placed inside the same old, boring, and unfashionable case. The PowerBook didn't become one of the most popular portables because it looked like its competitors. Can Apple put a little more effort into the external design of its computers? The benefits we could gain may be well worth the effort.

Kevin McGinty via America Online

Mistaken Identity

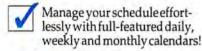
WAS SHOCKED BY THE COVER OF THE June 1994 issue of *Macworld*. The square and compass, shown as tattoos on the muscular arms in the photograph, is *continues*

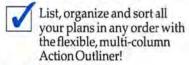
GET TOTALLY

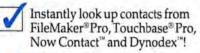


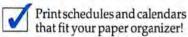
IN CONTROL!

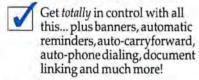
New IN CONTROL 3.0 is the only planner and organizer that combines the powerful, multi-column Action Outliner™ with state-of-the-art calendars, so you can plan, prioritize and schedule any way you want!











For more information, or site license or volume discounts, call: 1-800-925-5615

or (617) 776-1110. To upgrade, call: 1-800-784-7388 ext. 300.



THROUGH PARTICIPATING VENDORS

MacWEEK.

MacUser

MACWORLD ***



ATTAIN

Attain Corporation 48 Grove St., Somerville, MA 02144 (617) 776-1110 Fax: (617) 776-1626 Internet: Sales@Attain.com

All products are trademarks or registered trademarks of their respective holders.

Circle 6 on reader service card

CORRECTIONS

• The June 1994 "Video-Editing Tools" feature incorrectly stated that the Grass Valley Group is owned by Carlton Communications. In fact, Tektronix owns the Grass Valley Group.

■ The tray-loading CD-ROM drive in the Power Macintosh 6100/60 was introduced in the LC 575, not the Quadra 605 (Reviews, June 1994).

Version 4.0 of Adobe Premiere costs \$79 for users upgrading from version 3.0, and \$129 for users upgrading from versions prior to 3.0 (News, June 1994).

Opcode Systems' OMS fixes MIDI problems for the PowerBook modem port only, not the printer port (Letters, June 1994).

■ The May 1994 article "Does PowerPC Beat Intel's Best CPUs?" incorrectly described a micron as being a millionth of an inch. In fact, a micron is a millionth of a meter.

Nanao's rebate offer of \$100 applies only to customers who purchased monitors between January 1 and March 31, 1994 (News, May 1994). Also, the offer expired April 30.

 New Video Corporation's phone number is 310/449-7000, fax 310/449-0132 (New Products, May 1994).

Decathlon Corporation's Logo SuperPower product also comes in Aldus FreeHand format (New Products, May 1994).

The Power Macintosh Upgrade Card is not available for the Mac Hvi, Hvx, or Performa 600; instead, owners of those Macs may replace the motherboard with a Power Macintosh 7100/66 or 7100/66AV motherboard (PowerPC News, June 1994).

Golden Triangle has not folded, as indicated by a headline in the June 1994 MacBulletin. As correctly reported in that news item, the company is reorganizing.

The phone number for Now What Software is 415/885-3432 (Reviews, July 1994).

the universal symbol for Freemasonry. This symbol has great significance for millions of Freemasons around the world, and your use of it for commercial purposes is unacceptable.

Frederick Randall Secretary, Rantoul Lodge No. 470 Ancient Free and Accepted Masons Rantoul, Illinois

The square and compass as pictured on our cover referred only to the drawing functions of the products reviewed and were not intended to imply anything else, either about the software or about Freemasonry. Macworld apologizes for any misunderstanding.—Ed.

Math without an FPU?

OUR PROCESSOR-PERFORMANCE tests are easy to read and easy to understand, and I appreciate them very much, but one thing is not clear to me. In the *News* section of your April issue, Macworld Lab tested the new LC 575, which lacks a floating-point unit. The tests showed very good results in both processor and FPU performance, but how do you test FPU performance in a machine without a coprocessor?

Peter Schmidt Brookline, Massachusetts

Most (but not all) programs that take advantage of an FPU also have separate code to work on machines without one. Thus, on the LC 575, the floating-point calculations were executed using the alternate code.—Ed.

But Where's the Reset Switch?

EGARDING GUY KAWASAKI'S CORrelation between his firstborn and his Mac: he is right on the money (Wise Guy, May 1994). A man might better understand the impact that a new baby will have on his life if he stops to remember the day he bought his first computer.

I struggled through late-night feedings, ear infections, reduced income, and the day-care nightmare; then I bought my first Macintosh. What have I learned? Not to take crashes and error messages so seriously!

Laurie Curtis Somers, Connecticut

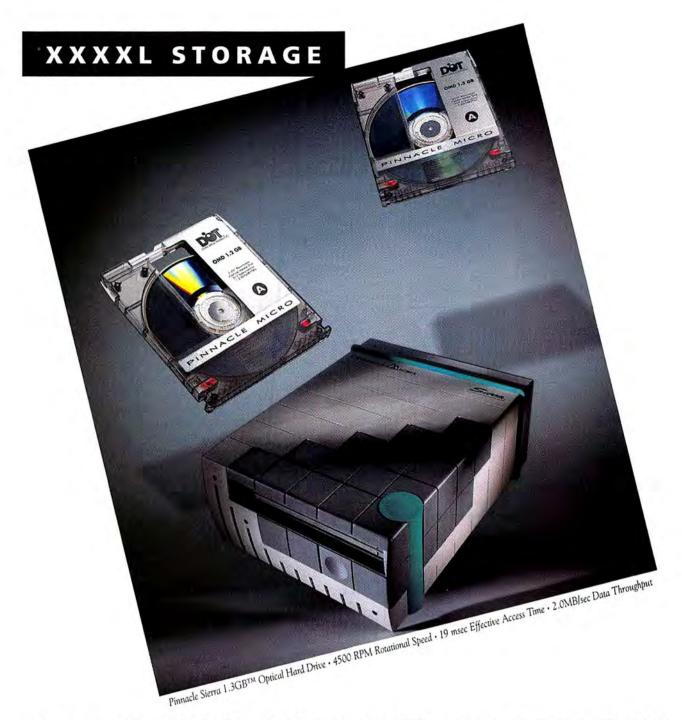
Freer Trade

OLA, AMIGOS! WITH ALL THIS talk about the North American Free Trade Agreement, you'd think the mail-order companies would take advantage of the million-dollar market right next door in Mexico.

In all of the 50-plus computer publications we receive at our university, we found only one international toll-free number—this out of more than 300 direct-sales firms. Computer companies across America, drop us a line. If it's toll-free, all the better.

James Mulford Mérida, Yucatán, Mexico

continues



It seems impossible to find a hard drive that's large enough to <u>fit</u> your storage needs today. That XL hard drive you just bought is now full.

Introducing a solution that's large enough to solve any storage problem... the Sierra 1.3 Gigabyte rewritable magneto-optical hard drive. It has the speed of a hard drive with an infinite capacity. So every time you fill up an optical disk, just add another one.

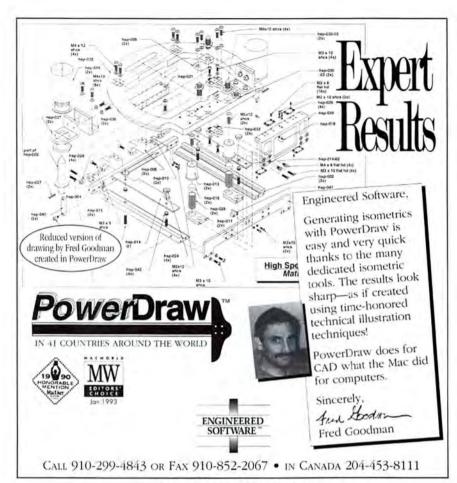
You can store online data, secondary data or even backup your files on your Sierra optical drive. It will never let you down. Optical is the most reliable storage device available. You can erase and write over four million times on optical media that has a shelf life of over 30 years. Save XL amounts of money over magnetic media which costs

about \$1.50 per megabyte, as compared to optical which costs only 15¢ per megabyte. Perfect for applications that demand XL amounts of data such as graphics, prepress, imaging, networking, digital audio and video, multimedia, and any other data intensive applications.

So the next time you're shopping for that XL hard drive... just keep the one you have and buy something that you will never outgrow... the Sierra $1.3GB^{TM}$. To order or for a local reseller call: 800-553-7070

PINNACLE AGE COMPANY

International Tel. 714-727-3300 U.S. Fax 714-727-1913



Circle 12 on reader service card



LETTERS

Random Notes

LOVE YOUR 'ZINE. MY LOCAL NEWSstand thinks I've been out in the sun too long, even though I'm from Seattle, where there is no sun. Your magazine arrives on the newsstand's musty shelves during a three- or four-day window at the end of each month, and I'm there with a three-latte buzz, waiting to attack the stockboy like a pack of hyenas.

> Nigel Heinsins Whereabouts Unknown

Net Losses

COULD NOT AGREE MORE WITH Steven Levy's "Net Gains" column in the March 1994 issue (The Iconoclast). As vet, I have not connected to the Internet, primarily because I own an older, 1200bps modem, and the Internet is not a user-friendly place for folks like me. A fellow worker connects quite often, but after struggling for three months and spending hours reading up on the subject, he is just now starting to feel comfortable with what he is doing.

I am not prepared to invest that much time and effort in learning to surf on the Internet.

> Chris Gartner Winnipeg, Manitoba, Canada

Axion Lives

WISH TO COMMEND DAVID POGUE ON his fine article "Multigrain Serials," and thank him for his kind words regarding the Axion Switch (The Desktop Critic, June 1994).

One point needs to be made: Axion did endure a corporate restructuring, but the rumors of its demise were a bit premature. Axion is still here, and it is better than ever!

Larry Woodard Vice President of Product and Business Development, Sunnyvale, California

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), or AppleLink (Macworld1), or via Internet (70370.702@compuserve.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. m

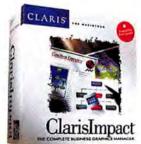




Buy one,

get eight free.

Finally, all the business graphics tools you need in one integrated solution: ClarisImpact.



"★★★★"—Macworld "**‡‡‡**"—MacUser 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.*

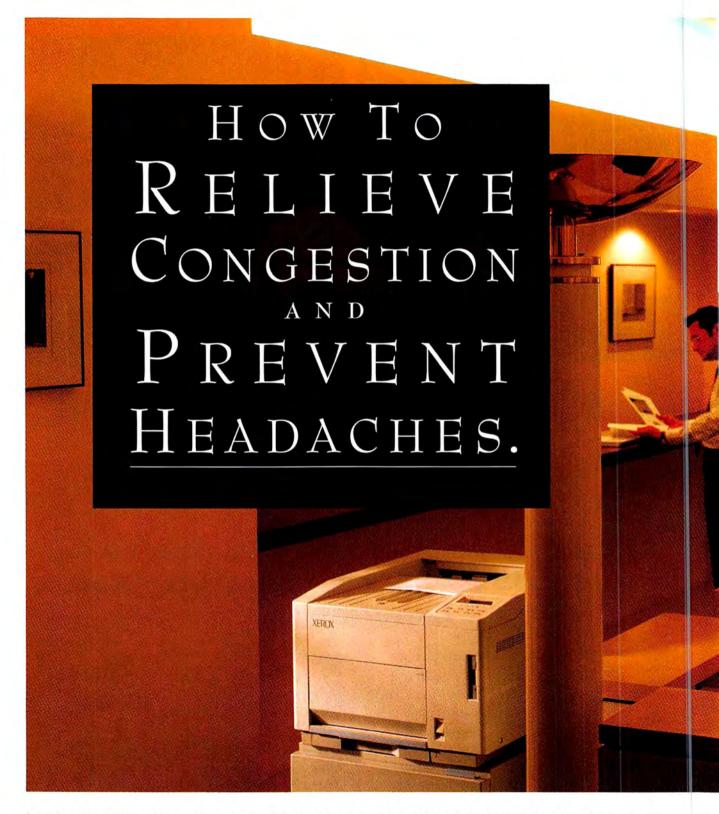
See it today at your Claris dealer. Or call us for a free demo. Free Demo
For a free demo
disk call
1800 544 8554
ext. 348. Then
take advantage of the
\$149* introductory
price offer!



Simply powerful software."



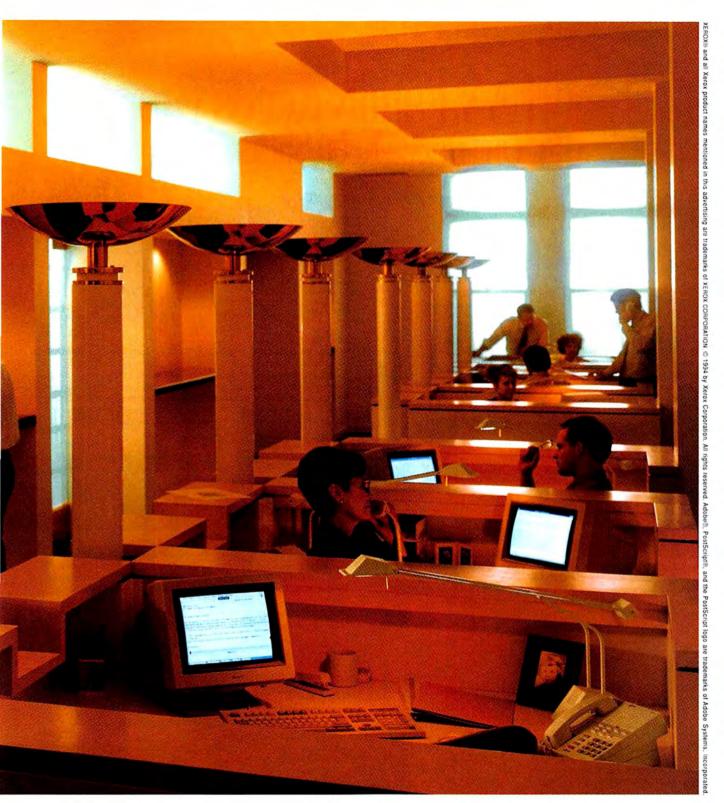
ClarisImpact was awarded four stars by Macworld magazine and four mice by MacUser magazine in their respective June 1994 issues; it was awarded the Buyers Assurance Seal by InfoWorld magazine in the April 4, 1994 issue. *The regular suggested retail price for ClarisImpact is \$399; special introductory price offer good now through September 30, 1994. © 1994 Claris Corporation. All Rights Reserved. Claris is a registered trademark, and ClarisImpact, the ClarisImpact design and Simply powerful software are trademarks of Claris Corporation.



INTRODUCING THE NEWEST MEMBER OF THE XEROX MAJESTIK COLOR SERIES.

THE INCREDIBLE 4900 COLOR LASER PRINTER goes a long way in smoothing out the problems of printer overload. At 3 ppm color and 12 ppm b&w, it's the fastest color/monochrome printer in its class, so you get your output right when you need it. Your color and b&w is managed from one printer, so you don't have to make separate sets and then integrate pages. And with up to 1200 x 300 dpi and Xerox Quad Dot





technology, you get graphic quality printouts. Plus the new

4900 Printer comes with a Total Satisfaction Guarantee, so you
also get peace of mind. All this for much less than you'd think.

Just what you'd expect from the company that pioneered laser printing.

CALL 1-800-ASK-XEROX ext. 4900 FOR INFORMATION AND SAMPLES.



THE DOCUMENT COMPANY XEROX

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 ports in high-end Macs and Apple printers (AAUI 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 is a single-post thinnet transceiver that comes with a T-connector. 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 Hub9 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.



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 TurboNet 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.

To Order And Get Your Free Catalog: 00-538-4888



\$39 performance application with

every EtherLAN card, FREE!



High-speed SMC technology makes this the fastest Ethernet card for your Mac.



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 TCPAP, DECNet and Netware, Features unloue, 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 measuring 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 in the high-speed lane at a bargain price. "Bottom-line Pick"

— Macworld 2/94

Over 30 Quality Ethernet Solutions To Choose From. Call FOCUS Enhancemen



LATE-BREAKING NEWS MACBUILDING

Apple Drops DOS-Compatible Card

After only two and a half months, Apple discontinued its DOS Compatible Card, which put a 25MHZ 486SX-based PC inside a Centris or Quadra 610. At press time Apple said it would also discontinue the preconfigured Mac Quadra 610, DOS Compatible system on June 13.

Apple Cuts Prices Yet Again Apple recently cut the prices of selected peripherals, Power-Books, and Quadras. The price of the Quadra 660AV 8/230 dropped 20 percent, to \$1499; the same version with a CD-ROM drive fell 18 percent, to \$1799; and the 8/500 model went down 14 percent, to \$2369. The Quadra 950 0/1000 Publishing Configuration was cut 15 percent, to \$6229. Price cuts on models of the Power-Book 145B and 165 ranged from 12 percent (down to \$1259 for the 145B 4/80) to 27 percent (now \$1699 for the PowerBook 165 4/160 with Express Modem). The PowerBook Express Modem Kit was slashed 33 percent, to \$215. Apple also reduced the price of the OneScanner by 20 percent, to \$699; of the LaserWriter Select 300 by 18 percent, to \$600; and of the 14-inch Macintosh Color Display by 21 percent, to \$399.

Radius and SuperMac Join Forces Two leaders in the Macintosh graphics and digital-video hardware market have announced their intention to merge. Subject to shareholder and federal approval, Radius and SuperMac will come together in a deal valued at approximately \$80.5 million. No changes in operations will occur at either company until October, according to SuperMac. If the merger is still on, at that time the companies will announce their product strategies for implementation.

120MHz PowerPC 601 Chip In a technology demonstration at Apple's recent Worldwide Developers Conference, IBM and Motorola showed a 120MHz version of the PowerPC 601 processor running

in a prototype Macintosh. The 120MHz chip is 20 percent faster than the fastest previous 601 chip, a 100MHz model that is available in small quantities but is not yet used in a shipping Power Mac (see *MacBulletin*, *Macworld*, June 1994). Apple said that the system shown was not guaranteed to be produced but was intended to show developers the capability of the Power-PC chip architecture.

Native Photoshop Does Layers The long-awaited upgrade to Adobe Photoshop, which will support multiple layers, is expected to ship by September of this year. Other new features of 3.0—a native PowerPC release—include CMYK preview, floating customizable palettes, color masks, and additional filters. For \$895, you'll get a CD-ROM version as well as the standard floppy-disk set; upgrades are \$149. 415/961-4400, 800/833-6687.

QuickMail Goes 3.0 CE Software has announced an August ship date for version 3.0 of Quick-Mail. The client-only upgrade features rules-based mail management (filtering messages based on preset criteria), multiple-criteria searches of messages (including sender, subject, and body text), and a spelling checker. A ten-user pack retails for \$649; current users can upgrade for \$12 per client; and users who purchased version 2.6 after June 13 will get the upgrade for free. 515/221-1801, 800/523-7638.

QuickDraw GX Predux By the time you read this, QuickDraw GX, Apple's long-delayed enhanced imaging architecture, should be shipping—but not from Apple. Peirce Software's Peirce Print Tools (\$129), a collection of GX printing extensions, also includes GX (which can be installed under System 7.1). Apple plans to ship GX as part of System 7.5 later this year. Peirce, 408/244-6554, 800/828-6554.

MGWS

EDITED BY TOM MORAN

IN THIS ISSUE

p. 35 Epson Color Printer p. 35 Lotus Drops the Mac p. 36 Stackable Storage

p. 36 Low-Cost NEC Display p. 36 MicroNet Disk Array

p. 37 4GB and 9GB Hard Drives p. 37 Virus Watch p. 37 Used Mac Price Index

Taligent Rising

n 1992, the earth shook: IBM and Apple clasped hands and pronounced themselves allies. From this union sprang Taligent, a small Cupertino, California, company that's now developing nothing less than a universal operating system. When complete, the Taligent OS will be scalable and platform-independent, running on machines based on Intel, PowerPC, and Hewlett-Packard PA-RISC processors. If Taligent is successful, the days of linking an operating system to a particular chip will be over, and the computer industry will again have to adjust to a new way of doing business.

What's inside a universal operating system? Based on a combination of IBM's Mach 3.0 microkernel and Apple's long-term system-software project code-named Pink, Taligent's operating system is completely object-oriented. Users move through a desktop world populated by People, Places, and Things, manipulating data with tools that are less individual applications than they are extensions of the core system. On a lower level, Taligent's microkernel architecture means that a relatively small chunk of code handles most or all of the interaction with the CPU and other hardware. You can add support for something as simple as a peripheral or as complex as a networking technology just by writing a new system software module. Readers may see similarities to the Mac's system software

model of extensions and control panels, but a microkernel architecture is far better-organized, faster, stabler, and, drumroll please, portable.

Developers create programs by adding on to frameworks—software objects that handle basic application services. A graphics framework, for example, would include a generic interface, plus rudimentary drawing and painting tools. A 3-D modeling company could take the graphics framework and add modeling and display algorithms. The theory is that developers, freed from generating the huge amounts of interface code demanded by today's event-driven software, will be

EVIN IRBY

able to concentrate on innovating and improving core technologies. Completed applications will plug into Taligent's Application Framework, which will be entering beta testing as you read this and is expected to be available in the first half of 1995. This first release will run alongside several existing industrialstrength operating systems, including OS/2, AIX (IBM's Unix), HP-UX (Hewlett-Packard's Unix), and eventually PowerOpen (which is based on AIX and will replace Apple's A/UX). Desktop computers will have to wait, though, as Taligent places heavy requirements on an OS, including full 32-bit compatibility, preemptive multitasking, and protected memory. Even for the hardware heavy-hitters, the complete Taligent system architecture won't appear until later in 1995, and after that, migration down to the desktop level will be a lengthy process, because of both hardware and software requirements.

Waiting for Applications

So who's going to write software for this OS wunderkind? Porting software to a new operating system is never easy, and committing to the Taligent OS is an even greater step, as most companies will have to rewrite their applications from the ground up to make them work in Taligent's new order. Taligent, on the other hand, contends that its system software, frameworks, and object-oriented approach will cut development time enough to make the transition worthwhile.

Nevertheless, vendors will be reluctant to adopt Taligent until it's clear that a reasonably large market exists for its products. On HP and IBM Unix machines and on Macintoshes, the Application Framework will act as a stepping-stone to the full Taligent operating system, but at this time no such stepping-stone exists for Intel-based platforms. However tempting it may be to contemplate the drama of an operating system showdown, Taligent officially denies any intent of being a Microsoft killer, and the realities of the market predict a Windows-compatible Application Framework at some point. Otherwise, Windows devotees moving to Taligent would have to make the kind of complete and sudden transition that end users hate. Furthermore, Microsoft would have little incentive to port versions of its own business applications.

One thing that will smooth the road to Taligent is OpenDoc, Apple's crossplatform vision for component software. OpenDoc will get developers used to writing reusable and self-sufficient software objects, while it gets users adjusted to a more doc-

ument-centered, task-oriented work environment. Also, because Taligent is a founding member of CILabs, the independent company that's monitoring OpenDoc compatibility, Open-Doc developers can be reasonably certain that this path to Taligent won't drop out from under their feet.

Will Taligent succeed? The Apple-IBM partnership appears to be batting one-forone with the success of PowerPC, and as bizarre as it sounds, the future of the relationship looks good. The recent addition of Hewlett-Packard as an investor in the company also augurs well for Taligent's prospects, especially since one of the keys to Taligent's success will be its adoption by large corporate buyers for use on their enterprise systems.

What does Taligent mean to current Mac owners if it does succeed? Probably not much for about two years. Apple's current thinking is to (1) ship Taligent's Application Framework on top of PowerOpen in 1995, (2) ship a full system with Taligent running native on Apple hardware with initial sales to enterprise clients, and (3) evolve the Mac OS to the point where it can handle the Taligent Application Framework-currently expected to be sometime in 1996, with the project currently code-named Gershwin (see "Apple Tells Its Software Future" in News, Macworld, June 1994), although a tricked-out Chicago (Microsoft's next-generation Windows OS) could force Apple's hand. The tip sheet says don't look for People, Places, or Things on your desktop anytime soon. But in the long run, for both Apple and end users alike, Taligent's vision of an object-oriented, cross-platform OS might be too tempting to pass up.

-CAMERON CROTTY



Epson's Color Stylus ink-jet printer uses special paper to achieve true 720-dpi resolution.

Hi-Res Color Ink-Jet

EPSON JOINS THE FRAY

hile Hewlett-Packard and Apple have been going after color ink-jet SOHO customers hammer and tongs (see "Battle over Color Printers," News, May 1994), Epson America hasn't been sitting still. In fact, the company has just announced its entry into the market: the Color Stylus, a color ink-jet printer that can print at 720dpi true resolution. Of course, in order to achieve this resolution, you need special paper, which Epson sells for \$24 for 200 sheets, more than ten continues

In Brief

SuperMac Adds II Spigot

Spigot II Tape is the latest in SuperMac's VideoSpigot digital-video hardware line. The full-size NuBus card encompasses the functions of the original VideoSpigot and adds a composite-video-out port, support for recording to tape, and additional minor improvements. Spigot II Tape ships with SuperMac's Screen-Play II software and lists for \$999. 408/541-6100, 800/334-3005.

CoSA Revives Hitchcock

CoSA, a division of Aldus, recently began shipping the resurrected Hitchcock, an application for professional nonlinear video editing. Hitchcock supports 60-fields-per-second video at 640-by-480-pixel resolution using JPEG compression. It also includes stereo audio, produces edit-decision lists, and exports files as Quick-Time movies. It is designed to work with the most common Macintosh JPEG video-digitizing boards. 206/343-4208.

Catalog for People with Disabilities

Apple's new mail-order service, called Aisle 17, offers assistive technology products to adults and children with disabilities. Among the products will be Macintoshes bundled with various devices, such as the Co:Writer writing assistant. Aisle 17 is open 24 hours a day, seven days a week, but is available only in the United States for now. 800/600-7808, for TTY devices 800/755-0601.

Lotus Drops the Mac

After a long history of futility in developing for the Macintosh (Jazz, for example), Lotus has announced it will do no new development for the Mac Operating System, with the exception of communications products including Notes and cc:Mail. 617/577-8500, 800/343-5414.

times the cost of ordinary printer bond. Users can proof their images at 360 dpi and use the 720-dpi resolution for final output.

Using Epson's proprietary piezoelectric ink-iet technology, the Color Stylus in standard mode prints at 360 dpi on any kind of paper. The base model is a serial QuickDraw printer, and although Epson sells a LocalTalk upgrade card, the company currently has no plans for an Ethernet upgrade. Similarly, Epson expects to update the driver and add a ColorSync model when QuickDraw GX appears but has no plans for PostScript emulation.

Print times for the Macintosh model were not available at press time, as the driver software was incomplete, but Epson claims that at 360 dpi, the Windows configuration of the Color Stylus is twice as fast as comparable printers, and slightly faster even at 720 dpi. Whether or not this speed makes it to the Mac remains to be seen. The printer uses two ink cartridges: one containing black ink and the other containing the cyan, magenta, and

yellow inks. You'll be able to replace the black ink cartridge separately when it runs out-replacement costs were not available at press time. The Color Stylus handles up to legal-size paper and ink-jet transparencies, although you can print only at 360 dpi on transparencies. The Color Stylus is expected to ship this fall for \$549

(street price). Epson America, 310/782-0770, 800/922-8911. -CAMERON CROTTY

Stackable Storage

MODULAR DRIVES AT NO PREMIUM

a Cie has designed the Joule Modular Storage System, a series of stackable storage modules including hard drives, tape drives, Sy-Quest removable-cartridge drives, and optical drives. Up



La Cie offers many types of drives in different capacities for its Joule Modular Storage System.

to seven of the SCSI devices can be stacked, mixed, and matched. La Cie will offer Joule drives in different sizes -full-height, half-height, and 21/2 inch-each with the hardware to fit it into the Joule system, and for about the same price as an ordinary storage device of the same capacity.

Each Joule system starts with a base unit that includes

one storage device; a 100-watt universal power supply; and a top cap, which covers the connectors in the top drive of the stack and includes the single SCSI cable that connects to the Macintosh. Another feature of the Joule system is portability: any drive except the base can be plugged into or pulled out of the stack (by sliding it in or out) without breaking the

SCSI chain, although the system must be turned off.

A typical base unit with a 340MB hard drive lists for \$389. Hard drive module prices start at \$259 for a 170MB version and top out at \$2339 for a 2GB device. Other available base units are a \$539, 105MB SyQuest drive and a \$689, 270MB SyQuest drive; both SyQuests are also available as modules. Other modules include 5GB and 8GB DAT drives, 155MB and 600MB tape drives, and optical drives in either 128MB or 230MB versions-all modules and base units are currently shipping. La Cie, 503/520-9000, 800/999-0143.-T.M.

MultiSync 2V

LOW-COST COLOR

esigned mainly for the home- and small-office markets, NEC's MultiSync 2V is a 14-inch color monitor that shows up to 1024 pixels by 768 pixels and has an estimated selling price of \$355. The display has a 0.28mm dot pitch, and its automatic digital controls adjust the size of the active viewing area and its centering.

The MultiSync 2V complies with the EPA's Energy Star power-saving guidelines and with the MPR II guidelines for emission of electromagnetic fields. Slated to ship on June 13, the 2V will come with a three-year warranty. NEC, 708/860-9500.-T.M.



The 14-inch NEC MultiSync 2V display should sell on the street for about \$355.

Big Arrays

MICRONET EXPANDS RAVEN LINE

or those who desire to frolic in a firehose of data, MicroNet has announced several high-speed, high-capacity drive options. The top of that company's Raven line now includes a 17.3GB dual-drive, SCSI-2 Fast, RAID Level 0 array that comes in two flavors: one for the Quadra 900 and 950 and Power Macintosh 8100, and one for the Quadra 650, 800, and 840AV. The difference between the two pack-

BUGS & TURKEYS

Apple changed the EtherTalk protocol for its LaserWriter Pro 630 and IIg. As a result, equipping one of these printers with a Farallon EtherWave transceiver slows print jobs to a crawl. Users hit by this slowdown can either use a non-EtherWave transceiver on their 10BaseT chain leading to the 630 or IIg, or contact Farallon for a free hardware device that, when placed between the printer and transceiver, fixes the problem.

The MacPro Plus keyboard from Key Tronic won't work if you've got a trackball connected to it. The problem shows up as soon as you restart your Mac. Key Tronic hopes to have a fix available soon.

The LC 575's new Energy Saver control panel is supposed to allow users to specify a period of inactivity after which their monitor shuts off. However, restarting the Mac returns the control panel to its default setting of 60 minutes before shutdown. Apple said it hopes to fix the problem soon.

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.

ages is that the former connects to the builtin SCSI ports of the Quadra 900 and 950 and Power Mac 8100, while the latter ships with the company's NuPort III card, which plugs into a NuBus slot and provides an extra SCSI The Raven 17.3GB array uses two 5.25-inch, 9GB Seagate drive mechanisms (see "Big Drives," News, in this issue),

and features an average access time of 6.3ms. When connected to a Quadra 900 or 950 or a Power Mac 8100, the new Raven can sustain a datatransfer rate of 7.2 MBps, but it tops out at 6.8 MBps when connected to a Quadra 650, 800, or 840AV. The array alone will retail for \$15,980; with the NuPort III card, the price jumps to \$16,280. In related news, Storage Dimensions has also announced a 17GB array based on the new Seagate mechanisms that is expected to ship in June. Its price was not set at press time.

The Raven Shuttle places two removable 3.5-inch Seagate hard drive mechanisms in a SCSI-2 Fast array, combining speed and transportability. Users can get up to 4GB with an average access time of 6.3ms and a sustained datatransfer rate of 8 MBps. Prices



The MicroNet Raven 17.3GB array comes in two boxes, each with a 9GB Seagate drive mechanism.

will range from \$3995 to \$7595, depending on capacity.

MicroNet has also announced a Macintosh version of its RAIDbank SCSI-2 Fast disk array system for the Quadra 650, 800, 900, 950,

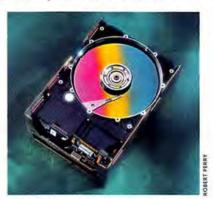
and 840AV. The new RAIDbank can now support six drives for up to 12GB of storage with an average access time of 8ms to 11ms and a sustained datatransfer rate of 7.2 MBps. The RAIDbank supports RAID Levels 0, 1, and 5, and will ship in July for \$3995 for a desktop model, \$3895 for a rackmount model, and \$4095 for a tower-case model. MicroNet, 714/

453-6000, 800/800-3475; Storage Dimensions, 408/954-0710.—CAMERON CROTTY

Big Drives

4GB AND 9GB SEAGATE MECHANISMS

eagate has announced two SCSI-2 Fast hard drive mechanisms: the 3.5-inch. half-height, 4GB Barracuda. and the 5.25-inch, 9GB Elite. The new Barracuda features a 12ms average access time and a sustained data-transfer rate of 6.5MB per second. Several companies have said they are considering the 4GB Barracuda for their external drive product, but only a few, including Procom, APS, and ClubMac, have set pricing. Procom's retail price for the MD4303 is \$6249, and APS's price is \$3799; ClubMac will



The Elite from Seagate is a 51/4-inch SCSI-2 Fast hard drive with 9GB capacity.

sell its external drive for \$3599. Drives based on the Barracuda 4GB mechanism will be available in quantity in July or August.

The 9GB Elite will be available in June, and more companies have committed to selling the drive, at prices ranging from \$5000 to \$8000. Look for drives from Procom, APS, Storage Dimensions, MicroNet, FWB, Focus, and ClubMac, among others. Micropolis is racing Seagate to market with its own 9GB mechanism that has an average access time of 12ms and a sustained data-transfer rate of 4.3 MBps to 6.5 MBps. Micropolis expects to sell internal versions for between \$5200 and \$5500; external versions will run between \$6240 and \$6600.—CAMERON CROTTY

Mac Tracks FedEx

In Brief

Got a Federal Express account number, a System 7 Mac, and a modem? Then you can use FedEx's Tracking Software to find out what your packages are doing, day or night. Once you type in a package's tracking number, you can follow your item's journey from pickup to delivery and find out when, where, and to whom it was delivered. Getting an account number is free, the software is free, and using the software is free, as Federal Express has set up an 800 number for Tracking Software calls. Federal Express, 800/238-5355, international 800/247-4747.

Encylopedia Price Cut

Compton's NewMedia has reduced the price of its Interactive Encyclopedia from \$395 to \$149.95. The company said it is "testing" the new price. Compton's NewMedia also ended its Upgrade and Switch competitive upgrade program, which allowed owners of other electronic encyclopedias to trade them in and receive the Compton's Interactive Encyclopedia for \$149. 619/929-2500.

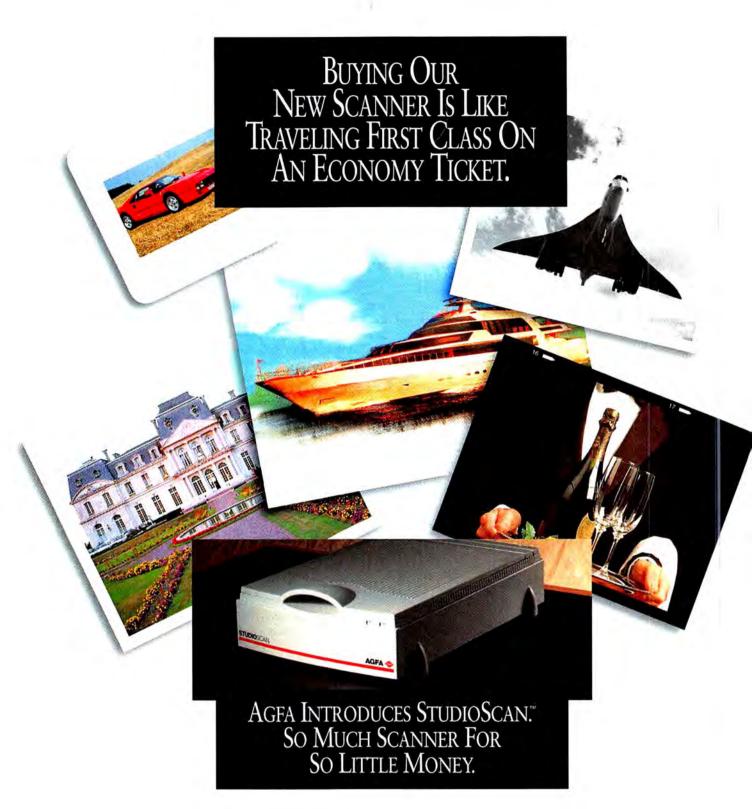
Virus Watch

Central Point and Symantec are both offering additions to their virus-protection software that detect and destroy the new INIT 29-B virus, which is capable of affecting all Macintoshes. Users of Symantec AntiVirus for Macintosh (SAM) 3.5 can upload the new virus definition into SAM Virus Clinic from the Symantec bulletin board (503/484-6699 for 2400 bps, 503/484-6669 for 9600 bps) or from CompuServe, America Online, or AppleLink. For a \$12 version on disk, call 503/334-6054 or 800/441-7234. Users of Central Point Anti-Virus for the Macintosh can get the update from the company's BBS (503/690-6650 for 2400 bps, 503/690-4777 for 9600 bps) or from the same online services or the Internet.

THE AMCOEX INDEX OF USED MAC PRICES

Machine/RAM/Hard Drive	Average Sale Price	Monthly Change
PowerBook 100/4MB/20MB	\$675	-\$25
PowerBook 140/4MB/40MB	\$950	-\$50
PowerBook 180/4MB/80MB	\$1750	-\$50
PowerBook Duo 230/4MB/80MB	\$1100	\$0
Mac Classic/2MB/40MB	\$400	-\$25
Mac SE/30/2MB/40MB	\$650	+\$50
Mac LC II/4MB/40MB	\$550	+\$50
Mac Ilsi/3MB/40MB	\$575	-\$25
Mac IIci/4MB/80MB	\$925	+\$25
Mac IIfx/4MB/80MB	\$1050	-\$50
Centris 650/8MB/230MB	\$1175	-\$25
Quadra 900/8MB/160MB	\$2275	-\$25

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



It used to be that unless you had a lot of money to spend, a scanner was simply out of the picture. But now there's Agfa StudioScan, the new feature-rich scanner that's wonderfully affordable.

StudioScan offers the speed and efficiency of one-pass scanning for both black-and-white and color images. Its flatbed design accommodates sizes up to 8.5" x 14", and an

optional transparency module scans 35mm slides up to 8" x 10".

What's more, StudioScan comes with a complete software package, including Agfa's proven labor-saving FotoLook, FotoTune LE, FotoSnap™ programs, and Adobe PhotoShop LE. Compatible with both Macintosh and PC systems, StudioScan actually guides an entry-level user through the entire scanning process.

To find out more about StudioScan's high-quality imaging for your layouts, in-house publications, illustrated reports, and more, call 1-800-685-4271 today. And discover the Agfa scanner that offers first-class features at an economy price.



Power Mac News

Did Vendors

MOST PRODUCTS SHIPPED AS PROMISED

ith the introduction of the Power Macs in March, Apple and third-party developers promised a wide array of native software options and hardware upgrades. Now that the dust has settled, were the promises hype or reality?

Upgrades Historically, in the mad dash for more, better, and faster, Macintosh owners wanting the latest upgrade often stumbled because the Apple-produced upgrades simply weren't available in sufficient quantity. Apple seems to have reversed that trend with its PowerPC upgrade cards and motherboard replacements for Centris and Quadra Macs.

An informal survey of Apple-authorized resellers across the country shows that most carry both the PDS upgrade card and the motherboard replacement (we asked about the 6100/60 upgrade). Some dealers, especially in rural areas, special-order the items as they're requested and were quoting waits of one day to two weeks.

Native software In February, 27 vendors claimed they would have native versions available within 30 days after the March 14 Power Mac introduction (see "Power Mac Software," Macworld, May 1994). But almost a third of them had still not shipped as of June 1.

Among the tardy is none other than Apple Computer, which promised that a native



version of PhotoFlash 1.1 would be available at the time of the Power Mac introduction. Other notably tardy products include Macromedia's MacroModel 1.5, Nisus Software's Writer 4.0, National Instruments' HiQ 2.1, Gryphon Software's Morph 2.5, and Dayna Communications' ProFiles 1.0.

One company delivered early: Aldus shipped Free-Hand 4.0 a month before it had promised to do so.

-SUZANNE COURTEAU AND MATTHEW HAWN

Prices Beat

6100 IS CHEAPER THAN **60MHZ PENTIUM PCS**

pple has mostly delivered on its promise to sell Macs at similar prices to equivalent Windows PCs. Despite a steep drop in the prices of Pentium-based PCs, a Macworld survey of prices shows that, on average, a Power Mac 6100/60 system costs about \$300 less than an equivalent 60MHz Pentium PC. But the Power Macintosh

8100/80 costs about \$1300 more than an equivalent 90MHz Pentium PC. The average price for a 7100/66 system runs about \$200 more than for a 66MHz Pentium PC.

The table "Prices: Power Macs versus Pentium PCs" shows our survey results. Keep in mind that prices do vary by type and location of

sales outlet. Our prices reflect what you'll find in major metropolitan areas.

To make sure we were comparing similar systems, we added the costs of missing components, such as the keyboard and monitor for the Power Macs (about \$600) and the network and sound cards for the PCs (about \$250). For the high end, we compared prices of systems equipped with double-speed CD-ROM drives, 500MB hard drives, and 16MB of system RAM.

We also compared prices of midrange systems (8MB of RAM, a 240MB hard drive, no CD-ROM drive, and no sound card).-GALEN GRUMAN

Power Watch

THE LATEST PRODUCTS FOR THE POWER MACS

rtifice offers Design-Workshop, an \$895 3-D CAD package. Upgrades from the 680X0 version cost \$49. 503/345-7421.

- Connectix's \$99 RAM Doubler 1.5 should be available by July in fat-binary format; upgrades from the 680X0 version 1.0 will be free, from online services. 415/571-5100.
- Data Description has released a fat-binary version of its \$595 Data Desk 4.2 data analyzer; upgrades from version 4.0 or 4.1 for 680X0 Macs cost \$45. SAS Institute says its \$695 IMP data analyzer will be available by September, with a \$50 upgrade price. Data Description, 607/257-1000; SAS, 919/677-8000.
- · TechWorks offers a \$295, 256K cache card for the Power Mac 6100 and 7100. 512/794-8533.

Look to the other news sections each issue for Power Mac announcements related to graphics, business, and network users.-GALEN GRUMAN

Prices: Power Macs versus Pentium PCs

	Midrange System	High-End System
Power Mac 8100/80 (dealer)	\$4400	\$5500
90MHz Pentium PC (dealer)	\$3300 (-\$1100)	\$4100 (-\$1400)
90MHz Pentium PC (mail-order)	\$3200 (-\$1200)	\$4000 (-\$1500)
Power Mac 7100/66 (dealer)	\$3300	\$4400
66MHz Pentium PC (dealer)	\$3000 (-\$300)	\$4800 (+\$400)
66MHz Pentium PC (mail-order)	\$2900 (-\$400)	\$3800 (-\$600)
Power Mac 6100/60 (dealer)	\$2500	\$3600
60MHz Pentium PC (dealer)	\$3200 (+\$700)	\$4200 (+\$600)
60MHz Pentium PC (mail-order)	\$2700 (+\$200)	\$3200 (-\$400)

Prices in parentheses show difference compared with the equivalent Power Mac. Prices are based on an informal survey; see text for system configurations.

The 1994 CD-ROM Expo: Profiting From Digital Publishing

October 5-7, 1994 - World Trade Center - Boston, MA



With The Endless Opportunities That CD-ROM Provides...

CORPORATIONS ARE SLASHING COSTS AND multiplying their profits with CD-ROM for advertising and sales presentations (from catalogs to kiosks), records management, technical product support, documentation, and training.

GOVERNMENT IS DRASTICALLY REDUCING the cost of printing, storage and distribution of databases via CD-ROM.

EDUCATORS — IN SCHOOLS, LIBRARIES, AND museums — are turning their analog assets into digital dollars.

THE PRINT-PUBLISHING INDUSTRY—
including books, magazines, and newspapers—is expanding to profitable new horizons
with CD-ROM's ability to capture and disseminate information at a fraction of historical
print costs.

ENTERTAINMENT INDUSTRIES ARE PROFITING from an expanded ability to reach untapped audiences in the consumer market, thanks to CD-ROM technology.

The CD-ROM
Expo Conference

will feature first-hand success (and horror!) stories from all these communities, including valuable lessons learned in the production and marketing/distribution of CDs.

If You Would Like to Publish a CD ...

Don't begin before you've learned how to enjoy the benefits while avoiding the pitfalls!

If You Are Publishing a CD...

Are you sure you're taking fullest advantage of the CD-ROM tools and techniques that can help you accomplish more in less time, with fewer complications, smaller margin for error, and greater opportunity for profit?

At the CD-ROM Expo Conference, You Can Learn About...

Successfully publishing and marketing a CD
• Maximizing multimedia in CD-ROM production • Coping with multiple platforms and

formats . Copyright and licensing issues . Authoring and development tools . Emerging new production techniques . Interactive application design . Networking multimedia applications . Text retrieval and development . Content asset management and exploitation . Strategies for defining markets . Industry trends and developments, including portable and wireless communications . Pricing/promotion/ advertising in new markets . Financing CD-ROM titles . New distribution channels Creating/converting data to digital form Transitioning from print and on-line to CD-ROM . Legislative initiatives . Where to find digital talent * In-house CD-ROM production and distribution vs. outside services . Using standard digital formats for different kinds of data ... and more.

If You're Interested in CD-ROM Titles For Home, School, or Business Use . . .

The exhibit floor at CD-ROM Expo will dazzle you with a fabulous array of titles, bringing a universe of information, entertainment, and education to your desktop!

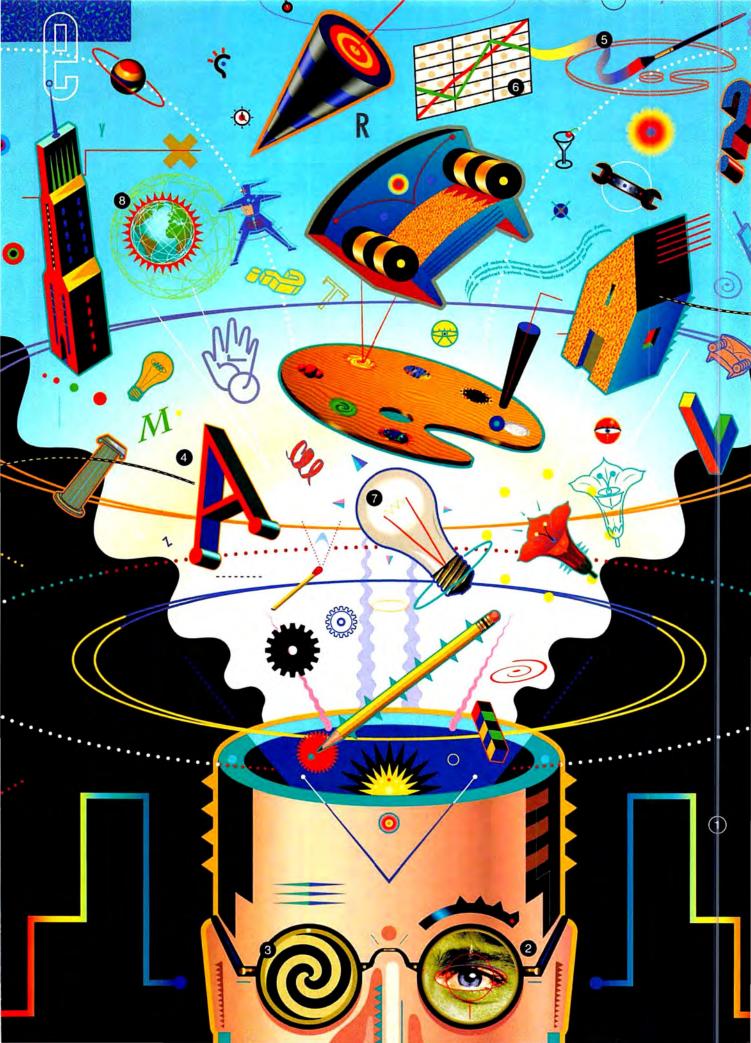
Yes, I'd like more information abo	out the 8th annual CD-ROM Expo October 5-7, 19	94, I'm interested in: exhibiting attending
NAME	TITLE	
COMPANY		
ADDRESS		
an	STATE	ZIP
TELEPHONE	FAX	

Send to: CD-ROM Expo '94, 260 Milton St., Dedham. MA 02026 or fax to: 617-361-3389

MACWORLD

THE STATE OF THE Art.





Here's what's going on in our head. Pencil sketch is scanned into Adobe Illustrator, Rainbow color effect 1 is created with Linear Gradient, Scanned eve 2 is colorized in Photoshop to simulate a sunglass effect. Grid of green & black in the other lens 3 is altered with Twirl filter. Circles are added to the bottom of the letter "A" 4, Pathfinder filter unites them. Letter is imported into Adobe Dimensions[™] which adds perspective. Brush stroke 6 is created with the Calligraphy tool and then painted with multi-color Gradient. The spreadsheet chart 6 is converted into an Acrobat PDF file and imported. Light bulb glow 7 is achieved with Shape Blending tool. Punk filter creates spikes 8 on globe. Entire ad was created and spell checked using Adobe Illustrator 5.5.

Adobe, the Adobe logo, Adobe Illustrator, Adobe Photoshop, Photoshop, PostScript, Acrobat, Distiller, Adobe Dimensions, and the tagline, "If you can dream it, you can do it" are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other marks and trademarks are the property of their respective companies. © 1994 Adobe Systems Incorporated. All rights reserved.

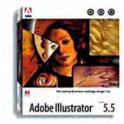
THE STATE the MIND.

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.





CALL NOW FOR YOUR
UPGRADE

TO THE NEW ADOBE
ILLUSTRATOR 5.5
FOR MACINTOSH*,
WHICH INCLUDES
ADOBE ACROBAT,
220 ADOBE TYPE I
FONTS, AND THE
ADOBE ILLUSTRATOR
DELUXE CD-ROM.





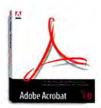
Enough creative options to put you in a STATE of RAPTURE

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. Adobe

New Products

THE LATEST MACINTOSH RELEASES

by Cameron Crotty

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY MACWORLD. UNLESS OTHERWISE STATED, 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

APS T 520

This hard drive fits in any PowerBook or Duo and provides just over 500MB of formatted storage. The APS T 520 features an average access time of 26ms and comes bundled with the company's PowerTools hard drive utility software. Dantz Development's DiskFit Direct backup software is also included. One version of the drive comes in an external enclosure with a rechargeable battery that lasts up to four hours. Internal \$899; external (Companion II enclosure) \$989; AC/DC portable with battery \$1039; configured for Laser-Writer Pro 630 \$949. APS Technologies, 816/483-6100, 800/235-2752; fax 816/483-3077



APS T 520

ATS Power House

When there just isn't enough room in your Macintosh's case for all the cool stuff you want to add, step up to an enclosure like this one. The Power House is constructed of anodized aluminum; sits on four casters; and features a 450-watt power supply, ten drive bays, an audio speaker, an extra fan, and an LED indicator panel to show SCSI and floppy drive activity. The case can accommo-

date the guts of a Quadra 900 or 950, or a Mac II, IIx, or IIfx. \$1200. ATS, 404/455-6225; fax 404/455-9803.

ClearVueColor 17 and 20T

The first of these two multiresolution color monitors is a 17-inch display that features a 0.26mm dot pitch and support for resolutions from 640 by 480 pixels to 1024 by 768 pixels at 50Hz to 100Hz. The second is a 20-inch Trinitron display that features a 0.31mm aperture pitch and supports resolutions up to 1280 by 1024 pixels at 50Hz to 160Hz. Both monitors have digital controls and can remember up to 22 different settings. The monitors are also MPR II–compliant. 17, \$1049; 20T, \$2149. RasterOps, 408/562-4200, 800/729-2656; fax 408/562-4033.



ClearVueColor 20T

CryptoCom V.32bis

When you put one of these modems on either end of the line, all that would-be eavesdroppers can hear is DES-encrypted data. The CryptoCom V.32bis is a standard 14.4-Kbps data modem that supports all the standard error-correction and data-compression protocols, including MNP Class 10 for cellular communications. Additionally, if two CryptoComs are talking to each other, they will encrypt their transmissions. \$895. Western DataCom, 216/835-1510, 800/262-3311; fax 216/835-9146.

DEClaser 5100

This 600-by-600-dpi laser printer comes with 2MB of RAM (expandable to 66MB); it features simultaneously active AppleTalk, serial, and parallel ports, with active emulation switching. The printer supports PostScript Level 2 and HP PCL 5E. Several upgrade options are available, including a 1200-dpi-resolution board; a 128MB hard drive; and interface cards for connecting to Token Ring and Ethernet networks supporting Ether-



DEClaser 5100

Talk, NetWare, LAT, or TCP/IP. \$2199; 1200-dpi upgrade (requires 10MB of printer memory) \$299; 128MB internal hard drive \$499; Multi-Protocol Ethernet Network Card \$499; Multi-Protocol Token Ring Network Card \$599. Digital Equipment Corp., 508/493-5111, 800/ 777-4343; fax 508/493-8780.

DGR Max

If your house were too small, you'd move into a larger one, so why not do the same for your Mac? This expansion chassis for Mac LC, LC II, LC III, and Performa computers provides four PDS slots, a 40-watt power supply, and an additional bay for a larger hard drive (up to a half-height 3.5-inch drive mechanism). The Multi Max includes all this but puts an internal, tray-loading, doublespeed, multisession Photo CD CD-ROM drive in the bay. The Multi Max also adds two internal amplified speakers. \$299; Multi Max \$799. DGR Technologies, 512/476-9855, 800/235-9748; fax 512/476-6399.

Duo RAM Upgrades

If you own a PowerBook Duo, you can use these RAM upgrade cards. A certified technician must install them, but once you've got that covered, you can boost your total on-board memory to up to 32MB. 4MB \$199; 8MB \$399; 14MB \$650; 20MB \$1250; 28MB \$1950. Simple Technology, 714/558-1120, 800/367-7330; fax 714/558-0997.

EasyNet

Who would have thought that you'd be buying Ethernet transceivers as cheaply as you bought LocalTalk transceivers a few years ago? The EasyNet connectors plug into any Mac or device with a built-in Ethernet port and connect to either a 10BaseT or thin Ethernet network. Each box measures 2.25 inches by 1.5 inches by 0.75 inch and weighs about 2 ounces. \$69. Dayna Communications, 801/269-7200, 800/531-0600; fax 801/269-7363.

MacWaveMaker

Plugging this 7-inch NuBus card into your Macintosh gives you a MIDI synthesizer that has stereo line-level outputs and MIDI-in and -out ports. The MacWaveMaker is a 32-voice polyphonic synthesizer with 357 instrument sounds; 48 digital echo, reverb, and chorus algorithms; and 15 different drum kits with over 400 percussion sounds. The board supports General MIDI, Roland MT-32, and Kurzweil Super-Orchestral MIDI sound tables. \$695. Morning Star Solutions, 508/692-0373; fax 508/692-6535.

Magic RAID

These dual-drive arrays come in 1GB, 1.4GB, 2GB, and 3.4GB sizes, and are populated with Quantum and Seagate mechanisms. All the arrays have average access times of 4ms and sustained data-transfer rates of 8MBps, except for the 3.4GB model, which can reach 3.7ms and 10 MBps. All the arrays support RAID levels 0, 1, 4, and 5. 1GB \$1899; 1.4GB \$2399; 2GB \$2699; 3.4GB \$4338. Mac Products, 512/472-8881; fax 512/499-0899.

NPS 530

Small enough to fit in your hand (almost), this print server connects nearly any printer with a serial port to a 10BaseT network. The NPS 530 supports NetWare, LAN Manager, LAN Server, TCP/IP, and EtherTalk. \$599; without TCP/IP \$499. Axis Communications, 508/777-7957; fax 508/777-9905.



NPS 530

NuMedia 2

To make your thunderbolts and lightning louder and more frightening, you could try this 7-inch NuBus card. The card provides 16-bit stereo sound at sample rates up to 48kHz and has stereo line-level inputs and outputs for recording and playback. Since the card depends on the AT&T 3210 DSP chip, it is compatible with the Adobe AV DSP Power plug-in for Photoshop 2.5.1, and you can use it continues

New Products

to accelerate any graphics application that accepts Photoshop plug-ins. The NuMedia 2 ships with Killer Tracks Royalty-Free Music CD and Opcode's Audio Shop 2.0. \$695. Spectral Innovations, 408/955-0366; fax 408/955-0370.

Pocket EtherTalk Adapter

You never know when you're going to have to network, but with Xircom's adapter, all you need to plug into an EtherTalk net is a SCSI port and the appropriate software. The Pocket EtherTalk Adapter features both DB-25 and HDI-30 ports, which makes it appropriate for PowerBooks or for providing a pass-through SCSI port for daisychaining other devices. The adapter draws power from the host Mac's ADB port. PET-10BT (10BaseT only) \$349; PET-10BC (10BaseT and thin Ethernet) \$399. Xircom, 818/878-7600; fax 818/878-7630.

Power Poker

A poker-playing and tutorial program, Power Poker includes 77 poker variations, and players can design their own. Built-in artificial intelligence learns your playing patterns, and the software features hand analysis, displays of historical hand strengths, and performance charts. Also, up to ten human players can play each other via LocalTalk or Ethernet. \$49.95. Electronic Arts, 415/571-7171; fax 415/570-5137.

Power RAID Storage System

Put scads of data at your fingertips with these two-drive SCSI arrays. The



Power RAID Storage System

1GB and 1.4GB arrays feature 3.5-inch Quantum drive mechanisms, while the 2GB and 3.4GB arrays use 3.5-inch Seagate mechanisms. All of these arrays have average access times of 4ms. A 7-inch NuBus, SCSI-2 Fast and Wide card is included with the arrays. To turn these devices into RAID systems, you have to purchase additional software. The PRSS Lite software supports RAID levels 0 and 1, and the PRSS Full software supports RAID levels 0, 1, 4, and 5. 1GB \$1709; 1.4GB \$2399; 2GB \$2699; 3.4GB \$4148; PRSS Lite \$190; PRSS Full \$365. DGR Technologies, 512/476-9855, 800/235-9748; fax 512/476-6399.

PowerR Presenter 575

This output adapter plugs directly into the motherboard of the Macintosh LC 575 or the corresponding Performa model. It provides D-15 (Macintosh) and HD-15 (VGA) connectors for color or monochrome LCD panels, external monitors, and projectors. A version that supports the Mac LC 520 and LC 550 and corresponding Performa models is available as well. \$129. PowerR, 206/ 547-8000, 800/729-6970; fax 206/ 285-0260.

PrecisionColor Display/21

There's something undeniably large about a 21-inch display, something that makes previously ordinary file icons seem tiny. This 21-inch multiresolution color monitor features a 0.28mm dot pitch, a maximum resolution of 1360 by 1024 pixels at 71Hz, and digital controls. Radius's Dynamic Desktop software, which allows instant resolution and bit-depth switching without restarting, is included. \$2499. Radius, 408/434-1010, 800/227-2795; fax 800/966-7360.



PrecisionColor Display/21

QuickArray

Handling RAID Level 0 data striping at the hardware level makes these SCSI-2 arrays appear as single drives to your Macintosh. The QuickArrays feature access times equivalent to 4ms and are able to achieve data-transfer rates of 10 MBps. Each array comes with PLI's QuickSCSI-F NuBus SCSI accelerator. 1GB \$3610; 2GB \$4325; 4GB \$7256. PLI, 510/657-2211, 800/288-8754; fax 510/683-9713

QuickSCSI-F

Why settle for data that crawls in through your built-in SCSI port at a measly 4MB per second when you can throw wide the gates to an information torrent? The QuickSCSI-F is a 7-inch Nu-Bus SCSI-2 card that supports data-transfer rates up to 10 MBps. Macs with the card installed can boot from drives connected to it, and the QuickSCSI-F supports disk mirroring for instant back-up. S699. PLI, 510/657-2211, 800/288-8754; fax 510/683-9713.

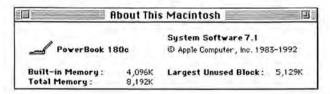
SlimWriter

At 12 inches by 8.5 inches by 1 inch, and 2.6 pounds (with battery), this 360by-360-dpi thermal printer could nearly fit into one of the side pockets of your PowerBook case. The SlimWriter prints on plain paper, thermal bond paper, envelopes, and transparencies, all up to 8 inches wide. The printer works off a standard camcorder battery, which provides 50 minutes of operation (35 to 50 pages); high-capacity batteries are also available. The unit comes with an AC adapter. The required Macintosh adapter package includes a serial cable and driver software. The manufacturer estimates that the SlimWriter can print about 1 to 1.5 pages per minute. \$399; Mac Pack \$60. Atlantic Technologies, 910/350-0700, 800/779-7705; fax 910/392-7093.

continues

Double your RAM.

Just install RAM Doubler™ software in your Mac and it doubles your RAM. It's that easy. No more hassles, just more RAM.



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.



© 1994 Connectix Corporation, RAM Doubler requires Max II (with PMMU) or better (68030 or 68040 processor) with 4 MB RAM & System 6 or 7. RAM Doubler is not compatible with Max LC, Classic, Plus, SE or PowerBook 100, RAM Doubler, CPU and MODE32 are trademarks of Connectix, All other trademarks are the property of their respective holders.

PowerMac Version Available Soon!





or 415-571-5100, fax 415-571-5195

JP.

Introducing The New SQ5200C Drive. The Biggest Reason Yet To Join Our 5.25" Family.

The SQ5200C delivers big in data-intensive applications such as desktop publishing and multimedia, with 200MB of storage, hard drive perfor-

mance, and full read/write compatibility with all SyQuest 44MB and 88MB cartridges. Plus all the advantages of removability, like unlimited capacity, off-line storage, sys-



Look for this logo when buying removable storage products.

tem sharing, fast backup, and unbeatable data security and transportability.

If you're a SyQuest user, it's the best way to migrate to the next level of storage. If you're looking to SyQuest for the first time, it's the biggest reason yet to join the world standard. To find out how to get more mileage out of your demanding applications, call 1-800-245-2278.



Sales of more than 6 million cartridges and 1 million drives have made SyQuest the world standard in removable storage.

New Products

Sound Advantage Hardware

If you want to work with sound, but your Mac doesn't have built-in sound input, this device connects to your Mac's serial port and provides a built-in microphone and two input jacks for an external microphone and a line-level source such as a CD player. The Sound Advantage Hardware also features a sliding volume control and a passthrough serial port. The device's maximum sample rate is 22kHz. The hardware ships with a software driver, which also provides voice-activated recording. Built-In Mic Options software, sold separately, works with Macs that have a built-in sound-input port, provides voice-activated recording, and controls digitization quality by tweaking the sample rate and the compression ratio. Requires System 6.0.7. \$160; Built-In Mic Options \$88. Heart Computer, 214/771-7511; no fax.



Sound Advantage Hardware

SoundMemo

Take a memo: this software can both record and play back sound files. When recording, SoundMemo automatically starts recording when dictation begins

and stops when the speaker pauses. The pauses are automatically tagged and can be used to control playback. You can choose from Good, Better, and Best sound settings, or you can fine-tune recording sessions by choosing from 8bit or 16-bit sample settings, sample rates up to 48kHz, and a range of compression ratios. SoundMemo is compatible with most current third-party soundinput boards. Requires System 7. \$79.95. Imagemakers Software Systems, 905/472-0151, 800/203-6366; fax 905/294-0040.

SuperMatch 21T XL

A 21-inch multiple-resolution color monitor, the 21T XL features a Mitsubishi aperture grille tube (0.31mm aperture pitch) and can display resolutions up to 1600 by 1200 pixels. The monitor has digital controls (including a three-way adjustable white point) and a microprocessor that remembers the settings for each viewing mode. This display complies with both the MPR II emissions guidelines and the Energy Star guidelines. \$2599. SuperMac Technology, 408/541-6100, 800/334-3005; fax 408/735-7250.

TV Elite for Macs

With this external video converter, you can put your Mac's 640-by-480pixel-resolution video on a television. The box has both composite video and S-Video outputs, as well as an RGB monitor output, so your video appears on your television and monitor simultaneously. \$399. Advanced Digital Systems,

310/926-1928, 800/888-5244; fax 310/926-0518.

Viking Duo RAM Upgrades

Having a PowerBook Duo is cool, but running out of memory is not. These RAM upgrades come in 4MB, 8MB, 12MB, and 20MB sizes and fit in any of the Duos, from the 210 to the 270c. You can also install the 20MB card and then piggyback an 8MB daughtercard on top of it to put a total of 32MB in your sleek gray road machine. 4MB \$275; 8MB \$525; 12MB \$975; 20MB \$1575; 8MB daughtercard \$800; 28MB combo \$2375. Viking Components, 714/643-7255, 800/338-2361; fax 714/643-7250.

XGT 6 X 8

Instead of scanning your paper drawings, you can skip the middle machine and sketch your ideas directly into your Mac with this graphics tablet. The XGT 6 X 8 has a 6-by-8-inch active area (1270-lpi resolution) on an 8.5-by-11inch frame. The pad plugs into the ADB port and comes with a cordless, pressure-sensitive pen (256 levels). Driver software is included. \$399. Kurta Corp., 602/276-5533, 800/445-8782; fax 602/276-9007.

SOFTWARE

BLAST Professional for Macintosh

This cross-platform telecommunications software relies on a proprietary transmission protocol to send your files up to two times faster than Xmodem. To realize that speed increase, your Mac must be talking to another machine that is also running the BLAST software; but BLAST Professional does support the more common Xmodem, Ymodem, and Zmodem protocols. The software can also perform terminal emulation (Wyse 50, VT52, VT100, VT220, and TTY), and it has a scripting language for automating tasks. \$139. BLAST, 919/542-3007, 800/242-5278; fax 919/542-0161.



Drive7 3.0

Drive7 3.0

The latest version of this drive-formatting and -partitioning software features an updated interface, plus support for SCSI-2 and Apple SCSI Manager 4.3. The software package includes an application and a control panel, both of which now display logical unit numbers and volume names. Working with SCSI Manager 4.3, the application can update, format, or initialize all connected SCSI volumes from a single command. continues



Circle 8 on reader service card



WHAT'S DUEER WITH THIS SENTENCE?

READ IT AGAIN. NOW ONCE MORE, SEE IT YET? OUR EYES CAN BE DUPED. BUT IF THIS WAS ONE OF OUR MONITORS, THERE'D BE NO TRICKERY. THEY HAVE A VERTICAL REFRESH RATE OF 75 HZ. WHICH IN HUMAN SPEAK, MEANS A FLICKER-FREE IMAGE. WANT MORE ENLIGHTENMENT? CALL 714-530-9984.

Circle 211 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.

ARE AUDIENCES CREATING THEIR OWN GRAPHICS FOR YOUR PRESENTATIONS?



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!

Polaroid

Circle 119 on reader service card

New Products

The control panel also now includes a caching feature that improves drive performance. \$79.95. Casa Blanca Works, 415/461-2227; fax 415/461-2249.

Fourth Power Service 2.0

This 4th Dimension-based accounting software is designed for service-oriented companies and can handle job records, estimating, and quoting: proposal production; time tracking and billing; and forms creation. Fourth Power Service can automatically create everything from invoices to purchase orders, and it comes with built-in report editors and a word processor. \$795. Honeybee Software, 514/954-0768, 800/667-1233; fax 514/875-2940



Fourth Power Service 2.0

Icontrol Human Resources

This software addresses such humanresources issues as employee tracking, including work history, reviews, and advancement/transfer requests. Icontrol HR can also track job applicants, benefits, and injuries and illnesses. The software generates required reports, including OSHA 101 and 200. 8MB min. memory; requires 68040. \$1995. Icontrol, 605/886-3848, 800/222-4266; fax 605/886-4180.

MusicTime

If you're musically inclined, this software can help your Mac be that way also. If you have a MIDI instrument, MusicTime can record your performance and create sheet music that you can edit and print out. Alternately, you can compose by hand, with up to eight staves per system and up to four voices per staff. The software can also play notes as you type, acting as if your computer keyboard were a piano keyboard. 2.5MB min. memory; requires Mac Classic. \$149. Passport Designs, 415/726-0280, 800/443-3210; fax 415/726-2254.

PortfolioMaker

If you're an artist, sending out slide portfolios to all and sundry can be an expensive proposition. But if you can scan or otherwise digitize your work, this software packs up to twenty 24-bit PICT images onto a single high-density floppy disk that you can duplicate and send out. You decide in what order to display the images, and you can optionally add text comments. The recipient can browse through the images and the text but cannot make any changes. Image size is approximately 3 by 5 inches (256 by 384 pixels). 4MB min. memory; requires System 7, color. \$129. CRIT, 410/426-7733; fax 410/426-7768.

RRKeyFonts/Mac

Trying to describe a keyboard shortcut can be an exercise in frustration (or at

least in long, hyphenated phrases). This font pack consists of RRMacCaps, depicting keys like \$\precess, option, return, and control; RRKeyLetters, showing the alphabet, numbers, and punctuation surrounded by keylike boxes; and RRWin-Symbols, depicting common Windows symbols and cursors. The package ships with both TrueType and PostScript Type 1 versions of the fonts. \$49. RoadRuner Computing, 504/346-0019; fax 504/346-8144.



Touch

Touch

An XTension for QuarkXPress that creates and manages libraries of documents, including text files, graphics, and Quark files. Entries can be sorted in import order or by their volume, folder, file name, and type. Touch items may be dragged directly from their library into a Quark document and placed—a preferences dialog controls sizing of graphics imported in this way. Touch libraries can also include items from Aldus Fetch catalogs. Requires QuarkXPress. \$179. Vision's Edge, 408/748-8411, 800/800-8476; fax 408/748-9584.

Word for Word-Macintosh 6.0

If you frequently need to translate files in a variety of different formats, you might consider the latest version of this document-conversion software. Word for Word reads and writes nearly 150 text, database, and graphics standards, including most common PC and Mac formats. If you have System 7, the software works with Apple's Easy Open extension, and you can convert documents by dragging and dropping them on the program icon. \$149. Mastersoft, 602/948-4888, 800/624-6107; fax 602/948-8261

XPreview

Preview your Quark documents without firing up the program. This software displays the document's vital statistics, including the colors, fonts, and imported graphics used, along with miniatures of each page of a file saved using the included Preview Editor Lite XTension. XPreview can have several documents open at once, and users can print out information about each document. Requires System 7. \$79. Vision's Edge, 408/748-8411, 800/800-8476; fax 408/748-9584.

CD-ROMS

CNN Time Capsule: 100
Defining Moments of the Year
From rap music to hairstyles to interest
rates, this package takes you on a tour of
1993. The disc includes 90 minutes of
continues

Introducing the \$139 investment no Mac user can afford to be without...



Blackouts, brownouts, sags... if you use computers, your bottom line is directly linked to your power line. The fact is, your data and hardware are vulnerable to problems that surge suppressors and power directors just aren't equipped to handle.

Call for your FREE 60 page PC power protection handbook!

Now there's an Uninterruptible Power Supply (UPS) to suit any budget. Back-UPS® are perfect protection for LAN servers, personal computers, phone/fax systems, POS equipment, or any other device that can go down when the power does. If lightning is a concern, Back-UPS are even backed by a \$25,000 insurance policy against surge damage to your equipment (see details).

So don't wait for the inevitable power problem to rob your business. Protect your productivity with Back-UPS, available

where quality computer products are sold.

APC Back-UPS provide instantaneous battery power during power disturbances, so your data and hardware AMERICAN POWER CONVERSION

800-800-4APC, dept. D7



\$179
Money Back
Guarantee

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.

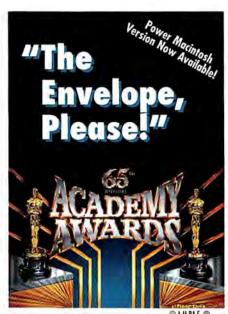
In just minutes, you can create project schedules that will enhance both your productivity *and* presentations. Plus, there's no need for cumbersome project management packages or time-consuming drawing programs.

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



"And the winner is... Kai's Power Tools" 2.0!"









C. David Piña uses KPT to create stunning graphics for television's biggest award spectaculars.

In-demand digital artisans like C. David Piña—best known for creating unforget-table titles for the Academy Awards, Emmy Awards and Miss America telecasts—know how indispensable the five-star Kai's Power Tools is to their stock and trade. "The challenge in doing a show like the Academy Awards is to create a set

of graphics that work together," Piña says. "With KPT's Gradient Designer, I created hundreds of graphics featuring letterform surfaces and beveled edges that looked as if they had all been formed from the same block of gold."

Your Complete Imaging Solution

Kai's Power Tools delivers the production tools to create imaging with flair! Watch your creativity skyrocket with 33 fantastic extensions and filters that plug into Photoshop, Painter, Pixel Paint Pro and more!

Best of all, KPT is a complete, standalone solution, because it includes Color-It!, the 32-bit paint and imaging program — a \$149 value FREE!

Whether you're a Hollywood pro or a rising star, Kai's Power Tools 2.0 will move you to higher levels of creative expression.

Ask for Kai's Power Tools 2.0 at:

Computerware 800.326.0092 COMPUSA 800.COMPUSA Computer City 800.843.2489 Egghead Software 800.344.4323 Electronic Boutique 800.800.0032

Own KPT 1.0? Upgrade Today! Call 1.800.472.9025

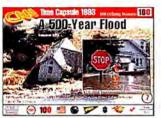
MSC Software, 1661 Lincoln Blvd. Suite 101, Santo Monica, CA 90404. Phone: 310.392-8441. Fax: 310.392.6015.

© 1994 HSC Software Corp. HSC is a registered trademark and Kai's Power Took is a trademark of HSC Software Corp. All other product names are trademarks of their respective owners.

Circle 7 on reader service card

New Products

broadcast footage from CNN, along with descriptive text and analysis. The clips are organized into such categories as sports, business, national news, and world news. You can also flag your personal favorites and file them in their own category. \$29.95. Vicarious Entertainment, 415/261-1900, 800/908-9966; fax 415/299-8126.



CNN Time Capsule

Visual Symbols

Clip art can appear cartoonish, but this collection of images is closer to real life. The discs in this series contain pictures of items photographed against white backgrounds. The seven titles are Everyday Objects 1, 2, and 3; Just Tools; Just Hands; Just Documents; and Metaphorically Speaking. All discs are in Photo CD format and contain both screen- and print-resolution files of each image. Each disc contains over 100 images. \$129. CMCD, 415/703-9900; fax 415/703-0711.

ACCESSORIES

PowerPlate QT1

When you're snapping photos, you don't want to run out of power. This battery power system attaches to the bottom of Apple's QuickTake 100 digital camera and wraps up and around the side to plug into the QuickTake's power port. You can recharge the PowerPlate with an AC adapter in about five hours (even while you are taking pictures), and the unit carries three times the power of the QuickTake's internal batteries, providing enough juice for roughly 600 photos. \$129. Technōggin, 513/321-1777, 800/305-7936; fax 513/321-2348.

RollerMouse

This ADB trackball has a 5-inch-square footprint and four programmable buttons. The RollerMouse ships with driver software, but you control the resolution and button functions with a bank of DIP switches on the bottom of the unit. The buttons can be set to send common key combinations, such as \$₹-O, \$₹-N, and \$₹-Z. \$119.95. CH Products, 619/598-2518, 800/624-5804; fax 619/598-254.

SCSI Sentry

Keeping long SCSI chains operating can require an advanced degree in magic. This device plugs into your SCSI chain and actively controls the voltage and impedance on the chain. The idea is that the less noisy your SCSI lines are, the more likely your signal is to make it through unscrambled. The product requires an AC adapter (included). \$99. APS Technologies, 816/483-6100, 800/235-2752: fax 816/483-3077.

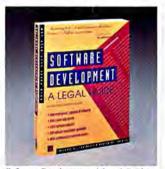
SyGuard

You may not think that your SyQuest drive exists in a high-contamination environment, but when was the last time you dusted your workstation? This plastic guard fits over the face of any 5.25-inch-format SyQuest drive while a cartridge is inserted. The SyGuard's rubber gasket seals out dust, debris, smoke, and other particulate matter that can contaminate your catridge or drive mechanism. \$8.99. APS Technologies, 816/483-6100, 800/235-2752; fax 816/483-3077.

BOOKS

Software Development: A Legal Guide

Written in plain English, this handbook for software developers covers everything from employment agreements to intellectual property rights. Author Stephen Fishman writes about when to use copyrights and trademarks; how to draft employment, nondisclosure, and consultant agreements; how to obtain permission to use materials in multimedia projects; and how to avoid copyright infringement. An included disk contains contracts, agreements, and sample letters covered in the book. 300 pages. \$44.95. Nolo Press, 510/549-1976, 800/992-6656; fax 510/548-5902.



Software Development: A Legal Guide

Zap!

Subtitled "How your computer can hurt you-and what you can do about it," this book covers computer-related health issues, including eyestrain, carpal tunnel syndrome, and back problems. Zapl discusses these health hazards and analyzes the solutions available to users. Author Don Sellers makes suggestions on how to avoid or correct problems and provides a resource list of furniture manufacturers, software developers, accessory sources, newsletters, books, government agencies, and online resources, 150 pages, \$12,95, Peachpit Press, 510/548-4393, 800/283-9444; fax 510/548-5991. m

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



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 N	ame		
Home Addre	200		Apt/Suite #
City			
State Check one:	ZIP 1.4MB Disk 800K Disk	Phone ()	23MW894

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintush are rejectered trademarks of Apple Computer, Inc.
eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted to the name of Apple Computer, Inc.
Offer does not include to the charges. Offer apples 10/31/94. To rether eWorld Joya II need the free eWorld in Jupaner, as Apple Macantash
computer with news influeur events of 10 or later and a flead 4 members of BML. a behind the set all 1 flues in computing the offer in the superior of 10 or later and at flues and the International Computer with a superior and the International Computer of 10 or 1

It's easy.
It's exciting.
It's economical.
It's eventful.
It's e•World.

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 N	ame				
Home Addre	255			Apt./Suite	#
City					
State	ZIP	Phone	()		
Check one:	☐ 1.4MB Disk ☐ 800K Disk	e.Wo	nd [™]	2	3MW894

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logs, and Machinoth are resistered Feademarks of Apple Computer, Inc.
«World and the eVerid logs are trademarks of Apple Computer, his. The eVerid logs is copyrighted in the same of Apple Computer, Inc.
Offer above not sociated on Line charges. Offer supera 10/31/94. To enter eVerid you'll need the free eVerid subsurar, an Apple Macination
computer with system suftware revision 7.0 or later and at least 4 megatyling of EMA, a phase law, and a Higgs-computable modern.



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 11370 BRIDGETON, MO

POSTAGE WILL BE PAID BY ADDRESSEE

eWorld Starter Kit Apple Computer, Inc. PO Box 4493 Bridgeton MO 63044-9718





NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

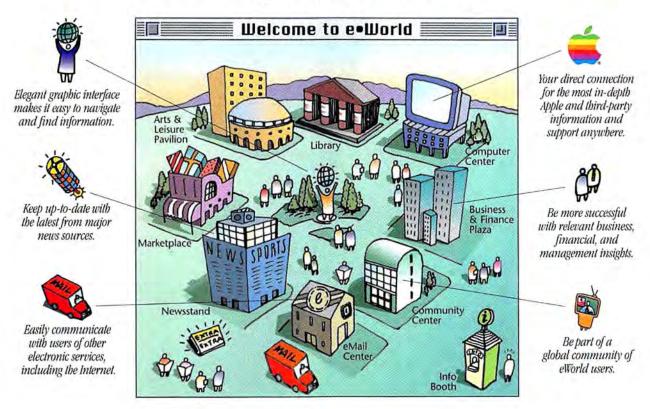
FIRST-CLASS MAIL PERMIT NO. 11370 BRIDGETON, MO

POSTAGE WILL BE PAID BY ADDRESSEE

eWorld Starter Kit Apple Computer, Inc. PO Box 4493 Bridgeton MO 63044-9718



Introducing the on-line service for people who have never tried one. And for people who have.



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.

Company Name 23MW894 Check one: 14MB Disk 800K Disk Just return this coupon to: eWorld Starter Kit Apple Computer, Inc.

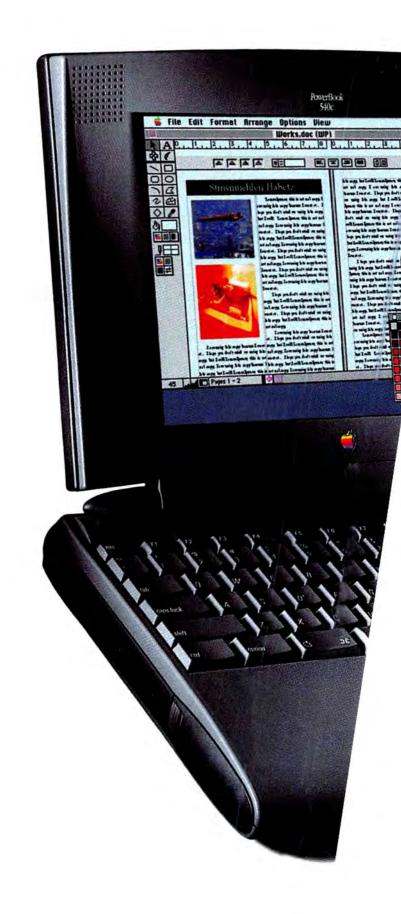
P.O. Box 4493 Bridgeton, MO 63044-9718



The right place. The right time.

e.World

The PowerBook 500 Series. In brief.







The PowerBook 500 Series. In depth.

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.

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

ous PowerBook models.

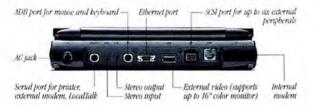


The revolutionary new Apple trackpad makes point ing and clicking even more intuitive than before.

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*).

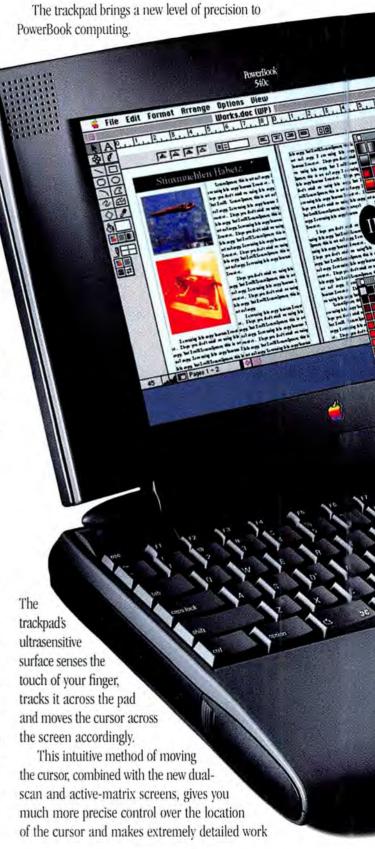


This makes the PowerBook 500 series powerful enough not only for word-processing long documents or Fortune 500-sized spreadsheets, but also for doing fieldwork with programs like Adobe Photoshop and other high-end, graphics-intensive programs.

Add SoftWindows* 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.)

More precision. Kindly direct your attention to the revolutionary new Apple trackpad pointing device that replaces the trackball and is centered on the comfortable palm rest.



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* These are the first PowerBook computers to use PCMCIA technology. 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 modemequipped 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 modern 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.

	PowerBook 520	PowerBook 520c	PowerBook 540	PowerBook 540c
Processor	Motorola 68LCO	40 @50/25 MHz	Motorola 68LC04	0 @66/33 MHz
Display	FSTN Gray-Scale	Dual-Scan Color	Active-Matrix Gray-Scale	Active-Matrix Color
Hard Drive	160MB	160MB	240MB	320MB
Memory		AMB DRAM exp	andable to 36MB	
Battery Life	Up to 7 hours with 2 hatteries Up to 6 hours with 2 hatteries			
Audio	16-bit steri	o in and out, built-in a	tereo speakers and mono mi	cropbone

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."



Introducing the PowerBook 500 Series. *The next generation of PowerBook.*

KHUHIK

Power Macintosh 7100/66

Macintosh Computer

PROS: Three expansion slots; fast

CPU. CONS: Awkward video implementation.

COMPANY: Apple Computer (408/996-

1010). COMPANY'S SUGGESTED PRICE:

Base model \$2899.

 $MW \star \star \star \star \star$



QUADRA, MOVE OVER. THE Power Mac 7100/66 is poised to be the next standard business Macintosh desktop model. The Cen-

tris and Quadra 650 have become the business Macs of choice because they combine power and expandability-and the Power Mac 7100, which looks like a Quadra 650, should assume the same role. Based on my experiences with early native-PowerPC software, I expect the ultimate performance of the 66MHz 7100—with all native programs—to be about two to three times that of a Quadra 650 (see "Native Power Mac Software Performance").

Ever-Changing Performance

The Power Mac 7100, running 680X0 programs in emulation, is about as fast as a IIfx, according to Macworld Lab tests. Our standard tests use programs that were available only in 680X0 versions at test time. Aldus FreeHand and PageMaker and Specular International Infini-D later shipped in native mode; QuarkXPress is expected by July. The three other programs in our test suite are on the slow track to native versions: Microsoft Excel and Word (slated for August releases) and Claris FileMaker Pro (no firm date).

As the applications you use begin to ship in native versions, you'll see some of the promised two-to-four-times-a-Quadra-650 speeds. Till then, the chief



advantage of a Power Mac is bragging rights. Still, the reasons to delay buying a Power Mac are beginning to evaporate.

Weird Video

The Power Macs are the first Apple computers with two video ports built in. One, on the back panel, uses an AV-style connector and the system RAM to carry the video signal (like the IIci). The other is on the bundled PDS-based video card (on an AV Power Mac, there's an AV card in the PDS slot that also offers a video port). The PDS video card uses a standard Mac video connector and video RAM (VRAM) to carry the video signal.

Is there an advantage to using one video port over the other? Sometimes. The performance of the back-panel video connector and the PDS card are about the same—about equal to a Quadra 700's internal video, but the PDS card's video

supports larger monitors at higher resolutions: up to 16-bit on a 19-inch monitor and up to 24-bit on a 16-inch monitor, if you have 2MB of VRAM on the card. (For PDS cards with 1MB of VRAM, or for AV cards with the TVvideo ports in use, the Power Mac 7100 supports 8-bit color on a 19-inch monitor, 16-bit color on a 16-inch monitor, and 24-bit color on a 14-inch monitor.) The back-panel video is limited to 8-bit color on 16-inch monitors and 16-bit color on 14-inch monitors.

The speed of the Power Mac's video, while less than that of a Centris or Quadra 650, is fine for most users. Apple has clearly decided that fast video should be an integral part of a system and not an add-on. If you need very fast video, you'll want to get a NuBus-based video accelerator anyhow. (And then you can connect three monitors to your Power Mac!)

It's convenient to have two monitor connectors, but Apple's implementation is strange. Most people don't have AV monitors, so they must plug their monitors into the PDS card or buy an adapter cable to use the back-panel port. And for the AV cards, why not use an AV video connector instead of the standard video connector? (From an engineering standpoint, it was easier to put the AV connector in the back; the motherboard there includes circuits for ADB and sound, whose control chips are nearby.)

Apple also says the Power Macs support VGA and Super VGA multimode monitors-the PC standards-via the PDS card video. That's true only with the right video adapter. Note that a Mac-to-VGA adapter for a Centris or Quadra may not work as you'd expect on a Power Mac. The Power Macs now support multiresolution displays (including Apple's latest models), so you can change the pixel resolution from, say, 832 by 624 to 1024 by 768 to view a large imagewithout restarting. VGA monitors have done that for years, although a restart is required. But the Power Mac won't know that a VGA monitor is multiresolution unless the adapter tells the Power Mac so. Ask your monitor maker for a new adapter; companies like NEC Technologies offer them for free (312/622-7427).

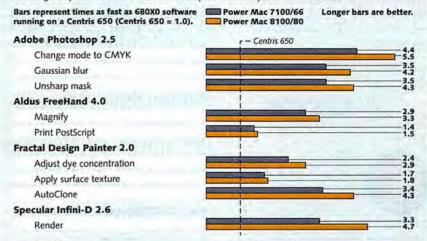
Both of my video concerns are minor issues-neither affects the vast majority of users, and neither lacks a solution for the users who are affected.

With Apple's new strategy of developing Mac platforms that several models can be based on-the Centris 650, Quadra 650, Quadra 800, and Quadra 840AV all have the same basic motherboard design, while the IIvx, Centris 650, Quadra 650, and Power Mac 7100 all have the same case-it's not surprising that the 7100 looks like its 040-based



Native Power Mac Software Performance

For these tests we used shipping versions of the Power Mac 7100/66 and 8100/80 (each with a total cache of 512K) and shipping versions of native Power Mac software. For each program, we tested several typical tasks. The results are strong examples of native Power Mac software's speed versus the speed of 680X0 software.



counterparts. There's not much to say about its hardware-the 7100 has the standard devices and ports.

Apple did make built-in Ethernet connectors (for which you need a transceiver) standard for all Power Macs, and 8MB of RAM is now a standard on-board configuration. You'll probably need that RAM, since early indications are that Power Mac software uses more RAM than 680X0 software. Power Mac software also typically takes more disk space, so make sure you get a big hard driveconsider 250MB a minimum, with 500MB a more realistic amount.

The 7100 has one option you should strongly consider adding: a cache card. This boosts performance by about 15 percent for standard programs and by as much as 45 percent for programs that use a lot of floating-point math, such as modeling and scientific-analysis software.

The use of the PDS for the video or AV card also means this slot cannot be used for expansion devices, except for third-party video cards (which no one has yet indicated interest in developing).

A Great Mac

The Power Mac 7100/66 is the Mac I'd like to have-once the native software I use is available, of course. If you have the money-figure \$4000 for a model with a 500MB drive, 256K cache card, 16MB of RAM, keyboard, and monitor, but no CD-ROM drive-the 7100 makes an outstanding workstation whose power should last you for several years, even with the inevitably faster Macs based on faster PowerPC 601 and PowerPC 604 CPUs that are likely to ship next year. A \$4000 price is nothing to take lightly, but the Power Mac 7100 delivers every dollar's worth.-GALEN GRUMAN

Power Macintosh 7100/66: How Fast Is It? BUSINESS-SYSTEM PERFORMANCE TIMES CORE-PERFORMANCE INDEX Times as fast as a Classic (Classic = 1.0). Times are in seconds. Shorter bars are better Use these standard ratings of overall perfor-Use these results to compare the performance of systems for different types of real-world mance, based on a core test suite, to compare tasks within each class. For each type of system, results can be compared with other Macworld systems across classes. **Business-System Performance Times** Video Display Processor Common Scientific **Drive Access** Floating Point Several tasks in Adobe File opens in Adobe Horizontal and vertical Scientific recalculations Typical business tasks We added to the Best result in test. in Microsoft Excel and common tasks several Photoshop, Aldus Photoshop and diskscrolling in Microsoft (which use floating-Products are listed in increasing order of overall performance. scientific calculations FreeHand, Claris Filebased sorts in Claris Excel and Word, and point math) in Micro-Word that use the Mac's processor, (which use floating-Maker Pro, and Micro-FileMaker Pro. QuarkXPress. soft Excel. drives, and video point math). soft Excel and Word. display Power Mac 7100/66" " 335 Power Mac 7100/66" 104 348 383 Power Mac 6100/60** 80 380 116 Quadra 840AV 118 Centris 650

Power Macintosh 8100/80

Macintosh Computer

PROS: Fast 80MHz CPU; tower case with three expansion slots and room for two 1GB hard drives. CONS: Expensive compared with other Power Macs. COMPANY: Apple Computer (408/996-1010), COMPANY'S SUGGESTED

PRICE: \$4249.

 $MW \star \star \star \star$



RUNNING AT 80MHZ, twice the clock speed of machines using Apple's 68040 CPUs, the Power Mac 8100 is ideal for pub-

lishers and designers who must squeeze every drop of performance from their computers. But of course there's a hitch: to get that speed, you need applications written in code native to the PowerPC chip.

The 8100 runs 680X0 applications at the speed you might expect from a Quadra 610, according to Macworld Lab tests. So if you now use a fast Quadra, you might want to wait until the software you need is in a stable native version (see "Native Power Mac Software Performance" in the Power Mac 7100 review).

Recognizing that LocalTalk is too slow for professional users and that many Macs must coexist with DOS machines, Apple has made Ethernet standard on all Power Macs and has bundled Macintosh PC Exchange with the Power Mac version of System 7.

Like all Power Macs, the 8100 can support two monitors simultaneously. The first option, an AV-style monitor port on the Power Mac's back panel, uses DRAM to give you 8-bit color on 16-inch monitors and 16-bit color on 14-inch displays. The second option is a PDS-based video card that uses VRAM installed directly on the card. The 8100 offers 2MB of VRAM in standard configurations, and it supports 16-bit color on 21-inch displays and 24-bit on 14-inch and 16-inch displays. If you upgrade the VRAM to 4MB (about \$200), you'll get 24-bit color on monitors with up to 21-inch displays.

The 8100 also supports multiresolution displays, but only if they identify themselves to the Power Mac as multiresolution models. You may need a video cable adapter for a third-party monitor.

The 8100/80AV

The AV option lets users add video input and output. The AV card replaces the



standard video card in the 8100's PDS slot and adds three ports: one for a second monitor and two for S-Video.

While the 8100's speed does improve AV performance, there still isn't much new AV technology available for Power Macs. Until AV software catches up with

PowerPC technology, the AV Power Macs don't live up to Apple's promised telephony and voice-recognition features.

Expanding the 8100

Most users will add more options to the powerful base design. Users of Quick-Time or 3-D rendering applications, for example, need lots of storage space. In addition to the 31/2-inch, third-height hard drive and 31/2-inch floppy drive included with the base model, the tower case has room for another full-height 31/2inch drive (or two half-height drives) and a 51/4-inch removable-media bay for a CD-ROM player or SyQuest drive. To access the extra drives quickly, the 8100 features a dual-channel SCSI interface; the internal SCSI channel supports data transfers at up to 10 Mbps, and the external channel supports up to six other SCSI devices that don't require such highspeed transfers. The high-speed channel even supports an internal disk array.

The 8100 is fast and will only get faster as software goes native and developers take better advantage of the Power-PC chip's power. And if you want to add multimedia, the 8100 offers top-of-theline speed and expandability. But this Power Mac is expensive when compared with its DOS equivalents, or even with the Power Macintosh 7100: the more than \$1000 price difference buys you essentially an extra 20MHz of speed, a dual SCSI port, and a tower case.

While it doesn't quite offer the excellent price/performance ratio of the other two Power Macs, you should consider the 8100 if you're a high-end user moving your work over to RISC-based computing.-MATTHEW HAWN AND DANNY LEE

Power Macintosh 8100/80: How Fast Is It?

BUSINESS-SYSTEM PERFORMANCE TIMES CORE-PERFORMANCE INDEX Times as fast as a Classic (Classic = 1.0). Times are in seconds. Shorter bars are better. Use these results to compare the performance of systems for different types of real-world tasks within each class. For each type of system, results can be compared with other Macworld Use these standard ratings of overall performance, based on a core test suite, to compare **Business-System Performance Times** systems across classes Scientific Processor **Drive Access** Video Display **Floating Point** Common Typical business tasks Several tasks in Adobe Horizontal and vertical Scientific recalculations Rest result in test We added to the File opens in Adabe Products are listed in increasing in Microsoft Excel and common tasks several scrolling in Microsoft Photoshop, Aldus (which use floating-Photoshop and diskorder of overall performance. Word that use the scientific calculations FreeHand, Claris Filebased sorts in Claris Excel and Word, and point math) in Micro-(which use floating-Mac's processor. Maker Pro, and Micro-FileMaker Pro. QuarkXPress. soft Excel soft Excel and Word. drives, and video point math). display. Power Mac 8100/80* Power Mac 6100/60* 380 Quadra 840AV 118 Centris 650

Newton MessagePad 110

Personal Digital Assistant

PROS: Better handwriting recognition and more RAM than original MessagePad; improved battery life; improved case design. CONS: Handwriting software still frustrating; lack of business software. COMPANY: Apple Computer (408/996-1010). COMPANY'S SUGGESTED PRICE: \$599; ROM upgrade for original MessagePad \$99.



ET'S GET THIS STRAIGHT AT THE start: the Newton MessagePad 110 is not radically different from the original Newton MessagePad. Don't expect it to recognize all your handwritten notes all the time. Don't ditch your PowerBook in favor of a much smaller PDA just yet. The Newton MessagePad, like PDAs in general, still lacks that one killer application that will make people realize they really do need a Newton.

With the Newton MessagePad 110, Apple provides more-versatile handwriting recognition, more memory, longer battery life, more-efficient design. When software developers and the market in general catch up, Newton technology will offer a stable platform.

Andrea and a poor Apparation

Safer to Carry, Delightful to Hold

The MessagePad 110 has a sleeker design than the original MessagePad. The 110 also has a cover that protects the screen when you're not using the Newton. This is a good addition, as any product designed to go everywhere I go better have as much protection as possible. The 110 is a little longer and thinner than the first MessagePad, making it more comfortable to hold in one hand while writing with the other hand. The new stylus is rounder and heavier than the original, which makes it feel more like a pen. It has a telescope-like design that allows it to collapse so it's out of sight after you return it to its home in the upper-right-hand corner of the MessagePad.

The Recognition Factor

The most significant feature of the MessagePad 110 is its improved hand-writing recognition. No, it still isn't 100 percent accurate, but heck, I'm not even 100 percent accurate at recognizing my handwriting. The new ROM-based handwriting-recognition software now supports deferred handwriting recognition and letter-by-letter recognition.

With the original MessagePad, if you don't have handwriting recognition turned on, your notes are saved as digital ink and are destined to remain digital ink until they are deleted; you can't go back and convert the notes into ASCII text. With the 110, you simply select the digital ink you want to recognize (by holding down the pen and dragging across the text). Then, when you double-tap on the highlighted text, the MessagePad attempts to recognize your handwriting.

If you use your MessagePad to take notes during meetings, you'll appreciate deferred handwriting recognition—it can be distracting to watch the MessagePad try to recognize your handwriting as you concentrate on what you're writing.

The other major improvement to the 110's handwriting-recognition capabilities is letter-by-letter recognition. In the original MessagePad, recognition is



strictly word-based. That is, the Message-Pad attempts to recognize words by matching them to entries in your word list. While this method is fast and generally reliable, the addition of letter-byletter recognition is great for proper nouns that most likely are not in the word list. If the MessagePad 110 butchers a word, tapping on that word brings up a list of possible alternatives and offers you the option of letter-by-letter recognition. If you write legibly, letter-by-letter recognition works well. For example, the 110 recognized Macworld as MacLeod; however, when I switched to letter-by-letter recognition, the 110 got it right. Or if you know that you are about to write a series of names that aren't in the word list, you can turn on letter-by-letter recognition. Also, after you use letter-by-letter recognition to identify a word, you can add it to the word list.

If you own the original MessagePad, you can get the improved handwriting-recognition capabilities by upgrading to the new ROM (\$99). In addition to the 110, Apple sells the MessagePad 100 (\$499), which uses the same case design as the original. The 100 has the same ROM as the 110, so you get the improved handwriting-recognition features.

In addition to new ROMs, the 110 has 1MB of RAM, which is a big plus because the Newton uses its RAM for active memory as well as storage. Of the original MessagePad's 640K of RAM (the MessagePad 100 also will have only 640K), only about 140K is available as work space. The 110 offers about 520K for work space, which reduces the need to buy a RAM expansion PCMCIA card.

The MessagePad 110 also has longer battery life, thanks to four AA alkaline batteries or a rechargeable NiCad battery. During my use I never received a low-battery message.

Make the Connection

Apple has also released version 2.0 of Newton Connection Kit (\$99). This new version has filters for WordPerfect 3.0, Word 4.0 and 5.0, ACT 1.1, Dynodex, Address Book Plus, DateBook Pro, Now Up-to-Date, and others. If you can't picture yourself entering and reentering hundreds of names, addresses, phone numbers, and calendar events using the Newton's handwriting recognition, you'll appreciate the connection kit.

The MessagePad 110's beaming capabilities provide an easy way to exchange data with other MessagePads and infrared devices. And the 110's infrared transceiver now supports transmission speeds of up to 38.4 Kbps. It's true that you don't see a lot of people running around beaming stuff to Newton MessagePads nowadays. However, if Apple decides to add infrared transceivers to Macs and printers, the MessagePad's faster infrared-transmission capability will become much more relevant.

Has the Newton Come of Age?

The MessagePad 110 is the Newton that Apple should have shipped last August, so in many ways it simply brings Newton technology to where you'd expect it to be. Still, Apple deserves praise for recognizing the Newton's shortcomings and acting quickly to correct them. Using the MessagePad 110 was a pleasant experience. Now all I need is a reason to use it.—DAN MUSE

OrangePC Model 200 Series

PC Coprocessor Cards

PROS: Fast; works in most Power Macs and 680X0 Macs; can be networked; allows expansion. CONS: Expensive; not as fast as CPUs' rated speeds. COMPANY: Orange Micro (714/779-2772). COMPANY'S SUGGESTED PRICE: \$1139 to \$3237, depending on model and configuration.

MW ***



WHAT'S THE BEST WAY to run Windows from your Macintosh (assuming you are so inclined)? Today, you have several choices,

including Farallon Computing's Timbuktu Pro for controlling a PC remotely (see *Reviews*, May 1994), Apple-endorsed SoftWindows from Insignia Solutions (see the review in this issue), and Orange Micro's OrangePC cards.

The new Model 200 series revamps the Orange Micro line so that all the cards use one of the 80486 CPUs that are the backbone of business PCs today.

There are three basic cards in the OrangePC lineup: the Model 210, which comes with 4MB of RAM, a serial port, a parallel port, and standard VGA video (16-color, 640-by-480-pixel resolution); the Model 250, which comes with 8MB of RAM, a PCMCIA slot, and Super VGA video (256 colors at up to 800-by-600-pixel resolution); and the Model 290,

which is essentially a Model 250 with 16MB of RAM and a cable that adds a serial and parallel port.

The PCMCIA slot lets you insert drives, SCSI adapters, and network cards, while the serial and parallel ports enable you to connect to fax modems, input devices, and printers.

All three models work in any Mac that can take 12-inch NuBus cards: that's all Macs except the IIsi, Centris 610, Quadra 605 and 610, Centris and Quadra 660AV, and Power Mac 6100. The OrangePC software works on the Power Mac 7100 and 8100 and on 680X0 Macs.

The OrangePC software lets you share volumes (folders or disks) between the PC and the Mac. If you use Apple's Macintosh PC Exchange 2.0, you can even share a PC SCSI disk that is connected to your Mac's SCSI port, although disk access slows considerably. If you want speedy disk access to an external drive, get a PCMCIA-based drive or SCSI adapter.

With the OrangePC, you can give your Mac a faster CPU for Windows work, so it's easy to put together the performance and features you want.

But the combination of expansion and speed is expensive. OrangePCs cost from \$1139 for the lowest-end Model 210 (which uses a 33MHz 486SX) to \$3237 for the highest-end Model 290 (which uses a 100MHz IntelDX4). That's about 30 percent more than it costs to buy an equivalent Windows PC—moni-

tor, keyboard, drive, the whole works.

You might attempt to justify the cost based on the fast speed of the 486 CPUs that the OrangePC cards use. But the speed you get does not match the rated speed of the CPU. For example, an OrangePC card using a 33MHz 486SX performs more like a PC using a 25MHz 486SX, while an OrangePC card using a 66MHz 486DX2 performs more like a PC using a 33MHz 486DX. The slowdown is due to the overhead of managing the PC card.

Still, the OrangePC cards are faster than any other Windows Mac option, as shown in Macworld Lab tests. If your goal is to get a Macintosh 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 day-in, day-out use, you can.

And although the price for the processor cards is steep, it's not out of line. In fact, if you compare the total cost of a Power Macintosh 7100/66 with a 33MHz 486SX-based OrangePC Model 210 card and Windows (it's not included with the card) against that of a Power Mac 7100/66 with SoftWindows and the extra RAM and cache, it's a difference of only \$375. That's not much, considering the much better performance of the Model 210. But for faster OrangePC cards, the price difference starts to loom large, and you have to ask yourself whether you're buying too much power. -GALEN GRUMAN

MW Oran

Orange Micro Comparison

	CORE-PERFOR	RMANCE INDEX	WINDOWS-PE	RFORMANCE IN	DEX		
	Times as fast as a Classic (Classic = 1.0).		Times as fast as a 3	3MHz 486DX PC (48	36DX = 1.0).		
Best result in test.	Common	Scientific	Aldus Info Publisher 2.0	Lotus Ami Pro 3.01	Lotus 1-2-3 4.01	Microsoft Access 1.1	Overall
Products are listed in decreasing order of overall performance.	Typical tasks that use the processor, drives, and video display.	We added to the common tasks several scientific calculations.	Database queries and data sorts.	Find and replace, layout reformat, and file-format conversion.	Integer and float- ing-point calcula- tions, file opens, and scrolls.	Report genera- tion, file-format translation, and data sort.	Combination of Windows- Performance Indexes.
66MHz 486DX2 (Gateway 2000 4DX2-66 OrangePC Model 290 (100MHz IntelDX4		79.0	1.5	-	1.4	- CED	1.5
33MHz 486DX (AMI 486/33)	15.5	36.3	1.5	1.8	0.9	1.5	1.4
OrangePC Model 290 (66MHz 486DX2)		- 55.7	- 1.0	0.6	- 0.8	1.0	0.9
33MHz 486SX (Tandy 3100 Model 10) -	16.0	16.6	1.0	0.9	0.3	0.9	0.8
OrangePC Model 210 (33MHz 486SX)A	12.9	- 61451	8.0	8.0	0.2	0.6	0.6
25MHz 486SX (Tandy 3100 Model 10) —	EPAID -	12.6	0.9	0.6	0.2	0.6	0.6
Timbuktu Pro 1.1 (33MHz 486DX) ⁸ Apple DOS Compatible Card (25MHz 486	55X)C — 11.9	- SIND	0.7	0.5	0.3	0.7	0.6
SoftWindows 1.0 (Power Mac 8100/80)	8.6	- 14.4	0.5	0.7	0.2	0.6	0.5
SoftWindows 1.0 (Power Mac 7100/66 ^D)		- 13.0	- 0.3	0.5	0.3	0.3	0.3
SoftWindows 1.0 (Power Mac 7100/66)	6.5	10.0	0.3	- 0.4	-0.3	- 0.3	0.3
SoftWindows 1.0 (Power Mac 6100/60 ^D)	5.9	10.6	- 0.3	0.3	- 0.3	0.3	0.3
SoftWindows 1.0 (Power Mac 6100/60)	5.0	7.4	0.2	0.2	0.2	- 0.3	0.2
SoftPC 3.1 (Centris 650)	1.6	2.8	0.1	0.1	0.1	- 0.1	0.1

^A On a Centris 650. ^B From a Centris 610 over a LocalTalk network. ^C4-bit color, with 8MB of system RAM. ^DWith 256K cache. All systems used 8-bit color with 16MB of system RAM, unless otherwise noted.

SoftWindows 1.0

Windows Emulation

PROS: Faithful emulation of Windows 3.1. CONS: Requires significant RAM; sluggish; does not support several Windows programs.

COMPANY: Insignia Solutions (415/694-7600).

LIST PRICE: \$499.

MW ★★

NSIGNIA HAS A TOUGH CHALLENGE: to deliver Windows on a Mac completely via software. The Power Macs are here, and so is SoftWindows-with a strong endorsement by Apple. Does Soft-Windows solve the speed problem? No, although performance is now acceptable for low-end business needs. More important, is SoftWindows a long-term solution to Windows compatibility? Perhaps, but there's no guarantee that it can keep up with forthcoming releases of Windows or new Microsoft technology.

SoftWindows delivers its main promise: you can run Windows programs, on a Mac, in a Windows window. Insignia has a license from Microsoft to use the Windows 3.1 code, and sure enough, you get real Windows. But there are prices to pay for the ability to run Windows

via emulation.

One price is the performance. While SoftWindows runs at four to six times the speed of Insignia's SoftPC, that's still at the level of bottom-end Windows machines, ranging from a fast (33MHz) 80386DX (approximately equivalent to the performance of a Mac IIfx) to a slow (25MHz) 80486 (approximately equivalent to a Centris 610). SoftWindows' performance varies by application. This performance is fine for standard programs used occasionally, such as accounting packages and databases.

A second price is compatibility. Yes, SoftWindows contains real Windows code, but it runs only in Standard mode. That means it acts like it's working on an 80286-based PC (such as IBM's longdiscontinued AT). The 286 has been dead for several years, and even the 386 has been basically out of the business picture for more than a year. Now that Pentiums are starting to overtake the 486, Windows software developers are dropping support for the 286 and requiring a 386 or better CPU. By targetting users who have 386, 486, or Pentium PCs, software developers can take advantage of Windows' Enhanced mode and its better memoryhandling, multiple-program-interaction, and protected-services features.

But Enhanced-mode programs won't work under SoftWindows. System-level services like OLE 2.0 (the Windows equivalent of the forthcoming OpenDoc, or Apple's publish and subscribe) require Enhanced mode-even if you don't need to run OLE 2.0 within your SoftWindows session, you may well want to use OLE to connect a program running in SoftWindows with a program running on a real PC on the network.

Realizing this, Insignia is working on an Enhanced-mode-compatible upgrade to SoftWindows, but that won't be available until the end of the year, at which time the next version of Windows-version 4.0, code-named Chicago-should be close to shipping. People need 486 mode right now, not the end of the year. Insignia says it will be several months after 4.0's release before SoftWindows will be upgraded to support it.

A third price is cost. The \$499 list price translates to a street price of about \$350. While that's steep for an operating system (Windows 3.1, MS-DOS, and System 7 combined cost less), it's not unreasonable. But SoftWindows requires 16MB of RAM-that's another \$350 or \$400 for most Power Mac owners. (Why so much RAM? The Mac System takes about 3MB, while SoftWindows' emulation takes about 7MB. That reserves about 5MB for Windows itself and about 1MB for other Mac programs.) And for reasonable performance, you need a cache card in the Power Mac 6100 or 7100that's another \$200 from third-party cache vendors. Quickly, SoftWindows ends up costing you about \$900. For a few hundred dollars more, you can buy a PC coprocessor board from Orange Micro (714/779-2772).

SoftWindows supports NetWare, so a Mac running it can be directly connected to a PC network. SoftWindows also runs on all models of the Power Macintosh. (The Orange Micro boards require a Mac or Power Mac with a 12-inch NuBus slot.) Users who won't be performing demanding tasks can run it-at less-than-optimal performance—on a system without a cache, which drops the total cost to about \$700.

If you run Windows software occasionally, or run undemanding Windows software a lot-and the Enhanced mode support is not an issue for you-Soft-Windows is a viable solution, but no more than that. For more-demanding or longterm needs, however, a hardware solution is a better approach. As Power Macs get faster, so should SoftWindows, but nonetheless, I'm not sold on SoftWindows as a long-term solution to Windows compatibility.-GALEN GRUMAN



Power Mac Update

WordPerfect 3.0a

System Requirements 680X0 Mac: 2MB of RAM, System 6.0.7, 9MB of hard drive space. Power Mac: 4.5MB of RAM, System 7.1.2, 11MB of hard drive space. Pricing The company's suggested price is \$495; current users of WordPerfect 3.0 for Macintosh can upgrade to the Power Macintosh version for \$19.95 (basically the cost of the disks), users of WordPerfect 2.X or earlier can upgrade for \$89, and users of competing word processors can migrate to WordPerfect 3.0a for \$99. Company WordPerfect Corporation (801/222-5000).

WordPerfect Corporation has wasted no time in shipping the native Power Macintosh version of WordPerfect 3.0. WordPerfect 3.0a has been recompiled to take full advantage of the Power Macintosh features. Both the 680XO and Power Macintosh versions contain the same feature set and ship on the same set of disks. WordPerfect uses the smart installer, which automatically detects whether a user has a 680XO or Power Macintosh and installs the appropriate version.

Macworld Lab performed a variety of speed tests using a WordPerfect 508K real-world file. We tested how long it took to open the file; perform a page scroll, find and replace, and word count; and change the font in the entire document. We then averaged the results. Macworld Lab performed these tests on a Power Macintosh 7100/66 with 8MB of RAM and a 250MB hard drive, and for comparison we performed the same tests on a Centris 650 with 8MB of RAM and a 230MB hard drive.

WORDPER		PERFECT
LAR	3.0a	3.0
Power Mac 7100/66		
Native	37.75	
Emulated 680X0		100.84
Centris 650		
680X0		60.88

Average time to perform tests (in seconds).

The Centris 650 outperformed the Power Macintosh 7100/66 using the 680X0 version of WordPerfect. When running software written for 680X0 CPUs, the Power Macs performed at speeds between those of a Ilci and a Centris 650, according to our testing. Clearly, no one should buy a Power Mac to run emulated 680X0 software.—LAUREN BLACK

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 wire-

power-efficient. And it's so safe, there are no FCC or global restrictions on its use.

COOPERATIVE is trans-



parent 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

less 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 Laser-



Writer® printers.

There's no problem with signal blockage. No need to "aim."

It's totally secure. Incredibly

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.





MetaFlo'

Graphics Utility

PROS: Easy to use; versatile; creates interesting visual effects and animations. CONS: Lacks Undo in morphing mode; no automatic save of catalog images. COMPANY: The VALIS Group (415/435-5404). LIST PRICE: \$595.

MW ***

EMEMBER CREATING FUNNY faces by pressing images onto Silly Putty and tugging on it? That's basically the premise of MetaFlo', a graphics utility that yields interesting visual effects with a minimum of fuss.

MetaFlo' imparts elasticity to 2-D images, letting you push and pull collections of pixels while retaining the visual integrity of the image. For example, you can edit photographs to produce subtle changes, such as widening a smile or thinning the nose on a face. Or you can simply distort the subject matter, as you might to emulate the melting timepieces of Salvador Dalí. When you're done, MetaFlo' renders a new image. And it can save the progression of image changes as a QuickTime movie, making special-effects animation a snap.

MetaFlo' can juggle several image layers simultaneously to produce complex effects. It accepts both PICT and TIFF files. You can operate tools for scaling, rotating, skewing, distorting, and translating (moving) on the entire image or on user-defined segments. You produce localized distortions by defining a core segment and a surrounding boundary that softens the transition from distorted segments to unaffected areas. And any effect can be modified by a percentage. For example, you can reduce that newly applied smile by 20 percent or further expand a nose by 200 percent.

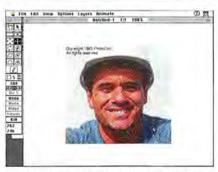
The program's accuracy and flow controls let you fine-tune the interaction of core and boundary pixels. You can adjust the coarseness of core and boundary edges by changing the number of control points in the elasticity-imparting grid used to calculate distortion effects. Higher settings offer more precision but require more calculation time. Still, after all the adjustments, the magic lies in how well MetaFlo' blends the distorted core and boundary with the rest of the image.

When applying multiple transformations, MetaFlo' keeps track of the sequence in hierarchical fashion. Handy palette buttons permit unlimited undoing and redoing of effects, letting you move forward or backward through the hierarchy. For example, you could retreat several steps, alter a distortion's percentage, and reapply the subsequent distortions to produce a different result. Transformation sequences are also stored in the program's native file format, so you can produce variations from completed images or apply the same distortions on a substitute image.

MetaFlo' keeps track of the hierarchy of transformations by letting you put snapshots of the current state of the image into a catalog. The catalog displays thumbnails in a separate window. Catalogs store the hierarchy of distortions, the order of image layers, the weight of each layer's mask, and the distortion percentage. You can jump to any stored snapshot by simply double-clicking on the thumbnail. Unfortunately, you cannot automatically add images to the catalog. If you need a snapshot after each effect, you must conscientiously take each one.

The program's layering ability lets MetaFlo' produce complex visual effects.





Distortion on Command With a bit of practice, MetaFlo' makes subtle photo-editing and large-scale image distortions as easy as click-and-drag.

You can distort layers individually and modulate other properties such as transparency. Each layer can accept a 32-bit image, and MetaFlo' has a pop-up tool palette for producing masking effects.

In addition, layering gives MetaFlo' the ability to create two kinds of morphs. The first combines two images by partially distorting each into the other. The result is a blending effect, like a facial composite. The second simply uses one

image as a template that governs the distortion of the other. Both produce interesting and useful morphs, but there's no Undo in either morphing mode. If you make a mistake setting control points, you must start over.

To create animations, you define the distortion steps as keyframes, and Meta-Flo' generates the intervening frames. You can set transition smoothness between keyframes as a percentage value, and there's no limit to the number of keyframes and tween frames you can specify. You can define the sequence from the catalog without reapplying the effects step-by-step. MetaFlo' stamps keyframes with SMPTE time-codes and offers a convenient Show KeyFrames feature that simplifies organizing an animation.

When you're finished distorting and transforming, MetaFlo' renders final images that are equal in quality to the original. Sliders let you adjust the sharpness of the image and its alpha-channel mask. Stills can be saved as PICT and TIFF files, and animations, in PICS and QuickTime formats. In prepress environments, an image's CMYK channels can be distorted as individual layers. MetaFlo' uses the values of the input image, preserving color balance.

Beyond the program's obvious uses in image processing, animation, and graphic arts lie other less conspicuous applications, such as cosmetic-surgery visualization. MetaFlo's layering capabilities and interface enhancements make it useful and versatile for professional use.

—CARLOS DOMINGO MARTINEZ

Cathled 7 1:1 100%



Blended Morphs MetaFlo' produces morphs by combining image layers. The process can be animated as a QuickTime movie.

PowerShare Collaboration Servers

Collaboration Software

PROS: Provides some useful collaborative services. **CONS:** Expensive; weak documentation; confusing and incomplete administration interface; poor troubleshooting aids.

COMPANY: Apple Computer (408/996-1010).
COMPANY'S SUGGESTED PRICE: \$999.



HE LATEST BUZZWORD IN OFFICE automation is "collaborative computing"-using computers to let people work together from physically remote sites. Proponents of collaborative computing promise to eventually deliver such tools as desktop videoconferencing, electronic whiteboards, real-time document sharing, and virtual meetings. Today, though, collaborative computing boils down to E-mail. With the PowerShare Collaboration Servers package, Apple intends to create a standardized central server environment into which third parties can plug components. The only plug-ins currently available for such a foundation are E-mail gateways; and for straightforward E-mail routing, Microsoft Mail and CE Software's QuickMail are superior. And while PowerShare includes time services, user authentication, and cataloging, the interface to these facilities is confusing and poorly designed.

PowerShare runs as a "headless" application. It has no direct user interface other than an administration tool; instead PowerShare provides server services to other Macs on a network. The package consists of three applications—Catalog Server, Mail Server, and Admin. The two server applications run automatically on start-up, consuming 2MB each, and the Admin application consumes 2MB when you're performing administration chores.

PowerShare provides four servicescataloging, electronic-mail routing, time coordination, and user authenticationin conjunction with PowerTalk software running on client Macs. The services are useful ones. Central time services keep all the clocks of client Power Talk systems in sync, ensuring that PowerShare correctly replicates centrally maintained catalogs on client machines. The Catalog Server lets you maintain a central store of information about Power Talk entities-users, groups, and network devices. PowerTalksavvy applications (such as the AppleMail component of PowerTalk) use catalogs to locate entities on the network-for example, to find a user to whom E-mail should be routed. The Mail Server manages mail queues for store-and-forward delivery of E-mail and lets you snap in third-party

external mail gateways. The catalog server also acts as an authenticator—verifying to one client that another client is an authorized user. Some PowerTalk-savvy applications, use PowerShare's authentication services to ensure that encrypted mail goes to the proper destination and to certify that a given encrypted message is from who it says it is.

In principle this is all great. And in practice, the services run as advertised—once you get them configured. But setting up and maintaining a PowerShare server is not a chore for the fainthearted. Configuration, ongoing management, and problem resolution—all things network managers must deal with daily—are odious tasks under PowerShare.

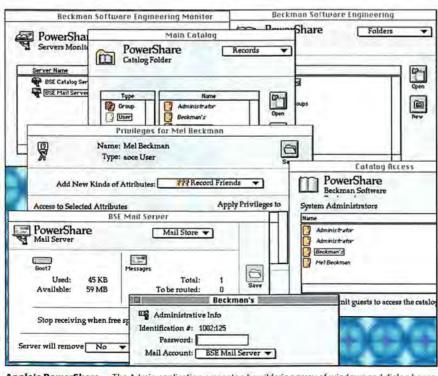
After three days dedicated to Power-Share, I could send mail from one machine to the others but not vice versa. Apple technical support couldn't help. I called ten times; six times I gave up after a minimum of 20 minutes on hold, and four times I actually spoke with Apple tech-support personnel. No one I spoke with had received any training on the product. When I asked how to get better PowerShare support, I was told I could buy a Technical Coordinator Answerline support contract for more than the cost of the software itself! If, after five years of experience as a network administrator, I have this much difficulty, I wonder how less experienced users will fare.

Making sense of Apple's sharp-looking but confusing (and unindexed) manual is anything but painless. The manual is a detailed guide for performing dozens of procedures, with no overview to make the entire process comprehensible.

Besides inadequate documentation, the Admin user interface requires dragging list entries between lists, with no visual cues about when such drags are allowed or what changes they effect. For en route E-mail, Admin shows that the messages are in an E-mail queue, but won't let you view information about the messages—such as the source or destination addresses—that is vital to diagnosing problems. The manual's terse troubleshooting section offers minimal help.

I've no doubt that collaboration computing is in the Mac's future. I also have no doubt that PowerShare, at least in its current form, isn't. Apple needs to overhaul the complex Admin application, add serious diagnostic aids, and provide comprehensive documentation before Power-Share will be ready for prime time.





Apple's PowerShare The Admin application presents a bewildering array of windows and dialog boxes. Setting up and maintaining a PowerShare Server is not a task to be taken lightly.

We've changed the way people buy Mac software and peripherals.

Not bad for a 10-year-old.

Back in 1984, an idea was born: to provide users of the revolutionary, new Macintosh with a revolutionary, new way to buy their software and peripherals.

We called our idea MacConnection.

Over the next 10 years, MacConnection pioneered every service breakthrough in the direct mail business.

And every one was a home run. Like \$3 overnight shipping for orders called in by 3:15 a.m. Money-back guarantees. And toll-free technical support, before and after the sale.

And we did it all at prices that set the standard for value.

Of course, some of these innovations were imitated by those who followed. But no one delivers MacConnection services like MacConnection. After all, each one was our brainchild.

So, next time you want the best Mac goodies at the best prices with the best service, call the most experienced 10-year-old in the business.

When you call, wish us a happy birthday!

MacConnection®

The Best Deal Going for 10 Years Running

800-800-3333

The Best Deals For

Call for a FREE catalog! 800-800-3333

We stock more than 3500 different products for your Mac. Money-back guarantee items indicated by *. If you don't see what you need here, just give us a call.

HOURS:

8 a.m. Monday continuous thru 5 p.m. Sunday ET

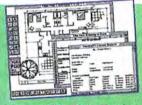


POWERBOOK/NEWTON

POWERBOOK/NEWTON	
Abacus Concepts	
7106 StatView 4.01\$439.	
* Adesso 30 day MBG	
5579 PowerBook Battery 59.95	
Apple Computer	
1332 Apple Newton MessagePad 110 599.	
ASD Software 30 day MBG	
15864 Wiz Tools for PowerBook 59.95	
* Battery Tech., Inc 30 day MBG	
7562 140-180 Batt. 59.95 10392 Charg. 64.95	
* Connectix 30 day MBG	
8441 CPU 2.0 55.	
* Global Village 30 day MBG	
7720 PowerPort/Silver 269. 7710/Gold 299.	
Lind Electronic Design	
14587 SBC-2 139.95 14841 BL4-200 179.95	
★ Sophisticated Circuits 30 day MBG	
7425 PowerPad Granite	
* Technoggin, Inc 30 day MBG	
14014 PowerPlate 3X 219.95 14015 5X 279.95	
14013 PowerPlate Mini 3 154.95	
U.S. Robotics	
11841 WorldPort 14.4 Fax	
* VST ThinPack 30 day MBG	
2634 Complete 189.95 2636 Plus 269.95	
* Zoom Telephonics 30 day MBG	
10267 FaxModem PBK144 199.95	
TOTAL TOTAL STATE OF THE STATE	
BUSINESS	
* Aldus Consumer Division 30 day MBG	
11558 TouchBase or 11557 DateBk. Pro ea. 49.	
* Attain Corporation 60 day MBG	
8465 IN CONTROL 3.0 85.	
* Best! Ware 30 day MBG	
14187 M.Y.O.B. 55. 14188 w/Payroll 109.95	
* CheckMark 60 day MBG	
5863 MultiLedger 119.95 5862 Payroll 79.95	
* Claris 30 day MBG	
3903 ClarisWorks 2.1 for Mac 193.95	
3836 FileMaker Pro 265. 14732 MWrite Pro 95.	
Creative Think	
14540 Creative Whack Pack	
* DeltaPoint 30 day MBG	
12974 DeltaGraph Pro 3 139.95.	
15010 D to C . I D . C . II	

15819 DeltaGraph Pro 3 Compet. Upg. ... 79.95

Gold Disk
12279 Astound \$249.
* Inspiration 30 day MBG
11269 Inspiration 4.0 165.95
* Intuit 30 day MBG
11845 Quicken 4.0
★ MECA 60 day MBG
2796 Managing Your Money 6.0 34.95
* Microsoft 30 day MBG
2884 Works 3.0 155.95 4902 Word 5.1 295.
3669 Excel 4.0 295. 5454 MS Office 3.0 475.
* Now Software 30 day MBG
1793 Now Up-to-Date 65. 2366 (10 pk.) 519.
14027 Now Up-to-Date & Now Contact 99.95
* Palo Alto 60 day MBG
6975 Bus. Plan 75. 4690 Mkt. Plan Tik. 75.
* ProVUE 60 day MBG
4582 Panorama 249, 11540 PowerTeam 95.
Symantec 60 day MBG
7636 ACTI (contact manager)
* WordPerfect 30 day MBG
4268 WordPerfect Mac 3.0A 299.95
4711 WP Upgrade (while supplies last) 54.95



Innovative Data Design

MacDraft 4.0 gives you full-scaled, multi-layered drafting environment with a complete set of sophisticated, yet easy-to-use drawing tools. It features keyboard editing for greater precision and integrated database.

9192 MacDraft 4.0 \$34995

GRAPHICS & DESIGN

* Abracadata, Ltd 30 day MBG
12083 Design Your Own Railroad \$39.9
Architect., Interiors or Landsc. ea. 49.9
15914 Train Engineer 28.9
Adobe
4562 Adobe Premiere 4.0 499.9
1736 Illustr. 389.95 12886 Photoshop 549.9
* Aldus/Consumer Div 30 day MBG
11548 PageMaker 579.95 10864 Upg. 145.9
15021 Persuasion 324.95 15029 Upg. 145.9
1330 FreeHand 389.95 4728 Upg. 145.9
9229 DateBook/TouchBase Pro Bun. 4.0 89.9
13711 Home Pub. or 3506 SuperPaint ea. 49.9
1306 Paint & Publish Bundle 89.9
Altsys
1195 Fontographer 258.9
Broderbund Software
13603 Print Shop Deluxe 49. 3572 Kid Pix 34
* Claris 30 day MBG
14158 Impact 145.95 2518 MacDraw Pro 269



calendars. Plan, prioritize, and

schedule simultaneously.

8465 IN CONTROL 3.0 ...

MDS Hard Drives

Add storage and performance to your Mac with a compact, reliable MDS Zero Footprint (ZFP) Hard Drive. They give you acres of data storage without taking up valuable acreage on your desk! And they're easy to install, with no jumpers or DIP switches to set. Features include a sturdy metal

case, two SCSI ports (for daisy chaining), two switched AC outlets, and a 2-year warranty. Includes a SCSI system cable and FREE Hard Disk ToolKit Personal Edition formatting software.

15814 270MB ZFP Hard Drive \$34995 15813 340MB ZFP Hard Drive....... 429.95 11863 540MB ZFP HD 599.95 15117 1.2GB (Fujitsu) ZFP 949.95 2219 1.08GB (Quantum) 999.95

ишши

MBG

MDS

* Deneba Software ... 30 day MBG 11055 artWORKS \$99. 3227 Canvas 3.5 \$259. Equillibrium 9034 de-Babelizer..... Fractal Design 10402 Painter 2.0A 265. 1564 PainterX2 94.95 * Harvard Systems Corp. ... 30 day MBG 11193 Kai's Power Tools for Photoshop 119.95 14438 Super Bundle EPS (840 images) 94.95 14457 Value Pak 1 EPS (640 images) 64.95 IMSI 8927 TurhoCAD MAC Innovative Data Design 9192 MacDraft 4.0.... * Manhattan Graphics ... 30 day MBG 4990 Ready, Set, Go! 6.0 219.95 7612 QuarkXPress 3.3. 589.95 Ray Dream ... 30 day MBG 12264 JAG II... 89. 4761 Designer 3.0 249. Synergy Software 6617 KaleidaGraph T/Maker ... 30 day MBG 3144 Incr. Images or 3147 CD-ROM ea. 89.95 3185 WalkTh. Pro 249.95 3189 Virtus VR 64.95

PROGRAMMING/UTILITIES

Patawatch ... 30 day MBG
4803 Virex 5.0 64.95 11486 SuperSet Ut. 94.95
FWB, Inc.
2999 Hard Disk ToolKit 125. 7929 Pers. 49.
Golden Triangle ... 30 day MBG
11731 TimesTwo (1.44) ... 49.95
14294 w/TouchBase or 14293 w/DateBook 59.
Infine Software ... 30 day MBG
15849 PopupFolder 34.95 1740 Redux Del. 49.95
Kont Marsh Ltd. ... 30 day MBG
9513 FolderBolt 73. 1839 NightWatch II 89.

5176 SAM 65.95 6748 NUM ...

EDUTAINMENT/GAMES

LDO IMITE IT I GAINE	
* Berkeley Systems 30 day MBG	
5737 After Dark 2.0x (30+ screens!)	. \$79.
2198 More After Dark 25. 2196 Bun	39.95
1502 Disney Collection Screen Saver	29.
3392 Star Trek Screen Saver	29.
5179 Star Trek Screen Posters	29.
5262 ST Screen Saver/Posters Bundle.	39.
Bit Jugglers, Inc.	
14676 UnderWare	29.95
Broderbund	27
13601 The Treehouse	36
* Claris Clear Choice 30 day MBG	
9322 Amazing Animation	39.95
* Davidson & Associates 30 day MBG	
MathBlaster Plus or ZooKeeper ea.	
13714 Eric's Ultimate Solitaire	35.95
* Edmark Corporation 30 day MBG	
7155 Kid Desk 24. 7318 Millie's Math Hs	e 29
1078 Bailey's Book House	
12989 Thinkin' Things	
GameTek	
13813 Jeopardy or 7433 Wheel of Fortune	24.95
* Great Wave 30 day MBG	24.00
6693 Kid's Math or 2276 KT Deluxe ea.	27 95
* Inline Software 30 day MBG	21 33
9792 Deliverance or 9797 Firefall Arcade	20 05
* Leister Productions 30 day MBG	20.00
7126 Reunion 3.0	115
* Maxis 30 day MBG	
13818 SimCity 2000 39.95 5279 Classic	2/ 05
* MECC 30 day MBG	24.33
3959 Word Munch 19, 3963 Oreg. Trail	20 05
* Microsoft 30 day MBG	2.5.33
2868 Flight Simulator 4.0 (CP)	42
Nordic Software 30 day MBG	42.
7723 Lang. Explorer or 7767 ClockShop	20
Software Toolworks	20, 23,
15815 Miracle Piano Software	0 / OF
* StarPlay Productions 30 day MBG 3675 Crystal Caliburn	200
	21.93
* Upstill Software 30 day MBG	20 00
14140 Mangial (includes 340 recipes)	33.95
* Voudette 30 day MBG	45
4764 FLOWERscape (garden planner).	48.



MBG Synergy Software

Get advanced data analysis and graphing capabilities with

KaleidaGraph. Enter or import data and KaleidaGraph automatically creates a wide variety of graphs, charts, and plots. Easy text labeling, flexible input formats, and more

6617 KaleidaGraph.. \$14995

10 Years Running.

CD-ROM

CD-ROM	
Broderbund	
Tort. & Hare or New Kid/Block ea. \$34.	
13509 MYST 49.95	
* Claris Clear Choice 30 day MBG	
13907 From Alice To Ocean (book w/CD) 46.95	
Compton's	
2314 Interactive Encyclopedia 79.95	
FWB, Inc.	
10198 CD ToolKit 49.	
* Microsoft 30 day MBG	
1741 Music. Inst. or 6759 Cinem. '94 ea. 54.95	
14913 Art Gallery or 14914 Dinosaurs ea. 54.95	
8517 Booksh. '94 62.95 6943 Encarta '94. 89.95	
PhotoDisc, Inc.	
Full line of great CD-ROM images call	
Presto Studios	
11330 The Journeyman Project 44.95	
* Spectrum Holobyte 30 day MBG	
1485 Iron Helix 59.95	
MULTIMEDIA/VIDEO	
A LOCALITICATION OF THE CO	

INOLINIED IN TIDEO
Apple Computer
3561 QuickTake 100 Camera 689.95
* Coda Music Technology 30 day MBG
5604 Finale 3.0 549. 12307 F. Allegro 259.
* Great Wave 30 day MBG
1014 ConcertWare Pro 1.0 129.95
Macromedia
5087 Director 4.0 849.95
Noise Cancellation Technologies
4919 Noise Buster 119.95
Nova Development
11101 Kaboom! 29. 12278 w/More Kaboom 40.
Radius
1738 PrecisionColor Pivot (reg. interf.) 879.95
14597 PhotoBooster 799.95
RasterOps PaintBoard Series Display Cards
14750 Lightn. 24-bit 849.95 12909 Turbo XL 1199.
Sony Multiscan Trinitron Monitors
10529 CPD-1730 17*
11810 Multiscan 15' SF 499.95
SuperMac/E-Machines 30 day MBG
12704 20'+Col. 1849. 10321 Col. Pg. T16II 1299.
10322 Presenter 449.95
8005 Ultura LX 1199. 7985 EtherDock 649.



Delight in the magic of Disney with all your favorite characters in The Disney Collection Screen Saver. After Dark is the classic screen saver, with more than 12 displays with sound.

COMMUNICATIONS

Apple Computer
7073 Mac PC Exchange \$59.
14231 Remote Access 2.0 Client for Mac 54.95
Asanté Technologies, Inc.
2775 10/T Hub-8 249. 2772 10/T Hub-12 499.
CommForce
15862 4-Sight 599.95
* CompuServe 60 day MBG
1676 Membership Kit
* DataViz MacLink Plus 60 day MBG
1823 PC Conn. 7.5 129. 12093 Tran. Pro 7.5 95.
* Dayna 60 day MBG
11878 DOS Mounter Plus 54.95
8719 EtherPr. or 9888 (10BASE-T) ea. 339.95
* Delrina Technology 60 day MBG
10080 FaxPRO for Macintosh 1.5 79.95
* Farallon Computing 30 day MBG
11499 EtherWave AAUI Transceiver 109.
4869 PhoneNET Connector 10-Pk (DIN8) 195.
14545 Timbuktu Pro 135. 4866 Remote 129.



* Freesoft 30 day MBG
6115 White Knight 11\$85.
14804 Second Sight 119.95
* Global Village 30 day MBG
7889 TelePort/Bronze II 95. 2179 Gold 299.
Hayes
10822 ACCURA 2400 74.95 11422 96 Fax 159.95
11419 ACCURA 144+Fax144 169.95
Insignia Solutions
7557 AccessPC 3.0 85.
4089 SoftPC 109. 10554 SoftPC Pro 215.
4433 Soft Windows for Power Mac 289.
* Practical Peripherals MCs 30 day MBG
4885 288MT II V.FC 309.95 4879 144 154.95
Shiva
6555 LanRover/L 599.
14837 NetModem/E ea. 1479.
* Software Ventures 30 day MBG
1964 MicroPhone II 109. 3455 Pro. 139.95
Sonic Systems
Ethernet Adapters (various) call
* STF Technologies 30 day MBG
7639 FaxSTF 3.0
* SupraFAXModems 30 day MBG
5337 FaxModem 144LC 164.95
2413 28.8K Modem+14.4K Fax 309.95

6618 VersaTerm 5.0 119.95 6619 PRO 169.95

11842 Sportster 14.4 Mac & Fax...... 169.95

* Synergy ... 30 day MBG

U.S. Robotics

* Zoom FaxModems 30 day MBG
7757 AFX 69.95 15895 VFX 28.8 \$239.95
3553 FaxModem VFX V.32bis 149.95
14152 FaxModem VFX 14.4V (Voice) 174.95
UPGRADES & DRIVES
Apple Computer
3443 Power Macintosh Upgrade Card 649.95
* DayStar Digital 30 day MBG
15782 Turbo 040 40MHz & 128K Cache 1049.
15924 80MHz Pow. Pro 601 for Pow. Mac 2149.
FWB, Inc.
14321 PE 170 409.95 14322 PE 340 FMF 579.95
14318 PocketHammer1000FMF 1349.95
IOMEGA
8781 Mac Transportable 90 PRO 369.
10499 Transportable MultiDisk 150 479.
Mobius Speedster 040 Accelerators
15189 AC433i 33MHz w/128K Cache 489.
15191 AC433f 33MHz FPU w/128K Cache 689.
Perinheral Land (PLI) full line available

11470 Infinity 88/RW 44...

INPUT/OUTPUT
* Adesso 30 day MBG
15456 Extended Mac Keyboard 79.95
15457 ADB Mouse 39.95
* Advanced Gravis 30 day MBG
1482 Game Pad 39. 9963 MouseStick II 65.95
Apple Computer
3560 LaserWriter Select 360 1499.95
3475 Personal LaserWriter 320 899.95
3461 StyleWriter II
3479 Color SyleWriter Pro 599.95
Caere
4930 OmniPage Pro 5.0 489. 7705 Direct 89.95
7925 OmniScan 299.95
Epson
8194 Action Scanner (ES-600C SCSI) 869.95
* GDT Softworks 30 day MBG
2499 PowerPrint 99.95 12717 PP. NW 329.95
Hewlett-Packard
14689 ScanJet 2CX 999.95
15859 DeskWriter 520 289.95
Interex Computer Products
12862 105 Key Deluxe Keyboard 99
* Kensington 60 day MBG
2547 Turbo Mouse 4.0 ADB 107
* Microtek Labs, Inc 30 day MBG
13815 ScanMaker IIs 479.95 13814 IIsp 749.95
1688 ScanMaker III 2359.95 1693 Ilea 1029.95
* Mouse Systems 30 day MBG

7520 Little Mouse ADB 59.95 8001 Plus 29.95





* 5	Sophisticated (Circuits	30 day MBC	3
	8009 PowerKe	y 75.95 800	8 Remote.	. \$32.95
*1	Texas Instrume	nts 30 d	ay MBG	
1	3658 microLas	er Pro 600 F	S23	1399.
1	3659 microLas	er Pro 600 F	S65	1599
* 1	UMAX Scanner	s 30 day	MBG	
1	3748 UC630 68	39.95 137	51 UC1260	1149.95
١	WACOM			
1	11259 ArtZ 6X8	Tablet		. 325.95
)	Xerox			
1	5345 TextBride	ie		74.95

ACCESSORIES

Apple Computer 11663 StyleWrit. II Cart. 23. 11669 (3 pk.) 63. LaserWriter Toners: Pers. 65. LW II 85.

★ Disks/Carts.: BASF, Fuji, 3M, Sony, Kao

* Kensington Cases ... 60 day MBG 14018 Tote.... 35.95 9585 Executive 115. * Targus Cases... 60 day MBG 7369 Notepac... 35.95 1305 Universal 69.

7369 Notepac... 35.95 1305 Universal 69 13941 Business Commuter Case 114.95



1-603-863-9322

MacConnection®

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

OUR POLICY

- VISA, MASTERCARD, AMEX. No surcharge.
 Your credit card is not charged until we ship.
- . If we must ship a partial order, we pay freight
- on shipment(s) that complete the order (in U.S.).
- No sales tax, except Ohio (please add applicable tax).
- All U.S. shipments insured; no additional charge.
 APD/FPO orders shipped First Class Mail.
- APO/FPO orders shipped First Class Mail.
 International orders: Add 2% surcharge and \$2.30 insurance. Manufacturer support and upgrade eligibility may be limited outside the U.S.A. Some products not available for export, call or fax for information.
- COD maximum \$1000. Cash or certified check.
 COD orders require an additional \$4.50 charge,
 ship via UPS and may require addt'I UPS charges.
- 120 day limited warranty on all products.
 Defective software replaced immediately.
- Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- . We are not responsible for typographical errors.

SHIPPING

894MW

Continental U.S.: Total shipping charge on any order is \$3. Barring events beyond our control, all credit card orders (non-CODs) phoned in weekdays by 3:15 a.m. ET will ship Airborne Express for delivery the next business day. That's same day delivery for orders placed between midnight and 3:15 a.m. I (Some orders ship UPS Ground for next day delivery). Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas required an extra day delivery.

Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgia Islands: Shipping may require additional time/charges.

All other areas: Please call 603-446-3333 or FAX 603-446-7791 for information. Business offices: 603-446-7711 M-F 9 a.m. -5:30 p.m. ET.

HOURS

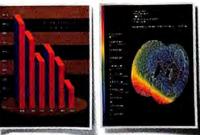
8 a.m. Monday continuous thru 5 p.m. Sunday ET



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 new Phaser 300 can print a full bleed 11"x17" page on nearly any kind of paper in two minutes.

Phaser 300 gives you PANTONEapproved 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

the Phaser 300 fast. Now you can spit out up to an 11"x17" full bleed image on nearly any kind of paper its own built-in sharpener, but hey, with color like this, Tektronix in two minutes flat. On top of all this, the

can do. Of course, the Phaser 300 may not come with 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,



OneWorld Fax

Fax Server

PROS: Entire office can share fax modems; easy to set up and configure. CONS:
Cannot receive faxes; cannot queue more than one fax document at a time from a single
CPU. COMPANY: Global Village Communication (415/390-8200). LIST PRICE:
\$999; two-line server and two PowerPort
Bronze II modems \$1499.



AX MODEMS ARE ONE OF THOSE technological advances that make our working lives easier. Unfortunately, technology is expensive, and putting a fax modem on everyone's desk adds up quickly.

Global Village's solution, OneWorld Fax, is one of the easiest network-fax products to install and use. It has limitations, but it lets an office share fax-sending resources without dedicating a hard drive and CPU to the process, which is a benefit that few other network-fax products offer.

The OneWorld Fax is about the size of a package of Oreo cookies. It's configured with one or two Global Village PowerPort Bronze II fax modems (supporting 2400-, 4800-, and 9600-bps fax-transmission rates) as well as connections for a 10BaseT and a LocalTalk network (you can use only one network type at a time).

Installing the hardware involves plugging three cables into the back of the unit—that's it. The next step is to configure the server with the administration software provided. Configuration includes setting up users and passwords as well as establishing a priority-fax threshold (shorter faxes are placed ahead of monolithic documents). The threshold length can be configured on a user-specific basis or for all users.

You must install GlobalFax software on all client Macs; it lets clients send faxes and choose the OneWorld server (more than one OneWorld server can exist on a network but they cannot be linked together). OneWorld comes with a license for 30 users. Additional user licenses are available.

The GlobalFax software that ships with OneWorld has a window in the Fax Center that allows you to monitor the progress of faxes in the OneWorld fax queue. Document icons represent faxes in this window; dots mark the faxes that belong to you.

Several volunteers installed the GlobalFax software, and we had them send multiple faxes to see how the product performed. Overall, the product performed quite well. Most users were familiar with the software and had little difficulty select-



ing the server and sending a fax document. The priority faxes did as promised and skirted right past a few large fax transmissions.

We discovered that the fax server cannot queue multiple fax transmissions from a single user, even for group address-book entries. In other words, if you're trying to send out more than one fax, OneWorld can't queue the second document until it has sent the first one. Also, users cannot access both fax lines simultaneously; this is a limitation of the GlobalFax software and not the server. Global Village is currently debating whether to add multiple data streams to future revisions of the software. We all vote yes!

Network faxing is a timesaving, costeffective way to reduce expenses. Other products exist to send faxes, but Global Village has a product that's easy to install and use at a price that won't knock a hole in your bottom line.—MATT CLARK

ProFiles 1.0

File-Management Utility

PROS: Keeps track of related files and folders; includes synchronization, compression, and expansion. CONS: High memory requirement; some file attributes appear only in pop-up lists; cannot display file contents. COMPANY: Dayna Communications (801/269-7200).

LIST PRICE: \$129.



ROFILES IS AN UNUSUAL NEW UTILity that lets you group related files and
folders for quick access. Unlike programs
that present a continually updated view of
a volume's directory, ProFiles displays an
empty file list: you have to add items to the
list either manually by selecting them one
at a time from a standard Open File dialog
box, or automatically, using ProFiles' Find
command. File lists can include volumes,
folders, and files in any combination (see
"ProFiles List"). You can view a folder's
contents by clicking on a tiny triangle next
to its name, just as you do with the Finder.

ProFiles' Find function works like the Finder's but is more comprehensive. You can specify up to three different search criteria (which you can save for later use), look for aliases whose original items have been deleted, or scan for files that contain a specific string of text. ProFiles' file list is also more functional than the Finder's in several respects—for example, you can view modification and creation dates, path names, and invisible files. But ProFiles only lets you display a file's type, creator, and version by #6-clicking to the left of the file name, and you can't edit any of the information in the list.

ProFiles provides an extensive suite of actions you can perform on files and folders. In addition to mundane functions such as copying, moving, and printing, you can create aliases, move items to the desktop, and turn sharing on and off. You can also compress or expand selected items by using an algorithm that you select in the preferences dialog box—ProFiles ships with Aladdin Software's Stufflt engine but also supports Symantec's AutoDoubler and DiskDoubler.

Because ProFiles can save file lists and can reference items on local or remote volumes, the program is useful for people who share files over a network. If you try to open an item on an unmounted disk, for instance, ProFiles attempts to load the correct volume for you—even logging on to a remote network with Apple Remote Access, if necessary. If you work with more than one

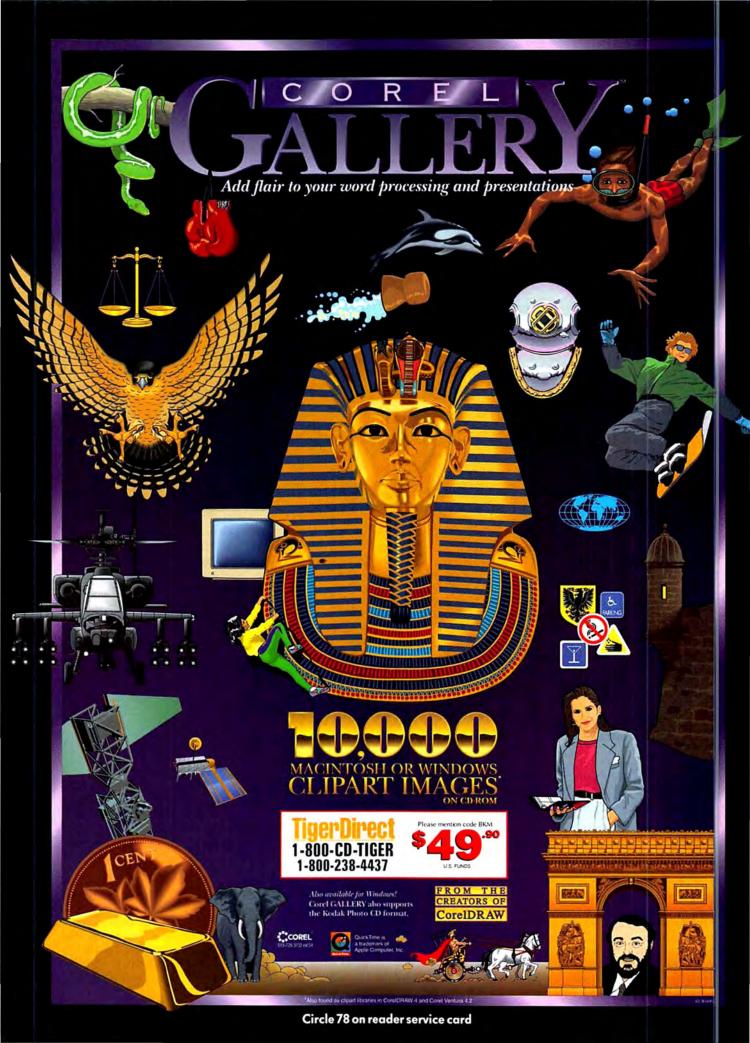
Mac, ProFiles' synchronize function lets you update two folders so they both contain the most recent versions of files.

Unfortunately, ProFiles doesn't take the place of some of my favorite utilities. For example, PrairieSoft Software's Disk-Top is faster for routine copying jobs, and

Ser	240+	894	PMPH	Driver.
DADALISM:	2.f.fee	110	다/11/차 자금	-06/14/90: A0:39
* Daming	- BTIM	Faller	02/20/92 16:46	G(28/89 11 48
V CHIMINT	1284	felow	02/09/95 10:40	GR/25/94 10/01
DE ALPETTE	51 mg	Filter	99/10/94 CV 20	SE1041AK 18:43
Dink termen	2.5144	Felder	32/32/94 H-M	Q5(16/9E) \$9.25
D CALKERY	244	Harwill Virt.	10/31/08 19.88	19/10/66 17.29
CANTOW AR	240	Hered vers to	10/81/W 16.52	16/01/86 15 12
CAI Spring SEV	248	Horsed Vorse	\$9/25/ES 10:27	G1/26/69 10 54
Este Review	198	mud Itames.	11/17/92 14:00	11/12/92 14/93
Dillering	que,	Harwill Vird &	01/05/W 11.29	09/02/92 15:54
Commogracy ferry	-	Person vires.	05/(5/90 18.87	09/19/90: 12/18
D 87 Avril 12/90	1900	HIRMS VICE	12/12/92 18 44	13/01/95 04:55
Of the rew felder	1450	folder	05/05/92 15:54	06/14/EV 10:00
Detreto Harvart Z	- 1	Horasett Word &	\$4/29/98 14.59	04/25/95 10:01
Anthrop (17/8)	160	Mayor 1.4 mayo.	10/16/91 09:08	09/21/91 11:34
COLUMNS	Brilles	fatter	02/12/94 D9.51	07/23/90 09:35
Officeron Tampleto	166	New # 54 state.	02/09/94 15:45	02/29/94 15:45
Frettler Nemen	180	Horsett Votal	08/25/94 16:55	03/20/94 09:25
Pritindure		PRODUCT POPULATION	SECTION IT OF	MANAGEMENT DE JA
Ruthlegy Paper Record (42)	- 18	Microsoft Variet.	12/30/90 10:25	12/28/98 21 18

ProFiles List The icon to the left of ProFiles Review in the file list shows that the volume isn't currently mounted.

I still need a DA like On Technology's On Location to examine a file's contents. Also, ProFiles' recommended RAM allocation of 1MB may be a problem for computers with limited memory (however, it uses only 384K of disk space). Still, ProFiles is worth considering if you have to keep track of associated files and folders scattered over a network.—FRANKLIN N. TESSLER



Mac-to-TV Converters

Video Adapters

L-TV Portable

PROS: Includes all cabling; sturdy; inexpensive.
CONS: Some flicker and distortion.
COMPANY: Focus Enhancements (617/938-8088), LIST PRICE: \$299.



The Presenter Plus Mac/PC

PROS: All cables included; supports Macs and PCs. CONS: Fit TV feature sometimes cuts off menus; murky focus; screen flickering. COMPANY: Consumer Technology Northwest (503/643-1662). LIST PRICE: \$429.



OCUS ENHANCEMENTS AND CONsumer Technology Northwest now offer small, external TV-converter units that plug directly into your Mac's built-in video port and convert the Mac's video output to NTSC. These portable devices make using a TV as a Mac display easier than ever, but frankly, they don't deliver the same results as the NuBus and PDS cards designed for Mac-to-TV output.

The Presenter Plus Mac/PC

This compact unit supports output to television from most Macs with built-in video—all Quadras and Centrises, the LC series, and those PowerBooks equipped with external video ports. Though you can use The Presenter with the IIvx and IIvi, it doesn't work with a IIci or IIsi.

The Presenter is a black plastic box

slightly smaller than a Newton. The 26-ounce unit connects to a TV or VCR via either a composite-video or an S-Video cable (Consumer Technology supplies both). The unit operates from a 9-volt external power supply and includes an AC adapter. You must snap on a Mac adapter (also supplied) to use the included DB-15 computer cable. The cable

works, but the adapter makes it hard to attach the cable snugly to the video port; a genuine Mac cable would be nicer. A second video port allows you to attach a VGA monitor to The Presenter along with the TV for dual output.

The device comes with a system

extension and a bare-bones control panel designed primarily to fit your Mac's screen within a television monitor. You can activate this Fit TV feature by holding down the T key during start-up. Unfortunately, the software sometimes doesn't do the job. In my tests, the edges of the screen got cut off when I connected my TV to a Quadra 700 and an LC. In one case, the Apple and application menu icons were off screen-though the menus became visible when I clicked in the appropriate corner. To avoid this, you can type a specific resolution into the control panel, choosing a size that will place your desktop well within the bounds of the TV.

The Presenter's antiflicker hardware does a barely passable job of providing a stable image on the television screen; flickering persists, and the image is generally fuzzy and poorly focused.

L-TV Portable

The L-TV supports the same Mac models as The Presenter, offers both composite-video and S-Video connections to a TV or VCR (all cables included), and has an additional port for simultaneous output to a VGA monitor. Both devices support cross-platform use and are lightweight and compact enough to travel with a PowerBook. However, the less-expensive L-TV feels sturdier. It comes with its own stand and ships with separate Mac and PC cables. The unit is housed in a slate gray case to match PowerBooks.

The L-TV's screen-fitting features are built into the hardware and are activated by DIP switches. An optional system extension is included to squeeze the Mac's screen to the TV's proportions if the hardware system fails to accom-

modate your Mac-to-TV

configuration.

Unfortunately, like The Presenter, the L-TV failed to provide high-quality output via a composite-video connection. The unit provided a crisper, cleaner image, but mild flickering and conspicuous shimmers were still persistent. When I activated the device's picture-stabilizing feature, the picture im-

proved, but the menu bar became distorted despite the screen-squeezing software.

The Presenter Plus (top) and

the L-TV Portable (bottom)

In the end, I preferred the L-TV's sharper (but slightly less stable) image to The Presenter's murkier output. The Focus package is more solid as a whole.

—JOSEPH SCHORR

Mac-to-TV Cards

Internal Video Adapters

L-TV Pro NuBus

PROS: Supports wide range of Macs; displays up to 32,768 colors at 640-by-480-pixel resolution. CONS: Some flicker and distortion despite flicker-filtering software; can't switch between PAL and NTSC modes; cables not included. COMPANY: Focus Enhancements (617/938-8088). LIST PRICE: \$399.99.



Simply TV

PROS: Diagnostic software included; impressively flicker-free image; supports both S-Video and composite-video connections. CONS: Screen mirroring degrades performance; no documentation on diagnostic software; resolution limited to 256 colors. COMPANY: E-Machines (408/541-6100). LIST PRICE: \$439.



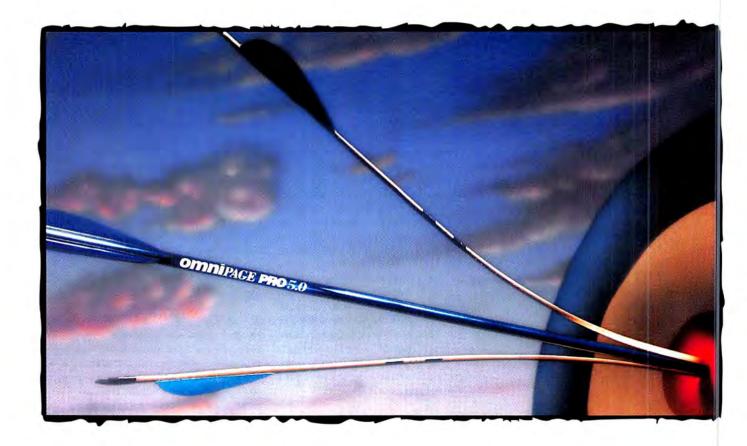
SARULE, TELEVISIONS MAKE POOR computer monitors; colors aren't very accurate on an ordinary TV screen, and the resolution is relatively crude. Still, for certain applications—children's games, slide presentations, Mac training programs—a television can be useful as a low-cost display device. E-Machines and Focus Enhancements now offer PDS and NuBus video cards that convert your Mac's RGB video signal to NTSC (the U.S. television standard) or PAL (the European standard) so you can use your Mac with a television or VCR.

Simply TV

The Simply TV is an easy-to-install video card that plugs snugly into the Processor Direct Slot (PDS) of any Color Classic, LC-series, Quadra 605, or Performaseries Mac. The Simply TV documentation promises you'll be up and running in five minutes—and it's absolutely true.

The card has two jacks: one for the standard composite-video cable that connects to most VCRs with an RCA-plug video-in jack, and one for televisions that support higher-quality S-Video input. A composite cable comes with the package; you simply plug one end into the card itself and the other end into the video-in port on your VCR or television.

The Simply TV's accompanying software is also very easy to use. A control panel includes two useful features: Safecontinues



Announcing OCR that's so accurate, anything else is simply pointless.

Introducing OmniPage® Professional 5.0 from Caere, the leader in OCR.

We'd like to make our point perfectly clear.

OmniPage Professional sets the standard in OCR. Offering more accuracy, more power, and more flexibility than ever before.

In fact, it offers the most advanced OCR technologies in the industry—technologies that Caere has pioneered.

Only Professional helps you spend more time using scanned information instead of correcting it. Its breakthrough 3D OCR™ feature recognizes grayscale information during document scanning to greatly improve recognition of poor quality documents.

That's not all. Professional recognizes a broader range of documents, reading the most difficult characters and symbols with ease. A feat made possible thanks to its exclusive Language Analyst, neural network and fax recognition capabilities.

Professional also allows you to easily edit both text and graphics with its new Text Editor and 24-bit color image editor. And for maximum ease of use and flexibility, there's a new click-andchoose interface, too.



So get OmniPage Professional 5.0 for your Mac today. See your local Caere dealer or call for more information on the complete family of OmniPage products at 1-800-535-SCAN. If you own a competitive product, ask about our "Step up to OmniPage" program.

For superior performance, it's your best shot.







For Your Information.

Caere and OmniPage are registered trademarks of Caere Corporation. The Caere logo, True Page, and Language Analyst are trademarks of Caere Corporation. Power Macintosh is a trademark of Apple Computer Inc. All other trademarks are of their respective companies. © 1994. All rights reserved.

Title ensures that the Mac's menu bar won't be cut off on the TV screen; and Flicker-Free does a fine job of providing a stable, smooth image on screen with minimal flickering and bleeding. The control panel also supports screen mirroring, which makes the TV display the same image as the primary monitor. Mirroring, however, noticeably slows down performance and degrades the speed of screen redraws. A utility, Diagnostics, isn't needed to use the Simply TV, but it provides test patterns and color bars you can use to color-calibrate your TV.

L-TV Pro NuBus

Focus Enhancements' L-TV Pro is a Nu-Bus version of Lapis Technologies' original L-TV card, which was specifically designed for the PDS slot of LC-series Macs. The beefed-up L-TV Pro NuBus supports a wider range of Macs than the Simply TV, including the Mac II series, the Performa 600, the Centris 650, and the Quadra family. (Focus also has a smaller, 7-inch version for use in the Centris 610.) PDS versions of the card are still available for use with the Color Classic, LC series, and Performa 400 series.

The L-TV Pro offers up to 32,768 colors at standard-size 640-by-480-pixel resolution. Like the E-Machines card, the L-TV allows you to record output to a VCR, or display directly to a television via either a composite-video connection or S-Video connector. The L-TV does not come with cables; you must buy your own or get a \$50.99 cable package from Focus.

The TV Show software allows you to use the television as a second display or to mirror your primary display. The easyto-use control panel also provides flicker filtering to stabilize the screen image.

The two cards perform comparably. Overall, I found that the Simply TV provided a somewhat more stable image than the L-TV card, which, despite its flicker-reducing features, displayed an image that sometimes shimmered noticeably. Also, though you probably won't need a card that supports anything but NTSC in the United States, the L-TV Pro doesn't switch between NTSC and PAL, as the Simply TV does; a different L-TV card is necessary for use with PAL.

Of course, whichever card you use, the results are going to be less than gorgeous. Menu commands, for example, are hard to read on a television. And you can't expect anything more than an approximate match of the colors you see on a monitor. But for presentations and applications that don't require high-resolution images or small text, a television and a converter-equipped Mac are a respectable combination.—JOSEPH SCHORR

SupraFaxModem 288

Fax Modem

PROS: Ultrafast file transfers; good fax software. CONS: 28,800-bps connections difficult to achieve; will need hardware update when V.34 standard is final. COMPANY: Supra Corporation (503/967-2410). LIST PRICE: \$349,95,

MW ****

UPRA IS PAVING THE WAY FOR LIFE in the fast lane with its new line of 28,800-bps modems. Even though the new ITU-TSS V.34 modem standard has yet to be finalized, Supra has based its new product on a chip set from Rockwell that supports V.Fast, a preliminary version of the new modem standard. Since other manufacturers are using the same chip set, you should be able to find someone to connect with at the modem's maximum speed if you look hard enough. The modem also supports existing modem speeds from 14,400 bps on down; fax capability maxes out at 14,400 bps.

From a distance, the SupraFaxModem 288 looks like other desktop modems from Supra. Only the "288" label and the small print referring to 28,800-bps data reveal the product's true colors.

The Supra modem ships with PSI's Faxcilitate software, which packs all of its features into a convenient pull-down



menu that you access from the menu bar. You can send faxes to a single location, broadcast them to a group of recipients, and defer transmission to a preset time. When sending or receiving a fax, you get a full status report from the FaxActivity desk accessory. Although printing faxes is not automatic, it is fast. Just open the In Basket from the Fax menu, click on the appropriate fax entry, and choose the Print command. In my tests, faxes were clear and sharp and printed in seconds.

Although fax software is notorious for causing a litany of extension conflicts, I found Faxcilitate to be basically trouble-free, even when used on my new Power Macintosh. The only features I miss are the ability to print a fax automatically after it's received and an OCR engine to convert faxes into editable text.

The communications software, MicroPhone LT from Software Ventures, is the same basic application as MicroPhone II and MicroPhone Pro, but it doesn't let you create your own scripts. It does work with scripts created by the other versions of MicroPhone, though. The package ships with scripts for online services such as CompuServe and GEnie, and for Software Ventures' own BBS, should you need technical support.

Supra has clearly learned some lessons. The SupraFaxModem 288 has none of the shortcomings of the older V.32bis model, which had occasional speaker failures early in its production cycle and required several ROM upgrades to fix connection problems. I connected to a variety of online services and BBSs during my testing and had almost no difficulty getting a reliable hookup. Though full 28,800-bps service was hard to come by, I did achieve consistent 24,000-bps connections with Supra's own BBS. Unfortunately, the quality of local phone lines is going to be a limiting factor in supporting the new modem speed. One hopes the ITU-TSS can provide additional methods to handle difficult connections when the V.34 standard is ready.

Supra's own ROM upgrades can be done via its flash ROM and will be available for downloading from the company's BBS or on disk. Doing a ROM upgrade yourself involves running a program that downloads the software directly to the modem—a process that takes three to five minutes. But when the V.34 standard is final, the modem's data pump (processing engine) itself will have to be replaced. That will require returning the modem to the factory for installation, or swapping it for another unit. The initial price will be \$69, but if you're willing to wait a few months for chip supplies to increase, the price will go down to \$49.

Despite my difficulty in finding places to connect to at its maximum speed, the SupraFaxModem 288 is a very good performer, as good as or better than 14,400-bps modems I've tried, 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.

-GENE STEINBERG

Macintosh Training

Pure.
Simple.
Effective.
Inexpensive.
Award Winning!

he 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.

Randy Smith

4th Dimension	6 Videos
Canvas	5 Videos
ClarisWorks	6 Videos
Design & Layout	1 Video
Desktop/PrePress.	2 Videos
Director	4 Videos
Excel	5 Videos
FileMaker Pro	4 Videos
Mac Fonts	1 Video
FreeHand	4 Videos
HyperCard	3 Videos
Illustrator	
Infini-D	
Integrate Program	s. 1 Video
Lotus 1-2-3	Marie Control of the
Macintosh 7.X	4 Videos

MacDraw Pro	. 2 Videos
Mac P & L	. 3 Videos
MacProject Pro	
MacWrite Pro	. 3 Videos
MS Works	. 4 Videos
Networking	. 1 Video
Now Contact/	
Now Up-To-Date	1 Video
PageMaker	. 6 Videos
Peachtree Accnt	g.3 Videos
Persuasion	2 Videos
Photoshop	6 Videos
PowerBooks	2 Videos
PowerPoint	2 Videos
Premiere	3 Videos
QuarkXPress	3 Videos
S 100 100 100 100 100 100 100 100 100 10	at a later to the same of the

Quicken, Personal	2 Videos
Quicken, Business	2 Videos
QuickTime	1 Video
SuperPaint	3 Videos
Troubleshooting	3 Videos
Word	4 Videos
WordPerfect	4 Videos

\$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.

Video Training Available in English, Spanish, Japanese, German, & French

Video Training Also Available For Many Windows Programs

Please add \$3 per order along with \$1 per video for shipping and handling.

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. MW894, Ormond Beach, FL 32176



Where the world learns the Macintosh"

DiskDoubler 4.0

File-Compression Program

PROS: Compresses and expands files faster and tighter than rivals; files can be dragged among archives. CONS: Lacks many great features of previous versions; archives incompatible with previous versions; outrageous phone-help price. COMPANY: Symantec Corporation (503/334-6054). PRICE: \$79.95.



HE ORIGINAL DISKDOUBLER (DD) could compress files into a disk-space-saving format faster and more tightly than its competition. And DD was breathtakingly simple to use. You highlighted a file's icon and chose Compress from the DD menu in the Finder. A simple double-click sufficed to both expand and open a DD file. But it didn't take long for rivals StuffIt (Aladdin Systems) and

DD can also open or convert StuffIt files. (StuffIt, on the other hand, can open a long list of Mac and IBM compression formats.) Unfortunately, the three new DD 4.0 file types can't be opened by older DD versions. Better send the free DD Expand 4.0 program to all your digital correspondents, or you'll be stranded on an island of incompatibility.

DiskDoubler also now offers archiving, which lets you compress multiple files into a single icon. Using a clever Finderlike interface, you can add files to, remove files from, or move files among archives, simply by dragging icons. Alas, you must do all this from a separate application; for the first time, DD users have to step out of the Finder's familiar bounds.

Unfortunately, what you notice most about the new DiskDoubler isn't what's new. It's what's missing. You can no longer add passwords to self-extracting files. You can no longer opt to recompress files automatically. The Skip button (when compressing a group of files) is gone. The Verify/Repair program (helpful for in-

Full Contact 2.01

Personal Information Manager

PROS: Object-oriented database heart leaves flat-file and relational engines in the dust, CONS: Makes managing your personal information a full-time job. COMPANY: FIT Software (408/562-5990), LIST PRICE: \$169.



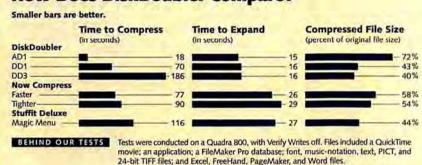
HE PERFECT PIM? IMAGINE A VIRtual secretary on speed, filing and cross-filing all your data so that you could instantly retrieve every phone conversation, meeting, project, person, phone number, company, address, and correspondence related to a contact, just by typing in that contact's name. FIT Software's Full Contact (FC) is the closest approximation of this ideal currently available: it's an object-oriented database in which almost every piece of information occupies its own record, and related records are linked for easy access. The advantage of FC is a database that's fast, versatile, and powerful. The disadvantage is that to use this personal organizer, you must already be incredibly organized.

Records in FC are divided into six types: Activities, Contacts, Phones, Addresses, Companies, and Notes. Any record can link to any other record; a contact might be linked to several notes (conversations), three other contacts (coworkers), and two phones. Each of those records could then have other records linked to them-for example, one of the phone numbers could be linked to a company and other contacts. Linking records establishes software connections between bits of data that you have already related in your mind. You can create a new, linked record from within another record, or you can link existing records by dragging and dropping one onto another.

Having to manually link all your data gets cumbersome, so FIT thoughtfully provides Quick Phone Call Entry (QPCE) and Quick Contact Entry (QCE) screens. Filling in a QPCE is a snap; FC offers its best guess at the company or contact name while you type, complete with a pop-up menu of qualifying candidates. FC also has an extensive series of templates to ease importing data. I switched from Now Software's Now Contact and Now Up-to-Date with hardly a hitch—not a bad trick considering their semilinked nature.

Superlists—windows that display records as fields in columns—are the main continues

How Does DiskDoubler Compare?



Now Compress (Now Software) to duplicate DD's Finder-menu interface—and its compression efficiency. The world waited: would 4.0 again set DD in the forefront?

In pure efficiency terms, yes. DD has five compression settings, three of which are new. The default, DD1, compresses by a few percentage points faster and tighter than other programs. Other options strike different positions on the speed-and-tightness trade-off scale. For example, the AD1 setting compressed my test files in one-sixth the time of StuffIt, but it compressed them only half as much. At the opposite extreme, the DD3 setting crunches files to an average of 40 percent of their original size, but it takes a third longer than StuffIt to do the deed. You realize the most dramatic speed gains, however, when expanding DD's files; regardless of the compression setting, DD files decompress about twice as fast as StuffIt or Now Compress.

specting flaky archives) is no longer included. Gone, too, is Fifth Generation's toll-free help; instead, Symantec charges \$25 per call after 90 days.

Symantec also removed the most loved feature of all: DD's ingenious ability to expand and open a compressed file with a double-click. You must now double-click once to expand a file, wait, and then double-click again to open it.

Fortunately, DD users' venomous response to the 4.0 "downgrade" has had a salutary effect: the company finally promised to restore the auto-open feature in version 4.1, projected to be available in mid-June.

When that day arrives, DiskDoubler again should become the most elegant, efficient, easy-to-use file-compression program available. Fie on thee, Symantec, for stripping DiskDoubler of its original flexibility and charm—but blessings on thee for putting the best of it back.

-DAVID POGUE

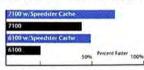
Power Upgrades for all your Macs.



Instant speed for your Power Mac.

Boost your Power Mac's performance by up to 48% with the Speedster 601 Cache. This 256K level 2 static cache maximizes both emu-

lated and native performance, with 100% Compatibility. Plus, the Speedster 601 Cache can be easily installed in less than 10 minutes by just plugging it into the cache slot on the Power Macintosh 6100 or 7100.



Speedster 601 Cache increases performance up to 48% (MacBench 1.1 Processor Test).

dster 040™	DayStar Turbo 040"
\$399	n/a
5499	\$749
\$699	\$949
\$899	\$1,049
	\$399 \$499 \$699

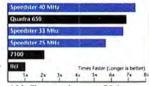


Blazing '040 power for your 030 Mac.

Now is the best time to accelerate your Macintosh with the Speedster 040. Starting at just \$399, you can upgrade your Mac IIci, IIsi, IIcx, IIx or LC to '040 power and immediately get blazing, 100% compatible performance.

Speedster 040 runs all your software up to 6X faster! You'll even

outperform Power Macs running 680X0 software by up to three times. Speedster's low-cost design saves you almost 35% over the competition. Plus you get a 3year warranty, 30-day money-back guarantee, and unlimited technical support rated "Excellent" by MacWorld Magazine. Adobe Illustrator redraws up to 7.3 times



Choice Displays for all your work.



Award winning quality and value.

Why settle for scrolling around on a tiny 14" monitor when you can view your entire document on a award-winning Mobius Display-that's over three times more desktop! Just plug it directly into your Macintosh and view up to 256 gray-levels* on the bright, razor-



sharp screen. Now available for over 50 Macs, Mobius Displays are rated at over 80,000 hours MTBF—the most reliable in the industry. That's why we back them up with an unprecedented Two Year Warranty. And starting at just \$399, Mobius Displays are best value you'll find anywhere. So choose the display that MacWorld named "Editor's Choice."

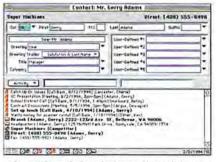
Call to Order or Get Your Free Performance Handbook

*For Macs w/supporting built-in video, video card may be required; call for more information. How to Order: We accept Visa, MasterCard, AmEx and Discover, Corporate and Education POs. Cache is free with Speedster 33i, 33f, and 40f models only. Competitive pricing as of 4/22/94. All trademarks are property of their respective holders. Mobius, 5835 Doyle Street, Emeryville, CA 94608, (510) 654-0556.

way to view your data. Each record type has a separate Superlist, which is good and bad. You won't confuse a company with a contact, but you can work directly with only one type of data at a time. (You can't, for instance, bring up a list of all the Companies and Contacts in California.)

You select records to view by using filters, FC's version of a search—you define the criteria, such as a range of dates, and FC filters the records. Filters are fairly versatile, and you even get a dialog box loaded with pop-up menus to help you build the perfect filter. But FC depends on filters heavily, and using them is a chore. You can't edit a filter unless you've first used it, which means you select a filter, wait as the software sorts, edit the filter, then wait again. Of course, you can build a filter every time you want a new search, but it's not much quicker, and you end up with a bazillion filters.

There are pleasant amenities and cool features sprinkled throughout FC, but the program makes using them an effort. When linking to a contact record in a QPCE, FC forces you to enter the contact's last name and then first name, separated by a comma; elsewhere, the software concatenates a phone number with its descriptor (Main, Fax, and so on), so easy lookup is impossible. FC has a word processor with drag-and-drop mail merge, but it makes you juggle two pop-up menus nearly every time you write a letter. You can create repeating events, but only the first iteration appears in the Activities window. There are also a ton of tiny irritants: Notes windows can't be



Information Chain Each record in Full Contact can be linked to many others. Gerry Adams's record shows addresses, phone numbers, and related contacts, plus meetings and conversations.

resized, new Activities always appear halfway off the screen, and Superlists don't automatically re-sort. Topping this catalog of unpleasant surprises is the lack of a database-wide search function.

Full Contact can handle with speed and style tasks that would choke other PIMs. But 90 percent of the time, using Full Contact feels like a full-time job.

-CAMERON CROTTY

Scenery Animator 1.0.4

Landscape Rendering and Animation Software

PROS: Renders high-quality pictures of realworld locations based on USGS map data; lighting and other features can be customized. CONS: Program's map coordinates don't correlate to paper maps. COMPANY: Natural Graphics (916/624-1436). LIST PRICE: \$149; additional landscapes \$10 each.

MW ***

T'S AMAZING. NATURAL GRAPHICS has squeezed a goodly portion of Yosemite Valley—from the massive face of El Capitán down to individual evergreen needles—into 170K of disk space.

Yosemite is only one of the many three-dimensional landscapes that Scenery Animator lets you explore; also included are views of Oahu, the Grand Canyon, and Mount Saint Helens. Landscape files for additional locations—including Aspen, Seattle, San Francisco, Pikes Peak, Crater Lake, the Black Hills, and others—are available for \$10 each.

Scenery Animator uses U.S. Geological Survey data (sampled every 30 meters)

(sampled every 30 meters) to create remarkably realistic 3-D representations of terrain. You can render an individual scene-complete with optional trees, water, snow, and clouds-or create an animation that flies the viewer through a landscape. You use real-world locales, or devise your own scenery with the program's fractal landscape generator. The program is smart (it won't let you place trees on a sheer cliff, for example), and it offers numerous customization options (you can specify that no trees grow above an elevation of 3000 meters, for instance, or redden a scene's colors to simulate evening light).

You navigate a landscape via several windows and control panels. The Map window shows an overhead view, with color-coded elevations. You view a scene through a simulated camera. The Camera View window shows a rough view through the camera's lens; when you've got the view you like—choosing a standard, wide-angle, or telephoto lens—you can render a detailed version of the scene and save it in PICT or TIFF format. The camera can be placed anywhere in a land-scape: hovering 100 meters above a mountain peak, or gazing up at the sky

through the leaves of a tree. You can also store a series of camera positions as key frames and create an animation, which can be saved as a QuickTime movie, a PICS file, or a series of PICT images. As with any program that renders complex pictures, I'd recommend a fast processor or a lot of patience (or both). Rendering time depends on the complexity of the scene, the rendering method used (faceted produces a rough landscape of large triangles, while smooth or textured produce more detailed-and slowerrenderings), and whether optional elements such as trees or clouds are added. I chugged along OK on my Mac IIcx, using in other programs while scenes rendered in the background, but was much happier when I borrowed a Quadra 800.





From Dawn to Dusk Scenery Animator lets you position a simulated sun to create shadows. You can alter the colors of land, water, and sky—say, to darken a cloudy landscape or add a rosy tint to a sunset scene. Here, the same image was rendered with different light and color settings to show dawn and dusk.

Scenery Animator is a pleasure to use. The manual is clear and informative, the program is well designed (although navigating through landscapes takes some practice), many customization features are provided, and the rendered pictures and animations are impressive. My main complaint is that the program's map coordinates can't easily be matched to the coordinates on a paper topographical map (Scenery Animator uses coordinates relative to the lower left corner of the map, rather than absolute coordinates such as longitude and latitude). For example, to create a digital picture of my campsite in Yosemite, I'd have to compare the terrain on the paper and computer maps and estimate where the site was. A Natural Graphics representative said the company is considering adding digital linegraph overlays, which would show roads and other man-made features. I also wish I could display distances in feet as well as meters (I can't help it-my public school failed to drum the metric system into my head), and for some graphics tools to add objects to scenes. But Scenery Animator's flaws are few, and I'd recommend it to artists, animators, educators, and armchair travelers.-ERFERT FENTON

GRAPHICS ACCELERATION SO FAST, YOU MIGHT WANT TO WATCH YOUR REARVIEW MIRROR.

Get in the fast lane
with Horizon 24™
and satisfy your
need for speed!

hen manipulating 24-bit color images on large-screen displays, the last thing you need is another delay. But even the most powerful Macintosh® suffers bottlenecks.

That's why Horizon 24 from RasterOps is your ticket to higher performance 24-bit color. Fast. Responsive.

Driving high-resolution displays to the limit. Horizon 24 speeds up more graphics primitives than any other Macintosh accelerator, making it the fastest graphics card the state of technology allows.

Doing time in Photoshop?

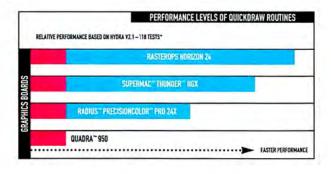
Sporting twin AT&T 3210 digital signal processing chips, the RasterOps

DSPro™daughtercard makes Photoshop™ barely street legal. It runs through timeintensive filters like a trooper, assuring you of optimum performance in Photoshop.

acelerated for



So get out of the slow lane. Call I-800-SAY-COLOR for more information or the location of a dealer near you.



RASTEROPS*

2500 Walsh Avenue • Santa Clara, California 9505 I

Softmanning Expension of Special International Properties of Special International Research Special International Properties and Special International Properties and Special International Special International Special International Internat

Circle 90 on reader service card

Koyn Fractal Studio 2.02

Educational Software

PROS: Creates colorful fractals at up to 2450 dpi; draw-program-like fractal design; fast rendering. CONS: Cannot create many classic fractals; poor program design; saves images only as PICT. COMPANY: Koyn Software (314/878-9125). LIST PRICE: \$149.95.

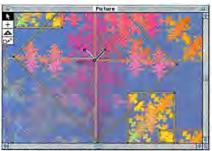


RACTALS-SHAPES CONTAINING infinite detail and that often exhibit self-similarity (portions of the shape resemble the whole shape)—are one of the most spectacular intersections of science and the visual arts. Koyn Fractal Studio enables you to generate beautiful fractals of your own design by means of Iterated Function Systems (IFS). To do so, you first draw the basic outline with a simple polygon tool, either freehand or by using an imported image as a template. You then clone the outline one or more times, alter each clone, and hide all the outlines (see "Handmade Fractals"). You can color the background, assign a color to each part of a fractal, and specify a number of attributes that blend colors and create textures.

At 72 dpi, Fractal Studio renders 8-bit fractals relatively quickly (in a few minutes), especially if your Mac has an FPU. You can specify renderings at up to 24-bit color and 2450 dpi, but these require major investments in RAM and time. Once your fractal has been rendered—and Fractal Studio is capable of beautiful renderings—you can zoom in (up to 1 million times, according to Koyn Software) on any area. Rendered fractals can be saved only as PICT files.

Although Koyn Software says the program is for fractal innocents and experts alike, prior experience certainly helps. The manual's tutorial section and the collection of sample fractal files assist novices to get going; but frankly, few people can make fractal geometry seem easy, and the manual's author is not one of them. Sadly, the design of the program doesn't help either. Among other things, there are tools that should more logically be commands, and commands that are tools in many graphics programs. There is no easy way to make regular polygons or create a clone that is a specific fraction of the basic outline's size. And defining a color scheme requires visits to a variety of dialog boxes.

Iterated Function Systems-generated fractals range from abstract shapes to mim-



Handmade Fractals In Koyn Fractal Studio you scale, rotate, skew, and move a part of a fractal by dragging on the handles attached to its outline. The mathematically inclined can specify transformations numerically.

ics of natural forms such as leaves, trees, clouds, and snowflakes, but IFS is not the only fractal-generation method. There are many classic types of fractals—including the Mandelbrot and Julia sets and realistic fractal landscapes—that Koyn Fractal Studio cannot generate; for these types of fractals, you will have to turn to a program like Springer-Verlag's more versatile but more challenging Beauty of Fractals Lab. Koyn Fractal Studio is a reasonable choice if you are interested in Sierpinski triangles or naturalistic forms, but it is not an all-fractals-for-all-people program. That program has yet to be written.

-ROBERT C. ECKHARDT

The Cruncher

Educational Spreadsheet

PROS: Creative; easy to use; educational.

CONS: Slow; lacks necessary spreadsheet functions. COMPANY: Davidson & Associates
(310/793-0600). LIST PRICE: \$59.95.

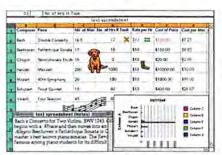


IDS AND ADULTS SHOULD LIKE THE Cruncher, a combination educational spreadsheet and business application. As a teaching tool, it shows kids spreadsheet basics; as a spreadsheet, The Cruncher can calculate and graph.

The Cruncher's clever, creative animated tutorials demonstrate how spreadsheets calculate. A selection of projects shipped with The Cruncher can help kids figure out if their families can afford a dog or a new stereo. You can even customize recipes: using the Recipe Converter template, you type in a recipe and the number of people the original recipe serves, then indicate how many people you want to serve, and the template converts it for you. (This is a use I'd never thought of for spreadsheets—I'm sure my future dinner guests will be grateful.)

The animations are cute, but they make The Cruncher sluggish; on my Mac IIci, I often waited a few seconds before actions occurred. The Cruncher is aimed at families, teachers, and students, many of whom have lower-end machines and may find the application quite slow.

You can decorate spreadsheets with color text and pictures provided in the program's Sticker Picker. You select an item in the Sticker Picker, assign a sound to it, and place it anywhere in the spreadsheet. The Cruncher also speaks: select a cell and hit a button, and a computerized voice reads to you. It even knows to read TN as Tennessee and Ib. as pound. Why this is useful I'm not really sure, but kids will probably enjoy it.



The Price of Art The fictional data in this spreadsheet shows how much great works of music cost to write. The graphics are from The Cruncher's Sticker Picker.

The Cruncher performs basic spreadsheet functions like graphing, number formatting, and calculations. But users accustomed to more-sophisticated spreadsheets
like Microsoft Excel will miss such functions
as the ability to wrap text in a cell and to
sort data. Also, calculation formulas can be
hard to understand. For some functions,
you can use basic spreadsheet functions like
=D3/F3. But if you want to multiply that
number by five, you have to write
=SUM(D3/F3*5). It's hard to know when
you need to insert the function type (SUM,
in this case) in the formula.

Aside from the calculation confusion, the only technical problem I had with the product was its sound. Even though my Sound control panel was set to zero, The Cruncher played music at a normal level—to the dismay of my coworkers—and I couldn't figure out how to turn off the start-up sound. Other than that, the Cruncher is uncomplicated. Information is easy to find in the manual and online, and when I called, Davidson's technical support was helpful.

The Cruncher is more effective as an educational tool: its spreadsheet capabilities are limited. If you can live without the advanced functions and can tolerate the slow speed, The Cruncher is a good spreadsheet choice. If you want to teach a child spreadsheet basics, The Cruncher will do the job.—JOANNA PEARLSTEIN

Should the New MiniCad 5 be your CAD Program?

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

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

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



Take the Quiz.

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

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

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

Accelerated for Power Macintosh

3 Free Application Specific Modules

Mechanical, Architectural, & Advanced Design

MiniCad 5 offers all of the above and more. The board-winning software has been hailed as the "features champion" by Macworld Magazine (March, 1993). Further, Graphsoft is dedicated to agressive 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!

















Also from...

Diehl Graphsoft Inc.





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

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

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



PopupFolder

Finder Utility

PROS: Simple and intuitive; provides easy access to files and data. CONS: Can be sluggish on full drives. COMPANY: Inline Software (203/435-4995). LIST PRICE: \$59.95.



EMEMBER WHEN YOU FIRST GOT your Mac? The hard drive seemed a vast, open expanse you couldn't wait to fill with the latest software and your great American novel. By now, though, you've probably spent far too much time managing that territory—moving files around and rummaging through folders in search of documents.

Hierarchical menu utilities, such as Now Software's WYSIWYG Menus, Inline Software's HAM, and Kiwi Software's Kiwi Power Menus, all take a similar approach to the file-management challenge. Rather than make you open a dozen windows to find that control panel or document buried deep in your drive, hierarchical menus enable you to put frequently used folders, subfolders, and aliases in the Apple menu and then open them using simple pop-up menus. But

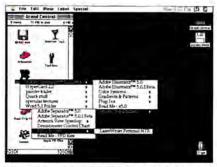
these utilities limit you to the folders and applications you've had the foresight to put into the Apple Menu Items folder. If you're already that organized, maybe you don't need hierarchical menus to begin with.

Inline Software's PopupFolder goes a step further by giving you hierarchical access to all the folders on your Mac. By clicking and holding on the icon of any folder, mounted volume, or floppy disk you instruct PopupFolder to search that item (up to five folders deep), giving you easy access to documents and applications all over your drive.

PopupFolder is primarily a Finder enhancement, but it also operates within applications, so you can use hierarchical pop-up menus to save and open files. Best of all, filing existing documents in folders becomes a simple matter of grabbing the files you want to put away and then dragging them onto the appropriate icon. When the menus pop up, you just drag the files and drop them into any folder.

When it is readying pop-up menus for every folder, PopupFolder seems sluggish; the program hesitates slightly over each icon while it scans your Mac's contents. Changing the mouse's double-click speed can help, but if many subfolders are nested on your drive, the slowdown can be a trifle annoying.

PopupFolder is easy to install-just



Changing the Way You Use Your Mac Use PopupFolder to get to those deep, dark, hard-toreach corners of your hard drive.

drop the control panel into the System Folder and restart your Mac. But be aware that you may need to disable certain extensions when you restart the first time after installation. PopupFolder's registration dialog box wants to be the first item that launches, and if you are running start-up extensions such as E-mail or virus-protection software, PopupFolder can cause a crash when you restart.

For the most part, PopupFolder is so handy and intuitive to use, you wonder why it isn't built into the Mac's system software. For those of us with hard drives full of folders packed within folders, it's a welcome improvement to Finder navigation.

-MATTHEW HAWN

DateView 1.0.1

Calendar/To-Do Manager

PROS: Easy to learn; integrates with InTouch contact manager. CONS: Can't see to-do's in grid view. COMPANY: Advanced Software (408/733-0745). LIST PRICE: \$99.95.



ITH DATEVIEW, ADVANCED SOFTware is aiming at personal-calendar users who are willing to sacrifice some features to get simplicity and speed. DateView loads its files completely into RAM, so it's a good choice for PowerBook users—since it won't spin up the hard disk, it saves battery power. DateView is a single-user product; if you need to share your calendars with other users, then Now Software's Now Up-to-Date or Aldus's DateBook Pro are better choices, as both are networkable and multiuser programs.

DateView has two types of multiday display modes. The list display shows events and to-do's sequentially (see "Schedule View"); the grid display shows days with lines marking times. Double-clicking on the header of any day zooms in, filling the screen with the day's agenda. You can cus-

tomize the list or grid displays to view one or more weeks at a time.

The program allows four types of events: Block of Time, Point in Time, Date, and To-do. You can set to-do's to carry forward if not marked as completed. You can enter a series of recurring events in a single

step and later reschedule one event in the sequence without affecting the others. DateView shows overlapping events side by side in the grid display.

It's easy to enter new events. If you're in the grid view, you just click and drag across the time the event will occupy; the Edit Event dialog box appears, and you set the type of event and fill in the event's description. You enter new events in list views by double-clicking on the day, which brings up the Edit Event dialog box.

One drawback is that todo's appear only in list views; if you're in a grid view, you can't

see to-do's at all. I found this so annoying that I invariably used only list views. I'd also like to see #-key equivalents for the pop-up menu choices in the Edit Event dialog box; as it stands now, you must leave the keyboard and use the mouse to set the category, type, and priority of an event.

DateView can link events to Advanced Software's InTouch contact manager, even under System 6.0.X. Linking a DateView event to InTouch is very easy and takes only a few seconds. However, linking in the other direction, to a date from within InTouch, is considerably slower.



Schedule View This two-week DateView list view shows icons that denote events' priorities. Events with the head icon are linked to an InTouch contact record. Note that past days are grayed out.

If you have complex scheduling needs, then you'd be better served by a program with more features than DateView offers. But if you want a calendar program that takes only a few minutes to learn and can handle basic scheduling, DateView makes sense.—TOM NEGRINO

DeBabelizer Lite 1.0

Graphics-Conversion Software

PROS: Supports a huge variety of file formats; simple interface; batch processing; supports many Photoshop plug-ins. CONS: Bitmapped formats only; some plug-ins don't work with it; images must fit in RAM. COMPANY: Equilibrium Technologies (415/332-4343). LIST PRICE: \$129.

 $MW \star \star \star \star$

HEN 1 FIRST STARTED USING DeBabelizer, I was astounded at its prowess in opening, converting, manipulating, and processing graphics files of almost any format—quickly and automatically (see *Reviews*, November 1993). Its \$299 price tag placed it out of the reach of people who only occasionally need graphics conversion, however, and its complex interface was daunting for casual users.

Equilibrium Technologies addresses both of these issues with DeBabelizer Lite —a version of the original program with a much narrower range of capabilities, a \$129 price tag, and an interface that any Macintosh user can navigate easily.

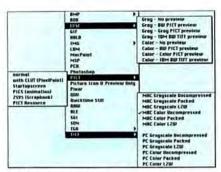
At its most basic, DeBabelizer Lite is

simply a program for converting graphics files from one format to another. Gone are all the esoteric options for dithering, resizing and resampling, scripting multiple operations, remapping color palettes, and the like. DeBabelizer Lite opens graphics files in one format and saves them in another.

You can convert individual files, or instruct the program to go through a whole folder and convert every image in the folder. An ingenious set of options lets you rename the resulting files sensibly.

Although there's a lot less to De-Babelizer Lite than its older sibling, not all of the controls are gone. There are options for saving in various flavors of key formats (color/gray scale, and compressed/uncompressed TIFF, for instance) and for changing the number of colors in an image. And you can choose from a few common Mac and Windows color palettes. You can also change the image's aspect ratio from DOS PC to Mac or vice versa—avoiding the squashed or stretched look that commonly results from moving screen shots between platforms.

Many Photoshop-compatible plug-ins work within DeBabelizer Lite, including filters and acquire and export modules. The program can even run a filter on a batch of



On the Menu Many graphics professionals will find that DeBabelizer Lite's selection of graphics file formats offers all that their images require and more.

images in a folder as each image is being translated. Unfortunately, many plug-ins that come with Photoshop only work with Photoshop (for example, the sharpening filters and the JPEG Export module).

DeBabelizer Lite's only other major failing is its use of RAM for image processing. If an image doesn't fit in the program's allocated memory partition, you can't use DeBabelizer Lite to convert it. This is far from fatal, but it's worth considering if you're short on RAM and don't want to resort to the sluggishness of virtual memory.

DeBabelizer Lite is a terrific graphics utility, offering a choice selection of its forebear's capabilities at a nice, slim price.

-STEVE ROTH

If you want to see a full 81/2"x11" spending a lot of money, only



Typical 17" monitor



\$799



Typical 20" monitor \$2,100

TimeSquare 1.0

Scheduling Program

PROS: Fast; flexible viewing options. CONS: Labels cannot be grouped; no multiday events; limited error notification when importing data. COMPANY: Team Building Technologies (514/278-3010), LIST PRICE: \$149 for two users.



F YOUR PAPER ORGANIZER IS JAMpacked, then it's time to consider a computer-based scheduler like TimeSquare. Unlike programs that restrict you to viewing single days, weeks, or months, TimeSquare lets you decide exactly how many days to display. You can also specify whether the calendar scrolls forward or backward in weekly or daily increments. (TimeSquare's use of both the horizontal and vertical scrolls bars can be confusing at first, but it soon becomes second nature.) A handy feature lets you jump directly to the current day with a single click.

TimeSquare supports two types of events: to-do's, which aren't associated with any date or time, and timed activities, which are. You can set timed activities to carry forward on a daily basis until they're marked as completed. Unfortunately, you can't schedule activities that span several days. TimeSquare does support recurring events, but not as flexibly as other programs.

TimeSquare's alarm extension can remind you about timed events up to 999 days in advance, even if the application isn't running. When a pop-up alarm appears, you can clear it permanently or indicate that you want to be notified again up to 60 days later. If you don't respond in 1 minute, the alarm disappears, only to reappear in 5 minutes. You can't snooze an alarm without using the mouse, however.

TimeSquare lets you categorize activities by assigning labels to them. You can define up to 30 different labels, each with its own color. Since events appear in the color of their label, it's an easy way to pick

	THE RESERVE TABLE	pe Calendar Symmetry	
to be	1 100, hep 3, 1994	376, 510 S. 1994	Tree, 249 4, 1894
Mari Ager Fagt of Delin	in the same	- (Yan	25
AND THE PERSON NAMED IN	i mile	200	125-111111
No. of Contract	APER I	St. St. St. of St. St. of Co. Street	7.12
	Prop. Stag 3, 1996	\$00, \$10, 1994	10-11-11-11-11-11-11-11-11-11-11-11-11-1
	gwas.	100	Maria va

Day by Day TimeSquare sports a flexible calendar that lets you display up to 35 consecutive days. Undated to-do's appear in the list on the left.

out related events in a busy schedule. The only missing feature is the ability to group labels into sets as you can with Now Up-to-Date. (Now Up-to-Date's sets make it easy to view all related categories or labels, such as all personal activities.)

TimeSquare supports multiple users by making extensive use of System 7's publish and subscribe. People on a network can view-but not alter-activities from another calendar by subscribing to a published edition that includes all of the events assigned to any label in the original file. If two people need to modify events in a calendar, however, they must have read-write access to a common calendar file.

For those rare times when you're away from your Mac, TimeSquare lets you print your schedule in a variety of formats. Time-Square also lets you import and export calendars as either tab- or comma-delimited files. (If you try to import an event with a description field longer than 255 characters, the import process terminates without telling you why.) TimeSquare's manual is clearly written. Finally, technical support is friendly, if not toll-free.

All in all, I was quite impressed with the first release of TimeSquare: it's fast and builds on the strong points of its predecessor, AgentDA. With a few changes, Team Building Technologies could have a winner.-FRANKLIN N. TESSLER

page without scrolling, shrinking, or the Portrait/15 Pivot makes sense.

Let's face it. A monitor is only as good as its ability to show you a readable page of text.

And since you're reading this ad, you've probably run out of patience with the standard landscape monitor you're currently using - the one that forces you to constantly scroll up and down. Or shrink everything to tiny, unreadable page previews.

You could upgrade to a 16" or 17" landscape monitor. But even a 17 incher only shows you about 65% of a full page. So you'd still end up scrolling. Or shrinking.

A fancy 20" model would be more than enough to do the job. Unfortunately, it would also break the bank.

Which leaves the Portrait/15 Pivot, the only affordable, full-color portrait monitor that lets







Only the Portrait/15 Pivot gives you the best of both worlds-portrait and landscape in one affordable monitor

you see a whole page of perfectly readable text. On a Macintosh, a Power Mac, or in Windows."

If the Portrait/15 Pivot looks like a great value, you haven't seen the half of it.

That's because buying a Portrait/15 Pivot is like getting two multi-frequency monitors for the price of one.

All you to do is reach up, grab the corner, rotate, and your portrait monitor instantly becomes a landscape monitor - no switches to set, no cables to change.

Portrait or landscape, you'll appreciate Macintosh resolutions up to 832 x 624 (up to 1024 x 768 in Windows), flicker-free refresh rates of 75 Hz and the sharp, clear images that only .28 mm dot pitch can give you.

Just what you'd expect from a monitor that combines the best of Radius* and Portrait Display Labs" technology.

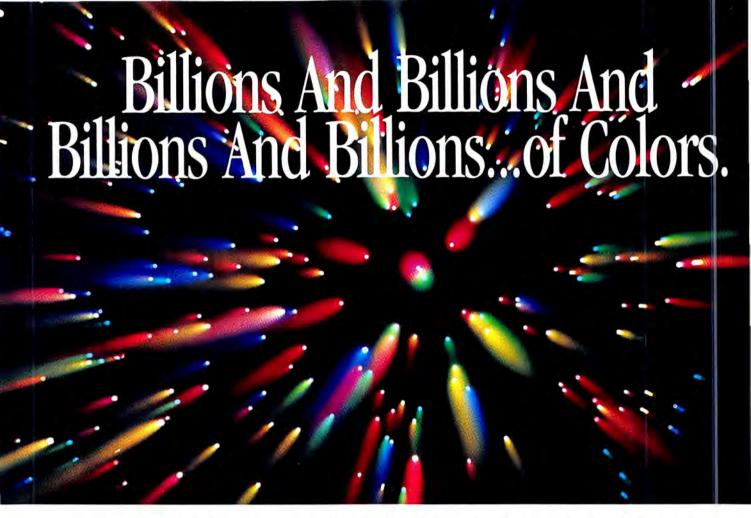
For an impressive list of features and specs, including our 30-day money-back guarantee, call 1-800-858-7744 Ext. 73.

It's the only sensible thing to do.



The Portrad/15 Parot is compatible with Macantosbon-board video and popular Windows graphics cards.

POWER WHY COMMITTEE !



Introducing the ScanMaker® III, the first 36-bit, single-pass, color flatbed scanner that's also the best value in the cosmos.

The ScanMaker III's 36-bit color scanning capability allows it to capture an astronomical 68 billion colors. It has an optical density that reaches 3.4, unprecedented for a flatbed scanner, which results in a vastly expanded

Dynamic Color Rendition

dynamic range. What all this means is, that your scanned images will have smoother color gradations, denser color values and substantially increased detail in shadow and highlight areas.

Performing like scanners priced somewhere in the stratosphere, the ScanMaker Ill's scans are so sharp, you will actually reduce the amount of time spent in post-scanning software to sharpen images. And its optical resolution of 600 x 1200 dpi

(enhanced through software to 2400 x 2400 dpi) is great for enlarging small originals.

ScanMaker III

shown with optional

Transparent Media Adapter

for scanning transparencies up to 8" x 10".

For accurate scanned color, DCR™ (Dynamic Color Rendition), Microtek's award-winning color calibration/correction system calibrates the ScanMaker III to a photographic

industry-accepted calibration target creating a custom profile of your specific scanner. This ensures the most accurate color possible as you scan an image, so you spend a lot less time adjusting the color of your scans to match your originals.

Windows users also get Microtek's ScanWizard™, a drag and drop application for instant image management, faxing and printing. The ScanMaker III also includes the full-version of Adobe Photoshop for complete image editing and color separations.

See why Microtek is the universally accepted leader in image quality. For more information about the ScanMaker III, DCR, ScanWizard, or for the name of your nearest authorized Microtek reseller, call **1-800-654-4160**.

MICROTEK
Better Images Through Innovation.

Icon Mania 1.0

Icon-Editing Utility

PROS: Simple interface; creates thumbnails from graphics files; good icon-editing tools. CONS: No text tool. COMPANY: Dubl-Click Software (818/888-2068). LIST PRICE: \$69.95.



CON MANIA IS A DELIGHTFUL ICONediting utility that comes with terrific tools for building new icons, even if you have no artistic talent all all. Unlike some iconediting programs, Icon Mania isn't a system extension or control panel; it's a small standalone application that makes editing batches of icons easy—and entertaining.

The program's main interface, consisting of three windows, is a model of clarity. The left window displays a library of custom icons; you can create your own libraries or dip into the 730 icons included with the program. The middle window shows the icons on any volumes currently mounted on your Mac. The window on the right is the pasteboard, a storage area where you can paste icons-in-progress or library items you access frequently. To apply an icon to a file, folder, or disk, you simply drag a custom icon—

from either the library or pasteboard—onto the icon you want replaced.

The icons that come with the program are outstanding; the majority are colorful, sophisticated, and well designed. (The icons look fine in black and white but are spectacular in color.) You can go wild with icons of space creatures, animals, bugs, Elvis, Ronald Reagan, and the Marx brothers. On a more practical note, there are colorful 3-D versions of popular application icons and folders as well as a set of sharp-looking icons representing floppy disks, hard drives, and removables. Icon Mania also allows you to replace your default system icons with full-color, jazzed-up versions of folder, control panel, Trash Can, and alert icons.

But this isn't just an icon collection; it's an icon editor. Choosing the Edit command—or just double-clicking on an icon in the library or on the pasteboard—opens a window for modifying icons on a pixel-by-pixel basis. You can also create new icons from scratch. A row of Instant Tool buttons allows you to rotate, invert, and flip pieces of your icon designs with a single click. Still, a text tool would make it easier to add letters and numbers to icon designs.

Some of the program's icon-making commands are particularly noteworthy. First, the program lets you merge two different icons into a single new design using Paste Into Icon, a powerful command that



Instant Thumbnails Icon Mania can create thumbnails—this dialog box lets you choose the portion of the image you want in the custom icon.

enables you to take one icon and superimpose it within the boundaries of a second. Another outstanding feature is the Thumbnail command. Select a graphics file, choose Thumbnail, and Icon Mania builds a custom icon containing a thumbnail of the actual image contained in the file. The command produces great results and works with files in PICT, MacPaint, TIFF, GIF, PICS, EPS, and StartupScreen formats.

Icon Mania won't make you more productive, and it won't make your Mac more powerful. But after seeing how vibrantly Icon Mania can transform a window full of boring, generic folders, you may just decide you can't live without it.—JOSEPH SCHORR

PowerMerge 2.0

File-Synchronization Software

PROS: Better file- and conflict-handling; can compare and launch documents within Power-Merge; locates duplicate files; improved status information. CONS: Can't schedule synchronizations. COMPANY: Leader Technologies (714/757-1787). LIST PRICE: \$129.



OWERMERGE IS ONE OF SEVERal synchronization programs that help you keep individual files, folders, or entire volumes organized and up-to-date. Power-Merge 1.0.2 was a useful program (see Reviews, Macworld, April 1993). Version 2.0 adds important new features.

Here's a typical scenario. Suppose I decide to work at home. I open Power-Merge on my Mac at work, locate the files I want to work on, and have Power-Merge copy them to a floppy. At home, I copy the files onto my Mac. I finish my work and return to the office Monday morning, dead-line met. Now I want to replace the files on my workplace Mac with the new files. Power-Merge can look at both the floppy disk and the hard drive on my workplace Mac

and can replace the old versions of files with the new versions.

That's synchronization at its simplest. But sometimes I just can't remember which file is my working copy and which file is a different version, an archival copy, or ready for the Trash Can. What's a gal to do?

Each time you open PowerMerge, it presents the preview screen. From this screen you can open files you're not sure about (without leaving PowerMerge) and take a look. If you've modified both desktop and floppy versions of a file, PowerMerge can do a text comparison—either automatically or by using a third-party product like DocuComp—or PowerMerge can open both copies and let you eyeball them, line by line. You can also rename



Conflict Resolution During synchronization, PowerMerge notifies you if a file name has changed.

files, trash superfluous copies, as well as set PowerMerge to copy new files (or tell it not to copy a particular file anymore). To help identify files, a status box at the bottom of the preview screen lists file types and creation/modification dates, and also shows how you've set up PowerMerge to deal with each file. You can choose to have PowerMerge display apparent duplicates at the top of the preview screen.

PowerMerge can also be used as a backup program. You can lock the working volume, making it a one-way synchronization. You can designate—in the preview screen the working volume as a master volume; again, the synchronization is one-way, but PowerMerge makes the contents of the backup, or slave, volume mirror the master volume, so you end up with an exact duplicate of the working volume. Lastly, for maximum flexibility you can select the two volumes and tinker with the settings each time you want to back up, especially if you want to keep several versions of a backup file or retrieve files from the backup volume without a full restore.

PowerMerge is a powerful file-management tool. If you're using 1.0, or have never tried synchronization software, check out PowerMerge 2.0. I see a lot of software, so when I not only install but also continue to use a program over a year later, I know it's a hit.—SUZANNE COURTEAU



COMPUTER DISCOUNT WAREHOUSE™

Maxima V2.0



says: "Any order \$200 or less ships for only \$2.99!"





DeskWriter 560C Color Inkjet Printer

 600 x 300 dpi with Resolution Enhancement 24-bit (16.7 million) color support 256 grayscale levels
 Up to 3 ppm print speed 3 year limited warranty 35 TrueType scalable fonts Apple Talk and serial scalable fonts AppleTalk and serial interfaces Prints on plain or glossy paper, transparencies, and envelopes

\$569.75 CDW 39509



Supra Corporation

SupraFAXModem[™] 144LC

14,400 bps data and fax ✓ LED status Includes FAXcilitateTM



1.6, MicroPhone™ LT, CompuServe® software, and cables





MultiSpin 3Xe **CD-ROM Drive**

195ms Access 450KB/sec Data Throughput *256KB Continuous-Flow Cache MPC Level 2, PhotoCD Multisession, and QuickTime Compliant Switchable SCSI-1/SCSI-2 Interface

\$463.57 CDW 32243

Call CDW today for all your Macintosh® computing needs!

800-509-4CDW



Catalog Reseller

Adobe		
Acrobat Exchange 1 user	125	85
Dimensions	119	55
Illustrator V5.5 + CD	379.	21
Photoshop V2.5.1	546	64
Photoshop V2.5.1 DLX CD	615	94
Premiere V3.0	444	38
Premiere V3.0 DLX CD	508	31
Streamline V3.0	127	87
Super ATM		
Type Basics	119	96
Type Manager V3.6	39	at
TypeSet Value Pk		



Aldus	
Datebook Pro V2.0	44.23
Fetch V1.2	182.77
Freehand V4.0	369.35
Gallery Effects Vol. 1	125.54
Home Publisher V1.0	44.53
IntelliDraw V2.0	41.18
Pagemaker V5.0	549.56
Persuasion V2.1	304.09
Pre-print V1.6	311.35
SuperCard V1.6.	125,54
SuperPant V3.5	44.92
Touchbase Pro V3 0	44.23
Altsys	
EPS Exchange V2.0	85.93
Fontographer	248.84
EPS Exchange V2 0 Fontographer Metamorphosis Pro V2.04	85.94
Ares	
Font Chameleon V1.0	172.53
Font Hopper	39.24
Fontmonger V1 5	89.11
Aladdin SitCom	63.82
Aladdin Stuffit Space Saver	34.06
Avery MacLabel Pro	45.89
Broderbund	
Automap Atlas	35.56
Bannermania	21.26
Carmen Sandlego/Time Carmen Sandlego/USA DLX	29.20
Carmen Sandiego USA DLX	39.24
Carmen Sandiego/World DLX	39.24
Carmen Sandlego World DLX CD-FOM	53.85
MYST CD-ROM	48.28
Patton Strikes Back	12.24

BestWare MYOB Accounting V4.0	99.54
Caere	
OmniPage Direct OmniPage Pro V3.0	87.14
OmniPage Pro V3.0	299.65
OmniScan	295.09
Central Point	
Anti Virus	41.58
MacTools V3.0	86.50
Safe and Sound	29.37
Claris	
Brush Strokes	45.55
Brush Strokes Comp Upg	71,21
ClarisWorks V2.1	185.26
FileMaker Pro V2.1	247.71
FrieMaker Pro V2.1 Comp Upg	109.98
Impact V1.0	136.29
MacDraw Pro V1.5	248.51
MacPaint V2.0	79.08
MacProject Pro V1.5	371.52
MacWrite Pro V1 0	95,19
MacWrite V1.1	82,49
Power to Go V2.0	25.21
Retreive Iti	25.21
Connectix	
Deskton Utilities	55.72

VIAXITIA VZ.U.	
On the Road V1.0	55.72
On the Road V1.0. PowerBook Utilities	55.72
RAM Doubler	55.05
Colorage Freedom of Press Classic	79.59
CompuServe Membership Kit	24 64
Corel Gallery V1.0	33 10
Corel Gallery V1.0 Corel SCSI	65.44
Dantz	
Diskfit Direct V1.0	29.78
Diskfit Pro V1.1	69.60
Diskfit Pro V1.1 Retrospect Remote V2.0	245.66
Retrospect V2.0	136.68
Datawatch	
ScreenLink V2.0 2 user	59.07
ScreenLink V2.0 2 user	59.07
Superset Utilities	85.62
Virex V5.0	59.93
Delrina	
DelrinaFax V1.5	79.62
Far Side Daily Planner	38.59
ntermission Screen Svr	26,30
Opus & Bill Screen Svr	29.60
Deneba	
Artworks V1.0	96.49
Canvas Tool Packs Canvas V3 5	34.51
Canvas V3.5	252.30
Ultra Paint V1 03	53.80
Dataviz MacLink+/PC Connection	
DCA Crosstalk	113.90
Electronic Arts	
Chuck Yeager's Air Combat	35.66
Cyberplasm Formula CD	32.94
Deluxe Music V3.0 CD	86.52
PGA Tour Golf CD	35.66
Papulous CD	29.40

Total Distortion CD	78 12
V for Victory II	41.60
Vampires Coffin CD	39.19
Entertainment	
Berkeley After Dark V2.0	28.17
Berkeley Disney Screen Svr	
Berkeley More After Dark	23.88
Berkeley More After Dark	
Berkeley Star Trek Screen Svr	28.45
Comptons King James Bible	
Comptons Movies	
Comptons Tropical Rainforest	25,30
Comptons Wild Places	25.30
LucasArts Indiana Jones Last Crusade	19.95
LucasArts Loom	18.00
LucasArts Secret of Monkey Island	21.00
Maxis A-Train w/Contruct Set	29.14
Maxis DoodleMation V1.0	18.32
Maxis EL Fish	29.13
Maxis Robosport	23.28
Maxis SimAnt	
Maxis SimCity 2000	39.62
Maxis SimCity Classic	
Maxis SimEarth	29.12
Microprose Civilization	
Microprose Railroad Tycoon	19.78
Paramount Jump Raven CO.	
Paramount Lunious CD	38.94
Paramount Movie Select CD	34.19
Paramount Rock, Rap and Roll CD	38.96



Fractal Des	ian
Colorstudio V1.5	443.61
Painter V2.0	243.45
Painter/X2	64.33
Sketcher V1.0	45.90
Frame Techn	ology
Framemaker V4.0	559.75
Framereader	74.51
Farallon Timbuktu V5.0	105.55
Freesoft White Knight 11	83 52
Golden Triangle TimesTwo	81.72
Gryphon Morph V2.0	139.60
Haves Smartcom III V3.4	79.58
HSC Kai's Powertools V2.0	95.59
Inline	
Cogito V1.0	34.10
Deliverance	
Firefail	
Icon 7	44.53
INITpicker V3.0	
Spin Doctor	34.19
Super Maze Wars	28.34
Insignia	
Access PC V3.0	79 92
RapidCD V1.0	45.20
RapidTrack V1.0	45.20

21,221,21	
Soft PC V3.0	99.10
Soft PC with Windows	302.25
Interplay	
Battlechess Battlechess Enhanced	17.91
Checkmate	
Out of this World	
Peter Gabriel XPLORA 1	47.06
Star Trek 25th Anniversary	34.19
IMSI TurboCAD VI.0	75.69
Informix Wingz V1.1	241.66
Intuit Quicken V4.0	42.93
Kent Marsh	
Cryptomatic V1.0	
Folderbolt V1.02	69.27
Folderbolt/Nightwatch bundle	
Quick Lock V2.1	.17.91
Lotus	
1-2-3 V1.1	276.77
1-2-3 V1.1 Comp Upg	98.47
1-2-3 V1.1 Server	332.35
1-2-3 V1 1 Server Upg	98.56
Light Source OFOTO V2.03	169.92
Macromind	
Macromedia Action Bundle	269.46
Macromedia Director V3 1	669.24
Macromedia Director V3.1 Upg SoundEdit Pro	352.82
SoundEdit Pro	125,10



	Fo	xP	ro	V2.	5	
\cap	(J	W	1	99	13	
4	761		CE	E W	7657	
	100					۱

Microsoft	
Cinemania 1994	51.76
Excel V4 0	298.78
Excel V4.0 Upg	114.54
File V2.0	123.01
Flight Simulator V4.0	43.31
Foxpro Professional Upg V2.5	265.50
FoxPia V2.5	
Office V3.0	
Office V3.0 CD.	442.88
PowerPoint V3.0	299.71
PowerPoint V3.0 Comp Upg.	
PowerPoint V3.0 Vers Upg	
Project V3.0	
Project V3 0 Comp Upg	
Project V3.0 Vers Upg	
	299.71
Word V5 1 Comp Upg	
Word V5 1 Vers Upg	99.35
Works V3 0	151.85
No Hands Common Ground V1.0	
Now Software Now Up-to-Date V2.1	59.49
Now Software Now Utilities V4 0.1	77.41
Disk Manager	31,29
QuarkXpress V3 3	16.962
Ray Dream	
AddDepth V1.0	115.01
Designer V3.0	223,59
JAG II	65.27
Sierra On-line	
Fronts, Direction	

Lesigner V3.0	ZZJ.51
JAG II	85.27
Sierra On-line	
Freddy Pharkas	23.77
Hoyle Classic	28.47
hoyle II	28.45
Japanese Alive CD	102.62
Kings Quest V	38.97
Kings Quest VI	44.51
Leisure Sut Larry 1	
Lessure Sut Larry 5	23.87
Police Quest 3	38.97
Police Quest 4	38.98
Space Quest IV	23.01
Spectrum Holobyte	
Falcon V2 2	35.26

Iron Helix CD	55.69
Super Tetris	29.78
Totris	24.07
Wordtris	29.78
Symantec	
ACTI VI.1	156.77
Autodoubler V2.0	58.38
Disklock V2.1	119.22
Greatworks V2 0	84.26
Nore V3.1	248.45
Norton PowerBook Essentials V1.1	83.72
Norton Utilities V2.0	93.62
PYRO! V4.1	27.33
SAM AntiVirus V3.5	
Sutcase V2 1	49.74
Superdoubler V1.0	69.74
Software Ventures MicroPhone Pro	132.08
T.Maker Incredible Image Pak	
WordPerfect	

	WOLDLELIECT		
tterPerfect V2.1	MITTERS AND ADDRESS OF THE PARTY OF THE PART	59	.50
ordPerfect V3.0		73	.87
andPerfect V3.0	Comp Upg	75	.81
ordPerfect V3.0	Vers Upg	47	.34
orks V1.2		44	
orks V1.2 Upg	STATE OF THE PARTY	79	.71

If You Find a Better Price, Call CDW **Before You Buy** (800) 509-4CDW

NASDAQ

Desktop Utilities

BUY WITH CONFIDENCE CDW® IS A NASDAQ TRADED COMPANY

D & B Rated AA1 Durs 10-762-7952

No Surcharge For Credit Cards





CDW* HOURS 8:00-7:00 COT Mon-Frt. 9:00-5:00 CDT Sat.

Free technical support for CDW customers: 800-383-4239

CDW® YOUR COMPLETE SOURCE FOR HARDWARE & PERIPHERALS

COMPUTER DISCOUNT WAREHOUSE



SONY

	44		
Monitors -		11	
E-MACHNES		■ Dayna	
T16li 16* color	1167.84	Network Vital Signs	237.33 592.40
	2426.02	SafeDeposit V1.3. SafeDeposit V1.3. SafeDeposit for ApplieShare Servers Daynaport ELC-T 108T. Daynaport EZ-Combo Daynaport EZ-Combo Daynaport SCSULINK Coax Daynaport SCSULINK 108T. Daynaport SCSULINK PB-1 108T. Daynapo	65.62 242.97
3V 15' flat sq. NEC	467.49	Daynaport ELC Coax Daynaport ELC-T 108T	108,87
37 13 "fat sq 3FG 15" fat sq 4FGe 15" fat sq 5FGe 17" fat sq 5FGp 17" fat sq 6FGp 21" flat sq	467.49 557.17 617.19	Daynaport E/LC-M Combo	154.76
5FGe 17" flat sq	998.50 1097.21	Daynaport SCS/J ink Coax	239.57
6FGp 21* flat sq	1997.00	Daynaport SCSI/Link-T 108T	248.97
MAGNAVOX	200	Daynaport SCSI/Link PB Coax.	268.22
CM2080 14* .26mm 20CM64 20* .31mm	249.80	Daynaport SCSI/Link PB-T 108T	268.22
SONY		Etherprint-T APL Bridge BNC/AUI	329.56
1730 17* trinitron 17se1 17* GDM-series trinitron	1119.80		354.01
Radius	1113,00	FARALLON FitterWays AAUT Transceives 1997	99.63
Monochrome 15° Pivot	562.66	EtherWave AAUI Transceiver 10BT EtherWave AUI Transceiver 10BT EtherWave LC Adapt, 10BT	101.09
Precisioncolor 15' Pivot	1079.12	EtherWave LC Adapt, 10BT EtherWave LC-F Adapt, w/FPU 10BT	179.21
20GS 20' mono dual pg	.796,88	EtherWave NuBus Adapt, 10BT EtherWave Adapt, (ParBk, Classic) 10BT EtherWave Newton Adapt, 10BT	178.20 291.25
	1636.19	EtherWave Newton Adapt, 10BT EtherWave Printer Adapt, 10BT	291.50
Sweet 16' color full pg. 21' mono dual pg. 20'20 20' color full pg. 21' color full pg.		EtherWave Newton Adapt. 108T. EtherWave Printer Adapt. 108T. EtherMac LC-107T 108T. EtherMac LC-107T 108T wFPU. EtherMac LC-107T 108T wFPU. EtherMac LC-107E 108T wFPU. EtherMac LC-107E 108T wFPU. EtherMac LC-107E Coat wFPU. EtherMac LC-11F Coat wFPU. EtherMac SCSI-17E (Casts: Mac-) Coax. EtherMac SCSI-17E (PowerBook) Coat. EtherMac SCSI-17E (PowerBook) 108T. EtherMac SCSI-7P (PowerBook) 108T. EtherMac SCSI-7P (PowerBook) 108T.	101.25 241.59
Sweet 16* color full pg	1058.78	EtherMac LC-C Combo	174.43 279.67
20/20 20° color full pg	1496.82	EtherMac LC-TN Coax	109.10
20T 20* color 30mm	1957.57	EtherMac SCSI-TN (Classic, Mac+) Coax	265.04
SUFFMAC		EtherMac SCSI-TN (PowerBook) Coax. EtherMac SCSI-TP (Classic, Mac+) 10BT	276.92
Supermatch 17T 17' color Platinum 20' mono full pg. Supermatch 20+ 20' color	1042.93	EtherMac SCSI-TP (PowerBook) 10BT EtherMac SE-C Combo	279.67 148.20
Platinum 20* mono full pg. Supermatch 20+ 20* color Supermatch 20TXL 20* color	2109.71	Ether10-T transceiver RJ45/AAU Ether10-T transceiver RJ45/AU LocalPath V1.0 8 user	54.51
Graphics/Video Boards -		LocalPath V1.0 8 user	132.03
E-MACHINES		PhoneNET Connector DIN-8 PhoneNET Connector DIN-8 10pk	194,66
Futura SX	299.00 762.11	Communications/Modem:	5 <u> </u>
Futura II Ethernet upg	254.20	PowerPort Bronze 2400 Int	***
			249.90 272.34
Powerlink Presentor Radius	416.05	PowerPort Silver 9500 Int PowerPort Gold 14 4K Int PowerPort Mercury 19 2K Int TelePort Bronze 2400 Ext	314.37
Precisioncolor 8X / 8-bit	456.42	TelePort Silver 9600 Ext.	219.96
Precisioncolor Pro 24XP	445.28	TelePort Gold 14.4K Ext. Teleport Mercury 19.2K Ext.	219.97
		GlobalFax Dug software	75.00
Powerview for PowerBook/Classic	475.61	Hayes'	
Paster()bs		Mac ACCURA 2400 Mac ACCURA 9600FAX96 Mac ACCURA 14.4FAX14.4 Mac OPTIMA 2400FAX96 Mac OPTIMA 9600FAX96 Mac OPTIMA 14.4/14.4 Pocket	148.91
BXL B-bit 1MB RasterOps	446.71	Mac ACCURA 14.4/FAX14.4 Mac OPTIMA 2400/FAX96	124.10
BXL 8-bit 1MB BXLI 8-bit 1MB 24MX 24-bit 2MB	467.40	Mac OPTIMA 9600/FAX96 Mac OPTIMA 14.4/14.4 Pocket	289.27
24STV 24-bit 24XLI 24-bit 3MB PaintBoard 8I (8-bit 1MB	1613.55	MACTICAL	
	316.72 782.72	Mac 14.4/14.4 Pocket Mac 14.4/14.4 FXSA wLCD	209.33
PaintBoard Lightning 24-bit 3MB PaintBoard Turbo 24-bit 3MB 7* PaintBoard Turbo 24-bit 3MB XL	1122.83	The second secon	200.20
PhotoPro Moviepak2	1527.77	Supra	
Mediatime	1492.58	Mac LC 14.4/14.4 w/LCD	207.74
CorrectColor Calibrator SUFERMAC	952.89	Mac PowerBook 14,4/14,4 Int	204.92
Spectrum'8 Series III	361,38	Mac Sportster 14.4/14.4	149.80
Spectrum/24 Series IV. Thunder/8	762.11	Mac WorldPort 14.4 Pocket	239.79
Thunder/24	1676.82	Storage Systems —	-
Thunder 24 DSP upg Thunder II	.508.28 .2001.54	₹ FWB	
Thunderstorm for Photoshop	339.71	Hard Disk ToolKit Personal V1.5	49.69 449.03
Videospigot NuBus	362.39 2816.04		525.24
Networking -		Pockethammer 170MB Pockethammer 240MB Pockethammer 530FMF 530MB Pockethammer 1000FMF 1 0GB Pockethammer 1500FMF 1 6GB Pockethammer 1500FMF 1 6GB	972.62
MASANTÉ		PocketHammer 1600FMF 1.6GB PocketHammer 2100FMF 2.1GB	1751.55 2268.03
10THUB 12 port 10BT - AUVBNC	456,01	HammerPB 210MB PowerBook Int.	599,85
10THUB 8 port 10BT +BNC AH1012 12 port 10BT +RJ21//BNC/AUI SNMP Module-AH1012	215,98 819,90	Hammer 2000FMF 2.0GB	2579.54
SNMP Module-AH1012	259.15	Hammer 2100FMF 2.0GB	3149.86
		HammerDisk 44MB Syquest	509.85
Asanteite LC-T0T 10BT Asanteite LC-TN Coax Asanteite NB-10T 10BT	108.88	HammerDisk 105MB Syquest	469.01
Asantelite NB-TN Coax AsantePrint 2001 APL Bridge RJ45/AUI	111.92	HammerDisk 600MB Optical	2409.15
AsantePrint 1002 APL Bridge RJ45/AUI AsantePrint 1002 APL Bridge AUI/BNC	329.61	PocketHarmer 2100FMF 2 108 Hammer PB 210MB PowerBook Int. Hammer PB 210MB PowerBook Int. Hammer 2000FMF 2 00B Hammer 2100FMF 2 00B Hammer 2800FMF 2 00B Hammer 2800FMF 2 80B Hammer 5800FMF 2 80B HammerDisk 140MB Syquest HammerDisk 150MB Syquest HammerDisk 150MB Optical HammerDisk 600MB Optical HammerTage 525MB External SCSI JackHammer 200FMF 2 00B	598.37
AsantePrint 1002 APL Bridge AU/BNC AsantePrint APL Bridge RJ45/AU/ EN1074 Transceiver B M5/AU/	319.42	SiedgeHammer 2000FMF 2.0GB Hammer external enclosure	2239.72
Asamerimi Are, Bridge Harbardi . FNIOTA Transceiver FLHS/AUI . FNIISTIM Coax w/transceiver . FNIIST Coax w/transceiver . FNITM Coax w/transceiver . FNITM Coax w/transceiver . FNITM Transceiver AU/AUI .	226.67	Ĩ∙M=GA	
FNIISITNMC 10BT witransceiver	194,39	MacFloptical 21MB MacTransportable Bernoulli 90MB MacTransportable Bernoulli 150MB	333 42
FNTKA Transceiver AUUAUI	64.54	MacTransportable Bernoulli 150MB	468.00
FNTNA Transceiver BNC/AUI MacLCTNIII Coax MC+30IE64 Coak MC+30IE764 10BT	149.17		
MC+30IE54 CONK MC+30IET64 10BT	149.17	C Pack 120MB	386.48
MC+LCIII Combo	17/4.00	C Pack 80MB C Pack 120MB C Pack 240MB C Pack 155MB Tape Drive C Pack 600MB Tape Drive SS-240 240MB Ft	478.18 729.87
MC+SEET 10BT	149.17	C Pack 600MB Tape Drive SS-240 240MB Ext	492.99
MC3IISI Combo MC3NB Combo	185.04	SS-240 240MB Ext. SS-313 323MB Ext. SS-414 430MB Ext. SS-540 540MB Ext.	1009.86
MC3SE Combo	194.39		1076.78
McLC10TIII 10BT MCLC10TMCII 10BT w/FPU	239.67	E PI I	

# Dayna		Infinity 21MB Floptical Int Infinity 21MB Floptical Ext. Ininity 1.3GB MaxOptical Ext. Infinity 600MB MixOptical Ext.
		Ininity 1.3GB MaxOptical Ext.
k Vital Signs pe System bundle	237.33 592.40	Infinity 600MB MaxOptical Ext.
po System burder point V1.3 point V1.3 post st AppleShare Servers point ELC Ces. post ELC-4 post Servers point ELC-4 point ELC	65.62 242.97	Infinity 600MB Optical Ext. Infinity 600MB Optical Ext. PLI 44MB Syquest Carl formatted. PLI 88MB Syquest Carl formatted. PLI 105MB Syquest Carl formatted. PLI 270MB Syquest Carl formatted.
posit for AppleShare Servers	242.97	PLI BBMB Syquest Cart formatted
sort E/LC Coax	108.87 89.36 144.76	PLI 105MB Syquest Cart formatted.
ont ELC-A AUI	144.76	PLI 270MB Syquesi Carl formatied
port E/LC-M Combo	154.41 239.57	SCSI hard drives
nort SCSULink Conv	248.97	Conner 1.0GB SCSI-2
port SCSI/Link-T 10BT	248.97 292.02	Micropolis 1.05GB SCSI-2
port SCSI/Link-3 Combo	292.02	Micropolis 1,05GB AV SCSI-2
nort SCSI/Link PB Coax	260.22	Micropolis 1.76GB AV SCSI-2
ort SCSI/Link PB-3 Combo	258.22 268.22 299.24 329.56	Micropolis 3.0GB SCSI-2
int APL Bridge BNC/AUI	329.56	Seagate 1.0GB SCSI-2
int-1 APL Bridge RJ45/AUI	321.07	Seagate 2.1GB SCSI-2
Intro JAPL Bridge BINCHUS/SAU FARALLON FARAL		PLI 270MB Syquest Cart formatted SCSI hard drives Corner 343MB SCSI-2 Corner 1.00B SCSI-2 Corner 1.00B SCSI-2 Corner 1.00B SCSI-2 Meropolis 1.05GB AV SCSI-2 Meropolis 1.75GB SCSI-2 Meropolis 1.75GB SCSI-2 Meropolis 1.76GB SCSI-2 Meropolis 1.76GB SCSI-2 Seagate 1.06B SCSI-2 Seagate 1.06B SCSI-2 Seagate 2.10B SCSI-2
Java AALII Tenerashur 100T	00.07	Input Devices -
ave AUI Transceiver 10BT		₹ CalComp
Yave LC Adapt, 10BT	288.49	
Ave LC-F Adapt w/FPU 10BT	179.21	DrawingSlate series 6x9 corded pressure stylus
ave Adapt. (PwrBk. Classic) 10BT	291.25	12x12 conflexs 4B cursor
ave Newton Adapt. 10BT	291.50 291.35	12x12 cordiess 48 cursor 12x12 cordiess 16B cursor 12x12 cordiess pressure stylus 12x18 cordiess 48 cursor 12x18 cordiess 16B cursor
ave Printer Adapt 10BT	291,35	12x12 cordless pressure stylus
ac LC-10TF 10BT w/FPU	241.59	12x18 cordiess 4B cursor
ac LC-C Combo	241.59 174.43	EDCON
ac LC-CF Combo w/FPU	279.67	EPSON
ac LC-TNF Coax w/FPU	241.59	Epson 800C Pro
ac SCSI-TN (Classic, Mac+) Coax	265.04 275.92	Logitech
ac SCSI-TN (PowerBook) Coax	263,73	Logitech MouseMan Logitech Trackman II
ac SCSI-TP (PowerBook) 10BT	279.67	Microtek
ac SE-C Combo	148.20	35T Siide Scarner
T transceiver RU45/AAU	54.51	ScanMaker II ScanMaker IIXE
ath V1.0 8 user	132.03	ScanMaker Auto Doc Feeder
NET Connector DIN-8	194,66	
NET Connector DIN-8 10pk	194,86	Wacom 6v8 Arts ADB confess states
imunications/Modems		6x8 Artz ADB, condiess pres stylus 12x18 Standard: condiess pres stylus 12x12 Electrostate, condiess pres stylus 12x12 UD-series, condiess pres stylus 12x18 Electrostate, condiess pres stylus 18x25 Standard, condiess pres stylus 18x25 Standard, condiess pres stylus
Global Village		12x12 Electrostatic, cordiess pres stylus
Port Bronze 2400 Int	87.55	12x12 UD-series, cordless pres stylus
Port Silver 9600 Int	249.90	18x25 Standard, cordiess pres stylus
ort Mercury 19 2K Int	249.90 272.34 314.37	Cordless 48 carsor Cordless standard stylus
rt Bronze 2400 Ext.	219.96	Cordless standard abdus
nt Silver 9600 Ext	219.96	CD-ROM/Multimedia —
t Mercury 19.2K Ext.	219.97 273.77 75.00	NEC MultiSpin 3Xe 195ms
ax Duo software	75.00	NEC MultiSpin 3Xi 195ms Int.
Hayes'		GP3: IOMM/IIIIIntelfia Mcronet CD ROM 225ms NEC MultiSpin 3Xi 195ms NEC MultiSpin 3Xi 195ms Int. NEC MultiSpin 3Xi 195ms Int. NEC MultiSpin 3Xi 195ms Int. NEC MultiSpin 3Xi portable NEC MultiSpin 4Xi protable N
CURA 2400 CURA 9600-FAX96 CURA 14.4-FAX14.4 271MA 2400-FAX96 TIMA 9600-FAX96 271MA 14.4/14.4 Pocket	69.28 148.91 157.95 124.10 348.13	Pioneer 6 Disc Quadrasnin
CURA 9600/FAX96	146.91	Plextor DM5028 240ms
CUHA 14.4/FAX14.4	124 10	Plextor DM3028 240ms Int.
TIMA 9600/FAX96	340.13	PLI CD-ROM 295ms Int
PTIMA 14.4/14.4 Pocket	289,27	PLI CD-ROM 320ms
MACTICAL		Toshiba 3401 200ms
4/14.4 Pocket 4/14.4 FXSA wLCD	299,33	Media Vision PAS 10 NuBus
4/14 4 FXSA wLCD	209,33	Aftec Lansing ACS100 Spkrs
C		Yamaha 10 watt Computer Spkrs Yamaha Hello Music! MIDI
Supra		Printers —
4/14.4 W/LGD	207.74	The second secon
4/14.4 w/LGD 14.4/14.4	207.74 152.30 204.92	TEN HEWLETT
14.4/14.4 werBook 14.4/14.4 Int	207.74 152.30 204.92	TEN HEWLETT
Robotics		TEN HEWLETT
Robotics		TEN HEWLETT
Robotics	207.74 152.30 204.92 140.80 239.79	TEN HEWLETT
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems		DoskWriter 520. DoskWriter 560C Laser-Jel 4ML Laser-Jel 4MP Laser-Jel 4S-MX DeskJel 1200C
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520. DoskWriter 560C Laser-Jel 4ML Laser-Jel 4MP Laser-Jel 454 MX Dosk-Jel 1200C NEC
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4M, Laser-let 4S, MX Dosk-let 1200C Stentwriter 640, NEC
orister 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4M, Laser-let 4S, MX Dosk-let 1200C Stentwriter 640, NEC
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4M, Dosk-let 1200C NEC Silentwriter 640, Silentwriter 640, Silentwriter 1097.
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4M, Dosk-let 1200C NEC Silentwriter 640, Silentwriter 640, Silentwriter 1097.
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520 DoskWriter 563C LaserJel 4ML LaserJel 4MP LaserJel 451 MX DeskJel 1200C Slentwriter 640 Slentwriter 1097 WITENAMENTS microLaser Pro 600 PS25 microLaser Pro 600 PS65
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DosaWriter 560C Laser-lei 4ML Laser-lei 4ML Laser-lei 4ML DosaWriter 500C NEC Silentwriter 640, Silentwriter 1007. PTEXAS INSTRUMENTS
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DosaWriter 560C Laser-lei 4ML Laser-lei 4ML Laser-lei 4ML DosaWriter 500C NEC Silentwriter 640, Silentwriter 1007. PTEXAS INSTRUMENTS
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4M, Laser-let 4M, Laser-let 4M, Laser-let 4M, Laser-let 4M, Dosk-let 1200C NEC Silentwriter 640, Silentwriter 1097. TRUM TRUM TRUM TRUM TRUM TRUM TRUM TRUM
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79	DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4M, Laser-let 4M, Laser-let 4M, Laser-let 4M, Laser-let 4M, Dosk-let 1200C NEC Silentwriter 640, Silentwriter 1097. TRUM TRUM TRUM TRUM TRUM TRUM TRUM TRUM
FRobotics ordster 14.4/14.4 ordsport 14.4 Pocket age Systems	149.80 239.79 125.62 49.69 449.03 525.24 972.62 1119.51 1751.55 2268.03 59.85 637.41 22579.54 2353.48	DoskWriter 520, DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4M, Dosk-let 1200C NEC Silentwriter 640, Silentwriter 640, Silentwriter 1097. Silentwriter 1097. STOLE SILENTWRITER 1097. SILENTWRITER 1097
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	149.80 239.79 125.62 49.69 449.03 525.24 972.62 1119.51 1751.55 2268.03 59.85 637.41 22579.54 2353.48	DoskWriter 520 DossWriter 560C Laser-let 4ML Des2-let 1200C Silentwriter 1007 TEXAS INSTRUMENTS INCIDENCE PTO 600 PS65 Power Backup BC500 BC
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	148.80 233.79 125.62 49.69 449.03 525.24 972.62 1119.51 1751.55 2268.03 399.85 237.41 2355.40 3149.86 449.81 599.85	DoskWriter 520 DossWriter 560C Laser-let 4ML Des2-let 1200C Silentwriter 1007 TEXAS INSTRUMENTS INCIDENCE PTO 600 PS65 Power Backup BC500 BC
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	148.80 233.79 125.62 49.69 449.03 525.24 972.62 1119.51 1751.55 2268.03 399.85 237.41 2355.40 3149.86 449.81 599.85	DoskWriter 520 DossWriter 560C Laser-let 4ML Des2-let 1200C Silentwriter 1007 TEXAS INSTRUMENTS INCIDENCE PTO 600 PS65 Power Backup BC500 BC
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	148.80 233.79 125.62 49.69 449.03 525.24 972.62 1119.51 1751.55 2268.03 399.85 237.41 2355.40 3149.86 449.81 599.85	DoskWriter 520, DoskWriter 520, DoskWriter 560C Laser-let 4Mk Laser-let 4Mk DoskJet 1200C Sientwriter 640 Sientwriter 1097. Toe INSTRAMENTS microLaser Pro 800 PS23 microLaser Pro 800 PS55 Power Backup BC250 BC400. BC500 BC500 BC500 LAN Smart 250 LAN
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	146.80 239.79 125.52 49.69 525.24 972.62 1119.51 1751.55 2268.03 527.41 2579.54 49.01 2579.54 49.02 240.25 240.25 240.25 259.85 260.25	DoskWriter 520, DesACKARD DoskWriter 520, DesACKARD DoskWriter 560C Laser-let 4M, Desk-let 1200C Sientwriter 640, Sientwriter 640, Sientwriter 1097, Truck Instruments microLaser Pro 600 PS23 microLaser Pro 600 PS55 Power Backup BC250 BC400 BC500 BC500 BC500 LAN Smart 250 LAN Smart 250 LAN Smart 500 LAN
PRobotics onster 14.4/14.4 oridPort 14.4 Pocket age Systems	125.62 49.89 449.03 525.24 971.61 17751.55 2268.03 590.85 517.41 22578.48 449.01 108.92 449.01 108.92 2409.15 915.80 598.37 2239.72	DeskWriter 520 DeskWriter 520 DeskWriter 560G Laseclei 4ML Laseclei 4MP Laseclei 4MP Laseclei 4SIMP Desklei 1200G Silentwriter 640 Silentwriter 1097 TEXAS INSTRUMENTS microLaser Pro 600 PS65 Power Backup BC450 BC400 BC500 BC400 BC500 B
INRobotics ontsier 14 4/14 4 ordsPort 14 4 Peptier IEGO SYSTEMS WINDS AND TORKE AND	148.80 233.79 125.62 49.69 449.03 525.24 972.62 1119.51 1751.55 2268.03 399.85 237.41 2355.40 3149.86 449.81 599.85	DoskWriter 520, DoskWriter 520, DoskWriter 560G Laser-let 4M, Laser-let 4M, Laser-let 4M, Dosk-let 1200G Silentwriter 640, Silentwriter 1097, TRUG TRUG TRUG TRUG TRUG TRUG TRUG TRUG
INRobotics ordiser 14 4/14 4 ordisport 14 4 74 4 ordisport 14 74 74 74 ordisport 14 74 74 ordisport 15 74 ordisport 15 74 ordisport 15 74 ordisport 16 74 ordisport 17 74 ordi	125.62 49.89 449.03 525.24 971.61 17751.55 2268.03 590.85 517.41 22578.48 449.01 108.92 449.01 108.92 2409.15 915.80 598.37 2239.72	DeskWriter 520 DeskWriter 520 DeskWriter 560G Laseclei 4ML Laseclei 4MP Laseclei 4MP Laseclei 4SIMP Desklei 1200G Silentwriter 640 Silentwriter 1097 TEXAS INSTRUMENTS microLaser Pro 600 PS65 Power Backup BC450 BC400 BC500 BC400 BC500 B



MacDeal\$ says: "If you've seen a better price, call us before you buy--because CDW is DEALIN!



CDW Computer Centers, Inc. 1020 E. Lake Cook Rd. Buffalo Grove, IL 60089-1900

294.59 233.16 298.12 386.67 386.67 215.99

McLC10TIII 10BT
MCLC10TMCII 10BT wFPU
Mini EN/SC SCSI Combo
Mini EN/SC10T SCSI 10BT
EN/SC SCSI Combo
MPLC Token Ring 16/4
AsanteView V2 2

CDW® Sells for Less and Services You Better!

≥ PLI

CALL TODAY FOR OUR FREE MACINTOSH CATALOG.

Performance Upgrades

PowerCache 33Mnz wFPU PowerCache 50Mnz wFPU Value 040 33Mnz Value 040 40Mnz Turbo 040 33Mnz

Value 040 40Mn2 Turbo 040 33Mn2 w/FPU Ouad 040 w/128K Image 040 40Mh2 w/128K, DSP FastCache Ilici 64K FastCache Quadra Charper

Memory Upgrades

CDW carries Macintosh-compatible memory upgrades from Technology Works, Kingston, Simple Technology and more Call today for the best price!

901.91 947.20 1527.91 198.49 288.29 479.43 619.59

online Services put otherwise Scattered Conversations and resources all in one place that's accessible from your desk. On a variety of nationally available commercial online services—such as America Online, CompuServe, Delphi, eWorld, GEnie, and Prodigy—you can get stock quotes, tech-

Macworld's Guide to Online Services

nical support, or a dinner date; download software; use an encyclopedia; send mail and faxes; browse magazines; make airline reservations; and participate in written discussions on topics ranging from computers to politics to "Beverly Hills, 90210."

The convenience and dynamism is difficult to overstate. Of course, many of the features offered by online services are available elsewhere, and the convenient access to them may be not be worth the price. Sure, it's neat to access the Official Airline Guide online, but why rack up charges to figure out the best pricing or to check seating availability when you can call a

travel agent to do the same for free? You can send a letter to President Clinton by E-mail or the Postal Service, but either way it'll probably get minimal attention. And while you can read news and financial information online, doing so in large quantities gets expensive. If you really need that information for business purposes, your company should investigate more-direct methods of providing it, such as Dow Jones's DowVision (609/520-4677) or Desktop Data's NewsEdge (617/890-0042, 800/255-3343).

If you're looking only for electronic mail and an Internet mail gateway, you can get an account on a service such as MCI Mail (\$35 a year plus some per-message charges; 202/833-8474, 800/444-6245). If you want full Internet

access, you won't find it on most of the services covered here; only Delphi offers full Internet access to its members.

Another function that online services offer is the ability to send files to other users in addition to E-mail. The catch is that the recipient must also have an account on the service—so if you regularly need to transfer files to someone on a particular service, it may make the most sense to obtain an account on that service (see "Connect Your LANs," in this issue). Most of the services covered here do not allow users to attach files sent through the Internet, although users wishing to send simple text may find that copying the text into a mail document is the easiest way to send it.

When choosing a service, you should consider its general feel, its offerings, interface, support for Macintosh users, Internet access, and costs.

LINE

ORT

The appeal of the large



Illustration by Mick Wiggins

Which
of these five services is
right for you?

online services is that they offer a wide variety of databases, topical discussion groups, and resources—in other words, the electronic version of a shopping mall.

Core services include general, business, and sports news; computer forums and news; reference materials; electronic mail and bulletin boards; business statistics and data; games; shopping services; travel services; and educational reference material.

Still, the different online services do have different emphases, so even though they all offer a range of basic services, they are not interchangeable.

- America Online (AOL) Within the core feature set on AOL (703/448-8700, 800/827-6364) you can find the Library of Congress, Compton's Encyclopedia, news organizations like Cable News Network and Time, an extensive software library, stock quotes, sports news, a career center, a Macworld forum, American Airlines reservations, chat rooms, and special-interest areas including everything from a ham-radio club to an active gay and lesbian forum. AOL's emphasis is on information for home, recreational, and business users.
- CompuServe (CIS) Known for its vast wealth of databases and research-oriented services for financial, legal, and medical interests, CompuServe (614/457-0802, 800/848-8199) offers the core set of services, as well as Books in Print, computer vendor forums, brokerage services, Consumer Reports, Associated Press news, and the electronic edition of the Official Airline Guide.
- Delphi An Internet-oriented service, Delphi (617/491-3342, 800/695-4005) offers most core services, with its main omissions being vendor forums and graphical software. Delphi offers news from Reuters and United Press International; stock quotes; airline and car-rental reservations; the Computerized AIDS Information Network (CAIN); the Nynex Electronic Yellow Pages (covering businesses in the Northeast); Grolier's Encyclopedia; movie reviews; and computer vendor forums for a variety of platforms, including Macintosh.



AOL
and CompuServe
have the
most Macintosh
resources

• eWorld By the time this article appears, Apple will have replaced its AppleLink service with its new online service, eWorld (408/996-1010, 800/775-4556) (see "Apple's Online Mall," News, Macworld, March 1994). At press time, eWorld was expected to launch in midJune. A look at a prototype of the service revealed that its contents will be similar to those of other online services.

The core services that eWorld will provide include news from Reuters and USA Today, stock quotes, movie reviews, Grolier's Encyclopedia, a Living Well section, and a computer center. But with the service's soft-

ware still in flux, it's too early to assess its potential success.

• GEnie Within GEnie's (301/340-4494, 800/638-9636) core areas, you can access stock quotes; Dow Jones News Retrieval; the Eaasy Sabre airline-reservation system; a GEnie mall; TRW business credit profiles; Grolier's Encyclopedia; forums for Macintosh developers and users; discussion areas; and a searchable database of articles from newspapers published in the United States, including the Los Angeles Times, Washington Post, and Chicago Tribune.

Prodigy The core areas of the Prodigy Service (914/962-0310, 800/776-3449) let you use an encyclopedia, read news, go shopping, discuss computer problems, and get stock quotes. There are more kids on Prodigy than any other online service, and Prodigy's plentiful educational offerings include games, National Geographic adventures, and a Sesame Street area.

In recent years, Prodigy has come under fire for its policy of screening messages sent to message boards before posting them. Prodigy communications manager Deborah Borchert said if a message contains an obscenity or blatant bigotry or hate, the message will be returned to the sender. Borchert stressed that the screening is done only for message boards, not private E-mail.

Mac Resources Compared

America Online and CompuServe have by far the most Macintosh resources.

Vendor forums Both AOL and CompuServe have lots of Mac vendors online, and those vendor forums are often good places to get technical support, exchange tips with other users, and download bug-fixes and new drivers. GEnie and Prodigy both have few Mac vendors online.

At press time, eWorld had 25 vendors online, including Aladdin Systems, Deneba Software, Farallon Computing, Global Village Communication, and SuperMac Technology. Apple said eWorld will have 50 Macintosh vendors online at launch, and the company will provide tech support for its own products through eWorld.

AOL and eWorld have a Mac-

world forum, while the ZiffNet/Mac service (which includes MacUser and MacWeek forums) is available on CompuServe, Prodigy, and eWorld (extra fees apply on CompuServe and Prodigy). ZiffNet/Mac is also available as a separate service (\$2.95 per month plus some connect fees; 617/252-5000, 800/666-0330). In all three publications' areas, readers get a chance to chat with editors, ask questions, exchange tips, and read selections from the magazines.

Software libraries Offering more than 50,000 Macintosh files, America Online has the best software library; Compu-Serve follows with over 20,000 files. Shareware fans may want an AOL membership just for its extensive shareware collection. It's easy to get technical support or software files on AOL, but CompuServe's sophisticated text-searching abilities give CompuServe the edge over America Online in finding specific information. CompuServe charges users the hourly rate for accessing its excellent Mac resources. (Although CompuServe's 9600-bps access costs twice as much per hour as 2400-bps, you should download at 9600 bps because it usually takes about one-fourth the time. But it's cheaper to browse, send mail, and post notes at 2400 bps.)

Prodigy is the only national online service that doesn't provide software-downloading capabilities. Instead, the service sells shareware kits, which cost around \$40 and are mailed to customers. Prodigy says that users aren't paying for the software, but rather for the "duplicating and cataloguing service." But it's hard to determine what exactly is included in the shareware kits, since there's no index, and paying for them pretty much takes the fun out of try-before-you-buy shareware.

A View of Two Services For getting around CompuServe (top), its Information Manager has icons, a tool bar, and a customizable list of favorite places. America Online's start-up screen (bottom) features colorful icons for navigation.





Internet Access Still Limited

The only national service that offers full Internet access is Delphi. At press time, America Online users could access Usenet newsgroups. Access to Gopher and WAIS (Wide Area Information Server) databases is expected in the future. GEnie users can access an Archie server, browse an Internet software library, read newsgroup files, and ask GEnie staff members to retrieve files from the Internet. Apple has promised eWorld Internet functionality in the future. (See the sidebar "How to Ride the Internet" for information about Internet terms and service providers.)

CompuServe offers no Internet functionality beyond simple mail, and the service charges 15 cents for each Internet message sent and received. While the service lets you decide whether to read (and therefore be charged for) a message, users with heavy Internet needs may find CompuServe too expensive.

But Prodigy users fare even worse: to send Internet mail on Prodigy, members must use a mail-manager program—which, at press time, was expected to be available for the Mac by the end

How Much Do Online Services Really Cost?

Because individuals' online usage varies widely, it's hard to characterize a service's costs in a single example. So, we chose three different scenarios (light, medium, and heavy use) to illustrate the wide range of fees an online user can incur. If you know how you would use an online service, the figures on the right will help you estimate your costs.

Light use is a conservative estimate of online usage: 8 hours a month. 6 offpeak and 2 on-peak, all at 9600-bps. That includes no extended services and no Internet mail fees. (For Delphi we assumed the 10/4 plan.) Medium use is a more generous estimate: 15 hours a month, 6 on-peak and 9 off-peak, with 3 hours of off-peak extended services and 10 Internet messages, all at 9600-bps. (For Delphi, we assumed the 20/20 plan and the \$3 Internet fee.)

Heavy use is a very generous estimate: 15 hours a month of on-peak usage at 9600-bps (7 hours of extended services), 5 hours of off-peak usage at 9600-bps, and 30 Internet messages. (For Delphi we assumed the 20/20 plan and added the \$9 hourly SprintNet charges that most people in the United States will incur during business hours.)

SERVICE Pri	MONTHLY FEE			HOURLY RATES		LIGHT USE	MEDIUM USE	HEAVY USE	
		Number of Off- Peak Hours	OFF-PEAK		ON-PEAK*			-	
	Price	Included	2400	9600	2400	9600			
America Online	\$9.95	5	\$3.50	\$3.50	\$3,50	\$3.50	\$20.45	\$44.95	\$62.45
CompuServe ⁸	\$8.95	0	\$4.80	\$9.60	\$4.80	\$9.60	\$8.95	\$39.25	\$80.65
Delphi	\$20.000	20					\$44.00	\$77.00	\$158.00
eWorld	\$8.95	2	\$4.95	\$4.95	\$7.90	\$7.90	\$44.55	\$91.00	\$142.30
GEnie	\$8.95	0	\$3.00	\$9.00	\$12.50	\$18.50	\$99.95	\$200.95	\$331.45
Prodigy	\$14.95	20	\$3.60	\$3.60	\$3.60	\$3,60	\$14.95	\$18.55	\$32.95

Actual on-peak hours vary by service, but they tend to represent normal business hours. BHourly rates for CompuServe apply only to extended services. You can access core areas for no hourly charge. It costs 15 cents to send or receive each Internet message. CDelphi has two pricing plans: the 20/20 plan costs \$20 for 20 hours of use, plus \$1.50 per additional hour. The 10/4 plan costs \$10 for 4 hours of use, plus \$4 per additional hour. Access to Internet services costs \$3. Most Delphi users pay a \$9-per-hour SprintNet charge for on-peak use. Prodigy's hourly rates apply only when accessing extended services. The monthly fee includes 2 hours of access to those services.

of 1994. Today, Mac-using members can receive Internet mail, but not send it. Prodigy hopes to introduce full Internet access—including FTP, Gopher, and Telnet—later this year.

Some regional or special-interest services also offer Internet access. For example, one option is The WELL (Whole Earth 'Lectronic Link, 415/332-4335), a San Francisco Bay Area-based organization that has bulletin boards, a software library, and full access to the Internet. The WELL is popular with Bay Area residents, and its bulletin boards feature spirited discussions on political and social issues. But navigation is complicated, and accessing The WELL from outside Northern California is expensive.

Another online service is Women's WIRE (Worldwide Information Resource & Exchange; 415/615-8989, 800/210-9999), an Internet-providing bulletin board for women. WIRE is based on SoftArc's FirstClass, an excellent graphical bulletin board software product. WIRE contains information and discussion boards on a variety of topics, including news, health, arts, and technology. Organizations like the Boston Women's Health Book Collective and chapters of the National Organization for Women have folders on WIRE. Introduced earlier this year, Women's WIRE grew to over 650 members by the middle of March. Considering that more-traditional online services' members tend to be mostly men, women may find WIRE a welcome change. (To read about other BBSs, see *The Desktop Critic*, in this issue.)

Adding Up the Costs

The costs of online services vary widely, depending on access speed, time of day, and services used. Most services charge a regular rate for core services and charge additional fees for extended or premium services (see the chart "How Much Do Online Services Really Cost?").

AOL, eWorld, and GEnie have fixed hourly rates, while CompuServe and Prodigy charge an hourly fee only if you're using an extended area. In February, CompuServe cut its prices by 40 percent, significantly lowering its overall costs. Now, most of the good stuff on CompuServe costs you \$4.80 or \$9.60 an hour, depending on your access speed; for \$8.95 a month, using only the core services is cheap, and accessing the extra services at 2400-bps is fairly reasonable. In contrast, eWorld's hourly rates apply at all times, so daytime users pay \$7.90 an hour for access, regardless of connect speed. The true effect of this pricing structure may be that eWorld is one of the most expensive services around.

On Prodigy, accessing all but four areas costs nothing more than the monthly fee of \$14.95. Users pay the hourly rate for accessing bulletin boards, stock quotes during trading hours, company news, and airline reservations. Prodigy is the only service that places advertisements on its screens, which may keep its costs low.

Delphi offers two payment plans. To get the best deal, you need to predict how many hours you're likely to use the service each month. Delphi's 10/4 plan costs \$10 for 4 hours of monthly usage; the 20/20 plan costs \$20 for the first 20 hours. Enrolling in Internet services (as most users will want to do) costs an additional \$3 per month, Sprint's \$9-an-hour phone charge applies during business hours. If you use Delphi in the evening, the price is right, but if you're a business user, the phone surcharges may make the cost prohibitive.

How to Ride the Internet

he Internet is a lot of things-President Bill Clinton and Vice President Al Gore's "data superhighway," a fast international post office, a file library, a bulletin board, a newsletter, a conference center, as well as a big database.

> The Internet is a tremendous network of networks, connecting more than 1.7 million computers all over the world. Some are personal computers, and some are mainframes located at large educational, corporate, or government institutions. You can use the Internet to send electronic mail, access databases, retrieve files from all over the place, have conversations online, and participate in discussions on a variety of subjects.

> Every person on the Internet has a unique user name, the components of which usually indicate the user's identity and the organization providing access. For example, the user name whoever@aol.com shows the user's name. the service providing access (America Online), and the category of service. The com in the Internet address above means the address is accessed through a commercial service. Other three-letter suffixes indicating the organization type are gov (government). mil (military). edu (educational). org (organization, usually used for nonprofits). and net (network).

> How do I get on? Types of Internet access vary. The most complete and expensive Internet access is dedicated access, requiring a phone line and a routing computer. Dedicated access is best for large institutions that have the money and resources to devote to Internet upkeep. If your organization has an Internet connection (as many corporations, government organizations.

and schools do) but you don't have access, talk to your network administrator.

If you're an individual who wants Internet access, you can get an account on a commercial Internet service provider, like Netcom, or you can purchase a more direct account, called a SLIP (serial-line Internet protocol) or PPP (point-topoint protocol) account, also from an organization such as Netcom. An account from a commercial Internet service provider may cost between \$15 and \$50 a month: an account on Netcom could cost more than \$100 a month. A dedicated connection (providing you with the ultracool your company.com suffix on your E-mail address) can cost thousands of dollars annually.

Using the Internet means using some Unix commands, but there are a few programs that

provide easier Internet functionality for Macintosh users. One is Mosaic, a free product from the University of Illinois's National Center for Supercomputing Applications. But you can't use these products unless you have a SLIP, PPP, or more direct dialin account.

Spry Inc. is working with book publisher O'Reilly & Associates on a product called Internet in a Box, which will provide users with graphical Internet applications, an opportunity for an Internet account on NovX InterServ, and a special edition of Ed Krol's The Whole Internet User's Guide and Catalog (see "Internet in a Box News,

July 1994). A Mac version of the product is expected later this year, and will cost about \$100. Ventana Media offers a similar product, the \$70 Internet Membership Kit (919/942-0220), providing two books and access via CERFnet.

Sending mail To send mail to someone on a commercial online service over the Internet. you need to append routing information to the

person's E-mail address. For example, a CompuServe user's Internet E-mail address is username@compuserve.com (CompuServe's user names include a comma, which you should replace with a period: such substitutions are not needed for other services).

Some businesses set up Internet mail gateways through office E-mail systems: these addresses can get quite complicated, and it's best to have the user E-mail you first so you can just copy the address into a macro or address book.

Users with Internet access can usually send files to others on the Internet; receiving those files usually means dealing with your telecommunications software's file-transfer protocols (see "Pick the Right Communications Software," elsewhere

To cut down on connect time, you can use the Eudora Internet mail program, if you have a SLIP or PPP account. A free version is available on the Internet, and Qualcomm (619/587-1121) sells a version with more features for \$50.

File transfer Internet also lets you transfer files using various commands. In Internet lingo, you use FTP-it stands for File Transfer Protocol, and it's used both to identify the protocol and to indicate using the protocol. You can log in to an FTP site, browse files, and download them, which involves transferring them



User-Friendly Internet Mosaic, a hypertext Internet browser, displays pictures and lets you navigate by clicking the mouse. Here, Mosaic is browsing the collection at the University of Illinois's art museum.

first to your Internet account and then to your own computer. You don't need your own account at the FTP site: many let you use anonymous as your user name and your E-mail address as a password. Because some Internet service providers charge users for disk space. FTP may involve extra costs if you transfer large files.

You can FTP via telecommunications software, or try an FTP-specific program like Fetch. written by Jim Matthew of Dartmouth College. The program is free to noncommercial users. and costs \$25 for commercial folks. (For information, send E-mail to fetch@dartmouth.edu.)

FTP files are usually free. You can FTP files from Apple, the National Institutes of Health, the Internet Network Information Center, the National Science Foundation, and various literary archives, just to name a few-there are thousands of FTP sites.

Don't know where to find a file you want? Archie will tell you. Archie puts a list of FTP files into one database on a server, and lets you search for files easily. There are Archie servers all over, and you can access them via E-mail, Telnet (explained later), and on GEnie and Delphi.

Similar to FTP, Gopher lets you find and retrieve remote files. But unlike FTP, Gopher



Gopher by Mouse The University of Minnesota's TurboGopher comes preconfigured to access Gopher servers in a Mac-like folder hierarchy. Unfortunately. TurboGopher is very slow, even at 9600 bps.

connects to the host site only to retrieve menus of information and disconnects for browsing, whereas FTP remains connected the entire time. One Mac Gopher program is the University of Minnesota's TurboGopher (free from several servers), which acts as a client to Gopher servers. The Archie of Gopher is called Veronica. Veronica is an index of Gopher archives and can be reached on Gopher servers.

Remote log-in The Telnet command lets you log in to another machine remotely. You might log in to a remote computer to search a database or log in to another account on the Internet. Telnet is particularly helpful if you have an account in another city, because you can log in remotely to save phone charges.

Newsgroups Usenet (also called Net News) collects received messages (or articles) on a particular subject and sends them to a mailing list. There are lists for every topic under the sun.

File searching WAIS (Wide Area Information Server) lets you search files based on content, giving commands as colloquial as "tell me about AIDS treatments." You can use Telnet to connect to a WAIS or log in to one directly using WAIS client software.

Service providers If you send E-mail to the following addresses of a cross section of Internet service providers, you'll receive a reply with information about pricing, availability, and connection instructions.

Among nationally available providers are Advanced Networks and Services (313/663-7610, info@ans.net), Delphi (617/491-3342, 800/695-4005; info@delphi.com), and Netcom On-Line Communications Services (408/554-8649, info@netcom.com).

Among regional providers are Colorado SuperNet (303/273-3471, info@csn.org), Holonet (510/704-0160, info@holonet.net) in the San Francisco area, and The World (617/739-0202, info@world.std.com) in the Boston area.

Resources Because the Internet is sprawling and largely unmanaged, it's hard to get a handle on how to use it effectively. Fortunately, there are some good resources to help you navigate it. One of the best is the Internet Network Information Center (619/455-4600, 800/444-4345). Your local user group may offer Internet access.

Your local bookstore may have lots of books on the subject. My three favorites are Bernard Aboba's The Online User's Encyclopedia (\$32.95, 1993, Addison-Wesley Publishing Company, 617/944-3700, 800/822-6339). Adam C. Engst's The Internet Starter Kit for the Mac (\$29.95, 1993, Hayden Books, 317/581-3500, 800/428-5331), and Ed Krol's The Whole Internet User's Guide and Catalog (\$24.95, 1992, O'Reilly & Associates, 707/829-0515, 800/988-9938). Aboba's is best for information about all things telecom, while Engst's comes with several pieces of TCP software. Krol's book has fewer lists but remains an excellent resource.

Interface Issues

When you do join a service, you're adopting a culture, and it can take a while to get acclimated.

America Online AOL feels like a Mac environment, from the menu and icon-driven interface to the friendly voice that announces "You've got mail."

America Online recently added more E-mail functionality, so that members can now mark already read mail as unread so it remains in the box, as it were, and can unsend mail already sent to AOL users. eWorld has some of the same abilities, but AOL's prices give it a significant edge.

AOL looks and behaves like a Macintosh program should. Each area has a designated keyword, and getting around is as easy as typing #-K and then the keyword. But while getting to an area is easy, getting around it isn't—arrow keys work for navigating some things, but sometimes there's no alternative to clicking on buttons.

Another problem with American Online is its inability to search message boards based on content, or to do threading

(navigating through related topics). You can read only messages posted since you last visited the area or in the last x number of days. If you want to read everything, that's great, but if you just want to find an answer to your question, patience is helpful. Having to read entire blocks of messages also increases the cost of AOL, since you spend more time looking for what you want than you would if you could search for it by keyword.

Earlier this year, AOL users experienced problems with logging on and slow performance, and those connection problems continued for some users in large U.S. cities in late May, partially because of problems with Sprint,

a company providing local access numbers. Pam McGraw, spokesperson for America Online, said there are isolated instances where subscribers are experiencing difficulties at the local-access level. "We're continuing to work to resolve those issues," McGraw said. The service's checkered history does not inspire confidence. Still, AOL's friendly organization makes adjusting to the service fairly easy.

CompuServe CompuServe looks and feels huge, and it can be reached through either of two graphical software packages: CompuServe Information Manager (CIM) and CompuServe Navigator. Users can also access CompuServe in text-only format from any standard telecommunications program, but unless you're a masochist, there's no real reason to do so, since CIM comes with CompuServe's \$39.95 starter kit. CIM version 2.3 provides a Microsoft Word-like tool bar for frequently accessed functions like mail, searches, weather, Go words (the commands to move to a specific part of the service), and connecting. CIM also provides a "favorite places" list that makes for easy navigating.

But CIM's keyboard equivalents are also limited—the Find command isn't even assigned to the Mac's standard #-F. Not all of CompuServe's areas support a graphical interface, and CIM is smart enough to switch to a textual interface when necessary. However, switching between CIM's terminal emulator and the graphics software can be confusing.

The other graphical navigation option, Navigator, is a complex program whose main purpose is to retrieve information to be read offline. Users can tell Navigator to log in to Compu-Serve, get mail, read particular message boards, search software libraries, and log off. The user can then read the Navigator log, which contains the information that Navigator retrieved, without incurring access fees while reading. Navigator is far



more sophisticated than any other online-service software I have seen, and while it is expensive (\$50 to \$70, depending on current CompuServe specials), a serious CompuServe user won't want to be without it.

Despite its sometimes awkward graphical interface, Compu-Serve excels in its ability to search data. CompuServe's search options include location, text string, and date, making it very easy to find what you want. Searching for information about bugs in your new software? Just type bug and select the vendor forum and the appropriate date, and Compu-Serve shows you all the relevant

messages. You can also hit a map button that displays a hierarchy of messages and their authors.

Delphi I found Delphi easier to navigate than any other text-based service I've used. Delphi is organized by menus, and a user can type the first few letters of an item to select it. Unlike other services, where commands differ depending on the part of the service you're using, Delphi responds to logical commands, and online help is easy to find.

Like CompuServe, Delphi can follow messages according to topic, but unlike with CompuServe, you can't search areas for keywords or dates. Reading Delphi message boards can take some getting used to, but the information tends to be useful. If you can't live without a pretty interface, Delphi isn't for you.

eWorld Built with software from America Online, eWorld looks and feels very much like AOL but with reorganized menus and different fonts. As in AOL, getting around eWorld can be a pain, since users often have to click through several screens to get to their destination. eWorld's graphics are rich and colorful, but as a result the software takes up over 3MB of disk spacealmost twice as much space as other services' software. eWorld will eventually replace AppleLink, and since Apple plans to make eWorld software a part of every Mac-and-hard-drive bundle it sells (starting no later than July), the service's membership may grow quickly. For eWorld, the test will be not how many people get memberships, but how many people keep them.

GEnie While GEnie offers good information, it's an ASCIIbased service-the introduction of long-promised graphical software has been delayed repeatedly. Because GEnie is text-based, you can access it from any telecommunications program.

GEnie's organizational metaphor is a book, and areas are located on particular pages. To move to a certain area, a user types a forum name or, in some cases, Move page number. Within areas, topics are organized by categories, and navigating the categories is sometimes difficult. Members can't search message boards by content; as with America Online, GEnie users can select messages based only on criteria such as posting date.



Help on the Way Macintosh users can exchange tips, get technical suppoort, and download software from Apple in the company's Customer Center on eWorld.

Prodigy The Prodigy online service is fairly easy to navigate: a tool bar at the bottom of the Prodigy screen lets you get to the main menu quickly. Prodigy uses "Jump" words that are equivalent to AOL's keywords and CompuServe's Go commands. Unfortunately, like AOL and GEnie, Prodigy can't do message-threading.

While navigation is mostly simple, accessing Prodigy from a Macintosh is a pain. The Mac version of Prodigy has an atrocious interface. For example, because Prodigy uses enormous screen fonts, users often have to move through several screens to

read an entire message, and there is no cut-and-paste.

This August, Prodigy expects to ship a new version of Mac software. I looked at a beta version of it that allows access to other applications and offers cut-and-paste capabilities, but still doesn't follow basic Mac software-design guidelines. Prodigy representatives said that they just didn't feel it was worth the effort to create a Mac interface.

What's Right for You

Commercial online services offer hundreds of services, and it's unlikely that you'll want-or use-all of them. In picking an online service, consider what you'll use it for most. If you want access to particular computer vendors, first determine whether they have their own bulletin-board system (their manuals usually tell you). Your local user group may also have a BBS that provides technical support and Internet access. (To find a local user group, call Apple's user-group hotline at 800/538-9696, ext. 500.) America Online and CompuServe have the most Mac vendors online. All services are good sources of news and finanto-use, and reliable.

what specials they are offering. America Online and Delphi regularly advertise free trial memberships. Apple offers free eWorld software, but no free access time. If you are considering

CompuServe, determine whether the areas that you will use most are going to incur CompuServe's hourly fees. CompuServe is a good choice for users who need reference materials, while the best choice for E-mail is America Online. Both services' Mac resources are excellent. Users seeking Internet access may want to use Delphi in the evening or get an account through an Internet service provider.

If you can afford it, you should try out a few services. The one you wind up using most is probably best for you. m

JOANNA PEARLSTEIN, a Macworld assistant editor, is a frequent contributor to the reviews and news sections of the magazine.

cial information, and America Online's E-mail is cheap, easy-If you are having trouble deciding between services, see

Services Online

To pick the top online services, we gave the most weight to the breadth and depth of informa-CHOICE tion, with emphasis on a Macintosh owner's

needs, followed by price and ease of use,

E-MAIL

America Online Relatively cheap and easy to navigate, America Online is the best choice for E-mail users. Company: America Online. Basic monthly fee: \$9.95.

REFERENCE

CompuServe With graphical software and new lower prices. CompuServe is the best choice for users seeking reference materials. Company: CompuServe Information Service. Basic monthly fee: \$8.95.

ntroducing orinter for ave ideas er thar Suggested U.S. list price. "Larger model lists at \$11,506. †Pantone, Inc.'s check-standard

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

\$9,995

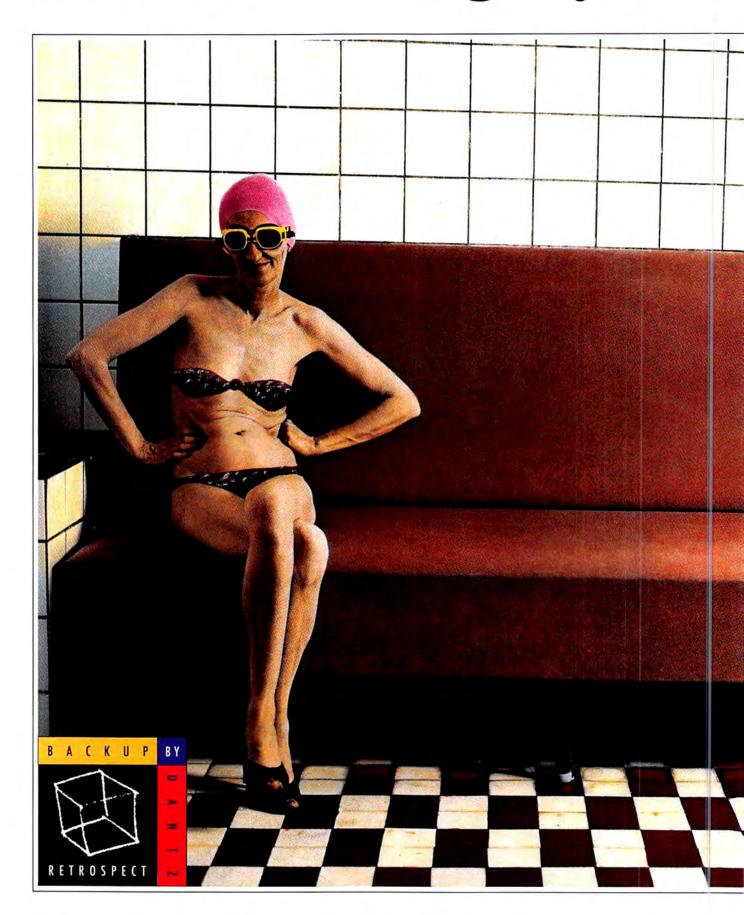


Go on. Give yourself room to think. With the HP DesignJet 650C/PS, you can now print in sizes up to 2' by 9' (up to 3' by 9' with our larger model**). Right in your office. Right away. No tilling. No hang-ups. No problem. Just clean, inkjet output with PANTONE*¹-licensed colors. Adobe™ PostScript™ Level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

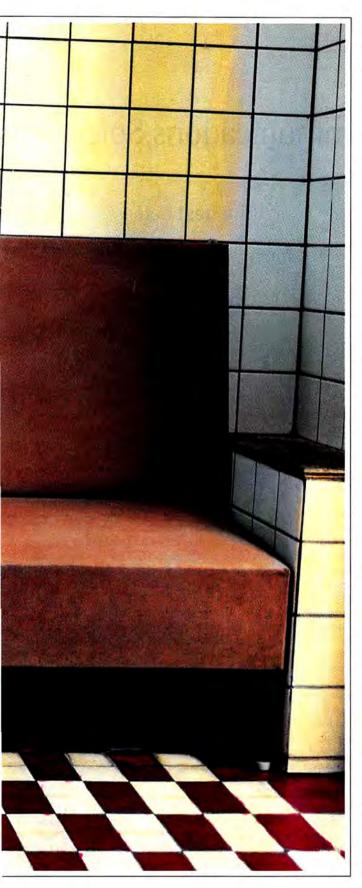


Circle 11 on reader service card

You never thought you'd



lose your looks, either.



BUT YOU WILL. 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 afterthe-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, pointand-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?



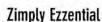
SO YOU BOUGHT A HIGH-SPEED MODEM, ONE OF THOSE 14,400bps items that are so cheap nowadays, and logged some time on simple communications: faxing friends, dabbling with the Δmerica Online trial package, and looking at Dow Jones quotes for stock you'll never buy. Now you're eager to do some real work—

Pick the Right Communications Software

customer-support BBS for the service department. Plus, with this speedy modem now fully operational, you're just dying to try out that precursor to the information superhighway, the Internet.

Your modem gives you easy access to all of these: bulletin boards by the thousands, commercial information services, mainframes and minicomputers, and gateways to the Internet. As with all of life's journeys, you need to equip yourself for the trip, which means choosing the right software. The choices you make depend on how far you want to travel and what you want

to see along the way. You have to weigh features such as protocols, terminal emulations, file-transfer support, and scripting capabilities. If your communications needs are limited to online services, such as America Online or CompuServe, you can probably get by with the software that came with your modem (see "Macworld's Guide to Online Services," elsewhere in this issue). But if you want to communicate with the rest of the world, you need more. The following guided tour surveys the most popular Mac communications packages, helping you pick a package that matches your budget and digital itinerary.



Bulletin board systems (BBSs) are like the swap meets of the global village: people of like interests meet to exchange war stories, advice, and tangible goods. You can find a BBS for virtually every special interest, from aviation to zoology. You can even set up your own BBS for others to access; all you need is a modem and BBS host software.

Accessing most BBSs requires only a simple terminal emulator with file-transfer capabilities for uploading and downloading files. One inexpensive product fills this role perfectly: ZTerm. This \$30 shareware gem by David P. Alverson (5635 Cross Creek Ct., Mason, OH 45040-2448; CompuServe: 72155,1560) is a well-outfitted, finely crafted terminal emulator

for exploring the vast network of BBSs that now stretches across North America (see "Two Bulletin Board Systems"). You can download Z-Term from any major online service and many BBSs, or for

0



Illustration by Will Crocker

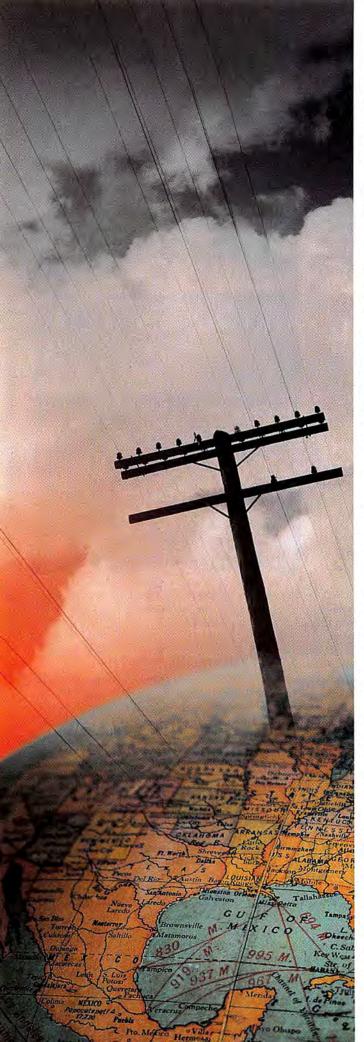
The best bets
for making the online
connection

an extra \$10 get the latest version on disk directly from the author (mail orders only-no phone calls, please). ZTerm supports communication speeds up to 57,600 bps, to take full advantage of the compression capabilities of high-speed modems; VT100 and PC-ANSI terminal emulation (used by most BBSs); automatic log-in for one-step dialing and sign-on; keyboard macros; and a reasonable suite of file-transfer protocols. A wide range of file-transfer protocols is one of the most important requirements in a program designed for BBS hopping, because not every BBS supports every protocol. ZTerm supports Xmodem and Ymodem protocols in all their variations, as well as the currently popular (and fast) Zmodem. ZTerm also supports the CompuServe B-Plus and Quick-B protocols, which give the fastest file-transfer performance possible with CompuServe's online service-important when you're using the extended services and paying connect charges by the minute. ZTerm's Queue Dialing command lets you repeatedly dial a list of BBSs to connect to the first one that becomes free. ZTerm also lets you transfer files in the background while you use other applications, albeit with lower file-transfer throughpu

ZTerm is a great low-cost tool for BBS work and Mac-to-Mac file transfers, but it has its limits. While it supports color text, it can't send and receive graphics, and its interface is non-graphical. ZTerm's scripting is simple and limited to automating log-on and log-off, and ZTerm provides no support for multiple sessions. Even so, ZTerm should be in your travel kit even if you eventually opt for something more expensive.

The Scenic Route

Although most BBSs use primitive character-based terminal emulators, a growing number of systems now offer a graphical user interface (GUI) that gives them a Mac-like look and feel. Two products, both shareware, open your Mac to the world of GUI BBSs: FirstClass, from SoftArc (416/299-4723), and Tele-



Finder Pro, from Spider Island Software (714/669-9260). Currently, FirstClass has more than 500 BBS sites in existence; TeleFinder has about 100. Both products consist of two parts: server software that runs on the actual BBS host system (\$95 for FirstClass, \$425 for TeleFinder), and client software that a caller uses to connect to the BBS. SoftArc and Spider Island make their money selling the server piece to BBS operators, which is why the client piece is distributed for free (or nearly so) to users through online services and BBSs.

Both products support file archives, discussion boards, real-time conference areas, and gateways to other systems and networks, all of which are represented by icons. In this way they are similar to the graphical front ends

for CompuServe and AOL. The critical difference is that you can connect to a wide range of BBSs rather than a single commercial service. Which product you choose depends on which BBSs you want to use; you must use client software that matches the server software.

In both programs you can open multiple windows to access several online services at once. FirstClass offers a purely modeless interface, meaning you can do any number of things at the same time (see "Two Bulletin Board Systems"). For example, you could be downloading one or more files while simultaneously browsing a message base and monitoring a real-time conference. With TeleFinder you can do only one online thing at a time. Both products let you use other Mac applications while downloading files in the background. TeleFinder's interface mimics the Mac Finder, with icons for both disk volumes and online services sitting on a desktop—an arrangement that some people find confusing. FirstClass organizes its icons in windows

The FirstClass and TeleFinder server components turn your Mac into a complete BBS. The price of server software depends on the number of simultaneous users you want to support—anywhere from a few hundred dollars to \$1000 or more. Many Mac vendors and user groups use FirstClass or TeleFinder for customer-support BBSs.

without changing your desktop's appearance.

Road Warriors

Sometimes you may want the Mac to run routine online chores automatically. Perhaps you need to retrieve your E-mail from an online service at regular intervals throughout the day, or transfer large files at night when phone rates are lower, or collect hourly stock quotes to import into a spreadsheet. Such tasks require scripts that tell the communications software what to do and when to do it. For scripting capability, you need to step up to the next level of communications software.

The Mac market is replete with scriptable comm programs, but a few stand out for their combination of simplicity, power, and value: Crosstalk for Macintosh (\$195, Digital Communications Associates, 404/442-4000), MicroPhone II and MicroPhone Pro for the Macintosh (\$195 and \$295, respectively, Software Ventures Corporation, 510/644-3232), SmartCom II (\$149, Hayes Microcomputer Products, 404/441-1617), and VersaTerm (\$125, Synergy Software, 215/779-0522).

For the price, VersaTerm is hard to beat. You can create scripts automatically by having VersaTerm observe your actions and record them for later playback. VersaTerm supports X-modem and Ymodem file-transfer protocols, but strangely, not Zmodem, an omission that doesn't rule out file transfers to a given service, but does mean slower transfers. If you connect with Unix systems, you'll be glad for VersaTerm's Kermit and

A growing number of BBSs now offer a graphical user interface

How to Buy a Modem

ally be your main justification for

modem is the most cost-effective enhancement you can buy for your Mac system. If your work requires current financial, legal, or medical information, your modem can actu-

owning a computer. But even if you only download software occasion-

ally through national online services such as America Online and CompuServe, your modem will quickly pay for itself. And a fax modem lets you avoid paper-based clutter and the ridiculous intermediate step of printing a computer document before sending it to someone else's computer. And as faster modems make transmission times negligible, even for large documents. telecommuting becomes possible for a wider range of jobs. A modem now makes sense for almost every Macintosh user, so the real question is: how much speed do you need to buy, and for what price?

Buying a modem is more confusing than adding memory or a new printer. Manuals for modems tend to feature cable-connect pinouts. timing diagrams, arcane CCITT jargon, and tables of the time-honored Hayes AT commands. If you have to deal with modem communications at this level, you'll wish you had an electrical engineering degree. Here's some advice on buying a modem and on choosing software that lets you dodge most of the technicalities of modern set-up and operation.

The Works

A modem's job is really fairly simple: it takes the digital output from your files or your keyboard and transmits it via telephone lines as a pattern of tones (a fax modem scans a document and translates the light and dark patterns into tones that it then transmits across the lines). The circuits that do this conversion have only one or two chips, so the price of modems falls steadily.

Let's review the options for modem hardware currently available. Then I'll make some buying recommendations.

Five Ways to Go

OLD, SLOW, AND CHEAP There are millions of old 1200-bps modems floating around, and it's often possible to cajole someone into giving you an old unit. Don't buy one, though.

FASTER BUT STILL CHEAP Many vendors offer plain old 2400-bps modems (no fax capability) for basic communications, and these modems can often be found bundled with introductory offers for subscriptions to national online services.

BASIC FAX Standard fax modems, offering 9600bps fax and 2400-bps data communications, are available at street prices ranging from \$100 to \$160 Some offer extra amenities, the Home Office 144e (\$269 list price) from Prometheus Products, for example, includes a voice-messaging system; and it works with your phone over a single phone line, instead of requiring a dedicated line for fax transmission.

Apple bundles the Global Village Tele-Port/Bronze fax modem with midrange Performa models. If you are thinking of buying a new Mac, this is a way to get a fax modem at a good price

and to avoid set-up hassles, as the included software handles the details

RIGHT HERE, RIGHT NOW If you regularly telecommute or download remote database data, you need a fax modem that offers 9600-bps data transmission and 9600-bps fax, such as Global Village Communication's TelePort/Silver and PowerPort/Silver

Modems that transmit data at 14,400 bps and also have 14,400-bps fax send/ receive capability are beginning to supplant 9600-bps modems. The SupraFaxModem 144LC. selling for \$189.95, for example, includes V.42bis compression, permitting E-mail throughput at 57,600 bps. And at this price, it's hard to make a

case for a slower modem, at least for users who connect for more than an hour a day.

CompuServe now has 14,400-bps dial-up numbers in large cities, and other services will follow soon. The 14,400-bps speed itself will be old news in a year or so, but right now there are few services that accommodate faster standards. MODEMS ON THE MOVE Very small portable external modems (pocket modems) for PowerBooks offer the advantage that you can unplug them and use them with a desktop Mac. One particular performance bargain. Bay Connections' Spectra-Com P1414 (\$249 list price), offers 14,400-bps data and fax transmission and V.42 compression.

Do This

GET THE FAX Vendors have pretty much stopped making modems without fax capability, since fax adds almost nothing to the modem's cost.

BUY SPEED If you're going to be playing interactive games or corresponding in real time and little else, modem speed isn't an issue. Typing 50 words per minute clocks out at about 5 bps, making 2400-bps modems more than adequate. But for downloading files from online services, speed makes a critical difference when you start to total up your connect charges. In fact, 9600-bps data access is still a real bar-

gain. For the few dollars required to make the jump from 2400 bps to the next common speed, 9600 bos, you get a fourfold speed increase; another 20 to 30 percent increase in price gets you to the next level, 14,400 bps.

Decision Time

The appropriate choice for most casual users will be a 9600-bps fax/2400-bps data modem, or a 9600/9600 unit for users who anticipate needing to do both file transfer and faxing in a business or home-office setting. Since the software is



independent of these speed considerations, check out the reviews of bundled software independently.

Different Names for Fast

Here's a brief explanation of current modem terminology.

- V.32 A communications standard used for most popular 9600-bps data transfer.
- V.32BIS A communications standard generally used for 14,400-bps (14.4-Kbps) modems.
- V.32TERBO A standard for 19.2-Kbps data transfer. This standard is not as widely accepted by modem vendors.
- V.FAST A standard for 28.8-Kbps data transfer (a neat 24 times faster than your old 1200-bps unit). V.Fast modems cost about twice as much as V.32 modems and will for the next year or so.
- V.42BIS A compression standard that speeds data transfer (at least to other V.42-capable modems) by a factor of four.
- V.29 The most widely accepted standard for 9600-bps fax transmission. Since this speed is typical of millions of stand-alone fax machines. V.29 will be around for a few years.
- V.17 The standard for 14.4-Kbps data trans-

fer, emerging as the most popular choice in computer-to-computer faxes.

by Charles Seiter

TCP/IP FTP protocol support. Terminal emulations include DEC VT100 and VT220, Tektronix Tek4014, and Data General D200, along with keyboard layouts for DEC, IBM, DG, and Unix systems. You can use these emulations to exchange E-mail and data with your corporate mainframe. VersaTerm supports multiple simultaneous connections over serial lines (with several modems) or via AppleTalk or TCP/IP networks. A server feature lets VersaTerm users on an AppleTalk network access other networks through a gateway Mac. The emulation is fast, able to keep up even on high-speed connections. Inconveniently, however, VersaTerm lets you view only one network connection at a time, even when several are active.

While VersaTerm's recording feature simplifies script creation, the script language itself is cryptic; its special characters and control sequences are impossible to grok without serious study of the programming manual. If you plan to create and maintain a lot of scripts, consider the pricier MicroPhone II or MicroPhone Pro. Both let you create scripts using the Watch Me command—and then view those scripts in something akin to English (see "Power Communicator"). You edit scripts with a syntax-sensitive editor that lets you choose script statements from a scrolling list and then prompts you for statement arguments. Instant syntax checking prevents grammatical errors. You can create button palettes to let users invoke scripts with a single mouse-click. In addition to better scripting, MicroPhone II supports Zmodem and CompuServe Quick-B file-transfer protocols, and VT320 and PC-ANSI terminal emulations, none of which VersaTerm handles. For \$100 more, MicroPhone Pro adds TCP/IP Telnet, FTP, and Usenet news client programs

and fax send-and-receive software. But buy only the features you need.

you need.

At \$195, the same price as MicroPhone II, Crosstalk offers more-powerful, although morecomplex, scripting, and a more inclusive set of terminal emulations and file-transfer protocols than either MicroPhone or Versa Term. For terminal emulations. Crosstalk adds IBM FFTERM and 3101, HP 700/94, VIDTEX, WYSE, ADDS, and PCTERM. Crosstalk is also the only Mac terminal emulator that speaks the arcane INDSFILE file-transfer protocol used by IBM's IBMLink mainframe network. Crosstalk's scripting is more robust than VersaTerm's but harder to use than MicroPhone's; the package also includes a huge array of script files preconfigured for online services, making good use of an elaborate button palette.

SmartCom II is another specialist's tool. It works extremely well with Hayes modems (not surprising, since Hayes developed it). Its terminal-emulation and file-transfer capabilities match those of MicroPhone II, but the scripting in version 4.0A is icon based rather than text based. The program comes preconfigured for virtually every Hayes modem

ever made (with free updates whenever new ones hit the market). If you have a Hayes modem, SmartCom II gets you connected in a snap, though you'll have to live with its limited scripting. If you have a Hayes-compatible modem, SmartCom II provides support for several vendors and dozens of models.

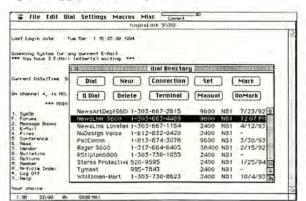
Internet Interstate

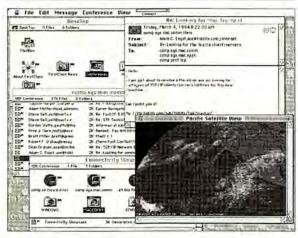
The Internet global network is a precursor to the anticipated information superhighway that promises to connect everyone to everyone, just as soon as we all get fiber-optic phone service and digital doorbells.

One way to connect to the Net is to use any basic terminal emulator to dial in to an Internet-connected Unix system. (All of the packages described so far are fine for this.) You then type arcane Unix commands such as ftp, whois,

and ping to talk with other computers on the Net. A better Internet connection is something called SLIP (serial-line Internet protocol): you use a SLIP dial-up program to dial in to an Internet gateway and establish a local area network (LAN) interface. Gateways are fee-based services costing between \$1 and \$4 per hour. A SLIP connection gives your Mac a LAN presence on the Net, just as Apple Remote Access gives you an AppleTalk presence on a Mac network. However, SLIP uses the TCP/IP protocol instead of AppleTalk, so you need Apple's MacTCP extension in addition to a SLIP connection program.

Two Bulletin Board Systems ZTerm (top) gives you all the basics for BBS hopping: terminal emulation, file transfer, and a great dialing directory. FirstClass (bottom) uses icons and windows to put a graphical front end on BBS systems. Its fully modeless interface lets you transfer files while browsing messages, viewing graphics, or searching databases.





Two popular SLIP products for the Macintosh are Versatilities (\$95, Synergy Software, 215/779-0522) and TCP/Toolz & Toyz (\$149, InterCon Systems Corporation, 703/709-5500). Both contain all the Internet connectivity components you need to get started: MacTCP; a SLIP connection tool: and clients for Telnet terminal emulation, Net-News, E-mail, directory services, and FTP file transfer. Versatilities is bundled with VersaTerm, making that package a real communications bargain for Mac Net surfers. A subset of InterCon's tools is included in Adam Engst's book-and-disk combo, Internet Starter Kit for Macintosh (\$29.95, 1993, Hayden Books, 317/581-3500). The book provides a nice introduction to the Internet; you'll find it useful no matter what SLIP product you ultimately use to tie into the Net.

Once connected via SLIP, your Mac acts as if it were connected over a 100-gigabit-persecond optical cable, only not as fast. Your Mac acts as a full-fledged network, and you can run any number of TCP client programs simultaneously. Client programs let you access services provided (for free) by the many far-flung host systems through-

Participating

out the Net—including colleges, libraries, research institutions, software companies, and governments. Typical client programs include Telnet for terminal emulation, FTP for file transfer, and NetNews for browsing the eclectic newsgroup discussions for which the Net is famous. Some client programs, such as the freeware MacMosaic, combine several client functions with hypertext, graphics, movies, and sound to make navigating the Net easier than ever, if no less exhausting.

By the time you read this, at least one other Internet start-up package should be on the market: Internet in a Box (a joint venture of Spry Inc. and O'Reilly & Associates, 707/829-0515, \$149). This book-and-disk combination plate includes a number of advanced

Internet client software programs, MacMosaic among them, and a subscription to O'Reilly's Mosaic server called Global Network Navigator, which provides a central source for Macintosh Internet news as well as updated software and various networknavigation tools.

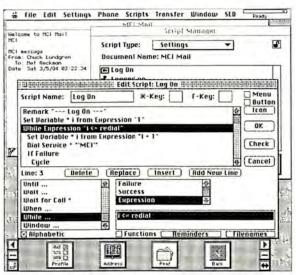
Other Horizons

Beyond communicating with online services, BBSs, and the Internet, you can use your modem to perform a number of specialty communication chores, such as LAN access, remote Mac and PC control, pager notification, and information services.

The most popular remote LAN access software for the Mac is Apple Remote Access (ARA), a two-part system that lets you connect your Mac to an AppleTalk LAN over a phone line by calling one of the Macs on the LAN. Originally included with PowerBook systems, ARA is now a separate purchase item from Apple. ARA MultiPort Server (\$249, Apple Computer, 408/996-1010) runs on the LAN-attached Mac; ARA Client (\$129) runs on the remote Mac (and comes bundled with the new 500 series PowerBooks). On the road you use ARA Client to call your server Mac and establish a LAN connection. You then can mount volumes and share programs and data as if you were locally attached to the LAN, the only difference being considerably slower access speed.

Sometimes you want more than just remote access to a LAN-you want to remotely control another computer completely, to provide technical support or operate unattended equipment. Timbuktu Pro (\$199, Farallon Computing, 510/ 814-5000) lets you dial into a remote Mac or Windows computer and observe a verbatim copy of the computer's desktop. You can then manipulate files and launch programs, just as if you were working onsite. You run Timbuktu on both machines, and either establish a dedicated Timbuktu modem connection or use an existing ARA or other network connection. In fact, Timbuktu's connection features are so versatile that you could operate a remote Mac through the Internet, using an Internet-connected TCP/IP LAN, or by dialing into an Internet provider using SLIP. Timbuktu Pro's file-transfer capabilities and support for Apple's PowerTalk mail extensions make it a nice all-around telecommuting package.

Want to give your computer the power to reach out and touch someone? Try Notify (\$149, Ex Machina, 718/965-0309), which lets your Mac dial paging services to send wireless mes-



Power Communicator MicroPhone's scripting is straightforward and easy to use. Its Watch Me command enables you to build scripts effortlessly, and its syntax-sensitive editor lets you edi: scripts using English-like statements.

a directory, enter a message, and Notify dials the paging service to transmit the message.

A number of specialty information services use dial-up connections to deliver news digests, stock quotes, and E-mail. One such service is Motorola's EMBARC (Electronic Mail Broadcast to A Roaming Computer; \$395 plus subscription fees, Motorola, 407/364-3151). EM-

BARC delivers E-mail, news, and

financial information over its pager-size NewsStream radio

receiver that you connect to your

sages. Notify works with alphanu-

meric, numeric, and tone-only

pagers, using your modem to

send either data or touch-tones to

the pager's dial-up line. You sim-

ply select a person to notify from

computer like a modem. The receiver collects messages into its own onboard memory, which you later download into your computer. To send outgoing Email, EMBARC dials up a host machine using a regular modem and telephone line. The package includes the NewsStream

receiver and special software; you must also pay monthly subscription fees and per-message charges.

End of the Line

With modem speeds at an all-time high and modem prices at an all-time low, participating in the online global village is easier and cheaper than ever. But don't make the mistake of buying the most expensive comm software available, thinking that you'll cover all the bases. No single package meets every need. If you're new to online communications, get your feet wet with services such as America Online and CompuServe, which provide one-stop shopping for such basic services as Email, discussion groups, and file archives. You can then advance to BBS exploration and perhaps mainframe access. Eventually you'll want to get on the Internet, if only to see what all the racket is about. m

MEL BECKMAN, senior technical editor for News 3X/400 and communications consultant, spends his waking hours as mbeckman@mbeckman.com.

Communications Software



There is no single best communications package—what to buy depends on the kind of communicat-

ing you want to do. These are the standout products in the most common categories.

BASIC CONNECTIVITY

ZTerm Every Mac modern jockey needs a copy of David Alverson's shareware program, ZTerm. It's fast, capable, and easy to use—a great lowest-commondenominator terminal emulator. Company: David P. Alverson. List price: \$30.

TERMINAL EMULATION

Crosstalk for Macintosh For BBS hopping and mainframe access, you need lots of terminal-emulation options to utilize graphics capabilities and scripting to automate access to each system. Crosstalk has the widest selection of terminal emulators and a power user's scripting language. Company: Digital Communications Associates. List price: \$195.

INTERNET EXPLORATION

VersaTerm This program's combination of excellent Unix-style terminal emulation and the Versatilities collection of Internet tools makes it your one-stop shopping center for Net surfing. Company: Synergy Software. List price: \$125.

Before you consider a third party external drive, look at what we've

brought to the party.



Front panel power-on switch.

> Apple quality, performance



Introducing Apple® External Hard Drives. Now you can add reliable

external storage to your Mac with all the quality you expect from Apple, at prices that will surprise you. Apple External Hard Drives are

bundled with everything you need to begin safely storing your data right away, including a power

cable, a SCSI cable, and a terminator. Convenient front-panel SCSLID and power controls make it easy to power up and change your SCSI address whether you set the drive up vertically or horizontally.

The new Apple drives are available in four convenient storage capacities, 160Mb, 230Mb, 500Mb and 1000Mb, and are manufactured exclusively by La Cie, Ltd. a Quantum Company. And right now we're celebrating the Apple

Drive debut by loading each drive with powerful hard disk management software, handy utilities and much more.

Look for the Apple Drive at your local dealer soon. For more information and the name of a participating reseller or Quantum distributor, call La Cie.

Now you can safely store your work outside your Mac without leaving the Apple family.

That's cause

160SC



FOR ALL THE FACTS CALL:



THE MORE, T

(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. (Not a bad thing to celebrate.)

Maybe your company's expanding, where more users will need to access files simultaneously. Or perhaps you're looking for more power to speed existing operations. FileMaker Pro Server is here, at your service. It's a high performance database engine, designed to dramatically accelerate multiuser 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 simultaneous users per file.

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

Due to its simple plug and play design, the
Server can be run by anyone in your organization,
not just network administrators or those with
database experience. To begin sharing files, simply
take any FileMaker Pro file off a desktop machine
and drop it on the Server. You needn't worry about
modifications or upgrades. It's all in one box.

HE MERRIER.

Comprehensive, graphical administration

features ensure that the administrator can quickly
and easily monitor file-sharing over the entire
network, as well as Server performance.

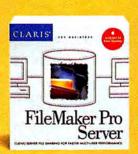
You might be wondering if FileMaker Pro
Server can stand up to the daily rigors of your
business. Rest assured. We've already put the
product through our own torture chamber: the
Claris® Testing Lab. We experimented with a
range of Mac and Windows computer models,
running them in a wide array of network and file
configurations--up to 100 computers at a time.
We ran tests and made refinements for a full six
months. So as more and more of you become
networked together, you'll find fewer clock and
coffee cup icons on your screens.

So come on! Grab a FileMaker Pro Server and

get the whole gang working more productively!

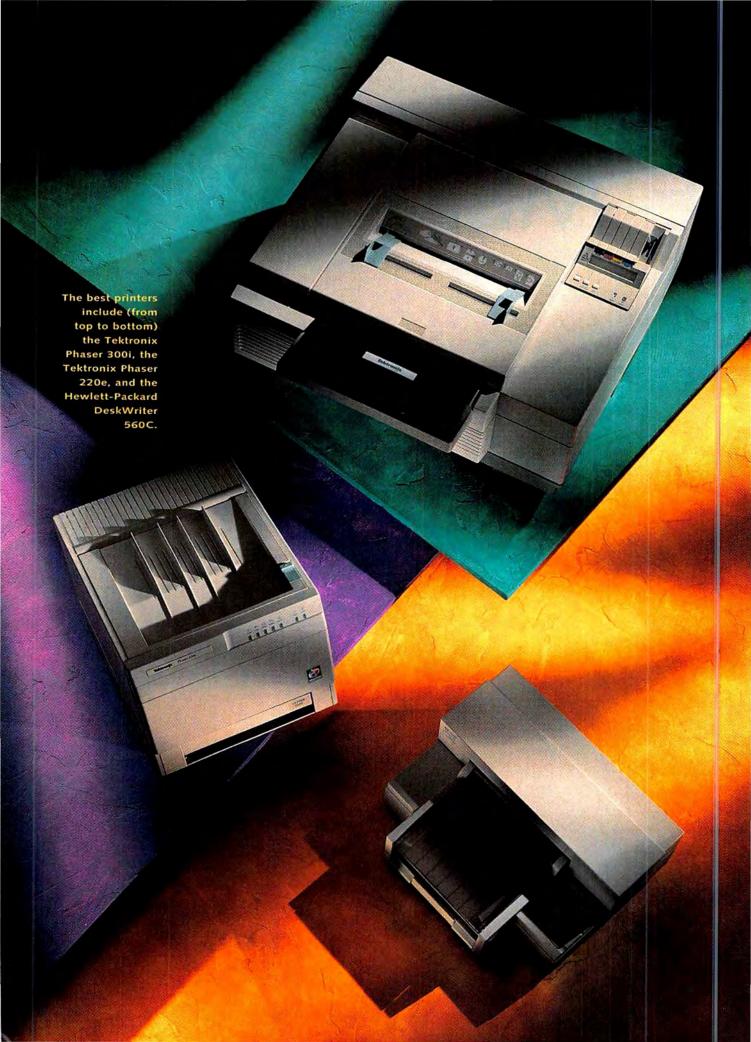
It'll definitely be more satisfying than the company picnic. (Sorry, onion dip and chips not included.)

You can get FileMaker Pro Server now from software resellers all over the world. If you'd like the name and address of the dealer nearest you, call Claris Customer Assistance at 1-800-3CLARIS.





Simply powerful software.™





GOLOR PRINTERS Macworld Lab tests 16 ink-jet and thermal-wax printers

till procrastinating over making the leap to color printing? You may be running out of excuses: printer manufacturers keep discovering better, faster ways to apply pigments and render images, and for less money.

The latest color machines still aren't about to replace monochrome printersregardless of how it works, a color printer is slower, more expensive, more com-

by Jim Heid

plex, and more finicky about paper than its monochrome equivalent. But for business presentation materials, for page proofs, and for any applications beyond gray-scale, this is a good time to follow the rainbow.

Or, more accurately, rainbows: each of the several color-printing technologies offers its own strengths and financial requirements. Liquid ink-jet printers span the price spectrum, ranging from \$379 to over \$10,000 (see "Finding the Best Business Color"). Half the printers, however, are low-end machines priced at well under \$1000. These are best for simple applications such as printing color presentations and jazzing up reports with colored graphs and spot color.

Solid ink-jet machines, priced between \$5595 and \$9995, are popular among publishers, thanks largely to an ability to print on nearly any kind of paper. Thermal-wax printers have become the mainstays for business color printing, generally offering better output quality and faster performance than inkjets can. Prices for thermal-wax machines have fallen into the monochrome laser territory, ranging from \$995 to \$8999.

For this survey, Macworld Lab tested 16 ink-jet and thermal-wax machines; last month we reviewed dye-sublimation printers, which produce photographic results but generally sell for between \$8000 and \$20,000 (see "Photo-realistic Color Printers," Macworld, July 1994).

The printers tested for this roundup don't do as well with scanned images; to simulate subtle color and shading shifts, they create dot patterns—this process is called dithering-that obscure fine details.

We also tested QMS's ColorScript Laser 1000, the first color laser for less than \$10,000. (Other color lasers sell for at least twice that.) The QMS machine produces vivid and durable transparencies and handles a wide range of paper stocks, but it has some drawbacks (see "Color Lasers Move to the Desktop").

are part of a disposable cartridge that also contains a supply of ink. The print head travels left and right, making dozens of passes in the course of producing a page.

The ink itself is water based and often wicks into the paper's fibers as it dries, giving text and line art fuzzy edges. The latest ink formulations from Hewlett-Packard and Canon-the two companies that build every liquid-ink mechanism tested-dry more quickly than did earlier inks and are much less prone to wicking, especially if you print on the special, coatthe real news is at the low end. After striking out with the Apple Color Printer, Apple returned to the drawing board and came up with the \$629 Color StyleWriter Pro. What an improvement.

Hardware-wise, the 11-pound Color StyleWriter Pro is an Apple-repackaged version of Canon's BJC-600, which is winning accolades in the DOS/Windows world. (The BJC-600 can be used with Macs when paired with GDT Softworks' [604/291-9121] \$149 PowerPrint driver and cable package.) Like the defunct

Wide Variations in Color Fidelity and Quality

When it comes to creating smooth gradations in color and to representing the colors of an original image accurately, you tend to get what you pay for with thermal-wax and ink-jet printers. Compared against the original image (top left), the print from the \$5995 Tektronix Phaser 220i (top center)-one of the most highly rated units-came closest to reproducing the difficult transitions between purples, greens, and blues in the background of the original image. It also did the best job of preserving fine details. Look at the points of the green star in the topcenter portion of the image and the white S to the lower right of the star. (Note: The banding on this image is an artifact of the process used to print this magazine.)

The Phaser 220i's corporate sibling, the \$9995, solid ink-jet Phaser 300i (top right), performed relatively well but didn't quite match the crisp details of the 220i.

In contrast, the \$1298 Nu-Design Color Printer (bottom left) darkened the scene so much as to evoke images of Batman's Gotham City. The NuDesign unit, as well as the \$629 Apple Color StyleWriter Pro (bottom center), also suffer from serious banding of colors during transitions, such as in the background.

The \$4995 General Parametrics SpectraStar GTx (bottom right) was able to handle color transitions fairly well, but it suffers from an overall washed-out quality. Nor could it capture fine lines, such as those on the document near the upper left corner of the image. The GTx represents the green star as a smudge.

When looking at these images, bear in mind that in most cases, an actual printout will be slightly brighter and more vivid than can be reproduced with the technology used to produce this magazine page.



Original



NuDesign Color Printer

Into the Liquid Inkwell

All color printers produce output by applying cyan, magenta, and yellow pigments. But each color-printing technology has its strengths and quirks; printers that excel on plain paper might fall flat with overhead transparency film. To pick the right printer for your jobs, it helps to understand how the technologies work.

Liquid ink-jet printers are spray painters. They use an array of microscopic nozzles that spew liquid ink onto the paper. In liquid-ink printers, the nozzles

ed paper that ink-jet manufacturers sell.

Today's inks are also less likely to smear when the output gets wet. In my scientific output-durability test-wiping a wet finger across the page-the inks used in the Hewlett-Packard DeskWriter printers resisted smearing better than the inks used by the Canon, IBM, and Apple printers-all of which have Canon mechanisms.

The Battle at the Bottom

Although the past year has brought progress in every color-printing technology, Apple Color Printer, the Color Style-Writer Pro produces 360 dpi, but the similarities end there. Apple eschewed the often-finicky SCSI bus in favor of a serial interface. That makes connecting the printer easier but could mean buying a serial switch box if your Mac's printer and modem ports are already occupied.

The Color StyleWriter Pro's fastdrying inks all but eliminate the wicking problem. Dramatically improved driver software adds a scatter-dithering option, which delivers better results with scanned

images. The new driver also provides better support for Apple's ColorSync colormanagement software.

The results from the improved driver made a good impression on our output-quality jury—12 Macworld editorial and art-department staff members. In five out of seven comparisons of unlabeled output, the majority of our jury preferred the Color StyleWriter Pro to its closest tested competitor, Hewlett-Packard's \$719 DeskWriter 560C. The Color StyleWriter Pro didn't do as good a job with text (the

the slow side, too. In our tests, done with a prerelease version of the driver, the printer never did reach Apple's claim of two minutes per page. At least the output is worth waiting for.

The Color StyleWriter Pro breaks no speed records, but neither does HP's Desk-Writer 560C. The latest in HP's noble line of ink-jets provides 600-by-300-dpi resolution and the Resolution Enhancement Technology previously found only in HP's laser printers. Like all of HP's Mac-compatible ink-jets, the DeskWriter

you're likely to have to replace the \$34.95 cartridge more often—even if only one chamber runs dry.

Moving Up: PostScript Ink-Jet

QuickDraw printers such as the Color StyleWriter Pro and the DeskWriter 560C give mediocre results when used with PostScript-oriented programs such as Adobe Illustrator and Aldus FreeHand. In the past, the answer has been Post-Script-clone interpreters that run on the Mac, such as TeleTypesetting Company's



Tektronix Phaser 220i



Apple Color StyleWriter Pro



Tektronix Phaser 300i



General Parametrics SpectraStar GTx

DeskWriter 560C provides higher resolution), and its output appeared a bit more mottled than that of the DeskWriter, with less consistency in the ink coverage.

Like all of the printers tested, the Color StyleWriter Pro can be shared on a network. But unlike the other machines, Apple's ColorShare driver technology makes the host Mac (the one connected to the printer) do all the work required to process jobs. That means the host slows down as it handles jobs from other Macs on the network. The printer itself is on

560C provides a LocalTalk port, making it better suited to network sharing than Apple's Color StyleWriter Pro.

While the Canon-based machines tested provide four ink cartridges (cyan, magenta, yellow, and black), the Desk-Writer 560C provides two: a black cartridge and a tricolor cartridge containing cyan, magenta, and yellow inks. This makes replacing ink a bit easier (the Canon cartridges can leak if you aren't careful), but because each of the tricolor cartridge's ink chambers are so small,

T-Script (\$85 to \$495, 617/734-9700). DeskWriter 560C and Color StyleWriter Pro users have another choice: true Adobe PostScript Level 2 interpreters that run on the Mac. HP offers a \$249 PostScript Level 2 software driver kit for the DeskWriter 560C.

GDT Softworks offers similar software, the \$149 StyleScript, for the Apple Color StyleWriter Pro. StyleScript is based on Adobe's Configurable Post-Script Interpreter (CPSI), which up to now has been used only on high-end printers such as 3M's \$20,000 Rainbow dye-sublimation unit. CPSI has stiff memory requirements, though-8MB minimum and up to 12MB for large Post-Script images, according to GDT Softworks. Even on a fast Mac, you won't get sizzling performance, and your Mac will slow as it processes print jobs.

Hardware-based PostScript printers deliver better performance, yet there are only three choices in the liquid ink-jet world. We tested two of them: Lexmark's \$3199 IBM Color Jetprinter PS4079 and Canon's CJ-10 with PostScript interface option. (The third machine is HP's \$2749 DeskJet 1200C/PS.)

Lexmark's IBM Color Jetprinter PS4079 combines the 360-dpi engine built by Canon for the BJC-820 with a built-in PostScript-clone interpreter. The Color Jetprinter PS4079 is more tortoise than hare—it was the slowest printer tested when used in its best-quality mode,

wherein the print head pauses for eight seconds after each pass to allow the ink to dry and prevent one pass from bleeding into the next. In its faster mode, the printer cut 30 percent or more time in four of five tests, not to damn it with faint praise.

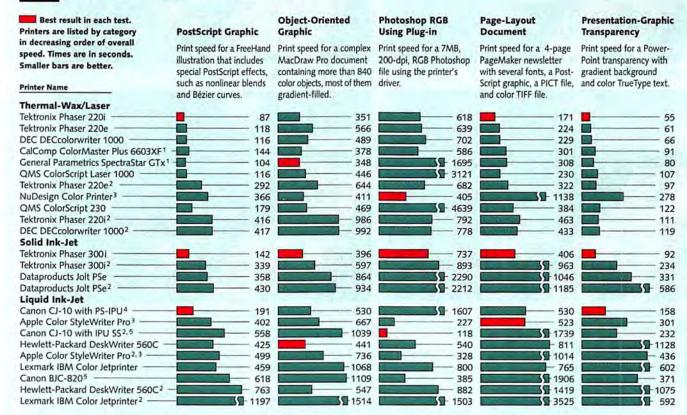
To its credit, though, the Color Jetprinter PS4079 provides a built-in Local-Talk port and is compatible with DOS/ Windows machines-Apple's Color StyleWriter Pro and HP's DeskWriter 560C can't make that latter claim. The Color Jetprinter PS4079 is also the only liquid ink-jet tested that provides an emulation mode for the Hewlett-Packard Graphics Language (HPGL), which ensures the printer's compatibility with drafting and computer-aided design packages. Its ability to handle 11-by-17-inch paper also makes it a good choice for drafting applications.

The Color Jetprinter PS4079 provides enhanced halftoning options, called ColorGrade, that deliver good results with scanned images. Indeed, our output jury generally preferred the Color Jetprinter PS4079's output to that of the other PostScript liquid-ink machine: Canon's CJ-10, which retails for \$10,990.

Ten grand for a liquid-ink printer? Yes, but the CJ-10 is actually a desktop copier that marries a Canon color-copier to a 400-dpi ink-jet print mechanism. It's a good enough copier to prompt a warning in the manual against copying currency and stamps. Front-panel buttons let you adjust brightness, contrast, and color balance as well as reduce and enlarge. The copier also accepts an optional (\$1250) slide-scanning attachment and a video adapter (\$1800) that lets you print images from a camcorder or other video source.

The \$10,990 version of the CJ-10 includes Canon's CJ PS-IPU PostScript interface. The PS-IPU sits beneath the copier and turns it into a PostScript print-

How Fast for Business Color?



1 Default resolution is same as enhanced mode. 2 Tested at high resolution. 3 Tested using serial-to-parallel converter. 4 High resolution is default. 5 Tested using SCSI port.

BEHIND OUR TESTS

Macworld Lab gauged printer speed with a variety of The Page-Layout test gives the printers a good overall workout from a different perspective. Except where noted differently, we tested the printers at default resolution, using the Local-Talk port.

The PostScript Graphic test shows the performance of a PostScript printer's controller. The Object-Oriented Graphic document also tests controller processing performance. The Photoshop test measures the printer's ability to handle large bitmapped images as well as network interface performance.

documents and techniques, each designed to test performance and demonstrates how well each machine handles typical publishing jobs. The Presentation-Graphic Transparency test looks at a primary business use for this class of color printer.

To judge output quality, 12 staffers from Macworld's editorial and art departments compared four different unidentified printouts against photographic prints of the original images, looking at highlights, shadows, color accuracy, and text.

-Macworld Lab testing supervised by Mark Hurlow

MS's \$9999 ColorScript Laser 1000 is the first desktop-laser color printer—but your desktop had better be capable of supporting a hefty 106 pounds. The printer uses four toner cartridges; setup and maintenance are more cumbersome than with other color technologies, with numerous hoppers, belts, and drums to replace at varying intervals (see Reviews, Macworld, July 1994).

One big advantage the ColorScript Laser 1000 has over competing technologies is its low operating cost. You can use cheap photocopier bond instead of the ultrasmooth laser bond or special, coated stocks that thermal-wax machines require. Also, the

amount of toner applied varies depending on what's on each page; by comparison, a thermal-wax printer always uses an entire set of four ink sheets for each page, wasting pigment for pages containing mostly white space. These factors combine to deliver output that costs only 5 to 10 cents per color page, versus about 60 cents for thermal-wax.

Where output quality is concerned, there's good and bad news. The good news is that business documents look great—colored

bar charts and spot-color headlines stand out beautifully against sharp black text. (Our output jury gave high marks to the machine's text quality.) The output is also more durable than thermal-wax or solid-ink output, with no flaking or scratching.

But the printer's colors aren't as vivid as those produced by competing technologies, nor do scanned images look as good. (The printer ranked near the bottom in most image-quality tests.) The printer's speed in most tests was good, although it finished second-to-last among all printers tested in our Photoshop test.

But the ColorScript Laser 1000 isn't designed for prepress or

digital-imaging applications. It's intended to provide color capabilities to a workgroup that would otherwise use a monochrome laser printer, and it meets this goal. The ColorScript Laser 1000 is suitable for business color applications and for printing short runs of color documents such as presentations. You decide whether these strengths outweigh relatively slow performance, and high maintenance requirements and price.

At press time, QMS announced another color laser printer: the QMS magicolor Laser Printer, which is the world's first 600-dpi color laser printer. The magicolor uses an engine similar to that of

the ColorScript Laser 1000 (indeed, an upgrade is available for \$2499, including installation). Unlike many thermal-wax machines, the magicolor provides 600-dpi resolution in both the horizontal and vertical dimensions. The sample output I examined boasted smoothedged text and halftones whose quality matched that of the best solid-ink and thermal-wax machines.

By the time you read this, the magicolor Laser Printer should be available in two configurations: a

\$9999 model that prints in monochrome at 600-dpi and in color at 300-dpi; and a \$10,999 model that supports 600-dpi color. (The only other difference between the two is memory: the low-end version provides 12MB, while the all-color model contains 28MB.)

Xerox (800/275-9376, ext. 4900) will also offer a desktop color laser unit, the 4900 Color Laser Printer, which should be announced by the time you read this. The printer will sell for under \$10,000 and boasts a resolution of 1200 by 300 dpi. The unit is aimed at the same market as the QMS units—business color for presentations, marketing materials, and internal reports.



QMS ColorScript Laser 1000 Vivid output, though blotchy in spots.

er. A unique operating mode lets you combine a photocopy with a computer document—to superimpose text over a photograph, for example.

A less-expensive (\$8690) version of the CJ-10 is available that uses a Quick-Draw-based interface, which connects to the Mac's SCSI port. The PostScript interface was faster in all tests except for the Photoshop test, in which it took almost 14 times as long. Why the huge disparity? The PostScript interface uses the laggardly LocalTalk port, which transfers data far more slowly than does SCSI. But the PostScript interface provides better network sharing and generally better output quality.

The Solid-Ink Alternative

Imagine candle wax dripping and solidifying on a paper tablecloth, and you have the idea behind the other major ink-jet technology: solid ink. Four printers—the Phaser 300i and Phaser IIIPXi from Tektronix, Dataproducts Corporation's Jolt

PSe, and the Brother HS-1PS2—use wax-based ink sticks that are melted in the printer's engine. The ink is sprayed onto the page, where it solidifies almost immediately. Like the wax on the paper tablecloth, nearly all of the ink sits on the paper instead of soaking into it.

The solid-ink approach eliminates the wicking problem and works well on plain photocopier bond, card stock, letter-head—anything a laser printer can handle. This versatility has made solid-ink printers—particularly Tektronix's Phaser IIIPXi and Phaser 300i—popular among designers creating packaging comps.

Tektronix has polished solid-ink technology until it glitters. The latest member of its solid-ink line, the \$9995 Phaser 300i, is faster and produces better output than the Phaser IIIPXi, which is still available at a reduced price of \$6995. The machines are otherwise similar: both are big boxes that accept paper as small as 4 by 6 inches and as large as 12 by 18 inches.

In its premium-quality printing

mode, the Phaser 300i earned some of the highest marks from our output-quality jury. In this mode, however, the printer was substantially slower than the fastest thermal-wax machines. In its standardquality mode, the Phaser 300i did a better job of keeping up with the thermalwax crowd, but at the expense of output quality. (This tug-of-war between output quality and performance occurred with most of the printers tested.)

Dataproducts' Jolt PSe has been improved somewhat over the Jolt PS we tested last year (see "Ink-Jet," Macworld, May 1993). The printer's output is still on the fragile side—fold a page in half, and the ink flakes off along the fold. The printer also requires more maintenance; you have to feed in a special head-cleaning sheet after each power-up. The Jolt PSe was also among the slowest machines tested, and our jury rated its output quality as inferior to that of the Phaser 300i.

Solid-ink technology has some drawbacks that transcend individual models.

Finding the Best Business Color

Company	Phone	Product	Imaging Technology	Tested by Macworld Lab	List Price	Standard Ports/ Optional Ports/ All Active	
Apple Computer	408/996-1010, 800/767-2775	Color StyleWriter Pro	liquid ink-jet	•	\$629	S/none/NA	
Brother	908/356-8880, ext. 4300	Brother HS-1PS2	solid ink-jet	0	\$8995	L, P, S/none/®	
CalComp Systems	800/225-2667	Colormaster Plus 6603XF	thermal wax	1.0	\$5495	L, P, S/E/O	
Canon USA	800/848-4123	BJC-820	liquid ink-jet		\$2199	P, SCSI/none/O	
		CJ-10.(PostScript)	liquid ink-jet		\$10,990	L ,P, S/none/	
1.9		CJ-10 (QuickDraw)	liquid ink-jet	•	\$8690	SCSI/none/NA	
Dataproducts Corporation	800/980-0374	Jolt PSe	solid ink-jet	•	\$5595	L, P, S/E/0	
Digital Equipment Corporation	508/493-5111	DECcolorwriter 1000	thermal wax	•	\$3999	L. P, S/E/	
Fargo	612/941-9470, 800/327-4622	Primera Color Printer	thermal wax	0	\$995	P, S/none/O	
General Parametrics	510/524-3950	SpectraStar GTx	thermal wax		\$4995	L, P, S/none/	
		SpectraStar GLx	thermal wax	0	\$3795	L, P, S/none/	
Hewlett-Packard	800/752-0900	DeskWriter C	liquid ink-jet	0	\$485	L. S/none/	
		DeskWriter 310	liquid ink-jet	0	\$379	L, S/none/	
		DeskWriter 550C	liquid ink-jet	0	\$599	L, S/none/®	
		DeskWriter 560C	liquid ink-jet	•	\$719	L, S/none/	
		Desklet 1200C/PS	liquid ink-jet	0	\$2749	L, P/E, T/0	
Lexmark	606/232-2000, 800/358-5835	IBM Color Jetprinter PS4079	liquid ink-jet		\$3199	L. P. S/none/	
NuDesign Engineering	612/832-5622, 800/762-3531	NuDesign Color Printer	thermal wax3		\$1298	P, S/none/O	
QMS.	205/633-4300, 800/523-2696	ColorScript 210	thermal wax	0	\$4595	L. P. S/E, T/	
		ColorScript 230	thermal wax		\$7335	L, P, S/E, T/6	
		ColorScript Laser 1000	laser	¥ 🍎	\$9999	L, P, S/E, T/0	
Seiko Instruments	408/922-5800, 800/873-4561	Personal ColorPoint PSE	thermal wax	0	\$2999	L, P, S/none/	
3		ColorPoint PSN Model 4	thermal wax	0	\$5999	L, P, S/E/®	
		ColorPoint PSN Model 14	thermal wax	0	\$8999	L, P, S/E/0	2
Tektronix	800/547-8949	Phaser 200e	thermal wax	0	\$2995	L, P, S/none/	
		Phaser 220e	thermal wax	•	\$3995	L, P, S/TC/0	
		Phaser 220i	thermal wax	•	\$5995	L, P, S/E, TC/O	
		Phaser IIIPXI	solid ink-jet	0	\$6995	L, P, S/E, TC/0	
		Phaser 300i	solid ink-jet	•	\$9995	L, P, S/E, TC/O	

= yes; O = no. Technical-support ratings are based on a series of calls made to each company by Macworld staffers (posing as customers) to gauge the accessibility, helpfulness, and accuracy of the company's support technicians. Macworld uses a point system, including bonuses and demerits, to derive the final rating. Ratings are for companies, not indi-

vidual products, and we call only those companies whose products Macworld Lab tests. E = Ethernet, L = LocalTalk, NA = not applicable, P = parallel, S = serial, SCSI = small computer system interface, T = Token Ring, TC = TCP/IP. PostScript Level 2 optional. ³600 by 300, black. ³Also provides dye-sublimation imaging.

The printers have warm-up times that rival that of a starting pitcher, taking about 20 minutes before their ink sticks are melted.

A more serious drawback is that solidink machines produce transparencies that look washed out when projected. That's because the solid beads of ink tend to refract light from the projector. Both Dataproducts and Tektronix sell desktop laminators that apply a second layer of film to counteract this phenomenon, but this adds cost and an extra step to the printing process. The best technology for transparencies remains thermal wax.

Iron-on Color

Thermal-wax printers' color comes from a roll of plastic film coated with pigmented wax in each of the three process colors (and optionally, black). The plastic is sandwiched between the paper and a print head containing thousands of evenly spaced heating elements. Where an element is hot, it melts a dot of wax, which transfers to the page. After one color's dots are applied, the ink roll advances to the next color.

In the last few years, as dye-sub printers have become cheaper, ink-jet printers have become better, and color lasers have knocked on the door, some people have predicted the demise of thermal-wax technology. But death reports would be premature. Thermal-wax manufacturers have added plain-paper capabilities, and thermal-wax machines were the fastest color printers Macworld Lab tested. Thermal-wax printers also provide unique output options, including media for making ironon fabric transfers and static-cling signs. (Seiko's machines support the largest selection of offbeat output options.)

Best of all, thermal-wax prices have fallen substantially; Seiko Instruments' Personal ColorPoint PSE, an Editors' Choice in last year's roundup, retails for just \$2999, while Tektronix's Phaser 200e lists for \$2995 (down from \$3695 last year). Fargo's Primera sets a new low at \$995, but it's slower than these machines and its 203-dpi output isn't in the same league. The Primera is also sold by NuDesign Engineering as the NuDesign Color Printer for \$1298.

Fargo and Seiko have taken a differ-

ent approach to fending off competing technologies. Both firms offer thermal-wax machines that also operate as dyesublimation printers (see "Photo-realistic Color Printers," *Macworld*, July 1994). We hoped to test the Seiko Professional ColorPoint PSF Model 14 for this story, but the unit's ship date slipped yet again—proof, perhaps, that creating a machine that straddles both camps isn't easy. I spent some time with a prototype and was impressed with its features and output quality; Seiko says the machine will be available by the time you read this.

Many of the latest printers from Tektronix, Digital Equipment Corporation (DEC), and General Parametrics have borrowed a page from the monochrome laser book, offering resolution higher than the standard 300 dpi. Tektronix's Phaser 220e and Phaser 220i, DEC's DECcolorwriter 1000, and General Parametrics' SpectraStar GTx and SpectraStar GLx provide 600-by-300-dpi output, obtaining the higher resolution on the long axis of the page by advancing the paper in smaller steps. The benefits are the same as with any type of noncontinu-

RAM (base model/ maximum)	Resolution (in dots per inch)	Imaging Language	SCSI Port for Font Storage	Number of Fonts	Prints on Plain Paper/Provides Manual-Feed Slot	Paper Sizes	Technical Support
NA	360	QuickDraw	0	64	•/0	A, A4, IgI	not rated
12MB/44MB	300	BR-Script Level 2	•	35	0/0	A, A3, A4, B, B4, B5, Igl, SB	not rated
8MB/64MB	300	PhoenixPage Level 2	•	35	●/○	A, AO, A3, A4, A40, B, B0	not rated
NA	360	QuickDraw	0	0	●/○	A, A4, Igl, B, B4	very good
16MB/16MB	400	PostScript Level 2	•	39	0/0	A,A4	
16MB/16MB	400	QuickDraw	NA	0	0/0	A,A4	
8MB/12MB	300	PostScript Level 2	•	39	●/●	A, A4, B5, folio, executive, Igl	very good
8MB/8MB	600 × 300	PostScript Level 2	0	17 (39 optional)	0/0	A	not rated
NA	203	QuickDraw	0	0	0/0	A, A4	not rated
10MB/32MB	600 × 300	PowerPage Level 2	•	52	•/0	A, A4	very good
8MB/24MB	600 × 300	PowerPage Level 2	0	52	●/0	A, A4	-
64K/64K	300	QuickDraw	0	35	●/0	A, A4, executive, Igl	very good
128K/128K	300	QuickDraw	0	35	0/0	A, A4, executive, IgI	
128K/128K	300	QuickDraw	0	35	•/0	A, A4, executive, IgI	
48K/256K	600 × 300	QuickDraw¹	0	35	•/0	A, A4, executive, Igl	
4MB/20MB	300, color ²	PostScript Level 2	0	35	●/○	A, A4, IgI	
4MB/16MB	360	PhoenixPage Level 2	0	35	●/0	A, A3, A4, B, B5	acceptable
32K/32K	203	QuickDraw	0	0	0/0	A, A4, long A4	poor
8MB/32MB	300	QMS Level 2	optional	65	•/•	A, A4, IgI	very good
13MB/32MB	300	QM5 Level 2	optional	65	•/•	A, A4, B, IgI, SB	
12MB/32MB	300	QMS Level 2	•	65	0/0	A, A4, Igl	
6MB/22MB	300	PhoenixPage Level 1	0	39	●/○	A, A4, B4, Igl	not rated
4MB/40MB	300	PhoenixPage Level 2	0	39	●/○	A. A4, SA	1000
12MB/40MB	300	PhoenixPage Level 2	0	39	●/0	A, A3, A4, B, B4, SB	
4MB/8MB	300	PostScript Level 2	0	17	•/O	A, A4	very good
8MB/8MB	600 × 300	PostScript Level 2	0	17 (39 optional)	●/○	A, A4	
10MB/14MB	600 × 300	PostScript Level 2	•	39	●/0	A, A4	
10MB/22MB	300	PostScript Level 2	•	39	•/•	4 × 6 inches to 12 × 18 inches	
10MB/22MB	300	PostScript Level 2	•	39	0/0	4 × 6 inches to 12 × 18 inches	

ous-tone printer: sharper text output and finer image halftones.

All five of these machines use a fast, Sharp-built print engine that can print on plain paper when used with a special ink roll. The ink roll sacrifices the black-ink panel in favor of a primer medium that is applied to areas of the page that will contain ink. The medium smooths the rough surface of plain paper, making it more receptive to the pigmented wax. It's a slick trick, but it's effective only when used with ultrasmooth plain paper such as Hammermill Laserprint or Nekoosa Laser 1000. These printers also have excellent paperhandling features.

On the test track, the Phaser 220i beat its look-alikes and was, in fact, the fastest printer tested—in 300-dpi mode, that is. In 600-by-300-dpi mode, the printer finished second to the Phaser 220e.

The Phaser 220e's output also impressed our jury, which gave it the highest rating. Among thermal-wax machines, the jury was least impressed with the output from the General Parametrics SpectraStar GLx, QMS's ColorScript 230, and CalComp's Colormaster Plus 6603XF. (That last machine has a unique attribute, though: it's the only thermal-wax machine tested that can print on both sides of a sheet of paper.)

Picking the Winners

Among low-end ink-jets, the Apple Color StyleWriter Pro delivers superior image quality (though inferior text quality) and is more compact. The HP DeskWriter 560C's superior text quality and networking features give it an edge over the Apple unit but by a small margin. If you can live with the Color StyleWriter Pro's approach to networking, and image quality is most important to you, pick the Apple unit.

In the solid-ink world, Tektronix's Phaser 300i wins hands down. The Data-products Jolt PSe costs far less, but it can't print tabloid-size pages and its output is on the fragile side. If you need color business documents, consider a plain-paper-capable thermal-wax machine instead.

Tektronix gets the gold in the thermal-wax category, too. Its Phaser 220i is fast, and its 600-by-300-dpi resolution yields the best thermal-wax output quality I've seen. If your budget barks at the \$5995 price, consider the \$3995 Phaser 220e, which delivers similar quality. m

Contributing editor JIM HEID has reviewed hundreds of monochrome and color printers, starting with Hewlett-Packard's ThinkJet in 1984. He is also the author and producer of Macworld Complete Mac Handbook Plus CD, third edition (IDG Books Worldwide, 1994).

BUSINESS COLOR PRINTERS



In a complex, broad category of color printers for typical business

tasks, we selected winners in three categories.

Low-End Ink-Jet

DeskWriter 560C This printer offers excellent text quality, thanks to its 600-by-300-dpi resolution and HP's Resolution Enhancement Technology. Company: Hewlett-Packard. List price: \$719.

Solid Ink-Jet

Phaser 300i Tektronix made a good thing better when it improved the output quality and performance of its venerable Phaser IIIPXi, which remains available at a reduced price. Company: Tektronix. List price: \$9995.

Thermal-Wax Transfer and Color Laser

Phaser 2201 This printer combines plain-paper capabilities, 600-by-300-dpi resolution, and fast performance. Company: Tektronix, List price: \$5995.



Helpful advice.

Stock updates.



Downloadable games.



Consumer Reports online.

Apple Update

Apple is expected to unverse. PowerPC microprocessor nethe RISC-based Macintoshe amount of compatibility to

The products will place Aprice/performance figures according to the report. PowerPC 601 chip: a high speed 66MHz chip, and an 60MHz.

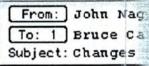
The latest.



Musical Instrument Digital Interface.



Hourly weather updates.



John:
Kow are you doi
now I'm afraid
anything import
think about thi
several things

E-mail.



Experienced help.



Downloadable programs.



Gardening Forum.



Mac Scripting/HyperCard For Mac System Forum + Newton/PIE Forum + Newton Developers Forum + Vendor Forums

Over 20 Mac forums.



Topic: Quark & Placing Pl

I could hazard a few guesse playing with Photo CD. Foru The resolution of the image (768x512), though I do not

There are some Photo CD-say to give you a thorough exp

Tips and tricks.



Airline reservations.



A friendly interface.



Desktop publishing assistance.



Virus updates.



Science Fiction and Fantasy Forum.



Shopping.



Scuba Forum.

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	40	
Evening Phone	Mac World/Aug.	:rve°



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 407 COLUMBUS, OHIO

POSTAGE PAID BY ADDRESSEE

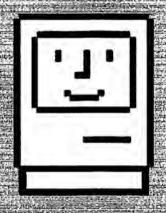
CompuServe[®]

NEW MEMBER DEPARTMENT Mac World/Aug. PO BOX 20961 COLUMBUS 0H 43220-9988

hlalalladdablladdablalddalddaldd

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES





Il's because CompuServe makes John's life so rough 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 ... The information service you won't outgrow

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.



See us at MacWorld Exposition/Boston, World Trade Center, Exposition Hall, Booth 5228.

EDITED BY JAMES A. MARTIN

THE LATEST IN DESIGN, PUBLISHING, AND PREPRESS

Two Ways to Make a Big Impression

EED POSTER-SIZE, FULL-COLOR OUTput? If so, you've got two new options: a Hewlett-Packard ink-jet printer designed for producing in-house, large-format images, and a Raster Graphics electrostatic printer for short-run color jobs from your service bureau.

The HP DesignJet 650/PS, expected to be available in June, is a PostScript Level 2 ink-jet device capable of printing five-color (CMYK, plus a spot color) images up to 3 feet wide and 9 feet long. The DesignJet is aimed at graphic designers who need to quickly produce inexpensive, large-format comps and posters.

The 300-dpi printer comes in two models: D-size (24 inches wide), for \$9995; and E-size (36 inches wide), for \$11,595. The printer uses special ink-jet cartridges and paper; a 3-by-4-foot print would cost an average of \$3 to \$5 in consumables, compared with the \$50 or more you'd pay a service bureau to output your file.

HP says the DesignIet is ideal for large, short-term color images, such as posters displayed at trade shows. Images printed on the DesignJet's paper stock and inks are designed to last up to a year under low-lighting conditions.

The DesignJet uses an Intel i960CA RISC chip and offers three printing modes: Draft, Final, and Enhanced. In Enhanced mode, HP's new scatter-halftoning rendering helps eliminate banding. The printer comes standard with LocalTalk, EtherTalk, Novell Ethernet, TCP/IP, Centronics parallel and RS-232C serial connectivity, 4MB of memory (upgradable to 68MB using proprietary HP memory), 39 Adobe Type 1 PostScript fonts, and Pantone color reference tables. The DesignJet isn't exactly a desktop printer, though-the 24-inch output model, for instance, weighs 128 pounds and is 43 by 28 by 45 inches.

Meanwhile, Raster Graphics' Digital



ColorStation 5400 is able to produce four-color prints up to 52 inches in width and of virtually unlimited length. The ColorStation 5400 is designed for shortrun, on-demand color print jobs (on coated stock) of 1 to 200 copies.

continues on page 119

Pedal-to-the-Metal Slide Scanner

OLAROID CORPORATION'S ELECtronic Imaging Systems group has introduced the SprintScan 35, a \$2495 color 35mm slide and film scanner that reportedly digitizes images at top resolution (2700 dpi) up to ten times faster than competitive slide scanners.

The SprintScan 35 uses Polaroid's proprietary implementation of Time Delayed Integration, a method by which the scanner's trilinear CCD array passes more quickly over an image yet yields better scanning results. In addition, the device includes such hardware-based features as sharpening, color correction, and image scaling for fast image processing. The SprintScan captures images in a single pass in 30-bit color and automatically samples them to 24-bit.

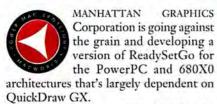
The SCSI-2-device SprintScan will ship in late July with an Adobe Photoshop plug-in filter for scanning directly into the image-editing application; a Windows version will ship in June. Polaroid,

800/662-8337.-J.A.M.

The ColorStation 5400, to be available in June, costs \$99,500 and up, and is aimed mostly at reprographic shops, imaging service bureaus, and photo labs. Service bureau customers can expect to pay \$50 to \$80 for a 3-foot-by-4-foot image. The 5400 is a direct-to-print device, meaning CMYK output can be printed directly from a Mac application. The 200-dpi device uses a web-cylinder transport system, which the company says helps produce clean, clear print quality.

Hewlett-Packard, 208/323-2551, 800/354-7622; Raster Graphics, 408/738-7800, 800/441-4788.—J.A.M.

ReadySetGo Prepares for GX



The company says that the GX edition of the page-layout program will give users a single imaging and printing architecture—QuickDraw GX—as opposed to relying on QuickDraw for screen rendering and PostScript for output.

To date, however, ReadySetGo's support for GX is unusual among page-layout programs. There are currently no plans to add GX capabilities to Quark-XPress, according to a Quark spokesman. Aldus declined to talk about specific plans for GX support in PageMaker.

ReadySetGo GX version 6.5 (the program's likely name) will offer GX features such as automatic ligatures, optical font alignment, text on a curve, and page-bypage formatting. The program will also let users draw and edit quadratic Bézier curves; one version of the program will support Arabic and Hebrew text, and another version that supports kanji will be available in early 1995. Because it relies on GX for many capabilities, the program will require minimal RAM and hard drive space and will run faster than previous ReadySetGo versions, the company says.

ReadySetGo 6.0, the current version, will continue to be available for users without QuickDraw GX. The GX version will ship later this year. Suggested retail price is \$395; upgrades from ReadySetGo versions 5.0 and 6.0 should be about \$70. Manhattan Graphics, 914/725-2048, 800/572-6533.—J.A.M.



The HP DesignJet 650/PS

New Digital Faces

THE FONT BUREAU, A BOSTON-BASED type foundry, has announced three digital PostScript Type 1 typefaces: Village, a text face originated by Frederic Goudy in 1932; Tasse, designed for display use; and Giza, for text and display. A spokesman said The Font Bureau will offer TrueType GX versions of these faces if there's a demand. The typefaces are sold by FontHaus (800/942-9110) and FontShop (800/363-6687).—J.A.M.

MAC Typeface 12345678 MAC Typeface 123 **MAC Typeface 123**

Three new Font Bureau offerings, in 18-point type. Top: Tasse (regular wide). Middle: Village (regular roman). Bottom: Giza (style One Three).

Adobe Revamps Licensing, Updates ATM



ADOBE SYSTEMS HAS BEGUN licensing its fonts for use on up to five computers for each individual typeface package purchased. In the

past, Adobe's font licenses were for a single printer. But the company says that a growing number of users prefer per-computer licensing agreements, which make it easier to ensure that the users have the appropriate number of

IN BRIEF

Adobe Tunes In to FM Adobe Systems plans to license its Frequency Modulation (FM) screening technology, Brilliant Screens, to manufacturers of imagesetters, printers, and presses. Brilliant Screens promises to offer enhanced image detail and significantly reduce moirés. Device manufacturers will make it available to end users. 415/961-4400, 800/833-6687.

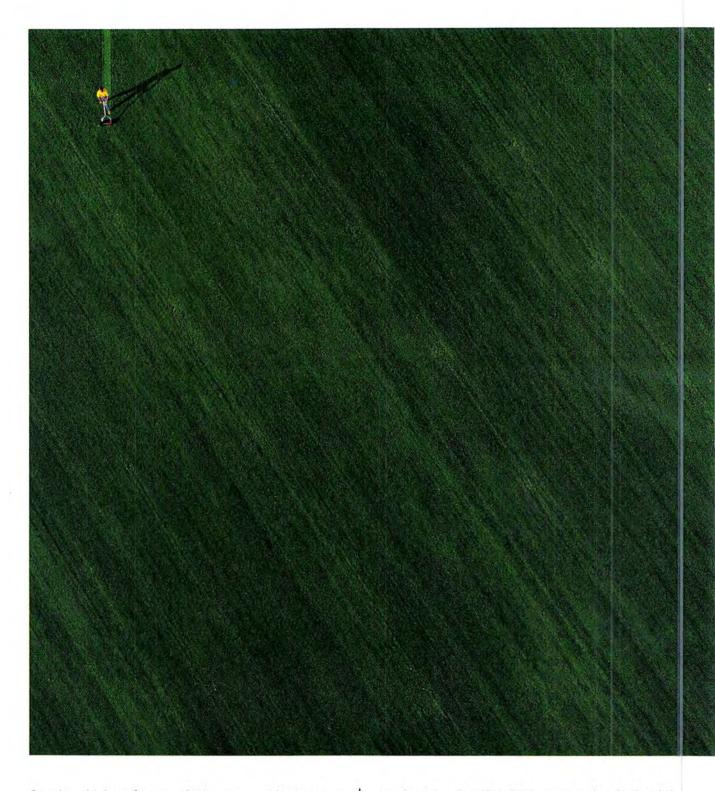
Power Mac Update
Canto Software has released native
PowerPC versions of its Cumulus
image database and Cirrus scanning/image-editing applications.
Both programs are available in fullfeatured and limited-capability versions. Prices vary based on program
version and number of users. 415/
431-6871, 800/332-2686.

The Art Institute of California is sponsoring the National Computer Art Awards, supposedly the first-ever competition of its kind for American computer artists. The deadline for submissions is August 1, 1994. For more information, send a self-addressed, stamped envelope to the National Computer Art Awards, 1125 Jefferson St., Napa, California, 94559; or call 707/226-1776.

licensed copies of a particular typeface.

The new licensing policy doesn't allow you to give a copy of a font to your service bureau. Adobe has unveiled a new pricing policy specifically for service bureaus, however. The policy enables any service company whose primary business is graphical output to pay as little as \$10 per typeface (a savings of \$15 or more) using Adobe's Type On Call CD-ROM font-unlocking system.

Adobe also announced that the native-mode PowerPC version of Adobe Type Manager is scheduled to ship in July. ATM version 3.8 will automatically install either the PowerPC or 680X0 version of the utility, depending on your Mac's CPU. ATM 3.8 will also include font substitution, as previously available in SuperATM. Separately, Adobe announced that ATM is now included, without charge, in every font package it sells. Adobe Systems, 415/961-4400, 800/833-6687.—J.A.M.



Imagine a high-performance 650hp mower with 10 sets of blades. Welcome to the world of MicroNet. We're

reshaping the desktop landscape with storage





products and a technical support

Optical Drive network designed to increase your

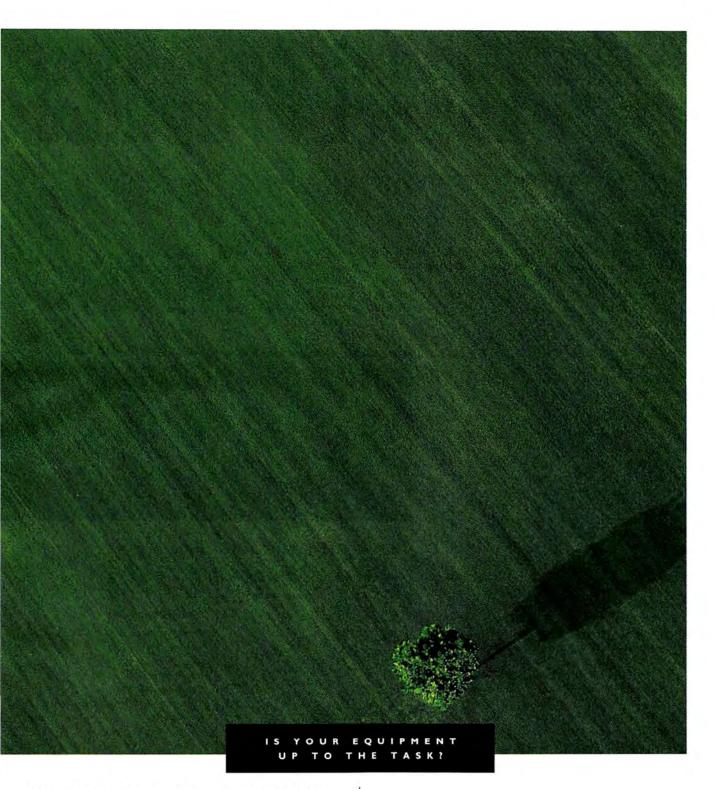
productivity. Our 17.3 GB Raven array has displaced the solitary drive. A 200 MB SyQuest has eclipsed the 88.

The 1.3 GB optical rivals the speed of a hard disk. And



SyQuest Drive DAT Backup

our 32 GB DAT backs up



between conception and completion. So in a world where time is measured in milliseconds and capacity in gigabytes, MicroNet provides productive solutions that can change the way you work. To impact your company's throughput, call your local reseller or 1-800-800-DISK.



GRAPHICS

Expert Graphics

GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

Artist: Daniel Pelavin is an illustrator and typographic designer based in New York City who began working regularly on the Mac two years ago. Pelavin's typeface ITC Anna was recently added to the Adobe Type Library.

How It Was Done: Pelavin began designing the typeface he calls Monograph by sketching the letters on paper. In Illustrator, Pelavin created the skeleton of each character out of simple strokes. Monograph has a fairly uniform stroke weight; its uppercase and lowercase letters differ in weight only slightly to maintain a consistent appearance.

To create Monograph's bold characters, Pelavin doubled the size of the original letters and scaled up their line weight, then reduced them back down to normal size without scaling down the weight. Then he manually fine-tuned some of the letters, such as shortening the loop in the uppercase *C* and shortening the serifs on the uppercase *F* and *T*.

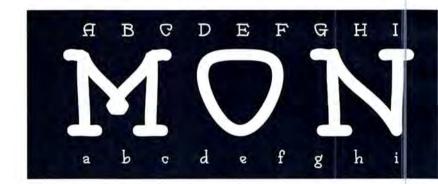
Although many fonts include stock character sets for unusual characters such as ligatures and symbols, Pelavin elected not to follow this route. Instead he designed each of Monograph's special characters from scratch.

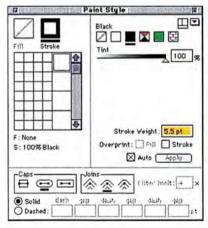
After designing the complete 223-character set—including foreign-accented letters, symbols, and punctuation—Pelavin's next step was to convert the strokes to outlines so the characters would be ready for importing into the font-creation program Fontographer. While it includes many of the tools found in Illustrator, Fontographer also contains features specifically for controlling a type-face's width and spacing, or kerning.

Finally, after Pelavin had finished testing and adjusting the letters for proper spacing and optimum readability, he was ready to generate the final Type 1 PostScript font in Fontographer's Generate Font Files window. This produced an outline font that would output at the best available resolution on any Post-Script device, and a bitmap font for 72-dpi screen display. **m**

1 Some letters from the designer's original sketch. Pelavin envisioned a font whose letterforms would have subtly curved strokes and whose round areas—like the o and the bowl of the lowercase g and e—would be triangular.









- 2 Although the characters have no weight when displayed in Illustrator's Artwork mode, the underlying architecture of each letterform is still apparent.
- 3 In the Paint Style window (Object menu), you define attributes such as stroke weight, caps (ends of strokes), and joins (corners).

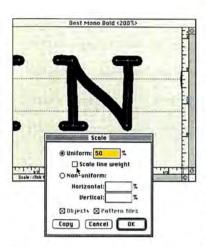
THE TOOLS

Hardware: Mac Ilci with 20MB of RAM and 240MB internal hard drive; APS 128MB magneto-optical drive; Sony 20-inch Trinitron color display; Radius PrecisionColor 24x 24-bit accelerated graphics card; Logitech ScanMan hand scanner; Hewlett-Packard DeskJet 1200C/PS color ink-jet printer; Mouse Systems Little Mouse ADB optical mouse. Software: Adobe Illustrator 5.0.1; Altsys Fontographer 4.0.3.



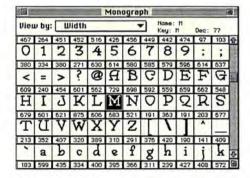


- 4 Using the paths that make up the letters' skeletons, Pelavin applied the stroke weight and viewed the resulting letter weights in Preview mode.
- 5 To convert the strokes to outlines, Pelavin used the Outline Stroked Path filter (under the Filter menu in the Objects submenu) and the Unite filter to make a single shape out of characters—such as the M and the N—that were composed of multiple paths.



6 To create Monograph's bold characters. Pelavin scaled all the letters 200 percent with the Scale line weight option checked in the Scale dialog box to uniformly double the weight of all the lines. Then, without deselecting, he unchecked the option and scaled the lines back down 50 percent, which brought the letters back to their original size but kept the line weights doubled.





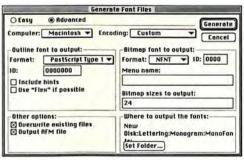


7 He brought the letters one by one into Fontographer by selecting the character, option-copying it to create a PostScript version that Fontographer could read, and pasting it into its own separate Character window.

8 Fontographer's font window, which lets you view all characters simultaneously, can be configured to display such information as character widths, left and right sidebearings (the amount of space allotted for the width of each character, including the space to the left and right of it), and keystroke (the key the letter is mapped to).



9 In the Metrics window, Pelavin set the kerning specifications to control the spacing between certain pairs of letters—such as the capital *T* and the lowercase o—for better readability and aesthetics.



10 With everything closed except the Font window, Pelavin chose Fontographer's Generate Font Files command (File menu), setting parameters such as output formats and ID, which facilitates font caching in PostScript printers (so the font will remain in the printer's memory and not be flushed after printing).

online Stock-Photography services promise to make the process of searching for and obtaining images faster, easier, and less expensive. The idea is to connect via modem to a central database with thousands of images from a variety of sources. Once you are online, you can use keywords

Searching for Stock Photos Online

or phrases to look for the types of images you want, then download candidates as low-resolution thumbnails. When you decide on an image, you can go back online and download a high-resolution version for use in your layout.

Again, that's the *idea* behind online image access. To find out how much of it is real, I put the current crop of electronic-image services—Comstock On-Line Access, PressLink, and Kodak Picture Exchange—to the test to see if they really do save money, time, and headaches. Among the things I looked for: How easy is the software to learn and use? How comprehensive are the search

capabilities? How usable are the images that you download? And how much money will you really spend using these systems?



Since it has no electronic search capability, Comstock's On-Line Access—which gives you access to 15,000 of Comstock's most popular images—provides a rather piecemeal approach to digital delivery.

You must search for images by flipping through the hefty, printed Comstock catalog included in On-Line Access's sign-up package. When you find the images you want, you dial Comstock's toll-free number using a modem, type in the catalog numbers for the images you

want, then download the low-resolution proofs from Comstock's electronic bulletin board. The proofs (about 500K) are compressed with Kodak's ColorSqueeze utility to about 50K, so each proof takes only a few minutes to download. Once the image is on your hard drive and you've signed off, you can use ColorSqueeze to decompress the digital photo to its original size—about 5 inches by 7 inches at 72 dots per inch.

On-Line Access is quick, trouble-free, and inexpensive. A typical, ten-minute online session in which you download three images costs between \$25 and \$40, depending on the photos you choose. Comstock also offers a scanning service: if you want an image that has not yet been posted on the bulletin

board, Comstock will scan and upload a low-resolution version of the photo for you. To receive this service, however, you can expect to tack on Comstock's standard research fee of \$60.



Illustration by Michael Sean

Macworld

puts stock-photo services

to the test

Despite its name, On-Line Access is not a full-featured online service. You cannot search online, you must negotiate usage fees for an image over the phone, and you still need to obtain transparencies. But if it is 10 p.m. and your preliminary layout is due tomorrow morning, On-Line Access could be your ace in the hole.

Charges: Sign-up fee \$99; \$2.85 per log-on; 85 cents per minute of usage; research fee for posting new images \$60; design proofs \$4.50 to \$9 each. Phone: 212/353-8600, 800/225-2727.

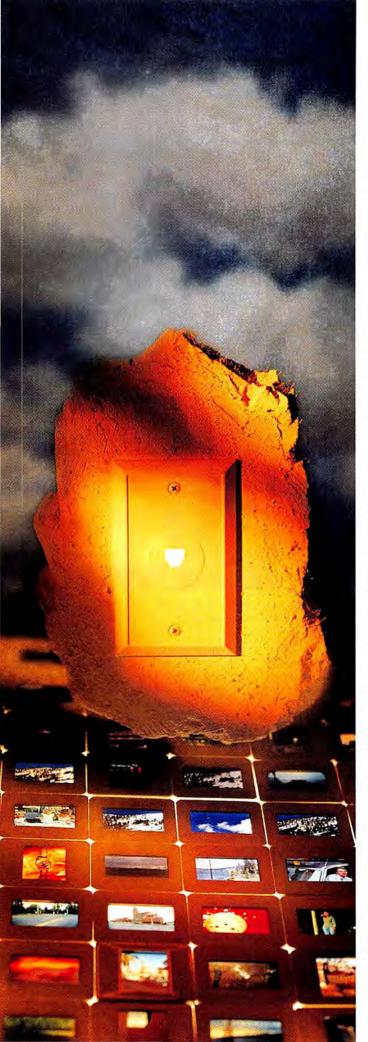
PressLink

Many small-to-midsize newspapers and magazines can't afford satellite hookups to get a steady stream of timely images. Instead, they're turning to a cost-effective alternative: PressLink, a Knight-Ridder subsidiary.

At press time, PressLink offered more than 150,000 images from some 14 media giants, including Times-Mirror, Reuters, Associated Press, United Press International, and Gannett. With PressLink, you can find photos of political and entertainment figures, snapshots of last night's all-star baseball game, and even Aldus FreeHand infographics from current issues of *Time* and *USA Today*. The trick, as always, is finding the images you want—and PressLink doesn't make it particularly easy.

Once you've dialed the local-access phone number and entered your password, PressLink presents you with a screen full of folders, each one representing a particular news service. Because the services try to protect how their images are used, there are no links between them. If you're looking for a photo of last week's hurricane in Alabama, for instance, you have to spend several minutes opening a dozen folders and searching within each one to find the right image.

In addition, the image providers offer only a handful of keywords to identify images. This wouldn't be too irksome, except that you can't whittle down your choices by viewing thumbnails



online—you can only read an image's caption. To view thumbnails, you must download them to a folder on your hard drive; each image is compressed to between 8K and 10K using proprietary software and takes 10 to 15 seconds to download. Once they're on your hard drive, you view the thumbnails by double-clicking on a thumbnail file's icon to automatically launch the PressLink Access utility. When you find an image you like, you then log back on to PressLink to retrieve the JPEG-compressed high-resolution version of the image and download it to your hard drive. Each image is 140K to 250K in size and takes between 5 and 10 minutes to download.

Highquality photos don't have to cost a bundle

The good news is that your final, decompressed color image is a healthy 2MB to 4MB in size. Even better, most of the content providers charge little for the images and allow multiple uses over a fixed period of time. UPI, for instance, offers newspapers unlimited use of photos for 90 days for a mere \$25 per image. Add that to PressLink's reasonable hourly online rate and download charge, and you'll find that using high-quality photos in your publication doesn't have to cost a bundle.

Charges: Sign-up fee (software included) \$50; monthly service fee \$9.95; \$15.95 per hour of usage; all downloaded information costs \$.0575 per thousand characters; content providers charge usage fees of \$25 and up for high-resolution images.

Phone: 703/758-1740.

Kodak Picture Exchange

At press time, 17 stock-photo houses—among them FPG, PhotoBank, and ProFiles West-had contributed nearly 100,000 images to Kodak Picture Exchange (KPX). But unlike those on PressLink, every KPX image (the majority are in Kodak's Photo CD format) carries a detailed description that follows Kodak's specifications. This makes it possible to search all of the content providers' images simultaneously.

Of the three services I tested, KPX comes closest to delivering on the promise of online image access. The software is easy to learn; I was able to perform simple searches and download images without cracking open the manual. The service is fast (KPX supports 9.6-Kbps, 14.4-Kbps, and ISDN transmissions) and powerful-even complex searches showed the number of hits within a few seconds, and I could quickly narrow my search criteria for a manageable range of images.

Here's a typical session. After launching the program which automatically dials KPX's toll-free number—and choosing from a list of image providers (you can select them all if you want), you're ready to start searching. For a simple search, you can type a few keywords, such as children and dogs; within a few seconds you'll see the number of images found that fit your request. (The above search yielded 133 hits.)

You can then choose how many thumbnail images you want to see and at what sizes—small (32 by 48 pixels), medium (64 by 96 pixels), or large (128 by 192 pixels, the same as the smallest Photo CD resolution). The program automatically downloads all thumbnails to your hard drive. For maximum speed (but minimal visual appeal), you can also download only the text description of an image.

KPX makes it relatively easy to perform more complicated searches, too. In the children-and-dogs example, I narrowed my search to include only images of a boy and a dog, in vertical format, with space at the top for a headline; using those criteria, my search yielded nine images. I could then pick from those images and download a 256-by-384-pixel design proof.

Once you've made your decision, you can order an image

Taking Stock of CDs

hanks to the growing ranks of CD-ROM-drive owners, a new means of distributing images is gaining popularity—high-resolution stock-photo CDs. Unlike the catalog CDs published by such stock agen-

cies as FPG International—which typically contain thousands of low-resolution (usually 72-dpi) images for onscreen browsing and use in comps—CD photo collections often contain between 60 and 400 electronic images at 300-dpi resolution that are suitable for printing at sizes ranging from 5 inches by 7 inches to 15 inches by 10 inches at a 150-line screen. (All the CDs reviewed here also offer low-resolution versions of the images for browsing and multimedia use.)

Unlike using a stock-photo agency, where you pay for every use of the image you choose, purchasing a stock-photo CD generally enables you to use any image on the disc as many times as you like, without additional charges.

I evaluated more than 50 high-resolution stock-photo CDs, keeping an eye toward image quality as well as aesthetics. From that pile, the following three multiple-disc, wide-ranging image collections and three single-disc, general-purpose collections were standouts.

Multiple-Disc Collections

COREL PROFESSIONAL PHOTOS Easily the largest collection of high-resolution images on CD, the Corel Professional Photos series offers more than 100 specific categories—one category per disc—to choose from. Most of the CDs deal with travel, animals, or plants, although the collection

is expanding to include subjects such as law, business, and residential interiors. Most images have noticeable imperfections, and more of these photographs need color adjustment than on the other discs I reviewed. But with 100 Photo CD-formatted images on each \$49.95 disc. I can't complain. Corel. 613/728-3733, 800/

DIGITAL STOCK'S PROFESSIONAL SERIES Excellent color balance, superior compositions, and only an occasional scanning imperfection characterize this collection of 20 CDs (100 images per disc). Digital Stock CDs cover the breadth of images; among the disc categories are Active Lifestyles and Buildings and Structures. Included in the collection is a Signature Series: each disc highlights the works of a particular photographer. All Digital Stock images are in Photo CD format. Each disc is \$250 (10 percent discount for 5 to 9 discs: 15 percent for 10 or more: Signature Series discs are \$350 each). Digital Stock, 619/794-4040. 800/545-4514

PHOTODISC Like Digital Stock's, PhotoDisc's images cover the gamut of subject matter and are well chosen and nicely framed. You get a greater quantity of images on a PhotoDisc CD—most have 336 photos—than you do with Photo CD—formatted discs, but the PhotoDisc images are slightly smaller. There are currently 13 discs in the series; volumes 1 and 2 have too many scanning imperfections and dark midtones, but a Pho-

toDisc company representative said that rescanning those images is a top priority and that there will be a nominal upgrade charge for anyone who already owns the volumes. PhotoDisc images are compressed via JPEO: each disc contains between 111 and 409 images and costs \$299 (except for volume 3, which goes for \$199). PhotoDisc, 206/441-9355, 800/528-3472.

Single-Disc Collections

COLORBYTES SAMPLERS ONE AND TWO Although a bit heavy with nature shots, these two generalpurpose discs have the best-scanned images of





Stock photos from Electric Iris Signature Series (top) and the PhotoDisc Series (bottom).

any I reviewed. They offer excellent color balance and large images sizes—several megabytes larger than even the maximum size supported by the Photo CD format. One annoying restriction: you must include a credit line for the photographer if you use any part of a photo. Images are

compressed in JPEG format; each disc contains 100 images and costs \$399 (discounted indefinitely to \$249). ColorBytes, 303/989-9205, 800/825-2656.

ELECTRIC IRIS SIGNATURE SERIES,
VOL. 1 NO. 1 This is perhaps the
most wide-ranging single-disc
collection of stock photos
around. The \$129 disc offers 60
RGB TIFF images from photographer Chris Grajczyk; they
include both the expected (sunsets and children) and the unexpected (a body in a morgue).
The images are nicely composed but grainy, with colors
a bit oversaturated. Digital
Knowledge, 612/595-0801, 800/
279-6099.

Left to right: ColorBytes: Corel Professional Photos: Digital Stock.







online. But here's where KPX disappoints by regressing to the timeworn tradition of phone negotiation. After you specify how you'll use the image (for example, book cover, 10,000 print run, and USA only), KPX electronically routes your order to the appropriate image provider, and a representative of the provider calls you with a price. It seems logical that prices for some images might need to be negotiated; but if I'm browsing online, I like to have an idea right then and there what a particular image will cost. After all, price can be a big part of my decision.

Another caveat, particularly for those on a tight deadline, is that KPX currently can't download high-resolution files via modem. So if you need the image today, you're out of luck. You can receive an image on a Photo CD or transparency via next-day air delivery, however, and the company says that a future version of KPX will let you download high-resolution files.

KPX seems pricey—the sign-up fee alone is \$399—but if you frequently request stock photos from a number of agencies, you could realize substantial savings in the long run. If you were to make search requests from four stock houses, for instance, chances are that each agency would charge you a \$60 research fee—a total of \$240. Add to that, \$30 in round-trip, rush airfare charges for each stock-house mailing, and that's another \$120—for a grand total of \$360. Deduct \$60 as a rebate from the agency through which you eventually license an image, and you've still paid \$300 just to find the image you want.

Using KPX, a novice can easily search and download 50

thumbnails from a variety of image providers in 30 minutes; experienced users will need only half that time. That translates to research costs of between \$21.25 and \$42.50, based on KPX's \$85-per-hour online usage fee. Throw in \$30 for a typical design proof and another \$30 for round-trip transparency or Photo CD delivery and return, and you're still at around \$100 per image (not including your sign-up fee).

Charges: Sign-up fee (includes software and two hours of free usage) \$399; \$85 per hour of usage; design-proof download fees \$9 to \$50. Phone: 716/473-7300, 800/579-8737.

More to Come

By the time you read this, Picture Network International, or PNI (703/558-7860), is expected to go online with Seymour, a direct competitor to KPX aimed at designers, ad agencies, book publishers, newspapers, magazines, and multimedia producers. At press time, 14 providers have supplied the system with images, and as many as 15 more are expected by year's end.

Seymour will sport a snazzy interface and let you search by natural-language phrases (such as three executives talking in front of a building) instead of keywords. Thumbnails and design proofs will come in TIFF format, proofs

will be as large as 700K (591 by 394 pixels), and the system will support modem speeds between 9.6 Kbps and 28.8 Kbps.

With Seymour you'll be able to get the exact price of any image (based on your usage), order it, and obtain a high-resolution version by downloading a Photo CD file. (The maximum Photo CD image size is 2048 by 3072 pixels.) If you prefer, PNI will also send the image on a Photo CD or SyQuest cartridge, or as a transparency.

Meanwhile, Microsoft chairman Bill Gates's search for images to use on the HDTV screens in his new home has unfolded into a new company, Continuum Productions Corporation (206/641-4505, 800/677-4172). Continuum's mission is to develop a digital archive of multimedia content. At this point in its evolution, the company is focusing on licensing and obtaining still images from photographers, museums, libraries, the public domain, and private archives and institutions. Images are being scanned at HDTV resolution (2000 by 3000 pixels), cataloged, and assigned keywords. The company also plans to develop a visual online navigation system. Although Continuum is currently providing images to producers of multimedia titles, by the time you read this the company will be making images available online to other users as well.

Picturing the Future

We're moving toward a scenario in which art directors never touch an actual transparency from a stock house. In fact, if you

use KPX, it's quite possible to accomplish that feat today. By the end of the decade, online image databases will have millions of images cataloged, and using them will likely become de rigueur.

So why aren't the visionary systems reviewed in this article going great guns today? (The largest of them, PressLink, boasted a mere 3000 subscribers at press time.) One reason is that they're relatively new, but a bigger obstacle is technophobia: say the word *modem* to many designers, and their eyes glaze over—that is, until they actually use one for an online joyride. Then they're hooked.

If you frequently use traditional stock-photo agencies, give their online counterparts a whirl. If you like Comstock's images and use them frequently, you should consider signing up with On-Line Access. If you prefer to shop at a number of stock houses, by all means try out KPX. And if you need low-cost images of current events, PressLink should fill the bill. These services-and others coming down the pike-are making it easier and cheaper than ever to load your Mac with the images you need. m

Fredoring to Month offers Works of Art
Fredoring to Month offers Works of Art
Fredoring Month offers Month of Art
Fredoring Month offers Month offers
Fredoring Month offers Month offers
Fredoring Month offers Month offers
Fredoring Month of Month offers
Fredoring Month of Month of

Two Stock Services It pays to be specific when you search on Kodak Picture Exchange (top). A request for images with the keyword Mardi Gras was rewarded with 22 hils (some of which are shown here), but only half of the images were actually of Carnival: the others were generic New Orleans scenes. Typing Mardi Gras and costume whittled the number of hits to 6. Seymour (bottom). From Picture Network International, will have the sharpest-looking, easiest-tonavigate interface of any online stock-image service. You can easily view a wealth of information—such as image orientation and photographic attributes—about a particular image. Seymour should be online by the time you read this.



Clear

S E Y M O D R

Designer/writer JIM BENSON is coauthor, with Cher Threinen Pendarvis, of the upcoming *The Painter WOW! Book* (Peachpit Press).

EDITED BY DAN LITTMAN

At Work

THE LATEST TOOLS FOR BUSINESS COMPUTING

FileMaker Goes Client/Server



CLARIS IS DEVELOPING A new version of FileMaker designed to make sharing FileMaker databases across a network viable.

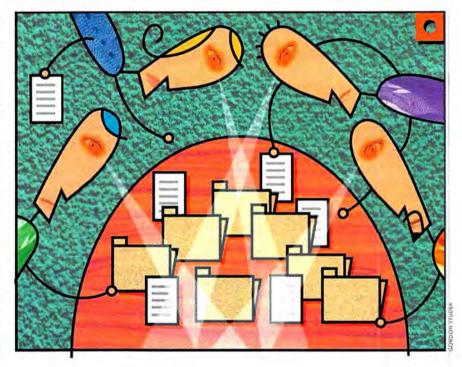
FileMaker Pro Server will run on AppleTalk networks and be able to drive databases created in FileMaker Pro 2.0 or 2.1. The server version will open up to 16 databases at once, and juggle tasks such as searching or sorting by interrupting one task to start another and threading multiple tasks. It will run on 680X0 systems, or in native mode on Power Macs. FileMaker Pro Server will list for \$1499 and should ship in July.

Claris is also developing a run-time engine that can be incorporated in File-Maker databases. For commercial-application developers, there is no license fee for distributing the run-time engine; the cost for in-house developers will vary based on quantity. The run-time will be sold as part of FileMaker Solutions Development Kit, a CD-ROM that will include FileMaker tips and predesigned buttons. It should ship in July for \$499 and will be available only to members of Claris's FileMaker developers organization, Claris Solutions Alliance. Claris, 408/727-8227.—D.L.

The Independent Invoice

YSOFTWARE IS SHIPPING MY-AdvancedInvoices, the Mac's first stand-alone invoicing package.

MyAdvancedInvoices can generate a bid and convert it to an invoice when the bid is accepted. The program includes a number of preset reports; it can create summary and detail reports of accounts



receivable, customers, and invoices (plus sales-tax, receipts, and trend reports). You can select a date range for reports; change field names; sort data based on any field; add a logo to your invoices; and print a message on each invoice. The program allows you to enter a single discount rate for all customers. It lacks calculations in its searching and reporting; for example, it is not possible to retrieve all overdue invoices over \$1000.

MyAdvancedInvoices is also designed to transfer data to MySoftware's other Macintosh products—MyDatabase, MyAdvancedDatabase, MyMailList, and MyAdvancedMailList—making it possible to generate collection letters, directmail pieces, and so on. Version 1.0 does not communicate with software from other vendors, but MySoftware plans to

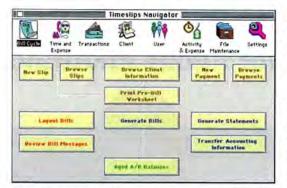
add that capability to an upgrade.

The list price for MyAdvancedInvoices is \$59.95. MySoftware, 415/325-9383, 800/325-3508.—D.L.

Timeslips Retooled

oping version 2.2 of Timeslips III, time-billing software for professionals who charge by the hour. The new version will be able to manage complex billing rates and will sport a redesigned and more accessible interface.

Timeslips 2.2 will support a matrix of billing rates to charge different hourly



Among the additions to the new version of Timeslips is a navigation window that provides you with one-click access to all of the various parts of the program.

rates based on who in an office does the work, who the client is, and what activity is performed. The new version will also include a navigation tool that simplifies gaining access to common functions. Version 2.2 is expected to ship in August for \$299.95. At the same time, Timeslips will ship an upgrade to its PowerBook time-billing program, Lap-Track; the new version, 1.1, has a refined interface. Lap-Track will list for \$79.95. Timeslips also sells links to several popular accounting packages, which can eliminate having to reenter data in your accounting package.

TimeSlips is also working on a time-billing product for

the Newton, but its name, price, and ship date were not set at press time. Time-slips, 508/768-6100.

-JOANNA PEARLSTEIN

Mac Automates Credit Card Sales

AS YOUR BUSINESS BEEN BURNED because verifying credit card sales manually seemed like too much trouble? Do you need to automate the whole point-of-sale process? MacAuthorize, which is being upgraded to version 2.0, verifies credit card transactions over bank-card networks and then deposits the sale in your account—without leaving your sales or customer database.

Salespeople feed credit card information into MacAuthorize with a credit card reader (MacAuthorize works with readers from TPS Electronics and Time-Keeping Systems) or by keying the information into the Mac using a data entry

MacAuthorize is software that verifies credit card charges for telemarketing or for a point-of-sale system like this one.

screen that resembles a credit card slip—the kind stores run through those clunky imprinters. MacAuthorize then dials the bank-card network for approval. Depending on the network used, funds are deposited after each sale or at the close of the business day. Version 2.0 automatically deducts the bank discount on each sale (the fee charged for using the network, generally between 1 and 5 percent). Using Apple events, you can access MacAuthorize from within databases such as 4D and FileMaker Pro.

Version 2.0 should ship before you read this. Its price was not set at press time, but it will be more than the \$315 cost of the current version. Free demo versions of MacAuthorize are available from online services including America Online and CompuServe, or from Tellan Software at 408/274-1110 or 800/483-5526.—SUZANNE COURTEAU

OCR That Thinks?

IGATURE SOFTWARE WANTS TO ADD some brains to optical character recognition with CharacterEyes, an omnifont OCR program that uses neural network technology to improve speed and recognition accuracy.

Like all omnifont OCR programs, CharacterEyes identifies a character's major features, such as crosses and loops, and tries to match them to the features of common fonts. To find matches, Charac-

IN BRIEF

Great Plains' Server Strategy Great Plains is developing a client/server engine for its Dynamics accounting series. To be called Dynamics C/S+, the server will require a TCP network and will run on Power Macs, as well as on Windows machines and Unixbased minicomputers from Sun. Hewlett-Packard, and IBM. It should ship this fall; pricing will depend on the number of users, ranging from \$5000 for eight users up to \$40,000. C/S+ is being developed to work with version 2.0 of the Dynamics modules, which should be shipping when you read this; pricing depends on module. 701/281-0550, 800/456-0025.

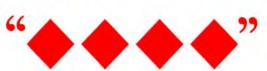
U.S. Phone Book on CD-ROM Digital Directory Assistance is shipping PhoneDisc, three versions of CD-ROMs containing U.S. telephone numbers. The \$79 PhoneDisc Residential has 81 million listings that include name. phone, and address: the \$79 PhoneDisc Business has company name, address, phone, and Standard Industrial Codes (SIC) for 9.5 million businesses; and the \$249 PhoneDisc Reverse includes residential and business listings and can search by name or phone number. 800/284-8353.

terEyes uses neural network technology, which works much like the brain, with its many connected neurons, to interpret ambiguous data such as the dot pattern of faxed text. Ligature says the neural net improves the program's success with difficult-to-read fonts and poor-quality documents. You can train CharacterEyes to recognize fonts that its omnifont engine can't decipher.

Ligature claims CharacterEyes achieves a real-world recognition rate of 200 characters per second with 99.6 percent accuracy. Additionally, CharacterEyes retains document attributes such as columns and tables, and the program can batch-process stored TIFF files, check the spelling of text, and export recognized text in Microsoft Word and WordPerfect format. It incorporates Hewlett-Packard's AccuPage technology and supports most major flatbed scanners. CharacterEyes lists for \$695. Ligature Software, 617/272-3085.—JIM FEELEY



The Image Composition
LAGE Tool for Adobe Photoshop



"A valuable tool that should be on the shelf of anyone who manipulates images on the Macintosh."

MacWEEK, January 24, 1994



Specular Collage lets you quickly combine high-res images, without using a lot of RAM. Each image is a separate object—even after it's been blended with others. Layout images with the convenience of rulers, guides, image grouping and layers. Enhance your composition with a rich selection of effects such as transparency, automatic drop shadows, feathering, and Photoshop filters. Anything you do in Collage can be changed at any time, giving you total creative freedom!









BY JIM HEID

Working Smart

Mac-Integrated Telephony

DOES PLUGGING YOUR MAC INTO THE telephone grid make you think only of modems and fax modems? Macs can reach out and touch more than just fax machines and other computers. With the right addons, a Mac can dial customers in your contact database and leave them a message; a Mac can also be the hub of a voicemail system, or of an automated fax-back system, which lets your customers dial in and get product brochures, technical updates, horoscopes, or whatever, sent to their fax machines.

Telephony is a hot trend in computing, and Apple is actively involved in it. Besides building telephony capabilities into the AV and Power Macs, Apple is enhancing the Mac's system software with support for third-party telephony software and hardware. While many of Apple's plans are still on the drawing board, here's a look at some useful ways a Mac can tie up a telephone line today.

Dial the Number

Once you have entered a phone number into a database, an E-mail message, a text document, or anywhere else, why should you have to dial it manually? Automatic phone-dialing can save your fingers from unnecessary walking.

There are a few routes to autodialing. Many personal information managers (such as Aldus TouchBase Pro) can dial using your Mac's modem, and you simply pick up the phone before the phone on the other end starts to ring. This scheme has several flaws. For one, it assumes that your modem and telephone use the same phone line—unlikely in any business employing more than one person.

Many programs can issue the tones needed to dial as you hold the telephone handset up to the Mac's speaker. But in my experience, this method works poorly—too many wrong numbers and incomplete calls. And, of course, you can't dial this way at all with phone systems that require pulsed dialing.

(To test the waters of autodialing,

QuicKeys owners can take a look at the Phone Dialer extension. To find Phone Dialer, pull down the QuicKeys Extensions submenu, then the Network and Device Tools submenu.)

A better way to dial is to hook up an autodialing box between the Mac and a telephone. I tested two: Sophisticated Circuits' Desktop Dialer and Advanced Software's TurboDialer. Each has good and bad points. The TurboDialer connects to the Mac's sound-output jack, blocking the port for external speakers. The Desktop Dialer connects to the



Apple Desktop Bus (ADB) along with your mouse and keyboard—a much more flexible scheme.

The TurboDialer can dial a number as soon as you select one, but the Desktop Dialer requires you to copy the number to the Clipboard, which adds a step to the dialing routine and replaces the Clipboard's contents. But to its credit, the Desktop Dialer can be driven by any program that can send Apple events, such as Claris's FileMaker Pro or Apple's Hyper-Card. Desktop Dialer also includes a

bare-bones address-book program that stores up to 20 names and addresses. In all, it's the better of the two dialers, and most contact managers and other dialing-aware programs support it directly.

Area codes and long-distance access codes can be a problem. You want an autodialing program to dial the codes for long-distance calls but not for local ones. How does the program know which is which? Both dialers use a simple scheme, which begins with your entering the local area code in a setup dialog box. When you go to dial a number, the dialer's software

checks the number's area code and doesn't dial it if it matches the area code in the setup dialog.

Both dialers also let you specify prefixes for accessing outside lines or long-distance services; you can insert a pause between the prefix and the number by typing a comma after the prefix. Both dialers also support the suffixes—your calling-card number—that many long-distance companies require.

Plug into the Grid

Apple is pushing telephony by building GeoPort connectors into the AV Macs and Power Macs. The GeoPort promises to do for

telephony what LocalTalk did for networking: make the hardware connections easy and economical.

The AV and Power Macs have enough processing horsepower to perform the tasks of a high-speed modem or fax modem, so they need only a hardware interface to the telephone lines. That's where the Apple GeoPort Adapter comes in—it's a simple interface box that plugs into the GeoPort and connects the Macintosh to analog phone lines (the continues

"FirstClass **Outperforms** Competitors Easily" BYTE Magazine

 ${
m M}$ ore than just a leading multi-platform e-mail system, FirstClass features electronic conferencing and remote access-all in the same package.

BYTE magazine says "FirstClass blends conferencing and mail together under a remarkably clean

Conferencing

E-mail

Remote Access

interface that goes far beyond the capabilities of most mail systems ... a regrettably rare example of a useful piece of software.



- Macintosh* and Windows support on the same network or via modem without costly file servers
- Easily accommodate upwards of 20 simultaneous modem connections and more than a hundred network sessions on one server
- Connectivity via network or modem to other FirstClass servers or other mail systems
- Remote or local administration with the same client
- Messages with multiple fonts, styles and colors & unlimited file attachments
- Simultaneous multiple up & downloads
- Online sound and graphics
- Background searching
- Gateways to the Internet with full Usenet newsgroup replication
- Fax gateway for individual or broadcast faxing and more!

DEALER & CONSULTANT INQUIRIES



1902 Ridge Road, #325, West Seneca, New York, USA, 14224
Fax: 416-754-1856 Internet: sales@softarc.com FirstClass: 416-609-2250

Phone: 416-299-4723 Circle 299 on reader service card

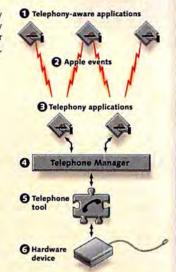
How Mac System Software Assists Telephony

Apple's Macintosh Telephony Architecture enables telephony products to work together, even those not designed specifically to do so, by using Apple events and the Telephone Manager extension to manage communication between the applications. drivers, and hardware that connect Macs and telephones.

At the Architecture's top layer are telephonyaware applications (1)-for example, a database that records order-entry information delivered by telephone, or a contact manager that looks up a contact's number and exports it to a dialer.

Apple events (2) carry messages between telephony-aware applications and telephony applications (3), such as an answering-machine program, a graphical switchboard, a voice-mail system, or an automated paging system.

The telephony application in turn communicates directly with the Telephone Manager extension (4), which then talks to telephone tools (5)-lowlevel drivers that control specific pieces of hardware, such as a modem or dialer (6).



kind that you probably have in your house).

The GeoPort isn't just for data-it can also carry voice. At this writing, the 68040-based AV Macs-the Centris/ Quadra 660AV and the Quadra 840AV are better equipped for voice telephony than are the Power Macs. The AVs include a program called ApplePhone that lets you make and take calls: you talk into the microphone that comes with the Mac and listen through the Mac's speaker (or through headphones connected to its sound-output jack). ApplePhone isn't compatible with the Power Macs, since it requires digital signal processor chips (which are built into the AVs). Apple-Phone can also serve as an answering machine. It lets you record and play a digitized outgoing message, and it digitizes incoming messages and saves them on your hard disk.

The AVs also include a microphone, the Apple Plain Talk Microphone, which their Power Mac siblings do not. But the Apple PlainTalk Microphone is disappointing when used with ApplePhone. The outgoing-volume level is too low, and the microphone picks up ambient room noise, giving the AV phone that annoying speakerphone echo.

A smarter way to put AV telephony to work is with Jabra Corporation's Ear Phone AV/Power Mac (see Reviews, Macworld, July 1994). This remarkable little gizmo looks like a standard earphone but has a sensitive microphone inside. The Ear Phone's two cables plug into the Macintosh's sound-input and soundoutput jacks. The Ear Phone itself plugs into your ear-it's fairly comfortable, although after an hour or so you become increasingly aware of its presence.

If you use PlainTalk's voice-recognition, you'll be glad to know that the Ear Phone works with it. In fact, recognition accuracy with the Ear Phone is a bit better than with the Apple microphone, because the Ear Phone microphone is fixed at a constant distance from your mouth and because Jabra's engineers finetuned the audio levels.

Desktop Voice Mail

Like them or not, voice-mail systems are coming on strong. Dedicated voice-mail systems start at about \$4000 and skyrocket into the six-figure range, whereas Macbased systems such as Cypress Research Corporation's PhonePro and Magnum Software Corporation's TFLX (pronounced tee-flex) start at several hundred dollars (not including the Mac, of course). Neither PhonePro nor TFLX is limited to voice mail-other uses include calling numbers in a database and playing a recorded message (a doctor's office might use this to set up an automatic appointment-reminder system); automatic order entry (callers enter item numbers from a catalog, and the system records the order); or telephone surveys (the system plays multiple-choice recordings and callers press keys to respond).

Every voice-mail system is a program that plays a message, records a message, transfers a call, and so on in response to keys pressed by the caller. To tailor a voice-mail system to your business, you must create the program that tells the system what to do. PhonePro and TFLX take remarkably similar approaches to the programming task. Both provide graphical programming environments, so you continues



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

 Quantum 3.5" Drive

 340MB
 \$359

 540MB
 \$499

 1080MB
 \$849

 1400MB
 \$1159

 SyQuest Removable

 105MB
 \$449

 270MB
 \$689

 Optical Removable

230MB \$1099

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 Finally a hard drive that grows with you. The best value today. 99

Bob Marchant President, Agio Design

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.



To order or for more information, call toll-free

800-999-1422

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.

Prices shown for units with 40 wat power supply. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Joule, Silvertining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum 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 without recourse. @ Copyright 1994 La Cie, Ltd. All rights reserved.

Apple made it easy to use. We make it easy to do.



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, *leams* 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 folders, 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 stationery 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 smartware. ... 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.



Charles River Analytics, 55 Wheeler St., Cambridge, MA 02138. Open Sesame! is registered frademark of Charles River Analytics. Macintosh and Apple are registered frademarks of Apple Computer, Inc.

Circle 18 on reader service card

program by dragging and linking icons that represent tasks and functions, and the end result looks more like a flowchart than a computer program.

PhonePro normally includes a high-speed SupraFax Modem (from Supra Corporation) upgraded with a chip that enables the system to play outgoing messages. For recordings to get through the Mac's modem port, they must be compressed in a way that compromises fidelity. TFLX doesn't have this sound-quality problem. It uses custom hardware between the phone line and the Mac's sound-output jack. Outgoing sounds are decompressed and played at the Mac's standard 11kHz or 22kHz sampling rate, which yields dramatically better fidelity.

TFLX's programming language is also more robust than PhonePro's. This isn't to say that you can't program complex systems in PhonePro—you can—but TFLX's language gives you more ways to express yourself, telephonically speaking. On the downside, I found the TFLX software a bit rough around the edges; PhonePro has a more polished feel to it.

Magnum has created an impressive demonstration of TFLX. Call 818/701-5051 and ask for the TFLX demo. If you call after hours (Pacific time), you're connected to the demo automatically.

WHERE TO BUY

Apple GeoPort Adapter \$129; Apple Remote Access \$199 (Apple's estimated prices); Apple Computer, 408/996-1010.

Desktop Dialer 1.4 \$75; PowerKey \$119; PowerKey Remote \$49; Sophisticated Circuits, 206/485-7979, 800/ 827-4669.

Jabra Ear Phone AV/ Power Macintosh \$169; Jabra Corporation; 619/622-0764, 800/ 327-2230.

PhonePro 1.2 \$349, with modem \$950; Cypress Research Corporation, 408/752-2700.

TFLX 5.2 \$495 to \$1750; Magnum Software Corporation, 818/701-5051.

Timbuktu/Remote 3.0 one user \$195, two users \$295; Timbuktu Pro 1.0 \$199; Farallon Computing, 510/814-5000.

TurboDialer \$79.95; Advanced Software, 408/733-0745, 800/346-5392.

Telephony from Afar

Telephones are, by their nature, for communicating from a distance—the prefix tele comes from the Greek for "far away"—so it's no surprise that there are plenty of tools for accessing your Macintegrated telephone system from outside the office.

 Remote access: With Apple's Apple Remote Access software (ARA), you can dial in to the office network and use its printers, file servers, and E-mail. A remote network node can do anything a local node can do, albeit in slow motion; even with a 14.4-Kbps modem, accessing a remote network feels a lot like trying to

run in a swimming pool.

 Remote control: Using ARA with Farallon Computing's Timbuktu Pro, you can actually control a remote Mac. From home, you can run programs on your office computer, open its documents, and see its screen-but again, in slo-mo. Note the subtle but important difference between Apple Remote Access and Timbuktu: ARA gives you access to a remote network and its services, while Timbuktu Pro gives you access to a remote Mac; you can't control or view the screen of a remote Mac using ARA alone. (If you're on a budget, buy Timbuktu/-Remote, which has fewer features than Timbuktu Pro but doesn't require ARA.)

The Trouble with Telephony

For all its promises, some aspects of computer telephony still have rough edges. For example, most people have separate lines for modems and voice phones, but Macintoshes don't support this basic requirement. Another problem is that Apple's GeoPort Adapter works only with analog phone lines, and many businesses have digital phone systems. Apple has been saying that PBX-compatible GeoPort adapters would be available since the AV Macs were released last year, but none have appeared to date.

Finally, it's impractical and expensive to dedicate a Mac as a simple answering machine or telephone. Conventional phones, answering machines, and fax machines aren't about to go the way of the telegraph key. At least for the time being, computer-based telephony tools will supplement, rather than supplant, the phone equipment to which we've become addicted. **m**

Next month: Word 6-Best and Worst

Contributing editor JIM HEID has been writing about the Mac since its introduction. His latest books are Macworld Complete Mac Handbook Plus CD (1993) and Macworld Word 6 Companion (1994), both published by IDG Books Worldwide.

Style with Purpose

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.



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 termination, 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 one upon the other. Built-in connectors eliminate cables and hassles.



Step Three: To *remove* a module, simply unplug and play without cables, termination or SCSI ID trouble. *It's that simple*.

The Joule System offers a complete 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	e Choices — Great Prices
85M82.5"Hard Disk\$299	1650MB 3.5"Full Height \$2039
170M82.5"Hard Disk\$359	1800MB 3.5"Full Height \$1259
256M82.5"Hard Disk\$449	2050MB 3.5"Full Height \$2329
170MB3.5"Half Height\$259	105MB*SyQuest Drive\$419
270MB3.5"Half Height\$329	270MB*SyQuest Drive\$659
340M8*3.5"Half Height\$359	5.0GB. DAT Drive. \$1159
540M8*3.5"Half Height\$499	TURBO DAT Drive. \$1359
1080M8*3.5"Half Height\$849	8.0GB DAT Drive. \$1729
1400M8*3.5"Half Height\$1159	155MBTape Drive\$569

Available as a Base Drive, call for prices.



The Joule Base Drive stands alone

or at the bottom of

your storage stack.

LACIE

To order or for more information, call toll-free Monday - Friday 5AM-7PM & Saturday 8AM-NOON PST

800-999-1422

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.

Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable, doule, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum 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 recourse. © Copyright 1994 La Cie, Ltd. All rights reserved.



BY CHARLES SEITER

raphing software exists for one simple reason: it's difficult

to perceive meaning directly from numbers. By presenting numbers as quantities that you can compare, graphing software makes numerical information more meaningful. The earliest number systems reflect this: Roman numbers and Chinese numbers both, for example, display the number three as a set of three lines. The Sumerian way to tally ten cows was to put ten little clay models of cows in a clay box, an early form of the pictographs you see today in newspapers.

Modern incarnations of those ancient representations—bar charts, line charts, and pictographs—are available to nearly all Macintosh users; even word processing programs typically include modest charting modules. For professional charting and graphing (the terms are interchangeable) in the Mac software universe, there are two types of graphs. First are the ones you can create with the ever-expanding feature set of Microsoft Excel, the standard Macintosh

spreadsheet program.

In the second category are graphs that require features that go beyond Excel's limits. This category can be further divided into business and scientific

eleven packages that

Graphing beyond Excel



offer sophisticated charting features

graphs. While both groups of products provide advanced charting features, there's a basic distinction between programs designed for business use and those designed for scientific use. For presenting small amounts of data in a visually interesting way (showing off yearly revenue growth, for example), business-charting packages are filled with features that let you highlight the message contained in your numbers. However, for seeking an underlying rule that unifies or explains lots of data covering a wide spectrum of time or other unit of measurement, scientific-charting packages offer advanced analytical capabilities that identify the significance of data and display its meaning graphically.

Whether your goals are business or scientific in

nature, all commercial charting packages typically go beyond Excel (and also beyond the charting features of integrated packages such as ClarisWorks, Microsoft Works, and WordPerfect Works). The 11 charting programs *Macworld* compares will help you present your data in ways that Excel can't, or at least can't do easily.

What They Do That Excel Can't

Although Excel 4.0 (\$495, Microsoft Corporation, 206/882-8080, 800/426-9400) has a solid range of charting facilities, plus Wizards that simplify the process of creating charts, it lacks several key features. For example, business users typically want a set of attractive, consistent formats that mix charts and

text easily. They want these to be available in slideshow format, with an outliner for previewing and a player that allows for run-time versions of Mac-based presentations. For business users who need to present data in a formal setting, Chooser-selectable output formats for producing 35mm slides are also important. Microsoft recognizes the importance of these features, but it has bundled most of them into PowerPoint (its presentation package), not Excel. However, several companies have seized the opportunity and offer software with presentation-style charting.



it's Alive It's almost a shame to put this Astound chart on paper. During a presentation, the balls bounce, the bars grow, a sports anthem plays, and the state map materializes from the side.

Analytical charting often involves thousands of data points and requires specialized chart types. Excel's charting capabilities can handle only a few hundred data points comfortably. Although it's possible to perform curve fitting (which draws a best-fit line through data points automatically) and other types of data analysis in Excel, you must write your own formulas into separate columns in

your Excel spreadsheet. In most scientific-charting packages, curve-fits and transforms are available as menu choices that plot directly with your data.

Strictly Business

Business charting, as a rule, involves much smaller and simpler data sets than scientific charting. It's rare to see as many as 40 data points in a business chart, while a science graph often has thousands of data points. Besides simply presenting data that shows, for example, sales projections, business charts should keep an audience interested. For that reason, business-charting software often contains sound effects or flashy graphics. Scientific charting is designed to focus on presenting data in the most accurate way, typically in black-and-white, two-dimensional formats that meet the publishing constraints of many scientific journals. Business charts call for color, shading, and extensive use of 3-D and pseudo-3-D formats; users often want to create slide shows rather than printed charts.

Astound 1.02 from Gold Disk (\$399, 408/982-0200, 800/988-9888) is a good example of the dazzle-the-audience approach to business charting. It offers an adequate assortment of chart types (including 3-D versions of most charts), but it also provides in-chart

animated figures, sound, and QuickTime movies. Gold Disk assumes that charts are typically going to be part of a slide show, so Astound offers different styles of slide-to-slide transition (fades, wipes, and other mock-cinematic devices, including sound effects). The user chooses the show's presentation style, which sets shadings, borders, bullets, headlines, and outlining.

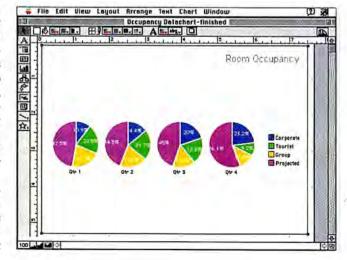
In conventional charting packages, which are based on the idea that a slide show should pretty much resemble an annual report or diagrams from a business textbook, text and graphs are static. Astound, in contrast, allows text to float in from the sides of the screen or materialize from sparkling powder; chart elements can grow in sequence before the viewers' eyes. This is a long way from the plain blackand-white line charts that have been the foundation of business graphing since the time of Adam Smith's Wealth of Nations in the eighteenth century. Astound brings the excitement of multimedia to presentation software; this may be necessary to hold the attention of today's audiences (see "It's Alive").

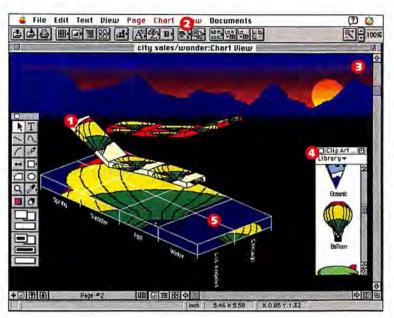
While Astound takes an MTV approach to presentations, Computer Associates International's Cricket Graph III 1.5 (\$129, 516/342-5224, 800/225-5224) offers no sound, no QuickTime movies, no animation, and a limited assortment of backgrounds and shading options; you'll find most of the fancy stuff in the company's Cricket Presents (\$199) instead.

Cricket Graph is designed to produce business charts, and it does provide graphs that are aesthetically more pleasing than standard Excel charts, while requiring almost no training. Longtime Cricket Graph users claim that if you create charts infrequently, this relative lack of features (compared

with Persuasion, for example) makes Cricket Graph easy to relearn. Fans of Cricket Graph also point out that if you will be distributing charts in print in black-and-white, most of the special effects in snazzier business-charting packages lose their impact anyway. If you're creating charts on the road using a PowerBook, Cricket Graph's compact size (less than a 1MB of hard drive space) is an asset.

New Chart Tricks
ClarisImpact has built in
many variations on the
basic business-chart
styles. If you don't like
these Modern pies
(modern means labeled
here), you can switch
instantly to one of many
variants.





DeltaGraph Pro

1 Business programs typically allow for a great variety of chart elements, some of which add confusion. 2 Most business-charting programs are organized around a slide-show format and make it easy to import sound and Quick-Time movies. 3 Evocative backgrounds (often provided as templates) make a consistent tone in a chart presentation. 4 Business charts usually feature clip art, if only the company logo. 5 Where are axes? A science chart wouldn't allow this, but business charts often show data floating in space.

Imaginative Business Graphs

ClarisImpact 1.0 (\$399, Claris Corporation, 408/727-8227, 800/544-8554), the newest business-charting package for the Macintosh, represents an intriguing mix of features. Claris set out to accommodate every sort of picture used in business communication. Besides charting, Impact does organization charts, Gantt-style time lines, calendars, flowcharts, and fancy tables.

Although ClarisImpact at first appears to offer a limited chart repertoire similar

to Cricket Graph's, the basic data-charting facilities all have imaginative variations. So while you can of course call up a plain pie chart (called Trad Pie in the list of Impact choices), you can also try the flashier International Pie or Modern Pie instead (see "New Chart Tricks"). In short, every chart type in Impact's basic gallery is equipped with options to

enhance its visual appeal. You can add shadows to simple line charts for emphasis, mix stacks of different objects in pictograms, and add titles at rakish angles for all sorts of chart elements.

Best of Both Charting Worlds

Astound, Cricket Graph, and Claris-Impact are designed for business graphs and don't delve significantly into scientif-

ic charting, DeltaPoint's DeltaGraph Pro 3 3.0.4 (\$195, 408/648-4000, 800/446-6955), however, is a serious attempt to incorporate everything you could want in a single program, whether you're creating business or science charts. Generally, DeltaGraph Pro 3 succeeds.

DeltaGraph has a variety of chart types ranging from basic business (bar, line, column, pie, scatterplot), to fancy variants of those charts, to specialized

scientific types (polar, XY vector, and so on). And you can select these from a dialog box that shows thumbnails of each type. It offers Smart Layouts, analogous to Persuasion's AutoTemplates, which minimize your effort and promote consistency in your presentations. It incorporates clip art, Pantone-selected color palettes, and QuickTime movies; Delta-Graph also opens Excel files directly. Finally, DeltaGraph supports Apple-Script, so advanced users can write short AppleScript programs that, for example, open every data file in a folder and make identically formatted graphs for each file.

What makes DeltaGraph unique, however, is that it combines snazzy designer effects with math capabilities equivalent to those in the science-oriented programs. Although business users might

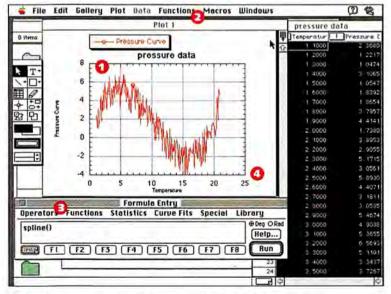
never get around to adding error bars to data or fitting a sales curve with a spline, and engineers probably won't put clip-art palm trees in the background of XY scatterplots, DeltaGraph puts these capabilities and more just a mouse-click away.

Make a Science of Charting

Deciding which scientific-charting package to buy would be a lot easier if one program stood out from the others. However, there is no product you can quickly dismiss because it has a short feature list

KaleidaGraph

1 Science charts often show thousands of data points, not just a handful of sales figures. 2 Macros or a full programming language are typical of science charting software. 3 Science charting software supports a wide range of data-manipulation options. 4 Science charts are usually black-andwhite. Even now, very few science journalsthe eventual home for most science chartspublish in color.



or an unfriendly interface. And while the programs all create many of the same charts, they are also quite specialized. Each program was developed by scientists whose particular background shows in the software.

SigmaPlot for the Macintosh 4.14 (\$295, Jandel Scientific, 415/453-6700, 800/874-1888), for example, is produced by a company whose main product line is statistics software. As you'd expect, SigmaPlot is especially competent at plotting statistical data sets. With its roots in analysis of the kinds of data sets that appear in population biology, biophysics, and chemical kinetics, the product is ideally suited to producing charts for scientific reference journals. This means uncluttered black-and-white graphs with an emphasis on curve fitting and data statistics designed to match scientific-journal chart-format requirements.

Produced by a company called WaveMetrics, Igor Pro 2.0 (\$495, 503/620-3001) has, as you'd expect, the best set of tools for analyzing waveforms (typically, plots of time versus voltage, which are used to determine repetitive signals). Igor Pro has so many analysis features that it could be described as an electrical engineering program that also includes blackand-white charting. Besides FFT (fast Fourier transform) functions, Igor's macro language supports statistics, peak fitting, and integration in spectroscopic/chromatographic data (see "Advanced Charting").

In contrast to most charting packages, in which the capability to open Excel files is considered a luxury, Igor Pro supports not just Excel files but also direct data acquisition from National Instruments' GPIB boards. Although with enough tinkering with

MAKE A SPLASH WITH YOUR GRAPHS

hen it comes to presenting information effectively and attractively, Persuasion (\$495, Aldus Corporation, 206/628-2320) and Microsoft Power-Point (\$395, Microsoft Corporation, 206/882-8080, 800/426-9400) control the lion's share of the Macintosh business-presentation market (see "Presentation Software That Delivers," Macworld, July 1994). Although they're not neces-

sarily powerhouse charting engines like DeltaPoint's Delta-Graph Pro 3, they include strong chart repertoires embedded in a slick presentation environment.

Persuasion Adds 3-D Charts Aldus's Persuasion has always offered a huge set of presentation templates, and now in version 3.0 it provides a large assortment of charts as well. If you consider every possible permutation of charts, Persuasion chart types number 80. The major charting enhancement to version 3.0 is the addition of 3-D variants (not just shading or adding depth) for every type of twodimensional chart, combined with full rotation and perspective control.

With a little practice you can easily tinker with perspective and shade the appropriate data elements to either conceal trends that you don't want your audience to notice or draw attention to trends you don't want your audience to miss. You can hot-link data, presumably residing in a spreadsheet, to Persuasion charts using System 7's subscribe feature; in turn, you can hot-link charts to word processing documents with the publish feature. Persuasion lets you overlay multiple elements on a single chart page, so it's possible to create your own new chart types from Persuasion's repertoire.

The real strength of Persuasion, however, is that its AutoTemplates have preselected fonts, shading, titling, and other elements that will make you look like an



Aldus Persuasion 3.0 If you have lots of data to present, but lack an artistic flair, Persuasion's AutoTemplates make it a snap to create attractive and consistent slides. And version 3.0 adds true 3-D capabilities and a wide range of chart types.



Microsoft PowerPoint Version 4 promises 100 chart types as well as some features, such as curve fitting and error bars, that are usually found in scientific-charting programs. The new version will also include a Wizard that makes it easy to automate presentations to suit a particular task or meeting.

experienced designer, while requiring little effort or skill on your part.

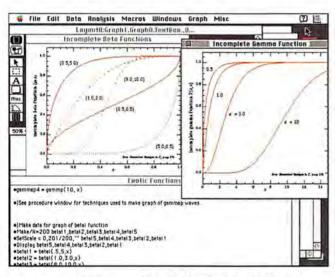
PowerPoint Hits 100 Graphs Microsoft PowerPoint is evolving according to Microsoft's standard strategy: look over the feature set in your biggest competitor and find a way to integrate those features into Microsoft Office, a suite of applications that includes Word, Excel, PowerPoint, and Mail. PowerPoint version 3.0 was shipping as this was written, but since version 4 for Windows had already been introduced, it's clear what features the Mac version of PowerPoint will have by midsummer. Version 4 for Windows adds several new chart types, including surface plots, radar charts, and doughnut plots (a kind of 3-D radar chart). For comparison with Persuasion, Microsoft counts 100 chart types in PowerPoint, although some of these are minor variants of each other. PowerPoint supports full rotation of its 3-D charts; as with Persuasion, you can be disarmingly honest or you can slyly fudge the way you present your data.

Features typically found in scientificcharting programs are now also available in PowerPoint. For example, PowerPoint offers curve fitting, error bars on chart data points, and computation of trend lines through data. The main improvement in PowerPoint, however, is the AutoContent Wizard's automation of common presentation tasks (sales meetings, quarterly reports, and so on). You just pick a type and add a bit of content. Similarly, the Pick A Look Wizard offers a set of template formats to apply for presentation consistency. A new drill-down feature lets you call up hot-linked documents in other Microsoft applications during a computer-based presentation, so that you can marshal supporting details for an argument on the spot in response to questions.

color features and chart elements you could make an Igor plot look like a DeltaGraph business chart, the graphical and operational macro capabilities in Igor target the program clearly at advanced scientific users who aren't put off by programming.

Charting the Really Big Numbers

Spyglass Plot 1.0 (\$295, Spyglass, 217/355-6000) is specialized for a unique function: charting very large data sets (see "Make Your Point"). It doesn't offer a large variety of chart types, but it can handle data sets of 32,000 columns by any number of rows, limited only by memory. Spyglass Plot chews up data quantities that the other scientific-charting programs simply choke on. (In business charting, 256 columns by a few thousand rows is considered a huge data set.) These monstrous data sets are stored in files in the supercomputer format called HDF (Hierarchical Data Format), and Plot reads these files directly. Spyglass Plot doesn't do 3-D: the company assumes you'll do your 3-D color contour plotting in its companion product Spyglass Dicer 2.01 (\$695) and that you are using Plot for an XY view of data only.

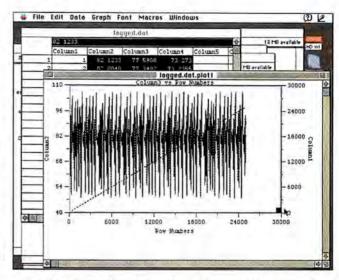


Advanced Charting Igor Pro incorporates a

powerful C-like programming language that extends Igor's analytical charting powers beyond the built-in functions of other programs. KaleidaGraph 3.0 (\$249, Synergy Software, 215/779-0522, 800/876-8376) is the most general-purpose scientific-charting program. It handles data sets of up to 256 columns by 32,000 rows, imports data directly from Excel, and offers sets-plotting templates. What sets KaleidaGraph apart is a particularly easy-to-use implementation of curve fitting—

you can define a large set of possible functions for curve fitting, and then compare plots of these model functions with your original data on a single plot. While it's possible to do this by workarounds in the other scientific-charting programs, KaleidaGraph makes it easy.

For charting features combined with serious math capabilities such as FFTs, you have two choices: SuperAnalyst 1.9 (\$249, SuperSoft, 801/225-4356, 800/827-4351) or Igor Pro. Of the two, SuperAnalyst is the simpler and less-expensive program that offers not only basic charts, drawing, and overlays, but also advanced computational functions, such as autocorrelation. SuperAnalyst goes beyond most



competitors in its Function and Analysis menus, which include a variety of styles of numerical integration, differentiation, and root-finding for functions obtained from original data sets by SuperAnalyst's built-in smoothing routines (moving and polynomial averages, and three kinds of splines, for example).

Make Your Point
That's 25,000 points,
represented in this Spyglass Plot chart. Plot is
useful mainly for twodimensional views of
the giant 3-D data sets
handled by Spyglass
Dicer and Transform.

Charting the Way

Macworld contributing editor CHARLES SEITER has reviewed most of the programs here, and consults with a variety of scientific firms on presentation design.

CHARTING SOFTWARE



Because there are a number of charting programs that excel at producing specific types of

graphs, to make our Editors' Choice selection we focused on programs that handle a wide range of chart types—both business and scientific.

DeltaGraph Pro 3 3.0.4 For most charting purposes, it's hard to fault DeltaGraph Pro 3. The price is right, the feature set is huge, it's easy to use, and you can hotlink data from Excel. DeltaGraph Pro offers not only the most-wanted features for business programs but the key features for scientific charting as well. Company: DeltaPoint. List price: \$195.

oney. Make It or Save It with TurboRes® Plain-Paper Typesetting from LaserMaster®

Buying your next printer doesn't have to be a guessing game. LaserMaster's TurboRes Plain-Paper Typesetters offer the features today's professionals demand. Whether you provide TurboRes Plain-Paper Typesetting as a service or need the capability in-house, LaserMaster's line of typesetters will make or save you money!

Oversized Printing

The Unity 1200xL-o provides 12"x19" paper support that lets you print 11"x17" documents with full bleeds, crop marks, and registration marks. That means no more keylining. stripping, or tiling!

1200-dpi Output

All of LaserMaster's TurboRes Plain-Paper Typesetters give you precise, 1200-dpi camera-ready output-the highest resolution available on plain paper. Your text is crisp, your line art is sharp, and your halftones and screen tints are smooth.



Unity 1200xL-0

Plain-Paper T	ypesetter
Features:	Benefits:
Oversized Typesetting	12x19-inch pages allow for full bleeds with crop marks and registration marks— eliminates paste-up, saves time and money.
1200-dpi Resolution	For camera-ready text, halftones, line art, reverses, and screens.
Internal Hard Drive	Stores thousands of fonts, eliminates font downloading.
Multi-Platform Networking	Mac, PC, and Unix users can all attach to the same printer.
235 Premium Type 1 Typefaces Pre-installed	Large selection of high-quality fonts provides typographic freedom.
ClearCopy* Copier Enhancement	Ensures halftones look crisp and clear after photocopying.
33-MHz Processor	Faster processing times.
Gamma Correction	Adjusts images to compensate for dot gain on press.
Software Upgradable	Prevents obsolescence.
Direct-to-Plate Option	Provides a cost-effective solution for short print runs.
TurboGray* Technology	Improves the appearance of halftone images.

© 1994 LaserMaster Corporation, 6900 Shady Oak Road, Eden Prairie, MN 55344, (612) 944-9330. LaserMaster Europe, Ltd., Hoolddorp, The Netherlands, (31) 2503-22000. LaserMaster, the LM logo, and TurboRos are registered trademarks; The Professional's Choice, "TurboGray, ClearCopy, and Unity are trademarks of LaserMaster. All other product or brand names are marks of their respective holders. These products incorporate Truelmage v.1 software with LaserMaster enhancements for performance and resolution. All rights reserved. Specifications and pricing subject to change without notice, Prices valid in U.S. only. (AMF/JSD) 4/94

The Cost-Effective Choice

With LaserMaster's 1200-dpi plainpaper typesetters the pre-press process is practically eliminated. That means in-house groups will save time and money-complete camera-ready

pages go right to print! And

plain-paper typesetting offers a fast and economical way for print shops and service bureaus to provide camera-ready output to their customers.

For More Information

Whichever you choose, LaserMaster's line of TurboRes Plain-Paper Typesetters offer professional features. with economics that can't be beat. Call now for more

information and some sample output.

Unity 1200xL-T **Plain-Paper Typesetter**

Multi-platform, plug-and-play plain-paper typesetter for your Macintosh*, PC, and most other computers



- 11"x17" paper handling (user upgradable to oversized 12"x19")
- · 40MB hard drive
- · 135 premium Type 1 typefaces pre-installed

LaserMaster 1200xL Personal Typesetter

- · The incredibly affordable bus-based personal typesetter for your Macintosh or PC
- · 1200-dpi, cameraready output
- 11"x17" paper handling
- 135 premium Type 1 typefaces







The Professional's Choice™

CALL 800-950-6868 or 612-944-9330 Fax: 612-944-0522

DEPT. 79F

Circle 43 on reader service card





BY LON POOLE

Quick Tips

Tips, Tricks, and Shortcuts

MICROSOFT WORD CAN CREATE TERRIFic tables, but you cannot place them directly into Aldus PageMaker 5.0. Ken Kreshtool of Cambridge, Massachusetts, devised a workaround using the Laser-Writer 8 printer driver, which Page-Maker 5.0 requires. This latest generation of the LaserWriter driver lets you save your output as an EPS file, which is perfect for placing into PageMaker. Follow these steps:

1. In the Chooser, choose Laser-Writer 8.

2. In your Word document, select (that is, highlight) the table.

3. In Word, choose the Print command. You want only the table saved as an EPS file, so in the first dialog box that appears, set the Destination option to File and check the Print Selection Only checkbox. Click the Save button, and in the next dialog box give a sensible name to the EPS file, choose Enhanced Preview (usually preferable to Standard Preview) from the Format pop-up menu, and adjust the other settings to taste (use balloon help for guidance). Click the Save button.

4. In PageMaker, use the Place command to place the table as you would any other graphic. The EPS graphic may fill the page on which you place it (Word doesn't always clip the EPS image properly), but you can crop and move it as nec-

essary after placing it.

This approach has two advantages over using Word's Copy As Picture command. First, hairline rules print correctly instead of being converted to 1-point lines. Second, PageMaker remembers a link to the EPS file, so you can update your PageMaker table simply by editing the original in Word, saving it again as an EPS with the identical name as the previous EPS file, and updating the link in PageMaker. PageMaker even preserves all the cropping and moving you did

after placing the first edition of the table in PageMaker.

Note: LaserWriter 8.0, which comes in the box with PageMaker 5.0, is buggy, although it seems to work fine for this purpose. The current version, Laser-Writer 8.1.1, fixes bugs and improves functionality. It is available from online services and is included with Aldus's Macintosh Filter/Driver Pack Plus, which also upgrades PageMaker 5.0 to version 5.0a (\$9.95 from Aldus, 206/628-2320).

Gradient Trapping Update

The procedure presented in a sidebar in last June's Quick Tips for trapping a gradient-filled object in Illustrator 5.0 and 5.1 is missing one important step. Although you can set the gradient-filled trap to overprint, the gradient fill does not overprint correctly, reports Bob Faulkner of Venice, California. The workaround is to save a copy of the finished illustration in Illustrator 3.0 format, and separate the 3.0 version with Adobe Separator, or place the 3.0 version in a pagelayout program and separate it there. (Keep the original Illustrator 5.0 or 5.1 version in case you need to change it later.) Saving in Illustrator 3.0 format converts the gradient fill into an object blend (a series of paths), which overprints correctly. Alternatively, you can manually create a blend with the blend tool in Illustrator 5.0 or 5.1 (the same process works in FreeHand). Illustrator 5.5 includes a filter that automatically performs trapping, but the filter does not work

with gradients; so the manual workaround still applies.

Hard Drivers

Please tell me if anyone sells driver software for hard drives that takes advantage of SCSI Manager 4.3 found in the 660AV, 840AV, and all Power Macs.

> David A. Brown Saratoga, California

Eight companies I contacted said their latest drivers take full advantage of SCSI Manager 4.3. The hard drive utility applications that install 4.3-compliant drivers range from the no-frills \$49.95 Formatter-

One Pro 1.0 (Software Architects, 206/ 487-0122) to the full-featured \$199 Hard Disk Toolkit 1.5 (FWB, 415/474-8055). For a comparison of those and eight other hard drive utilities whose latest versions can install 4.3-compliant drivers, see "Hard-Drive Optimizers," Macworld, March 1994. Of the companies listed there, Bering Industries says it is withdrawing from the Macintosh hard driveutility market, and Golden Triangle did not return my calls.

continues



You're well acquainted with this megabyte-eating beast.

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



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

This compact little set-up will save you big. Like Syquest, you put an external drive

on-line and save your files to removable, rewritable cartridges. But unlike Syquest, you don't have to break the bank each time around.

With DynaMO, you can use 128 and 230 MB industry standard 3.5-inch cartridges. The cartridges aren't vulnerable to the everyday

abuse that might otherwise do in your data. In fact, Fujitsu cartridges are so reliable we back them with a lifetime warranty.

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

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

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



COMPUTERS, COMMUNICATIONS, MICROELECTRONICS

Circle 202 on reader service card

SCSI Manager 4.3 is the latest version of the part of the operating system that controls data transfer between a Mac and its SCSI devices. Theoretically, Apple could use a system extension to add SCSI Manager 4.3 to all Centris and Quadra models, but so far it has not done so.

The performance improvement you experience after switching to a 4.3-compliant driver could be anywhere from 0 to 30 percent, depending on many factors, including the following:

- · The type of drive or drives you use
- How much data your applications transfer at a time (for example, opening and saving small word processing or spreadsheet documents will show less improvement than opening and saving color images and multimedia files)
- The relative quality of the software engineering in the old and new drivers
- Cable quality (it is possible for poorly shielded cables to degrade performance by 500K per second)

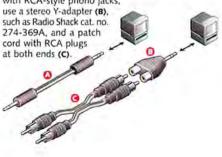
Sound-Input Cable

Realizing I needed a patch cord to connect my Quadra 840AV to my sound synthesizer, I examined the stereo plug on the Apple speech-recognition microphone that came with the computer. I was surprised to learn that it is non-standard, and I'm unable to find one like it or even get information about it from Apple. Short of cutting the plug off my Apple microphone, how am I to obtain a patch cord?

David McDonald Koloa, Hawaii

Although the Apple speech-recognition microphone has a nonstandard plug, you can use an ordinary patch cord to connect an audio source to the audio-input port of a 660AV, 840AV, or any Power Mac. The mike's extralong plug reaches deep inside the sound-input port to draw power for the mike's inter-

To input sound to an AV or Power Mac from a source other than a microphone, you need an audio patch cord. For a source whose output jack is the same type as the Mac's input port, you must use a patch cord with a ¹/s-inch stereo miniplug at each end (A). For a source with RCA-style phono jacks,



nal preamplifier. A patch cord doesn't need electricity, so its regular '/s-inch stereo miniplug need not reach the port's power lead.

Dvorak Keyboard Layout

Where can I obtain software that will convert my keyboard to the Dvorak system through the Keyboard control panel?

Sara Neyer Gillette, Wyoming

America Online and · CompuServe both have several Dvorak keyboard-layout files, and so do user groups such as BMUG (510/549-2684). All layouts adhere to the Dvorak layout for letters but put punctuation, symbols, and diacriticals in different places (see "Dvorak Variations"). Detailed reasons for the differences accompany each free keyboard layout. You install a keyboard layout by dragging it to the System Folder.

In addition to switching keyboard layouts with the Keyboard control panel, you can use System 7's Keyboard menu, which is normally hidden. To make it appear between the Application and Help menus, use ResEdit to turn on the "Always show

kybd. icon" option in the System file's itle resource.

Express Modem Problems

I have heard the Apple Express Modem has problems, but I have yet to hear precisely what is wrong with it. The one in my Duo 230 fails miserably at high-speed file transfers using the Zmodem protocol. Is the Express Modem to blame? If not, what causes the problems, and can they be fixed or am I stuck with a lemon? To the best of my knowledge, I have the latest software for my modem.

Aaron Hathaway Santa Fe Springs, California

The Express Modem had a variety of problems initially (too numerous to list here), but the many sources I contacted agreed that version 1.1.2 of the software makes the Express Modem as reliable as any modem. That version was released last year for Power-Books as well as 660AV and 840AV Macs and is available from Apple dealers and







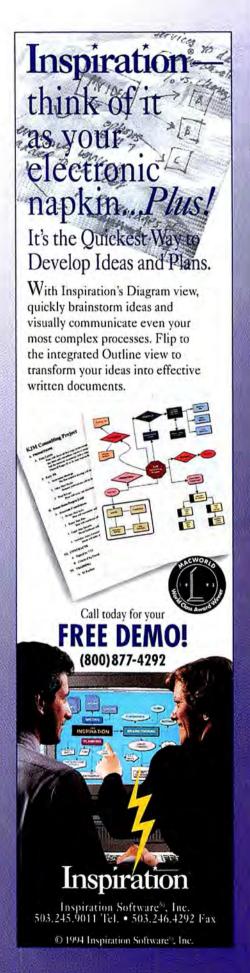


Dvorak Variations A number of Dvorak keyboard layouts are available from online services and user groups. These versions differ in the location of punctuation, symbols, and diacriticals. Shown here are the ANSI Dvorak and US Dvorak layouts.

online information services, or as part of the System Update 2.0.1 disk from the Apple Order Center (\$10, 800/769-2775, ext. 6717). (The Power Macs also use Express Modem software, and come with version 1.5.1.)

Your problem may be one that could afflict any type of modem. Maybe you need to change your communications program's modem-initialization string or its settings for Zmodem transfer. Get specific advice from the publisher of each communications program you use. For example, Software Ventures advises Express Modem owners to use the latest versions of its communications applications, MicroPhone II 5.0 and Micro-Phone Pro 2.01. Where previous Micro-Phone versions used a generic initialization string (which Software Ventures calls a driver) with the Express Modem, the latest MicroPhone versions have a special initialization string for the Express Modem (and individualized strings for other modems).

continues





Orderly Finder Window You can easily force an item to the top of a Finder window without visibly changing the item's name, like the items shown here above the divider line in the Apple Menu Items window. You paste a blank line (not a blank space) at the beginning of the item's name. (Incidentally, the divider line is a sound file whose name is a string of hyphens and whose custom icon is a blank white graphic. The Show Clipboard item is an alias of the Clipboard file in the System Folder.)

If you're downloading files from a Unix workstation or mainframe, you may need to specify certain options along with the Unix file name. Try sz -w 2048 filename for text files and sz -e filename for binary files (replacing filename with the name of the Unix file you want to download). If you're having trouble with the Unix telnet command, try the rlogin command, and vice versa. (This information is based on the ZTerm 0.9 FAO by Les Jones, available on America Online and on the Internet through the comp.sys.mac.comm and comp.sys.mac.apps Usenet newsgroups.)

Also, don't overlook the possibility that the problem may lie with the modem or communications program to which you are connecting.

Forcing Order Invisibly

TIP Forcibly reordering items viewed by name in a Finder window by putting spaces or punctuation marks at the beginning of the items' names gets up my nose. It visibly pollutes the names and conspicuously messes up name alignment. Here's how to invisibly force the order you want, as illustrated in "Orderly Finder Window."

Open the Note Pad or a new document in TeachText or any word processor. Press the return key to create a blank line, select the blank line, and copy it to the Clipboard. Switch to the Finder, click the name of an item you want to appear at the top of its folder, press the up arrow key to move the insertion point to the beginning of the selected name, and paste. The whole name will go blank, but don't fret. Press the enter key or click outside the name, and the name will spring back into view. The renamed item will jump to the top of the window if you're viewing by name. To increase an item's alphabetic buoyancy, paste the blank line two or more times at the beginning of the item's name.

> Chris Bloomfield Kelburn, Wellington, New Zealand

Finding Nothing in ClarisWorks

There is a way in ClarisWorks databases to find all records where a certain field is blank (or not blank). Use the Find command to create a find request, select the field of interest, and enter <>"" to find all records within the field that are not blank. Making the same entry and checking the Omit checkbox finds records where the field is blank.

Charles L. Stang Milwaukee, Wisconsin

Self-Updating Field Names

When you are working with Microsoft Excel's database commands and functions, such as Find and Extract, the field names (column titles) must be exactly the same in the database range, the criteria range, and the extract range. The most obvious way to assure this is to copy the field names from the top of the database range, to the criteria and extract ranges. However, the database commands and functions will not work if someone later changes a field name in the database and neglects to recopy it to the criteria and extract ranges. Even if you always remember to recopy changed field names, another person using your spreadsheet may forget or be unaware of the potential problem.

To avoid this pitfall, simply use formulas at the top of the criteria and extract ranges. The formulas reference the field names in the database range. For example, suppose the name of the first field in your database range is in cell A2. If the name of the same field in the extract range is in cell F2, enter the formula =A2 in cell F2. Now any changes to the field name in A2 will automatically update cell F2.

> Shane Devenshire Walnut Creek, California

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. m

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is Macworld Guide to System 7.1, 2nd Edition (IDG Books Worldwide, 1993).

STATIST

STATISTICA/Mac™ A complete statistical data analysis system with hundreds of presentation-quality graphs integrated with all procedures In-depth, comprehensive implementations of: Exploratory techniques; Descriptive statistics; Frequency tables; Large selection of nonparametric tests; Stepwise multiple regression methods with extended diagnostics; General nonlinear estimation (with predefined or user-specified models); Logit/Probit analysis; General implementation of ANOVA/ANCOVA/MANOVA/MANCOVA (designs of practically unlimited complexity, repeated, nested, incomplete, random, changing covariates, contrast analyses, post-boc tests, custom designs); Stepwise discriminant function analysis; Canonical analysis; Large selection of time series modeling techniques with forecasting: Factor analysis; Cluster analysis (incl. bierarcbical, k-means, and 2-way joining); Reliability/Item analysis; Log-linear analysis; General survival/failure time analysis (incl. life tables, group comparisons, and regression models); Distribution fitting (a large selection of continuous and discrete distributions); Curve and surface fitting and smoothing (incl. spline, DWLS, NEXP, and others); and much more Manual with comprehensive introductions to each method and step-bystep examples (Quick Reference booklet explains all major conventions); balloon help Extensive data management facilities: a super-fast spreadsheet of unlimited capacity with formulas (and Publish and Subscribe); merge/split files; "double identity" of values (numeric/text); BASIC-like data transformation programming language; Import/Export data and graphs from Excel, STATISTICA/w and other formats - Graphs integrated with all procedures (e.g., click on a correlation coefficient to produce the corresponding scatterplot and other graphs; click on a variable in the descriptive statistics table to produce a histogram and other graphs; click on an interaction effect in the ANOVA table to see a plot of interaction) Large selection of 2-dimensional graphs: Histograms (incl. multiple, clustered breakdowns, overlaid functions), Scatterplots (incl. multiple, weighted frequency, smoothed, function fitting), Multiple line and Range plots, Trend plots, Standard deviation plots, Data sequence diagrams, Contour plots, Box-and-whisker plots, Column plots, Bar graphs, Double pie charts, Scrollable dendrograms, Two-way joining plots, Curve fitting plots, Distribution comparison plots, Range plots, Probability plots, Amalgamation plots, Factor space plots, Casewise outlier and residual diagrams, ANOVA interaction plots, Multivariate (multiple) matrix plots, exploratory Draftsman plots with bistograms, categorized (multiple) graphs, and many other specialized plots Large selection of 3-dimensional graphs: 3D surface plots (with data smoothing procedures, color or gray-scale shading, and projected contours), 3D scatterplots, 3D block scatterplots, 3D axis (space) plots, 3D spectral plots with adjustable planes, 3D line/ribbon plots, 3D sequence block plots, 3D histograms, 3D surface-smoothed frequency plots, and 3D range plots ("flying boxes") All 3D plots displayed in true perspective, feature interactive real-time rotation facilities (incl. continuous rotation) Extensive graph customization options: all structural aspects of graphs (axes, scaling, patterns, colors, sizes, styles, regions, perspective, rotation, fitted functions, etc.); MacDraw-style tools with specialized "objects;" hi-res. graph and artwork embedding; page layout/preview; dynamic rulers . All output displayed in Scrollsheets™ (dynamic, internally scrollable tables: all numbers can be instantly converted into a variety of on-screen customizable, presentation-quality graphs) All contents of Scrollsheets can be saved as data and used for input, or be exported Flexible facilities to perform analyses on specific subsets of data Extremely large analysis designs Unlimited size of files Extended precision Unmatched speed (e.g., on a Mac IIfx, arbitrary rotation of a surface with 1000 points takes 1 second; correlation matrix 50x50 with 100 cases-less than 3 seconds; transposing a 5000 data points file-less than 2 seconds) - Full support for System 7 ("savvy") incl. Publish and Subscribe, Apple events, balloon help, "drag and drop," 32-bit, etc. Price: \$695.

Quick STATISTICA/Mac™ A subset of STATISTICA/Mac ■ All basic statistical modules of STATISTICA/Mac (Basic and Descriptive Statistics, Frequency tables, Exploratory data analysis, Nonparametrics, Distribution Fitting, Stepwise multiple regression; ANOVA/ANCOVA) ■ Manual with comprehensive introductions to each method and step-by-step examples (Quick Reference booklet explains all major conventions) ■ All data management facilities of STATISTICA/Mac (including interactive rotation of all 3D graphs, extensive on-screen graph customization facilities) ■ Price: \$395.

Windows versions also available (can exchange data with Macintosh versions): STATISTICA/w™ \$995; Quick STATISTICA/w™ \$495.

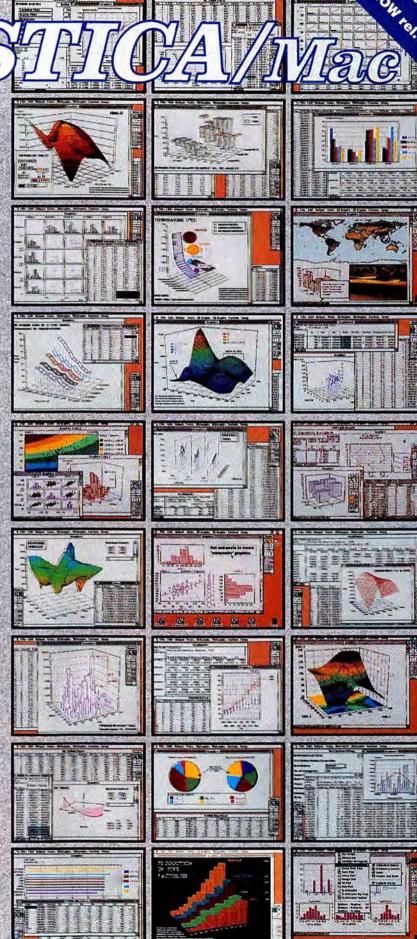
Domestic sh/h \$10 per product; please specify type of computer with order; 14-day moneyback guarantee.

Circle 99 on reader service card



StatSoft[™]

2325 E. 13th St. • Tulsa, OK 74104 • (918) 583-4149 Fax: (918) 583-4376



Overseas Offices: StatSoft of Europe (Hamburg, FRG), ph: 040/4200347, fax: 040/4911310; StatSoft UK (London, UK), ph: 0462/482822, fax: 0462/482855; StatSoft Pacific (Melbourne, Australia), ph: (03) 663 6580, fax: (03) 663 6117; StatSoft Canada-CCO (Ontario), ph: 905-849-0737, fax: 905-849-0737, f



*Suggested retail price. Reseller prices may vary. You must own a competing word processor with a suggested retail price of \$249 or more.

Offer good in the United States and Canada only. All trademarks are property of their holders. ©1994 WordPerfect Corporation. All rights reserved.

Here's the perfect upgrade offer.

Now there are two great reasons to upgrade to new WordPerfect* 3.0 for the Macintosh* today:



- •\$99* special upgrade price for users of competitive word processors.
- $^{\bullet}$ Get the Random House Webster's Electronic Dictionary and Thesaurus, College Edition for just \$49—a 50% savings—when you upgrade.

To get this new upgrade, visit your reseller or fill out this order form and mail it. For faster service, fax to (801) 228-5277, or order by phone at (800) 526-7820. WordPerfect*

Name			Please send me copies of the \$99
Company Name			WordPerfect 3.0 for the Macintosh upgrade.
Address			(Plus \$4.50 shipping and handling.)
City	State	Zip	Please send me copies of the half-price Random House Webster's Electronic Dictionary
Daytime Phone ()			and Thesaurus, College Edition. (\$49 plus \$4.50
Current Word Processor is		Version	shipping and handling.)
My License Number is			Total cost
Credit Card Number			□ My shook or money order is applicad
Expiration Date			☐ My check or money order is enclosed.
Cardholder's Signature			



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 36

OREM, UT

POSTAGE WILL BE PAID BY ADDRESSEE

WordPerfect

Priority Orders Processing Q2300 WordPerfect Corporation 1555 North Technology Way Orem, UT 84057-9912



Click the button. It's so simple. Click. It's the easiest way to get things done. Which is

Our ruler bars give you a whole new way to look at formatting.

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



Word processing that gives you the power to express yourself. 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

WordPerfect*

shorter, it'd be as easy as our interface. Click.

EDITED BY ELIZABETH DOUGHERTY

Networks

THE LATEST IN CONNECTIVITY AND COMMUNICATIONS

PowerPC Server Applications Arrive

POWER MAC SOFTWARE publishers are announcing applications for the Power-PC-based Workgroup Servers that can run many times faster on the Workgroup Servers than on

any 680X0 Mac server, but they've only scratched the surface of the application possibilities.

Network application updates accompanied last month's Workgroup Server announcements, with publishers claiming big speed gains (see Networks news, July 1994). For instance, Dantz Development's Retrospect Remote 2.1, which comes bundled with the WS 8150 and 9150, operates up to five times faster than its predecessor. Aldus's Color Central 2.1 (due by summer), an Open Prepress Interface and printer server application, performs two to four times faster under PowerPC. And Aldus's TrapWise 2.0 will operate at three to eight times the speed of the trapping application running on a 680X0 Mac. In the world of databases, Canto's Cumulus PowerLite 1.2 (\$199) and Cumulus PowerPro (five users \$1495) both offer a 200 to 300 percent speed boost over previous versions of those database managers; and EveryWare Development's Butler 1.3 (\$1695; due in July) will bring users three to four times the speed of 680X0 Mac versions.

The performance gains sound impressive, but the truth is that the full potential of the new Workgroup Servers for server-based and client/server applications remains a mystery to developers. For example, Dantz discovered that Retrospect Remote 2.1 runs faster using compression and encryption than it does nonencrypted and noncompressed. So far nobody knows why.

Because developers are still learning the ropes, it's hard to pinpoint categories of applications likely to benefit from



PowerPC's qualities. One thing is clear: if an application relies heavily on the AppleTalk protocol stack or other Mac OS-based networking capabilities, such as AppleShare or Apple File Sharing, don't expect much of a speed boost until Apple converts its AppleTalk protocol stack to run in native PowerPC code instead of in 68040 emulation. One product that won't have to wait for Apple's conversion is ACI US's 4D Server Universal 1.0, due this summer. 4D relies on the company's own implementation of AppleTalk, and ACI US has already rewritten it in native PowerPC code.

The direct memory access (DMA), instruction caching, and RAM caching that are possible with the PowerPC, speed AppleTalk a little but not enough to overcome AppleTalk's fundamental speed limit. Apple acknowledges that the

fastest networking applications will be based on other networking protocols, like TCP/IP or Novell's IPX, which boast much higher theoretical speed limits. (Apple Talk maxes out at 256 Kbps, while IPX and TCP/IP have proven themselves at much higher speeds.)

When developers and Apple have native software, the PowerPC could not only change the way existing applications are implemented, but also create new classes of networking applications that weren't possible under the power of the 68040. For instance, Aldus has announced Open Prepress Environment 1.0, a workflow manager for prepress applications slated to ship in the fall.

ACI US, 408/252-4444; Aldus, 206/622-5500; Canto, 415/431-6871; Dantz, 510/253-3000; EveryWare, 905/819-1173.—MARGIE WYLIE

Two for Networked Faxing

WO RECENTLY INTRODUCED PRODucts allow users to share a modem for exchanging faxes. PSI's Faxnetwork server software (\$99) turns any Mac on the network into a nondedicated fax server for any Class 2 modem. Client Mac software (\$225 for five users) sends fax jobs to the server where they are spooled, processed, and sent, quickly freeing client Macs for other uses. For convenience, the server can also print out all incoming faxes on arrival.

4-Sight's Small Site (\$995 for ten users, including a Zoom VFX V.32bis modem) lets Macintosh users fax multiple documents simultaneously from an application you call up with a keyboard command. Processing and logging happen locally. LineShare Lite from Stalker Systems, which is bundled with Small Site, allows the modem to be shared between fax and data applications (such as ARA). PSI Direct, 408/559-8544, 800/622-1722; 4-Sight, 515/224-0211.

-MARGIE WYLIE

CD-ROM Network Guide

HE NETWORK SOLUTIONS GUIDE TO Mac network hardware, software, and services, once published by Apple Computer, is available from an offshoot of Pacific Bell in a new guise, as a CD-ROM. The first one's free, kids, until July 31. Thereafter it's \$499 for four issues of the quarterly, called Re:Source Network Solutions. Each issue includes interactive articles, an extensive productand-service database, collected spec sheets, and the option to order any listed product through an associated system integrator. Later this year look for an online version. Pacific Bell Information Services, 415/543-7593, 800/303-7247. -NANCY E. DUNN



The Re:Source CD catalogs network products.



Cabletron's communications hub has room for up to 28 modems.

Modems Plug in to the Hub

ABLETRON SYSTEMS AND XYLOGICS have teamed up to develop a communications server that offers up to 28 high-speed modems and supports AppleTalk Remote Access Protocol (ARAP). Xylogics' Modmim, a \$23,900 module that fits into Gabletron's multipurpose hubs, comes with 4 built-in V.32bis modems and room for up to 12 internal modems, which are priced separately. The remaining 4 serial ports can support up to 16 additional external modems, so you can use your existing inventory of modems or add new devices.

The Modmim's built-in ARAP support lets Macintosh users dial in using Apple's ARA client software version 1 or 2. The module also supports common Unix- and Intel-based PC protocols, including SLIP (serial-line Internet protocol) and PPP (point-to-point protocol). It can be managed via Simple Network Management Protocol, and it offers dialback security. Cabletron Systems, 603/332-9400.—MARGIE WYLIE

ARA Made Easy

OR ONLY A FEW BUCKS PER CLIENT, Apple Remote Access administrators can nurse the technologically hopeless and keep would-be intruders at bay while sharing the network's wealth with even temporary users.

Trilobyte Software's ARACommander 2.0 (1 user \$35, 100 users \$675) is a commercial upgrade of a respected shareware utility that adds a feature-rich, flexible, and secure interface to existing ARA client software (versions 1 and 2).

For users, the utility's control panel provides an easy way to automate dial-in times, application launch, and disconnection. Network administrators can use ARACommander 2.0 to create Connectors, small custom applications that execute log-ins. You can set up a Connector to dial a server automatically at scheduled times, launch applications, perform AppleScripts, and automatically discon-

IN BRIEF

- For Sun Servers Updated uShare 4.0 server software, which makes Sun Microsystems servers look and act familiar to Mac users, offers improved performance, supports AFP 2.1, and includes Mac-based administration. Built-in application mapping allows assigning double-clickable Mac icons to Unix and MS-DOS documents. Version 4.0 ranges from \$595 for one user to \$1395 for any number of Mac clients (\$295 for upgrades). Information Presentation Technologies, 805/541-3000.
- eNote for the Mac This summer E Ware Corporation plans to ship a Mac version of eNote, its Windows E-mail program, which displays a small, handy palette of buttons on the desktop for sending messages without pulling down a menu. About \$200 for five users. 212/564-7791, 800/743-8645.
- add-on module for White Pine Software's Mac 5.1 X-Windows client emulator, eXodus eXpress, lets eXodus users dial in to an X-Windows server at a speed that the company claims rivals Unix remote-access protocols, like SLIP and PPP. \$99 per client module, plus \$99 per module for each Unix host. Also due in late summer: eXodus for Power Macintosh (\$259; \$75 as an upgrade), a PowerPC native application. 603/886-9050.

nect after a specified idle time. Connectors also let administrators hide the network phone number, account name, and password from clients, as well as build in a self-destruct date. Connectors can disable themselves after several incorrect password attempts. Trilobyte Software, 513/777-6641.—MARGIE WYLIE

Phone = 555-1212	Patsword: entered
Options Committe preferences*	Save Correcto
Sport and to define as	Has daing tring when daing
Fratect tran vwwwq/editing	Out wher discoveration
Out after connection	Disable after Says
Presign for grafts or credit card	October Affer 2 bet passwer
Status : Communicating at 14 4 kbgs	

ARACommander automates ARA connections.

Public online services offer low-cost ways to link far-flung offices

A decade ago, your company had to lease a private phone line to connect its mainframe computer with the terminals and computers at its branch offices. Branch employees probably used low-speed lines to access the mainframe at speeds of 9600 bps to 56 Kbps. The data processing center may have leased an entire T1 circuit that funneled the traffic flowing in from the branches to a single 1.54-Mbps pipeline.

Today, most businesses still use privateline wide area networks to send data between far-flung locations. The reason: private lines provide maximum control over network resources, a high level of data security, and unlimited usage at a fixed price.

But the corporate computing environment is changing. The terminal-to-host scenario is becoming a thing of the past. LANs are becoming the norm. And connecting several LANs into a single, enterprise-wide network is becoming mandatory for companies that do business at more than one location. Network managers face the challenge of finding cost-effective methods to integrate their LANs. Network managers now have an alternative to dedicated private lines: public data services.

Public data networks use their own network-based services and equipment to route your data traffic along with traffic from other customers over a shared network facility.

A smorgasbord of public data services with names like *frame relay* and *switched digital* are now offered by long-distance carriers such as AT&T (201/606-2000) and Sprint Corporation (404/859-5000), local carriers such as Bell Atlantic (215/963-6000) and Pacific Bell (415/542-9000), and value-added network providers such as CompuServe (614/457-8600) and Infonet Services Corporation (310/335-2600).

The key to choosing the right service is to understand the LAN applications your company plans to run over your WAN. Before you start shopping, you should consider the following.

• Your connectivity requirements. How many LAN locations are you connecting—two, three, or more? Does each location need to connect to each other location in an any-to-any configuration? Do you plan to install network connections with customers or suppliers outside your company? Do each of your branch locations need to connect only to your head-quarters office, or does each branch need to connect to each other branch in an any-to-any (full-mesh) configuration?

 Your volume of usage. On average, do your users transmit small, medium, or large files across the network? How much time does it take to transmit a typical file?

 Your data-transmission frequency. Is network traffic constant or intermittent?
 Do users send and receive files over the network all day long or only occasionally?

 Your need for speed. Do users send large image files over the network that will choke at slow speeds? Do they send database queries that require rapid response times? Or are most users transferring small files and sending electronic mail?

Your disaster-recovery needs (automatic rerouting). Is a portion of your network traffic mission-critical? Will your company's business suffer if a network connection fails and your data is not automatically rerouted? Are you paying extra for disaster-recovery services?

Now consult the table "Where Public Data Services Make Sense" to see which data services match up best with your company's WAN needs.

 If you already have a private network in place, you might want to consider adding frame-relay or switched-digital connections at your branch locations but leaving your backbone network intact.

CONNECT YOUR

 If you're sending files from your remote offices back to your main office just a few hours each day, a switched-digital service is an economical choice.

 If you plan to connect the LANs at, for example, each of your four offices into a one-to-any (mesh) network, a frame-relay solution is a good bet. Or, if your company needs to exchange information regularly with its customers, business partners, or suppliers, a TCP/IP network could be your solution.

To understand the applicability of each type of service, consider their strengths and weaknesses.





Switched-digital services Switched-digital services (sometimes called digital dial-up services) typically cost less than private lines if your data traffic averages less than two hours per day and your sites are widely separated.

Switched services work like regular voice calls. To set up a switched call, you simply dial a predetermined phone number and start sending data. The beauty of this system is that you're charged only for the bandwidth you need, only when you need it. A typical switched 56/64 Kbps (commonly called just switched 56) call from New York to San Francisco will cost you between \$7 and \$10 per hour—the same as or slightly more than what a voice call costs.

Switched services are a natural for remote offices that can't justify a private line or for telecommuters whose bandwidth needs exceed the upper limits of analog modem connections. Switched services can also augment private-line connections during peak traffic times or dial backup bandwidth in case a private line goes down.

If you plan to interconnect LANs using switched-digital circuits, you'll need a router or an inverse multiplexer to connect to the WAN. Inverse multiplexers let users aggregate multiple switched 56 circuits into temporary high-speed pipelines. Instead of using individual 56 Kbps connections, for example, inverse multiplexers dial up as many as 24 56-Kbps circuits to bridge LANs or back up private lines.

If you are connecting individual Macs to switched services, you need to plug a Data Service Unit/Channel Service Unit (DSU/CSU) or an Integrated Services Digital Network (ISDN) terminal adapter into your machine.

Carriers offer switched services in bandwidths of 56, 64, 384, and 1536 Kbps. You can sign up for these services by calling either your local phone company or your long-distance carrier. But check prices carefully; in some cases you may find it cheaper to use your local phone company's switched service to connect to your long-distance carrier than it is to sign up for switched services directly from your long-distance carrier.

Frame-relay networks Frame-relay services and LAN internetworking are considered by some people to be a match made in heaven. That's because frame relay, an updated version of X.25 packet switching, economically connects multiple sites in an any-to-any configuration and efficiently handles the high-burst data transfers that are typical of LAN traffic, imaging, and client/server exchange. Typical uses include financial data trans-

fer, CAD/CAM imaging, and forms processing. Frame-relay networks are also a good choice for critical applications because they automatically reroute data in case of network failure.

Frame relay works by breaking data streams into packets and then routing the packets to their network destinations over logical connections called permanent virtual circuits (PVCs). A company must set up PVCs between its different network locations before any one location can send or receive data from any other location. Requiring that a company predefine PVCs between locations before any communication can take place is what makes the data on your public frame-relay network just as secure as the data on your private-line network.

PVCs also make frame-relay networks cheaper to use than private lines for internetworking three or more LANs. That's because a single physical connection into a frame-relay network supports multiple logical connections into the network. A company connecting five locations into an any-to-any frame-relay network, for example, pays for one connection into the network for each of its five locations, for a total of five connections. A company connecting the same five locations into a private-line network, on the other hand, must pay for ten network connections, since each logical connection on a private-line network requires a physical connection as well.

To get started with frame relay, you need frame-relay-capable routers. Major vendors sell routers that support frame relay and AppleTalk protocols. Some companies report that using a frame-relay network costs 20 to 30 percent less than using a private-line network—enough to pay for the investment in routers during the network's first year of operation. Carriers such as AT&T, CompuServe, and WilTel (918/588-3210) offer frame-relay services at connection speeds ranging from 56 Kbps up to T1.

X.25 networks Frame relay's predecessor, X.25, is a low-speed packet-switching technology that is still widely used today for interactive, transaction-oriented applications such as order entry and credit card verification. Because of X.25's large network overhead, most X.25 networks operate at top speeds of 56 Kbps—too slow to effectively handle LAN-to-LAN traffic.

But don't rule out X.25 networks if you just plan to send electronic-mail messages and small files across wide area links. Companies like AT&T and Sprint use worldwide X.25 networks to provision their AT&T Mail and SprintMail global electronic-messaging services.

Where Public Data Services Make Sense

	Frame Relay	Private Line	Switched Digital	TCP/IP	X.25
Connectivity					
One-to-one	-0.	•	•	0	0
One-to-any	•	D.	•	•	•
Any-to-any	•	0	Ü	•	•
Traffic volume					
Low	•	Ð	U		•
Medium	•	-D	• 1		0
High	0	•		0	0
Traffic frequency					
Occasional	•	10	•	•	
Frequent	•		0	•	•
Speed					
Low	Ø	•	0	•	
Medium	•	1961	•		O
High				•	10
Automatic rerouting	•	g	5	•	•

appropriate use of this service; = inappropriate use of this service.

Also consider X.25 if you communicate with offices overseas. Its error-checking protocols make it effective in areas of the world where circuits are noisy and transmission errors are likely to occur.

TCP/IP services Recently, service providers like Advanced Network & Services (914/789-5300), Infonet, and Sprint have started offering managed TCP/IP-based routers that let companies connect their LANs to their customers' or suppliers' LANs or build customized TCP/IP networks via the public Internet.

The advantages of TCP/IP include the ability to connect dispersed LANs across diverse networking environments and to provide access to the resources of the global Internet. (For more information, see "Linking AppleTalk Workgroups over TCP/IP," Macworld, April 1994.) Most likely to benefit are companies that need to transfer files or exchange E-mail with their suppliers, customers, or trading partners across the country or around the world, since the TCP/IP communications protocol lets users easily connect incompatible E-mail systems and LAN protocols across wide area links.

Their disadvantages include concerns that subscribers on the public Internet could gain access to an organization's private network resources. Managed services tackle the security issue head on. Designed for companies that have no interest in the public Internet but want LAN-to-LAN TCP/IP connectivity, these services set up virtual private networks for companies by restricting users' access to all but certain predefined network locations.

Consider the offerings of the different Internet service providers carefully if you're thinking of using TCP/IP as your WAN transport system. Offerings and fee structures vary between providers.

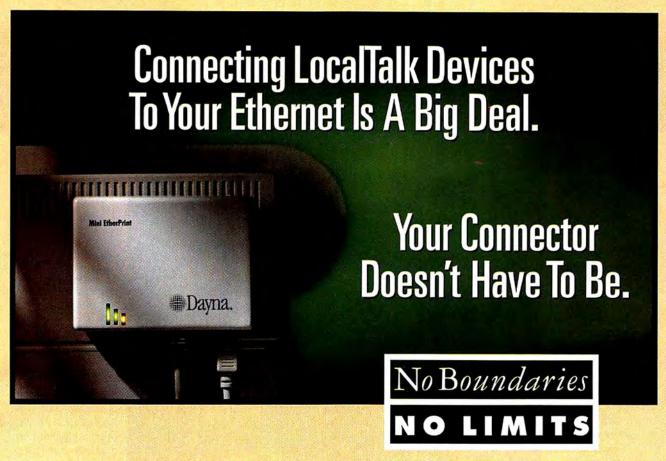
Choosing a Provider

Once you have homed in on the data service that suits your LAN applications, it's time to look for a service provider. It's also time to decide how much control you need—or can provide—over your WAN links. Do you have the staff and the budget to manage your own network, or will it be more economical for you to pay a service provider to manage your network?

For a fee, most service providers will completely take over the design and implementation of your network, including arranging for access lines from the local phone company and installing the equipment you need at each of your network locations. Once your network is operational, you can sign up for round-the-clock, seven-days-a-week network monitoring and management services.

For example, Sprint recently started offering managed network services for its SprintNet (X.25), SprintLink (TCP/IP), and Frame Relay Services. Depending on the complexity of your router setup, Sprint will design and implement your network for a onetime fee ranging from \$250 to \$1000 per network node. Ongoing service charges include on-site routermaintenance fees of between \$40 and \$150 per month and router-management services of \$240 per month, per router. The company has said it plans to offer managed network services for its privateline and switched-digital services by year's end. (Other companies offer similar services at similar rates.) m

MARTHA STRIZICH writes frequently about networking.



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

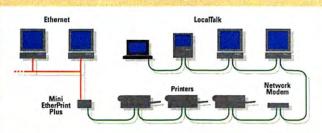
connection for as few as 1 or 2 LocalTalk printers to as many as 8 LocalTalk devices of any variety.

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 SecurIt 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.



Mini EtherPrint products are ultracompact plug-and-print solutions offering Ethernet connectivity for LocalTalk devices. Mini EtherPrint supports 1 or 2 devices, Mini EtherPrint Plus supports up to 8.

FAX Response: 801-269-7340, Doc.#1303



Okay, so what's on your Xircom Pocket EtherTalk Adapter?

Jill Byron Account Executive

My PowerBook, which I take everywhere.

My LAN which I can finally get on!

Access to all the network applications that don't fit on my PowerBook.

E-mail thanking Sean for my Xircom Pocket EtherTalk Adapter.

> My Syquest and CD ROM drives daisy-chained on my SCSI port.

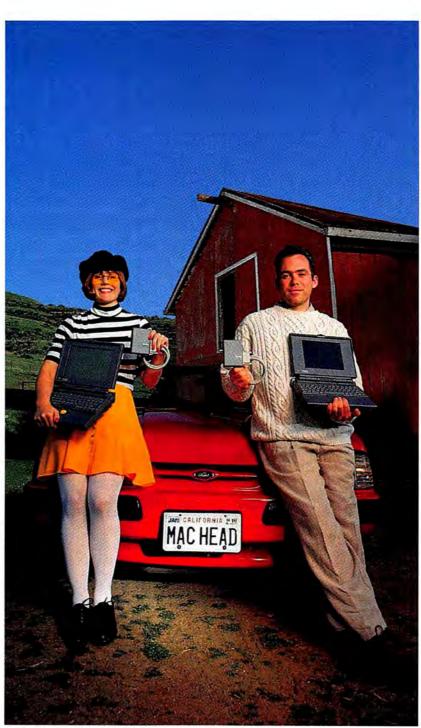
Phantom Power cable so I never have to worry about packing an AC adapter.

The same dependable Xircom brand name as all the PC notebook users have on their LAN adapters.

My calendar appointments from the server.

Xircom's phone number in case someone asks for a recommendation.

A lifetime warranty and upgrade policy.



For more information on the Xircom Pocket EtherTalk™ Adapter, call 1-800-438-4526 ext. 31R.

Xircom U.S. Headquarters: 818-878-7600. Xircom Europe NV: +32/(0)3 360.38.11. Xircom Asia: +852 525-2078.

©1994 Xircom, Inc. Xircom is a registered trademark of Xircom, Inc. EtherTalk is a registered trademark of Apple Computer, Inc.
All other brand names or marks are used for identification purposes and may be trademarks of their respective owners.

Circle 269 on reader service card

Sean Scullion MIS Director

The Xircom name.

Xircom guaranteed compatibility.

Choice of 10Base T or thin Ethernet via the SCSI port.

10Mbps Ethernet vs. AppleTalk's 230 Kbps access to all my file servers.

Special pass-through SCSI feature for Syquests, CD ROMS and other peripherals for my PowerBook users.

Phantom Power cable that draws from the Apple Desktop Bus so I don't get hassled about AC adapters.

Reversible SCSI cable so both my Powerbook and Macintosh desktop users can use it.

30-day free product evaluation and 37% discount when I purchase the evaluation unit.

Lifetime warranty and upgrade policy.

All my PowerBook users.





BY CARY LU

Power Book Notes

Frequently Asked Questions

SOME QUESTIONS—NO MATTER HOW many times they're answered—seem to get asked over and over again, either by new users or by people who haven't found the right resources. One of these resources is Apple's technical-support line for Macintosh users: 800/767-2775. With the cooperation of the support-line staffers who field such queries, I compiled the most frequently asked questions and answers about PowerBooks.

Even when it's plugged into the AC adapter, my PowerBook does not always start when I press the power-on button. What should I do?

A. Try a hardware reset. For 100- and 500-series PowerBooks, simply unplug the AC adapter and remove the battery, leaving it out for ten minutes. For Duos, press and hold the back power button for four to five seconds.

What is the correct system enabler for my PowerBook?

A. Models 100, 140, 145, 145B, and 170 require no enabler. The other 100series PowerBooks use Enabler 131 (131 replaces two earlier versions-Enabler 111, which came with the Power-Book 160 and 180, and Enabler 121, which came with the PowerBook 165c). The 200 series (Duos) use PowerBook Duo Enabler 1.0 (replaces Enabler 201, which was shipped with the early Duos 210 and 230). The 500-series Power-Books use PowerBook 500 Series Enabler 1.0.2. The latest enablers are available through the usual sources: System Update releases, new system software releases, and many online services. You



can also get them with the System Update 3.0 for \$10 (credit card only); call the Apple Order Center, 800/769-2275. Although older enablers will still work, it is a good idea to update to the most current one.

Why does my PowerBook sometimes become quite warm to the touch?

PowerBooks can heat up during operation, especially on the bottom beneath the keyboard and around the battery compartment during charging. To avoid overheating, leave the PowerBook display open and the feet down during operation, especially when using an external monitor. In some cases, a hardware reset (described above) may work.

How do I get a frozen cursor unstuck?

A. First, wait a few moments to see if the PowerBook is just taking longer

than expected to finish a task. If the cursor is truly stuck, restart the computer (see the manual for the correct procedure for your model). If the problem persists, you may have a conflict with a system extension; try booting while holding down the shift key, to turn off extensions. If this corrects the problem, you have to restore extensions one at a time to find the offending one and possibly change the order of extensions by renaming them. Or you may need to reinstall your system software because of a corrupted system file.

. What should I do when I connect an external SCSI device to my PowerBook and I see a diamond icon with a number or I can't access SCSI-disk mode at all?

Make sure that you are using the proper cable. When connecting SCSI devices to a PowerBook, use the off-white Apple SCSI System Cable or equivalent (part number M2538LL/A). When connecting the PowerBook to another Mac using SCSI-disk mode, use the dark gray SCSI Disk Cable (M2539LL/A), which has 30 pins at the PowerBook connector (the square end), while the peripheral/system cable has only 29 pins.

What does it mean when my Power-Book just stops and the screen goes gray?

A. The computer may have gone to sleep. Press the shift key to wake it up. Or the battery may have completely drained, which also induces sleep mode. If so, plug in the power adapter, let the battery charge for 15 minutes, and then try to wake it up. If this still doesn't work, continues



restart the PowerBook (see manual for directions for your model).

What do I need to use my PowerBook outside of North America?

Apple's PowerBook AC Adapters automatically adapt for all common AC power voltages worldwide (90 to 260 volts). The power frequency (50/60Hz) does not matter. For many countries you will need a plug adapter, available at electronics shops, luggage stores, and airport shops. If you have a third-party AC adapter, check that its voltage range is appropriate for the country you're visiting.

. Why does my PowerBook crash so often?

Two likely possibilities: software conflicts or faulty third-party RAM. First make sure you are using the latest version of all your applications. You may need to replace your system software by doing a clean install from your system software floppy disks: (1) rename your System Folder to "old"; (2) take the Finder file out of that System Folder and put it on the desktop or in the Trash; (3) insert the Install Me First disk and restart; (4) choose Easy Install; (5) after system installation, copy your personal software (control panels, extensions, and so on) from the old System Folder to the new one, and trash the old folder. If you have a third-party RAM card, have your local service technician remove it to see if that corrects the problem.

. Why won't the battery recharge?

Make sure the power adapter is plugged into a live socket. Select Battery (Apple menu); a lightning bolt appears over the battery symbol during charging and disappears when charging is done.

For a Duo with Type I batteries, be sure the battery is fully inserted into the computer. Type II or III batteries don't usually have this battery-contact problem, but if a Type II or III in a Duo 210, 230, or 250 doesn't seem to charge correctly, you need Duo Battery Patch, a free extension from the usual sources.

. Why does my PowerBook go to sleep so soon after I stop using it?

In the PowerBook control panel, move the Battery Conservation slider toward Maximum Performance. Power-Book control panel 7.2 and third-party software let you set the length of time before an idle PowerBook goes to sleep.

... Why doesn't my PowerBook sleep?

A PowerBook will not go to sleep (1) if there is background activity such as printing, file sharing, virus checking, or telecommunications; (2) if it's plugged into AC power and an external monitor is connected (it can dim the external monitor); (3) if AppleTalk is turned on in the Chooser; or (4) if "Don't sleep when plugged in" is checked in the Options section of the PowerBook control panel.

Why does my active matrix display have dots that never go away?

An active matrix screen contains over 250,000 pixels. Because of the current manufacturing technology, a few defective pixels is common. If screen flaws interfere with your work, call the Apple technical-support line to find out if your screen qualifies for replacement (determined on a case-by-case basis).

Why does my screen seem so dark?

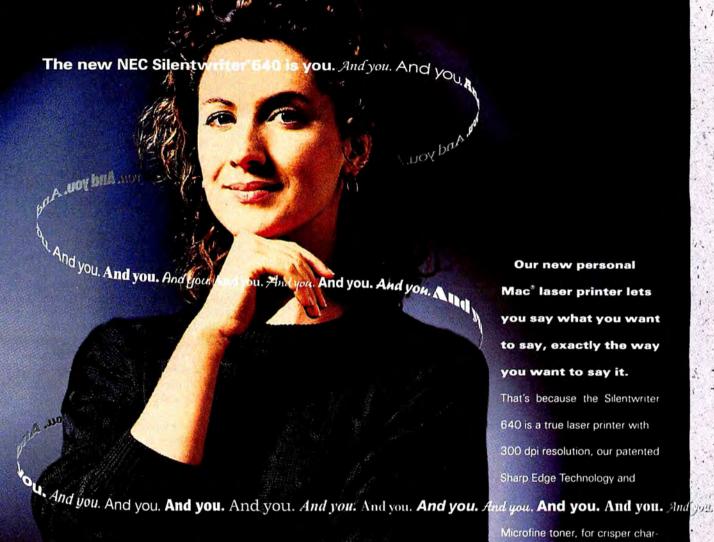
You may need to adjust the brightness and/or contrast setting. To see if
screen dimming has been activated, move
the trackball/trackpad. Also, the screen
automatically dims when the battery runs
low; if this happens, plug in the AC
Adapter. Some third-party power managers dim the screen at start-up; to inhibit this, check the settings appropriate for
that software, or restart while holding
down the shift key. Active matrix color
screens do not have contrast adjustments
(they don't really need them). Note, however, that all color screens are impossible
to read in bright sunlight.

. Why do I see flickering, shadowing, and faint lines on my passive matrix screen?

A Some flickering or shadowing is normal, but try adjusting the contrast and brightness, selecting Black & White in the Monitors control panel, or switching to a lighter desktop pattern (in the General control panel).

What should I do if my external monitor's screen is blank?

Open the Monitors control panel. You should see images of two monitors: the PowerBook display and the external monitor. If you don't see the image of the external monitor, make sure the PowerBook is plugged into the AC Adapter, which is required for an external monitor. Make sure the video cable is securely connected and restart the computer. In the Monitors control panel, click (and hold) the Identify button. A large numcontinues



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.





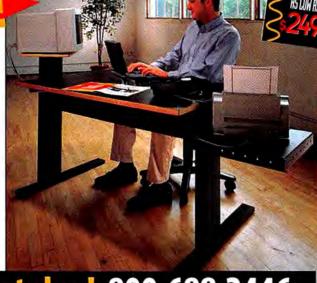
Circle 1 on reader service card





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





Free Catalog! 800.688.2446

| Phone 503. 690.1400 | FAX 503. 690.1423 | Europe 011.41.62.631026 | Japan 011.81.3.3583.0436 | 👼

ber 2 should appear on the external monitor display.

• How do I get my cursor to go to my external monitor? How do I invoke mirroring on my external monitor?

A. Check the Monitors control panel for the presence of a second monitor. You can change the relative positions of the monitors by dragging either monitor icon, so that you can tell which direction to move the cursor to go from one screen to the other. Video mirroring (showing the same image on both screens) is set in the PowerBook Display control panel.

Q. Why won't my PowerBook read a floppy disk that I formatted on my desktop Mac?

A. Some extensions block reading floppies—restart and hold down the shift key until you see the message "Extensions Off." Then try reinserting the disk. Also, the disk may be damaged. Try formatting a floppy disk in your PowerBook and use that disk in your desktop machine. If that doesn't work, have your floppy disk drive tested for alignment.

Q. I have an Express Modem installed. When I start up, why does the Fax Modem extension icon have an X through it?

A. The Fax Terminal Pref file (located in the Preferences folder in the System Folder) may be corrupted. A temporary fix is to throw this file away and restart, which automatically creates a new preferences file. This problem was corrected in version 1.0.4 of the Express Modem software. The current version is 1.5, available from the usual sources.

. How do I print to a StyleWriter from a Duo or a 500-series PowerBook?

A. For PowerBooks with only one serial port (Duos and 500-series PBs), you must disable AppleTalk. Then tell the StyleWriter driver that you are using the modem port. If you have an Express Modem installed, set Express Modem to Off in the Express Modem control panel. If you have a PowerBook Setup control panel, set Modem to Normal. If you are having trouble printing to a StyleWriter from a Duo Dock, get a hardware upgrade from your local Apple Authorized Service Provider. AppleTalk must also be disabled if you want to use the printer port of the dock. **m**

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column.

WANNA SEE WINDOWS SCREAM ON YOUR POWER MAC?

So you finally get your hands on the hottest new Mac and what happens?

Somebody insists that you run Microsoft Windows[™]

applications.

Don't despair. Just double click on SoftWindows[™] and hang on tight.

You see, SoftWindows not only lets you use your Mac as a Mac, it also lets you **run** thousands of

thousands of popular

Windows programs – as fast as a 486SX.

You can run DOS programs, too. Not to mention PC network applications such as NetWare, LAN Manager and TCP/IP.

How can SoftWindows be so utterly compatible? Because it **includes Windows 3.1 and MS-DOS 6.2**, optimized to run at top speed.

And since both DOS and Windows are prein-

stalled, you don't have to put up with tedious installations.

With SoftWindows, you can copy and paste between PC and Mac applications. You can even **use Macintosh peripherals**—CD-ROMs, printers, modems and more—with PC programs.

Call us today at **800-848-7677 Dept. B.** Or visit your dealer. What you discover will blow you away.



Windows Compatibility for the Power Macintosh.

Insignia

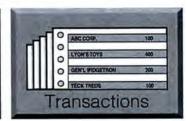
In Europe, call (44) 494 459426.

Circle 68 on reader service card

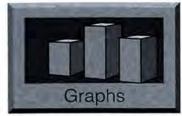
StreetSmart Makes Wall Street a Whole Lot Friendlier!













Trade online with StreetSmart™ now for Macintosh®

Point, click, invest.

Now, at last, you can combine the power and accessibility of your Mac® with one of the most powerful investment software programs on the market.

With StreetSmart — new from Charles Schwab — you can actually act as your own broker. Just point to place a trade. Get real-time quotes. Pull Dow Jones news and analysts' opinions off the wire — and into your home.

Place buys and sells like a Wall Street trader.

Click to pull down trading screens. Click again to review your portfolio. Chart price histories. Access 6,700 company reports. StreetSmart helps put you in control of your investments.

Save 10% more every time you trade.

You can buy and sell stocks, options, bonds and over 700 mutual funds electronically — and save 10% off Schwab's already low commissions every time you invest.* Plus you'll save up to \$25 more on your first StreetSmart trade.**

Get StreetSmart for just \$59 — or trade up to Schwab and get it free.

Just move \$15,000 or more into a Schwab account between May 2 and

August 31, 1994, and you'll receive StreetSmart, free.[†]

To place your StreetSmart order — or to take advantage of this limited-time offer — stop by one of our 200 offices or call us toll-free at:

1-800-435-9258 ext. 67A.



Charles Schwab

Helping Investors Help Themselves®

ball cleaners.

BY DAVID POGUE

Not Your Father's BBS

FirstClass systems: online services for the rest of us

OU KNOW WHAT A BBS 1S, don't you? It's an electronic bulletin board system. At one end is a Mac Plus and a couple of phone lines in some teenager's bedroom. You, modem junkie, are at the other. You can dial in to the BBS at any hour. By typing commands, you can read Monaco 9-point text describing 32-bit-addressing schemes, download the latest version of MacArmyMan Pro, or post heated messages about the efficacy of mouse-

Well, that's what a BBS used to be, back when the information superhighway was a couple of dusty bike trails. But times have changed. Courtesy of a remarkable program called FirstClass, the aforementioned BBS operators of America can now replace the boring scrolling text of yesteryear with nifty clickable icons, just like those in America Online or eWorld. The backdrops are colorful, the icons are customized, text comes in all sizes and colors, and there are witty sound effects at every turn. For the first time, you can use a BBS without a degree from MIT.

A FirstClass BBS is multitasking, too. Even as you're downloading, say, a Bart Simpson sound file from the BBS software library, you can simultaneously read messages, type in live conversations with other members, and explore the service. (Try that on America Online.) Actually, that's a bad example; on a FirstClass system, you can listen to a sound without downloading it.

The content of FirstClass systems is eye-opening, too; instead of merely serving as a canvas for political user-group mudslinging, these BBSs offer things like faxing, efficient E-mail, and access to the mother of all BBSs, the Internet. And on most FirstClass BBSs, people go by their real names (Bill Smith, Jenny Jones) instead of coy handles (Mac Stud, NoLifeGuy).

(SoftArc, the company that makes FirstClass, wishes to stress that its product's actual purpose in life is to be a corporate communications center, like QuickMail or something, and that 3000 companies use it this way, and that the explosion of FirstClass BBSs is merely an unexpected side effect of the program's stunning success in the business world. Duly noted.)

Here's a sampling of some interesting FirstClass systems; to find one in your own area code, visit the Macworld area of America Online, where I've posted a list of 500 FirstClass BBSs all over the world.

digitalNation

If your mind is easily blown, put on a helmet before visiting this BBS. Its 28 highspeed phone lines connect you to services so varied and useful, they almost make CompuServe look like a garage sale. In my first whirlwind evening, I searched the You may have trouble believing this, but digitalNation's information is all well organized and easy to find. You'll definitely have trouble believing this: except for the call to Virginia, digitalNation is free (up to 20 minutes a day; you can pay for more access). What's more, if you use digitalNation, you've just stuck your toe into the meganetwork called the Internet; you get your own Internet address, and you have full access to the torrent of messages that gushes through the Internet every day. (Sysop, Bruce Waldack, bless 'im; voice 703/642-2800; modem 703/642-0453.)

DesignLink

DesignLink is no digitalNation; it barely qualifies as a digitalSuburb. But

despite its unassuming size, it's worth mentioning for the sheer cleverness of its purpose. It's a resource for art, design, desktop publishing, and photography types. Most of its shareware programs, imported Internet discussions, and announcements pertain to those creative pursuits: there's a calendar of art shows and contests, links to design-industry magazines and companies, and so on.

The heart of Design-Link, however, beats in its Portfolio folder, which makes brilliant use of a unique FirstClass feature. In this area, you double-

click on the icons of actual artwork samples from photographers and designers. In seconds, the full-color picture appears on your screen. (You also have the option of downloading them at a low-res 72 dpi.) What an ingenious way for these artists to display their wares—and for clients to window-shop! (Free up to 20 minutes daily, \$200 per year to put your artwork online; sysop, Ash Mehta; voice 510/930-6746; modem 415/241-9927.)

continues



recipe database for dishes containing prunes, downloaded the complete transcripts of the "Monty Python" TV shows, and sent a fax. Later, I unearthed the entire Bible, Frequently Asked Questions about Seinfeld, 12 complete Shakespeare plays, the transcripts of every speech ever uttered by President Clinton, Apple Product Information, months' worth of David Letterman Top 10 Lists, 4.5 gazillion shareware programs, and enough other surprises to turn me into a gibbering digitalIdiot.

EastNet

EastNet is everything you ever wanted in a BBS—in 100 BBSs, actually. Its most noteworthy feature is that it links to other BBS systems. Several of EastNet's icons are actually gateways to such worlds as OneNet (a worldwide network of 300 FirstClass BBSs) and, of course, the Internet. Needless to say, you could spend a lifetime exploring all these spokes of the EastNet wheel, but some of the most interesting are Off White and Green (psychiatry), the Missing Children's Network (double-click to see the photos of missing kids), and InvestNet (with online graphs of individual stocks).

According to Michael Wechsler, his co-sysop Robert Knowles "needs some therapy; he's a file pack-rat." Translation: this BBS also has, quite probably, every Mac shareware program ever written. Everyone has access to 20,000 of them; for an extra \$10 per year you can also access six CD-ROMs' worth; and Rob will hunt through his 25 gigabytes of programs if there's something special you're looking for. (\$20 per year, \$10 additional for Internet access; voice 718/575-1318; modem 718/767-0157.)

Earth Spirit Online

If you get so addicted to this stuff that you never go out and enjoy the fresh air and sunshine, at least you can *read* about fresh air and sunshine. Earth Spirit is an extraordinarily comprehensive, coherent, upbeat environmental BBS. On it you'll find discussions, announcements, and files that touch every conceivable aspect of recycling, research, environmental politics, camping, health, and so on. There's even an area where people analyze each others' dreams. (Actual reply: "My interpretation of your dream is that you were wishing for a nice salad.")

Greenpeace, the Sierra Club, and various California eco-outfits are there, as are several dozen imported relevant Internet discussions. Even I, a Manhattanite who hasn't seen plant life in eight years, found something I'd been looking for: a decent definition of postconsumer recycling. A bonus: For some reason, environmentalists don't have the same appalling spelling and grammar of most BBS patrons. (Free up to 30 minutes daily; sysop, Robert Greenhood; voice 310/582-8228; modem 310/264-4785.)

User-Group Systems

Since BBSs are user-driven, noncommercial enterprises, it stands to reason that several of the best are associated with user-driven, noncommercial outfits—Macintosh user groups. (To locate the one nearest you, call 800/538-9696.)

These BBSs harbor the usual First-Class riches: E-mail, discussions, Mac answers, selected Internet discussions, and the inevitable boxcarful of shareware. But



Digital Cafeteria The icons on digitalNation's industrial-tech welcome screen give you access to a vast, rich, underground world of information, files, and services. Except for the phone call, it's all free for the taking.

the geographical relevance of user-group BBSs gives them a special zest. For example, on the Los Angeles system, there's an icon called LA Eats, which suggests good L.A. restaurants. BMUG Boston (the East Coast wing of the famous Berkeley, California, user group) has press releases about Senator Kennedy. And the New York system, naturally, includes news of Broadway and the museums.

You're welcome to look around these services for free, even if you're not a member; but your time and access are limited until you pay up. (LAMG membership \$36 per year; voice \$10/278-5264; modem \$10/559-6227. BMUG membership \$40 per year; voice \$10/849-2684, Planet BMUG [the main BMUG system] modem \$10/849-2684; BMUG Boston modem \$617/721-5840. NYMUG membership \$45 per year; voice \$212/473-1600; modem \$212/473-1967.)

The Upshot

These friendly, info-dense services are as dramatic a Mac development as, say, the invention of the mouse pad. Why don't we hear more about them? The pundits can finally quit bellyaching about how hard the Internet is to use—if you connect through a FirstClass BBS, using the Internet is no more challenging than double-clicking a folder.

In short, the quantity and quality of the stuff you'll find in this welcoming cyberland is astounding. After you've visited a few of these magical places, you'll either be stricken with Information Anxiety—or cured of it. **m**

Research assistance by Omar Wasow of NY Online (modern 718/596-5881) and Dallas Kachan of SoftArc (voice 416/299-4723).

Contributing editor DAVID POGUE is the author of More Macs for Dummies (IDG Books Worldwide. 1994), which contains, among other things, step-by-step instructions for getting onto the information superhighway without missing your exit.

A FIRSTCLASS DICTIONARY

he world of FirstClass is so exciting, so mind-stretching, that it requires a whole new raft of terminology. Clip, save, enjoy.

Conferences FirstClassese for messages. This is the real bulletin-board part of a BBS, where you can participate in never-ending chains of replies to replies on every conceivable topic.

FirstClass Client Important! This is the free program you need to dial in to any FirstClass BBS. You'll find it in the Macworld area of America Online, among other places.

Gateway A link to another BBS. Unless you're really savvy, you probably won't even know when you're being patched through to a different system.

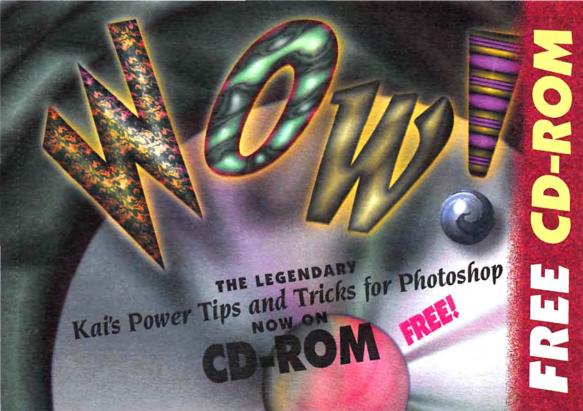
Internet A vast, technical, former military, computer network. It encompasses 20 million people and thousands of universities, companies, and government institutions.

Résumé A wonderful FirstClass feature that lets you read all about other BBS visitors, in their own words.

Settings file What really makes FirstClass BBSs great is that each is different. The welcome screens, the sounds, the icons, the folder arrangements are all customized by the operators of each BBS; all of this information is packaged into a document called the settings file. To enjoy the rich multimediac experience of a certain BBS, you must also obtain its settings file.

I've put the settings files for the BBSs described in this article, once again, in the Macworld forum of America Online. You can also get the settings file from the BBS itself (after dialing in with the FirstClass Client's generic settings).

Sysop The system operator—the poor slob who has forsaken food, family, and friends in order to maintain and administer a BBS.



The legendary electronic book featuring secrets of the masters is finally yours!

Plus incredible digital imaging and a QuickShow utility! All on one CD-ROM!

Compatible for both Windows and Macintosh.

Kai's Power Tips and Tricks CD-ROM — a \$149 Value FREE*!

* Just \$9.95 shipping and handling.

On CD-ROM you get: "Kai's Tips and Tricks for Photoshop"—These practical shortcuts and insights by Kai Krause are ideal for beginning or professional digital imagers who want to get more productive right away using Adobe's Photoshop image editing software. Incredible Digital Imaging — Sample from hundreds of megabytes of out-of-this world textures, fractals, gradients, photo realistic 3-D landscapes, and other exclusive KPT imaging. QuickShow—The latest version of one of our favorite utilities turns your PICT images into a cool slide show.

ORDER TODAY! Fax Your Request To 310-392-6015
Include your name, address, phone number, signature and valid Mastercard or Visa number with expiration date.

Or Call HSC Software Direct At 310-392-8441

HSC IS A REGISTERED TRADEMARK, AND KAI'S POWER TOOLS IS A TRADEMARK OF HSC SOFTWARE CORP. OFFER VALID FROM JUNE 1 TO AUG. 31, 1994
AND IS SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE ALLOW THREE TO FOUR WEEKS FOR DELIVERY. FOR MAIL ORDERS:
HSC SOFTWARE CORP. ATTN: CD-ROM, 1661 LINCOLN BLYD., SUITE 101 SANTA MONICA, CA 90404

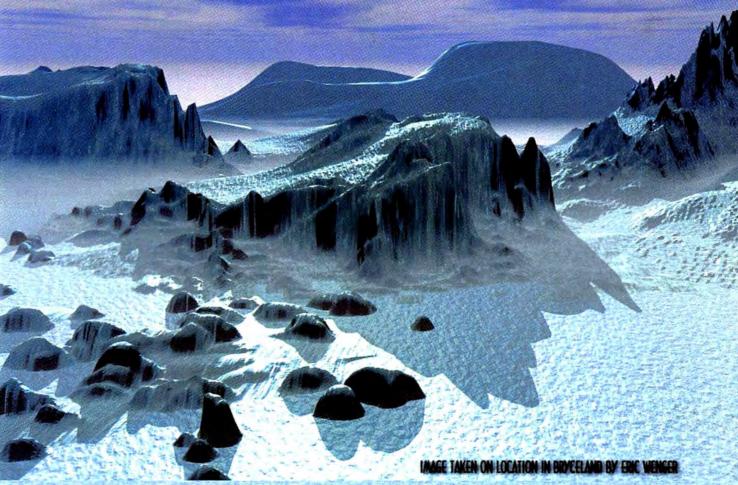
MW894

OR PURCHASE KAI'S POWER TOOLS 2.0 FROM YOUR FAVORITE SOURCE BETWEEN JUNE 1 AND AUG. 31, 1994, AND RECEIVE YOUR CD-ROM FREE OF SHIPPING AND HANDLING CHARGES! JUST SEND US THIS CARD, YOUR SOFTWARE REGISTRATION AND DATED PROOF OF PURCHASE.

MEN IN THE PHENOMENALLY SUCCESSFUL SERIES OF KAP'S POWER TOOLS"

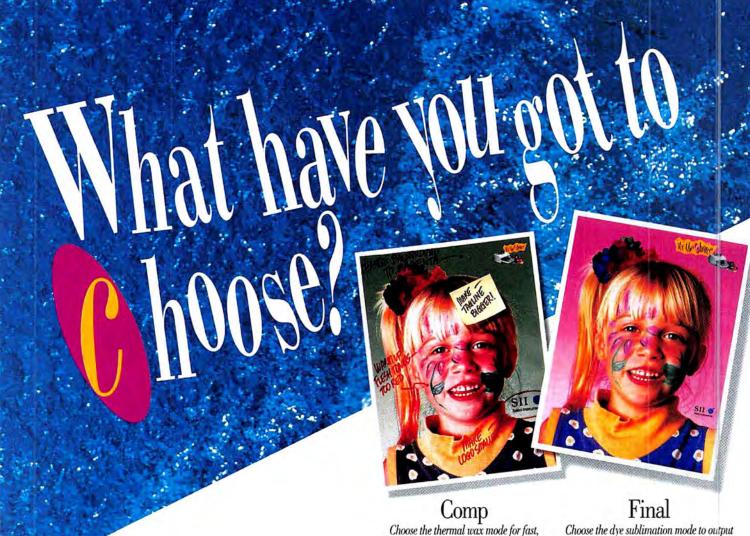
KPT Bryce.

"We have a way with worlds..."



HSC SOFTWARE PRESENTS A STANDALONE APPLICATION "KPT BRYCE" STARRING A UNIQUE INTERFACE TO DESIGN & RENDER LANDSCAPES REAL & SURREAL ANAILABLE AT COMPUTERWARE \$226,0092, EGGHEAD \$224,4323, COMPUTER CITY \$23,2489 & OTHER CITY \$20,7392.8441 VOICE COMPUTER CITY \$20,7392.8441 VOICE

TALK TO US "Katupport@aolzom," KEYNOOD "KPI" oo AMERICA ONLINE" CALL YOUR FAVONTE RESELLER & ASK FOR KPI BROCE ©1994 HSC SOFTWARE COM



Introducing The Only Photo-Realistic Printer That's Actually Two Printers In One.

You want accurate photographic-quality prints to show your work at its best. And you want bright saturated color that won't cost you an arm and a leg for each page you print. Does that mean you need two color printers?

Not if you have the multi-technology Professional ColorPoint 2 PSF. The only 300 dpi full-bleed tabloid sized color printer with two printing technologies in one.

When color accuracy and realism count, you can choose the dye sublimation mode. You can output full-bleed tabloid pre-press color proofs, digital photographs or final color comps in sharp 24-bit continuous tone color. Without wasting time at a service bureau. But that's just the beginning.

This printer is also a low-cost thermal wax transfer printer. Just swap the media and ink sheet and you can output color layouts and quick comps in vivid color for about one-sixth the

cost of dye sub prints. And the Professional ColorPoint 2 PSF comes standard with features Adobe PostScript like embedded Adobe PostScript Level 2®



inexpensive color comps, layouts and drafts. photo-realistic proofs right from your desktop.

Intel RISC processor, a 160 Mb

internal hard disk, automatic page cutting and more.

So whether you're in graphic design, architecture, science or medicine, the Professional ColorPoint 2 PSF has the power and flexibility you need. Because for high-quality dye sublimation and low-cost thermal transfer technologies in one printer, it's more than the

right choice. It's the only choice.

Call now for more information 1-800-888-0817.

Seiko Instruments

© 1994 Sciko Instruments USA Inc. Professional ColorPoint 2 PSF and It's The Choice are trademarks of Seiko Instruments USA Inc. PostScript Level 2 is a registered trademark of Adobe Systems Inc. All other trademarks are the property of their respective companies.



Passing on En Passant

Attention, shoppers: virtual malls don't make it

HOPPING BY COMPUTER IS one of the best things to come along in years-from a retailer's point of view. The salespeople are software agents, who ask little in the way of wages. The real estate consists of a sales floor inside the consumer's personal computer, on which the retailer pays no rent, mortgage, or taxes. Shoplifting is unheard of. And the customer base is almost limitless, bounded by neither geography nor other real-world constraints like closing one's doors upon the onset of darkness. Is it any wonder that every marketer from Sears to Spiegel is getting in on the action, setting up storefronts in online virtual malls and publishing catalogs on CD-ROM?

What they seem to have forgotten is the customer's point of view. The initial ventures into this brave new world of digital consumerism seem to be driven more by what's good for the retailers than what the poor fish at the other end of the terminal might want. They apparently think we're just dying to spend our leisure hours—and our dollars—making virtual shopping trips in an environment controlled by their software and limited by the choices they offer us. At least that's the impression I got on a whirlwind shopping tour at several outposts of the cyberspace bazaar.

Case in point: En Passant. This CD-ROM-based product is a joint venture between Apple, Redgate Communications (a company experienced in compiling catalogs of Macintosh products), and EDS (a data processing firm). According to Ted Leonsis, the president of Redgate, "En Passant finally delivers on the promise of interactive, digital content delivery and personalized shopping in an environment that will bind buyers and sellers closer together." Last year the partners released a pilot version of En Passant to 30,000 CD-ROM owners; the test was sufficiently successful that the partners will continue with the shopping guide, which subscribers will receive quarterly.

Annoying Technology

I found it an annoying piece of technology. En Passant has two components: a series of 21 digitized shopping catalogs from well-known junk-mailers to the yuppie trade, the usual suspects from Patagonia to The Pottery Barn, and a set of "departments," which consist of a few screenfuls of multimedia content seemingly digested from old airline magazines and trashed Learning Annex course guides. I sampled the departments first, laboring through several video-bytes of canned wisdom by the likes of Tom Peters. ("Update your résumé every 90 days," he said, jerkily waving his hands in a QuickTime clip.) Then I skipped through a feature about neckties where I learned my tie should say, "Me." All of this, filtered through the sluggish

through-rate of CD-ROM technology, was like an infomercial on qualudes.

Then I tried the catalogs. In theory, multimedia catalogs have advantages—you can get multiple views of items, seeing them in different colors, for instance. Or you can hear snippets of recordings. Or you can get pop-up calculation devices that figure out sizes and such. It is essential to provide lots of these goodies, because computer catalogs suffer inherent drawbacks—they require a more focused attention, you can't flip pages and make

serendipitous discoveries, and you can't read it on the toilet. En Passant falls short in these compensatory features. Though some items are supplied with sounds, there is little in the way of imaginative presentation. When a blouse is offered in six colors, why not let us change the colors we see?

The most useful component of En Passant is the Directory, which lets you go cross-retailer to choose items. For instance, if you're interested in necklaces, the program instantly compiles a custom catalog with items from The Horchow Collection, Tiffany's, The Nature Company, Pastilles, and the New York Museum of Modern Art. Still, Apple admits that the catalogs provided here are skimpier than the ones that are delivered to your mailbox. It's almost like get-

ting a catalog with half the pages torn out.

In the Apple Catalog component, for example, I looked at the item for replacement LaserWriter cartridges and found that the En Passant disc only offered cartridges for the Select series—unlike the old Apple Catalog, which offered replacements for the entire range of Laser-Writers. And the price was higher, too—in En Passant you get no discount for ordering three.

And if you do want to order something from the En Passant catalog, you can't simply press a button

and have your modem call up the service and automatically buy the item—you have to call up or fax your order the old-fashioned way! (An Apple spokesperson says that future versions might allow you to order directly.)

Mall of America Online

So much for CD-ROM. I the sample online shopping new on to the shopping dist online. The first shock

Invest a stamp



Save a bundle

For the price of a stamp, you can get the latest edition of the federal government's free Consumer Information Catalog listing more than 200 free or low-cost government publications on topics such as federal benefits, jobs, health, housing, education, cars, and much more. Our booklets will help you save money, make money, and spend it a little more wisely.

So stamp out ignorance, and write today for the latest free **Catalog**. Send your name and address to:

Consumer Information Center Department SB Pueblo, Colorado 81009

A public service of this publication and the Consumer Information of the U.S. General Services cation. covered that AOL charges the customer for shopping time. (Its main competitor does not: visit CompuServe's virtual mall and you're off the clock.) The next shock came when I actually tried to find something I wanted to buy.

I headed right for the AOL Online Bookstore, run by a company called Read USA. A good sign: a note informed me that every book was sold at a discount price. The most recent Philip Roth book had just come out in softcover, so I tried to locate it with the search function, looking for the keyword Roth. The sole response to my query was Harriet Roth's Fat Counter. This seemed odd only until I looked deeper into the Online Bookstore and discovered that aside from a relative profusion of computer books, its selection couldn't compare to your average garage sale. Literacy was at a premium, too. In the biography section there were all of 16 books, with 3 devoted to Princess Diana and 3 to Ross Perot. Even the categories betrayed a suspect sensibility—there were separate sections for fiction and literature.

eShop of Horrors

I would like to report that we can expect much better shopping alternatives when the new generation of personal digital assistants come online, but judging from a demonstration I had of eShop, the electronic shopping component geared to the General Magic operating system, I think there will be a shakeout period. Simply reading the eShop press release, which promises "technology that allows merchants to create exciting, personalized shopping experiences for consumers," made my heart sink. Don't they understand? When we sit in front of our computer screens or stare at our blurry little PDAs, we don't want shopping "experiences." If we did, we'd leave the house and go to a store! The whole idea of shopping by computer is to avoid shopping-those who prefer to do it digitally just want to push a few buttons and get hold of the specific merchandise we need. We don't want to browse-and if we did, we certainly wouldn't want to do it on the hardto-decipher, black-and-white, 4-inch screen of a General Magic device.

Yet, to my astonishment, when I got a demo of eShop, I was shown a cyber-spacey re-creation of the "experience" of going into the sporting goods section of a department store and comparison shopping for a tennis racket. In the real eShop, you'd see a picture of one tennis racket, with brand name and features, and then look at another one and presumably make your decision.

I could not contain myself. "Excuse me," I asked, "isn't a tennis racket the absolute last thing you'd want to buy electronically? Don't people buying tennis rackets usually want to *bold* them before they buy them?"

The eShop representative was non-plussed—he had never heard this question before. But now that I mentioned it, maybe tennis rackets were not the ideal choice for the demo. He asked me to assign no special meaning to this choice, since, after all, it was only the demo. Also, digital merchants can use the flexibility of the eShop system to set up any number of different kinds of environments.

Still, I wondered afterward, eShop could have chosen anything for their demo—why did they choose tennis rackets? After all, the real usefulness of having a PDA with a shopping component is hooking up to vast databases of items, utilizing fast searches to find the specific item you need, and ordering it in a flash. Didn't they get it?

At Last I've Found You

Amazingly, one company does get it. Compact Disc Connection (408/985-8982 for online access) is a listing of over 80,000 compact audio discs that can be easily searched by artist, title, category, or other fields. When you find what you want, you order it online, and CDC tries to get it for you (the service claims a hit rate of over 90 percent). The commands on the system are spartan but effective. When you find the disc you want, you can, with a keystroke, get a list of the songs it contains. Many of the CDs are subjectively rated by a star system, and some have short reviews. Often, CDC sells its wares at a discount.

When I accessed CDC through its Internet address (cdconnection.com), I got hooked instantly. Though it is not flashy-no videos of Tom Peters hereand though it makes no claims to be an "experience," Compact Disc Connection provides utility that En Passant has yet to attain. When I get my wireless PDA, Compact Disc Connection will be on the speed-dialer. I want the same sort of service for books, too, as well as other sorts of items. For instance, instead of the lush graphics of an L. L. Bean catalog on CD-ROM, I'd prefer to call up a database that lists everything Bean has ever sold-just in case I want to order a sleeping bag in a hurry. When it comes to shopping electronically, high-bandwidth selection and a quick in-and-out is the future. Spare me the frills, please-I just want to shop till I stop. m

STEVEN LEVY's latest book is Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything (Viking, 1994).

ADD YOUR Handwriting TO FONT MENU

Signature Software

Personal Printed Handwriting Font

The impact of handwriting.

Experienced communicators know that people open hand-addressed envelopes, read hand-written letters and respond to hand-written requests! Handwriting has a personal flair which grabs your attention! Unfortunately with the advent of the personal computer we've been using our handwriting less and less. Now with PenFont you can add your handwriting to the Font Menu!

PenFont - the TrueType version of

Signature Software will convert your best printed handwriting into a custom font that you can use with any of your Macintosh or

Windows applications! Imagine running your spell checker on your handwriting! Or how about using your word processor's cut

and paste features to polish up handwritten letters. Sign your FAX-modem messages. With PenFont you can combine the convenience and power of your computer with the personal

impact of your own handwriting. All for the unheard of custom

To obtain your own PenFont complete the form on the reverse side of this page and send it into Signature Software. Our font

designers will convert your handwriting into a unique TrueType font. After thorough testing, this font is shipped to you along

with easy-to-use installation software. Your PenFont includes your

signature and two symbol characters (like your initials or a personal logo) along with a complete set of 98 keyboard

characters including the upper and lower case letters, numbers

System Requirements:

your OWN handwriting!

font price of only \$49%!

Create your font today!

Price breakthrough! A custom font of your own handwriting and signature for only \$4995! Arial Courier

Your Font

Helvetica Times

WINDOWS

Actual PenFont Handwriting Font Samples!

Please review prior to Tuesday's meeting.

Judy L. - Toronto, ONT

Congratulations on your promotion

Ken J. - San Diego, CA

P.S. Thanks for your order!!

That was some company picnic!

> BobFont Bob S. - Tulsa, OK

- Include US \$750 Shipping and Handling.
- International versions available.

For more information call

1-800-925-8840 (in USA) or 503-386-3221 or FAX 503-386-3229



Mac - System 6.05 or higher, including System 7 PC - Windows 3.1 or above

ORDER YOUR FONT!

Send your completed form to

and punctuation.

Signature Software, Inc. 489 N. 8th St. Suite 201

\$20 for 5 day processing (48 hour processing is available) *57: special handling includes personalized disk, personal test



PenFont

THERE'S NO OTHER FONT LIKE YOUR OWN PENFONT, AND HERE'S HOW TO ORDER!

Mac AND Windows!

Hood River, OR 97031 Because each order is custom please allow 2 to 4 weeks. Add + \$730 shipping and special handling (Note: all prices \$US) document and copy of original form Dealer Inquiries Welcome NAME COMPANY ADDRESS CITY COUNTRY STATE 7IP VISA CARD NUMBER (circle one or enclose check) CARD EXPIRATION PHONE CARDHOLDER'S SIGNATURE (circle format desired) YES! Rush me my PenFont in 5 working days for \$20 extra

YESI Include PenPals with my PenFont Order for for the special bundle price of \$69%

"FOX	THOS	老	TMES	WHE	N PALATINO	ox.	AKIAL	JUST
WON'T	DO,	Fo	NTS	FROM.	SIGNATURE	50	FTWARE	
COME	TO	THE	KES	CUE."	-Con	nputer	Shoppe	er

: recrument these forts for each and every person who has heard for read the words. forming is impersonal - MacWorld

Also Available: PenPals Printed Handwriting Font Pack Five Fantastic



Handwriting Fonts! America Anna

Joann Rhyne Robert

Special Printed Handwriting Font Bundle Receive BOTH PenFont and PenPals for the

unbelievably low price of \$69"

Signature Software
PenFont
Personal Contextual Handwriting Font

August to War

SAMPLE FORM INSTRUCTIONS

 Write your signature and write or paste in SIMPLE figures for the two symbol characters – smile face, logo, initials, etc. Make sure symbols fit in the box.

symbol 2

- Quitain

Sid	ostri	be (VOU	T TIO	me)

Name: _____ Phone #:_____

2. For best results, use block printing for all characters. Avoid using long tails on your letters since they may tend to cross over neighboring letters. Remember, what you write here will be the final font.

Print the characters shown within each box using the broken lines as a base. Don't forget the punctuation!

- 4. Print naturally and consistently. Practice first on a separate sheet of paper.
- 5. Use the supplied fibertip pen. Do not use ballpoint pens or pencils!
- 6. Use the grid lines in the boxes as an aid to

	1		- 4	
- 11			 1 1	

maintain consistent height and slant. Be sure capital

7. Name your font below and complete the name,

address, and payment section on the front of this

can even make changes after you receive your font!

letters are proportional to lower case letters.

NOTE: Strike out mistakes and write

corrections nearby. Signature Software

form. Indicate PC or MAC!

b

h 1

i m n o p q

a v v v

·y

Please PRINT the following sentence (using the same style you used filling out this form).

The quick brown fox jumps over the lazy dog.

1. 2

() () [] [] A. B. C! D?

E: F: G H I I I I K_

L # M W N S O & P I Q W R^

S + T - U * V = W / X \ ' Y '

5 6

Repair Strategies

How to cope with a sad Mac

OT A BROKEN MAC? MAKE sure it is really busted before taking it in for repair. Between 40 and 60 percent of the Macintoshes that are brought to dealers show no hardware problems, according to repair specialist Larry Pina. "If you're faced with a problem, the chances are fifty-fifty that you don't need to pay any money; you just need to think the problem through."

"Don't assume it's hardware," says. Pina. It might be a problem with system software, extension or INIT conflicts, or a change in default settings. The automatic install program for System updates, for example, turns off 32-bit addressing and may change the default printer.

Before you panic, restart the computer with a good System backup on a floppy. "If you can boot with that floppy and connect to your hard drive, it's not the computer," says Pina. (For more software troubleshooting tips, see *Conspicuous Consumer*, July 1993, and "Troubleshooting Tips and Tools," *Macworld*, April 1994.)

If it is a hardware problem and the Mac is still under warranty, any authorized dealer can handle a repair. But owners of older machines also have options. You can still go to an Apple dealer, where a service technician will diagnose the problem, locate the faulty part, and then replace it with an Apple-refurbished part covered by a three-month warranty. You can use an independent service provider, who may also swap out a faulty part and replace it or repair the faulty part. Or you may be able to make the repair yourself.

Larger businesses have similar choices: deal with repairs on a case-by-case basis; develop an in-house repair center; or use a corporate repair service provided by Apple dealers or independent service companies such as Vanstar Corporation (formerly ComputerLand) and GE Computer Services. Vanstar (800/722-2736) and GE (404/246-6200) target companies with hundreds of computers, offering a variety of repair and service options, including response times of two to eight hours and next-day service.

One Company's Choice

Although SRI International of Menlo Park, California, has hundreds of Macintoshes, materials coordinator Anita Ledtje doesn't believe it's cost-effective to buy service contracts. "Most Apple products are up and running until the time we unplug them," she says. "The Power-Books have a hard life, but we don't have that many problems. If we paid for scrvice contracts, it would put us into a hole."

Ledtje's job requires her to eliminate headaches before SRI buys equipment and after, she says. "That's why it's very important to have good service and support." But keeping SRI's Macs in good repair is not easy. Earlier this year, for example, Ledtje sent a PowerBook 170 to

dled up the Duo and MiniDock and sent them to the HP facility in Austin, Texas. "The MiniDock had been fixed, but nothing else worked," says Ledtje, who waited two weeks for the Duo's repairs. "The latch didn't latch; the return didn't return. The Duo was visibly broken." Ledtje negotiated a much lower repair fee from HP, given the result, and in the process learned that HP doesn't repair Macs itself but contracts the work out.

Then an SRI researcher dropped his PowerBook 170, and Ledtje got nervous. She was running out of repair options. The researcher suggested Macadam, a San Francisco Apple dealer he heard about through a local user group. Macadam gave Ledtje the needed service,

and owner Tom Santos made the repair process fast and easy.



Dealers versus Independents Leff Bierly co-o

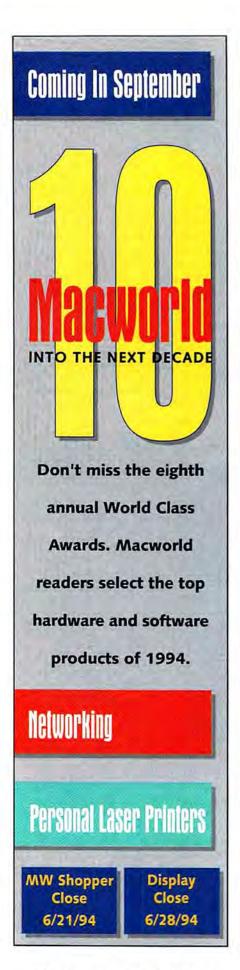
Jeff Bierly, co-owner of Atlantic Computer Systems of Toms River, New Jersey, warns against using independent service providers that do component-level repairs, because subsequent repairs may be more expensive. That's because Apple charges two different prices for parts: one for refurbished parts, based on a trade-in program where dealers send the defective part to Apple;

and another, much higher price for brandnew parts. If you use an independent for one repair but must go to a dealer for another, you may pay a price penalty.

Still, the gamble can be worthwhile. The price difference between independents and authorized dealers can be dramatic. ComputerWare in San Francisco charges just over \$800 to replace a faulty Quadra 700 logic board, for example, while 800-We-Fix-Macs (408/988-2334, 800/933-4962) charges \$429 plus shipping. The five-year-old Santa Clara, California-based company charges flat-rate continues

a local ComputerLand for a floppy drive repair. Because SRI material is often sensitive, the hard drive was completely erased before it was sent for repair and had to be started up from a floppy-based System. Though Ledtje had explained the situation, a technician called to report a problem with the hard drive. Ledtje tried to explain the situation once more; even so, the PowerBook was returned with the floppy drive still broken.

Next, Ledtje tried Hewlett-Packard, a company she loves for its customer service. When an SRI employee had several problems with his Duo 230, Ledtje bun-



fees for repairing motherboards, Power-Books, floppy drives, monitors, and other peripherals. Other established independents include MicroDoc (503/344-5335) and Soft Solutions (503/461-1136), both

of Eugene, Oregon.

If you prefer to do it yourself, two books by Larry Pina are invaluable. The Dead Mac Scrolls (1992, Peachpit Press) describes Mac symptoms, offers probable diagnoses, and suggests solutions. It's particularly useful for folks who don't plan to do their own repairs but want to avoid repair rip-offs. Mac Classic & SE Repair and Upgrade Secrets (1993, Peachpit Press) shows the technically talented how to repair common problems with these compact Macs. (For more info, contact Peachpit at 510/548-4393 or 800/283-9444.)

A Service Checklist

If your company is too small to field inhouse repairs, or you simply find it more cost-effective to go outside, use this checklist to compare service offerings.

· How long has the company or service center been in existence? Although there are exceptions, older businesses may

be more stable than start-ups.

- · What are the qualifications of the repair technicians? They should be Apple-certified. Certification doesn't guarantee that technicians are highly skilled in repair, but it does mean that they should be able to diagnose any faulty hardware and swap it out if not repair it on the spot. Apple trains techs to locate hardware problems and then replace malfunctioning parts with refurbished ones.
- · Is there a fee if no problem is diagnosed? Many companies charge to diagnose a problem, whether or not they find

one. In some cases the fee may be applied to the repair bill if a problem is found.

- How long is the warranty? Apple offers a 90-day parts-and-labor warranty on repairs. Independents often have warranties of six months or more.
- · What is the turnaround time? It will probably vary depending on work load and staff levels. Some companies offer same-day, while-you-wait service or premium 4-hour on-site response programs. Claims of 24-hour and 72-hour turnaround times are not uncommon; find out what that means. For example, 24 hours may mean that if a company receives your computer on Monday, the Mac will be repaired and shipped out on Tuesday via second-day air, so you get your machine back on Thursday.
- · Compare prices. Charges vary by dealer, service, and region. If you know the problem is, say, a dead monitor or broken floppy drive), compare ballpark estimates over the phone. Dealers usually charge a one-hour minimum plus parts; independents often charge a flat fee. But price is not the only consideration. As Anita Ledtje notes, "I'm buying for a business. I'll pay more knowing a company will be here when we have problems."
- If you are considering an independent, ask about inventory and the source of parts. Independents sometimes buy gray-market parts because Apple won't sell to independents directly. As a result, some parts may be tough to locate, which might slow down your repair.
- · Does the company offer any special services or programs? 800-We-Fix-Macs offers toll-free technical support. Loaner programs are rare, but customers with clout may be able to negotiate for a loaner computer during the repair period.

 Ask for references and call them. See how the company's claims match the experience of its customers. And check with user groups or online service to get a feel for the company's reputation.

One last thing-when you take an Apple product in for repair to a dealer, ask if the product is covered by an Apple repair-extension program. Apple notifies dealers, though not usually owners, when a particular product will be repaired free of charge beyond its warranty period because of manufacturing problems. Until August 15, for example, Apple is supplying free ROM upgrades for Personal LaserWriter NTRs with certain symptoms. Ask your dealer for details. m

SERVICE HERO

eader Jean-Yvan Fradet of Montreal writes in praise of Data Memory System. After buying four 2MB SIMMs, Fradet found one was defective, so he called Data Memory's tech support for help. "The guy there told me the company would ship me four new SIMMs," writes Fradet. "He told me to try them to see if they worked before returning the four previously shipped to me." Data Memory apologized for the problem and refunded the postage fees for returning the first SIMM order; our reader was dazzled by the prompt replacement of a defective product.

Send nominees 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.



Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

Edited by Susan Grant-Marsh

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 hoard \$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: • ErgoView 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 F340i*W; Nanao USA, 800/800-5202; \$799.

15-inch display: NEC MultiSync 4FGe; NEC Technologies, 708/860-9500; estimated street price \$755.

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, 503/646-6699; \$699.

EXTERNAL HARD DRIVES, Feb 93

Companion 120; APS Technologies, 800/874-1428,
 \$599.
 PocketDrive 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; \$9995.

Thermal-wax transfer and color laser: Phaser 220i; Tektronix, 503/682-7377, \$5995.

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; \$7999.

General publishing and business: Phaser IISDX; Tektronix, 503/682-7377; \$9995.

PERSONAL PRINTERS, Sep 93

Ink-jet: StyleWriter II; Apple Computer, 408/996-1010;

PostScript laser: TI microLaser Series; Texas Instruments, 512/250-6679; \$1199 to \$1599.

QuickDraw laser: LaserWriter Select 300; Apple Computer, 408/996-1010; \$839.

WORKGROUP PRINTERS, Feb 94

High-speed: Hewlett-Packard 45i MX; Hewlett-Packard, 800/752-0900; \$5499.

Best buy: Apple LaserWriter Pro 630; Apple Computer, 408/996-1010; \$2529. Hewlett-Packard LaserJet 4M; Hewlett-Packard, 800/752-0900; \$2329.

SCANNERS

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: Mirror 800 Plus Color Scanner; Mirror Technologies, 612/633-4550; \$1299.

OCR. Nov 93

OmniPage Professional; Caere Corp., 408/395-7000; \$995.

SYSTEMS/STORAGE

DOUBLE-SPEED CD-ROM DRIVES, Jul 93

Sheer speed: Pioneer DRM-604X; Pioneer, 408/988-

1702; \$1795.

Overall value: AppleCD 300; Apple Computer, 408/996-1010; \$599.

Budget choice: NEC MultiSpin 38; NEC Technologies, 708/860-9500; \$465.

HIGH-SPEED HARD DRIVES, Aug 93

2.7GB drives: Nova XL 2700; Microtech International, 203/468-6223; \$2999. Vista 3.5GB; Relax Technology, 510/471-6112; \$3499.

SCSI-2 adapter: QuickSCSI; PLI, 800/288-8754; \$499.

MACINTOSH UPGRADES, Jun 93

SE accelerator (25MHz): Quik30; Novy Systems, 904/ 427-2358; \$449 (without FPU).

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 25i, Radius Rocket 33; Radius, 408/434-1010; 25i \$1199, 33 \$2499.
Universal PowerCache series; DayStar Digital, 404/967-

IIfx SCSI accelerator: QuickSCSI; PLI, 800/288-8754;

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

2077: \$449 to \$999.

3½-inch: • Epson OMD 5010; ClubMac, 800/258-2622; \$959.

128 MO; APS Technologies, 800/874-1428; \$899.

51/4-inch: Sharp JY-750; ClubMac, 800/258-2622; \$1829.

 Infinity MaxOptical 11m; Peripheral Land Inc., 800/288-8754; \$4113.

VIDEO/DISPLAY

24-BIT VIDEO CARDS, Apr 94

Inexpensive acceleration: PrecisionColorPro 24XP; Radius, 408/434-1010; \$599.

Full-featured acceleration: Thunder II GX•1360; SuperMac Technology, 408/541-6100; \$4499.

HIGH-END VIDEO EDITING, June 94

Presentation Video: ♦ MoviePak2 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

MACWORLD Editors' Choice

Corporate Video (Online): VideoCube; ImMix, 916/ 272-9800; \$40,500.

PHOTOSHOP ACCELERATORS, Apr 94

PhotoBooster; Radius, 408/434-1010; \$999.

Software

ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93

Small-business system: M.Y.O B.; Teleware, 201/586-2200; \$199

Home office/personal finance: MacMoney: Survivor Software, 310/410-9527; \$119.95.

BUSINESS TOOLS

STATISTICS, Oct 93

Exploratory data analysis: DataDesk 4.1; Data Description, 607/257-1000; \$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: ZTerm; 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, 215/779-0522; \$125.

HIGH-SPEED FAX MODEM SOFTWARE, Oct 93 Faxstf; Telefocus, 816/886-9800; \$79.

NETWARE 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, 215/779-0522; \$149

GRAPHICS

3-D DESIGN, Aug 93

Price for performance: Aay Dream Designer 2.0.4; Ray Dream, 415/960-0765; \$299. Alias Sketch 1.5; Alias Research, 416/362-9181; \$995.

All-in-one solution: ♦ Infini-D 2.5; Specular International, 413/253-3100, \$695. ♦ StrataVision 3D 2.6.1; Strata, 801/628-5218, \$995.

CLIP ART'S GREATEST HITS, Jan 94

Overall collection: ClickArt Studio Series; T/Maker Company, 415/962-0195; \$99,95 per volume. Electronic Clipper 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, 800/456-0234; \$99.95 to \$129.95 per volume, CD-ROM \$499. Typographers' Ornaments; Underground Grammarian, 609/589-6477; \$25 per volume; Ien TIFF albums \$200; EPS volumes \$50 each.

DRAW PROGRAMS (LOW-COST), Sep 93

Budget draw: Expert Draw; Expert Software, 305/567-9990; \$49.95.

Budget draw/paint: UltraPaint; Deneba Software, 305/596-5644; \$79.

Beginners' program: Aldus SuperPaint; Aldus Corp., 619/558-6000; \$149.95.

Overall: Canvas: Deneba Software, 305/596-5644;

FONT BUYERS' 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; Letraset, 201/845-6100; \$39.95 per face.

Bargain collection: Monotype ValuePack; Monotype, 312/855-1440; \$89 for 57 fonts

IMAGE DATABASES, Oct 93

Aldus Fetch 1 0; Aldus Corp., 206/628-5739; \$295.
 Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; \$249.

PAINT AND IMAGE-EDITING, Sep 93

Budget buy: Expert Color Paint; Expert Software, 305/ 567-9990; \$49.95.

Overall program: Fractal Design Painter; Fractal Design Corp., 408/688-8800; \$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

Vendors: Please write to Macworld Editors' Choice, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price

ONLINE SERVICES

ONLINE SERVICES, Aug 94

E-mail: America Online; America Online, 703/893-6288; basic monthly (ee \$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; DellaPoint, 408/648-4000; \$195.

0

SALES-AUTOMATION SOFTWARE, Oct 93

 Contact Ease; WestWare, 619/274-5053; one user \$395, five users \$1495.
 Colleague Business Software, 512/ 345-9964; \$495.

TEXT-RETRIEVAL SOFTWARE, Dec 93

Small system: On Location; On Technology, 617/374-1400; \$129.

Multiuser system: Personal Librarian, Personal Library Software, 301/990-1155; \$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:

Book-length documents: FrameReader; Frame Technology, 800/843-7263; \$84.95.

PRINTING, Sep 93

PC-printer cable packages: PowerPrint; GD1 Softworks, 604/291-9121; \$149

VIRUS KILLERS, Jul 94

Commercial software: Virex, Datawatch, 919/549-0711; \$99.95.

Free software: Disinfectant; free from online services.

VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, June 94

Virtual memory Software: Virtual 3.0, Connectix Corp. 415/571-5100, \$99,

Memory Boosting Software: RAM Doubler 1.0.13 Connectix Corp., 415/571-5100, \$99 **m** The Pinnacle Recordable CD Storage System just got better... \$1500 better!

\$3995

\$2495 list price







"The best CD-R system for low-volume archiving."

-Erik Holsinger, MacUser June 1994



Publish Magazine 1993 Impact Award



Imaging Magazine 1994 Editors' Choice



PC Computing 1993 Multimedia Product of the Year

The Pinnacle recordable CD just got better. Now only \$2495, the Pinnacle RCD-202™ is the most affordable CD-R maker in the industry. It has also won more awards than any other CD-R system out there.

The RCD-202 is ideally suited for data archival/backup, creating and testing multimedia titles, or even mixing your own music/audio CDs. Each recordable CD holds up to 680 Megabytes of data for only \$39, or just 6 cents per megabyte.

The RCD-202 is a multisession recorder and player that supports ISO 9660, HFS, and CD Red book audio recording standards.

The RCD-202 system comes complete with Pinnacle's easy-to-use software program. Simply set the recording

format, drag-and-drop selected files to their destination, then hit create. And in minutes you've just mastered your own compact disc.



To order or for a reseller call:

800-553-7070



International Tel. 714-727-3300 U.S. Fax 714-727-1913

All Trademarks and Registered Trademarks of Their Respective Owners.

You may use this to secure your bicycle



But...

FAXMODEM

You **must** have this for secure data communications

LOGICODE presents

QUICKTEL 28,800 DATATM SAFE

FAX/MODEM

The first modem with a built in safe

With LOGICODE's new QUICKTEL
DATASAFE™ 28,800 fax/modern
you not only get the fastest available
data transmission speeds, but you
gain the added security of having total
control over the use of your modem.

control over the use of your modern.

"Password Protection" hardware
enabled to fend off data piracy

"Call Back Security" will automatically

"Call Back Security" will automatically reconnect with pre approved telephone numbers that you store in the NVRAM

"Remote Configuration" with your hardware stored Master Password, perform remote configuration tasks from any where in the world.

"Upgradeable" all QUICKTEL products can be upgraded to incorporate faster speeds and newer features.

TO ORDER CALL 1.800.735-6442

Visa & MC accepted

28,800 DATASAFE™ 28,800 FAX/MODEM 14,400 VOICE/FAX/MODEM 14,400 FAX/MODEM

\$299.00 \$249.00 \$219.00 \$169.00 M2814HCX M2814XV M14V14XV M1414XV









1380 Flynn Road, Camarillo, California 93012, USA Tel 805.388.9000 • Fax 805.388.8991

LOGICODE, Reshaping The Way You Communicate



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 680XO 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, \$295. This entry-level relational database is a low-cost way to distribute the power of 4D and 4D Server to an office full of Macs. It's not much easier to use, however, than the full-fledged 4D. May 94

*** Acrobat Exchange, Acrobat Distiller, Adobe Systems, 415/961-4400, 5195 to 52495. Complete, well-planned paperless office system creates application-independent viewable files that can be readily distributed on a network. Still, it's not yet as inexpensive or as convenient as you might wish. Oct 93

*** @Risk 1.1, Palisade Corp., 607/277-8000, \$395. Statistical simulator for Microsoft Excel financial computations generates complex, statistically valid templates within Excel and is the first choice for analysts who work with probabilistic models every day. It assumes that the user is an Excel power user. Aug 93

** BaseMap 1.0.1, GeoPoint, 415/957-1560, 5149. For simple maps displaying simple data, this mapmaking tool may be useful. It's not for the cartographic sophisticate, however, as it offers very limited data-display abilities and only one projection. May 94

★★★ ClarisImpact 1.0, Claris Corp., 408/ 727-8227, \$399. Business graphing, project management, object-oriented drawing, word processing, and presentation functions merge in this business graphics software. The outstanding integration offers versatility that dedicated programs are pressed to match. Jun 94 ○ *** ClarisWorks 2.0, Claris Corp., 408/ 727-8227, \$299. Integrated program provides more features, is easier to use and faster, and has better integration among modules than other available programs. Aug 93 3

Common Ground 1.0, No Hands Software, 415/802-5800, \$189.95. Simple, robust document-interchange system is the clear choice for modest document-distribution jobs. In tests, it worked easily with documents from many different applications. Oct 93

★★★ Cricket Graph III 1.5, Computer Associates International, 516/342-6000, \$129. 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, 5195. 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, HavenTree Software, 613/ 544-6035, \$229. The rough edges and distinctly un-Mac-like attributes of this flowcharting software reflect its DOS heritage, but on the whole it's easy to use. \$ep 93

*** Helix Express 2.0.1, Helix Technologies, 708/465-0242, \$589. Icon-based relational-database software's improved performance makes it a serious competitor for all-Mac networks. Especially notable is its much faster speed; multiuser operation is downright snappy. Jul 94

*** Helix Tracker 1.0, Helix Technologies, 708/465-0242, \$439. 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, \$495 per client. Well-organized, robust, and flexible business data system demands a full-time administrator, preferably with considerable programming experience, for effective use, \$ep 93

** Map II 1.5, ThinkSpace, 519/661-4006, 5395. Well-structured program has most of the functions a simple geographical information system needs and is suitable for introductory instruction in GIS and for alert first-time users who just like maps. May 94

*** MarcoPolo 2.0, Mainstay, 805/484-9400, \$395. Inexpensive, easy-to-use product allows you or your workgroup 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, \$395 to \$1995. 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

★★ Memorizer 2.0, Brains Software Engineering, 432-231-28973 (Austria), \$100. Software records dictation and you transcribe the dictation in a word processor. You may prefer to stick with a hand-held tape recorder, considering the product's RAM and storage appetite, and its propensity to crash. Aug 93

*** Micro Planner Manager 1.1, Micro Planning International, 303/757-2216, \$695. 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., 206/882-8080, \$495. Dazzlingly fast and easy to use relational database has a greatly improved interface and cross-platform compatibility. For projects of 4 to 20 users that handle large amounts of data it offers excellent performance. Apr 94

*** Office Tracker 1.1, Milum Corp., 512/ 327-2255, \$195 to \$995. The efficient user interface of this software sign-out board, in both single-user and networkable versions, makes it easy to learn and use; but it has some minor flaws. Dec 93

*** Pablo 2.0.1, Andyne Computing, 613/
548-4355, \$695. 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, \$695. For most midrange project-planning, 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, S345. 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., 508/7748233, \$179.95. 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

*** Wingz 1.1ae, Informix Software, 913/ 599-7100, 5399. Low-overhead spreadsheet offers advanced-math functionality, a competent calculating encontinues

Star Ratings

gine and superior charts; but is missing outlining, real 3-D spreadsheet linking, and the host of third-party add-ons offered for Microsoft Excel. Jul 93

COMMUNICATIONS/NETWORKS

- ** AccessPC 3.0, Insignia Solutions, 415/694-7600, 5129.95. 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,
 \$195. Commendable 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, Delrina Corp., 408/363-2345, \$129. Fast, efficient fax software has an excellent address-book feature but also has some interface quirks and minor burs. Feb 94
- *** DOS Mounter Plus 4.0, Dayna Communications, 801/269-7200, \$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're a worthwhile investment. Jan 94
- *** MacLink Plus/Translators Pro 7.5, DataViz, 203/268-0030, \$149. If your PC files are in archaic formats, you'll need this file-transfer and translation utility. It's a great option for most users, but it doesn't support removable drives or network volumes. Apr 94
- ★★★ On The Air 1.0.1 (1.0.2), Digital Eclipse Software, 510/547-6101, \$79.99 to \$639.99. Intercom system transmits System 7 SND resources, SoundEdit, and AIFF sound files across a network. It's well designed and performs decently, but its usefulness seems limited. Aug 93
- ★★★ On The Road 1.1, Connectix, 415/571-5100, \$99. Helpful PowerBook utility looks 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
- *** Silver Cloud 1.2, AG Group, 510/937-7900, \$495. If you are administrating a large network and are drowning in a sea of devices and zones, this network-management software will make your life simpler. Feb 94
- *** SITcomm 1.0, Aladdin Systems, 408/ 761-6200, \$120, 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, 5200 to \$1440. Software will put you on the electronic-mail trail more easily and more cheaply than any competing product, if you can live with some minor (but surprising) shortcomings. Jun 94
- ★★ SoftPC 3.1, Insignia Solutions, 415/694-7600, \$499. While the speed of this Windows PC emulator is greatly improved, buying an add-in PC card for your Mac is more efficient. Mar 94
- *** Timbuktu Pro, Farallon Computing, 510/814-5000, \$199 to \$1999. Terminal emula-

- tion product is a must-have for in-house technical-support staff and for people who need direct connection to computer systems on a variety of networks. The major enhancements of this version are TCP/IP support for Macs and noticeably faster screen redraw. May 94
- ** TrafficWatch II 2.0, 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 multiprotocol 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 thumbnalls. Aug 93
- ***
 Aldus PageMaker 5.0, Aldus Corp., 206/622-5500, \$895. Desktop publishing software has added the features, both great and small, that it's been lacking, while still retaining the ease-of-use advantages that it's always had. This is a superb upgrade. Nov 93
- ★★★ Cumulus 1.1 (1.2), Canto Software, 415/ 431-6871, \$295 to \$895. Good network support, plus a feature that creates a protocol file for recording user actions, make this image-cataloging program a good choice for workgroups. It doesn't have an image-preview feature, nor does it offer 32-bit thumbnails. Aug 93 ○
- *** FontMonger 1.5.7, Ares Software Corp., 415/578-9090, \$149.95. 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/ 658-5600, \$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 timesaver. Mar 94
- ImageAccess 1.0, Nikon, 516/547-4355, \$495. This expensive image-cataloging program has an unusual interface and cannot be used over a network. A plug-in module provides direct support for Nikon's LS-3510AF film scanner. Aug 93
- ★★★ 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
- ★★ Kudo Image Browser 1.0 (1.1), Imspace Systems Corp., 619/272-2600, \$195. This imagecataloging software cannot control thumbnail depth or compression and doesn't have a keyword feature or allow

- multiple users to access the catalog simultaneously. The unique Riffle feature lets you quickly scan images. Aug 93 *** Print Shop Deluxe, Broderbund Software, 415/382-4400, \$50. Even the most hamlingered can create professional-looking greeting cards, signs, banners, letterhead stationery and calendars with these desktop publishing templates and graphics. While it's not a substitute for a high-end program, it is easy to use and inexpensive. Apr 94
- *** QuarkXPress 3.2, Quark, 303/894-8888, \$895. This upgrade adds the EfiColor XTension to ensure the greatest possible fidelity of 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 tableeditor to QuarkXPress and is a must-have for anyone doing even mildly complex tables. Jan 94

EDUCATION

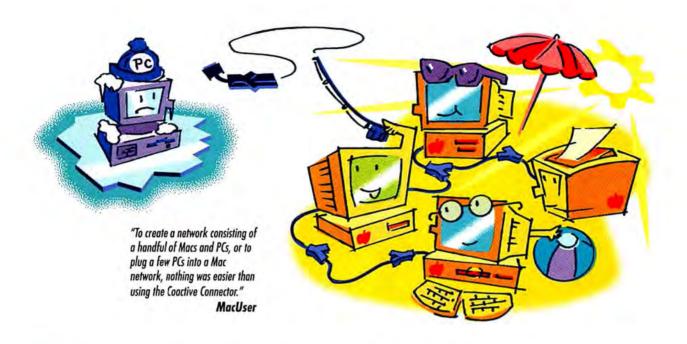
- *** Grolier Multimedia Encyclopedia,
 Grolier Electronic Publishing, 203/797-3530,
 \$395. CD-ROM encyclopedia has excellent search capabilities, weighs much less than a shell of books, and is lots of fun. Its timeliness and some hierarchical snafus were slight problems. Jul 94
- *** How Computers Work, Time Warner Interactive Group, 818/955-9999, \$79.99. Graceful, well-integrated CD-ROM tutorial guides the curious through brief but helpful explanations of basic computer technologies. Jan 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, CalEd 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, 415/885-3432, \$79.95. Nicely integrated collection of beautiful Earth-from-space images on CD-ROM lacks many features of standard atlases and doesn't have a search function, but is endlessly fascinating. Jul 94

ENTERTAINMENT

- *** 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 the way. Oct 93
- *** Crystal Crazy, Casady & Greene, 408/
 484-9228, \$49.95. Ultraglossy, superpolished version of the classic Crystal Quest is challenging and fun without being overly difficult. Each level retains some old elements and adds some new ones to keep you on your toes. 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

CONNECT PCs TO APPLETALK" NETWORKS. IN JUST 5 MINUTES. GUARANTEED.



hether you use your Macintosh[™] in a small company, home office, or workgroup, there's probably at least one Windows[™] or DOS PC not far from you.

And, while all of your Macs are probably connected to an AppleTalk network, chances are the PC is not. Instead, it's left shivering out in the cold—unavailable for file and printer sharing with your Macs and AppleTalk printers.

IT DOESN'T HAVE TO BE LIKE THIS.

Now there's an easy way to connect your PCs to your

The Connector's built-in CPU and RAM do virtually all the work, leaving all but 65K of your PC's valuable memory free for applications. Macintosh network, so that all of your computers can share printers and files. It's called The Connector™ from Coactive. And in no more than 5 minutes* of installation time per PC, it will let your DOS and Windows colleagues enjoy the simplicity and productivity of Apple Talk connectivity. Guaranteed, or your money back!

APPLETALK PLUG 'N' PLAY FOR PCs.

With Coactive, there's no need to open the PC to install a complicated networking card. Instead, The Connector plugs right into the PC's external parallel printer port. Load Coactive's PC software, connect to the next computer with simple telephone wire (included), and your Mac-to-PC network is complete.

PCS CAN PRINT TO APPLE LASERWRITERS".

Now your Macs can exchange files with Windows and DOS PCs. And, your PCs can share high-quality AppleTalk PostScript" printers like the Apple LaserWriter. Best of all, there's nothing new to learn. You and your PC co-workers use your computers just as you always have. What could be easier?

To purchase The Connector, visit your favorite retailer. Or, call 1-800-PC SHARE, EXT. 162 to order direct for \$149.95—25% off the suggested retail price. Plus, you'll receive a FREE copy of Common Ground"*** for Windows or Macintosh, a \$189.95 value!

** Common Ground lets you distribute documents that anyone can view, regardless of their applications, computer, or fonts.



 Excluding cabling time.
 Cartier and The Connector or Iradionack of Control Computing Corporation, Apple,
 Mennisch, Apple Tali, and Lase Vertor are trademarks of Apple Computer, Inc. Common Ground to strademarks A'D. Blank Sylvans, other trademarks are the property of their property behavior. Purpose manufactured under parts from less Tearling Computing.

"When People See What We've Done On The Desktop With VideoVision Studio, They Can't Believe Their Eyes."



Flavio Kampah heads KampahVisions, a broadcast design studio, directing and producing trend-setting, award-winning music videos and television graphics, including the U2 music video, Even Better Than The Real Thing. Flavio became a VideoVision Studio™ devotee while creating a new opening for the American Gladiator TV program and a series of promo spots for ESPN2 and Avirex Jeans.

"Until VideoVision Studio, it wasn't quite there yet. The motion, in particular, wasn't right. But with VideoVision Studio, we can use the Mac to produce work for broadcast television."

VideoVision Studio gives full-screen, full-motion video directly from a Macintosh. It's a complete, no-compromise, professional quality, 24-bit, QuickTime-based video production system under \$4,500.

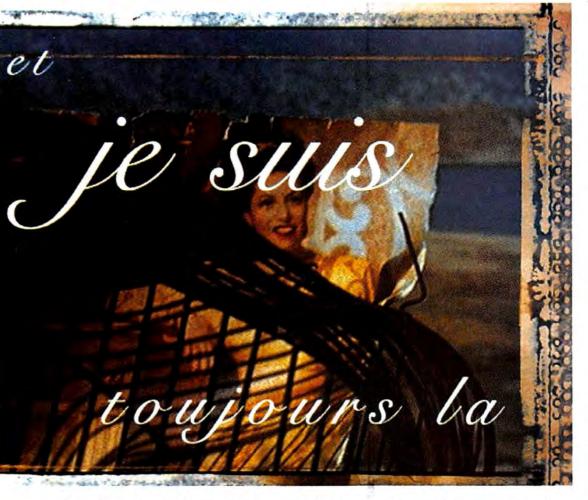
"After working for years with traditional high-end computer graphics equipment, I'm convinced the Macintosh and technologies like Radius' VideoVision Studio are the most exciting designer tools in broadcast today. It puts control of the creative content back in the hands of the creator."

© 1994 Bodius Inv. Radius, the Badius logs, "How The Best Get Better" and all Radius product and service names are trademarks of Radius Inv. All other names are trademarks of their respective holders. 3/21/94

VIDEOVISION STUDIO **radus**

How The Best Get

BETTER:



VideoVision Studio lets you input, capture, display, edit, add special effects, mix sound and output full-screen video at 30 frames and 60 fields per second. It comes with the

hottest video editing and effects software, Adobe Premiere™ and VideoFusion. And VideoVision Studio is backed by our Lifetime Worry-Free™ Warranty and onsite, overnight replacement guarantee.

No other desktop system offers you such an incredible array of capabilities, so incredibly priced.

"The way the system works it's very easy for anybody to create high quality videos without the cost of a high-end editing suite."

Call 1-800-227-2795 Ext. 88C for more information about no-compromise desktop video production and the name of your nearest Radius reseller. For faxed information, call 1-800-966-7360.

Star Ratings

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 cabbie with a penchant for time travel, toss in the Empire State Building, add a few brainteasers, 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 Atlantis and finds it armed 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 Journeyman Project 1.0 (1.2), Presto Studios, 619/689-4895, \$79.95. Interactive science-fiction epic on CD-ROM is a work of art. The scenes are rich with painstakingly detailed graphics, elaborate 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. Compelling, 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, 510/ 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 simple 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, \$69.95. The postD-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 Help menus of this tax-preparation software make filling out your tax return a smooth, almost

relaxing process. The only state versions available are California and New York. Apr 94

*** BestBooks 1.0, Teleware, 201/586-2200, \$99. In a straightforward, unintimidating manner, this small-business accounting program integrates the standard bookkeeping functions of accounts receivable, accounts payable, and general ledger. Jul 93

ExpensePlus 1.0.1, 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 Software, 603/435-5098, \$99. Business economics 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 interface 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 collection 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 4.01, 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 Software, 800/820-7457, \$79.95. Personal-finance program does a good if somewhat roundabout job of keeping 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 than previous versions, 4.0 lives up to its promise of making financial chores easier and better organized. Nov 93

GRAPHICS

★★★ addDepth 1.0.2, Ray Dream, 415/960-0768, \$179. The purpose of this graphics program is to enhance the creation of 2-D images with 3-D effects. It's: versatile, accommodating, and affordable, but working on complex images gets tedious because of the automatic application of styles. Aug 93

*** Adobe Illustrator 5.0, Adobe Systems, 415/961-4400, \$595. The Mac's most dependable draw program has added enough new features to boggle the mind. It still can't import TIFF images, but it catches up with, and in some areas surpasses, the competition. Nov 93

*** Aldus FreeHand 4.0, Aldus Corp.,

206/622-5500, 5595. The new page-design and textediting functions of this powerful draw program make it more than worth the price of admission. Aside from some bewildering interface elements, it's an outstanding program. Mar 94

Alias Sketch 1.5, Alias Research, 416/
362-9181, \$995. The enhanced modeling and revamped rendering capabilities of this 3-D illustration program contribute to a tremendous and reliable upgrade, a heartening example of a company listening to its users. Jul 93

*** Blueprint 4, Graphsoft, 410/290-5114, \$295. Entry-level 2-D drafting program is a wonderful antidote to the complicated CAD system blues. Don't be misled by the low price: this full-fledged drafting package is powerful enough to serve professionals who appreciate the value of simplicity. Jul 93

★★ BrushStrokes 1.0, Claris Clear Choice, 408/727-8227, \$139. If you have absolutely no experience with computer graphics, the simplified interface of this 24-bit paint program might warrant its price. Otherwise, you can find better programs for less. Oct 93

★★★ CA-Cricket Draw III 2.0 (2.01), Computer Associates International, 516/342-5224, 5249. This draw program is not going to inspire experienced Mac artists to jump up and down, but its features are abundant, the interface is straightforward, and the price is right. Oct 93

*** Canvas 3.5, Deneba Software, 305/596-5644, \$399. Draw program offers two to three times as many features as any competing program, but our reviewer would prefer an interface that you can navigate without scrambling for the manual. Jan 94

★★★ Collage 1.0.1, Specular International, 413/253-3100, 5349. Image-compositing software is a flawed but serviceable tool that allows you to combine and composite multiple RGB images stored in PICT. TIFF, and Photoshop 2.5 formats. While it's functional and indisputably easy to use, its oversights, including slow screen redraw with no interrupt option, are nearly as numerous as its benefits. Jul 94

★★ ColorUp 1.0, Pantone, 201/935-5500, 599.95. Professional graphic designers don't need the advice of this color tutorial and series of palettes. Although nonprofessionals might benefit from the information on color theory, it may not be worth the money. Nov 93

★★★★ DeBabelizer 1.5 (1.5.5), Equilibrium Technologies, 415/332-4343, \$299. Bitmapped-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

★★★ 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

★★★ Expert Draw 1.0, Expert Software, 305/ 567-9990, \$49.95. Inexpensive draw program is not really for experts, but it offers a decent, no-frills set of basic drawing tools and commands for beginning illustrators, office use, or anyone on a budget, Aug 93

*** Folio 1 Media Kit-Print Pro, D'Pix, 614/299-7192, \$499.95. Each image in this texture collection on three CD-ROMs provides a dynamic range of colors, highlights, and shadows. Is free of artifacts, and is crisply focused. Aug 93

*** Fractal Design Painter 2.0, Fractal Design Corp., 408/688-8800, \$399. If you can put up with a few inconveniences, this color paint software pro-

vides the tools required by professional artists, and many of its functions—natural-media brush tools, the color-sensitive magic wand—are entirely without peer. Jul 93 •

*** 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

*** 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

★★★ Ofoto 2.0 (2.02), Light Source Computer Images, 415/461-8000, \$395. Many new features—notably color support—have been added to the already impressive toolbox of this scanning software. It often produces good results, but it rarely produces the best scan possible for a given image and output method. Jul 93 ★★★ Paint Alchemy 1.0, Xaos Tools, 415/487-7000, \$99. For the price, these plug-in graphics effects are a tremendous value that both casual users and professional artists can use to design a little chaos into their work. May 94

*** 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

★★★ PosterWorks 3.0, S. H. Pierce & Co., 617/338-2222, \$395. This large-format graphics production tool is for people who think big, up to 10,000 square feet big. It fills the need for user-defined, full-color, large-format output robustly and elegantly, Aug 93

*** 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 price leader, unstable operation, misbehaving features, and sluggish performace are problems that need to be rectified. Jul 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

*** Transverter 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 attempting to fill such a tall order, its conversions are not always flawless, but it can be a lifesaver nonetheless. Nov 93. *** Typestry 2.0, Pixar, 510/236-4000, \$299. An approachable interface, animation support, and outstanding Renderman rendering technology make this 3-D type-renderer 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

★★★ Virtus WalkThrough 1.1, Virtus Corp., 919/467-9700, \$195. Interactive 3-D modeling tool provides instantaneous access to rendered 3-D scenes, allowing you to travel through models at will. While it has some problems (such as occasionally just quitting), it's an excellent value. Jul 93

★★★ Wraptures One, Wraptures Two, Form and Function, 619/536-9999, \$95 each. The images in these texture collections on CD-ROM are generally acceptable, although some are muddy and others are difficult to decipher at low resolutions. If you need images for repeating patterns, however, these repeat seamlessly and are a good value. Aug 93

MATH/SCIENCE

*** Alchemy III, Tripos Associates, 314/647-1099, \$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

★★★ Amazing Universe 2.1 (2.1a), Hopkins Technology, 612/931-9376, \$79.95. Space-image exploration package on CD-ROM offers an amazing variety of astronomical images with a very competent program (ProVision II) for modifying and inspecting those images, It assumes that users won't be fazed by such things as writing their own image-convolution matrices. Aug 93

*** Caduceus Science Review Macintosh
Project 1.0, Scientia, 617/776-3427, 5150 to
\$250. If you're taking the MCAT, you'd be nuts not to
buy this interactive science review. Wilh proper use, its 9MB
of files are certain to improve your score. Apr 94

*** CircuitMaker 3.0, MicroCode Engineering, 801/226-4470, \$199.95. Much of the tedium of diagramming circuits and constructing prototypes is relieved by this digital circuit simulator that provides a powerful set of basic tools for a very reasonable price. Aug 93 *** 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.

★★★ f(z) 6, Lascaux Graphics, 602/299-0661, 5115. 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 with limited statistics back-

grounds, 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 *** LabView for Mac 3.0.1, National Instruments, 512/338-9119, \$1995. For large-scale, demanding projects in data acquisition and analysis, this scientific software is an unchallenged standard, in a class by itself. Jul 94

*** 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 should be, as well as improvements to computational routines. Sep 93

★★★ QC Tools 1.0, Abacus Concepts, 510/ 540-1949, 5245. 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 2.12, Scientfic Visions, 301/ 593-0317, \$135. If you have piles of data and don't need animated, exploding bar-charts in 24-bit color, this scriptable plotting software should be part of your analysis tool kit. Jun 94

*** Spyglass Dicer 2.0, Spyglass, 2.17/355-6000, 5695. Scientific 3-D visualization tool displays a two-dimensional slice through a three-dimensional object (which is represented in the computer by a data table). While Dicer pushes the limits of the Mac hardware, for its function this product is really the only game in town. Jul 93 ** Spyglass Transform 3.0 (3.01), Spyglass, 217/355-6000, \$595. Scientific-visualization software can access data stored in every common format, offers some useful presentation-graphics features, and includes a programming language with a large range of built-in, high-level scientific functions. Sep 93

*** StatView 4.01 (4.02), Abacus Concepts, 510/540-1949, \$595. If your work uses statistics for decision support rather than abstract analysis, and you regularly have to present your results to nonstatisticians, this is the statistics package for you. Oct 93

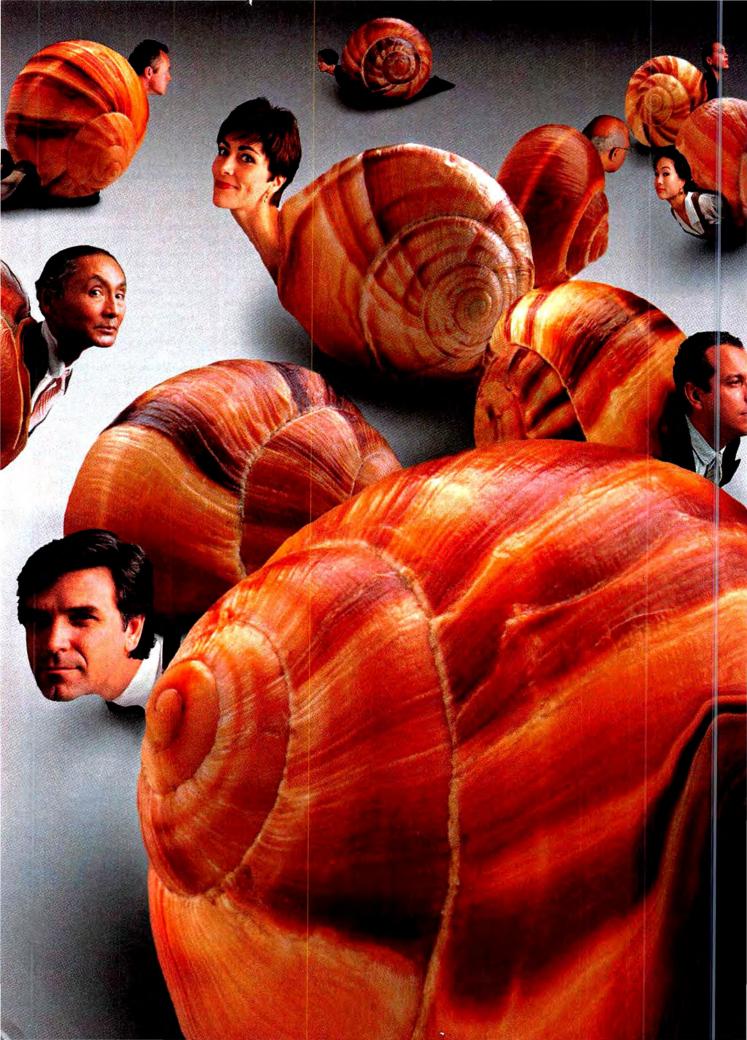
** Sum Total 1.01, Concurrent Engineering Tools, 602/464-8208, \$99.95. Exceptional calculator utility is packed with advanced features, including a mode that lets you sample colors and use the numerical color values in calculations. The convenient palette approach causes a distinct time-lag in menu operations. Oct 93

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

ORGANIZATION/PRODUCTIVITY

this much material, at this level of clarity. Jan 94

** Achieving Your Career 1.02 (1.04), Up Software, 415/921-4691, \$69. HyperCard-based jobcontinues

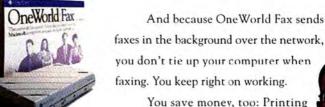




Talk about perception versus reality. Like something out of a science fiction movie, faxing came into being to move documents along at the speed of light. But in reality, "moving" hasn't been the activity most associated with faxing. "Waiting" has.

Waiting for the document to print. Waiting in line. Waiting for the fax to go through. A situation where things can get so bottlenecked, an entire office can be reduced to a crawl.

Well, at Global Village Communication; we're happy to report a way to get everyone up to speed again.



costs fall when you fax from your com-

puter. Phone bills can be reduced since faxes can be scheduled to take advantage of off-peak phone rates. And, of course, you save valuable time.

And if all this news weren't good enough, OneWorld Fax is easy to install. Everything you need -all the hardware and software-is built into a single,

THE PROMISE OF FAX MACHINES IS TO HELP PEOPLE WORK AT A FASTER PACE. THEN, OF COURSE, THERE'S THE REALITY.

With something we call OneWorld" Fax, the fax server that lets everyone on a network of Apple Macintosh computers fax right from their desk.

With OneWorld Fax, everyone in the office can send faxes – to one person or to many – with just a few clicks of the mouse. It's as easy as printing, thanks to the industry-acclaimed GlobalFax™ software used in OneWorld Fax.

self-configuring package smaller than a toaster. Anyone can install it, in a matter of minutes.

But, before you go, here's something else to consider: OneWorld Remote Access – a complete, easy-to-use ARA server for providing access to AppleTalk networks from remote Macintosh and PowerBook computers.

So. There you have it. Two ways to get everyone in your office up to speed again. Now isn't it time you got moving? For more information and for the Global Village dealer nearest you, call 1-800-736-4821, ext. 2246.



Circle 156 on reader service card

©1994 Global Village Communication, inc. Global Village Communication, the Global Village Communication logo, GlobalFix, and OneWorld are trademarks of Global Village Communication, Inc.

AppleTalk® Remote Access is licensed from Apple Computer, Inc. All other brand names are trademarks of their respective companies. A special thank you to the snails who graciously lent their shells and the Wee-Fit Clothing Outfitters for their ingenious turtleneck sweaters which kept the snails warm until their homes were returned.

Star Ratings

search software succeeds by compactly organizing. It provides a structure for identifying letters to write, phone calls to make, and interviews to follow up. Aug 93

*** Arrange 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 calendarmaking program is straightforward, with a variety of options for customizing your calendar. Some features can be cumbersome. Oct 93

★★ ClienTrac 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 2.0.1 (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, 619/558-6000, \$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 due, 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, \$99. 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, 5199. 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

PRESENTATION TOOLS

*** Adobe Premiere 3.0, Adobe Systems, 415/961-4400, \$695. Solid and dependable QuickTime video-editing software offers a structured, responsive, and flexible interface with enhancements that range from the mundane to the dramatic. It can now mix 99 tracks. Jan 94 *** Astound 1.0, Gold Disk, 408/982-0200, \$399. Presentation software lets you include sound, text, and graphics animation with no more effort than pasting in a chart in other products. It's a good value. Nov 93 *** Authorware Professional 2.0.1, Macromedia, 415/252-2000, \$4995. Multimedia-scripting and -presentation software lets you develop complex presentations with amazing speed. Although expensive, it's wonderfully done and will pay for itself in time saved. Feb 94

*** Avid VideoShop 2.0, Avid Technology, 508/640-6789, \$499. QuickTime video-editing pro-

gram shines in its intuitive, easy-to-use interface, although it may fall short on features for hard-core video professionals. Feb 94

CoSA After Effects 1.1, CoSA, 401/
831-2672, 51295. QuickTime movie editor blurs the boundaries between animation and traditional video-editing. It produces results that simply can't be created in other packages. Oct 93

★★★ Deck II 2.1, OSC, 415/252-0460, \$399.

AV Macs turn into digital-audio workstations with this software that enables you to record, mix, modify, and play back CD-quality sound. It doesn't include equalization features.

Jun 94

★★ Elastic Reality 1.0, ASDG, 608/273-6585, \$349. Exciting morphing tool can create professional-caliber results—if you can figure out how to use it. The needlessly convoluted interface, poor documentation, and inadequate tech support make that a difficult task. Feb 94

★★★ FlipBook 1.0, S. H. Pierce, 617/338-2222, \$89. Animation printing utility lets users make flip-books (consisting of a series of printed images that, through application of an extremely technical thumb-andforefinger method, appear to move) out of QuickTime movies. PICS animations, and Scrapbook files. Jun 94

Morph 2.0, Gryphon Software, 619/
454-6836, 5239. Easy to use morphing software is beautifully designed, with delightful new features, including the ability to morph QuickTime movies. Using it is as painless as morphing gets. Apr 94

*** Passport Producer Pro 1.0, Passport Designs, 415/726-0280, \$995. Superb, albeit quite expensive, media-integration package makes assembling even complex presentations surprisingly easy. Path animation is limited to entrances and exits. Apr 94

★★★ QuickFlix 1.0, VideoFusion, 419/891-1090, \$149. Approachable QuickTime moviemaking software lacks the high-end features of other programs but costs a whole lot less. Feb 94

★★★ VideoFusion 1.0.1 (1.5), VideoFusion, 419/891-1090, \$649. Collection of special effects for QuickTime movies may not be for the casual user, but if you have the equipment and you can't live without spinning logos, then go ahead and indulge. Jul 93

Working Model 1.0, Knowledge Revolution, 415/553-8153, \$995. Animators and engineers will love this terrific motion simulator that mimics real motion by applying physical laws to objects. It's easy to learn and use, but you'll need some understanding of math and physics. Oct 93

PROGRAMMING

★★★ CLImate 1.0, Orchard Software, 617/ 876-4608, \$59.95. With a little more documentation and a few more sample programs, this utility that provides a subset of Unix-like commands for the Mac environment could be an irresistable package. Oct 93

*** FutureBASIC 1.0 (1.02), Zedcor, 602/881-8101, \$299.95. Complete, easy-to-learn, real-world programming tool has full Toolbox, System 7, and assembler support. It's a wonderful tool that's rapidly becoming a favorite among commercial developers. Jul 93
*** Macintosh Common Lisp 2.0 (2.0.1), APDA, 716/871-6555, \$495. Anyone who likes programming in LISP will be pleased with the environment provided by this version of the standard dialect and its extensive debugging and interface-building facilities. Oct 93
*** Object Master for Think C and C++, ACI US, 408/252-4444, \$255. Object-onented de-

velopment environment is full of goodies and will pay for itself in about a week due to increased programmer productivity. Apr 94

★★★ PG:Pro 1.5 (2.1), Staz Software, 601/ 255-7085, 5169. For part-time or novice programmers, the combination of these BASIC programming tools and FutureBASIC is a fast path to a working program. Jul 93

★★★ PowerPacks 2.0, NDG Phoenix, 301/ 718-8880, 5225. Programmers' tool kit for 4th Dimension provides 280 external procedures to improve custom applications and exploit System 7 features. Don't expect any quick fixes for 4D's less-than-blistering performance in most areas, though. Oct 93

*** Smalltalk/V for Macintosh 2.0, Digitalk, 714/513-3000, \$495. Object-oriented development system is now even more viable for commercial projects, while Digitalk's customer support and documentation set a standard other vendors should emulate. Feb 94

★★★ SoftPolish 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, Il's a programming tool for anyone who hopes to produce a commercial Madapplication. Sep 93

★★★ SourceSafe 2.1, One Tree Software, 919/821-2300, \$295 to \$1195. Solid, relatively easy-to-use product handles program-development administrative tasks, including version control, for multiplatform 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, 805/4849400, \$295. Popular programming language letprogrammers 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, 805/4849400, \$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

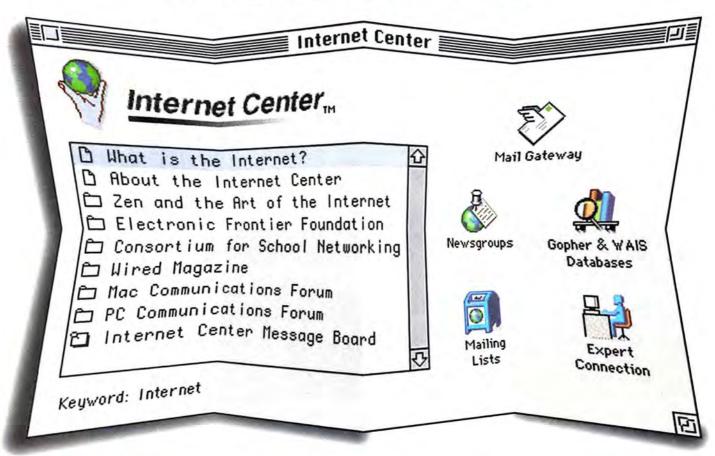
UTILITIES

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 extracttext from documents in many formats. May 94

** Atticus Vista 1.0, Atticus Software Corp., 203/348-6100, \$69.95. Control panel and application automatically catalog 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 (2.04), Automap, 206/455-3552, \$99.95. 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 the written directions and maps the program has to offer. Jul 94 *** CD-ROM ToolKit 1.0.5, FWB, 415/474-8055, \$79. Software accelerator can halve the time it takes to open files and search on a CD-ROM. The product supports a wide variety of formats and CD-ROM drives.

Your Road Map For The Information Superhighway— 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.

N Section Sect	NAME				
	ADDRES	S			
	CITY				
	STATE		ZIP		
	HOME P	HONE			
SELECT DISK TYPE	AND SIZE —				
Windows*:	5.25	3.5			
DOS:	5.25	3.5		☐ High Density	Low Density

"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

☐ Macintosh®3.5

Apple*:

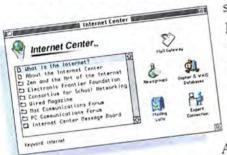
Use of America Online requires a major credit card or checking account. Limit one free trial per household. America Online is a registered service marks of America Online, Inc. Other names are service marks or trademarks of their respective owners.

0980/W

Test Drive The Internet On America Online For 10 Hours, FRE

The Internet Center, An America Online Exclusive!

Before you can exchange ideas with people around the world, you have to learn your way around the information



superhighway. No problem. Just go to our Internet Center-your road map to the Internet. You'll find we've made it as easy to handle as America Online.

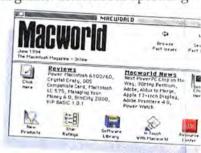
With a point and click, you can

access newsgroups on hundreds of topics, send e-mail to other online services or overseas, access information on everything from home brewing to NASA news using Gopher and WAIS databases and more. Best of all, on America Online, you can navigate the Internet without worrying about message counts, block counts, or surcharges—it's all at no extra charge!

Featuring Macworld® Online.

In addition to the Internet, you can access the electronic version of MacWorld magazine. Learn about upcoming

articles and events before the next issue hits the newsstands. Share your opinions and questions with the editors and receive answers. Download software they recommend.



Plus, check out America Online's software libraries with over 100,000 files to download. Multi-file downloading ar 9600 baud modem access make it fast and easy. You can

join online clubs for your favorite hobbies. You can ever talk with other members in liv conversations, conferences, ar classes. All on the most "clickable" online service there is.



NO POSTAGE **NECESSARY**

IF MAILED

IN THE

UNITED STATES

Start Your Test Drive Today.

So hit the information superhigh way and head for America Online. It's easy. Just mail the attached card or fax it to us at 1-800-827-4595. Or simply call 1-800-827-6364, Ext. 0980, to order today!



BUSINESS REPLY MAIL FIRST CLASS MAIL PERMIT NO. 9096 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE



8619 Westwood Center Drive Vienna, VA 22182-9806



1-800-827-6364, Ext. 0980 <u>հահվահվում Սիսիսի հիմահվիկում հումիվ</u>

but users should be aware that playback of QuickTime movies is often uneven. May 94

- ★★★ Chameleon 2.0.3 (2.1), Logical Solutions, 612/659-2495, \$59.95. Sleek desktop-pattern editor comes with an ample supply of rich, textured color images and a set of limited but functional editing tools. Sep 93 ★★★ ClickChange 2.0, Dubl-Click Software, 818/888-2068, \$89.95. Interface-customizing package has nothing you need but is filled with everything you want, including tools that let you alter major elements of the Mac's look and feel. Aug 93
- ★★★ Connectix Desktop Utilities 1.0 (1.0.1), Connectix Corp., 415/571-5100, \$99. Although some of the 16 utilities offered in this package are more at home on a PowerBook, this collection offers one-stop shopping at a low price. It's worth it for the file-synchronization, Keyboard Power, and Hot Keys features alone. Nov 93
- *** CopyDoubler 2.0 (2.0.1), Symantec/
 Fifth Generation Systems, 504/291-7221, \$59.
 This utility speeds up copying, lets you queue jobs for background copying, and offers a variety of other useful,
 copying-oriented features—all at a very reasonable price.
 Nov 93
- ★★★ Copyright Pro 1.0.3, CSG Technologies, 412/471-7170, S79. Utility takes over the Finder's copying function, copies in the background, and allows you to regularly schedule copying. It doesn't speed up copying, however. Nov 93
- *** CPU 2.0 (2.0.1), Connectix Corp., 415/
 571-5100, S99. Reasonably priced collection of utilities for the PowerBook adds new features, including file synchronization, that easily justify the upgrade price. Sep 93
 *** CryptoMactic 1.0.1, Kent Marsh, 713/
 522-5625, S99. Security software offers fast Finder-level encryption and decryption with effective file removal. Although its simplest encryption algorithm isn't quite hacker-proof, it's worth considering. Feb 94
- ★★★ DiskLock 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
- *** DiskTop 4.5, PrairieSoft, 515/225-3720, 599.95. Organizing a crammed hard drive is a more manageable task with this simple but powerful filemanagement utility that lets you copy, move, rename, delete, and find files—without using the Finder. Jul 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 includes 16 different modules. Mar 94
- ★★★ DriveShare 1.03, Casa Blanca 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. Nov 93
- ★ DriveTech 1.0, MicroMat Computer Systems, 415/898-6227, \$59.95. Without decent documentation or clearer error messages, this floppy-drive cleaning and diagnostic program is essentially a \$60 floppy-drive cleaning kit. Since you can buy a cleaning kit without software for \$10, that makes it a bad deal. Jan 94
- ★★★ DupLocator 1.03, Midnight Software, 303/933-1013, \$99. For new Macintosh users who don't have a general file utility, this software that locates duplicate files, as well as performs basic file commands such as moving and renaming files, may be useful. Jan 94

- ★ eDisk 1.0 (1.2), Alysis Software Corp., 415/ 566-2263, \$149.95. Driver-level compression software has little to recommend it over file-level, idle-time compression programs. The biggest drawback is the strong potential for disk or file corruption. Oct 93
- *** Freedom of Press Classic, ColorAge, 508/667-8585, \$149. Utility allows you to print Post-Script graphics on almost any non-PostScript printer—easily and with impressive results. Mar 94
- ★★★ Icon 7, Inline Software, 203/435-4995, 579.95. Simple, straightforward utility has a streamlined and intuitive library feature for storing and retrieving icons, plus tools for icon editing. Its icon collection, however, is pretty paltry. Sep 93
- ★★★ Icon-It Pro 3.0.6, Olduvai Corp., 305/ 670-1112, \$129. Utility allows you to attach custom tool bars to almost any application, including the Finder. The interface is quirky, but you get used to it. Dec 93
- ★★★ I Like Icon 1.0, Baseline Publishing, 901/ 682-9676, \$59.95. Clitzy utility has tools for icon editing, has a nice library of icons, and can create animated icons. Some basic features, such as a text tool, are missing, and the animated icons are fun but impractical. Sep 93
- *** MacPak 1.0, Symantec/Fifth Generation Systems, 504/291-7221, \$149. The quality of this utility collection is uneven—some modules are unpolished—but if you don't already own AutoDoubler, CopyDoubler, and a good file-management program, it's worth the price. Jan 94
- *** MacTools 3.0, Central Point Software, 503/690-8090, \$149. Recovering trashed files is a snap with this utility package that fixes more disk problems than its competition. It includes disk-and-file maintenance, disk repair, virus protection, and backup. Mar 94
- ★★ Magic Typist 2.0, Olduvai Corp., 305/670-1112, \$129. If you want to speed up typing of repetitive phrases or if you don't have full use of your hands, this utility, which automates typing of repetitive phrases, may be useful, but some functions work erratically or not at all in Microsoft Word. Sep 93
- *** Mr. File 2.0, Softways, 408/978-9167, \$99. The well-designed background capabilities of this Finder utility make it a handy tool for copying, finding, moving, launching, and renaming files, although it has a few interface quirks, Dec 93
- *** Now Compress 1.0 (1.0.1), Now Software, 503/274-2899, \$69. Compression utility holds its own in a crowded market; it's easy to use, it's complete, and it compresses as well as or better than other options.
- ** Now Fun, Now Software, 503/274-2899, 545. Five control panels let you liven up your Mac by customizing everything from menu colors to system sounds. The included screen-saver modules and desktop patterns and pictures are fairly limited, though. Dec 93
- *** Now Utilities 4.0.1 (4.0.2), Now Software, 503/274-2899, 5129. 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 scrapbook feature, however, is awkward and inconvenient. Aug 93

 ** Open Sesame 1.02, Charles River
- Analytics, 617/491-3474, \$99. Utility automates Finder operations, such as opening and closing files, without 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, 412/681-2692, \$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
- *** Power To Go 2.0, Claris Corp., 408/ 727-8227, 599. PowerBook utility collection has a few unique slants—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
- *** QuicKeys 3.0, CE Software, 515/221-1801, 5169. The simple, unintimidating 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, 5249. Powerful backup and
 archiving software has an improved interface and scripting
 capabilities, and works well for all levels of users. Sep 93 ①
 *** 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 ②
- ** 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
- ** Safe or Sorry 1.0, Olduvai Corp., 305/ 670-1112, \$59. Unobtrusive 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, S99. Efficient, thorough virus-protection software slows down system start-up and application launching, but this program is a worthwhile investment for anyone who exchanges or downloads files. Mar 94
- *** 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 lifts 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, Stac, 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 quotient. Oct 93
- ★★★ Star Wars Visual Clips, Sound Source Unlimited, 805/494-9996, \$89.95. 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 continues

Star Ratings

make you remember 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, 5149. 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 (1.3), usrEZ 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 panless. 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, S69. Rapid disk cataloging; 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

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. Although the
interface is nonstandard, it's logical and easy to learn. May 94

*** Finale 3.0.1, Coda Music Technology, 800/843-2066, \$749. Upgraded music-notation
software is now infinitely more pleasant to use. Its comprehensive feature set makes it the standard against which all
other music-notation products must be judged. Dec 93

★★ MacInteriors, 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

*** Roll Call 2.0 (2.5.6 or 3.0), By the Num-

bers, 603/927-4508, \$495 to \$595. 4th Dimension database application for church management helps track donations, attendance, church-group membership, and visitation. While not a complete church-management system, it's an acceptable complement to a general accounting program. Aug 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, \$10/549-1976, \$69.95. Legal software quickly and easily automates the creation of wills, health-care directives and proxies, and final-arrangements documents. It offers excellent supporting explanations, examples, and background. Jun 94

WRITING TOOLS

*** MacWrite Pro 1.5, Claris Corp., 408/ 727-8227, 5249. 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., 206/286-2600, \$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, 5895. CD-ROM dictionary contains 20 print volumes, including half a million words, but the flaws, omissions, unreliability and unforgivably 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, 305/596-5644, \$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. It quickly and transparently prevents you from making embarrassing typos. Nov 93

**** WordPerfect for Macintosh 3.0, WordPerfect Corp., 801/225-5000, \$495. The innovative interface of this word processor uses context-sensitive button bars and expandable rulers to make innumerable features accessible with a click of the mouse, It's an accomplishment in ease of use. Mar 94

*** WriteNow 4.0.1, WordStar International, 415/382-8000, S119.95. 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 Kajillion Rhymes 1.0, Eccen-

tric 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

* Apple Adjustable Keyboard, Apple Computer, 408/996-1010, 5219. Keyboard is only a slight improvement on the flat slab keyboard. Theoretically, it corrects ulnar deviation, but many sufferers of repetitive stress injuries want a keyboard that adjusts vertically. Jul 93

* * 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 opl for a drawing tablet. Oct 93

*** DrawingSlate, CalComp Digitizer Divi-

sion, 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, FTG Data Systems, 714/
995-3900, \$498. Input device lets you manipulate items on the Macintosh screen using a special stylus called a light pen, it works well, although it seems ergonomically inferior

to a mouse for routine tasks. Mar 94

*** TrakMate, Key Tronic Corp., 509/9288000, \$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, 5749. 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

** AC\$100, 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 hiss noticeably. Dec 93

★★ ACS150, Altec Lansing Consumer Products, 717/296-2818, 5150. Subwooler rounds out the sharp tones of the ACS100, 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, \$179. 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, 5400. This extremely versatile and beautifully designed portable CD-ROM drive offers 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, Lyrrus, 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

★★★ Hello Music, Yamaha Corp. of America, 714/522-9240, \$449. MIDI starter kit includes an impressive tone generator that's compatible with General MIDI Level 1 and Roland MT-32, but the included software is functional at best. Dec 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 Presentor, E-Machines, 503/ 646-6699, \$499. Simple, compact Duo dock 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

★★★ PowerPlate, Technöggin, 513/3211777, \$169.95 to \$299.95. Line of long-lived, external
PowerBook battery packs, each of which enables you to
work for 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, Pinnacle Micro, 714/727-3300, \$3995. Writable 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

★★★★ 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. Jul 94

★★★ Yamaha Y5T-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. Apr 94

MODEMS/NETWORK HARDWARE

*** AsantéHub 1012, Asanté Technologies, 408/435-8388, 51299. This 12-port, 10BaseT Ethernet hub works right out of the box and is a premium device at a bargain price. Dec 93

★★★ 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. May 94

★★★ DataLink PB; Axcell Cellular Interface, Applied Engineering, 214/241-6060, S824. If you need a full-blown office on the beach, this PowerBook cellular-modern package with automatic answering machine is a well-executed solution. Each recorded second requires 25K of disk space. Nov 93

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. May 94

★★★ PerFit Port-A-Com, PerFit, 303/530-7333, \$349. Compact, ADB-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. Nov 93

*** 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. Disabiling its fax software solved occasional transfer problems. Nov 93

*** Watermark Message Central 2.0.2, High Tide Software, 510/704-9927, \$499. If you're willing to put in a lot of effort, you'll find this highly sophisticated voice-mail system supremely flexible. It includes a specially modified modem with voice chip, as well as fax software and telecommunications software. Jul 94

PRINTERS

** 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. Oct 93

★★★ Apple Color Printer, Apple Computer, 408/996-1010, \$2349. 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. Aug 93

★★★ Apple Portable StyleWriter, Apple Computer, 408/996-1010, \$439. Sleek, portable ink-jet printer weighs 4½ pounds and is a pleasure to use. It uses standard StyleWriter cartridges. Jan 94

★★ Brother HJ-400, Brother International, 908/356-8880, \$369. Compact, 360-dpi ink-jet printer is fairly slow and does not allow background printing. Some large files require additional application memory to print correctly. May 94

★★★ 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. May 94

★★★ 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, Aug 93

★★ 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. Aug 93

LaserWriter Select 360, Apple
Computer, 408/996-1010, \$1599. Low-cost, highperformance, 10 ppm printer is perfect for small LocalTalk
or mixed networks. For bigger networks, consider buying
more than one; they're more cost-effective than a 20-ppm
printer. Apr 94

★★★ microLaser Pro 600, Texas Instruments, 800/848-3927, \$2148. Overall, this workgroup 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. Jul 94

*** MobileWriterPS, Mannesmann 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. Dec 93

★★ 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 at all an issue, however, other options may be preferable. Jun 94

★★★ Personal LaserWriter 320, Apple Computer, 408/996-1010, \$959. If you've been holding out for a high-quality personal laser printer that's fast enough to share over LocalTalk, the small inconveniences of this 300-dpi printer are easily outweighed by its low price, good speed, and PostScript Level 2 support. May 94

★★★ Phaser 200i Color Printer, Tektronix, 503/682-7377, \$5995. 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 photocopier bond. Aug 93

★★ PrintPartner 10W, Fujitsu Computer Products, 408/432-6333, \$2450. While this multiplatform printer is fast and prints clearly, many Mac users will find it frustrating as it can't print some TrueType fonts. Jul 93

★★ 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. Jul 94

★★★ Silentwriter 640, NEC Technologies, 508/264-8000, \$800. With 3MB of RAM, PostScript Level 2 support, and a 6-ppm engine, this printer is a capable performer. Generally, it represents hassle-free printing, but it doesn't handle single sheets of paper well. Jun 94 continues

Star Ratings

** Smart Label Printer Pro, Seiko Instruments, 408/922-5900, 5299.95. If you need to print only a few labels at a time, this label printer may be an expensive but good choice. It prints very quickly, and with excellent print quality. May 94

SCANNERS

- *** Apple Color OneScanner, Apple Computer, 408/996-1010, \$1349. Tests of this color scanner demonstrate unpolluted colors and sharp image details, perhaps due to color filters and lenses that Apple claims were designed and tuned for the scanner. Jul 93
- ***
 Coolscan L5-10e, 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. Dec 93
- ***
 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. Aug 93
- *** 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. Jul 94
- ★★★ LightningScan Portable, Thunderware, 510/254-6581, 5459. PowerBook owners will find this hand scanner's modem- or serial-port connection, lightweight interface, and total portability well worth the cost, although the scanner is incompatible with some desktop Macs. Dec 93 ★★★ Mirror 800 Plus Color Scanner, Mirror Technologies, 612/633-4450, \$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 35t, Microtek, 213/321-2121, \$1999. Speedy 35mm film scanner accommodates loose film and delivers a good image, but the included software is weak. Dec 93
- ★★★ ScanPlus Color 6000 for Mac, PlusTek USA, 408/980-1234, 5749. Small, Inexpensive sheetfed color scanner is not appropriate if exact color matching is critical, but it is otherwise a good, economical option. Sep 93

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
- *** EtherDock, E-Machines, 408/541-6100, 5699. Heavy-duty Duo 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 PI-7000, Sharp Electronics
 Corp., 800/993-9737, S899. Personal digital assistant features the advantages of the Newton, in a better industrial design and at a comparative price. If the battery lasted longer and the message network were implemented, the PDA revolution could begin. Feb 94
- ** 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, \$795 to \$894. Small, light, quiet, inexpensive 105MB SyQuest drive is ingeniously packaged and ideal for both desktop and PowerBook use. \$ep 93
- ★★★ LC 575, Apple Computer, 408/996-1010, 51699. 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
- ★ 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, 51799. 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
- ** 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, 5399. By changing the oscillators 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 165c, Apple Computer, 408/ 996-1010, 4/80 \$3399. The passive matrix screen of this color notebook computer is dull and has noticeable afterimages, but if your expectations are reasonable, the speedy processor provides a pleasant work environment. Jul 93
- ★★ PowerBook 180c, Apple Computer, 408/ 996-1010, 4/80 54169. 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 \$3099. 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 \$1819. 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
- *** Quadra 605, Apple Computer, 408/ 996-1010, 4/80 5979. 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 54679. Squat, yet curvy and attractive, this minitower system has fewer expansion opportunities than the Quadra 950, but just as much power. It's fast, slick, and moderately priced. Aug 93
- *** 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-rec-

ognition and audiovisual technology. Beware of some hardware and software incompatibilities. Dec 93

- ★★★ SCSI MicroDock, Newer Technology, 316/685-4904, S175. 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 inexpensive. Although it can be a bit noisy when accessing data. it's a good deal. Apr 94
- *** SmartStack, Envisio, 612/628-6288, 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 has the fastest 68040 chip available and is as fast as or faster than any Mac in processor-intensive tasks. For the price, however, it may make more sense to trade up to a faster computer. Dec 93

VIDEO/DISPLAY

- 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 Jess 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, 5769. 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
- *** Intellicolor Display/20, Radius, 408/ 434-1010, 53199. Although with its exceptional brightness and clarity this monitor would be a fine addition to any designer's desk; the included Intellicolor software, which lets you control the settings of your display, doesn't offer much added value. Apr 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, 51499. 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
- *** 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
- ** 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 m

Streetwise Shopper

SPECIAL HARDWARE AND SOFTWARE BUYING OPPORTUNITIES

Selected and edited by Charles Barrett

The following listings include both time-sensitive promotions and long-term offers being sponsored by Macintosh vendors and their resellers. Each listing indicates which products have been awarded a star rating in Macworld's Reviews (products rated ** or lower are not eligible for inclusion), have been selected as an Editors' Choice, or have won a World-Class award. In some cases, the editorial evaluation quoted is for an earlier product version. The Symbol indicates that the product is Power Mac related.

When placing an order, please mention that you saw the offer in *Macworld*. Should any problems arise, contact the *Streetwise Shopper* editor by fax (415/442-0766), phone (415/978-3241), or mail (*Macworld*, 501 Second St., San Francisco, CA 94107).

Vendors and resellers desiring to have products and services included in this section are encouraged to contact the Streetwise Shopper editor with particulars.

BUNDLES

FlexScan Monitors + Colorific Nanao USA will begin shipping Sonnetech's Colorific software-only color-management system, once it becomes available in August, to all FlexScan monitor (Jan 94 "Small Wonders" Editors' Choice for FlexScan F340i-W) customers who return their warranty registration cards. The Colorific versions destined for Nanao customers will list all FlexScan models on a menu, along with a standard VGA setting for non-Nanao monitors. Call 800/800-5202 for more information.

Last Resort + Toner Tuner 1.0.6 + Working Watermarker 1.0.6 Working Software is offering a bundle of 3 of the 16 best utility programs (Apr 94 "Top Utilities"): its \$49.95 Last Resort for storing keystrokes in text files; its \$24.95 Toner Tuner for adjusting how much toner should be applied to each print job (Dec 93 **** for version 1.0.3); and its \$49.95 Working Watermarker for printing or faxing text or graphics watermarks in the background of a page (Jan 94 *** for version 1.02). Available direct (800/229-9675) for \$89.95.

MoviePak2 Pro Suite RasterOps has combined several third-party products with its 51849 MoviePak2 compression daughterboard, \$3249 24XLTV display adapter, and \$649 Video Expander II RGB/NTSC encoder box to create a \$4199 full-motion, 60-field QuickTime video-production system (Jun 94 "Video-Editing Tools" Editors' Choice): Adobe's \$695 Premiere 3.0 QuickTime video-editing software (Jan 94 ****); AlSoft's \$89.95 DiskExpress II disk-optimizer utility; and a special RS-422 Pro version of Abbate Video's \$99 VTK Plug In Pack for professional VTR control. Call 800/729-2656 for more information.

PowerBook 500 and Duo 200 Series + 12 Utilities + PowerPort/Mercury Apple has integrated software into its 68040-based PowerBooks starting at \$2269 and Duos starting at \$2639 (Jul 94 "PowerBooks: The Next Generation")—including Apple Remote Access Client 2.0 for server connection, Macintosh PC Exchange 1.0.2 to read and write DOS/Windows floppy disks, PowerBook File Assistant synchronization package, PowerBook Control Strip 1.0 power-management utility, PowerTalk electronic-mail-management extension (for models with 12MB of RAM), and DataViz's MacLinkPlus Easy Open Translators for converting between Mac and DOS/Windows file formats. In addition, the 500 series comes with Global Village's 14,400-bps PowerPort/Mercury internal fax modem and GlobalFax application, plus ZTerm data communications software.

SuperPaint 3.5 + HomePublisher 2.0 Aldus is bundling these two products in a Paint & Publish one-box collection with an "estimated street price" of \$89.99. SuperPaint includes pressure-sensitive drawing tools, TWAIN support, and a QuickTime plug-in module. HomePublisher (formerly Personal Press) is an entry-level page-layout program that includes document templates, T/Maker Clickart images, 12 Bitstream TrueType fonts, and specialty paper. Call 800/888-6293 for more information.

Thunder 7 1.5.3 + Magnet 1.0 + CPU 2.0.1 + Full Contact 2.01 Baseline Publishing is bundling its \$99.95 Thunder 7 spelling checker and thesaurus (Nov 93 ****) with No Hands Software's \$129.95 Magnet intelligent-agent-based utility for automating file management (Feb 93 ****), Connectix Corporation's \$99 CPU PowerBook utility (Sep 93 **** for version 2.0), and FIT Software's \$169 Full Contact personal information manager (Aug 94 ***). Available through MacWarehouse (800/255-6227) for \$79.95. Ofter expires 8/31/94.

SIDEGRADES/UPGRADES

CalendarMaker CE Software is offering users of this calendar-making program (Oct 93 **** for version 4.0) a choice of upgrading to version 4.1 for \$25, or to version 3.0.2 for \$10. The 4.1 upgrade features over 50 layout styles, recurring-events editors, two formatting palettes, and six paint tools for color icon editing. The upgrade to 3.0.2 is available to those who are content with their current version's functionality but require System 7 compatibility. Call 800/523-7638 for more information. Offer expires 8/31/94. Mathematica 2.2 Wolfram Research is offering the 5995 Enhanced Version (requires math coprocessor) of this symbolic mathematical computation system (Sep 93 **** for the Standard Version) to users of any other technical software program, for \$395. Call 800/441-6284 for more information and to order. Offer expires 7/15/94.

PowerMerge 2.0 Leader Technologies is offering this file-synchronization program (Aug 94 ****) for S49 (regularly sells for \$79) to users of competing synchronization and backup programs or PowerBook utility programs. Call 800/922-1787 to order. Offer expires 9/30/94.

SPECIAL DISCOUNTS/REBATES/OFFERS

ClarisImpact Claris Corporation is offering a special \$149 introductory price for the native Power Mac version of this \$399 integrated business-graphics program (Jun 94 **** for the 680X0 1.0 version). In addition, users of calendar-making, flowcharting, project-scheduling, data-charting, and organizational-charting programs can trade up to ClarisImpact (both the 680X0 and Power Mac versions are included) for \$99. Call 800/544-8554 for more information. Offer expires 9/30/94.

Claris Organizer Claris Corporation is offering a special S49 introductory price for this soon-to-be-released (early August) S99 integrated personal information manager that allows you to access contact-management, calendar, to-do, and notes capabilities from a single floating palette. Call 800/325-2747 for more information. Offer expires 9/30/94. Expert Pad Newton 1.3 Operating System Sharp Electronics is offering version 1.3 of the Newton OS (version 1.05 can be downloaded from America Online or Compuserve with a Newton Connection Kit) to Expert Pad users for S49 (Apple charges S99, which includes two Newton applications). Besides increasing performance and fixing bugs, version 1.3 adds enhanced letter-by-letter and deferred handwriting recognition. Call 800/237-4277 for more information. Offer expires 8/15/94.

O Power Macintosh Computers Apple Commercial Credit, a partnership between Apple and Dana Commercial Credit, is offering rebates on every Power Macintosh it leases, according to the following schedule: 5100 for the model 6100/60 (Jun 94 ****) or 60AV; \$200 for the 7100/66 (Aug 94 ****) or 66AV; and \$300 for the 8100/80 (Aug 94 ****) or 80AV. Customers who already have upgradable equipment on an Apple Business Lease can add a Power Macintosh upgrade to their current lease. Call 800/225-0513 for leasing program details. Offer expires

TelePort and PowerPort Global Village is offering purchasers of its \$349 TelePort Mercury, \$279 TelePort Gold (Oct 93 "High-Speed Fax Modems" Editors' Choice), \$399 PowerPort/Mercury, and \$349 PowerPort/Gold (Dec 92 ****) 14,400-bps and 19,200-bps fax modems a \$100 rebate coupon toward the purchase of its \$999 (\$1199 for one-line LocalTalk; \$1899 for two-line Ethernet) OneWorld Remote Access fax server (Aug 94 ***). Call 800/736-4821 for more information. Offer expires 9/30/94.

VideoVision Studio Radius is offering a \$500 trade-in rebate toward the purchase of this \$4495 video-production system (Jun 94 "Video-Editing Tools" Editors' Choice)—which comes bundled with Adobe Premiere (Jan 94 **** for version 3.0) and VideoFusion (Jul 93 *** for version 1.0.1)—to owners who trade in a New Video, RasterOps, Sigma Designs, or SuperMac video-capture board. Call 800/966-7360 for more information. Offer expires 8/31/94.

If you think you just get some floor space, think again.

YOU ARE HERE...



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/Boston - August 2-5, 1994 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.

Please send me more information on MACWORLD Expo. I am interested in exhibiting in:

□ Washington, D.C. □ Boston □ Canada □ San Francisco

Company

Address

City/State/Zip_

Phone_

Mail to: Mitch Hall Associates

260 Milton Street, Dedham, MA 02026

Or Fax to: 617-361-3389 Phone: 617-361-8000

Macworld

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.

Page No.		ader c. No.	Phone	Page No.	Advertiser	Reader Sive No.	Phone	Page No.	Advertiser	Reader Sive. No.	Phone
41-44	Adobe		_	14	GDT Softworks	32/42	800/663-6222	15	Proxima Corporation	47	800/447-7694
51	AEC Software	44	800/450-1982	181A-181B	Global Village	155	800/736-4821	248-250	Quality Computers	263	800/777-3612
38	AGFA Corporation	158	800/685-4271	82	Graphsoft	46	410/290-5114				
160	Agia Designs	_	800/688-2446					179A-179B	Radius	146	800/227-2795
202-203	Alliance Peripheral Systems	62	800/874-1428	97	Hewlett Packard	11	800/354-7622	80	Hasterops	90	800/SAY-COLOR
182A	America Online	62	800/827-6364	52	HSC Software	7	310/392-8441				
50	American Power Conversion	72	800/788-2208	165	HSC Software	5	310/392-8441	28	ScanCo	-	800/722-6263
12	Anthro	-	800/325-3841					166	Seiko Instruments USA In	149	
2-3	Apple Computer	_		217	IDG	_	-	168-171	Signature Software	300	_
22-23	Apple Computer	_	100	161	Insignia Solutions	-	200 V 675	132	SoftArc, Inc.	299	905/415-7000
24	Apple Computer	_	_		Incorporated	68	800/848-7677	130	Specular	41	800/433-7732
53	Apple Computer	_	-	146	Inspiration Software	-	800/877-4292	147	Statsoft	99	918/583-4149
54-55	Apple Computer	_	_					10	Strata	114	800/869-6855
56-57	Apple Computer	_		BC	Kensington Microware Ltd	d. —	800/535-4242	211	SuperMicro	126	800/352-3415
26	Attain Software	6	617/776-1110					47	SyQuest	249	800/245-2278
			197035	16-17	La Cie	52	800/999-1422	31	Syducat	243	000/243-2270
8	Battery Technology	205	800/982-8284	105	La Cie	51	800/999-1422	70	Tobassalu	142	800/835-6100
208-209	BottomLine Distribution	63	512/472-4956	133	La Cie	_	800/999-1422	70	Tektronix	143	
0.50 0.25			Jana Capitor	135	La Cie	54	800/999-1422	48	TRIAM, Inc.	211	714/530-9984
74	Caere Corporation	69	800/535-SCAN	142	LaserMaster	43	800/950-6868	5.	W- 18-10		
40	CDROM Expo	-	617/361-8000	176	LOGICODE Technology, In	c. 297	800/735-6442	9	ViewSonic	237	800/888-8583
134	Charles River Analytics Inc.	18	800/913-3535	To As				Carron			
162	Charles Schwab &			212-213	Mac Bargains	70	800/619-9091	148-149	WordPerfect Corporation		800/526-7820
102	Company Inc.	277	800/435-9258	76	MacAcademy	106	800/527-1914	3			
29	Claris Corporation	-	_	67-69	MacConnection	-	800/800-3333	30-31	Xerox Corporation	100	
106-107	Claris Corporation	-	800/544-8554	193-198	MacMall	131	800/222-2808	156	Xircom	269	800/438-4526
200-201	ClubMac	96	800/CLUB MAC	206-207	MacWarehouse	150	800/255-6227				
179	CoActive	142	800/PC-SHARE	188	Macworld Expo		617/361-8000				
116-117	CompuServe	66	800/848-8199	216	MegaHaus Corporation	245	800/786-1184				
88-89	Computer Discount			120-121	MicroNet Technology, Inc.	139	800/800-DISK				
	Warehouse	2	800/861-4CDW	IFC-1	Microsoft Corporation			1			
46	Connectix	189	800/950-5880	86	Microtek Lab Incorporate	d 287	800/654-4160				
21	Contemporary Cybernetics Group	188	800/873-9000	13	Mirror Technologies	58	_				
72	Corel Corporation	78	800/836-3729	78	Mobius Technologies Incorporated	109	800/800-4334		TURN TO THE M.	CW	ORLD
199	CRA Systems Incorporated	20	800/375-9000	48	Mornentum Incorporated		800/263-0088		SHOPPER ON PA	GE :	218
199	GnA Systems incorporated	20	800/373-3000	40	Montenium incorporated	0	800/203-0000		TO FIND ADDI	TION	AL
98-99	Dantz Development	26	510/253-3020	159	NEC Technologies	15	800/NEC-INFO		ADVERTISE	RS.	
155	Davna Communications	161	800/443-2962	IBC	NEC Technologies	16	800/NEC-INFO				
-11	Delphi	173	800/965-4005	18	Now Software	-	800/237-2078				
215	Digital Axis	83	800/747-7555	20	nView Corp.	117	800/736-8439				
214	Direct Connections	121	800/572-4305		man sop.		7-54-1-1-1-1				
1217	Direct dominations		***************************************	160	Panelight Display System	is 1	800/726-3599				
251	Educorp	157	800/843-9497	64	Photonics	298	800/628-3033				
28	Engineered Software	12		27	Pinnacle Micro Incorpora		800/553-7070	1 1	Info <i>F</i>	1	X
6-7	Epson America	14	800/BUY-EPSON	175	Pinnacle Micro Incorpora		800/553-7070				
204-205	Express Direct	81	800/765-0020	49	Polaroid Corporation	119	800/816-2611	F	or instant faxed back		
32	Focus Enhancements	201	800/538-4888	84-85	Portrait Display Labs	89	800/858-7744		call 1-800-23	1-04	55
144	Fujitsu	202		210	ProDirect	135	800/524-9952	PI	ter extension 505 fo	Now	Software



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.

	Page No.	Advertiser	Reader Sivc. No.	Page No.	Advertiser	Reader Srvc. No.	Page No.		Reader Sivo, No.	Page No.	Advertiser	Reader Sive. No.
	OFTW	ADE		UTILITIES			HARD DISKS/S	TORAGE		SERVIC	ĖŠ	
	ISINESS	ARE		134	Charles River Analytics In	19	202-203	Alliance Peripheral System	nc 67	Malan and		
В	51	AEC Software	44	46	Connectix	189	200-201	ClubMac	96	ON LINE	and the second	
	26	Attain Software	6	98-99	Dantz Development	26	21	Contemporary	30	182A	America Online	_
	162	Charles Schwab &	Ų	14	GDT Softworks	32/42	21	Cybernetics Group	188	53	Apple Computer	-
	102	Company Inc.	277	161	Insignia Solutions	32/12	214	Direct Connections	121	116-117	CompuServe	66
	106-107	Claris Corporation	_	101	Incorporated	68	144	Fujitsu	202	- 11	Delphi	173
	146	Inspiration Software	-	18	Now Software	_	16-17	La Cie	52			
	IFC -1	Microsoft Corporation	-				105	La Cie	51	TRAINING		
	168-171	Signature Software	300	WORD PROCES	SSING		133	La Cie		76	MacAcademy	106
	147	Statsoft	99	148-149	WordPerfect Corporation	-	135	La Cie	54	70	IVIdUACAUGITY	100
	148-149	WordPerfect Corporation		200			216	MegaHaus Corporation	245			
		and the federal		HARDW	ARE		120-121	MicroNet Technology, Inc	. 139	TRADESHOWS	/CONFERENCES	
CA	D/CAM			BOARDS			27	Pinnacle Micro Inc.	115	40	CDROM Expo	\rightarrow
	28	Engineered Software	12	179A-179B	Radius	146	175	Pinnacle Micro Inc.	178	188	Macworld Expo	-
	82	Graphsoft	46	80	Rasterops	90	210	ProDirect	135			
							211	SuperMicro	126	ACCES	SORIES	
CD	ROM			CD ROM			47	SyQuest	249	FURNITURE	CEMMA .	
	72	Corel Corporation	78	251	Educorp	157				7.0.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	A-1-8-1	
	251	Educorp	157	IBC	NEC Technologies	16	INPUT DEVICES	S		160	Agio Designs	
				211	SuperMicro	126	BC	Kensington Microware Ltd	i	12	Anthro	-
CO	MMUNICAT	0.707			3.11					28	ScanCo	-
	64	Photonics	298	COMPUTER SY	STEMS		MISCELLANEO	us				
	132	SoftArc, Inc.	299	2-3	Apple Computer	_	8	Battery Technology	205	MISCELLANEO	US	
-				24	Apple Computer	_	24.00			8	Battery Technology	205
ED	UCATIONAL			54-55	Apple Computer	-	MODEMS			28	ScanCo	
	248-250	Quality Computers	263	56-57	Apple Computer	-	181A-181B	Global Village	156	20	Scanco	
	NITO			208-209	BottomLine Distribution	63	176	LOGICODE	207	Intervals a line		
FU	NTS	6.4		199	CRA Systems Incorporate			Technology, Inc.	297	MAIL	RDER	
	168-171	Signature Software	300	204-205	Express Direct	81	MULTIMEDIA					
00	ADUUGG/DT			4.74			160	Panelight Display System	s 1	202-203	Alliance Peripheral Sys	tems 62
GH	APHICS/DTF			DIGITIZERS/SC	ANNERS		100	r andight Display dystem	3 1	208-209	BottomLine Distributio	63
	41-44	Adobe		38	AGFA Corporation	158	NETWORKING			200-201	ClubMac	96
	29	Claris Corporation		74	Caere Corporation	69	50	American Power		88-89	Computer Discount	
	106-107	Claris Corporation	70	215	Digital Axis	83	100	Conversion	72	00-03	Warehouse	2
	72	Corel Corporation	78	6-7	Epson America	-	155	Dayna Communications	161	214	Direct Connections	121
	52	HSC Software	7	86	Microtek Lab Incorporate	d 287	32	Focus Enhancements	201	7.000		
	165	HSC Software	5	13	Mirror Technologies	58	181A-181B	Global Village	156	204-205	Express Direct	81
	130	Specular	41		4004		48	Momentum Incorporated	В	67-69	MacConnection	-
	10	Strata	114	DISPLAY			156	Xircom	269	193-198	MacMall	131
	0051144150			199	CRA Systems Incorporate	ed 20				206-207	MacWarehouse	150
IVII	SCELLANEO			215	Digital Axis	83	POWERBOOKS			216	MegaHaus Corporation	245
	146	Inspiration Software	-	13	Mirror Technologies	58	BC	Kensington Microware Lt	d. —	210	ProDirect	135
				78	Mobius Technologies		iv. v. co.			248-250	Quality Computers	263
MI	ULTIMEDIA	17.0			Incorporated	109	PRINTERS			240-230	disality computers	203
	41-44	Adobe	-	20	nView Corp.	117	14		32/42			
				160	Panelight Display System	is 1	97	Hewlett Packard	11			
NE	TWORKING	Di	122	49	Polaroid Corporation	119	142	LaserMaster	43			
	64	Photonics	298	84-85	Portrait Display Labs	89	159	NEC Technologies	15			
	132	SoftArc, Inc.	299	15	Proxima Corporation	47	166	Seiko Instruments USA In				
00				48	TRIAM, Inc.	211	70	Tektronix	143			
OC		Carra D	20	9	ViewSanic	237	30-31	Xerox Corporation	100			
	74	Caere Corporation	69	Star No			10000					
-	ATIOTICS			EXPANSIONS/	UPGRADES		VIDEO		550			
ST	ATISTICAL		125	78	Mobius Technologies	704	179A-179B	Radius	146			
	147	Statsoft	99		Incorporated	109	80	Rasterops	90			

Macworld

JUST FOR YOU. FREE PRODUCT INFORMATION FROM MACWORLD.

There's no cost or obligation. We even pay the postage! Simply fill in the questionnaire, then circle the numbers on the card below for the products that interest you. Numbers for advertised products can be found in the ad and in both the Product Index and Ad Index. Fold card and mail. No staples please.



For faster results just fax this sheet to +1-415-657-4345. Please indicate your fax number where indicated.

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.)
 - 01 3 1000+
 - 02 3 999 100
 - 01 99 25
 - or Under 25
- Which of the following computers are installed at this entire work-site? (Check all that apply.)
- Apple Workgroup Servers/
 Mac Quadra-series
- o a Mac Centris-series/II-series/LC III/ Performa 600/450/SE 30
- Mac LC/LC II/Performa 430/405/ 400/200/Classic-series/SE/Plus/ 512K/128K/Portable
- ox (a) Mac PowerBook-series/Duo-series

- C. What is the total number of Macs installed at this entire work-site? (Check one.)
- For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)

		17
500+	10	1 15
499 - 100	J 10	→ 16
99 50	J.11	45
49 - 10	1 10	⊿ 18
9 - 1	311	1 19
None	J 14	1 30

- E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)
- ⇒ □ Initiate/Determine need for product/capabilities/features
- Evaluate, recommend, or approve brands/models
- 13.4 fivaluate, recommend, or approve purchase source

2) Authorize purchases

- F. Over the next .2 months, how much will this entire work-site spend on Macintosh products and/or services/ (Check one.)
 - S J 51 million or more
 - ≥ J \$999,999 \$500,000
 - 5499,999 \$100,000
 - 28 \$99,999 \$50,000
 - 29 J 549,999 \$10,000
 - in 1 Inder \$10,000
- G. Considering the entire work-site, which of the following Macintosh hardware and software products are corrently installed? (Check all that apply.)
 - Business software (Word processing, spreadsheet, database etc.)
 - € ☐ Graphics/publishing software
 - ss I Monitors/displays
 - u ☐ Printers/scanners

 - Multimedia/AV hardware and/or software
- ☼ → Mobile computing products (PowerBooks, peripherals, software, etc.)

- H. What is your primary job function? (Check one.)
 - S

 ☐ Computer Reseller/VAR/VAD
 - 49 J MIS/DP/IS/Network Management
 - * Ingineering
 - +: R&D/Scientific
 - 32 2 Corporate/General Management
 - 45 Accounting/Finance
 - → J Marketing/Sales/PR/
 Communications
 - 45 Ant/Design/Creative Services

Thank You!

Please print or type all information.

itle	
0	

Phone_

Fax.

ree Product Information 😵

e Macworld Shopper Information 🕥

101 402 403 404 405 501 502 504 504 505

41" 51-4)-(29) 55-+36 +10 ++6 5(15 Sivi 465.5 4 11 4-2 5-1 5-5 5-1 SHII 1"0 1266v 4XX

☐ 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 Oct 6, 1994 S1 August 1994



J M BOS DORDT COLLEGE 498 4TH AV NE SIOUX CENTER

(9) 500 506 507 508 509 600

IA 51250-1606

FREE PRODUCT INFORMATION.

Get valuable information about the products that interest you. There's no cost; no obligation. Just fill out both sides of this FASTFACTS Information form. Circle the numbers for the desired products. Then mail the card. We pay the postage! For even faster results fill out and send the card via our FASTFAX.

Now fast... get the facts, the competition's gaining on you.

Macworld

FOLD HERE AND CLOSE WITH TAPE. DO NOT STAPLE!

BUSINESS REPLY MAIL

FIRST CLASS MAIL

PERMIT NO. 215

PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld

Reader Service Department P.O. Box 5299 Pittsfield, MA 01203-9906 NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



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.





ORDER TOLL FREE 800-222-2808

Call us for all your Apple Macintosh® Needs

The HP DESKWRITER





300 DPI Inkjet Printer

- 35 Scalable Fonts
- Prints up to 3 pages per minute
- Water-resistant ink
- 256 levels of greyscale for great graphics
- **Built-in print spooler**
- Three-year limited warranty

Brand new! Limited Supply - Good while supplies last.



HP DESKWRITER 520

InkJet Printer

HP's most affordable high-quality printer



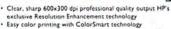
 Clear, sharp 600x300 dpi professional quality output -HP's exclusive Resolution Enhancement technology

- · Grayscale printing for dramatic black graphics
- · 35 TrueType scalable fonts
- · AppleTalk and serial interfaces



3-YEAR LIMITED WARRANTY!

HP's affordable high-quality black and color printer for the Macintosh computer.



Prints up to 3 pages per minute in black, and an average of 4

Resident black and color ink cartridges for convenient black and color printing without switching cartridges 35 TrueType scalable fonts

AppleTalk and serial interfaces



HP LASERJET 4ML

- · HP Resolution Enhancement technology and microfine toner produce the best 300dpi output available
- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA processor
- 4 MB RAM standard memory
- · Macintosh and Windows PC compatible





 True 600dpi resolution utilizing Resolution Enhancement technology and microfine toner

- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA
- · 6 MB RAM standard memory
- Macintosh and Windows PC compatible





Bonus: Includes FREE

Calera WordScan

OCR Software

HP SCANJET II SCANNERS HP SCANJET IIp 300dpi, Greyscale Flatbed Scanner

· 8 bit grey scale provides high

quality reproduction
New AccuPage 2.0 technology
features makes third-party OCR

 software even more accurate
 Print-path calibration optimizes
 settings for high-quality output · Automatic exposure saves time and eliminates guesswork

60124



HP DESKWRITER 310

- Crisp 300 dpi black print
- Optional color kit for amazing color outp
 Fast up to 3 pages per minute
 Compact and lightweight

- · 35 scalable fonts built-in
- Background printing
 Optional rechargable battery



HP SCANJET IIcx

The high performance color/greyscale scanner that provides advanced features at a breakthrough price!

- · Superior image quality with 1600 DPI enhanced resolution; 400 DPI optical resolution
- · 24-Bit color allows you to recognizse and scan over 16 million colors
- · HP AccuPage 2.0 for better text recognition · Optional transparency adapter available
- Optional 50-page document feeder available
- · One-year HP Express Exchange Warranty for 24-hour replacement service



	- 10
HP Fax 900 12 sec./pg	62567
DeskWriter 550C548900	60746
DeskWriter C	33/0
DeskWriter black ink cartridge (high capacity) \$2499	60123
DeskWriter color ink cartridge \$2799	3344
EP-S Toner Cartridge ¹⁸⁴⁹⁹	51071
LaserJet 4 toner cartridge510499	60634
LaserJet 4L/4ML toner cartridge55999	61890
PostScript Software for HP \$189**	61839
DeskWriter 310 sheet feeder56999	60749
DeskWriter 310 color kit53699	62565
DeskWriter 310 black ink cartridge \$1799	63511

Offer Code: D472MG14

LOWEST PRICES? YEAH!

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!*

Maximize your image.™



260 I 200dpi **Color Scanner**



This 24-bit, flatbed scanner gives you 600x | 200dpi optical resolution and the ability to scan millions of calors.

- Supports material up to 8.5" x 14" 2400 dpi resolution through software
- Includes FULL Adobe Photoshop 2.5
- Optional document feeder & transparency option

61198

0



UC630LE 600 dpi **Color Scanner**

\$ **[0 0**

- Includes Adobe Photoshop 2.5LE

- Supports materail up to 8.5°x14"

 Shown with optional transparency scanner

 Scan up to 1200dpi through software

 Rated Four and a Half Mice" by MacUser Magazine!

 Now bundled with Apples's PHOTOFLASH software to simplify the scanning process

UC840 800dpi

\$89499

62568

Transparency Adapter (for UC&30LE).......549799





SyncMaster[™]I4GL 14" Color Monitor

- 1024x768 at 76Hz refresh rates
- .28mm dot pitch
- · Digital (one touch) picture controls
- Tilt-swivel base

SyncMaster[™]I 5GL 15" Color Monitor

- 1024x768 at 76Hz refresh rates
- · .28mm dot pitch
- · Digital (one touch) picture controls · Tilt-swivel base





SyncMaster[™]I 7GL 17" Color Monitor

- 1280x1024 (max. res.) at 60Hz refresh rates
- .28mm dot pitch
- · INVAR shadow mask
- Tilt-swivel base 64537



SyncMaster[™]l 7GLs 17" Color Monitor

- 1600x1200 (max.res.) at 60Hz refresh rates
- .28mm dot bitch
- · INVAR shadow mask!
- New AR coating · Tilt-swivel base



YOUR MAC SUPERSTORE!

Super CD-ROM Buy!!



- Caddy-less, all-in-one design Includes FREE FWB CD-ROM Toolkit
- Comes with Cable and SCSI Terminato Brand New with One Year Warranty

VividCD Drive **DOUBLE SPEED EXTERNAL CD-ROM!**



- Double spin speed Photo CD (Multisession) Compatible Includes FREE FWB CD-ROM Toolkit
- . SCSI system cable and external terminator extra

Save up to \$500 on CD-ROMs...

Purchase any CD-ROM drive from MacMall and you can purchase any of these great CD-ROM BUNDLES shown, for as low as '74"! Bundles are only available with CD-ROM drive purchase, ordered at the same time.

ENCYCLOPEDIA BUNDLE INCLUDES THESE GREAT TITLES:



- HOME BUNDLE

INCLUDES THESE GREAT TITLES:



REFERENCE BUNDLE

INCLUDES THESE GREAT TITLES:



ords CD · Mayo Clinic CD or It! CD · Capitol Hill CD

ENTERTAINMENT BUNDLE

INCLUDES THESE GREAT TITLES:



ORDER TOLL FREE 800-222-2808

Call us for all your Apple Macintosh® Needs!

PowerBook Duo



MicroDocks Ultra-small and low cost, Newer's 3 MicroDock" models provide connectivity and portability for Duo Users.

SCSI MicroDock*, the first portable SCSI solution, provides SCSI and ADB ports. Exclusive features include active termination for low power consumption and more reliable connection to hard drives and other Macintosh computers. Get SCSI-mode and SCSI Disk mode operation with any PowerBook SCSI cable.

Color MicroDock, the first low-cost portable color solution, supports VGA, SVGA, and Apple's 12- to 16-inch color monitors in 256 colors (8-Bit) and 19- and 20-inch monitors in 16 colors (4-Bit). Audio out and ADB ports included. NTSC adapter available.

Ethernet MicroDock, the first portable Ethernet solution, provides easy RJ45 10BaseT Ethernet network connection. Included software monitors hardware in the background for network errors. Full SNMP support. Promiscuous mode. Comes with a standard ten-foot IOBaseT cable.



The Slot-Free Quadra Cache **Cache Solution**



Add 128K of high-speed "slotless" cache to Quadra 605, 610, 650, 700, 800, 900, 950 and Centris 610 and 650 Macintosh computers. Quadra Cache "allows users to enjoy improved performance while leaving the PDS and NuBus slots open for other high-speed upgrades. First the existing CPU socket, boosts your Macintosh computer's performance by up to 40%! Comes with a 2-Year Warranty.

GLOBAL VILLAGE COMMUNICATION





THE NEW **PowerPort** SERIES offers un-

surpassed fax/modem reliability and high speed. Communicate at 19,200 bps, and even faster speeds using v.42bis compression.

And with FAX speeds of 14,400 bps your communications are faster than ever before, Includes GlobalFax OCR software to convert received faxes into editable files. Also includes: ZTerm, GlobalFax and America Online software FREE!

PowerPort Mercury for PowerBooks (145 to 180)

334 63062

TelePort Mercury for Desktop Macs ... \$299 63061 PowerPort Gold for PowerBooks with \$28999 60467

TelePort Gold for desktop Macs with 14.4 bps send and receive data/FAX \$239 60661

PowerPort Silver for PowerBooks with \$264,99 80466

TelePort Bronzell for Desktop Macs with \$9699 61920 2,400 bps data and 9,600 bps FAX

MacMall FAX Order Line: 3 10-222-5800 Offer Code: D472MG14 Order Status: 800-560-6800

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!*

vid*Ouest*

The Best in Removable Media

Removable hard drives, including the brand new 270MB 3.5" drive that reads and writes 105MB or 270MB cartridges, or the new 200MB 5.25" drive that



will read and write 44MB, 88MB or 200MB cartridges. SyQuest is the industry standard format for removable hard drive storage devices.

SyQuest Drives

SyQuest 270MB External ... \$58999 64243

\$59999 SyQuest 200MB External 64416

\$38999 VividQuest 105MB External ... 61945

SyQuest 88C (R/W 44) External .. \$44.999

Genuine SyQuest Cartridges

Lowest pricing on high quality removable cartridges for any compatible SyQuest" drive mechanism.

270MB^{\$7999} 64415 200MB \$11999 64417 105MB55999 61241 88MB574°° 3304 44MB 16499 1906





16" High Quality Color **Trinitron Display**

Multiple resolutions from 640x480 to large screen 1152x870.

SuperMac 17T510	14999	60756
Super Match 17XL 59	9999	63945
SuperMatch 20*T XL \$20	9999	61371
Thunder II GX 1600 332	19999	64715
Thunder II GX 1360 \$26	7999	62960
Thunder II GX 1152521	6499	64387
Thunder/24 v3.0 514	2999	55442
Spectrum Power 1152 511	5999	63888
Spectrum/24 Series V \$8	3999	64703







Highest quality internal and external hard drives

All Hard Drives include "FWB" Hard **Drive Software**



2.5" for PowerBook

170MB 17ms Int. .. \$289 63594 Ext. .. \$369 64030 256MB 17ms Int. .. \$369 64039 Ext. .. \$449 64040

3.5" Low Profile

170MB 17ms Int. .. \$189 4356 Ext. .. \$269 64035 270MB 11ms Int. .. \$299 63195 Ext. .. \$379 64031 340MB | Ims Int. .. \$319 5637 Ext. .. \$399 64032 540MB 10ms Int. .. \$459 63192 Ext. .. \$539 64033 1088MB 11ms Int. 1819 5508 Ext. .. 1899 64034

3.5" Half-height Drives

1225MB 10ms Int. 1979 61331 Ext. 1059 64036 1800MB 10ms Int. 1079 5509 Ext. 1159 64037

tion of internal drives into your m le for \$30. Inquire for more inform

: Farallon **PhoneNET**

BUYTWO **GET ONE FREE!**



Single: \$2299 50728

3-Pack: \$4598 (5)56



ORDER TOLL FREE 800-222-2808

Call us for all your Apple Macintosh® Needs!



Perfect for image

editing and

illustration!

UD-1212R Drawing Tablet

New 12" x 12" tablet is the perfect fit for any computer artist! New features include a full menu strip, 120 levels of pressure, a transparent over lay surface, a fully customizable cordless batteryless pen, and a more powerful interactive interface!



UD-1212R & Painter 2.0 Bundle 575900 135000

6x8" Tablet

World's first high-speed ADB compatible graphics tablet. The batteryless, cordless pressurestylus has 120 levels of sensitivity. Programmable side switch for Undo, macros or othe commands. 6" x 8" work area other Plugs into ADB port.



ArtZ and Painter

Get both a great tablet and the award winning 24-bit color Natural MediaTM painting program from Fractal Design 61953





Turbo 040 Accelerators

MBG

64655

64578

60976

64654

MHC.

Turbo 040 (with FPU support)

33 MHz Turbo 040 w/128 cache ... '829" 40 MHz Turbo 040 w/128 cache ... 1989** FastCache Turbo174"

Turbo 040 (without FPU support) 33 MHz Turbo 040i w/128 cache .. '639'

Transform your Mac into a PowerPC with Daystar's PowerPro 601 Upgrade

- Genuine Apple PowerPC ROMs
- Simple plug-and-play operation
 Works with your current memory
- IMB secondary cache
 Add up to 128MB of optional memory

66 MHz PowerPro 601

80 MHz PowerPro 601

FastCache PowerPro - IMB Cache '529" 64215

MacMail FAX Order Line: 3 10-222-5800 Order Status: 800-560-6800



MacMall has it all!

If you're looking for a Macintosh peripheral or accessory and don't see it then give us a CALL! We do our best to carry just about everything!

Sharp JX-9460PS 600dpi PostScript Laser Printer

- 27 PCL5 typefaces
 Virtually silent with "sleep mode" and cuts your electric bill!
- True 600x600dpi quality printing
- · Fast 6 page-per-minute printing
- Standard 2MB RAM, expandable to 9MB (3MB required to auto switch between HP PCL5, Epson FX, IBM Proprinter or PostScript) - works with Macs and PCs
- 35 built-in PostScript fonts



Sharp JX-325

24-bit 600dpi one-pass color flatbed scanner

- Fast, precise scans with outstanding
- 300/600 dpi quality 24-bit color, 256 shades of grey or black-and-white scanning
- · Superior color and clarity with
- Sharp's one-pass scanning system

 300dpi optical resolution (600dpi
 interpolated)
- · Zooming enhances mapping to a
- certain size

 Adjustable white balance with edge
- emphasis allows sharpening
 Widely used SCSI-2 interface





RAYDREAM

RayDream Designer 3.0

"By far the best modeling and rendering value around...'

-MacWorld, August 1993

Try the leading 3D illustration package. It handles the details lighting, shadows, transparency, reflections and perspective are automatic! Actually paint the most complex object in 3D!



Type, draw, and print in 3D with this award-winning application! Use built-in text and drawing tools to type and draw directly in 3D. Or import popular clip art and graphics. Add depth and perspective automatically, then personalize with colors, textures, bevels and lighting. Export your files in Illustrator, FreeHand, PICT or EPS format, A must-have for both business graphic users and creative professionals.



This award-winning graphics utility is packed with new features. Resolution boosting eliminates the jaggies in your images or animations, especially scans and bitmaps, with a single mouse click. Supports PICT, TIFF, EPS, PhotoCD, QuickTime and more.







ORDER TOLL FREE 800-222-2808

Call us for all your Apple Macintosh® Needs!

VideoVision Studio The Professional Macintosh Digital Video System

YOUR MAC SUPERSTORE!

Call MacMall

for Memory!

For the lowest prices on memory

products for your desktop Macintosh

or PowerBook, call us FIRST!

1x8 80ns \$44 2224

2x8 80ns \$75 60274

4x8 80ns\$155 2239

4 MB 80ns\$149 4468

8 MB 80ns\$309 4177

16 MB 70ns\$678 61271 32-Bit SIMMs (72 pin) Quadra, Power Mac 4 MB 60ns\$169 61203

8 MB 60ns\$329 61205 16 MB non-composite \$749 62424

32 MB non composite \$1,449 62425

4 MB\$199 61751

6 MB\$269 55471

4 MB\$179 60773

6 MB\$279 60774

8 MB\$379 60775

4 MB\$199 61383

6 MB\$299 61384

8 MB\$385 61385

10 MB.....\$479 61386

4 MB\$195 61619

8 MB\$359 61034

Pricing on memory modules can fluctuate on a

daily basis. Please call for the lowest prices.

*\$1.00 FEDEX® offer applies to continental U.S. only; order over 10 bb incur extra charges. Call customer service at \$00 \$10-400.000 if you have a question or problem with any order. No packages will be accepted without a Return Authorication Number from customer service. All returned products must be in original condition with all packing and registration card, within 10 days of original invoice date. Apple, the Apple logo and Hacintosh are registered trademarks of Apple Computer, Inc. While we do on.

Duo (all models)

PowerBook 165c, 180c

PowerBook 140, 145, 170

PowerBook 160, 165, 180

32-bit SIMMs (72 pin)

LC III, Performa, Centris, Quadra, Power Mac

8-Bit 80ns SIMMs (30 pin)

With VideoVision Studio you can record full-screen, full motion. 60-field per second, digital video input and output to and from your hard disk. It digitizes stereo audio simultaneously and stores it with the video for easier editing.



__ \$1629" 61785

- \$1629" 62146 miere & . \$1979" 61327



Radius LeMans GT Display Adapter plus FREE NEC **CD-ROM DRIVE!!**

The world's fastest 24-bit display interface for Macintosh, delivering resolutions to 1152x882 with utra fast 31-bit QuickDraw acceleration. With 3MB of VRAM, and optimized ASICs, it performs up to 230% faster than built-in video of Quadra!



BONUS! Direct from Radius
NEC 3xe CD-ROM Drive
(valid thru 8/93) (valid thru 8/93)

62326

61769

61695

63786

63587

Radius 24xp-Pro Display Adapter \$49999 PrecisionColor Pro 24x Accelerator 5146999

PrecisionColor Pro 24x (7") 58 1 999† PrecisionColor Pro 24xk Adapter 574999**

Radius PhotoBooster \$80999 62325 **Offer good through 8/31/94. *Pro 24xk price after \$50 Radius mail-in rebate †24x price after \$75 Radius mail-in rebate. Rebates expires 8/31/94.

rac AUTHORIZED RESELLER

Precision Color 17T

on-the-fly" "on-the-fly" resolution switching from 640x480 to 1152x870. Digital controls for precise settings and super sharp .25mm dot pitch give you quality you can see! Ask about the Radius worry-free service warranty!



*AFTER 100 MAIL-IN REBATE

IntelliColor Display/20

The Intelligent 20" Color Display for Macintosh Computers

- · Vertically flat 20" Trinitron
- · Resolution up to 1600 x 1200



Precision Color 20/V

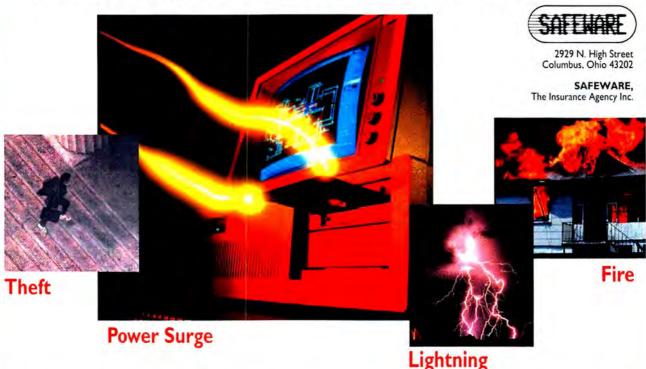
precisionColor interface card, (sold separately) you can swith resolutions on the fly without closing applications or rebooting. With flicker-free resolution up to 1152 x 870, the PrecisionColor presents two full pages for design, spreadsheet, and DTP applications. Requires compatible interface card.



MacMall FAX Order Line: 3 10-222-5800 Offer Code: D472MG14 Order Status: 800-560-6800

Send mail orders to: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

System Security: insures your Apple® Protects your system in the office, at home, and even on the road.



If you lost the use of your computer tomorrow, how would you manage? Unfortunately, it happened to about two and one-half million users last year. Their computers were stolen, destroyed by fire or natural disasters, accidentally dropped - even disabled by sudden power surges. Unforseen mishaps that no warranty covers. Fortunately, you can now insure your valuable APPLÉ equipment against external loss or damage, with System Security from Safeware®.

Comprehensive coverage.

Under the System Security policy, your system is insured against theft, fire, vandalism, water damage, power surges, lightning, accidental damage, earthquake, flood and windstorms. No matter whether your system is in transit, at the office or at home. What's more, the policy covers repair or replacement of your equipment without depreciation.

You pay no deductible.

When your premium is accepted, your

system is covered for one year. There is no deductible.

10-day free trial period.

You can try System Security for 10 days and if for any reason you're not completely satisfied, Safeware will refund your premium in full.

Why not begin your System Security coverage today? It's easy! Just phone the special Safeware toll-free number listed below to purchase a one year policy on any of the equipment listed here.

One year coverage for just pennies a day!

DESKTOPS	I-yr Premium
Power Macintosh	
Macintosh Quadra	
Macintosh Centris	
Printers & Monitors	
\$100 to \$1,000	\$39
\$1,001 to \$2,000	\$40
\$2,001 to \$3,000	\$60
\$3,001 to \$4,000	\$80
\$4,001 to \$5,000	\$100

† This is a general summary of the provisions and qualifications of the insurance benefits included in the System Security Policy, Review the policy for complete details and disclosures. System Security is the service mark of Safeware. System Security in offered exclusively by Safeware and is underwritten by American Bankers Insurance Company, 11222 Quail Roost Dr., Miami, FL 33157.

POWERBOOKS	I-yr Premium
Apple Macintosh PowerBooks	
\$100 to \$1,000	\$39
\$1,001 to \$2,000	\$64
\$2,001 to \$3,000	\$96
\$3,001 to \$4,000	\$128
\$4,001 to \$5,000	\$160

POWERBOOKS	1-yr Premium
Apple Macintosh PowerBooks	
\$100 to \$1,000	\$39
\$1,001 to \$2,000	\$64
\$2,001 to \$3,000	\$96
\$3,001 to \$4,000	\$128
\$4,001 to \$5,000	\$160

NEWTON	I-yr Premium
Apple Newton	\$52

For more information or to order System Security today, call:

1-800-800-6132

Insurance Sales Only.

For merchandise, call 1-800-222-2808

BELOW DEALER COST CLOSE-OUTS!

Below Dealer Cost Clearance! All Radius products are new with full manufacturers 1 year warranty!

All quantities are extremely limited and will be sold on a first come first serve basis. Dealer costs are shown below for comparison.



Sony 17" Color Trinitron \$899 \$1198 with 24-bit video card



RADIUS PRECISIONCOLOR 24X S The Radius PrecisionColor 24X is

the 'Best Price/Performance Value' (MacUser) 24-bit board on the market!

- . Highly integrated 7" card design.
- . \$1000 plus savings vs. Thunder/24! · 20% faster QuickDraw than Thunder/24!
- On-board QuickDraw acceleration •24-bit color
- . Up to 1152 x 882 resolution . Compatible with
- virtually all monitors . Supports Nubus block transfer
- Multiple resolution switching 'on the fly

VIDEO BOARDS

YOUR PRICE DEALER COST

Radius Universal 24XP \$299 \$456 Radius Universal 24XK \$599 \$750 VideoVision \$1299 \$1428 SuperMac VideoSpigot \$299 \$352 SuperMac Thunder 24 \$1399 \$1562 SuperMac SuperView \$299 \$525 milar to PowerView but also does TV!

CALL FOR ALL OTHER RADIUS VIDEO BOARDS!



WITH PURCHASE OF CARD. We have cards for-SE/30, LC, Ilsi, Nubus, Quadras

DISPLAYS



Radius Color Pivot LE (see above) E-Machines ColorPage 15 \$499 \$1307 •15" full page color display •35% larger image area lat tension mask screen Radius Grayscale Pivot \$535 \$499

NEW

Portrait and landscape orientations • Grayscale \$399 \$530 **Full Page Display**

•640 x 870 resolution •75 Hz refresh •Grayscale Built-in video compatible \$1899 \$1989 Radius Color Display/21

• Compatible with Centris or Quadra built in video (16 bit on Quadra 950) •1152 x 870 resolution •True WYSIWIG mode Precision Color Display/19 \$1499 \$1749

 Compatible with Centris or Quadra built in video (16 bit on Quadra 950) . Multiple resolution switching 'on the fly'

Precision Color Display/19 \$2298 \$1749 with 24 bit video card

Sony 20" Color Trinitron \$1899 \$2065

Radius 21" Grayscale Display \$899
•Grayscale •Compatible w/Centris or Quadra built in video \$978

RasterOps 20" Color Display \$1499 \$1446 RasterOps 20" ColorTrinitron \$1899 \$2209

ROCKETS/ACCELERAT

•68040 processor •Supports up to 128 MB of standard RAM

in 8 SIMM slots •QuickDraw acceleration w/Radius boards YOUR PRICE DEALER COST Radius Rocket 33 MHz \$899 \$1248

\$999 Radius Rocket 25 MHz \$699 \$599 \$830 Radius Rocket 25i \$299 RocketShare -\$359

Multiprocessing on your Mac! 33MHz or 40MHz Upgrade

for the Quadra 950, 900, or 700

80MHz Upgrade for PowerMac 6100/7100 accelerate to PowerMac 8100 speed

APPLE LASERWRITER Postscript printer 8 ppm Limited quantities, 600 dpi upgrades available.

APPLE IMAGEWRITER Limited quantities

All LaserWriter/LaserWriter Plus Parts in stock!

\$349



CALL FOR MAC SYSTEMS & PARTS!

Quadra 950 - Below Dealer Cost!!

349

399

199

399

199

AWS 95 16/230 AWS 95 32/1GB.DAT.AS Pro. 7999 Mac Plus 1/0, Mac SE 1/20 ... 299/399 Mac II 0/0, Rev B ROM Mac IIx 0/0, 800K/1,4MB 699/799 Mac Ilex 0/0, 800K/1.4MB ___499/599 Mac Ilci 0/0, 800K/1,4MB. Quadra 840AV, 900, 950, 800, 700 .. CALL PowerBook 170 8/80 (active matrix) _1799 PowerBook 140 4/40 999 All other CPUs **UPGRADES** Quadra 900 to 950.

Mac II to IIIx Mac SE FDHD upgrade. Mac II FDHD upgrade.

CARDS- Network Apple Token Talk 1/4-4/16 399/599

DCA Mac Irma 3270... DCA Mac Irma 3270 for SE30 Ethernet boards for SE/SE 30. 99 Ethernet LC thin coax... 99 Shiva FastPath 4 Gateway

CARDS- Misc. B&W TV card for Nubus.

Apple lie Emulation for LC. 149 Apple IIci Cache Card 99 Apple Serial Nubus Card. 399 Daystar Nubus Ram Card Kodak Device Color Profile accel....1999 lisi NuBus adapter card Ilsi Daystar Dual PDS adapter QQ Orange Micro 286 board TrueVision NuVista+ 2MB. 1999

CARDS- Video Apple 8.24 GC.

Apple 8 bit for 13-14"

Apple 8.24.

Apple Portrait/Two Page E-Machines Colorlink EX/T. E-Machines T19 card for SE30/llsi 299 RasterOps 708+,8 bit for 20". RasterOps 8LC card for LC RasterOps 364 Frame Grabber 300 RasterOps 24 xli 1599 RasterOps 24 L with 801 1299 RasterOps Editing Aces. RasterOps 24 XLTV 2399 SuperMac Spectrum 24 for 20"....1699 SuperMac Thunder II.... DRIVES Apple 40MB 3.5 Internal HD. Apple 5.25 External PC Drive..........49 PowerBook 20/40/80MB __89/129/199 Dayna 360K/1.2MB-740K/1.44MB 499 Exabyte 8mm 5GB tape backup _1599

Maxtor 800MB WORM Drive Ricoh HyperSpace 600MB Optical_1999 SOFTWARE

PageMaker 5.0
Lotus 123
4D 4 06/2 0

AppleShare File Server 2.0	299
Radar 4.0 Network Manager	299
GraceLan 50 User Pack	199
GraceLan Unlimited Corp. Pack	499
MONITORS	
Apple 12" Mono/Gray Scale	100

Apple 15" FPD Mono/Gray Scale ...449

Apple 21" TPD Mono/Gray Scale __999 E-Machine ColorPage 15 w/8 bit card _499 INPUT/PRINT Apple Scanner

Abaton Flatbed 300 scanner. 399 Dest 1020 Scanner 499 HP Scanjet... 499 Howtek ScanMaster III+... Mirrus Film Recorder. 2999 Sharp JX 450_ 3999 Presentation Tec. Film Recorder..3495

Voice Navigator II. PRINTERS

Apple ImageWriter I/II. Apple ImageWriter Wide/LQ269/449 Apple LaserWriter 8ppm PS. ...499 Apple LaserWriter IInt/ntx.... 799/999 AST Turbo PostScript Laser. 1399 GCC WriteMove II portable 399 HP PaintWriter XL 599 IBM Pageprinter II. .999 LaserMax 800, 135 fonts 2499 Mitsubishi G370-10u 300dpi color .. 1999 NEC LC890 SilentWriter. 999 Newgen Turbo PS400. QMS ColorScript 100 m10 1999 OMS ColorScript 100 m30 11x17 4999 QMS 4MB Upgrade, legal pack for ColorScript 100 (above). 499

Qume Crystal Print Publisher II.. 999 Qume ScripTen_ 1399 Ricoh Laser 6000/ps. 999 Texas Instruments 2108 999

MISCELLANEOUS 110-1500 Watt Battery Backups 99/799 Apple LQ cut sheet feeder. 149

.79

PARTS

Apple LQ bin expansion.

Apple Universal Monitor Stand

Mac Plus logic, No ROMs. Mac II logic Rev. B ROM (new)... 199 All Logic Boards. CALL CALL All Power Supplies. Mac Plus power supply 129 SE-Analog board 129 SE power supply. 129 1.44 FDHD Floppy (NEW). 199 400K/800K Floppy Drive 49/99 Apple 5.25 External PC drive 49 Apple ADB mouse (NEW). Ilcx case and power supply Mac II/IIfx case & power supply 199 Quadra 700 case & power supply. 399 CRT and Yoke for Plus, SE

All LaserWriter parts CALL Over 20,000 items/parts in stock,

999

89

399/549

WE BUY MACS!!

Please fax list when possible. Corporate, Government, and University P0's welcome. Prices reflect cash discounts. Mastercard, Visa, AMEX, & Discover Card accepted. Lease/Purchase financing available.

Consultants/Dealers 817,754,2131 International Sales 817.754.2120 TeleFax 817.754.2345

MACWORLD August 1994 199

CRA Systems, Inc. 300 South 13th St.

Hard Drives

<u>l</u>uantum LPS 270mb Internal



Quantum Pro and LPS series carry a TWO Year Warranty. Go Drives carry a ONE Year Warranty

LPS & PRODRIVE SERIES

	3.5" LC	OW PROFILE	
Capacity	Access	Internal	External
85mb	17ms	§135	5195
170mb	14ms	\$199	\$259
270mb	11ms	\$259	5319
340mb	11ms	\$299	\$359
540mb	10ms	\$399	\$459
1080mb	9.5ms	5739	5799
1440mb	9.5ms	5909	\$969
2100mb	9.5ms	\$1239	\$1299

GO-DRIVE SERIES

2 5" POWERBOOK DRIVES

	Tin I Ditte	DOON DINITES	
Capacity	Access	Internal	External
170mb	17ms	\$259	§379
256mb	17ms	°339	\$459

S.	Se	aga	te	MONEY BACK GUARANTEE		ives carry a Warranty
Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
3.5" LC	OW PRO	FILE				
1.2GIG	ST31200N		10ms	1000mb	\$869	5929
3.5" H	ALF HEI	GHT				
1.9GIG	ST11900N		9ms	1600mb	\$1199	\$125
2.4GIG	ST12400N		9ms	2000mb	\$1549	\$1609
1.9GIG	ST11950N	Barracuda 1	8ms	1350mb	\$1489	1549
2.4GIG	ST12550N	Barracuda 2	8ms	2050mb	\$1745	\$180
5.25" I	FULL HE	IGHT				
3.4GIG	ST43400N	Elite-3	11ms	2750mb	52159	5225

11ms

Removable





REMOVABLE TECHNOLOGY

All SyQuest drives include a TWO Year Warranty. All drives include SCSI Director formatting software, ONE FREE Cartridge, necessary cables for "plugand-play" and documenta-



Club	Mac	Remova	bles
@100 @		II CILL OF ACI	

and the mentordores	Internal	External
ClubMac 44mb 5.25" (50555)	⁵ 199	\$229
ClubMac 88c 5.25" (SQ5110C)	\$379	5419
ClubMac 200mb 5.25"(505200)	5559	\$599
ClubMac 105mb 3.5" (503105)	\$319	\$359
ClubMac 270mb 3.5" (503270)	5549	\$589



ST4108000N

Elite-9

Introducing the NEW ClubMac 200mb 5.25" Removable Drive

8600mb

54699

54799

\$59

\$69

579

559

589



9.0GIG

All SyQuest cartridges cartridges include a FIVE Year Warranty.



Cartridges

44mb (SQ400) 88mb (SQ800) 200mb (SQ2000) 105mb (SQ310) 270mb (SQ327)

MultiSpin 3Xp

The 3Xp combines 3X transfer rate performance, 250ms access time and a 256 KB continuous-flow cache in a compact design, making it and incredible value. At only 2.4 lbs the 3Xp is the world's lightest triple speed CD-ROM reader.



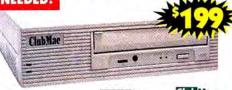




NEC CD-ROM READERS	w/o bundle	w/bundle
MultiSpin 3Xe (External, 195ms access time)	\$469 .	5569
MultiSpin 3Xi (Internal, 195ms access time)	\$439 .	
MultiSpin 3Xp (Portable, 250ms access time)	5399 .	5499
MultiSpin 4X Pro (External, 180ms access time)	5935	51035







- 320ms occess time
- Double Speed performance
- Headphone jack and RCA jacks

NEW!

PhotoCD compliant





ClubMac 2X Speed (Ext., 320ms access time)....\$199 ...\$299

The ClubMac CD-ROM reader carries a ONE Year Warranty

CLUBMAC CD-ROM BUNDLE S800 VALUE









QuickShot Speakers



· Luces Game Pak

lubMac ptical Drives

CLUBMAC NEW 3.5" 230MB FUJITSU OPTICAL

ClubMac (M25IIA) 3.5" 128mb Fujitsu Optical Fujitsu (M25IIA-DYNAMO) 3.5" 128mb Dynamo ClubMac (M2512A) 3.5" 230mb Fujitsu Optical ClubMac (JY-750) 5.25" 650mb Sharp Optical MaxOptix Tahiti III (9400) 5.25 1.3GIG Optical



All ClubMa: Opticals include ONE cartridge and ONE Year Warranty.



Tape Backup

		THE REAL PROPERTY.		THE PERSON
Model	Format	Media	Internal	Externo
ClubMac DAT	DDS	60m, 90m	s749	\$79
ClubMac DAT/DC	DDS-DC	60m, 90m	5949	599
ClubMac DAT/2	DDS-2	60m, 90m, 120m	51329	\$137
HP DAT	DDS	60m. 90m	5949	s99
HP DAT/DC	DDS-DC		51109	\$115
				\$142
	ClubMac DAT/DC ClubMac DAT/DC ClubMac DAT/2	ClubMac DAT DDS ClubMac DAT/DC DDS-DC ClubMac DAT/2 DDS-2 HP DAT DDS HP DAT/DC DDS-DC	ClubMac DAT DDS 60m, 90m ClubMac DAT/DC DDS-DC 60m, 90m ClubMac DAT/2 DDS-DC 60m, 90m, 120m HP DAT DDS 60m, 90m HP DAT/DC DDS-DC 60m, 90m	ClubMac DAT DDS 60m, 90m 5749 ClubMac DAT/DC DDS-DC 60m, 90m 5949 ClubMac DAT/2 DDS-2 60m, 90m, 120m 51329 HP DAT DDS 60m, 90m HP DAT/DC DDS-DC 60m, 90m 51109

ClubMac DAT and DAT/DC drives include Retrospect v2.0 Backup Software, ONE 90 Mater Tope and a TWO Year Warranty, HP DAT drives carry a CNE Year Warrant The ClubMac DAT/2 & HP DAT/2 drive includes Retrospect Remote v2.0 (3-Pack) Network Backup Software, ONE 120 Mater Tape and a ONE Yiar Warranty

5369

\$249

5299

5499

1029 \$959

\$2579

CLUBMAC 20" TRINITRON MONITOR BLOWOUT

Monitors & Graphic Cards

CDAL	DILL	-	CA	n	nc
GRAI	П	·	LA	ĸ	כע

LeMansGT (0447)	51949
PrecisionColor Pro 24X (0429)	51349
PrecisionColor Pro 24XK (0430)	5699
PrecisionColor Pro 24XP (0431)	5449
PrecisionColor 24X (0421)	5824
*33915201600000 ** * * * * **	

MULTIMEDIA

VideoVision	Studio	(0418)53389
VideoVision	Studio	Upgrade (0419).51499
		Basic (0416) \$1549

MONITORS

MOMITORS	
PrecisionColor/21 (0463)520	49
IntelliColor Display/20 (0381)518	79
PrecisionColor Display/20v (0427)516	79
PrecisionColor Display/17 (0460)59	99"
Pivot Display (0356)55	
Full Page Display/gs (0424)54	89
TPD20gs (0436)/21gs (0437)5799/59	
* After MFR 150 00 rehote 1 After MFR 175 00 rehote	

"After MFR 100.00 rebate. Offers expire 08/31/94

17" MultiSync 5FGp



IntelliColor Display / 20

ClubMac **Blowout** Price is...

Purchase one of the following





It's time to trade up for VideoVision Studio! **SAVE '500**

For a limited time, you can trade in your digital video board and get 500.00' from Radius when you purchase a VideoVision Studio video board. "Offer good only with the purchase of a Radius Video Vision Studie. Mail qualifying video board, Video Vision Studie, warranty registration cord and a copy of your soles receipt to Radius. Offer ends 08/31/94

MONITORS

15" MultiSync 3V (JC-1535VMA) up to 1024 x 768	3469
15" MultiSync 4FGe (JC-1531VMA-3) up to 1024 x 768	5629
17" MultiSync 5FGe (JC-1731VMA-3) up to 1024 x 768	5989
17" MultiSync 5FGp (JC-1741UMA-3) up to 1280 x 1024	51099
21" MultiSync 6FGp (JC-2141UMA-3) up to 1280 x 1024	\$1999
NEC Manifect entry a THRIF Year Wassanty	

PRINTERS

Silentwriter 640 6ppm, 3	100 dpi, 52 fonts, PS Level 2	5719
Silentwriter 1097 10ppm	n, 600 dpi, 35 fonts PS Level 2	⁵ 1379

The Silentwriter 640 corries a Limited TWO-Year Overnight Replacement Warranty The Silentwriter 1097 carries a CNE Year Warranty

HP LaserJet 4ML Printer



• 300-dpi • 35 PostScript form • 4com

18.8 MHz RISC or

HEWLETT PACKARD Authorized Dealer

HP DeskWriters corry a THREE Year Warranty HP DeskWriter 310s carry a ONE Year Warrant P DeskWriter 310s carry a ONE Year Warrant HP Laser Jets carry a ONE Year Warranty

HP DeskWriter 310 Printer 300 x 300 dpi, 3ppm, Color Kit Available	\$299
HP DeskWriter 310 Printer with Cutcheet Feeder, Color Kit Available	
HP DeskWriter 520 Inkjet Printer 600 x 300 dpi, 3ppm, 35 fonts	5299
HP DeskWriter 550C Inkjet Printer 300 x 300 dpi color, 3ppm, 35 for	5479
HP DeskWriter 560C Inkjet Printer 600 x 300 dpi color, 3ppm, 35 for	\$579
HP LaserJet 4ML Printer 300 x 300 dpi, 4ppm, 35 scalable forts	
HP LaserJet 4MP Printer 600 x 600 dpi, 4ppm, 35 scalable forts	

cceleration

POWERPC PRODUCTS	
66 MHz PowerPro 601(000728)	.1499
80 MHz PowerPro 601(000735)	\$1999
FastCache PowerPro-1MB Cache (000742)	
TURBO 040 ACCELERATORS	
Turbo 040 (with FPU support)	
33 MHz Turbo 040 w/128K cache (000773)	5799
40 MHz Turbo 040 w/128K cache (000797)	5959
FastCache Turbo (000223)	5165
Turbo 040i (w/o FPU support)	
33 MHz Turbo 040i w/128K cache (000780)	5629



G	1	T	Δ	1
	G			G I T A CATION ACCELERATOR

,	POWERCACHE without FPU / with FPU
)	33 MHz PowerCache (P31UV-033) \$275 / \$359
	50 MHz PowerCache (P31UV-050) \$415 / \$539
7	PowerCache Adapter*599
)	* Not reg'd for Ilci, Ilvi, Ilvx, Performa 600

Vetworking

10THUB/12	1081 H
10THUB/8	108T H.
Mini EN/SC	Thn/108
Mini EN/SC10T	101 505
NETEXT-FN	AAUI Hu

1081 Hub w/12 101, Thk & The ports	5465	
108T Hub w/8 10T, The port	5229	
Thrs/1081 SCSI Ether w/DT& PB cable	5297	
10T SCSI Ethernet w/DT & PB cable	5237	
AAUI Hub w/4 RJ45 ports	5179	

ANTE FNTNA MC+IIE64

14. 7 1	SANIE
FNTNA	1081 or Thin FriendlyNet Media Adopter565
MC+IIE64	Max II & Perf 600, Thk/Thn, 64K
MAC+IIET64	Moc II & Perf 600, This, 1081, 64K
MC3NB	Mac II & Perf 600, Thk/Thry/1081, 648 189
AP1001	AcantePrint, Thk/108T or Thk/Thn5329

SUPERMAC.

WE HAVE THEM IN STOCK!

When you purchase the 200 REBATE following products.

SuperMatch 20TXL



Thunder/24 v.2.0

Bundle: STIPFRALLE REBATE

24-BIT GRAPHIC ACCELERATORS

TI DII OIUII III MEELLEI	THE CITY
Thunder II GX-1600 1600 x 1200	53349
Thunder II GX-1360 1360 x 1024	52689
Thunder II GX-1152 1152 x 870	52169
Thunder/24 v. 2.0 (G1130)	
Spectrum Power • 1152 (63430)	s1169
Spectrum/24 Series V (63930)	5839

All SuperMac products carry the SuperCare Plus Warranty (Overnight replacement for ONE Year). SuperMac graphics and digital - video cards carry a FIVE Year Warranty.

LARGE SCREEN DISPLAYS	
SuperMatch 21 • T XL Trinitron (STD2102)	.52199
SuperMatch 20 T XL Trinitron (STD9752-XL)	.51949
SuperMatch 17XL (STD1701)	\$999
Platinum 21 Two-Page GS (\$109761)	5999
PressView 21 Display System	53349
MULTIMEDIA SOLUTIONS	
Digital Film (DV2050)	\$3199
Spigot II Tape (8V1530)	5849

Spigot II Tape (DV1530) Video Spigot NuBus (0V1030) Video Spigot LC (DV1050) ...

CORPORATION

MONITORS

MOMITORS	
20T MultiScan Trinitron (207580)	.51929
20/20 Multimode Color (2020C)	.51539
ClearVue Color 17	5869

5779
\$1119
52239

MULTIMEDIA

24STV (2536)/24XLTV (2548)	5729/52598
MoviePak (2690)/ Movie Pak2	(2676) \$519/\$1479
MoviePak2 Pro Suite (2692)	53359
Video Expander II (2826)	5499
DUOMATES	
DunMate 16sr (2650)	\$529

"Sure Thing"" Service Program

Under the "Sure Thing" service program, RasterOps will provide customers with next-day replacement of a fauly or defective add-an board or display product for the first year of awnership.

To be eligible for the program, customers must be the original purchaser of
the product, send in a warranty registration cord and show proof of purchase

Input Devices



UD Series Graphic / **Tablets**

canners

EPSON ES-800C Pro Mac *FREE ASTOUND 1.0 & '50 Rebate with



ES-800C Pro-Mac ActionScanning-Mac..... Transparency Unit (88130215749

MICROTEK

ScanMaker IIG	with Fractal Design Sketcher 1.0 \$489
ScanMaker IIsp	with Photoshop 2.5 LE 5799
ScanMaker IIHR	with Photoshop 2.5 \$1089

Warrantier All liters manufactured by Châbber are returned to Châbber for warranty repoir. All other items carry manufactured by Châbber carry and product manufactured by Châbber carry as 30 of locuraties. All product manufactured by Châbber carry as 30 of money back guarantee. Châbber extends all other monafacturers return policies to its recinerers. Rend Châbber product sery 30 day money back guarantee when specified. Returns, Cell for RMA number! Any product that is returned WITHOUT on RMA number! Any product that is returned. WITHOUT on RMA number will be refused. All product information and prices are subject to change without notice. Not responsible for typographical errors.



SD 18x25 Standard Tablet Vlodems

ARTZ 6x8 ADB Tablet

UD 12x12 Standard Tablet

SD 12x18 Hectrostatic Tablet

SD 12x18 Standard Tablet.

GLOBAL VILLAGE TELEPORT / POWERPORT\$329 / \$295 Mercury 19,200, V.32 Turbo Gold 14,400 V.32 bs.......5279 / 5235 Silver 9600, V.125255 / 5235 Bronze/Bronze II 2400, 4800, 9600 Fex......595 OneWorld Fax Server 1 Line/AppleTalk5865

Supra Modem	
SupraFaxModem 14.4 LC	5159
V.32bis, V.42bis w/FAXsif & Micro SupraFaxModern 14.4	5225
v.32bs, v.42bs v/Fixsel & Micro SupraFaxModem PB 14.4	5225
V.32bs, V.42 Int. for Powerbook SuppraFax Modern 28.8 v tors floor	5319

Info (714)768-8130 • Tech Support (714)768-1490 Fax (714)768-9354 • 7 Hammond, Irvine, CA 92718

Great Products. Priceless Support!

An APS Breakthrough

APS Announces New Drives Featuring IBM's Breakthrough Magneto-Resistive "" **Head Technology**

(FFE

(FE

"In the fiercely competitive world of the humble desktop hard drive, nobody sweats the details more than APS. Elegant design, quality components, and rocksolid construction distinguish the compact

APS SR 2000 Case." Editors of MacUser

SR 2000 CASE



on your SCSI Chain, even when you're not ready to buy a new drive. Our new SCSI

Company of the Compan	
Benefits	SCSI Sentr
Optimizes Overall SCSI Perform	mance .
Exclusive Digital Active Termination	in v
Provides Ideal Termination Power	
Drastically Reduces SCSI Retries	
Regulates SCSI Line Voltage	
Solves Bus Impedance Issues	
LED Activity Indicators Diagnostic To	ol 🗸
Easy Installation: Takes Seconds	

Sentry™ gives you all the benefits of APS' acclaimed DATerm technology in the form of an external SCSI performance monitoring instrument.

RD

For your Mac or Power Mac

Model	Capacity	Internal	SR2000
163M	B - 1	029WI	В
APS Q 270 ² Quantum LPS27	257MB	\$259	\$359
APS I T 270		259	359
APS MX 290 Maxter 7290 mp		249	349
APS MX 345		329	429
APS 340 ² 340 mechanism	327MB	279	379
APS I''' 360		299	399
APS Q 525 ² Quantum 525 ma		379	479
APS I''' 540 IBM DSAS 3540	² 522MB	399	499
APS Q 540 ² Quantum 540 me		399	499
APS I''' 730	² 700MB	499	599
APS MS 1.2A Micropolis 2210	V5 965MB	759	859
		Third was a series of the series	

Internal drives for Quadra 800 and Centris 610 available DATerm patent pending Copyright © 1994 APS Technologies

Model Internal SR2000

	1612	1B - 2	2845N	B
	APS MS1.25 Micropolis 2210 m	1001MB echanism	\$699	\$799
4444	APS I""1.05		699	799

Heart proce to Commercial		
APS MS 4110 5 1002MB Micropolis 2210 mechanism	699	799
APS Q 1080 ² 1029MB Quantum 1080S mechanism	749	849
APS MS 1.7 AV 51612MB Micropolis 2217AV mechanism	999	1099
APS MS 1.7 1682MB Micropolis 2217S mechanism	929	1029
APS 1 2.0 5 1920MB IBM 0664 mechanism	1299	1399
APS ST 2.05 2040MB Seagate ST 1255000N Barracuda me	.1679	1779
APS MS 2.4G ⁵ 2100MB Micropolis 1926 mechanism		-1549
APS MS 3.0G 5 2845MB Micropolis 1936 mechanism	1999	+2199

1611MB 1-5 Denotes length of manufacturer's warranty

* External Case is Special Full Height Only

* Internal Price Listing

The New APS I"1.0 Gig

The new high-capacity, value leader, the APS I 1.0 also promises to be the reliability leader as a result of its IBM 0662 mechanism's incredible 800,000 hr MTBF and five-year

warranty, Employing IBM's Magneto Resistive head technology, the APS I 1.0's low power requirements enable internal compatibility across a variety of Mac platforms, yet provides 1003MB

of impressive performance with seek times as low as 13.3 ms and sustained transfer rates as high as 3.3MB per second. A great match for Mac Centris models through the PowerMacs. external versions of the APS I 1.0 in our SR 2000 enclosure are compatible with virtually all Macs from the SF, through the PowerMac.



- + End Cable Bondage Forever!
- . Minimize SCSI Chain Length
- . Heavy Metal Shielding Protects SCSI Signal
- . StacKIT Includes Four Concave Stacking Feet
- + StackIT Includes Exclusive APS SCSI C "Connector"

POWERBOOK DRIVES

	Model APS PB 85	Capacity 80MB	\$249	Internal	AC/DC
(SC)	APS PB 170	160MB	319	\$269	\$419
M.	APS T 213	202MB	319	269	419
1111	APS PB 250	240MB	359	309	439
LABS	APS T 340	324MB	549	499	649
1111	APS T 520	500MB	699	649	799

PORTABLE STORAGE

The Perfect Home for your 2.5" PowerBook Drive. Companion II Enclosures AC/DC \$89 Enclosure \$139









Get the Best: APS DAT

All APS Drives Are Power PC Mac Compatible!



30-Day

Toll-Free

Support

Awesome

Warranties

Factory Direct

Quality

Rapid

Repair

Return

24-Hour **Product** InfoFax

MBG

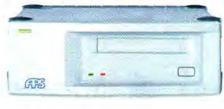
Only APS DATs bring you all the benefits of our SR 2000 enclosure with DATerm. **Digital Active Termination**

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 HyperDAT™



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 S139 Value, Free!

DAT			
Model	Capacity*	Internal	SR 2000
APS DAT ²	1.8-2G on 90m tope	\$749	\$799
APS Turbo DAT ²	4-5G on 90m tope	949	999
APS HyperDAT	8-10G on 120m tape	1149	1199

*Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environme

DAT Medla (Units)	14	5-19	20+
60 meter DAT Tapes -	\$10	\$9.50	\$8.50
90 meter DAT Tapes -	12	11.50	10.50
120 meter DAT Tapes -	23	22.50	21.50

All APS DAT Drives Include Retrospect



1993 Macworld Magazine World Class Award - APS Hard Drive Series Readers' Choice



Model



999 1099 APS 230MB MO

2499 APS 1.3G 5.25" MO Mechanism is Sony-Optical SMO F521-00

All MO Drives Include 1 FREE Cartridge 128 MO cartridge — \$45 unformatted, \$50 formatted 230 MO cartridge — \$60 unformatted, \$65 formatted \$12 KRS MO cartridge — \$123 unformatted 1024 KRS MO cartridge — \$123 unformatted

POWERBOOK STUFE

APS SCSI DOC w/ PowerMerge Lite

Palm-Sized 25–30 PowerBook SCSI Adapter that includes a dock-ing adapter for PowerBook and termination power indicator. Receive Power-Merge Lite Free with every APS SCSI DOC!

APS SCSI BOY Rugged Palm-Sized 25–30 PowerBook SCSI Adapters

APS PowerBalls (4 Pack)

Brighten up that dull granite with a colorful APS PowerBall, Manufactured to the same exacting specifications as the Apple original, the APS PowerBall lets you customize your PowerBook * environment.



\$9.99



APS 44MB SQ 555



,	APS SQ 555 ²	44MB	\$259
•	APS SQ 5110c ²	44/88MB†	429
•	APS SQ 3105	105MB	329
	APS SQ 3270	270MB	539

† Does not format 44MB cartridges All SyQuest Drives Include 1 FREE Cartridge

SyQuest Media	14	5-19	20+
44MB cartridge -	\$59	\$58	\$57
88MB cartridge -	100	98	97
200MB cartridge -	100	90	97
105MB cartridge -	59	57	56
270MB cartridge -	95	93	92

Listed prices are unformatted.



Great Products. Priceless Support!

CD ROM DRIVES

Model	SR 2000
APS T 4101	\$299
APS T 3401	439

APS INTERNATIONAL Global Storage Resource APS Intl. Sales Line (816) 920-4109 On parle français au (816) 920-4135 Se habla español en (816) 920-4136 Si parla l'italiano in (816) 920-4137 International

Wir sprechen Deutsch (816) 920-4138 どうぞご遠慮なく日本語の。

ファックスでもお申込み下さい

24-Hour Intl. Fax: (816) 483-3077 M-F 6AM-12Midnight CST. SAT & SUN 9AM-9PM CST. For a Free Catalog, call APS Sales: (800) 874-1428, IntoFax: (800) 374-5802

ne day shipping for personal checks (Restrictions apply)



APS Technologies 6131 Deramus Kansas City, MO 64120

00 874-

We're not like the other

We go the extra





Whether you need a system for highend color publishing, professional prepress applications, desktop design and production or simply business productivity – Express Direct can custom configure a Mac System that's right for your specific job and right for your budget. And remember, all Macs aren't created equal! At Express Direct we do more than take orders and ship boxes. We install the memory, video card and system software. Then we test every System – so all you need to do is plug it in! And only Express Direct gives you Toll-Free Technical Support with every Mac!

\$5,149

Power Macintosh 8100/80 AV with CD ROM Drive 16MB RAM, 500 MB HD, includes Ethernet & FPU. •Add SuperMac 21TX4. with Thunder /24 with DSP, 24-bit graphics accelerator, Extended Keyboard & System 7.1. Complete System Price \$9299

Power Macintosh™

PawarP Talk to an expert.



Newgen's superior engineered products bring high-resolution, "service-bureau-like printing" to the personal printer. Newgen's proprietary Image Enhancement Technology produces incredibly crisp output normally found in printers at twice the price. And patented Auto Recognition Technology allows all Newgen printers to be attached to multi-platform networks for maximum flexibility and compatibility.

, \$2199 , \$1399

(a) SuperMac Thunder /24 with free DSP, "the fastest 24-bit card" 8 (b) the award winning 21-TXL, 21" Trinitron display, "Price after \$200 rebate. Call for details.



For color publishing & pre-press, nobody delivers more power and performance than SuperMac. SuperMac's 24-bit graphic accelerators constantly sweep MacWorld magazine's top 3 ratings for the fastest cards on the market. SuperMac's large screen displays are tailored to the demands of the graphics professional.



Get true RAID performance on any NuBus Mac with the potent combination of FWB's 2.0 GB SledgeHammer 2000 FMF NuBus and FWB's SCSI JackHammer accelerator card.

*FWB

FWB produces the industry's broadest range of affordable, high-performance disk array storage subsystems. Choose the solution that's best for you from the SledgeHammer family of disk arrays, which now includes the top performing SledgeHammer II and SledgeHammer Wide. No matter which Macintosh you have, you'll benefit from the unsurpassed professional performance of an FWB disk array. Power Macintosh compatible.

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

Apple, the Apple logo, Macintosh Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, inc. Prices are subject to change without notice. A 21's surcharge applies to American Express purchases. All returned orders may be subject to a 15% restocking fee plus return shipping. Call for RMA before returning. Software, unless defective, currind be returned after it has been opened. All warranties on Macintosh or Apple brand products sold by Express Direct will be honorall by Express Direct or its authorized agents only. All other manufacturers' warranties still apply. * Extended Service Plans are optional and available for an additional cost. Call for complete details.

mail order companies.

mile for you.



ance and Value: FOCUS Enhance 17t (a) & the most affordable accelerated 24-bit color interface (b).

FOCUS Enhancements' Lapis T17 is without a doubt the best value available today. Offering an unmatched combination of performance and price, this 17° Trinitron gives you sharp, brilliant color in 4 resolutions. Add the accelerated 24-bit color card, and you've got all the features and speed at half the price of all the comperable systems. Now you can have the performance you demand at a price you can afford.



From affordable 24-bit color at under \$900, to top-of-the-line, 1200 dpi performance, Umax offers a scanner for every need and budget. With Adobe Photoshop for image editing and manipulation and an optional transparency adapter for scanning slides and transparencies, Umax scanners bring professional power to the desktop!



 Unlimited toll-free technical support



· Full warranty Authorized service coverage

AUTHORIZED







 Flexible payment & leasing terms for those who qualify



International Orders Shipped Daily Fax: 312.549.6447 Ph.: 312.549.0030

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!



1801 W. Larchmont Ave. Chicago, IL 60613

Mac Allen

MiniCad 5 - Performance leader for Mac CAD!

The multi-award-winning price/performance leader for Mac CAD contains 2D, 3D a database/spreadsheet and a macro language. Includes FREE integrated modules for: Architects, Mechanical Engineers, Designers. Customizable Item# CAD 0048 menus and palettes, a ClarisCAD conversion kit, and more.

Your practical, precision CAD solution!

Blueprint 5 – Power Mac version included!

Blueprint is professional 2D drafting at an unbeatable price, providing all the tools you need to do precise, high-quality 2D CAD. This award-winning software now ships with Power Macintosh and regular Mac versions in each program! Features include: auto-dimensioning, tolerancing, unlimited layers, auto-wall tool, polylines, DXF translator, and more. Publisher: Graphsoft







Adobe Illustrator™ 5.5

Great new features! Plus, upgrade from 5.0 and get FREE Adobe Acrobat Exchange & Distiller, 220 typefaces and a BONUS CD-ROM filled with more typefaces, clip art, Adobe Collector's Edition 1 & 2, Illustrator

Gallery artwork, and MORE! Illustrator 5.5 Full product: Ask for item# GRA 0772 5389. Publisher: Adobe

Ask for Upgrade Item# UPG 0085



HEWLETT PACKARD

This personal inkjet HP Deskwriter model #2279A printer gives you superior, water-resistant, 300 dpi black printing on plain paper. Print up to three pages per minute, with 35 built-in fonts, and 256 levels of grayscale for great graphics.



Ask for item# INP 0318

Now only



evise & 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! 5-User: COM 0231 \$239 Publisher: Mastersoft

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, 14 modules in all! Works with Intermission and After Dark. Publisher: Delrina

VST ThinPack Plus

battery management software. Manufacturer: VST Power Systems

Item# ACC 1286 \$1995

Item# ACC 1424

Also available: ThinPack Complete



8-15 hr. PowerBook Battery!

High-density, maintence-free batteries for the Power Book.

UL listed for safety and comes bundled with VST Utilities

ASD Security Trio!



Get TrashGuard, FileGuard & FileDuo ALL 3 - ONLY \$14995!

Ask for item# UTI 0423

- · FileGuard 2.7-"It's sleek, fast and safe. I highly recommend it." MacUser. Protect your hard drive, applications, files, and folders (including System Folder) from erasure, unauthorized access, deletion, and illegal copying. Item# UTI 0135 \$139.
- TrashGuard-Delete files forever! Using the Trash Can to delete a file only makes the space available, but does not erase data. TrashGuard not only deletes files, it actually removes them from your hard disk. Item# UTI 0322 \$49.
- · FileDuo-Backup your important files quickly and automatically! FileDuo creates backups any time you want: every 5 minutes, at a specific time, or when you shut down your Mac. Item# UTI 0323 \$89.

Publisher: ASD Software

MB SyQuest BLOWOUT!

For a limited time, get a 44MB Removable SyQuest Drive for only \$199- plus, get your first* 44MB cartridge for only \$29.95! 'Limit one 44 MB cartridge for each 44 MB drive purchased. Call for details.



Track computer time use with WindoWatch!

WindoWatch 1.5.5 tracks window usage on stand-alone or networked Macs-perfect for Desktop Publishers or any business that bills clients for computer time! The program

keeps track of every minute spent in any program, and records this information in the form of a timesheet. Even differentiates between actual use and paused time -Item# UTI 0264 when you're working on several jobs at once. Publisher: ASD Software



The most affordable, full-function keyboard ever!

The Power User105E 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



Lightning-Fast-LOW PRICE!

Magnum 144 Fax/Data Modem

The Magnum 144, with fax and data speeds of 14,400bps. provides V.42bis, MNP data compression and error correction for 57,500bps throughput. Other powerful features include automatic speed and error control. Great for modem novices or experts alike.

Manufacturer: Technology Concepts

Item# MOD 0183



MacDraft 4.0

Offers easy-to-use drawing tools. including linear, radial and angular dimensions; special tools to extend and trim lines, create perpendicular, tangent and parallel lines, fillets, chamfers, merge/subtract objects; keyboard editing and placement of objects for increased precision; new integrated database assigns data to objects, creates custom reports and links them to Excel®. Publisher:

Fight Desktop Boredom!

Opus 'n Bill Screen Saver

Screen savers have been known to be funny, but now there's one with an attitude. Introducing Opus 'n Bill Screen Saver from Delrina. Let Opus and Bill protect you and your monitor from boredom. Windows and Mac. Publisher: Delrina



Item# UTI 0446



Order toll-free 24 hours a day, 7 days a week! 1-800-255-6227

Innovative Data Design

SUPERSTORE" Get Microsoft ENCARTA

A Complete Multimedia Encyclopedia on ONE CD-ROM!



- . More than 25,000 articles! . Thousands of images!
- . Thousands of sounds!
- · Hundreds of maps and charts!

Ask for item# BND 0348 when you buy any CD-ROM Drive from us at the same time.

Now, when you buy any CD-ROM drive and ENCARTA from us at the same time, you'll also receive the Space Shuttle and Oceans Below

Plus, 2 CD-ROMs FREE!





To order this Power User Double-Speed CD-ROM drive, ask for item# DRI 0891.

BUSINESS & PRESENTATION

CDs, too!

A LASTING IMPRESSION ResumExpert (Full line available)	0
	13.
BUS0298 DateBook Pro	10
DATO104 TouchBASE Pro	
BASELINE PUBLISHING	
SPL0029 Thunder 7 1.5.3	6.
CLARIS	
DAT0112 FileMaker Pro. 2.1	9.
INTUIT	
FIN0201 Quicken 4.0	95
LOTUS DEVELOPMENT CORPORATION	
BUS0188 Lotus 1-2-3 for Macintosh 1.1 29	99.
MICROSOFT	
BUS0223 Excel 4.0	95.
BUS0181 Project 3.0 44	15.
BND0349 Office 3.0 w/ F/A-18 Hornet	75.
BUS0269 PowerPoint 3.029	15
WRD0059 Word 5 1 29	15
BEST!WARE	
FIN0212 M.Y.O.B. 4.0 w/o Payroll	95
FIN0213 M.Y.O.B. 4.0 w/ Payroll 109.	
WORDPERFECT CORPORATION	
WRD0068 WordPerfect 3.0 (♦)	95

COMMUNICATIONS & NETWORKING COM0171 Adobe Acrobat Starter Kit ... APPLE COMPUTER, INC. NET0250 AppleShare 3.0.1

COM0211 Apple Remote Access	189.
UTI0514 Apple Personal Diagnostic	
DAYNA COMMUNICATIONS, INC.	
NET0358 EtherPrint-3 Plus	449.
FARALLON™ COMPUTING	
NET0007 PhoneNET® Plus, SE & II	29.95
GLOBAL VILLAGE (FULL LINE AVAILABLE)	A 11
PowerPorts	Call.
HAYES	100.05
MOD0130 ACCURA 144+Fax 144	
MOD0129 ACCURA 96+Fax96	
UTI0433 AccessPC 3.0	00.05
POWER USER®	89.95
MOD0116 14.4 Send/Receive Fax Modem	159.95
SHIVA	
NET0246 LANRover/L	599.
ZOOM TELEPHONICS	
MOD0109 VFX V.32bis MacPack	149.95
EDUCATIONAL & ENTERTAIN	MENT
BRODERBUND	
GRA0268 Kid Pix 1.2	35.
NORDIC SOFTWARE	25
EDU0051 MacKids Turbo Math Facts 2.0 PERSONAL TRAINING SYS. (FULL LINE AVA	
Excel 4.0. Word 5.1. Filemaker Pro 2.0	
THE SOFTWARE TOOLWORKS	cd. 49.
BND0169 Miracle Piano Bundle	220

BRODERBOND	
GRA0268 Kid Pix 1.2	35
NORDIC SOFTWARE	
EDU0051 MacKids Turbo Math Facts 2.0	25
PERSONAL TRAINING SYS. (FULL LINE AVAIL	
Excel 4.0, Word 5.1, Filemaker Pro 2.0	
THE SOFTWARE TOOLWORKS	
BND0169 Miracle Piano Bundle	229

	GRAPHICS	& DESIGN	
BE			

	GRA0772	Illustrator 5.5 (♦)	389
-			

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.

Order by Midnight (a) for Overnight Delivery — Only \$3.00!

1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701 ©1994 Micro Warehouse Inc.

- All major credit cards accepted. No surcharge.
 Your credit card will not be charged until your order is shipped.

- If we ship a partial order, we pay the freight on the remaining portion.

 All LS. shipments are insured at no extra charge.

 C.O.D. orders accepted (add \$6.00 including shipping)-\$1,000 maximum.

 All products are covered by a 120-day limited warrants. Defective software replaced immediately. Hardware replaced or repaired at our discretion.
- me products may have system requirements. Call for details
- Sales fax: CT residents add 6%, NJ residents add 7%, Ohio residents add appl. tax
- All orders add \$5 00 per order. We ship Airborne Express overnight unless
- LPN Ground delivers overnight. (Some rural areas require an extra drv.)
 Orders placed by 12 (O MIDNIGHT (ENT) (weekshays) for "in-stock" nems ship
 same day (burring system failure, etc.) for overnight delivery.
- C.O.D. orders ship via US (Blue Label if you are more than 2 days from us via US Ground). Charge is \$6.00 including shipping.

 Alaska, Hawaii, outside continental U.S., APO/FPO call 908-367-0440 for information.
- Some products are not available outside the U.S. We regret that we cannot be responsible for typographical errors
- For faster service for existing customers, our computers recognize incoming calls by the telephone number and instantly locate your records.

OCopyright 1994 MicroWarchouse, Inc. MacWAREHOUSE* is a dission of MicroWarchouse, Inc. MacWAREHOUSE* and MicroWarchouse* are registered servicemarks of MicroWarchouse, Inc. Item availability and price subject to change without notice. Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc.

	Photoshop 2,5.1 (♦)	559.
GRA0654	FreeHand 4.0	389.95
GRA0757	Paint & Publish	89
DTP0088	PageMaker 5.0	579
UPG0032	PageMaker 5.0 Upgrade	149
APPLE CO	MPUTER, INC.	
GRA0347	QuickTime Starter Kit	79.
CLARIS		
GRA0350	MacDraw Pro 1.5	269.95
RAY DRE		
GRA0605	Ray Dream Designer 3.0	249.95
QUARK, I		
	XPress 3.3	589.
SOFTKEY	SOFTWARE	
F0N0480	KeyFonts	49.
	INPUT & OUTPUT	
CAERE		4.1.42

INP0289	UmniScan	299.93
KENSING	TON	
INP0231	Turbo Mouse (SE or II) 4.0	109
	K (FULL LINE AVAILABLE)	
INP0246	Microtek ScanMaker II	699
SUPERMA		
MON0053	SuperMatch 20+ Color Display	1799

POWERBOOK PRODUCTS

ACC0840	59.95
INPOZZ1	. 79.

	Powerpad	69.95
	UPGRADES & DRIVES	
DAYSTAR	DIGITAL	
DRI0469	Universal FowerCache 33 MHz	299
	20 MHz Turbo 040i Accelerator	
PERIPHER	AL LAND, INC.	
DRI0615	Infinity 88/RW44	559.95
POWERUS	ER®	
CHP0011	4 Meg SIMMs 80ns	Call
CHP0013	1 Meg SIMMs 100ns	Call
	44/88C MB SyQuest w/ cartridge	
	44MB SyQuest w/ cartridge	

UTILITIES & PROGRAMMING

01	ILITIES & PROUNTING	140
ALADDIN	SYSTEMS	
	Stuffit Deluxe 3.0	69.
APPLE CO	MPUTER, INC.	
SYS0004	System 7.1 Personal Upgrade Kit	45
	At Ease 2.0	
CAERE		
UTI0293	OmniPage Direct	99.95
MICROMA	AT COMPUTER SYSTEMS	
UT10285	MacEKG 2.0	89.
SYMANTE	C CORPORATION	
UT10151	Norton Utilities for the Mac 2.0	95.
UT10334	Symantec Antivirus 3.5 (SAM)	65.95
ASD SOFT	WARE	
UT10135	FileGuard 2.7	139

(*) Accelerated for Power Macintosh -Runs on your regular Mac too

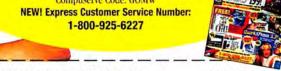
To order, call toll-free

1-800-255-6227

Call 24 hours a day, 7 days a week.

Inquiries: 908-367-0440 FAX Your Order to: 908-905-9279

Compuserve Code: GOMW 1-800-925-6227



FREE CATALOG SUBSCRIPTION

MW0894

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. State Zip

(Expect to receive your first issue within 4-6 weeks)





Circle 150 on reader service card

LINE 1-800-622-8721



Precision Color 17 /21 \$999/21	J
IntelliColor Display 20i1849	
LeMans GT1899	
Precision Color 20V1575	
Precision Color Pro 24x1245	
Precision Color Pro 24xP429	
VideoVision Studio3275	
StageTwo Rocket1499	
Free NEC CD-ROM with purchase of	

selected items



JetInc is the most economical way to refill your ink jet printers. It provides over 50% savings, and incorporates recycled materials to help reduce landfill waste.

2Pk Black/Color	\$15.99/22.99
2Pk High Capacity E	Black19.99
500c/550c/560c/3	310 8Pk55.95
AppleColorPrinter 2	Pk Black 22.95
Cyan/Yellow/Mager	ta29.95



\$137
\$210
\$439
\$518



44MB External Drive\$189	
88c MB External Drive349	
200 MB External Drive499	
270 MB External Drive499	
44 MB Cartridge57	
88 MB Cartridge69	
200 MB Cartridge99	
270 MB Cartridge65	



SummaSketch FX Tablet

- · Pressure sensitive tablet with stylus
- Unique cordless/corded convertible transducer
- 256 levels of pressure

	Tablet	\$399
12"x18"	Tablet	\$739



1200SE 3000dpi	\$2595
UC630MAC w/Photosi	hopLE649
UC840MAC w/Photosi	hop935
UC1260MAC w/Photo	shop1189
Transparency Adapter	439
Auto Document Feede	

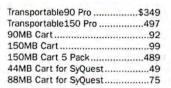


Infinity 88 Internal	\$389
Infinity 88 External	469
Infinity 200	669
Infinity 270	
1.3GB Maxoptical	2799
MiniArray 1.0GB	2049
Quick SCSI	309
21MB Floptical	369



1MB TI Memory	\$40
MicroWriter PS23	
MicroWriter PS65	989
MicroLaser Pro 600 PS23	
MicroLaser Pro 600 PS65	1465
MowerStep40MHz Upgrade	325
MicroWriter Toner	
MicroLaser Pro Toner	159

IOMEGA





ArtZ Demo\$235	
ArtZ269	
12x12 UD Tablet499	
12x18 UD electrostatic810	
12x18 UD transpar, surface675	
Painter v2.0 w/Tablet199	
Four Button Cursor108	

@DGR

BANK MARKET

DGR Technologies is committed to the excellence that has made us the industry leader. Each drive is shipped in an all-steel case with a universal 40 watt power supply, double shielded SCSI cable, external terminator and a free cartridge. (Also for PC's!)

				22,27,72,20
	128 MB	 	 	\$799
	256 MB	 	 	\$899
	1.3 GB	 	 	\$2299
Internal PC Ca	ard	 	 	\$149
PC Parallel to	SCSI Adapter	 	 	\$199

Bottom Line Carries Over 8000 Products

7th Guest CD-ROM	\$51
Adobe Illustrator 5.5	399
Adobe Photoshop 2.5.1	
Aldus Pagemaker 5.0	499
Canvas 3.5	249
DeBabelizer	275
Filemaker Pro 2.1	235
Flying Nightmares PowerPC	55
Fontographer 4.0	249
Fractal Painter	239
Fractal X2	75
Freehand 4.0	
Infini-D 2.6 PowerPC	780
Iron Helix CD-ROM	59
The Journeyman Project CD	

7th Cuest CD DOM

Macromind Director 4.0	699
MiniCAD+ 4.0	499
MS Excel 4.0	279
MS Office 3.0	410
MS Word 5.1	279
Myst CD-ROM	
PGA Tour Golf II	
QuarkXPress 3.3	549
QuicKeys 3.0	103
RamDoubler	
SoftWindows PowerPC	270
Streamline	130
Studio Pro	595
Suitcase 2.1	49

System 7.1 Pro99

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 Multi-Media with the DGR MultiMax! Equiped 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.



Technologies

Call If You Don't See What You're Looking For.













1-800-622-8721

For best prices and service, call



Executive Multi-Media Pack

- Double-Speed/Multi-Session, Kodak Photo CD Compatible.
- Complete with powerful stereo speakers, headphones, microphone and five CD titles. All for only \$489



ScanJet II cx	\$939
DeskWriter 310	299
DeskWriter 520	299
DeskWriter 560c	579
LaserJet 4ML	1029
LaserJet 4MP	1395

Saturday Shipping **Now Available**



Mercury	275
Gold	.225
Bronze II	
One World Fax	.793
Duo Mercury	.319
Duo Software	74

Power PC

6100CD 16-500/1GB.,\$2767/3048 7100 16-500/1GB3342/3623 7100CD 16-500/1GB....3601/3882 8100 16-500/1GB 4611/4892 8100CD 16-500/1GB....4877/5158 Custom configurationsCall



	Supra Corporation				
14.4	Mac Package\$	205			
	LC				
14.4	Powerbook	219			
28.8	Mac Package	299			

Magic. Hard Working Tools For Your Macintosh Since 1985. Brought to you by MacProducts USA

Call for your free MacProducts catalog.

Magic **Network Tools**

MagicNet Adapter	\$12
Magic 10BaseT Adapter	49
Magic 10BaseT/ThinNet Adap	ter 49
Magic 8 Port 10BaseT Hub	149
Magic 8 Port 10BaseT Hub	249



Magic Fax Modems Magic 28.8 V. Fast Class\$199 Magic 14.4 Data/FaxModem......99 With Voice Mail.....189

High Speed Modern Cable15 Maglc Powerbook Int. Modems 14.4bps Data/FaxModem119

24/96 Data/FaxModem.....79 All FaxModems come with full feature fax and data software, America Online and Compuserve Startup Kit.

Magic Modems Magic Hard Drives



Magic 240 External	\$299
Magic 1.0 GB Ext. 9 ms	799
Magic 2.0 GB Ext. 9 ms	1199
Active Terminator	59
Call us about custom co	onfigurations

Magic 2GB Tape Drive



Magic Memory

1MB 30pin 80ns\$2	5
2MB 30pin 80ns6	
4MB 30pin 80ns12	
4MB 72pin 60/70/80nsfrom 12	9
8MB 72pin 60/70/80nsfrom 25	9
16MB 72pin54	9
32/64MB 72pin 60ns1295/279	5
Powerbook RAMCa	11
Newton 1MB/2MBfrom 15	
LC VRAM2	9
Quadra VRAM1	
ColorBlaster LC14	
All Magic memory has a 30 day	y
money back guarantee and a	
lifetime warranty.	

Magic 128 Optical Drive



Magic 128 Optical/Turbo .\$739/838
Magic 230 Optical899
Magic 256 Optical/Turbo899/999
Magic 1.3GB /Turbo 2299/2399
128 MB Carts/10 Pack27/240
230 MB Carts49
256 MB Carts/10 Pack65/590
1.3 GB Carts 135

Magic 1GB RAID Upgrade for the Power PC 8100



Utilize the advanced SCSI features of you PowerPC to the fullest

with the Magic 1GB RAID Upgrade, the ideal solution for desktop video on the PowerPC. This system is compatible with SCSI 1,2 and SCSI Manager 4.3. RAID drives come with software and cables.

	Upgrade	Externa
1.0GB RAID	\$799	\$1899
2.0GB RAID	1495	2499
4.0GB RAID		2999
18.GB RAID		9495
Software		190/599

Call Bottom Line 1-800-622-3475 or 1-512-472-4956 On the Internet: sales@max.dgr.com

TO ORDER FROM BOTTOM LINE: Cail 1-800-622-8721. Payment: Visa, Mastercard, Discover & American Express. No surcharge on credit card orders. Tax. Texas residents add 8% sales tax. Prices. Items and prices subject to change and availability. Terms: Net 30 available.

Shipping: minimum S5-UPS Ground, Blue, Red, Federal Express, & Airborne. Returns All returns must be in original condition and packaging and require an RMA number. Seal must not be opened on software. Returns may be subject to a restocking fee. Original shipping is non-refundable. International Orders: Bottom Line provides the extra level of support international clients require. 24-hour international fax line, 220-volt versions of most hardware, discount rates and customs brokerage available via DHL and FEDERAL EXPRESS. 2-3 DAY DELIVERY to most countries. Bottom Line Distribution cannot be responsible for errors in typography or photography. All brands, and product names are trade marks of their respective holders











ProDirect

Call 800-524-9952

Quantum Best Byte for MACs

New Product <u>Capacity Seek RPM Ditc Cache</u> LPS 170 MB12MS 4500 128K 199 259 3.5" LOW PROFILE LOW POWER DRIVES

LPS Series Capacity 270 MB CALL CALL 340 MB 11ms 290 350 540 MB 12ms 395 455

3.5" LOW PROFILE, LOW POWER DRIVES LPS and ELS series includes a 2 year warranty.

GO Drive Series

Capacity 80 MB 17ms 185 255 127 MB 17ms 230 315 170 MB 17ms 255 335 256 MB 17ms 345 425

Empire and Pro Series Disc Cache 9.5ms 5400 540 MB 512K \$545 605 1080 MB 10ms 5400 512K Price 1800 MB 10ms 4500 512K 965 1025

MOST ORDERS SHIPPED SAME DAY.

NO SURCHARGE ON CREDIT CARDS

NO OUT OF STATE SALES TAX COLLECTED

 30 DAY MONEY BACK GUARANTEE ON ALL DRIVE PRODUCTS.

Summer Special

Micropolis 1.7 GB AVOnly \$1025 Seagate 2.4 GB Barracuda II.. Only \$1725

Both drives are perfect for your Direct to Disk recording needs. SCSI Manager 4.3 savry driver for all of your PowerMac & AV needs included with all ProDirect Drives.

Seagate

Capacity	Model	Size	Access	RPM	Disc Cache	h	Ext
1.2 GB	ST31200N	3.5	10ms	5400	256K	\$775	\$835
1.9 GB	ST11950N	3.5"	Bms	7200	1024K	1485	1545
2.4 GB	ST 12550N	3.5*	8ms	7200	1024K	1725	1785
NEW! 4.2 GB	ST15150N	3.5*	8ms	7200	1024K	Call	Call
3.4 GB Elit e3	ST 43400N	5,251	10ms	5400	512K	2125	2225
9 GB Elite 9	ST 410800N	5.25"	11ms	5400	512K	CALL	CALL

Seek

20ms

20ms

RPM

3200

3200

M1936AV

Capacity	Model	Size	Access	RPM	Disc Cache	Int.	Ext.
1.2 GB	M4110	Low Profile	8 MS	5400	256K	\$750	\$810
1.2 GB	M2210	3.5"	10 MS	5400	512K	750	810
New 1.7 GB	M2217	3.5"	10 MS	5400	512K	970	1030
2.4 GB	M1926	3.5"	11 MS	5400	256K	1420	1520
3.6 GB	M1936	5.25*	11 MS	5400	256K	2135	2195
	C Direct	to Disk	Recoi	ding !	AV Drives	É	
1.2 GB	M2210AV	3.5"	10 MS	5400	512K	810	870
1 7 GB	14221741/	2 5=	10.445	E400	FIDE	1005	1005

All drives come formatted and packaged with the lates: SCSI Manager 4, 3 compatible driver External drives come with a double

FUĬĬTSU

3.6 GB

- 11MS • Transfers up to 10mb/sec.
- · Fast SCSI-2

5400

- . 5 Year (HOT SWAP) Warranty
- 2185 300,000 Hours MTBF COMES WITH QUADRA AV

2285

\$835

NEW! 105 MB SQ3105 14.5ms 3600 270 MB SQ3270 13.5ms 3200

Model

SQ5110C

SQ555

Removable Media Price 44 MB **5Q400** \$55 88 MB **SQ800** 64 105 MB SQ310 59 200 MB 5Q2000 78

128K 549 565 One FREE Cartridge Included with all SyQuest Products! All SyQuest cartrideges come with 5 year warranty. ProDirect, Inc. offers a 30 day money back guarantee. All drives include a FREE copy of Anubis Formatting Software.

Int

249

375

329

Ext

405

379

Buffer

32K

64K

Memory Products

Memory 2x8x80

SyQuest

Capacity

88 MB

Call 4x8x80 Call 4x8x80(FX) Call 16x8x80(Low Profile) Call 16x8x80 (FX) Call All memory has a lifetime warranty! Centris, LCIII & Quadra 4 MB -70 ns/ 4 MB 60 ns 8 MB -70 ns/ 8 MB 60ns 16 MB 70 ns

32 MB -60 ns VRAM Video RAM 256K/512K

Call

Call

Call

Call

Call

1.2 GB DIZIMO ...

Capacity

330MB

520 MB

128 MB Dyna MO

M2622

M2624 F/A

M2694E5A

30 ms,

8.5 ms

5400 3600 RPM, SCSI-2

512K

\$865

\$775

HEWLETT

Capacity	Model	Access	RPM	Warranty	Int.	Ext.
1.2 GB	C2247	9.5 ms	5400	5 Year	\$845	\$905
New Pricel 2.4 GB	C2490	8.5 ms	6400	5 Year	1645	1705
2.35 GB Optical Drives	C3010	11 ms	5400	5 Year	1975	2075
1.3 GB MO	C1716T	23.5ms	2400	1 Year	2599	2699

QMS PRINTERS

Model	Price
PS 410 4PPM,300DPI	\$1399
2 MB, Hot Ports, PS L1 & HP-PCL, 45 Fonts	
'PS 860 8PPM, 600 DPI, 11x17	\$3825
12 MB exp. 32 MB,39 Fonts, PS L 1& 2, RISC Processor	
'PS 1725 17PPM, 600 DPI, New Price!	\$4399
8 MB Exp. to 32 MB, PS Level 1 & 2, RISC Processor	
*Network interfaces available for Ethernet/Talk, Token Ring for	
Netware, TCP/IP, DECnet, Emulation for DEC LN03, CCITT Group IV.	

800-524-9952 Fax 24 Hrs. a Day 612-941-1109
Fax International Orders 612-929-2421 • Call: 612-941-1805

Business Hours: 8:00am to 7:00pm M-F (CST.)

Prices & Specifications subject to change. All trademarks are registered trademarks of their respective companies. Freight not refundable. All returns may be subject to a restocking fee.

Access **RPM** Disc Buffer Int Ext 14ms 4500 128K \$310 \$370 9ms 4500 512K \$545 \$605

TAPE BACKUP DRIVES

Capacity	Model	Media	Int.	Ext.
2.0 GB	HP35470A	4mm	\$935	\$985
3-5 GB	HP35480A	4mm	1105	1150
4-10 GB	HP1533A	4mm	1365	1425
20-50 GB	HP1553A & Auto Tope Loc	ider	3495	3595
2-5 GB	Exabyte 8205	8mm	1535	1595
5-10 GB	Exabyte 8505	8mm	2175	2275
20-50 GB	Exabyte 10i Auto Tape Los	oder	CALLI	Call!

ProDirect tape backup systems include Retrospect backup software. Drives come with 1 piece of media,

EXTERNAL CABINETS

ZERO FOOTPRINT	\$75
40 watt shielded power supply, 110/220 VAC. Works with all 3.5" and 5.25" HH Driv	res.
MICROCAB Vertical Standing	\$89
110/220 VAC, Works with any 3.5" Drive.	
FULL HEIGHT	\$139
68 watt shielded power supply, 110/220 VAC. Works with all 5.25" Drives.	
Multi Bay Cabinet	\$CALL
Two, Four, Six, and Eight Bay Cabinets available. CALL FOR QUOTE. All cabinets come	with
a 25-50 pin Mac system cable. One year warranty on all cabinets.	

- Dealer Inquiries Welcomed
- Volume Discounts Available
- P.O.'s Welcomed Educational, Government, Corporate
- Please Specify For: Mac, HP Workstation, SUN Sparc or IBM RS6000



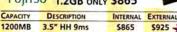
6824 Washington Ave. S. Minneapolis, MN 55344



Circle 135 on reader service card

HARD DRIVES

FUJITSU 1.2GB ONLY \$865



"Quantum" 540MB ONLY \$425

CAPACITY

GO170MB 2.5" NB 17ms GO256MB 2.5" NB 17ms 42 MB 3.5" LP 1 7ms	\$335 \$109	\$385 \$435 \$169 \$215
42 MB 3.5" LP 1 7ms	\$109	\$169
	\$165	\$215
85MB 3.5" LP 17ms		
170MB 3.5" LP 17ms	\$205	\$265
240MB 3.5" LP 10ms	\$245	\$305
270MB 3.5" LP 10ms	\$255	\$315
340MB 3.5" LP 10ms	\$295	\$355
540MB 3.5" LP 10ms	\$425	\$485
1000MB 3.5" HH 10ms	\$795	\$855
1200MB 3.5" HH 10ms	\$965	\$1025
1800MB 3.5" HH 10ms	\$1075	\$1135
Go Drives carry a 1 year warra		

2400MB ONLY \$1740 Seagate

CAPACITY	DESCRIPTION	INTERNAL	EXTERNAL
1200MB	3.5" HH 10.5ms	\$865	\$925
1900MB	Barracuda 1, 8ms	\$1485	\$1545
2400MB	Barracuda 2, 8ms	\$1740	51800
2400MB	3.5" HH 10.5ms	\$1545	\$1605
3400MB	5.25" FH Ilms	\$2150	\$2250
9000MB	5.25" FH Ilms	\$4695	\$4795
Seagate Dri	ves carry a 5 year warra	inty.	

Maxtor 290MB ONLY \$255

DESCRIPTION	INTERNAL	EXTERNAL
3.5" LP 10ms	\$255	\$315
3.5" LP 10ms	\$295	\$355
3.5" HH 8.5ms	\$699	\$759
3.5" HH 8.5ms	\$1199	\$1259
	3.5" LP 10ms 3.5" LP 10ms 3.5" HH 8.5ms	3.5" LP 10ms \$255 3.5" LP 10ms \$295 3.5" HH 8.5ms \$699

0% DOWN SUPER LEASING



DTP SUPER SYSTEM

- Quadra 650AV 33MHZ, 68040 processor 16MB RAM, 1GB hard drive, X keyboard
- 17" hi-res monitor with 24-bit video
 SuperMac Spectrum IV,
- · 24-bit accelerator/video card
- ScanMaker IIAV, 1,200 x 600 dpi scanner
- with Adobe Photoshop LE Syquest 88C read/write drive
- Texas Instruments Pro 600, 9ppm, 600dp laser printer

Special Note: You can create any customized package of equipment to meet your own special needs. Just call our leasing department for a lease estimate.

Three Super reasons to lease from SuperMicros

1. 24 hour approvals
2. 100% tax deductible

Call our leasing department for all your leasing needs. You will enjoy the freedom to lease the equipment you want to meet your individual needs. We can lease you a complete system or a hi-res printer. You can choose a 1,

2, 3, 4 or 5 year 100% tax deductible lease.

- 3. Over 20,000 products available for Lease

24 hour approvals, CALL NOW!

SCANNERS



	THE RESERVE		
-1988	MODEL	DESCRIPTION	PRICE
-100	MICROTE	UMA	×
-537	ScanMaker IIG/UC630	24-bit Color, 600x300 dpi	\$485/659
SALE	ScanMaker IISP/UC840	24-bit Color, 600x300 dpi	\$795/895

Transparency For Microtek & UMAX

SYSTEMS AVAILABLE

MODEL	DESCRIPTION	PRICE
Q950 8/200	SuperMac 20T, Keyboard	\$5599
Q800AV 8/200/CD	SuperMac 17, Keyboard	\$3999
Q650 8/200	17" Monitor, Keyboard	\$2799
Q660AV 8/250	14" Apple, Keyboard	\$2069
Q605 8/160	14" Apple, Keyboard	\$1419
PM8100 8/200/CD	SuperMac 20T, Keyboard	\$6789
PM8100 8/200/CD	SuperMac 17, Keyboard	\$5659
PM7100AV 8/200/CD	SuperMac 20T, Keyboard	\$5999
PM7100 8/200/CD	SuperMac 17, Keyboard	\$4199
PM6100 8/160	14" Apple, Keyboard	\$2099

TAPE DRIVES

OPTICAL DRIVES



MODEL	CAPACITY	SEEK	MACKIT
Sony-650	594/650MB	66ms	\$1999
Ricoh-9200 EX	594/650MB	35ms	\$1849
MaxOptix-Tahiti II/III	594/650/1GB	25ms	\$2299/2499
PMO-650/1.3GB	594/650/1.3GB	19*ms	\$2599/2799
Sony 1.3GB	594/650/1.3GB	25ms	\$2299
Includes external drive, 2	5/50 SCSI Cable, Ma	c SW, and	Terminator
Cantainere		Dozer	

3M 594/650MB		\$99	650MB
Sony 594/650MB		\$119-	ONLY \$79
Sony 1.3GB		\$139	
3.5" OPTICAL DRIVES	PANASONIC	128MB	NLY \$689
MODEL	CAPACITY	SEEK	MACKIT
Panasonic	128mb	35ms	5689

		221112	
Fujitsu-230	128mb	30ms	\$999
Sony P-301	128mb	35ms	\$999
Most-256	128/256mb	37ms	\$895
Includes external dri	ive, 25/50 SCSI Cable, N	nac SW. and	d Terminator
	100000	1800	NM
CARTRIDGES	2.00000	PRICE	MY
	and the state of t	1800	128MB

No One Has A More Complete Family of 5.25" & 3.5" Rewritable Optical Drives than

Sony 128MB ..

SuperMicro



MODEL	CAPACITY	SIZE	MACKIT
Archive Viper 250	250MB	3.5"HH	\$499
Archive Viper 525	500MB	3.5"HH	\$625
Sony SDT-2000	2Gbyte	3.5"HH	\$879
Sony SDT-4000	4Gbyte	3.5"HH	\$899
Sony SDT-5000	5-16 Gbyte	3.5"HH	\$1245
Exabyte 8200	2Gbyte	5.25"FH	\$1299
Exabyte 8500	5Gbyte	5.25"FH	\$2199
Exabyte 8205	2-5Gbyte	5.25"HH	\$1595
Exabyte 8505	5-10Gbyte	5.25"HH	\$2275
Includes external drive, and Terminator, Retro:		MAC SW II.	
TAPE	Sec.	19630	26

Sony DAT \$22 Maxell 8mm \$19

SYQUEST DRIVES



	MODEL	INTERNAL	EXTERNAL	
Į,	Syquest 270	\$499	\$499	
	Syquest 200	5459	\$499 300	2
ė	Syquest 105	\$279	\$319	5
S	Syquest 88C	\$275	\$329	
	Syquest 44	\$199	\$229	
	Includes external drive	e, 25/50 SCSI Cable, Mad	SW, Terminator	
	CARTRIDGES 44N	IR CARTRIDGES ONLY S	49.99	

C	CARTRIDGES 44MB CARTRIDGES ONLY	49.99
2	270MB Cartridges (5+ or with drive pure	hase)\$98.99
2	200MB Cartridges (5+ or with drive pure	hase)\$98.99
1	105MB Cartridges (5+ or with drive pure	hase)\$58.99
8	88MB Cartridges (5+ or with drive purch	ase)\$72.99
	44MB Cartridges (5+ or with drive purch	

DISK ARRAY RAID SYSTEMS



DISK ARRAY RAID SYSTEMS	MACKIT
1.0 GB RAID System, 2 x 540MB hard drives	\$1329
2.0 GB RAID System, 2 x 1.0GB hard drives	\$2129
4.0 GB RAID System, 2 x 2.0GB hard drives	\$3499
6.0 GB RAID System, 2 x 3.0GB hard drives	\$3999
Includes external drive, 25/50 SCSI Cable, MAC disk array sol	

A SuperMicro disk array combines multiple hard drives into a single disk, offering high speed data transfer with seek times as low as 5 msec. There are many advantages to disk arrays over individual hard drives:

· Better data integrity



PRESENTATION COMBO

· RAID level 0, 1, 4, 5 supported

Syquest 44 & Dual Speed Photo, CD-ROM drive \$555



A Syquest cartridge is large enough to hold several presentations. Use the CD-ROM drive as a source of graphic images. With this combo, you can bring everything you need on disk, and quickly connect it to your client's computer for the presentation.

385 VAN NESS AVE. #110, TORRANCE, CA 90501

1-310-782-5760 INTERNATIONAL

1-310-782-5974 FAX



Federal Express

We Specialize in Image Processing MACWORLD August 1994 211

MAC BARGAINS

Buy with confidence from MAC BARGAINS:

- A leading direct marketer
- of Mac products

 Over 2,500 products in stock
- Most orders ship the next day
 Our goal is 100% customer
 - satisfaction Toll Free Technical Support for our customers

Great Deals!



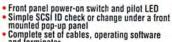
SupraFAXModem 144LC External



- Sends/receives data and faxes at 14,400 bps Caller ID lets you monitor incoming calls
- Silent Answer lets you use the same phone
- line for voice and fax communications
 Supports Class 1 and Group 3 fax standards
- Supra #99308



Apple External Hard Drive 160MB



- and terminator

 Cushioned foot pads protect the drive and your desk in a vertical or horizontal position

 Advanced 3-1/2" drive technology for fast data access

Apple Computer, Inc. #95346



- Energy Star and VESA compliant
 3 user-adjustable temperature presets for more accurate whites
 31mm dot pitch
- Nine preset resolutions

Sony #01157

SONY

	Adobe	
99251	Acrobat Exchange Single user	\$121.88
06263	Dimensions 2.0	5124.38
99491	Blustrator V5.5 Adobe Blustrator 5.0-5.5 Upgrade	\$371.88
05808	Adobe Illustrator 5.0-5.5 Upgrade	\$89.98
04042	Photoshop V2.5.1	\$544.98
04670	Premiere V4 0	\$399.98
05702	Premiere v3 0 -4 0 Upgrade	\$71.82
03971	Streamline V3.0	\$124.38
06332		\$93.13
99253	Type basics	. \$123.10
03497	Type Manager V3.6	\$37.50
03950	Adobe Type on Call	\$61.88
98501	Aladdin SitCom	\$61.36
05820	Aladdin SrtCom Aladdin Stuff1 Space Saver	\$30.66
	Aldus	
06711	DateBook Pro V4 0	
06319	Fetch V1.2	\$184.38
00333	FreeHand V4.0 Gallery Effects Vol. 1 HomePublisher v2.0	\$371.88
04121	Gallery Effects Vol. 1	\$124.38
98047	HomePublisher v2.0	\$43.61
05481	Intel Draw V2.0	\$43.61
04573	PageMaker V5.0	\$559.38
00346	Persuasion V2.1	\$309.38
04190	SuperPaint V3.5	
06712	TouchBase Pro V4.0	\$42.61
98194	DateBook & TouchBase Pro 4 0 Comp Upgr	\$45.98
	Altsys	
05036	EPS Exchange V2.0 Fontographer	\$85,11
04537	Fontographer	\$251.93
00349	Metamorphosis Pro	\$84.66
	Font Chameleon V1 0	
99266	Font Chameleon V1 0	\$175.17
00078	Fontmonger V1.5	\$89.98
03552	Avery MacLabel Pro	\$42.59
	Broderbund	
95451	Automap Atlas	\$54.74
03970	Bannermania	\$21.98
03513	Carmen Sandiego/Time	\$28.95
99564	Carmen Sandiego/USA DLX	\$38.47
05688	Carmen Sandiego/World DLX	\$38.47
97732	Carmen Sanciego/World DLX CD-RDM .	\$53.00
02730	Might and Magic III	\$34.84



v3.0

#00427

04144	Maxima V2 0	
	PowerRook Utilities	\$53.73
99127	Colorage Freedom of Press Classic	579.36
	Corel	
95331	Corel GALLERY	\$32.09
Call	Corel Professional Photo CD's - Call	\$25.57
00203	Cricket Graph III	\$85.23
	Dontz	
06326	Diskfit Direct V1.0	\$27.27
04722	Diskid Pro VI.1	\$09.43
04194		
02586	Retrospect V2.0	\$139.84
	Datawatch	
06533	Citadel W/Shredder	\$53.55
06535	ScreenLink V2 0 Twin pack	\$53,55
02077	Virex V5.0.3	\$59.16
	Delring	
04706	Far Side Daily Planner	\$37.22
	04144 05646 96785 99127 00213 95331 00203 06326 04722 04722 04586 06533 06535 06534 02077	Maxima V2 0

17271	Intermission Screen Svr Opus & Bill Screen Svr	\$25.11
97938	Opus & Bill Screen Syr	\$27.66
	Deneba	
99538	Artworks V1.0 Canvas V3.5	\$100.14
00803	Canvas V3 5	\$260.23
	Electronic Arts	
97701	Chuck Yeager's Air Combat Cyberplasm Formula CD Deluxe Music V3 0 CD	\$34.98
94589	Cyberplasm Formula CD	\$31.98
	Deluxe Music V3.0 CD	
00473	PGA Tour Golf CD	\$36.00
97712	Populous CD	\$30.00
97703	Total Distortion CD	\$73.86
00636	V for Victory II Vampires Coffin CD	\$36.00
94591	Vampires Coffin CD	\$39.98
97707	Victory at Sea	\$42,00
00705	Entertainment After Dark V2.0 The Disney Screen Syr Collection More After Dark vol 1 Star Trek Screen Syr Comptons Movies LucasArts Indiana Jones Last Crusade LucasArts Loom Maxis A-Train w/Contruct Set Maxis DoddleMation V1.0 Maxis EL Fish Maxis Robosport	***
02785	The Discon Seroes Sur Collection	\$25.80
04053	More After Dark vol 1	\$21.00
05934	Star Trek Screen Syr	\$27,50
95465	Comptons Movies	\$25.31
03598	LucasArts Indiana Jones Last Crusade	\$19.23
00307	LucasArts Loom	\$27.00
99583	Maxis A-Train w/Contruct Set	\$26.14
98218	Maxis DoodleMation V1.0	\$18.32
00145	Maxis EL PISH	\$32,90
04721	Maris SimAnt	\$26.09
98222	Maxis SimCity 2000	\$38.98
99216	Maxis SimCity Classic	\$20.89
03800	Maxis SimEarth	\$27.25
06848	Microprose Civilization	\$42,61
07137	Microprose Hairbad Tycoon	\$34.07
9/12/	Paramount Lunious CD	\$30.90
97144	Paramount Movie Select CD	\$26.25
97145	Paramount Rock, Rap and Roll CD	\$35.77
05518	Passport Music Time/Trax Bund e	\$84.66
05264	Passport Trax	\$215.91
06486	Psygnosis Lemmings	\$32.14
99237	Psygnosis More Lemmings	\$27.35
01503	Velocity Development Spectre V4	\$32.01 \$38.08
99236	Mass EL Fish Mass Robosport Mass Robosport Mass Similar Mass Co Paramount Hump Baven CD Paramount Movis Select CD Paramount Movis Select CD Paramount Movis Select CD Paramount Mavis Climar Paramount Marvis Similar Mass Del Trax Passport Trax Passport Trax Pasygnosis More Lemmings Velocity Development Spectre VR Velocity Development Spectre VR Velocity Development Spectre VR Velocity Development Spectre VR Virgin 7th Guest CD	\$47.93
	Fractal Design Colorstudio V1.5 Painter V2.0 Painter X2 Sketcher V1.0	
03216	Colcretudio V1.5	\$439.98
00665	Painter V2.0	\$258.44
05957	Painter X2	\$94.98
06157	Sketcher V1.0	\$48.48
	Frame Technology	
03582	FrameMaker V4.0 FrameViewer	\$578.11
	(Tamerican)	414.55
96800	Farallon Timbuktu Pro Gryphon Morph V2.0	\$130.78
99506	Gryphon Morph V2.0	\$131.82
neces	UCC Valle Dames Table 1/2 0	*****
00000	1750 Mai S T DWEI 10013 V2.0	\$100,50
Line.	Inline	
06015	Inline Cog to V1.0 Deiverance Firefall Loon 7	\$25.55
9/198	Deirverance	\$25.55
06060	lean 7	\$20,55
00638	INiTpicker V3.0	\$40.85
99200	Spin Doctor	\$30.66
99227	Icon 7 INITpicker V3 0 Spir Doctor Super Maze Wars	\$33.22
	Access DC 2 0 Insignia	
	Acress PC 3 0	\$79.55

06060 lcon 7 00638 INITpicker V3 0 99200 Spir Doctor 99227 Super Maze Wars	\$40.85 \$30.66 \$33.22
99227 Super Maze Wars	
Incimie	933.22
Insidilla	
03664 Access PC 3.0	\$79.55
06786 RapidCD 1.0	\$42.00
06084 Rap dTrack V1.0	
04541 Soft PC V3.0	\$101.57
05715 Soft PC with Windows	\$307.16
Auto Doubler with any purch any product in	nase of
99110 Crystomatic V1 0	\$53.30
99110 Cryctomatic V1.0 00258 Folderbolt V1.02	\$53,38 \$69.83
99110 Cryptomatic V1.0	\$69.83

99110	Cryptomatic V1.0	\$53.30
	Folderbolt V1.02	
99121	Folderbolt/Nightwatch II Bundle	\$122.73
	Quick Lock V2.1	
	Lotus	
00507	1-2-3 V1.1	\$278.98
00518	1-2-3 V1.1 Comp Upg	\$92.98
96010	Lotus Organizer Scheduler	\$93.98
	Mac Play	
04134	Battlechess	\$17.91
99575		
04135	Checkmate	\$28.10
	Out of this World	\$32.47
97149		
	Star Trek 25th Anniversary	

00897	IdeaFisher 2.0	\$107,93
04230	Intuit Quicken V4 0	\$40,98
04949	In Control 3.0	\$68.18
	Macromedia	
99524	Macromedia Action! Bundle	\$277.08
00839	Macromedia Director V4.0	
05288	SoundEdit Pro	\$135.63
03619	Swivel 3D Professional	\$291.78
06840	Mac P & L	\$170.45
	Microsoft Corporation	
06184	Project v3 0 Upp	\$134.98
04161	Project V3.0	
00227	Excel V4.0 PowerPoint V3.0	\$294.98
01220	PowerPoint V3 0	\$294.98
04898	Word V5.1	\$294.98
04545	Excel v4.0 VER. Upg	\$117.27
00567	Works V3.0	\$152.80
00596	Word V5.1 Upg	\$117.27
03233	Office V3.0	\$454.98
99696	FoxPro V2.5	\$88.98
04293	Flight Simulator V4.0	\$39.85
99702	Cinemania 1994	\$49.06
04712	MYOB 4.0	\$52.00
98514	No Hands Common Ground V1.0	\$85.51
00580	Now Software Now Up-to-Date V2.1	\$58.59
04191	Now Software Now Utilities V4.0.1	\$80.57
04736	QuarkXPress V3.3	\$568.98
04230	Guicken 4 0	\$39.98



v5.5

#99491

ONLY

05965	AddDepth VI 0	5119.0
00441	Designer V3.0	\$232.95
	JAG II	
	Sierra On-line	
94595		\$24.00
94596	Hoyle Classic	\$20.00
04683	Hoyle II	\$18.61
94597	Japanese Alive CD	\$00.0
04675	Kings Quest V	\$37.41
94598		
03295		\$17.00
04681	Leisure Surt Larry 5	\$21.36
94599	Nova 0	\$10.00
94002	Nova 9 Police Quest 3	\$39.00
94000	Police Quest4	\$38.90
51656		900.00
	SoftKey	
00641	WriteNow 4 U	\$55.17
03531	Calendar Creator	\$36.90
	Spectrum Holobyte	
01808	Falcon V2 Z	\$34.98
06852	Iron Helix CD	\$55.41
06496		
	Tetris	\$24 95
	Wordtris .	
	Commenter	
	Summatar.	

	Symantec	
6231	ACTI VI.1	\$156
5330	Autodoubler V2.0	\$9
6763	Central Point Anti Virus	\$45
4413	Diskfock V3.0	
3481	MacTools V3 0	\$84
4464	More V3.1	\$246
4890	Norton Utilities V2.0	
2194	PYR01 V4.1	
664B	Safe and Sound	
0116	SAM AntiVirus V3.5	\$61
4776	Surcase V2.1	
6997	Superdoubler V1.0	\$68
6243	Software Ventures MicroPhone Pro	\$136
6828	Sun Clock 4.0	\$18
	T/Maker	

	July 1 Color of the Color of th	
06243 06828	Software Ventures MicroPhone Pro Sun Clock 4.0	\$136.3 \$18.1
	T/Moker ClickArt Incredible Image Pak Disk ClickArt Artistry & Borders	\$81.8 \$47.7
00481	WillMaker 5	\$35.1
96374 03972 99748 05013 96363 96375	WordPerfect V2.1 WordPerfect V3.0a WordPerfect V3.0a Comp Upg WordPerfect V3.0a Vers Upg WordPerfect V3.0a Vers Upg WordPerfect V3.0a Vers Upg WordPerfect V3.0a Vers Upg	\$34.5 \$280.5 \$75.5 \$48.5 \$69.5

02648 4th Dimension

Call MAC BARGAIN\$
before you buy!



Credit Cards are not charged until the order is shipped. Freight is calculated based on carrier's actual freight charges. Most products shipped UPS Ground. Next day delivery available - please ask your Sales Advisor for details. Packaging and handling \$4 per order. Returns subject to restocking fee.

\$37.22

TOLL FREE Technical Support For Customers

For the Best Deals Around!

MO	NITORS	
05923	T16II 16' Coor	\$1.207.95
01156	SONY Multiscan 15se	\$464.77
06909 99167	GDM-17SE CPD-1730	\$1,193.18
01137	radise	\$1,931.82
97894 6552		\$517.05
97873 97865	PrecisionColor 17" polar 20GS 20" Monachrome	\$859.28 \$1,039.77 \$847.26
97895 99916 95516	Precision Color 20v Intellicular 23' Display Precision Color 21	\$1,687.50 \$1,930.68 \$2,157.95
33310	SUFFMAC.	32,137,93
98851 98850	Supermatch 20 Plus Color SuperMatch 20TXL Supermatch 17XL	\$1,682.95 \$2,126.14
97899 95515	Supermatch 211XL	\$1,035.50 \$2,244.59
13147	NEC MultiSync 3V 15'	\$474.98
99801 99800	NEC MultiSync 3FGe 15' NEC MultiSync 4FGe 15'	\$574.98 \$629.98
99990 98146 98145	NEC MultiSync 3V 15* NEC MultiSync 3FGe 15* NEC MultiSync 4FGe 15* NEC MultiSync 5FGe 17* NEC MultiSync 5FGp 17* NEC MultiSync 5FGp 21*	\$999,98 \$1,135.23 \$2,055.58
	EO/GRAPHICS BOARDS	
	Futura II SX	\$429.97
98883	Futura II LX	\$775.41
97890 99765	Simply TV PowerLink Presentor	\$379.14 \$428.25
05893	radus	\$467.75
99171 98862	PrecisionColor BXU 8-bit PrecisionColor Pro 24XP PrecisionColor Pro 24X PrecisionColor Pro 24XX	\$470.45
97893	Lemans GT	\$788.39 \$1.948.74
99164 06716 93863	Photo Booster Video Vision Video Vision Studio	\$816.23 \$1,573.86 \$3,680.68
	SUFFRMAC.	
05116	Spectrum 8 Series III	\$387.77
95513 97879 99938	Spectrum 24 Senes V Spectrum Power +1152	\$862.77 \$1,208.23 \$1,121.86
9/898	Thunder/8 Thunder 24 v2 0 Power DSP Upgrade	\$517.32
97864 95543 95544	Thunder II Upgrade Thunder II GX+1152	\$517.32 \$2,244.59 \$862.77
97857	Thunder II GX Upgrade Video Spigot II Tape	\$862.77
ACC	ELERATORS DAYSTAR	
04634	Universal PowerCache 33MH2 TPU	\$365.63
97260	33MHz Value 040i 128K Cache	\$553.13 \$638.35 \$808.81 \$979.31
97263 95397		
95398 95399 98419	33MHz Univ Turbo 040 w/128K Cache 40MHz Univ Turbo 040 w/128K Cache Quad 040 40MHz 68040 w/128K Cache	\$638.35 \$808.81 \$995.45 \$979.26 \$1.575.85
97264 95350	Image 040 Imaging Xels PowerPro 601 66MHz Xel	\$1 499 00
95351 98804	PawerPto 601 80MHz Xel Charger	\$493.47
06482	radus	\$638.35
05250 95541	Radius Rocket 33 Radius StageTwo Rocket	\$1,020.95 \$1,612.50
NET	WORKING	
98800	MASANTE Asante Lite Mac II & Performa 600 (TK/TN)	\$114.89
98801 98802	Asante Lite Mac III & Performs 600 (TK/TN) Asante Lite Mac III & Performs 600 (TK/T01 Asante Lite LC family (TK/TN) Asante Lite LC family (10T) MC3M8 1/ Mac II Performs 600 (TK/TK/T01) MC3M8 1/ Mac II Performs 600 (TK/TK/T01)	\$114.89 \$114.89
98803 00511 03641	MC3NB t/ Mac II Performa 600 (TN/TK/10T) MC4IIF64 for Mac II Performa 600 (TN/TK/10T)	\$101.84 \$197.07 \$150.93
03641 03642 03646	MC+IIET64 for Mac II Performs 600 (TK/101 MC+30IET64 for IISI & SE/30 (TK/101)	\$150.93 \$150.93
03647	MC+30IE64 for IISI & SE 30 (TK/TN) MC+SEE for SE (TK/TN)	\$150.93 \$144.31
03649 04933 99950	MCCARD IT Mad. II Performs 600 (MINTX 101). CHIEGE 16 MAE II Performs 600 (MINTX 101). MC-IIEGE 16 ME II Performs 600 (MINTX). MC-IIEGE 16 ME II B 6.500 (MINTX). MC-SEE 16 SEE (MINTX). Asante Print 3 (MINTX). Asante Print 3 (MINTX). MS-SEE 16 SEE (MINTX). MS-SEE 16 SEE (MINTX).	\$197.07 \$177.30
99951 99952	MCLCTNIII forLC LCII LCIII (TN) MCLC10TIII for LC LCII LCIII (10T)	\$149.49 \$150.93
96842 96817	Asante Print 3 (AUL/101) Asante Print 3 (AUL/101) Mai EN SC 1 Programme (101)	\$318.17 \$380.40 \$233.43
06818 96840	Mini EN SC 1 Fower Book (101/1N)	\$302.52
96841 05499	Thirt FriendlyNet Media Adapter	\$65.25
05500 05501 00348	Thick Friency, Net Media Adapter 10 Base T Friendy, Net Adapter 10T HUBIT2 w/10T/TK/TN Forts 10T HUBIB w/8 10T/TN Ports	\$65.25 \$65.25 \$487.07
00404	10T HUB/E w 8 10T/IN Ports	\$231.24
00806	DayraPORT E/LC (TN) DP0400	\$98.86

•		
775.67	DaynaPORT ESE (IN/TK)DP0100 DaynaPORT ESE (TN/TK)DP0201 DaynaPORT ESE (TN/TK)DP0201 DaynaPORT ESE (TN/TK)DP0201 DaynaPORT ESE (TN/TK)DP0101 DaynaPORT ESE (TN/TK)DP0102 DaynaPORT ESE (TN/TK)DP0202 DaynaPORT ESE (TN/TK)DP0202 DaynaPORT ESE (TN/TK)DP0202 DaynaPORT ESE (TN/TK)DP0202 DaynaPORT ESE (TN/TK)DP0203 Da	F12E 2E
04595	DaymaPORT E/II-1 (101/TK)0P0201	\$98.86
98400	DaynaPORT E/SE-T SE (101/TK) DP0101	\$136.36
98403	DaynaPORT E/SE-3 SE (10T/TN/TK) DP0103	\$136.36
98404	DaynaPORT E/LC-M (10T/TN) DP0403	\$145.45 \$154.55
05728	DaynaPORT E/II-3 (10T/TK/TN) DP0202 DaynaPORT E/II (TN/TK)DP0200	\$152.27 \$105.82
00488	DaynaPORT SCSI Link-3 DP0802	\$277.27
96825	Dayna Pocket SCSI Li nk T (101)	\$220.45
05279	DaynaPORT EasyNet-T (AAUI/10T)	\$51.14
00003	DaynaPORT EasyNet (AAUL/TN) Etherprint (10T/TK)	\$311.35
00321	EtherPrint Plus 2.0 (TN/TK) EtherPrint 2.0 (TK/TN)	\$373.85
06595	Etherprint 3 (10T/TK/TN) Etherprint-3 Plus (10T/TK/TN)	\$343.18
04911 06617	PaynaSTAR Min Hub-8 Pathfinder Router	\$184.09 \$560.23
99962		\$794.32
98408	: Farallon* EtherWave AUI Transceiver	\$99.68
98409	EtherWave AAUI Transceiver EtherWave Printer Adapter	\$99.68
98410 98411	EtherWave NuBus Card	\$99.68 \$312.90 \$176.95
98412 98414	EtherWave PB or Slot-less Mac Adapter	\$169,15 \$292.86
98413	EtherWave NoBus Card EtherWave LC Card EtherWave PB or Slot-less Mac Adapter EtherWave PC ISA Card EtherThin Transceiver (AAUI/TN) EtherTho Lorsceiver (AUI/TN)	\$169.15
98849	EtherToin Transceiver (AUI/TN)	\$62.78
04307	Ether10-T Transceiver (AAUU/10T)	\$55.10
99051	EtherMac SCSI Adaptor (TN) DB25	\$261.95
99052	Ether Inn Transceiver (AUUTN) Ether ID-Transceiver (ID-Transceiver ID-Transceiver ID-Tran	\$277.41 \$1,035.72
05693	Ether10-T Starlet PN515-1 PhoneNET DIN 8 10PK PN310	\$261.95
00832	PhoneNET DIN 8 PN308	\$28.58
04160	PhoneNET Connector 50pk PN350	\$771.95
02779	PhoneNe I Star Connector PN301	\$13.90
	MMUNICATIONS/MODEM Global Village	5
99319	GlobalFax Duo Software 2.07 Global Village Teleport/Bronze II FowerPort Bronze	\$77.69
05686	FowerPort Bronze	\$90.42 \$90.42
05684	TEIEMORE FROM TOURS	\$222.12 \$277.51
98181 98182	TelePort/Mercury for Desktop Macs	\$277.61
98183 95206	PowerPort Mercury for PowerBook Duo	\$317.39
95208 95207	One World Remote Acc - 1 Line, LocalTalk	\$953.75
95207 95209 96598	One World Remote Acc - 2 Line, Ethernet	\$1,192,39
96598 96599	FowerFort Gold TeleForther Up to Bestop Macs FowerFort Mercury for PowerFort XXX FowerFort Mercury for FowerForth December Mercury for FowerForth December Mercury for FowerForth Mercury for FowerForth Mercury for FowerForth Mercury for FowerForther Act - 1 Line, LocalTail Che World Fawer - 2 Line, Ethernet Cheb Fax for One World FowerForther Mercury for Mercury fo	\$198.07 \$794.66
	Haves	\$72.53
		\$169.25
ganna	Supra FaxModem 144LE Et - Mac Supra FaxModem 9 32BIS (MC) w.Stt Cable Supra FaxModem 288 Ext - Mac Supra FaxModem 144PB Int - PowerBook Supra FaxModem 288 Int - Mac PB	\$153 ng
00413	Supra FaxModein V 32BIS (MC) w/Stt Cable	\$222,73
06865	Supra FaxModem 144PB Int - PowerBook	\$214.77
		\$305.02
510	RAGE SYSTEMS L·MEGA	
95252		\$285.45
96810	lomega MacTransportable 90 (NO DISK) lomega MacTransportable 90 Pro- lomega MacTransportable Mutidisk 150	\$333.14
30011	PLI	9450.32
96820	Infanty Debes VB 3.5 (RM)	\$957.95
04699	Infinity 3.5 Optical Drive (Fuytse) Infinity Opt Sony 3.5 128MB Infinity 200 Removable Drive	\$1,071.59 \$1,163.64 \$653.41
95364 06547	Infinity 200 Removable Drive	\$653.41 \$495.45
96821 96822	Infinity 88/R-W 44 Infinity MAX Optical 5 25 1 3GB Infinity Optical 5 25 HH 1 3GB	\$495.45 \$3,397.73 \$2,894.32
97953		\$1,437.50 \$573.86
99926	Infinity 105 Turbo S 105MB REM	\$414.77
97513	CD-ROM Toolkit	\$44.89
05476	Hard Disk Toolkit - Personal Ed Hard Disk Toolkit	PR 112
99923	Hammer PE 170 MB HD Hammer PE 340MB HD	\$409.82
04891 94110		\$540.38 \$1,004.59
94108	FocketHammer 1000 FMF FocketHammer 1600 FMF	\$1,198.65 \$1,816.98 \$2,358.56
94109 94120	HammerTage 525MB Ext	\$2,358.56 \$942.26 \$617.75
94121	SCSI JackHammer	\$517.75
95346	Apple Hard Drives 160MB External HD 230MB External HD	\$323.88
95347	230MB External HD 325MB External HD 500MB External HD	\$409.09 \$448.85
22240		
95348 95338 95339	500MB External HD	\$714.77

J			
		-	
	\$135.35	01107	Quartern 540 MB
01	\$98.86 \$135.36 \$136.36	99929 06736	Quantum 540 MB
0103	\$135.35	97991	Seagate 2 1GB Barracuda Externo
13	\$145.45 \$154.55	06728 97961	Quantem 170 MB
2	\$152.27 \$106.82	06942 01108	Quantum 340 MB
8	\$277.27 \$294.32	99927 06731	Quantem 1 2GB
	\$220.45 \$272.73 \$51.14	99168	Seagate 2.1 GB Barracuda
	\$51.14 \$311.35 \$373.85	06219 06538	Syquest 44M8 Syquest 44/88M8
-	\$311.36	99930 01142	Synthest 105MR
	\$343.18 \$405.68	97989 99187	Syguest 200MB Syguest 270MB 128MB Magneto Optical
	\$184.09 \$560.23 \$794.32	99174	PowerBo
		99174 99175 99176	127M8 2.5' Drive 210M8 2.5' Drive 340M8 2.5' Drive
	\$99.68 \$99.68		UT DEVICES
l-Pinite are	\$312.90 \$176.95 \$169.15		MICRO
1_	\$292.86 \$169.15	06251 06945	ScanMaker IISP ScanMaker IISP ScanMaker IIXE
	\$53.32 \$62.78	06252 01120 06903	ScanMaker IIHR
	\$65.48 \$55.10 \$277.41	01122	ScanMaker III
	\$261.95	13442	Transparent Media Adapter
	\$277.41 \$1,035.72 \$261.95	99380	DrawingSlate 6x9 Corded Po PrawingSlate 12x12 Contless
-	\$192.41 \$28.58	98251 95241 95242	DrawingSlate 12x12 Cordless DrawingSlate 12x12 Cordless
	\$28,58 \$771,95	95243 95244	DrawingSlate 649 Cordec Pr DrawingSlate 12x12 Condless DrawingSlate 12x12 Condless DrawingSlate 12x12 Condless DrawingSlate 12x13 Condless DrawingSlate 12x18 Condless
	\$13.90	04258	MouseMan Logited
DEM	3	95612	TrackMan II
	\$77.69 \$90.42	03677 00087	12x12 Std, Cordless Pressur 12x12 Electrostatic, Cordless P 12x18 Electrostatic, Cordless P
11	\$90.42	03803 13342	109-201 Contiless Batteryless
X	\$277.51 \$277.61 \$317.39 \$317.39	60	Sensitive Pen (UD Series)
ò	\$317.39 \$794.66		ROM/MULTIMED
Talk.	\$953.75 \$1,192.39 \$1,510.57	97814 97815	NEC MultiSpin 3Xe Externa
4	\$198.07	97816	NEC MultiSpin 3Xe Externa NEC MultiSpin 3Xi Internal NEC MultiSpin 3Xp Classic P NEC MultiSpin 3Xp Gran to P NEC MultiSpin 4X Pro
k	\$794,66	96658 97817 06884 06789	
	\$72.53	06789 02168 99384	Yamaha Helio! Music! Yamaha M10 Shielded Speak
	6173.60	98280 05589	Affec Lansing 50 Speakers Affec Lansing Submoofer 15 Affec Lansing ACS 300 Spea
Cable	\$154.09 \$222,73 \$305.02	1	NTERS
ook	\$305.02 \$214.77 \$305.02		AP HEW
		95517 95518 95520	HP DeskWriter 310 HP DeskWriter HP DeskWriter 520
		95522	HP DeskWriter 560C
() <u></u>	\$285.41 \$333.14	96746	NEC Stentwriter 640 NEC Stentwriter Model 1097
0	\$468.52	13111	NEC Stentwriter Model 1097 Texas Instru
	\$957.95	12525 14319	MicroWriter Basic
	\$1,163.64	14320	
	\$495.45 \$3,397.73	PO	WER BACKUP Tripp Lit
	\$2,894,32 \$1,437.50	04505 04740	Isobar 4 Surge Protector
	\$573.86	99790 06661	Isobar 4 Surge Protector Isobar 6 GS Surge Protector Tripp Life BC 250 UPS Tripp Life BC 400 UPS Tripp Life BC 500 UPS
	\$44.89	04744	
	\$120.89	ME	Mac Bargains carries Me Please call for configurations
	\$409.82 \$540.38	ME	
	\$1,004.59 \$1,198.65 \$1,816.98		Bernoulli Car
	\$1,816,98 \$2,358,56 \$942,26	96824 97289 97291	Bernoulii 90MB Cart Bernoulii 105MB Cart Bernoulii 150MB Cart
s	\$517.75	37291	Volume discounts
-	\$323.88 \$409.09		SyQuest Car
	\$448.85	02183 00183	Syquest 44MB Cart Unfo Syquest 88MB Cart Unfo
-	\$1,130,58	99922	Syguest 105MB Cart Unto

IINF	MACDOTON	_
DOSE4	MICROTEK	\$625.00
06251 06945	ScanMaker II	\$755.68
06252	ScanMaker IIXE ScanMaker IIHR	\$875.00
06903	351 Side Scanner	\$1,051.1
01122	SeanMaker III	\$2,482.95
13442	Automatic Document Feeder Transparent Media Adapter	\$363.6- \$585.21
	Colores	
99380	DrawingSlate 6x9 Corded Pressure Stylus	\$245.80
98251	DrawingState 12x12 Condess Pressure Styl	S745 8
98251 95241 95242	DrawingState 12x12 Cordless 168 Cursor	\$245.80 \$245.80
95243 95244	Brawig State 649 Cordec Pressure Shirus Drawig State 12x12 Condless Pressure Shirus Drawig State 12x12 Condless 4B Cursor Drawig State 12x12 Condless 4B Cursor Drawig State 12x18 Condless 4B Dursor Drawig State 12x18 Condless 4B Cursor Drawig State 12x18 Condless 166 Cursor	\$371.88
352.44	Logitech	9017.00
04258	MouseMan	\$52.23
95512	TrackMan II	\$72.53
03677	12x12 Std. Cordless Pressure Stylus	\$655.80
00087 03803	12x12 Std. Cordiess Pressure Stylus 12x12 Electrostatic, Cordiess Pressure Stylus 12x18 Electrostatic, Cordiess Pressure Stylus UP-201 Cordiess Batteryless Pressure	\$1,070.5
13342	UP-201 Cordless Batteryless Pressure	31,031.2
	Sensitive Pen (UD Series)	\$85.2
CD-	ROM/MULTIMEDIA	
	NEC	
97814	NEC MultiSpin 3Xe External	5479.50
97815	NEC MultiSpin 3Xi Internal	\$439.4 \$399.2
96658	NEC MultiSpin 3Xp Grande Portable	\$399.2
97817	NEC MultiSpin 3Xe External NEC MultiSpin 3Xb Internal NEC MultiSpin 3Xp Gram te Portable NEC MultiSpin 3Xp Gram te Portable NEC MultiSpin 4X Pro	\$927.1
06884 06789		\$90.8 \$262.2
02168	Yamaha Helio! Music! Yamaha M10 Shielded Speakers	\$63.6
99384 98280	After Lansing 50 Speakers After Lansing Subwoofer 150	\$66.8 \$103.2
05589	Altec Lansing ACS 300 Speakers	\$233.8
PRI	NTERS	
	PACKARD	
95517	HP DeskWriter 310	\$324.70
95518 95520	HP DeskWriter HP DeskWriter 520	\$195.4 \$312.7
95522	HP DeskWriter 560C	\$515.9
	NEC	
96746	NEC Stentwriter 640 NEC Stentwriter Model 1097	\$789.9
13111		\$1,419.0
12525	Texas Instruments MicroWiter Basic	55.01 D
14319	MicroLaser Pro 600 PS23 MicroLaser Pro 600 PS65	\$542.0 \$1,437.5
14320		\$1,615.9
PO	WER BACKUP	
	Tripp Lite	-
04605	Isobar 6 GS Surge Protector	\$38.7 \$45.5
99790	Tripp Life BC 250 UPS	\$96.1
06661	Isobar 4 Surge Protector Isobar 6 GS Surge Protector Tripp Life BC 250 UPS Tripp Life BC 400 UPS Tripp Life BC 500 UPS	\$150.9 \$185.1
		4100/1
WE	MAC Bargains carries Memory operades	
	Mic Bargains carries Memory opgrades Please call for configurations and current p	rices
MEL		
00000	Bernoulli Cartridges	***
96824	Bernoulii 90MB Cart Bernoulii 105MB Cart Bernoulii 150MB Cart	\$79.3 \$78.7
97289 97291	Bernoulli 150MB Cart	\$78.7 \$87.3
_	Volume discounts Available	
******	SyQuest Cartridges	
02183	Syquest 44MB Cart Unfo Syquest 88MB Cart Unfo	\$57.0 \$90.9
99922	Syquest 105MB Cart Unfo	\$52.2
97992	Syquest 200MB Cart Unfo Syquest 200MB Cart Unfo Syquest 270MB Cart Unfo	\$109.9 \$61.3
31337		901.3
	Volume Discounts Available	
	TENNIE DISCUSSIS ATTUENT	

External HD

Removable HD

PowerBook HD

\$278.41 \$380.68 \$460.23 \$598.86 \$914.77 \$1,112.50 \$2,039.77

\$487.50 \$737.50

\$277.27 \$395.59 \$559.09



SSUPERMAC.

SuperMatch 17XL

- Brilliant color
- Razor-sharp clarity
 Multiple resolutions
- Maximum work area
 Flicker-free 75Hz refresh rate

SuperMac #97899



PrecisionColor Pro 24XP

- 24-bit interface for up to 17" monitors
 The most cost efficient 24-bit color solution
- The least expensive, most

accelerated interface SuperMac #97899

radus



PLI #96823



Call Now!



IF YOU DON'T SEE IT...CALL! Please mention this source code when ordering MW08



Knowledgeable Sales Advisors help make buying easy!

@1994 MZI, Inc. Redmond, WA "Trademarks of all companies listed in this ad. All rights reserved.

Internal HD



800-572-4305 Fully Compatible 30 DAY MONEY-BACK power pc drives

INT'L612-937-9604 YEARS 1

FAX:612-937-6285

HOURS: M-F 8:00-6PM CST





HARD DRIVES FROM \$270

Fujitsu 1.2GIG External-\$755

FUĴÎTSU		3 Y E	A R	WAR	RA	NTY
CAPACITY	SIZE	ACCESS	IN	TERNAL	EX	TERNAL
240MB*	2.5"	14MS	\$	315	\$	375
1.2GIG	3.5"	8.5MS	\$	695	\$	755
Span	ato	AVE	A D	WAD	D 1	NTV

(m) 250	yace	U	I LAR WAR	N A	11 1
CAPACITY	SIZE	ACCESS	MODEL	EX	TERNAL
1.2GIG	3.5"	9MS	ST31200N	\$	815
2.4GIG	3.5"	9MS	ST12400N	\$	1525
2.5GIG	3.5"	8MS	Barracuda 2	\$	1765
2.5GIG	3.5"	8MS	Barracuda 2w	ide	CALL
3.4GIG	5.25"	10MS	Elite 3	\$	2175
9.0GIG	5.25"	11MS	Elite 9	\$	4595

CONNER		•	YEAR	WAR	RAI	IT
CAPACITY	SIZE	ACCESS	MODE		EXT	ERNA
330mb**	3.5"	12MS	CFA3	40S	\$	33
545MB**	3.5"	12MS	CFA5	40S	\$	49
1.0GIG	3.5"	9MS	CFP1	060S	\$	81
Quant	um	6	YEAR	WAR	RAN	IT

CAPACITY	SIZE	ACCESS	MODEL	EXTERNAL
1.0GIG	3.5"	9MS	E1080S	\$ 815
22GIG	3.5"	9.5MS	E21680S	\$ 1359

IIIIAC	<i>7</i> 1 11	TILAR WARRANTI		
CAPACITY	SIZE	ACCESS	INTERNAL	EXTERNAL
3.7GIG	5.25"	12.8MS	\$ 1645	\$ 1745

MONITORS		CD ROMS	
Sony GDM-17SE1	\$1159	Toshiba 4101	\$ 275
Sony GDM-2038S	\$ 1995	Toshiba 3401	\$ 439
RasterOps Horizon 24	\$ 2259	Sony CDU-561	\$ 385
RasterOps Paintbd Turbo RasterOps 8XL	\$1159 \$459	RICON 1000 RECORDABLE CD-MAKE YOUR OWN!	\$ 3259
RasterOps Li	\$ 339		

DIRECT CONNECTIONS 7668 EXECUTIVE DR. EDEN PRAIRIE, MM 55344 " 1 yr warranty. " " 7 yr warranty. Gov"t, Corp. and Univ. P.O's accept 30 dwr money back does not apply Towards monitors.



OPTICAL DRIVES FROM \$765

1 YEAR WARRANTY

CAPACITY	MODEL	ACCESS	EX	TERNAL
128MB	Olympus	30MS	\$	765
230MB	Fujitsu	30MS	\$	945
650MB	Ricoh Hyperspace	28MS	\$	1799
1.3GB	Ricoh	40MS	\$	2459
1.3GB	Sony	40MS	\$	2299
2.0GB	Hitachi	40MS	\$	2799



TAPE BACKUP

INCLUDES TAPE + RETROSPECT SOFTWARE

2 YEAR WARRANTY

CAPACITY	MODEL	MEDIA	IN	TERNAL	EX	TERNAL
250MB	Tandberg TDC 3660	DC6250	\$	445	\$	499
520MB	Tandberg TDC 3660	DC6250	\$	565	\$	625
2GIG	Archive 4320*	4MM	\$	839	\$	899
8GIG	Archive Turbo*	4MM	\$	1039	\$	1099
4.0-8GIG	Connor 4326 DDS2	4MM	\$	1089	\$	1149
1.3-5GIG	Exabyte 8205	8MM	\$	1539	\$	1599
1.3-10GIG	Exabyte 8505	8MM	\$	2179	\$	2279
4GB	Sony 5200 DDS2	4MM	\$	989	\$	1049
4.0-8GIG	Sony 5000 DDS2	4MM	\$	1129	\$	1189



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 BARACUDA 2 RAID.
 \$ 4885

MEDI

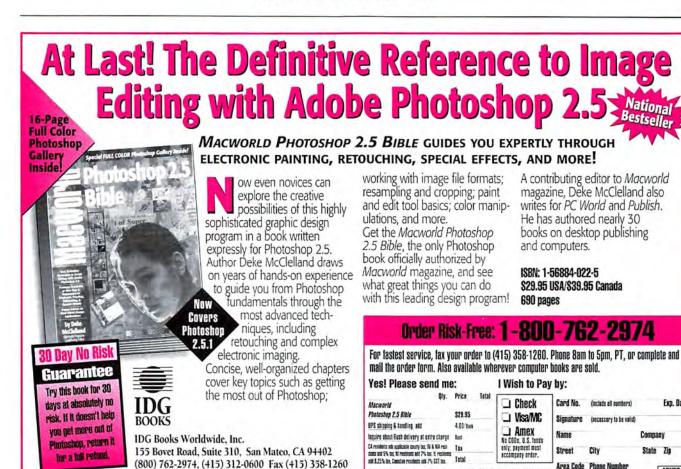


				W	Α.
60M	Tape	\$ 10	128MB	Optical	\$ 28
90M	Tape	\$ 12	650MB	Optical	\$ 79
112M	Tape	\$ 18	1.3GIG	Optical	\$105
120M	Tape	\$ 22	2.0GIG	Optical	\$120

HITACHI



Circle 83 on reader service card



For volume discounts and special orders, please call Tony Real, Special Sales, at 415-312-0644.

Area Code Phone Number

Exp. Date

MWB94



1-800-786-1184

- Our 8th year selling quality drives at incredibly low prices.
- 30 Day money back quarantee.
- Fast, friendly, and smart service.
- Lifetime technical support.
- 24 Hour turnaround, 1 year replacement policy.
- We appreciate your business!



SyQuest

INCREDIBLE SALE!

- Complete External Subsystem Includes: Syquest drive in an external enclosure.
- 2 year warranty on drive & case. 1 FREE Cartridge, & 1 SCSI cable. External plug in SCSI terminator. Formatting software, and manuals.

88MB \$419 105MB \$349 200MB \$579 270MB \$569



OPTICAL DRIVES

- High performance optical drives.
- *Ask for your free "Dare to Compare" specification brochure
- Includes SCSI Manager 4.3 compliant

driver, c	ablos, and 1	free disk.	
Capacity	Model	Internal	External
128MB	555128	\$649	\$699
230MB	555230	\$849	\$899
1.3Gig	5551300	\$2399	\$2469

Power Hi NOW AVAILABLE!

- Hard Drives fine tuned specifically for
- Power Macintosh computers.
- Includes SCSI Manager 4.3 compliant
- driver for best performance. Capacity 540MB Internal External \$449 \$509 **PHD540** 1050MB PHD1050 \$1059 1750MB PHD1750

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 apacity Model Internal External 000MB MC2210AV \$869 \$939 Capacity 1000MB 3000MB MC1936AV \$2259

TONISHA SHADON HARRADA BARA

WE HAVE THE DRIVE YOU WANT AT AN UNBEATABLE PRICE!

renemble to the transfer



Capacity	Model	Internal	External
170MB	ELS170S	\$179	\$239
270MB	LPS2705	\$238	\$298
340MB	LPS340S	\$275	\$335
540MB	LPS540S	5389	5449
1080MB	EMP10805	5739	5799
1800MB	PD18005	\$969	\$1029

TO HER WEST OF THE STATE OF THE

Capacity	Speed	RPM	Buffer	Brand	Warranty	Internal	External
105MB	19ms	4464	31K	Maxtor	1 Year	\$469 (Ty	pe III PCMCIA)
170MB	17ms	3600	32K	Quantum	2 Years	\$179	\$239
240MB	14ms	4500	256K	Fujitsu	1 Year	\$309 (25	for Powerbook)
270MB	12ms	4500	128K	Quantum	2 Years	\$238	\$298
340MB	12ms	4500	128K	Quantum	2 Years	\$275	\$335
530MB	13.8ms	4500	256K	Fujitsu	5 Years	\$375	\$435
540MB (LPS)	12ms	4500	128K	Quantum	2 Years	\$389	\$449
540MB (EMPIRE	9.5ms	5400	512K	Quantum	5 Years	\$509	\$569
1052MB	8.5ms	5400	256K	Micropolis	5 Years	\$779	\$839
1060MB	9ms	5400	512K	Conner	5 Years	\$749	\$809
1080MB	9.5ms	5400	512K	Quantum	5 Years	\$725	\$785
1080MB	9.5ms	5400	256K	Fujitsu	5 Years	\$725	\$785
1440MB	9.5ms	5400	512K	Quantum	5 Years	NEW	CALL
1690MB	8ms	7200	1024K	Seagate	5 Years	\$1459	\$1559
1750MB	10ms	5400	256K	Micropolis	5 Years	\$999	\$1059
1800MB	10ms	4500	512K	Quantum	5 Years	\$969	\$1029
2145MB	8ms	7200	1024K	Seagate	5 Years	\$1689	\$1769
2148MB	9ms	5400	512K	Seagate	5 Years	\$1429	\$1529
2160MB	9.5ms	5400	512K	Quantum	5 Years	NEW	CALL
3020MB	11ms	5400	256K	Micropolis	5 Years	\$2139	\$2169
includes form	natting sof	tware and	cables. We st	ock multiple bay	enclosures fo	r custom c	onfiguratio

							.,,
Capacity	Compatible	Model	Speed	Buffer	Warranty	Internal	External
88MB	44, 88MB	SQ5110C	20ms	32K	2 Years	\$369	\$419
105MB	105MB	SQ3105	14.5ms	64K	2 Years	\$289	\$349
200MB	44, 88, 200	SQ5200C	18ms	64K	2 Years	\$519	\$579
270MB	105, 270MB	SQ3270	13.5ms	128K	2 Years	\$509	\$569
Media Qt	v 1/5 88	MB \$96 / \$89	ea.	105MB \$58 / S	556ea.	270MB \$93	/ \$89ea.
	1 CARTRIDGE	formatting s	oftware an	d cables Mult	inle Syquest	rive towers in	stockt

Brand	Model	Speed	Transfer	Type	Internal	External
Teac	CD-50	265ms	335KB/sec	Single disk	\$299	\$359
Toshiba	XM3401	200ms	330KB/sec	Single disk	\$349	\$409
NEC	CDR510	195ms	450KB/sec	Single disk	\$439	\$499 BUY
Pioneer	DRM-602X	300ms	307KB/sec	6 Disc Changer	n/a	\$919
Pioneer	DRM-604X	300ms	614KB/sec	6 Disc Changer	n/a	\$1169
Pioneer	DRM-1804X	300ms	614KB/sec	18 Disc Changer	n/a	\$2099

Capacity	Type	Brand	Speed	Internal	External
250MB	QIC 150	Archive	7MB/min	\$459	\$529
2Gig	DAT	Conner	11MB/min	\$839	\$899
4-8Gig	DAT	Conner	88MB/min	\$1269	\$1329
4-8Gig	DAT	Hewlett Packard	42MB/min	\$1089	\$1109
4-10Gig	DDS-2 DAT	Sony	88MB/min	\$1139	\$1199
4-10Gig	DDS-2 DAT	HP (Fastest Tape!)	88MB/min	\$1449	\$1499

Capacity Speed Brand Cache Internal External 1.3Gig 23ms **Hewlett Packard** 512K MultiFunction N/A \$2679 1.3Gig 19ms Maxoptix 4MB MultiFunction N/A \$2799 Includes formatting software, 1 disk, and cables, 256MB Fujitsu and 650MB HP models also in stock.



TENERAL CHARLES (ALCOHOLOGICAL)

1-800-786-1184 M-F 8-7 Sat 9-3 Central Local (713)333-1910 Fax (713)333-3024

No International orders accepted



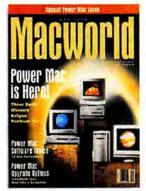
1110 NASA Rd. 1 #306 Houston, Texas 77058

ITESTET STORES THE REAL PROPERTY.

Prices and specifications subject to change.All emarks are registered trademarks of their respe companies. Returns must be in new condition, and mu

Congratulations

to the Winners of the 9th Annual Computer Press Awards!



Best Computer Magazine (Circulation more than 100,000)

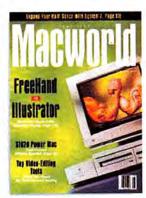


Best Computer Newspaper (Circulation more than 100,000)

Best News Story in a Computer Publication ("DOS 6.0" by Stuart Johnson, Doug Barney and Kevin Strehlo)

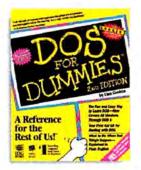


Best Computer Columnist (Deborah Branscum, "Conspicuous Consumer")





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.





PRODUCT INDEX **BUSINESS TOOLS**



Page No.

Category

Catenary

Category	Page No.
ACCESSORIES Covers Computer Mouse Pads Diskettes	239
BUSINESS TOOLS Bar Code Credit Authorization Point of Sale Real Estate Manufacturing	218-220
EDUCATIONAL & RECREATIONAL Astrology College Guide Degree Program Discount Software Genealogy Grading Music Religion	240-241
GRAPHICS 3D CAD/CAM Clip Art Fonts Graphics Translators Magazine	244

category raye ii	U.
MOBILE COMPUTING & PDA's239 Battery Charger PowerBook Accessories	9
MULTIMEDIA & CD-ROM241-24 Quicktime Flipbook	3
NETWORKING & COMMUNICATIONS	9
PROGRAMMING & UTILITIES 24 Data Compression Languages	5
SERVICES & SUPPLIES246-24 Computer Insurance Computer Repair Data Recovery On-Line Services Prepress Services Slides	7
SPECIALIZED MARKETS	5
SYSTEMS & PERIPHERALS	7

ACCOUNT MANAGERS: 800.888.8622
Acception to the control of the cont
Carol Johnstone415.978.3152
Shannon Smith
Niki Stranz
DTP COORDINATOR:
Clayton Haberman
1/2 MILLION ACTIVE BUYERS FIND WHAT THEY ARE
LOOKING FOR
IN THE
MACWORLD
SHOPPER SECTION.

Macworld

UPGRADES & MEMORY233-238

Page No.

BarCode Labeler™ II

for the Macintosh



When you need easy to use, fullfeatured bar code printing software for the Macintosh, look to BarCode Labeler II. This package allows you to easily create, edit, and print bar codes in all the popular bar code symbologies.

BarCode Labeler II makes merging text or graphics into your bar code

simple. Sizing and movement capabilities give you the flexibility to develop what you want in a bar code or label.

Call us today for information on BarCode Labeler II.

Retail price: \$149.00

1105 N.E. Circle Blvd., Corvallis, OR 97330 503-758-0521 • Fax 503-752-5285



Videx is a registered trademark and BarCode Labeler is a trademark of Videx, Inc. CCO466

CIRCLE 545 ON READER SERVICE CARD



EXPRESS asterCard



I LA LA USA

Compatible with all Macs from 128K to current models Inventors of keyboard interface bar code reader for Macintosh. PDCS-300 Portable System (1 year warranty) \$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

Complete with wand & bar code printing software

30-Day Money-Back-Guarantee on All Products Established 1978 · Newton Scanners and Software Available Now! Discounts for Resellers, Schools, Non-Profit & Government Agencies

> 2495 Old Middlefield Way, Mtn. View CA 94043 (415) 988-0141 Fax (415) 988-0289 (800) 526-5920 AppleLink: BARCODE

CIRCLE 441 ON READER SERVICE CARD

Mac-Barcode ProLabel

Electronics

Version 2.0 Not a Font...A True Label Application!

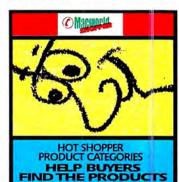
Call for Product Literature & Demo Disk.

The Mac-Barcode C

800-733-7592

CIRCLE 562 ON READER SERVICE CARD

oologies Including /EAN-128 (with Als



THEY NEED FAST







Bear Rock

TECHNOLOGIES



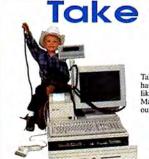


CIRCLE 450 ON READER SERVICE CARD



CIRCLE 479 ON READER SERVICE CARD





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 notice.

Point-of-Sale • Inventory Management

Ensign Systems, Inc. (801) 546-1616

The One That Apple® Uses

ac BARCODA

Barcode Generation

Bundle discounts available.

4140 Mother Lode Dr., Ste. 100, Shingle Springs, CA 95682 916 672-0244 - Facsimile 916 672-1103

All the vital features for high-

quality bar code production. Compatible with all major pagemakeup and graphics software. The highest precision barcoding package available for the Mac.

Bar Code Readers

For Mac or PC. Connects between keyboard and computer. Works with any software package. All major bar codes supported. Wand Reader \$ 255

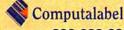
Label Printing on Sheets Version 2.0 of the easy to use PostScript label printing package. Any label size and sheet layout with bar codes, text, graphics, sequential numbering Label Designer and mail merge.

Call the Bar Code Experts

800 232-7625

Label Printing on Reels

The easiest option for printing short-run multi-variation labels on reels with powerful text, graphics, and bar code facilities. Compatible with Zebra thermal printers



Call Toll Free - 800-289-0993 28 Green Street, Newbury MA 01951 Fax 508-462-9198

CIRCLE 544 ON READER SERVICE CARD

BUSINESS TOOLS

SYSTEMS & PERIPHERALS



Bar Code Headquarters



Labeling Software

Now with **PostNet**

- 65 PostScript Type 1 Bar Code Fonts As easy to use as Times or Helvetica
- Use in any program with a font menu
- Code 39, UPC/EAN, 128, I 2of5, PostNet
- Not HyperCard Dependent because they're fonts
- Simple, Easy-to-Use, Plug & Play!
- Create 1,000 incremented bar codes in 5 seconds or translate your list using Sequencer®DA
- Generate film masters in Quark, PageMaker, etc.
- \$199 includes our DA, All Fonts and Manual

JORTHINGTON

DATA SOLUTIONS

Bar Code Readers

for all Macintosh ADB or Serial

- Attaches thru ADB as 2nd Keyboard in seconds.
- UPC/EAN, Code 128, 2of5, Code 39, Interleaved 2 of 5
- Wand, Magstripe, CCD, Laser, Slot Badge



All European Keyboards Supported

- Top Rated by Independent Reviews
- Complete Reader with Cordless RF Wand \$695
- Complete Reader with CCD Scanner \$624
- Complete Reader with Corded Steel Wand \$329

Portable Readers

Call for

Our

for all Macintosh ADB or Serial

- 64K or 256K RAM. Keyboard or serial upload.
- Download Tables
- Wand, CCD or Laser Input
- UPC/EAN, 128, 2of5, MSI, Code 39, etc.
- 4 x 20 LCD, 35 Keys
- 2 Built-in Inventory Programs
- Optional Voice prompts and error msgs. You record!
- Double duty as non-portable
- Very easy to program & interface with applications
- Complete 64K Unit with Wand & Voice \$799

Ordering is Easy!



- Qualified P.O's Accepted
- 2 Year Warranty on Readers
- Same Day Shipping
- Free UPS Blue in US

Catalog

or call 408-458-9938 . FAX 408-458-9964

In Europe call our Irish Office at 00 353 1 6614 566

MAIL ORDER Distribution POINT-OF-SALE

SYSTEMS .

POS/OE 4 MAC™

- ORDER ENTRY *BARCODING
- INVOICING •MULTI-USER
- FAST CASH RETAIL
- **•CREDIT CARD PROCESSING**
- •PURCHASE ORDER
- •INVENTORY CONTROL

 DEMO available EES Companies Inc

800 - 508 - 4444 TEL 508.653.6911 FAX 508.650.1872

CIRCLE 600 ON READER SERVICE CARD

Mac Landlord \$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 2037

Dearborn, MI 48123

313/562-6247



Bar-Code Readers from \$289.00 3* CCD w/Internal Decoder - Only \$389.00
Receipt Printers • Cash Drawers
Credit Card Auth. • Port. Data Collection
UPS Manifest SW • Accounting call or fax for a FREE CATALOG

(800) 622-7670 (618) 985-8237 TÉL • (618) 985-3014 FAX

DIREC



HELP BUYERS D THE PRODUC THEY NEED FAST.



Internat'l (815) 338-8658 Fax (815) 338-4332

224 West Judd St. Woodstock, Illinois 60098

WE WILL MATCH YOUR BEST PRICE!



COMPUTER PRODUCED AFTER THE MAC PL	OS .
QUANTUM	STEERAL / ETTERAL
170mb. (11ms) 3.5" LPS 1/3 height	\$199 / \$249
170mb. (17ms) 2.5" GLS Notebook	\$279 / \$349
256mb. (17ms) 2.5" GLS Notebook	\$339 / \$399
270mb. (11ms) 3.5" LPS 1/3 height	\$269 / \$319
340mb.(11ms) 3.5" LPS 1/3 height	\$299 / \$349
540mb.(11ms) 3.5" LPS 1/3 height	5399 / 5449
540mb. (9.5ms) 3.5" Empire 1/3 height	\$489 / \$539
1080mb. (9.5ms) 3.5 Empire 1/3 height	\$719 /\$769

Micropolis Hard Drives

Matthe Matthews (1994) 1.0 (1994

MEHIOLY & EAL	Junsion
4 Meg 72 Pin SIMM	70m / 60ms
4 Meg 30 Pin SIMM	
8 Meg 72 Pin SIMM	\$299 / \$299
8 Meg 30 Pin SIMM	5299 / 5329
16 Meg 72 Pin SIMM	\$579 / \$619
16 Meg 30 Pin SIMM	\$629 / \$659
32 Meg 72 Pin SIMM	\$1,129 / \$1,18
32 Meg 30 Pin SIMM	
WE HAVE BLACKBIR	D MEMORY
Also in stock: PowerBook a	ind Duo Memor
upgrades from 4 to 32 N	deg Modules
All memory has a Lifetin	me Warranty.

CD-ROM Drives

Apple CD300i (external). Apple CD300i (internal)..... NEC MultiSpin 3Xp (external)... CD-ROM DISCS

abriel's Seens CD-ROM World

NCD MAC CPU Accelerator

cases CPU and Graphics speed of your Centris 610 s or Quadra 660av, Quadra 650, and Quadra 800 by Only for C-Q660av, C610, Q650, Q800 \$99

Centris / Quadra 610 25Mhe w/ FPU upgrade only \$199 33Mhz w/ FPU upgrade for \$349



Mass Micro 24-bit NuBus Video Digitizing Card

ne Queklmage 24 card allows your fullus equipped Macintosh to priview and capture 24-bit color or 8-bit rayscale images from a wide rauge of NTSC or PAL video input sources, including camcorders, VCRs, videodisc, and still video cameris via the built in composite and S-Video puts, Ql-24 can capture 24-30 Frames for Second. The Ol-24is (high-frime

\$69 with any other purchase \$79 purchased separately

CIRCLE 553 ON READER SERVICE CARD





To Order Call: 1.800.223.4622

Other Inquires & International Orders: TEL: 818 · 708 · 6388

L: 818 • 708 • 6388 FAX: 818 • 708 • 6399
WE install your memory...., internal syquest...., Internal optical...., internal DAT.., and test all components together before shipping your custom configured system.

Please call us for the lowest price on Quadra 605, 610, 660av, 650, 840av, 950

Purchase of overy CPU

8Meg 280	289
16Meg 550	565
32Meg 1088	1135
NIKON CO	OLCCAN

External/Internal...... 1759/1590

Pinnacle Micro Optical

Taho 130/Sierra 1.3GB ... 945/2649 Recordable RCD 202 3295

Radius

Precision 20V/Pivot 15" ... 1569/821 Intellicolor 20/17"Color .. 1769/1195 2 Page 21GS/Full page 939/479 Precision 24X/ Pro 24X ... 869/1279

SuperMac

Thunder IIGX Line-up 1152/1360/1600 ... 1994/2511/3159 Spec. Power•1152 1122 Press View 21 3100 SuperMatch 21/20 TXL . 2093/1969 SuperMatch 17•T/17XL 999/939 SuperMatch 20 Plus 1549

Laser 4M/4ML/4MP 1895/995/1395 Deskwriter 550c/560c .. 499/595 Deskwriter 520/310 335/355 Deskjet 1200cps 2095

3FGE/4FGE/5FGE ... 569/631/1019 5FGP/6FGP/3V . 1115/1999/477

Infinity 88c/200 488/Call Infinity Optical 128 969

Microtek Scanners

IIG/II/IISP/IIXE 440/599/749/841

Sony Monitors

17SE/GDM 2038 1166/1995

UMAX Scanners

Visa, MC & Discover Add 2%

840/1260/1200SE .. 852/1137/2513

Texas Instruments Microwriter

PowerMac 8100, 80MHz

8MB/250 MB HD 3699 (AV)/24/1G HD/Apple CD . 5549 16MB/1Gig HD/Apple CD . 4759 16MB/500MB/SoftWindow 4529 40MB/1Gig/Syquest 200MB/Ext. key 5799 136MB/2.4Gig/SuperMac Press View 21/ CD.... 13299

24 bit Color with Display Resolution of 1152 X 87

PowerMac 7100, 66MHz

8MB/250 MB HD 2779 (AV)/16/1G HD/Apple CD . 4263 16MB/500 HD/Apple CD ... 3689 16MB/250MB/SoftWindow 3360 24MB/1Gig/Syquest 88c/Ext. key 4389

40MB/1Gig/Sony 17SE/Apple CD 5699

16 bit color with Display Resolution of 1024 X 768

PowerMac 6100, 60MHz

(AV)/16/1G HD/Apple CD . 3344 8MB/160 HD/Apple CD 1855 16MB/500 HD/Apple CD ... 2540 16MB/250MB/SoftWindow 2376 8MB/160HD/Apple Color Plus & CD/Ext. key 2204 16MB/500 HD/CD/Apple 17/Ext Key 3569 16 bit color with Display Resolution of 640X480

PowerBooks 520 / 520C

520 / 520C 4MB•160 MB HD 2033/2595 8.240.19.2 Modem .. 2828/3377

20MB•320 MB HD ... 3055/3655 12•320•19.2 Modem 3095/3555

PowerBooks 540 / 540C 540 / 540C 12MB•240 MB HD ... 3199/4469

8.240.19.2 Modem .. 3399/4745 20MB•320 MB HD ... 3711/4995 12.500.19.2Modem . 3939/5195

280 / 280C 280 / 280C

4MB•240 MB HD 2366/3199 8.320.14.4 Modem .. 3099/3955 18MB•320 MB HD ... 3177/3930 12.500.14.4Modem . 3378/4177

Apple Printers

Select 310/320/360 .. 799/895/1499 Pro 810 / 630 4650/1999 Stylewriter/Color 299/595 F 6924 CANBY AVE. UNIT #104 RESEDA CA. 91335 Portable Stylewriter...

Prices are subject to change without notice All Returns are subject to restocking fee, must be in original package, condition & needs an RMA#







SINCE 1988

WE SELL BRAND NEW PRODUCTS WITH FULL 1 YEAR PARTS AND LABOR WARRANTY. ALL PRICES ARE C.O.D. & SUBJECT TO CHANGE.NO TAX OUTSIDE CA 19801 VENTURA BLVD. WOODLAND HILLS, CA 91364.

(818) 719-9200 (FAX) 719-9115

PROFESSIONAL

THE RIGHT SOURCE

POL	JER N	AC	QUADR	R	PO	JER BO	OKS	PRINTERS	non	ITORS
8100	16/250	3987	950	CALL	520	8/160	2377	STYLEWRITER II 2	287 14 / 14 PLUS	397 / 297
8100	24/500	4447	840 AV 8/230-CD	2987	520	12 /240	2677	COLOR PRO 5	587 14" AV	627
8100	40/1000	5377	840 AV 16/500	3297	520	24 / 340	3177	HP DW 560 5	MULTISCAN 1	7 1027
8100	72/1.8 G	6777	840 AV 40/1000	4497	520 C	8/240	2997	HP DW 310 3	MULTISCAN 2	0 1977
8100 AV	16/500 CD	4997	840 AV 64/1.8-G	5577	520 C	8/160	2897	HP 1200 C/PS 20	047	
8100 AV	40/1.8 G	4997	650 8/250	1977	520 C	12 / 340	3347	320/360 887 / 14	147	MEE
8100	SOFT WIN	CALL	650 16/500	2477	540	4 / 240	2897	630 / 810 1947 / 43	50NY	MEC
7100	16/250	2847	650 32/1000	3297	540	8/340	3297		1730 / 17SE	977 / 1177
7100	24/500	3277	650 40/1.8-G	3977	540	12 / 540	3777	SCANNERS	2036 / 2038	TOTAL PROPERTY
7100	40/1000	4297	660 AV	CALL	540 C	4 / 240	4177	UC 630	697 4FGE / 3V	647 / 577
7100 AV	16/500 CD	3847	610	CALL	540 C	8/340	4427	UC 840	947 SFGP / GFGP	
7100 AV	40/1.8 G	4777	605	CALL	540 C	12 / 540	4977	UC 1260 11	197	11113.23
7100	SOFT WIN	CALL	610 DOS 8/160	1527	165	4/80	1447	HP II CX	967	
6100	8/230	1777	POUER MAC		165	4 / 120	1547	SCANMAKER II	717 S P	ERNAE
6100	16/25 CD	2277	UP-GRADE		165	8/160	1777	SCANMAKER IIXE	997	
6100	24/500	2477	UP-GRADE CARD	677	ALL AC	CESSORIES	CALL	Cool Scan Ext. 17	797 17T	997
6100 AV	8/250 CD	2347	6100 / 6100 AV	1377		DUO		Nikon Film Scanner CA	ALL 20TXL	1947
6100 AV	16/500cp	2877	7100 / 7100 AV	1677		500			21" Press V	iew 3177
6100	SOFT WIN	CALL	8100 / 8100 AV	1977	250 270 C		CALL	RUDIO / VII	DEO PRODU	CTION
	CAMERA		SYQUEST		280	4 / 240M	2397	DIGITAL FILM 2050 33	The second secon	550 .570
	100000000000000000000000000000000000000				280	12 /240M	2897	VIDEO VISION STUDIO 33		CALL
QUICKT	AKE 100	717	88/44C	447	280 C	4 / 320	3177	SUPERMAC HDTV 797	77 TRUEVISION BD	s CALL

WE SPECIALIZE IN CUSTOM MADE CONFIGURATIONS

CIRCLE 495 ON READER SERVICE CARD





Next & same day shipping available! No sales tax for out side of California orders. Prices subject to change with out notice!



Leasing available! FOR BUSINESSES ONLY!

POWER PC 8/160CD 1952 8/250CD 16/250 Win 2326 AV 8/250CD 2390. AV 16/250CD 2690. 7100 8/250CD

2875 6/250 Win 3/500CD 2005 8100 3150. 8/250 950 16/1GB 8/250CD 4075. 16/500 4352 16/500 Win 16/1Gig CD

Power PC 8100/80

136MB, 2.1Gig HD, CD

SuperMac 21" Pressview

Thunder IIGX 1360

Extended keyboard

Sharp JX-610 Scanner

\$ 25,285.00

Power PC 7100/66

40MB, 1.2HD CD

SuperMac 17T

Extended keyboard

& Mouse pad

QUADRA'S 995 610 8/160 650 8/230 650 8/230CD 660AV 8/230 660AV 8/500CD 800 8/230 800 8/500CD 840AV 8/230 840AV 8/230CD 840AV 8/1.2 840AV 64/1.2

Hi-End Specials!

180c 4/80 520 4/160 2097 520c 12/500 2295 540 12/240/M 3497. 540c 4/320 4297 540c 12/320/M 3326 **EPSON** ES-800C Pro 3000 SHARP 950 136/1Gig/CD 8130. 950 136/2Gig/CD 8795. JX-610 for items not listed

Power PC 8100/80

72MB, 1.2Gig HD, CD

SuperMac 20*Triniron

Thunder IIGX 1360

Extended keyboard

with mouse pad

\$ 12,295.00

Quadra 840AV

72MB, 1.2HD CD

Sony 20" Trinitron

Radius Pro24x

Extended keyboard

\$ 8395.

145B 4/40

165c 4/80

180 4/80

1549

PRINTERS PowerBook's Apple ColorStvl. 625 StyleWriter II Portable Styl 395 1960 Pro 810 495 Select 310 Select 360 1469 DeskWriter 560c D.Writer 1200c 1895 HP Laser 4M HP Laser 4ML HP Lasor AMP

Daystar Turbo 040/40 Turbo 040/33 Fastrache Oud 365 50Mhz powercache549 Diskrunner

128MB Optical

cartridges

\$ 33. Min. 5 pcs.

Call for most

recent prices!

UMAX UC630LE UC840 895. UC1260 1195 UC1200SE MICROTEK ScanMaker II ScanMaker IIxe 975 ScanMaker lisp ScanMaker IIG SUPERMAC 17" Color \$ 744.

17T Tonitron Pressview 21" 3095. Thunder II 1360 2185. Thunder IIGX **ProofPositive** 6695. E-MACHINE

Futura IISX Futura MX Futura IIILX Ultra LX 1037 NIKON

Coolscan 35mm 1829 Coolscan Internal 1588. Pinnacle Micro Pmo 650mb Opt. 2577.

Sierra 1.3gb 2647. Recordble rcd202 3277. NewGen

Turbo PS-440B 2795 16" RGB Color Turbo PS-660B 3145 17" RGB Color Turbo PS-660BE 3495 Turbo PS1200B Imager 6L 600dpl 3350. Imager 6L/Ether, 3695 Imager 12 1200dpi Cali

RADIUS Precision pro 24x 1395. Precision pro 24xp 475 Precision pro 24xk 595. Precision pro 8x Videovision studio 3195.

FARGO Color printer Photo Realis.upg.

539. MiniArray 1gb 128 IBM optical 2096 Global Village

Bronze 9600 SONY

327

539

1119.

399

1730 17 7SE1 17* 1936 20"

APPLE 14 RGB Color

MULTIMEDIA BLOWOUT!

RasterOps PaintBoard Turbo 21* Dual mode DuoMate 20T Multiscan NEC 4FGE

6FGP DAT/OPTICAL 128MO Sony

AGFA TEXAS INS.

Select press 1200 597 PLPR

FWB ammer 1gb int. Hammer 2gb int. Hammer 2ob Ext. Hammer 4gb array Co PE 130MB Optical 97

FOR ORDERS ONLY!

\$ 5,695.00 SuperMac 17T SuperMac 20T 20* Sony 20° Trinitron 1595.

ANGELES.

CA

QMS 600dpi Dual tray Hi-Resolution only \$ 2295.00 Lmtd.qty.!

Info-Mac CD Over 10,000, files! Only \$ 29.00

CIRCLE 508 ON READER SERVICE CARD

WEST PRICES BEST SE **POWER PCs** FAX 310-358-9100 Dealers & International Orders Welcome Same Day Shipping in USA We Only Sell Brand New Systems **Full One-Year Warranty** "Best Computer Source" -Computer Magazine SOURCE MACINTOSH THE TO WORLD

CIRCLE 542 ON READER SERVICE CARD

N. LA CIENEGA · LOS



Radius Video Vision Studio	\$2975			
Radius Video Vision Studio Upo	rade \$1375			
RasterOps Movie Pack II Studio	\$2995			
RasterOps Movie Pack				
Phillips CD-Rom Recorder While 5	\$5899			
Call For Any Mul	ti Media Product			
MONI				
15" AV Proton High Res Stereo	sound\$495			
17" Flat Square Hitachi Tube .2				
14" Apple Color Monitor	\$225			
14" Apple Color Monitor Call For Pricing	On Any Monitors			
MACIN				
Q 840AV-8/230\$3275	PPC 6100 8/250\$1750			
Q 660AV-8-230\$2150	PPC 7100 8/250\$2795			
Q 650-8/80\$1875	PPC 8100 8/250\$3795			
Q 950\$3175 Q 800-8/230\$2495	PPC 8100 AV\$4995			
Q 800-8/230\$2495	BlackbirdsCALL			
Call For Pricing On Any Macintosh Computer				
PRINT PRI	DUCTION			
QMS Color Script	\$2275			
Kodak Color Ease	\$6275			
GCC ColorTune	\$6225			
SPECIAL DEALS				
SuperMac Thunder 24				
E-Machine T16 II				
1GB External HD	\$795			
Call For Any Product Advertised In				
Call For Any Product Advertised In MacWorld				
Prices Are Subject To Change Without Prior Nations				
1-800-429-7779				

CIRCLE 405 ON READER SERVICE CARD



IMAGE MACHINES. 1-800-909-7879 1-413-436-7879

Power Macintosh Computers · PowerBooks PowerPC Upgrades · Coprocessors · Accelerators

Apple · DAYSTAR · YARC · Radius · SuperMac MONITORS

Apple · HITACHI · NANAO · NEC · NOKIA · SONY Radius · SuperMac · Mitsubishi · ViewSonic

Ask for Radius & SuperMac Specials & Rebates!

PRINTERS · SCANNERS · OPTICAL DRIVES

Apple · GCC · KODAK · Mitsubishi · QMS · Seiko Nikon · SuperMac · MICROTEK · UMAX · Pinnacle

D1 VIDEO EXPLORER & TRUEVISION Animation Systems CD-ROM/CD-I/Video CD MPEG Authoring

NONLINEAR VIDEO EDITING & ANIMATION Software

Radius VideoVision Studio Image

Electric Image · CoSA · VIDI Presenter Professional The Animation Stand · Diaguest · form · Z · STRATA

SONY/Panasonic Cameras/VTRs/Laser VideoDisc

NO CALIFORNIA SALES TAX! NO PAYMENTS FOR 90 DA

COMPAG E SECURE radius Microsoft FUJITSU IBM SUFFIMAC

C.R.I. INC.

1 800 275-9924

IN NY 516 737-0800 FAX 516 737-0923

	101 0000 1101	
QUADRAS	PRINTERS	ı
05 4MB/80HD\$799	HP 4ML \$990	9
05 8MB/160HD\$1050	HP 4MP \$139	9
10 8MB/160HD\$1350	HP 4M\$1995	5
10 8MB/230HD\$1675	HP 4M+ CALL	L
10 8MB/230/CD.\$1950	4SIMX CAL	L
50 8MB/230HDCALL	DESKWRITER\$299	9
50 BMB/500HD\$2550	C/560C\$399/CAL	L
00 8MB/230HDCALL	1200 C/PS CAL	L
50 80 \$3100	PJ)1300PSCAL	L
60av8MB/230HDCALL	STYLEWRITER II \$299	4
40av8MB/230HD.\$3250	PRO 630\$199	5
40av8MB/500CDCALL	LZR 1580CAL	L

SUPERMAC	SISONY	OMS 860	
177	\$1039	RADIUS/ N	EC
20 PLUS 20TXL	CALL GHT CALL	INTELCOLOR 20 PC 24X PC24XP	CALL
SPECTRUMV CPD1320		3V 3FGe	
CPD1730	10,000	5FGe	CALL

FOWEND	JUN	
155 4/40	\$1399	PB
165 4/80	\$1499	PB
165 4/160	CALL	PB
180 4/80	\$2150	PC
130 4/120	\$2325	
150C 4/80	CALL	п
180C 4/160	CALL	
250 4/200	\$1795	п
270C 12/240 M.	\$3325	

SCANNERS
UMAX 630LE\$729
UMAX 840\$975
UMAX 1260\$1229
SCANMAKER II SP.\$829
SCANMAKER II G., \$499
MICROTEK 35TCALL
HP SCANJET IICX . \$995
HP SCANJET IIP \$509
EPSON ES CALL

CALL



40/80/HD.....\$79/149 120/160HD \$215/310 250/340HD.\$390/545 CKET EXT.CS....\$85

APPLE \$149



MACROMEDIA DIRCTOR

Graphic Consulting, Training, Service and Support!

NEW & USED BOUGHT & SOLD EXTENDED WARRANTY



CIRCLE 474 ON READER SERVICE CARD



	1	
Quadra/Power Mac	BLACKBIRD/PB/DUO	DEMO UNITS
8100 AV CALL	540C 4-160 CALL	Q700 1240
8100 16-5004620	5400 36-320 5690	Q800 STOCK
8100 32-1GB CALL	52016-160 CALL	Q900 1489
7100 8-0 2490	520 8-340 2625	II SI 335
7100AV 8-5003565	180C 4-80 STOCK	IIG/IIF STOCK
6100 8-500 CD2390	165C 4-250 1980	PB 170 1090
6100 8-230 2195	180 4-80 1840	PB 180 CALL
Q840 16-1GB CALL	DUO 280C CALL	MORE DEMO UNITS
Q840 0-0 2490	280 12-240 3190	IN STOCK
Q650 1895	250 4-200 1750	PB 140 815
950 CALL	250 +MODM CALL	14" MONITORCALL

STOCK 230 4-80 CALL



PARTS !!! Special Upgrade POWER SUPPLY LC, LCII, LCIII to FLOPPY DRIVE Preforma 460 33 mhz \$385 HARD DRIVE Centris 610 S989 IN STOCK

> WE SELL: NEW MACS, PRE-OWNED MACS AND PARTS!

PLUS MONITORS, SCANNERS, PRINTERS, MODEMS & MORE

INTERNATIONAL COMPUTER Fön 310-441-9181 = FAX 310-479-012-10835 SANTA MONICA BLVD., SUITE 102, LOS ANGELES, CA 90025

CTR 650/660.CALL







PawerMac	8	New Arrivals		Apple Monito	rs	Supermac		RasterOps	1	N.E.	C	Microtei	k Uma	TY
6100 16/250/CD		605 4/160/Sftwr	995	Color Plus 14"	299	Platinum 21" Mono	995	Clearvuecolor 20T	1895 3	V / 3FGe	499/599	Scanmaker II	599 UC 630 LE	699
6100 av 8/250/CD		605 8/250/Sftwr	1295	14" Trinitron	399	Supermatch 20" Plus	1579	Sweet 16 AV Monito	945 5	FGe /5FGp	1075/1099	Scanmaker II xe	879 UC 840	899
6100 8/160		PB 520 4/160	2095	14" AV Monitor	629	Supermatch 17T	1025	Clearvuecolor 17"		FGp 21"	1995	Scanmaker III	2345 UC 1260	1199
6100 16/250/Win		PB 520C 4/160	2645	Apple 16" RGB	875	Supermatch 20Txl	1995	20T Multiscan		W 640	745	Scanmaker 35T	1299 UC 1200SE	2545
7100 40/1gb		PB 540 12/240/M	3475	Multiplescan 17"	979	Supermatch 21" col	2145	Horizon 24 bit	2035 F	G 24x 24bit car	rd 899	Custom cor	figurations a	
7100av 72/2gb/CD		PB 540C 4/230	4275	Multiplescan 20"	925	Thunder II Gx 1360	2545	Moviepak 2 pro	3175	Nound				
7100 16/250/Win		Duo 230 fd/dock	1475	Danilar Darks	-5	Thunder II Gx 1600	3095	Mediatime 24 bit	799	NewC			nal Orders W	
8100 72/IGB		Duo 280 12/240/M	2895	Hewlett Packa.	ra	Digitalfilm	2695	Same		mager Plus 6L	359		all HP Acces	
8100 8/250/CD		Duo 280c 4/320	3375	Deskwriter	199	Radius		Sony		mager Plus 6	399		asing. Amex, Visa. M/	C.Discover
8100 16/500/Win	4695	Quadras		Deskwriter C	375			GDM-17SE1		mager Plus 12	549		TO 1	
8100 av16/500/CD	5075			Deskwriter 310 SF		Prec.Color Pivot 15"		GDM-2036S		S 1200B	414		: Stor	COL
Apple Printe		605 8/160		Deskwriter 520		Mono Pivot 15"		GDM-2038	1939	PL		TATELL		
4.4		610 16/250/CD		Deskwriter 560C		Full pg 15" Mono		CPD-1730	995	ifinity 88rw/44	469	Call (3	10)829-	0720
Stylewriter II		610 8/160/DOS		Laser 4ML		TPD 20 GS		CPD 1430	STATE OF THE PARTY.	afinity 200MR	ruy 640	Can (S	10,023-	2/00
Stlyewriter Pro C		650 40/1gb/CD				Prec.Color 17" Tri		128mb MO External	1243	28MB MO Ext	999		quiry by f	av at
Port. Stylewriter		660AV 8/230/CD				Prec.Color 20V		THE CO CALL INCO LAL	2175					
Laser Select 320		840 24/230/CD		Control of the Contro	-	Intellicolor 20*	1799		4500000	Wace		1-800	-Fax-95	53
Laser Select 360		840 128/2GB/CD				Prec.Color 21"	1995			In Z 6*8	29			
Laser Pro 630		950 136/1.2GB				Videovision Nubus		Calcomp CCL 600	32999 1	2*12 RM	49		t'l Fax (310)31.	
Laser Select 810	4445	950 256/2GB/CD	12995	Scanjet IICx	925	Videovision Studio full	3275	Powerbk 165 4/160	31825	2*18 Elect w/s	99:	C.O.D Prices sho	own and may change v	w/o notice

M	A	C
C	IT	Y
COM	PUT	FDS

ALL SYSTEMS ARE NEW WITH
ONE YEAR WARRANTY
NO TAX OUTSIDE CALIFORNIA
WE CARRY FILL LINE MACINTOSH
SYSTEMS SINCE 1987
INTERNATIONAL ORDERS
VISA-MC-AMEX OK
Tel: (818) 505-8991
Tel: (818) 385-0080
First (818) 505-8992

OUADRA

O650	16/500 CD	CALL
Q650	8/230/CD	1949/2199
Q610	8-230-CD	CALL
Q610	8-80/160	1199/1299
Q605	4/80	899
Q605	8/160	1129

Q840 8-230 / CD 2799/2999 Q840 16-500/ CD CALL Q840 24-1.2G CD 4149 Q950 8-0/500/1.2GIG CALL 660 8-230 / 500 1529/1799 16MB 60nsc non compst 579

PowerPC Upgrades SAVE With Any Purchase
ASK FOR LATEST PRICES

Powerbook / BLACKBIRD

4 1 - 1 - 1 - 1 - 1			20000	
180c 14/250-14/340	Call	540C	4/320	4299
180 4/80	1899	540C	20/220	CALL
180 14/250			14/240	2899
165C 4/80-4/120	Call	520C	4/160	2699
165 4/80-4/160 1	499 /1699	520C	8/240	CALL
Duo 270c / 250	Call	Duo 280c		CALL
4MB/10MB	189/369	Duo 280	12/240	CALL
14.4 FAX MODEM int	219	CARRY	ASE	539

PowerPC

ALL CONFIGERS AND UP	GRADES
8100AV 32-1gig CD	5899
8100AV 136/0	CALL
8100 72/1G CD	6899
8100 24-1GIG CD	5129
8100 8-250	3799
8100 8-0	3599
8100 16/500	4249
7100AV 8-500 CD	3599
7100 8-250/8-1GIG	CALL
7100 Softwindows	CALL
7100 8.0	2349
6100AV 8-250 CD	2349
6100 8-160	1599

	PLI	
.00	EXT	CALL
4/88C	EXT	489
05MB	EXT	419
28 OPT	ICAL	CALL
AINI AR	RAY IG	1995

	Monit	0.0
Al	PPL 14" PLUS/Co	olor 295/199
A	pple 14T/17T	379/989
A	pple 14"AV/20"T	595/1889
R	ADIUS 20" COI	OR 1699
	dius COLOR Piv	
Ra	idius 15" pivot	559
	ad VideoVision St	udio 3269
Ra	nd Prec 24XP	499
Su	permac 21" Two	Page CALL
Su	permac 17/20T	899/call
Su	permac Thunder	11 2099
Su	permac Thunder	24 1669
So	ny 17SE1	1129
	ny 1320/1730	339/949
So	ny 2036/2038	CALL
Ne	c 3FGE/4FGE	595/715
	c 5FGP/6FGP	1179/2189

Printer & Scanners Printer & Sent
Pro 810/630
Select 310/360
Select 320
Stylwriter In
Stylwriter In
Stylwriter port
HP 4MM/AMP
HP 200
HP 4MM/MPIus
HP D1 1200CPS
HP Deskwriter 500
HP Deskwriter 500
HP Deskwriter 500
HP Senigle Ilex
UMAX \$40
UMAX 1200SE
Microtek II
Drite's
Microtek II
Drite's Call/1949 639/Call 949 289 398 Call 989/1329 1869/1949 9/1949 2079 569 289 929 1049 1509 2839 969 635

Seagate Baracuda 2.4g ex Seagate 3.4g 11ms ex Quantom 1g 9.5msc int 249 449 749 WE DON'T TRADE OR SELL USED COMPUTERS
WE SELL ONLY NEW SYSTEMS

CIRCLE 442 ON READER SERVICE CARD



(800) 299-MACS 409.690.5353 (Fax)

(800) 299-6227 409.690.5345 (Intl. Sales)

Prices subject to change — please call for latest pricing. We carry hundreds of items — call for availability. Your satisfaction is our goal.

Prices are C.D.D. and subject to change. International Orders and Fax Orders Welcome!

Color Classic	\$849	Duo 280 4/240	\$2395	Apple Color Plus 14"	\$288	Apple C
Centris 660av 8/500/CD	\$1950	Duo 280 12/240 Modem	\$2867	Mac 14" Trinitron	\$407	Apple CI
Quadra 605 4/80	\$890	Duo 280c 4/320	\$3243	AudioVision 14"	\$613	Apple CI
Quadra 605 8/160	\$1177	Duo 280c 12/320 Modem	\$3708	Multiscan Trinitron	\$982	(Include
Quadra 610 8/160	\$1308	520 4/160	\$2060	Sony 1430 14"	\$580	
Quadra 610 8/160 (DOS compatible)		520c 4/160	\$2395 \$2867 \$3243 \$3708 \$2060 \$2632 \$2867 \$3494 \$4175 \$4779			
Ouadra 610 8/230	\$1648	540 4/240	\$2867	Sony Multiscan 17 SE	\$1225	
Quadra 610 8/230/CD	\$1964	540 12/240 Modem	\$3494	Sony Multiscan 20"	\$CALL	Apple Ke
Ouadra 650 8/230	\$1933	540c 4/320	54175	Apple Multiscan 20 Display	\$1913	Apple Ex
Quadra 650 8/230/CD	\$2248	540c 12/320 Modem	\$4770	RasterOps Sweet 16	\$965 \$2315	Apple Ad
Quadra 660ay 8/230/CD	\$1615	Duo Dock/Duo Dock II	\$477/836	RasterOps 24XLI	\$2315	Apple Ac
Quadra 840av 8/230	\$2756	DUO DUCKDOUD DUCK II	35////030	RasterOps 20t	\$2066	
Ouadra 840av 8/230/CD		Dawerbacke		SuperMatch 17T	\$995	
	\$3007	145B 4/80	64205	SuperMatch 20 Txl	\$2475	James No.
Quadra 950 8/0	\$2713		\$1305	NEC Monitors	SCALL	Turbo Mi
One Year Warranty On New Ma We sell only Apple original senet num		145B 4/120	\$1522	NEC WORROW		Apple Po
THE BENDINY Apple on great suner nur	(OO) (A)	165 4/160	51800	Moderne		Apple Qu
PowerMacs		165 4/160 Modem	\$2146	GV PowerPort Bronze	\$97	Newton &
		Duo 220 4/80 ***				

6100/60 8/160 6100/60 8/250 CD 6100/60 AV 8/250 CD 7100/66 8/250 CD 7100/66 8/250 CD 7100/66 AV 8/500 CD 8100/80 8/250 CD 8100/80 AV 16/500 CD 8100/80 AV 16/500 CD \$1651 \$2078 \$2358 \$2631 \$2885 \$3620 \$3665 \$3898 \$4882

Scanners
HP Scanjet Ilcx/IIP
Interface For Scanjet
One Scanner
Color One Scanner \$980/730 \$265 \$705 \$938

Duo 250 4/200 Duo 250 4/200 Duo 250 12/200 Modem Duo 270c 4/240 Duo 270c 12/240 Modem

Photoshop 2.51 PageMaker 5.0 After Dark Filemaker Pro 2.1 Canvas 3.5 Quicken 4.0 Excel 4.0 Word 5.0 Office 3.0 (CD-ROM or Disk) \$540 \$540 \$29 \$260 \$259 \$309 \$309 \$305

GV PowerPort Silver

\$263

GV PowerPort Mercury	\$329
Geoport Adapter	\$113
SupraFax LC	\$157
SupraFax	\$198
Coletore	
StyleWriter II	\$290
Apple Color SytleWriter Pro	\$571
W Select 300, 310, 320, 360	\$CALL
LW Pro 630	\$1912
LW Pro 810	\$4374
HP Laserjet 4SI	\$3190
HP Laserjet 4SI MX	\$4670
	THE RESERVE OF THE PERSON NAMED IN

COs	
Apple CD 300 Ext.	\$290
Apple CD 300i Plus	\$341
Apple CD Multimedia Kit	\$550
(Includes Apple Design Power Spe CD 300 External, & 4 CDs)	akers,
Apple Keyboard II	\$7
Apple Extended Keyboard II	\$160
Apple Adjustable Keyboard We have Intl Keyboards!	\$130
Other Stuff Turbo Mouse	\$11

Turbo Mouse	ther Stuff	\$110
Apple Power	Speakers	\$140 \$667
Apple Quick Newton & Ar	cessories	\$CALL
PLI (5yQuest)		\$CALL
Weshi	p Airbome Exp	rress.
Inter	rational shimm	9008

FREE Mousepad With Every Order!!

CIRCLE 438 ON READER SERVICE CARD

LAVI'E'SII'



SPECIALS

INCREDIBLE BLOW-OUT!!

NEW Microsoft Office - \$149.00 : NEW NEC CD-ROM DRIVE - \$99.00

(Includes Microsoft Word, Excel, Powerpoint & Mail)

ONLY \$99.00 with Purchase of CPU

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

SYSTEM SPECIAL

- 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

Apple's First All-in-One 040 New Mac LC 575 \$1,699.00



NEW

Power Mac, PowerBook, Duo's In Stock New Laserwriter Select 310 \$749.00 New Laserwriter II Engine \$599.00 **New Stylewriter** \$199.00 New Apple Mouse II \$59.00

New Conner 543MB 3.5" Int HD \$399.00 New Apple PC 5 1/4" Floppy Drive \$15.00 New Ext. Hard Drive Enclosures \$69.00 New LC Apple Ethernet Card \$39.00

New Microsoft Works (Integrated Software) Super Sale! -

00

USED

Mac Plus	1/0	\$199.00	Personal LW NT	\$499.00
Mac SE (800K)	1/0	\$225.00	Personal LW NTR	\$749.00
Mac SE/30	1/0	\$549.00	ImageWriter II	\$199.00
Mac Classic	2/40	\$459.00	Apple Stand. II keyboard	\$65.00
Mac II	1/0	\$199.00	Apple Ext. II keyboard	\$120.00
Mac IIsi	1/0	\$279.00	Apple 13" RGB Display	\$349.00
Mac IIcx	1/0	\$399.00	Apple Two Page Display	\$599.00
Mac IIci	1/0	\$649.00	Apple 8 bit Video Card	\$85.00
Mac IIfx	4/0	\$899.00	Mac IIsi NuBus Adapter Card	\$49.00

EPSON Color Scanner

300 dpi, 256 Color Single Pass Flatbed



EMAC SE OR SE/30 ETHERNET BD - \$15.00

POWERBOOK CORDURA CARRYING CASES - \$25.00

WE CARRY MAC REPAIR / SERVICE PARTS AND OFFER EXTENDED WARRANTIES!!

DEALS

Software Special Bundle Includes:

All For Only

Write Now, Faxmania American Heritage Dictionary, \$25.00 Grammatik Mac, Correct Quotes, and ClickArt Holidays

Prices listed may not be current market value.

Prices represent a Cash Discount - off Full Price.

Call for latest updated pricing

Returns at discretion of Mgmt./15% Restocking fee.

WE WANT TO BUY YOUR **NEW/USED MAC EQUIPMENT**

CIRCLE 401 ON READER SERVICE CARD



Sales (818)787-3282

COMPU.D

FAX (818)787-5555

Power Mac

6100 8-160/500	1639/1949
6100 8-250 CD/500 CD	
6100 16-1GB/W-CD	2619/2869
6100 av 8-250/W-CD	2149/2339
6100 av 8-500/1GB	3019/3269
6100 16/250 W-SoftWindows	2299
7100 8-250/500	2609/2799
7100 16-1GB/2GB	3449/3749
7100 av 8-500/W-CD	3379/3589
7100 av 8-1GB/2GB	4249/4549
7100 16/250 W-SoftWindows	3069
8100 8-250/W-CD	3749/3949
8100 8-1GB/2GB	4619/4919
8100 av 16-500/W-CD	4799/4999
8100 av 16-1GB/2GB	5449/5749
8100 16/500 W-SoftWindows	4629

APPLE CD ROM 300i For Power PC & Quadra Factory Installed ADD \$249

SUPERMAC.

Thunder II GX 1152	2049
Thunder II GX Upgrade	- P. C. C.
Thunder 24 V.3.0	- 1000
Power DSP Upgrade	
Spectrum 24 PDQ+/24 Ser.	
Spectrum 24 Ser. V	CALL
Spectrum Power1152	
17-XL Multimode	
17T Trinitron	
20" Plus Color Dual Mode	1539
20-TXL Multimode	1929
21-TXL Multimode	
20" Hi Res. Trinit.	2399
21" Two-Page Clr.	1699
Display Calibrator Plus	CALL
20" /21" Gray Scale	
T-16IIMR/ Ultura LX	749/1019
	-

Software Specials

Adobe Photoshop V. 2.5.1 For PP	C 599
Adobe Illustrator V. 5.0	329
Adobe Premier V. 3.0	419
Aldus PageMaker V.5.0.a	549
Aldus Freehand V. 4.0.1	359
Caere OmniPage Pro V. 2.1	499
ClarisWorks For Power PC	188
Claris FileMaker Pro V. 2.1	255
Microsoft Office V. 3.0	425
Microsoft Excel/Word	299/299
Pixar Typestry V. 2.0	199
Penthouse Interactive CD	95
Other Software	CALL

Quadra

Work Group Servers M. 60/80	/95 _ CALL
950 8-0/525	2699/3149
950 16-1GB/2GB	3899/4298
840 av 8-230/500	2899/3099
840 av 16-500/1GB	3399/3799
840 av 16-2GB/W-CD	4099/4349
800 8-500 CD	2999
660 av 8-250/500	1399/1599
660 av 16-500/1GB	2269/2569
650 8-230/500	1949/2199
650 16-500/1GB	2499/2849
650 16-2GB/W-CD	3268/3568
610 8-160 W-DOS CARD	1499
610 8-230/500	1599/1949
610 16-1GB/W-CD	2569/2869
605 4-80/160	_ 789/849
605 8-240/500	1049/1299
******	*

	A A A .	* * * *	**
iigii	3-40/160		A95/50

	0 10	, 200	
IIVX	4-80	/230	

PowerBook

520	4-160		2095
520C	4-160		2675
540	4-240		2895
540	12-240 W-M	odem	3499
540C	4-320		4309
540C	12-320 W-M	odem	4939
145B	4-80/120 _	1219	/1319
165	4-80/160 _	1429	/1529
180	4-120/200 _	1799	/1999
180C	4-160/320	2649	/2890
Call	For USED	PowerBo	oks

DIIO

280	4-240	(New Model)		243
280	12-240	W/Modem _		286
280C	4-320	(New Model)		336
280C	12-320	W/Modem _		382
270C	12-240	W/Modem_		289
		20 10		119
230	4-80W-	Mini Dock+FL	PY	152
250	4-200			149

MONITORS & CD ROM Drives

20"/17" Trinitron Multi-Scan	1899/989
16" /14" /12" RGB	849/369/195
AudioVision 14"	589
14" Color Plus/14" Basic	289/179
CD 150i/150	99/149
CD 300i/300/Internal CD Kit	249/329/29
QuickTake100	679

PRINTERS

Select 300/310	499/599
Personal 320/Select 360 _	879/1429
Pro 630/600	1929/1299
Pro 810	4299
LaserWriter IIF/IIF Board	1099/295
LaserWriter IIG/IIG Board	1499/799

Hard Drive

80/120/160 MB HD 2.5" _	_ 109/179/210
210/250/340MB HD 2.5"_	_ 249/319/419
525MB HD 2.5" For PowerE	Boook 619
40/160/270MB HD 3.5" _	79/210/290
340/525MB/1GB	279/399/665

HEWLETT PACKARD

LaserJet 4ML/MP	_ 965/1295
LaserJet 4M/4M 220V.	1835/1925
LaserJet 4M Plus	1899
4SI MX/4SI	4250/2865
DeskWriter /DeskWriter C	235/375
DeskWriter 550C/560C	440/559
DeskWriter 520/310 Portable	_ 290/315
DeskJet 1200C PostScript	1995
PaintJet XL300 PostScript	3190
ScanJet IIC Demo	595
ScanJet IIP/ IICX New	549/899
DO NOT BE TOTAL	The state of the s

Liquidation Prices For HP Printers' Accessories!

SONY

1320/17 SE1	339/1099
2036S/2038S	1899/2049

NEC

3FGX/4FGE/5FG	499/629/999
5FGP/6FGP/3PG	1099/2049/2350

radus

21" Clr	1069
Precision Clr.20V/17	1599/1219
Precision Pro 24X	1349
VideoVision Studio	3399
IntelliColor 20i	1849

SPECIALS

DUO 250 4-80/200 \$1395/1499

CALL

68030, 33MHz, Active Matrix Display, 4.2 Lbs. Lightest PowerBook, Upgradable to 24MB RAM

Microsoft Office 3.0 MAC

\$420

DUO Dock W/FPU \$345 1.4MB Super Drive, Ext. Video out 2 NuBus Slots, 68040 Upgradable SuperMac 17" Multi-Mode 1024x768 Res., .28 \$549

SONY 1304S (New) \$339 1024x768 Res., .25 Trinitron

SCANNERS

ScanMaker II/IIXE 620/899 UMAX 630LE/840 620/825

E-Machine E-20___ \$1095 Futura SX/MX _\$199/349 T16 IIMR \$749

COMPAQ Prolinea 486-66 340MB HD ______\$1695 IBM ThinkPad 750C/750CS__

340MB HD _____ \$Call In Stock. TOSHIBA 4500C-120MB HD i486, Active Matrix CIr.\$2095

Apple Color Printer \$595

11x17, 4Color CMYK With ColorSync, 45 Fonts

COMPAG

WE ALSO DISTRIBUTE

TOSHIBA 📑

TOSHIBA Authorized Dealer & Service Center

1-800-929-9333 Orders Only

CIRCLE 434 ON READER SERVICE CARD



Powerbook 180c

4/80	\$2249
8/80	\$2399
4/160	\$2449
14/160	\$2995
3.44000	00045

Powerbook 180

4/80	\$1699
4/120	\$1789
8/120	\$1949
14/160	\$2599
14/240	\$2749

Powerbook 165

4/80	\$1389
8/80	\$1529
4/160	\$1499
8/160	\$1649
14/160	\$1895

Powerbook 145B

8/120	\$139
DUO'S	
250 4/200	\$149

250 4/200	51499
250 12/200/Modem	\$2149
270C 4/240	52349
270C 12/240 WIMOM	\$2799
DUO DOCK	\$349
DUO DOCK 230HD	\$539
The Control of Control	A STATE OF THE PARTY OF THE PAR

Quadra 950

8/0	\$2799
8/500	\$3299
16/1GIG	\$3699
256/2GIG	\$13995

8/230	52499
8/230 W/CD	\$2699
16/1GIG/CD	\$3499

Quadra 800

8/230	SCALL
8/230 W/CD	SCALL
8/500	\$CALL
Consider 66	MAN

8/80	\$1299
8/230	\$1399
8/230 w/CD	\$1599
8/500	\$1799

Quadra 650

2099
2299
2499
3099

8/160	\$1289
8/230	\$1499
8/230 W/CD	\$1799
8/500	\$1899
8/500/CD	52199

Quadra 605

4/80	\$729
8/80	\$889
8/160	\$1049
8/160/CD	\$1349
8/240	\$1149
8/240/CD	\$1449
and the second second	A STATE OF THE STA

MORE MING	•
Classic II 4/40	\$549
Classic II 4/80	\$599
Classic II Color 4/80	5679
LCIII 4/80	\$699
MAC II SI 3/40	\$499
Centris 610 4/80	\$749
Centris 650 8/230	51449
Cent 650 8/230/CD	\$1740

We beat prices!

UNIVERSITY, GOVERMENŤ, AND FORTUNE 1000 P.O.'S.

Trained Staff, We ship out of U.S.!







(310) 473-2535 FAX (310) 312-9041

FEDERAL EXPRESS Next Day Shipping! Call for Latest Pricing.

APPLE'S HOTTEST NEW POWERBOOK IS IN STOCK!

\$2839

\$4229

\$4899

2 NUBUS slots
Superdrive
Expandable
Affordable

VideoVision Presentation

PrecisionColor Pro 24x Interface PrecisionColor Pro 24xk PrecisionColor Pro 24xp PrecisionColor 8xj Interface

Color Pivot Nubus Interface PrecisionColor 17" Display PrecisionColor 20" Display

VideoVision Studio

6100 8/160	
6100 8/250/CD	
6100 16/250/WIN	
6100AV 8/250/CD	

520 4/160

520C 4/160

520C 8/160

• 68030 33MHz • 6 HR Battery Life • 4.2 pounds • 9" Active Matrix

Photobooster for Stage II Rocket Photobooster for Rocket Photobooster for Rocket

Stage II Rocket
Stage II Rocket w/ Macromedia

Rocket 33 Accelerator

RocketShare

SCSI-2 Booster VideoVision Basic

\$100 to \$350

\$49.95

7100 8/250 7100 8/250/CD 7100 16/250/WII 7100AV 8/500/CI

540 4/240

4/80HD \$1399 4/200HD \$1499 12/200HD \$1849

540C 4/320

540C 12/320/EXPMOD

\$599

\$599

\$1499 \$1795 \$999 \$399

\$269

\$1499

\$2079

\$2629

\$2829

	The second second
\$2399	8100 8/250/CD
\$2699	8100 16/500/WIN
\$2849	8100AV 16/500/CD
\$3349	8100 16/1GIG/CD

280 4/240

280C 4/320

280C 12/320/EXPMOD

\$3699 \$4349 \$4649 \$4995

\$2389

\$3299

\$3759

\$1749 \$3299 \$1349 \$799 \$499 \$499 \$499

\$1299 \$1699

\$4001 to \$5000

Apple 300CD PLUS INT Apple CD 300 Ext

Hewlett Packard

DeskJet 1200c (PS) LoserJet 4ML LoserJet 4MP

LaserJet 4M LaserJet 4M Plus Scanjet Ilcx

220 Volt Products CD-ROM Driv

Apple CD 300 EXT Apple Power CD \$399 Apple Multimedia CD \$599 NEC 3xi/xe/xp 499/59 /659 NEC 4X (4 spin!) HARD DRIVES

Quantum 80MB Quantum 230MB Quantum 500MB Quantum 1GIG External Chasis Apple 2.5° 20MB HD

SYQUEST

\$199

5679

1049

2199

44MB Int/Ext 88c Int/Ext 105 Int/Ext \$389 \$440

Apple Monito 14' Plus Color

14' RGB HIRES 16' RGB HIRES RGB HIRES \$999 \$169 21" RGB HIRES AudioVision 14" w/adt \$629

NEC Monitors

3FGE 15 Color 4FGE 16 C 5FGE 17' Color ofGP 21 Cola

SONY Monit

13045 IA COM 1730 17 Colo 17SE1 17 Calo 2036 at Coor 2038 21 Coor

SuperMac

Thunder II 24bit Thunder II Lite Spec 24 PDQ Plus Spectrum 8 20° Hi Res Color 20° Plotinum Color 21° Plat (2pg Mono) SuperMatch 20t SuperMtch 21 (2pg)

SCANNERS

Agfa Arcus Plus Agfa Transparency Microtek II ScanMaker IIXE ScanMaker IISP UMAX 600le **UMAX 1260**

\$139.95 \$199.95 \$259.95 \$169.95

\$2001 to \$3000

\$1201 to \$2000

CIRCLE 497 ON READER SERVICE CARD

\$701 to \$1200

228 August 1994

\$351to \$350

\$79.95



WECARRYEVERYTHINGFORMAC

Thunder IIGS 1360

ProofPositive

See us at MACWORLD EXPO, Boston, Aug. 2-5 Booth 1401

2950

CALL

Division of WC

Powe	er MA	Cs
8100	8/0	3497
8100	16/500	4295
8100	40/1.8	5995
8100	128/2.4	10350
8100	256/3.4	16500
8100AV	8/0	4195
8100AV	40/1.8	6595
8100AV	128/2.8	10540
8100AV	256/34	17150
8100AV	16/1.7	5395
7100	8/0	2395
7100	24/500	3295
7100	72/1.8	7395
7100	136/2.4	10795
7100AV	16/500CD	3875

48/1.7

72/1.2

8/250CD

8/250CD

16/500

16/500

32/1.2

8/0

7100softwindow16/250

5495

6095

3127

1495

2050

2495

3295

2450

2795

6100softwindow 16/250	2295
POWERMA	\C
UPGRAD	E

7100AV

7100AV

6100

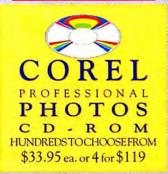
6100

6100

6100 6100AV

6100AV

UPGRADECARD 682 6100/60AV 1395 7100/66AV 1695 1995 8100/80AV



Quadra's		
840AV	0/0	2395
840AV	16/500	3150
840AV	64/2.0	5795
800	8/500	CALL
950	8/400	3195
950	64/1.2	6150
605	8/230	1250
610	16/230	1895
650	16/500	2495

Power Books		
540C	4/320	4350
540C	12/320M	5295
540C	36/550	6295
540	4/240	2950
520C	8/160	2995
520	12/240	2895
280C	4/320	3425
280C	12/320M	3870
280	4/230	2489
180	8/80	1999
180	14/340	2695
250	12/240	2195
Any Custom Config. Available		

New Ite	ems
Quick take	695
Color Pro	595
Newton 110	589

Apple	Monitor
14" HiRes	375
16"/17"	1025/CALL
14"AV/20"	599/1995

Apple Printers		
320/630	950/1949	
300/310	495/650	
360/810	1450/4395	

THE RESERVE OF THE PERSON NAMED IN
25
1495
1695
1695
345
139
1550

♦♦ ADULT CD'S♦♦ CALL US FOR FAX LIST

SUPERMAC	
20TXL/17T	1920/995
Thunder/24	1575

AGFA	
StudioScan	995
Studio Scan Tranp.	345
ArcusPlus	2695
Arcus+Tranp.	795

Umax	
UC630	799
UC840	995
UC1260	1295
UC1200SE	2495
Tranparency	495

UCC	
Selet Press 600	3697
Selectpress 1200	5595
Colortone	5995

Kodak		
Color Ease	6495	
450GL	1395	
PCDWriter 200	CALL	

Hewlett Pack	ard
DeskWriter 520	289
DeskWriter550C	395
DeskWriter 560C	563
DeskWriter310	295
DeskWriter 1200C	1875
Laser Jet 4ML	989
Laset Jet 4MP	1330
Laser Jet 4M	1875
HP4SiMX	4240
ScanJet IICX/IIP 9	10/695
JetStore 2000E 2GBDA	T 1595
40GBOptical JukeBox	13999
187GBOptical JukeBox	44900

1.3GBOptical Drive

Demo Mac's/Parts		
840	8/230	2395
800	8/230	1850
950	8/400	2495
SuperFloppy		195
Quadra 9	50 Logic Board	1900

Save on

\$oftware	
Microsoft Excell 4.0	311
Microsoft Office 3.0	456
Microsoft Word 5.1	271
Microsoft Power Point 3.0	289
Claris Works 2.1	189
Quark Express 3.2	566
Claris File Maker Pro 2.1	253
Aldus PageMaker 5.0	538
Microsoft FoxPro 2.5	432
Microsoft Project	425
Connectix Ram Doubler	59
Now Utilities 4.0.2	79
Adobe PhotoShop 2.5	548
Illustrator w/StreamLine 5.0.1	379
Fractal Design Painter 2.1	252
Aldus FreeHand 2.0	363
HSCKai PowerToll 2.0	99
Adobe Premier 3.0	432
Aldus SuperPaint 3.5	56
AltSysFont Grabler 4.0	259
Gold Disk Video Director 1.5	125
Disney Screen Saver	29
Kid Pix 1.2	33
M.Y.O.B. 4.0 w/Payroll	106
Mini CAD 5.0	495
PIXAR Typestry 2.0	159
Lotus 1-2-3 1.1	295

Custom configuration for all Audio-Video & Desk Top Publising

Exchange any **OLDMAC** to Power PC

LEASING AVAILABLE

Call for APPLE 3rd party products • International Orders, Visa, MC & AmEx Welcome • Next Day Shipping for U.S.A. & International Prices are subject to change w/o notice • All prices shown are C.O.D. Prices

(800) 761-1999 · Fax: (310) 470-8099 Tel: (310) 470-7099 10837 SANTA MONICA BOULEVARD • LOS ANGELES, CALÍFORNIA 90025

CIRCLE 453 ON READER SERVICE CARD

END OF SUMMER BLOW-OUT!

Duo Dock (no floppy)\$299.	llsi 3/40 (new)449.	Mac II 0/0279.
	PowerBook 100 4/40699.	Personal L'writer LS349.
LCII 4/40449.	PowerBook 140 4/40899.	Apple 14" Performa Plus249.

Quantities are very limited and items will be sold on a first come first sold basis. CPUs are without keyboard.



Apple Multimedia Kit includes: AppleCD 300, Apple Powered Speakers, multimedia CD

call!

■ E-Machines DoubleColor SX ■

Accelerated Color Video Board

Works with Apple 12", 13", 16". Rasterops Sweet 16, ColorPage T16 II, ColorPage E16, SuperMatch 17, NEC D & FG, Sony 1604S, E-Machines T19II, Third Party 19'

Printers

Imagewriter I	S169.
Imagewriter I w/c	229.
Imagewriter II	299.
Imagewriter LQ	449.
Personal L'writer LS	349.
Personal L'writer NT	649.
Laserwriter II engine (NEW)	699.
Laserwriter IInt	799.
Laserwriter IIntx	899.
Personal L'writer NTR	799.
Stylewriter	229.
Apple Color Printer	449.

Used CPU's

Mac IIci 0/0	\$599.
Mac Plus	299.
Classic 4/40	499.
Classic II 4/40	599.

Monitors & Video Bds.

Apple 12" mono	S149.
Apple Basic Color	129.
Apple 12" color	169.
Performa Plus (NEW)	299.
Apple 14" trinitron	299
Apple Portrait	299
Apple 2-page mono	
Artscan 17" color (NEW)	
Apple 16" color (NEW)	
Radius	
Monochrome Pivot	249.
Color Pivot(anti-glare)	
Color Display/20 (trinitron)	
Video Boards	
Apple Portrait	49.
Apple 4-bit	99.
Apple 8-bit	129.
Apple 4•8	149.
Apple 8•24	
Apple 8•24GC	
(monitor & video board prices with purchase	

All equipment is used or demo unless otherwise stated. Equipment carries a 120-day warranty. Returns subject to a 15% restocking fee. Prices subject to change. Prices represent 2% cash discount.



LC 2/40. Includes Apple Basic color, keyboard & mouse.



Parts

Logic Boards	Floppy Drives
Hard Drives	
Imagewriter Parts	Laserwriter Parts
Cases	Portable Parts
PowerBook Parts	Monitor Parts

EXPRESS ORDERS ARE OUR SPECIALTY!!

Upgrades

Mac 512kE to Plus	599.
Mac Plus 4-meg RAM	99.
Mac SE FDHD ROM & Drive	329.
Mac Ilcx to Ilci	399.
Mac SE to SE-30 logic board	399.
Mac II to IIfx	1299.
Mac II FDHD (ROM only)	249.
Ilci to Quadra 700	

With FREE Software &



Home Office Starter Package: SE 1/20, keyboard, mouse

Software: Write Now (word processor), Super Paint, Full Impact(spread sht), Record Holder Plus(data base)

Misc. Specials!

CD-SC w/Wayzata "Fun House"	\$149
SE Power Supply	
LC Power Supply & case	179
20-Meg External Hard Dr	89
SE-Analog Bd	
1.44 FDHD floppy mech	199
ADB Extended Keyboard (3rd Party)	79
40-Meg Tape Back-up	
LaserWriter Plus ROM upgrade	99
PowerBook 140/170 Battery	
12* Monochrome monitor	169
LC Logic bd	99
Mac Ilsi Power Supply & Case	149
ADB Mouse	49
40-Meg internal for Mac Portable	149
800k External Floppy	110
5.25 External PC Drive	25
Ilcx/Ilci/Quadra/Ilxv Power Supply	149
Portable Battery Recharger	
1200 Baud Personal Modern w/cable	
40-Meg 5.25 (Internal Mac II/IIx/IIfx)	
Nubus Black & White Video bd	49
LC Ethernet Board	
CRT & Yoke Assy. (Plus & SE)	
Ilsi Case	
Mac Plus Keyboard	
20-Meg Internal Hard Dr	49
Portable 2400 Baud Internal Modem	
40-Meg External Hard Drive	
Case & Power Supply-Mac II/IIx/IIfx	199
Classic Power Supply	
Personal NT Logic Bd.	
Mac Portable Numeric Keypad	29
8-Bit Video Bd (nubus)	
Personal SC Logic Board	
SuperMac S'view (p'book video i'face)	199
Ilcx case & power supply	
Classic Logic bd	
CRT & Yoke Assy	49
Mouse (Mac Plus)	59
Ilfx 1-Meg SIMMS	
Ilvx Case	
Plus Power Supply	119
StyleWriter AC adaptor	49
400 meg internal hard drive	
Too may internal hard drive	999



Personal Laserwriter NTR RISC Processor, 4-ppm, 300 dpi, Postscript Level II, IBM compatible

Personal L'writer NTR Upgrade

Upgrade your Personal Laserwriter SC or NT to the NTR for only \$299.

We Buy Macs! Call 318-424-9791 or FAX 318-424-9771

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



Power Macintosh CPUs PowerBooks 5 4 1 Video Boards Spectrum Power 1152 Duo 230 4/120 WORLD ATLAS \$49 PowerPC 6100/66 8/160 \$1648 50 Spectrum 24 seriesIV PowerPC 6100/66 8/250/CD Duo 230 4/80 W/MINI DOCK \$13 \$839 ENCYCLOPEDIA GROLIER \$49 \$2068 195 Radius 24XP ANIMALS DUO 280 4/240 \$455 \$49 PowerPC 7100/66 8/250 \$2648 Duo 280 12/240 MODEN \$2829 Rudius Precision, Pro 24x OCEANS BELOW \$1369 \$49 PowerPC 7100/66 8/250/CD \$2898 \$3349 Radins Precision Pro 24xk Duo 280c 4/320 \$ 755 PowerPC 8100/80 8/250 \$3785 NEW Peripherals Duo 280c 12 320 MODEM Apple Printers PowerPC 8100/80 8/250/CD \$3988 53829 Global Village PP Gold \$279 Duo Dock FOR ALL DUCK \$499 StyleWriter II \$279 Global Village pp Mercury \$359 Duo Dack II \$898 Color StyleWriter PRO \$659 Apple Express Modem \$299 APPLE DUO EXPRESS MOM \$299 Personal LaserWriter 320 \$898 Geoport Adaptor \$139 LaserWriter Select 360(10 PPM) \$1448 Memory for all mac's save PB 145B 4/80 Power Mac Upgrade Card \$695 LaserWriter 360 Fax Modem \$298 PowerBook Battery \$69 PB 16 PowerPC 6100/60 Logic Bd \$1989 \$1085 **U-max Scanners** CALL PB 520 1/160 NEW 040 \$2028 LaserWriter Pra 810 PowerPC 7100/66 Logic Bd \$1498 \$4298 Micronet 88MB Rem. Drive \$449 PB 520c 4/160 NEW 040 \$2589 PowerPC 8100/80 Logic Bd \$1798 Hewlett Packard \$49 Apple PB carrying Case PB 540 1/240 NEW 040 52849 \$4395 HP DeskWriter 320 NEW Mac CPUs \$299 PB 540c 1/320 NEW 040 ClarisWorks Bundle \$129 HP DeskWriter 560c \$589 Q 610 8/160 DOS \$1439 Monitors HP DeskWriter 310 w CSF \$389 Q 610 8/230 \$1698 Look For Monthly Apple 14 Color Pla HP Laserlet 4 ML \$989 Q 610 8/230/CD \$1849 \$359 Specials Highlighted Apple 14" Color Trinitron Q 650 8/230CD \$2129 Apple 14" AV Let us Do Your Custom Config In Black Q 660AV 8/230 \$1379 Apple 17" Color \$989 O 660AV 8/230/CD \$1619 PRICES REFLECT CASH DISCOUNT & SUBJECT TO CHANGE W/O NOTICE Apple Multiple scan 20" Mon-Fri 9:00 To 6:00 Since 1988 SAT 10:00 TO 2:00 PST 1941 Freeman #B \$1929 O 950 8/0 \$2769 Sony 17SE Color Monitor \$1198 Q 950 24/1GB \$4119 SuperMac 17 T Color \$989 Q 840AV 8/230 \$CALL Signal Hills, CA 90804 SuperMac 20" Plus Monitor \$1539 Q 840AV 8/230 W/CD \$CALL R Fax (310) 498-0032 SuperMac 20- TXL \$2349

CIRCLE 443 ON READER SERVICE CARD

EXTERNAL DRIVE HOUSINGS

Full Height 145.00 Half Height 89.00 .5" Mini Housing 89.00 2.5" Pocket Housing 89.00

Closed or Open Front Bezel Includes FWB Software & all

necessary cables.
110/220 VAC Auto Switching

Power Supply Full Height Cabinet will hold

(2) 3.5" or (2) 5.25" HH Drives 800-321-4962 DATAMAX

26212 Dimension Dr. #220 Lake Forest, Ca 92530 Fax 714-586-6959

CIRCLE 552 ON READER SERVICE CARD

LOW & HIGH END CUSTOM SETUPS

CASH FOR MACS

FAX 310-317-1583

BUY • SELL • TRADE

Open Monday-Saturday 22775 PCH, Malibu, CA 90265

CIRCLE 428 ON READER SERVICE CARD

The SX-29000 Fast 600 dpi Laser Printer!

The SX-29000 is a combination of highquality, high-performance products. The marking engine is the popular Canon 5X—the same 8 ppm printing mechanism used in the most popular laser printers

- 8MB RAM expandable to 16MB
- AMD RISC processor
- 850 x 850 dpi equivalent gray scale
- PostScript* language compatible with 35 built-in scalable fonts using PhoenixPage



- Simultaneous active ports for use with both PCs and Macs
 - Automatic PCL and Postscript emulation switching
- SCSI port for hard-drive based font library

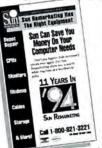






3481 Arden Road, Hayward, California 94545





Free Catalog

Of Used

Macintosh Computers

and Peripherals

hile Mac outfits come and go, we We've been refurbishing and selling used computers for 11 years. Your satisfaction is guaranteed with us!

1-800-821-3221

Call Anytime!

PO Box 4059 Logan, UT 84323-4059 International (801) 755-3360 Fax: (801) 755-3311

CIRCLE 424 ON READER SERVICE CARD

BEAT ANY PRICE!



CPU's: POWER PC & POWER PC Upgrades

Quadras & Powerbooks All models available DISPLAYS: Apple, SuperMac, NEC, RasterOps, Radius, Sony and others. SCANNERS: Microtek, Umax, HP, Sharp & More. PRINTERS: Apple, HP, NewGen, GCC. MODEMS: Global Village DEALERS AND INTERNATIONAL SALES WELCOME!

(818)880-6103

41 Ventura Blvd., Suite H99 Woodland Hills, CA 91364 CIRCLE 540 ON READER SERVICE CARD





ideo Works 25 Beta Ct. San Ramon, CA. 94583

800-838-1031

MITSUBISHI COLOR MONITOR

FG6601 CRT Size Resolution Dot Pitch

\$345.00 16"/15" View 832 x 624 0.26mm Millions



CIRCLE 403 ON READER SERVICE CARD

MAC MULTIMEDIA

Radius, Apple & Sony *Call Now*

For the Life of Your Mac

Loviel 2X-\$299 Loviél 3X-\$499

INCL. 2 TITLES.

CABLE & FWB CACHING SOFTWARE

BUNDLE: SPEAKERS & Two TITLES \$79

DIGITAL VIDEOSYSTEMS

Loviél CARRIES THE FINEST HARD DRIVES & REMOVABLE STORAGE FORMATTED WITH STORAGE FORMATTED WITH CHARIS MAC, ANUBIS UTILITY

MEMORY

LOWEST PRICES

WEST EAST Call for a FREE Color Cata og

CIRCLE 534 ON READER SERVICE CARD

Media Cartridges Monthly Special's SyQuest Removables Optical SyOuest EXT. INT EXT. INT 128MB \$32 270MB \$64 Scagate 3.4 Gig \$2199 \$2139 270MB \$549 \$505 256MB \$65 200MB \$81 IBM 2.1 GIG \$1339 \$1279 200MB \$529 \$495 370MB \$ \$305 105MB \$62 Olympus 128 MO \$810 \$760 105MB \$330 650MB \$110 NEC 2X CD-ROM \$295 \$235 88/44MB \$410 88MB \$74 \$364 1.3GiG \$120 44MB \$54 Kodak PCD Writer \$4607 Software, Cable, 25 Disc's TDK Recordable CD's ALL 600MB \$20 640MB \$21 Optical Drives EXT. INT. MERCHANDISE **Ouantum Drives** Fujitsu 128 MO \$810 \$760

LPS 540MB \$504 \$444 Ricoh 650 MO Tahiti III 1.3 MO \$2786 \$2716 Pro 1.08 Gig \$849 Fax: 714-573-5795 w/ 4MB Cache NEW TECH CONSULTING

\$950

\$909

Ocean 256 MO

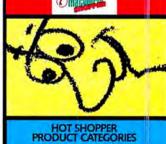
Ocean 370 MO

SINCE 1988 7

CIRCLE 567 ON READER SERVICE

- . We'll pay you cash for used Mac equipment! Call now for FREE quote.
- We also sell refurbished Macs. w/1-vr warranty & 10-day moneyback quarantee. All models.

CIRCLE 521 ON READER SERVICE CARD



HELP BUYERS OTHE PRODUC THEY NEED FAST

1-800-334-KIWI

EXT.

\$279

\$289

LPS 270MB \$339

LPS 340MB \$349

Que	iura
605 4/80\$825	605 w/softwareCall
605 8/160\$1049	650 8/230\$1999
605 8/250\$1149	650 16/500\$2575
Power	r Mac
6100 8/160\$1649	7100 16/500\$3199
6100 16/500\$2299	7100 24/1Gig\$3799
6100AV 8/250CD.\$2375	8100 24/1Gig\$4999
Power	rBook

Please call for all Powerbook Prices. 145b, 165, 180, 520, 520c, 540, 540c, 280, 280c

Monitors & Printers Magnayox 14"......\$249 \$275 Stylewriter II. Apple 14" Trinitron.\$499 Deskwriter 520 \$289 NEC 4FGe...\$625 Deskwriter 560C \$575 Sony 17SE1......\$1135 HP Laseriet 4ML...\$975 Radius Monitors.....Call Laserwriter 360, \$1449 Specials

660AV 8/230... ...\$1399 80mb int HD \$115 LC III & Ilvx.....Call 160mb int. HD......\$159 lisi & Ilci..... ...Call 40mb Pwrbook HD.S49 Laser Select 310.....Call 256k LC III Vram.....\$18

Trade-Ins Wanted

All products in this ad are NEW. Visa & Mastercard No Surcharge. Better Business Bureau Member.

Kiwi Computers, PO Box 57381, L.A., CA 90067 Toll Free (800) 334-5494 Fax (310) 286-9667 In California and Overseas (310) 553-4507 Hours: Mon-Fri 7.30am-6pm, Sat 9am-2pm PST

All products have a 1 year warranty.

Returns are subject to a 15% restocking fee.

Prices subject to change. Quantities may be limited.

Not affiliated with Kiwi Software, Inc.

CIRCLE 404 ON READER SERVICE CARD





GUARANTEED

NEW

- Save your 30-pin SIMMS into one 72-pin SIMM. For Power Macs, Quadra's, Performas, and LC's.
- Easy installation, Guaranteed,
- Send us your FX and Q900/950 SIMMs. We'll turn them into 72-pin SIMMs

1-800-636-7281

Compu-Circle

Tel (316) 264-2244 • Fax (316) 264-4445 CIRCLE AND ON DEADED SERVICE CAR

Macintosh



CIRCLE 543 ON READER SERVICE CARD

MAC MEMORY, CALL FOR LOWEST PRICE

NEW POWER PC MEMORY LIFETIME GUARANTEE

30 PIN SIMMS

1X8-80/70 1X8 FX

2X8-80/70 4X8-80/70

4X8 PAL

4X8 FX 8X8-70 16X8-70

WE ACCEPT M.C. VISA & DISCOVER. UNIVERSITY. GOVERNMENT AND CORPORATE

P.O'S WITH APPROVED CREDIT

72 PIN SIMMS

1X32-70/60 4MB 2X32-70/60 8MB 4X32-70/60 16MB

8X32-70/60 32MB NON COMPOSITE

VRAM 256K VRAM . 512K VRAM 4 & 8 BIT VRAM SETS IMB VIDEO ZIPS

DRAM 256K DIPS . IMB DIPS

140,145,170 2MB,4MB,6MB

POWER BOOK

100:

2MB.4MB.6MB

160,165,180 4MB,6MB,8MB,10MB 165C,180C

4MB,6MB,8MB,10MB

DUO 210,230,250,270C 4MB,8MB,12MB,

14MB, 20MB, 28MB FPU

> 68882-25. 68882-33 PMMU CHIPS

MEMORY FOR ALL PRINTERS

1-800-662-SIMM (7466)

DATA MEMORY SYSTEMS INC.

15 UNION ST. LAWRENCE, MA. 01840 TEL. 508-683-2325 ESTABLISHED 1963 FAX 508-975-5232

CIRCLE 447 ON READER SERVICE CARD

PERIPHERAL 800 256-6581

Call now! We have all sizes of memory for the new Blackbird PowerBooks!



Standard SIMMs

1 Megabyte	40.00
2 Megabyte	79.00
4 Megabyle	145.00
8 Megabyte	329.00
16 Megabyte	589.00

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, IIvx,	
Ilvi DuoDock and Performas	36.00

68882 FPU Boards

25 MHz for Macintosh LC	55.00
20 MHz w/2 slots for Mac Ilsi	119.00
25 MHz for Mac Classic II	55.00

Cache Cards, Etc.

128K Cache Card for LCIII	
and Performa 450	159.00
w/25 MHz FPU	209.00
Ilsi 64K Cache Card	159.00
Ilci 64K Cache Card	125.00
llsi 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

MISCENANEOUS		Nourton D
LaserWriter Pro 810 4 MB upgrad	e 275.00	Newton P
LaserWriter Pro 810 8 MB upgrad	e 549.00	512K Static RAM Up
T.I. MicroLaser 1 MB	49.00	1 Megabyte Static R
Mac Classic 1 MB Board	75.00	2 Megabyte Static R
68851 16MHz PMMU	89.00	2 Megabyte Flash Ca
if requested, MODE 32 software included f	ree w/PMMU	4 Megabyte Flash Ca
Mac Portable 3 MB Card	369.00	100000000000000000000000000000000000000
Mac Portable 4 MB Card	399.00	8 Megabyte Flash Ca
Mac Portable 5 MB Card	449.00	16 Megabyte Flash (
Due to volatility in the market all prices an	d availability are sul	ject to change without notice.

DiiMOCache 50MHz Accelerator \$445



DiiMOCache
50MHz Accelerator
DayStar
PowerCache 50

Radius
Rocket 25

Jeer
0.00 0.50 1.00 1.50 2.00 2.50

Number of times faster than a Mac Ilci

SAVE MONEY! Peripheral Outlet will buy back your old memory at great prices! Call for details.

NEW PRODUCTS!

LaserWriter Pro 810 4 MB Upgrade board	275.00
LaserWriter Pro 810 8 MB Upgrade board	549.00
PowerBook Duo 20 MB/28 MB Modules	949.00/1349.00
All sizes PCMCIA cards for Newton.	Call For Pricing!

72 Pin Memory for the new Macs!

80 ns	70ns	60 ns

4 Megabyte	Balance Balance Ballion
3 Megabyte	Prices Changing Daily-
16 MB-Non Composite	Call for Best Prices
32 MB-Non Composite	Ouil for Doot I i looo!

PowerBook Memory

	100	140/1/0	100/100	1030/1000	D002
2 MB	89.00	89.00			
4 MB	172.00	145.00	149.00	149.00	195.00
6 MB	249.00	209.00	215.00	215.00	215.00
8 MB			289.00	289.00	319.00
10 MB			349.00	369.00	
12/14 MB					569/649
20/28 MB					875/1249
22			San Carrier	200	25.434

Newton PDA Upgrade Products

125.00
169.00
289.00
259.00
425.00
749.00
1375.00

CIDCLE 454 ON DE

Speed up everything you do by up to 400% with this 50MHz 68030 accelerator by DiiMO Technologies. Awarded 4 ½ Mice in MacUser's April 93 Accelerator Review, the DiiMOCache 50MHz 68030 Accelerator outperformed not only DayStar's PowerCache 50MHz but also most of the 68040 25MHz accelerators. And it costs less too! For the LC, LCII, LCIII, II, IIx, IIcx, IIci, IIvx, IIvi, IIsi, SE/30, and Performa 600 and 400 series. Call for adapter prices. DiiMOCache 50MHz 68030 Accelerator

without FPU \$445.00 with FPU \$519.00

68040 PROCESSOR WITH FPU \$249.00

(25MHz, with 'LC' trade in) \$299.00 without trade For the Centris/Quadra 605, 610, 650, and 660AV, and the Performa 475/476 and LC 475.

33MHz FOR QUADRA 650 & LC 575 - \$399.00 40MHz - \$699.00 Heat Sink - \$19.00

TOLL FREE TECH SUPPORT

LIFETIME WARRANTY ON ALL MEMORY PRODUCTS
ORDER BY 6:30 PM CST FOR SAME DAY SHIPPING*
OVERNIGHT DELIVERY FROM \$8.00 *some restrictions apply

PERIPHERAL OUTLET, Inc.

327 East 14th, PO Box 2329 • Ada, Oklahoma 74820 405/332-6581 FAX 405/436-2245 • AppleLink-PERIPHERAL HOURS: Monday-Thursday 7AM-7PM CST, Friday 7AM-6PM INTERNATIONAL TOLL FREE: France – 0590 1997, UK – 0800 962 058

HE LLB COMPANY INC

POWERPC MEMORY \$145	POWERBOOK MEMORY PB140-170-4/6
POWERPC, CENTRIS, QUADRA, LC III 4MB-70ns / 4MB-60ns 5145 / 5145 8MB-70ns / 8MB-60ns 5294 / 5300 16MB-60ns non-composite 5615 32MB-60ns 51212 STANDARD 30 PIN MEMORY 1x8x80 540 4x8x80 (IIfx) 5155 1x8x70 542 4x8x70 (IIfx) 5157 1x8x100 539 4x8x80 (II,IIx) 5155 2x8x80 577 4x8x70 (II,IIx) 5157 2x8x70 579 8x8x70 (IIIx) 5157 2x8x70 579 8x8x70 (IIIx) 5449 4x8x80 5145 16x8x70 (Low Profile) 5625 4x8x70 5147 16x8x70 (IIfx) 5635 PRINTER MEMORY	PB165C-180C-4/6/8/10
LaserWriter 810 4MB / 8MB	35MHz Performa 600 / Duo Dock FPU
Action 2-Button ADB Mouse	120 SIMM Remover (30 pin only)/Grounding Strap \$3/\$1.50 129 Modem Cable/High-Speed Hand Shaking \$7.50 / \$12

650 / 600MB Optical5109 128MB 3.5" Optical546

SONY Floppy Disks 3.5" DD / 3.5" HD 57.50/\$12 3.5" HD Pre-Formated \$13.50

650MB/74 Min	525
553MB/63 Min	§23
SONY 4mm DAT	
4MM 60M 1.3GB	§13
4MM 90M 2GB	15
4MM 120M 4GB	524
Cleaning Cartridge 12	.50
SONY 8mm DAT	
8MM 15M 600MB	512
8MM 54M 2.4GB	14

SONY CD-R

8MM 112M 5GB \$16 Cleaning Cartridge \$28

Port Juggler Serial Switch575

Wacom ARTZ Tablet5315

Wacom 12 x 12 Digitizer ...

SyQuest 44MB Cartridge 1-4/5-9/10+ .. \$59 / \$58.50 / \$57.50 Pre-Formatted SyQuest 88MB Cartridge 1-4/5-9/10+ Pre-Formatted SyQuest 105MB Cartridge 1-4/5-9/10+ 562 / 561 / 560 SyQuest 200MB Cartridge579 SyQuest 270MB Cartridge 1-4/5-9/10+ \$65 / \$64 / \$63

THE RESERVE TO THE PARTY OF THE	
128MB 3.5" Optical	30
128MB 3.5" Optical, Apple Format	
256MB 3.5" Optical	
600 / 650MB 5.25" Optical (512 b/s / 1	024 b/s) . \$85
1.2 / 1.3GB Optical (512 b/s / 1024 b/	s) ⁵ 112
DC2000 with QIC40	
DC2080 with QIC30	\$16.90
DC2120 with QIC80	519.50
4mm 90m / 60m	\$11.50 / \$8.90
8mm 112m	\$10



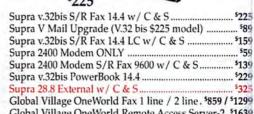
\$23 (For use in Recordable CD-ROM Drives)

Kensington Turbo Mouse5106 Costar Stingray Turbo Mouse \$85

.... 5689

Printer Cable DIN-8 to DIN-8/DIN-8 to DB-25 \$7.50 Newer Technology VSO Q700/900/950/IIFX..... \$259 Wrist Saver Keyboard or Mouse Pad/Bundle \$12/520 SCSI Cables M25-M50 18"/M25-M50 6' 58 / 519 SCSI Cables M50-M50 18"/M50-M50 6'

Fax 14.4 w/ C & S



Global Village OneWorld Remote Access Server-2 51639 Global Village Teleport / Powerport (Bronze) 24/96/48 Global Village Teleport / Powerport (Gold) 14,400 Global Village Teleport / Powerport (Mercury) 19,2005329 U.S. Robotics Sportster 14.4 S/R Fax5237 Prometheus PowerBook 14.4 w/Voice......5309 Zoom Pocket 14.4 w/Voice5239

Zoom 14.4 w/Voice

Zoom V. fast 28.8 modem

WE ALSO CARRY FARALLON & DAYNA NETWORKING PRODUCTS, CABLES, PRINTER SUPPLIES, KEYBOARDS, MICE, SCANNERS. . . . CALL US TODAY

Educational/ Government Fortune 1000 1 Companies

5189

CIRCLE 563 ON READER SERVICE CARD

OUR MEMORY STORE & MORE...



Rumi SyOUEST DRIVES

HP IIP ..

UMAX 1260 ..

UMAX UC630 PS/LE UMAX UC840

Microtek ScanMaker IIG ...

Microtek ScanMaker IISP .

Microtek ScanMaker II

Microtek ScanMaker IIXE

Labelwriter II PLUS

GCC Write Impact

Microtek ScanMaker IIER \$1329 Microtek ScanMaker 35T Nikon Coolscan

Citizen Notebook II Color Printer . 5378 Notebook II Ni-cad Battery Pak 569

HP Deskwriter Printers Now Available

PACKARD

Rumi 44MB SyQuest (FREE Cartridge)	\$289
	5439
Rumi 105MB SyQuest (FREE Cartridge)	5429
Rumi 200MB SyQuest (FREE Cartridge)	\$579
Rumi 270MB SyQuest (FREE Cartridge)	\$579

RUMI CD-ROM Drive, Sony Speakers and 4 CD Titles

• World Atlas • Myst • Lunicus • Where in the World is Carmen Deluxe

Rumi DAT DRIVES

Rumi 2.0GB DAT Drive w/Retrospect (Includes Tape) \$1069 Rumi DDS / 8.0GB w/Retrospect (Includes Tape) \$1209

Rumi **OPTICAL DRIVE**

128MB Optical Drive Double Speed with TEAC Mechanisam



Rumi HARD DRIVES

Rumi 85MB Internal	. \$209
External (Quantum)	. \$279
Rumi 170MB Internal	
External (Quantum)	\$299
Rumi 270MB Internal	. \$289
External (Quantum)	. \$339
Rumi 525MB Internal	
External (Quantum)	. \$619
Rumi 1.0GB Internal	
External (Quantum)	\$939
Rumi 1.2GB Internal	
External (Quantum)	\$1109
Rumi 2.0GB Ext (Seagate Barracuda)	\$2269
Rumí Powerbook 210 Int (Toshiba)	

MORE DRIVES

PMO Tahoe 230MB Optical	. \$979
PMO Sierra 1.3GB Optical	
PMO Sierra 2.6GB Optical	
PMO RCD 202 Recordable CD-ROM	\$3629
PLI Quick Array 1GB	\$2499
PLI Quick Array 2GB	\$3429
PLI Quick Array 4GB	\$5749
PLI 1.3GB Maxoptics (Tahiti III Mech)	\$3449
PLI 10Gg Dat Drive	\$1459

\$799

\$1349

.. \$499

5829

5685

\$925

Sonic Ether 10T/Thin-II/LC	. \$92
Sonic Micro SCSI PowerBook	
Sonic FriendlyNet 10T/Thin	
Sonic Starbase T9	
Sonic HubLite 5 port	
Sonic PowerBridge	
ASANTE	

HEWLETT®

Asante	Friendly Net Adapters	. \$59
Asante	Mac Con-i Nubus 10T	\$159
Asante	Mini EN-SC 10T PB	\$259
Asante	Net Extender Hub 10-T	\$179
Asante	Mac Con-i LC Series T	\$159
Asante	SCSI w/Thick/Thin/10-T	\$299

Dayna and Farallon Products Also Available THE ART & SCIENCE OF COLOR"

RASTEROPS

Horizon 24	\$224
PaintBoard Lightening	588
PaintBoard Professional	
PaintBoard 8Li /20"/16"	/13" \$33
24STV	
24Mx	549
Movie Pak 2 Pro Suite	5347
RasterOps Clearvue	
Color 17" Monitor	\$94
RasterOps 20" MultiScar	
Color Display	\$161
RasterOps 20T	TIME
Color Monitor	5247





Paintboard Professional \$1799

E-Machines Futura IISX	. \$459
E-Machines Ultura LX	. \$829
Sony 17SE1	\$1249
Sony GDM 2036s	
20" MultiScan	\$2039



- Airborne Express Overnight \$6 and up.
 First quality New, Brand Name products
 - · All major credit cards accepted with no surcharge.
 - · P.O.'s accepted upon approval
- Credit card not charged until order is shipped Orders received before 7:30 pm Eastern time
- weekdays shipped same day
 We export 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

300 120th Avenue NE, Bldg 1, Suite 120, Bellevue, WA 98005, (206) 454-7258



THE LLB COMPANY, INC.

UPGRADES & MEMORY



MAC Xtra! Delivering The Knockout Punch On High Prices!

1x8x80	\$40
2x8x80	
4x8x80	\$145
4x8x80 II/IIx	\$155
16x8x70 (Low Profile)	\$619
1x8x80fx	\$42
4x8x80fx	\$155
16x8x80fx	\$629
4MB 72 pin (70NS/60NS)	\$145/\$145
8MB 72 pin (70NS/60NS)	\$293/\$300
16MB 72 pin (70NS/60NS)	\$612/\$612
32MB 72 pin (60NS)	\$1,212
Newton-2MB	

PB 100-6MB	\$265
PB 140/170-4MB/6MB	
PB 160/180-4MB/6MB	
PB 160/180-8MB/10MB	\$289/\$355
PB 165C/180C-4MB/6MB	\$152/\$229
PB 165C-8MB/10MB	
PBDUO 210/230-4MB/6MB	
PBDUO 210/230-8MB/12MB	
PBDUO 210/230-14MB/20MB	
PBDUO 210/230-28MB	\$1,429

MODEMS

Supra 5014LC 14.4 S/R Fax	\$159
Supra 2400	\$59
SupraV.32bis Powerbook Fax	
Supra 14.4 S/R Fax	
(w/cable/software)	\$225
Zoom AMX 2400 bps	\$68
Zoom FXV 2400/9600 S/R Fax	
ZoomVFXV 14 4 v 32his S/R	\$175



DAYSTAR Universal Powe	rcache
030 33/33 w/FPU	\$289/\$379
030 50/50 w/FPU	\$439/\$565
Turbo 040 33 w/cache	\$829
Turbo 040 40 w/cache	\$999
128K Cache for Turbo 040 Accelerat	ors \$172



· · ·	
Rumi 1.2 Ext/Rumi 1.2 Int\$1,109)/\$1,089
Rumi 170 Ext/Rumi 170 Int\$2	99/\$219
Rumi 85 Ext/Rumi 85 Int\$2	79/\$209
Rumi 240 Ext/Rumi 240 Int\$3.	35/\$279
Rumi 525 Ext/Rumi 525 Int\$6	79/\$609
Rumi CD-ROM	\$299
Rumi Optical 128 MB w/5 cartridges	\$995
Rumi 44MB SyQuest w/cartridge	\$289
Rumi 88MB SyQuest w/cartridge	\$439
Rumi 105MB/C SyQuest w/cartridge	\$429
Rumi 270MB SyQuest w/cartridge	\$579
Rumi 8GB DAT Drive	\$1209

256K / 512K VRAM\$20/\$38
Fool Kit (Simms Inst. Kit)\$7
PowerBook Tool Kit\$6.50
SIMMdoubler/SIMMchanger\$137/\$98
LC/ LC II FPU\$55
LC III FPU\$65
Classic II FPU/Color Classic FPU\$55/\$48
Duo Dock/Performa 600 FPU\$59
Centris FPU\$315
I'l Microlaser Upgrade\$54
HP 4MB/HP 8MB\$175/\$339

SyQuest 44MB Cartridge	\$59
SyQuest 44MB Preformatted	
SyQuest 88MB Cartridge	\$69
SyQuest 88MB Preformatted	
SyQuest 105MB Cartridge	

Optical Cartridges	
128 MB (Verbatim)	\$32
650 MB (Verbatim)	
1.2GB/512K (Verbatim)	
1.3GB/1024K (Verbatim)	\$112
Bernoulli Cartridges	
44 MB	\$97
00 MB	\$105

150 MB (5 Pack)	\$459
	ń-
	SHIPPING

Overnight Delivery .	\$7
	\$6
Phone:	(206) 455-0786
Fax:	(206) 455-3448
International Ora	lers-24 Hours a Day

MAC Xtra

1075 Bellevue Way N.E. Suite 114, Bellevue, WA 98004 Phone: (206) 455-0786 Fax: (206) 455-3448

Returns subject to approval and restocking fee. Prices subject to change 7:00 AM to 6:00 PM M-F 9:00 AM to 4:00 PM Sat. PST

We accept MasterCard, VISA & Discover •

CIRCLE 561 ON READER SERVICE CARD



YOUR MEMORY GUIDE

POWER PC

8meg Kit	\$309
16meg Kit	\$634
32Meg Kit	
64meg Kit	

30 PIN SIMMs

1x8 - 100	\$39	4x8 - 80 \$147
1x8 - 80	\$42	4x8 - 70 \$154
1x8 - 70	\$45	8x8 - 80 \$365
2x8 - 80	\$76	16x8-70 \$589
2×8 - 70	\$79	16x8-70nc \$609

72 PIN SIMMs

1x3270	(4meg)	\$149
2x3270	(8meg)	\$295
4x3270	(16meg)	\$585
4x3260		
8x3270		

POWERBOOK

		160/180		
4mb	159	169	165	195
6mb	219	239	239	219
8mb	_	299	309	329
10mb		385	389	

HARD DRIVES

ı	QUANTUM 2	year W	/arr. INT/EXT
ı	LPS170mb	3.5"	\$245/293
ı	LPS270mb	3.5"	\$298/369
ı	LPS340	3.5"	\$349/399
١	PRO540mb	3.5"	\$648/698
l	PRO1050mb	3.5"	\$979/1029
ı	PRO1225mb	3.5"	\$1085/1139
	QUANTUM G	O DRI	VES INT/EXT
١	127mb	2.5"	\$269/359
	170mb	2.5"	\$289/379
	256mb	2.5"	\$379/465
ľ	FUJITSU 5 Year	Warr.	INT/EXT
	520mb 3	.5"	\$589/649
	1.2Gig 4	.5"	\$849/899
	2.4Gig 5	.25"	\$1789/1889
	EXTERNAL DE	IVE H	OUSINGS

BLACKBIRD

Complete with SCSI and power cable.
Half Height Mini \$89

For Pow	erBook 520,	520c, 540, 54
4mb	NEW!	\$279
8mb	NEW!	\$479
16mb	NEW!	\$839
32mb	NEW!	\$1599

DAYSTAR DIGITAL

WER	DC

66 MHz PowerPro 601	\$1499
80 MHz PowerPro 601	\$1999

POWERCACHE	W/OFPU/FPU
33MHz PowerCache	\$275/359
50MHz PowerCache	\$415/539

Power	Cache Adapter*	\$99
No adopt	er required for Mac CI. V	VX. Ferforma &

TURBO 040

33MHz Turbo 040	\$629/799
40MHz Turbo 040	/959
Fastcache Turbo	\$169
1128	-1.1

APPLICATION ACCELERATORS

APPLICATION AC	CELEKATOKS
Image 040	\$1549
Quad 040	\$959
Charger	\$498
Charger Plus	\$639
Charger PFS	\$1819

SUPERMAC BLOWOUT !!! CALL FOR SPECIAL PRICING ON ALL VIDEO CARDS, WHILE THEY LAST, HURRY !!!

SYQUEST

DRIVES	INT/EXT
Memory Direct 44	\$249/289
Memory Direct 88c	\$379/419
Memory Direct 200	\$559/599
Memory Direct 105	\$339/379
Memory Direct 270	\$619/659
44mb SyQuest Cart.	\$62
44mb lomega Cart.	\$56
88mb SyQuest Cart.	\$94
88mb Iomega Cart.	\$80

MODEMS

Global Village	Power Port
Bronze	\$95
Silver	\$259
Gold	\$279
Global Village	Tele Port
Bronze	\$119
Silver	\$279
Gold	\$298
New II	
Global Village Po	war Port Margue

New 11
Global Village Power Port Mercury
for PB 540, and 540c \$589
Global Village Mercury \$339
One World Fax Server
1 Line/Apple Talk \$879

2 line/ 10BT \$1299

Same Day Shipping
Educational, Corporate and Government
P.Q. & Welcome.
Ve occept AMEX, NISA, MASTERCARD & DISCOVER

7921 Professional Circle
Humington Beach, CA 92648
FAX 714-842-9437
7am - 6pm Monday - Friday P.S.T.

800-989-6348

MEMORY DIRECT!

Terms & Conditions: RMA numbers are required for all returns. All unopened, refused, cancelled or non-defective returns will be subject to a 15% restocking charge

CAŞH IN YOUR USED MEMORY

We buy 256k, 512k, 1mb, 2mb, 4mb, 8mb, & 16mb Memory SIMMs. Also VRAM & Laptop Memory 714-842-1227

GREEN MEMORY

CIRCLE 516 ON READER SERVICE CARD

UPGRADES & MEMORY



Dynamic Engineering

PowerBook & Duo Accelerators 16 -> 33, 25 -> 33, 33 -> 40 MHz MacPortable Memory, HDD, Batteries

Mac & PC Systems & Accessories PowerBook 100 Batteries \$89

HP Printers & FAX

435 Park Dr., Ben Lomond, Ca. 95005 (P)408-336-8891 (F)408-336-3840

VISA

(408) 336-889

WANTED: USED SIMMS

TOP \$\$\$ PAID

(Dealers welcome) 256K-512K-1MB-2MB PB

(310)459-4591

FAX (310) 454-8474

CIRCLE 410 ON READER SERVICE CARD

Attn: Ilfx and Ilci Owners Accelerate your Mac IIfx and IIci with Fusion Data's TOKAMAC accelerators. • 20-50% faster than a Quadra 950. • Buy at super low factory direct prices • 30 day MBG • Lifetime warranty . Toll Free tech support • 1992 MacUser Editor's Choice "Best accelerator of the

Fusion Data Systems TokaMac 8920 Business Park Drive Austin, TX 78759 (800) 285-8313

(512) 338-5326

(512) 338-1276 FAX

THE BIGGEST SPEED INCREASE FOR YOUR MONEY. As seen in MacWorld, March 94.

MAX IISI	Self Installable Kit	\$89
MAX 00A0 700, 800, 850	\$99*	\$159
MAX 040	\$99	\$159
MAX POWER PC	5139	\$199

MAC*EXPERTS*

(310) 394-1223 FAX (310) 394-7323

CIRCLE 556 ON READER SERVICE CARD

MEMORY TRADERS WE BUY USED MEMOR ANY QUANTITY - ANY SPEED 256K POWERBOOK 2MB-10MB 512K

1MB VRAM OR TO BIA 2MB 8MB 4MB 16MR CHEAPER THAN "DOUBLING"

TRADE IN FOR NEW SIMMS

7215 Arlington Road, Suite 202 Bethesda, MD 20814

IIFX SIMMS

800-315-7807 301-215-7807 FAX 301-907-7542

WE BUY PC/WORKSTATION MINICOMPUTER MEMORY

DataCarts for Syquest Drives

Lifetime Warranty

Money Back Guarantee

Special Offer

DataCart 45	A075
1 Pack	\$58.
5 Pack	\$55.
DataCart 88	

1 Pack \$89. 5 Pack \$86.

Komag Optical Disks

128MB\$28. 600MB\$85 1GB.....

Memory Merchants **Quality Removable Storage**

(800) 799-DISK

WMA (3475)4 Shratton Ave., San Carlos, CA

CIRCLE 539 ON READER SERVICE CARD

RATORS/FPUs



No. of the last of	INT/FPU
40MHz 040 Centris 610	5299/5399
Mobius Speedster 25MHz	\$399/\$499
33MHz w/128K cache	\$549/\$649
25MHz 030 Mac SE	\$129/\$178
25MHz 020/FPU/16K coche LC	\$99
25MHz 030/FPU/16K coche LCII	\$129
33MHz 030 Mac II, IIx, SE/30	\$188
Apple Cache Card Mac Ilci	S49
Cache Card 256K PowerMac	\$269
68040 FPU Q605,LC475,C610 (*with 68L(D40 trade-in)	\$249*
68882 FPU LC I-III, Duo, etc.	\$39-49
68851 PMMU w/Mode32 Mac II	\$99
32-bit SIMMs 70ns 4/8MB	\$149/299

ONN@T TECHNOLOGIES

18004 Sky Park Circle, Irvine CA 92714

714-261-2800

Visa/MC No Surcharge; Gov't./Corp./Educ. P.O. One year min. warranty on all products.

SOURCE INTERNATIONAL

Silicon Valley's

(415) 323-6059 Fax (415) 326-3552

CIRCLE 592 ON READER SERVICE CARD

DRI 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

CIRCLE 557 ON READER SERVICE CARD

Macworld Shopper offers a great way to reach 550,000 active shoppers.





MOBILE COMPUTING AND PDA'S

ACCESSORIES



Batteries

Chargers Accessories

for Macintosh PowerBooks TM & Duo TM

SlimPack for Powerbook(MC-188S) \$169.95 PowerGoge Battery (MC-180) High Capacity Battery (MC-170) \$ 69.95 PowerCharger Plus (MC-SC100) \$149.95 PowerCharger(MC-CHR) \$129.95 Automobile Power Adapter 5 99.95

(MC-AP100)

Swapper for PowerBook (MC-SWP1)S 14.99 Starter-Kit (MC-KIT) \$149.95 Power-Kit (MC-K02) \$199.95

SlimPack for Duo (MC-2005) RapidCharger for Duo (MC-SC200) S149.95 Automobile Power Adapter for Duo S 69.95 (MC-AP200)

X-Pack Extended Battery with \$119.95 leather Case (NT-KO1)



* Dealers: Products available through Ingram *

5700 Bandini Boulevard, Commerce, California 90040 Tel: (213) 728-7874 • (800) 982-8284 • Fax: (213) 728-7996

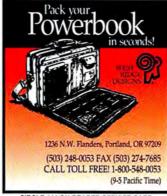
CIRCLE 509 ON READER SERVICE CARD

Simply the best program available for updating files between multiple Macs and disks!

Leader Technologies Tel 714-757-1787 800-828-0883 Fax 714-757-1777



CIRCLE 558 ON READER SERVICE CARD



CIRCLE 444 ON READER SERVICE CARD

TeleFinder* **Bulletin Board** GROUP EDITION BBS System

The leading Macintosh BBS for business and education. First in quality and performance.

- · "The best BBS available on any platform, at any price." - MacUser (UK).

 "Best Communications Software 1992"
- MacWorld Australia.
 Multi-user chat, E-mail, ZMODEM file
- transfer, conferences, find file, and graphic user interface
- Supports Mac and PC users.
- TeleFinder is \$425 for unlimited users, includes host and user communication software. Call for free eval disk!

Spider Island Software 4790 Irvine Blvd #105-347 Irvine. CA 92720 tel (714)669-9260 fax (714)669-1383 bbs (714)730-5785

CIRCLE 597 ON READER SERVICE CARD

COMPUTERWORLD's "5th Wave" Cartoon Mouse Pad



COMPUTERWORLD

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. C3MW3

UPER MAT

The Best Way To Reduce **Computer Noises and Vibrations**

High-tech Super Mat dampens annoying noises and damaging vibrations, to create a safer, more pleasant workspace, Model for PowerMac, Quadra, Centris, Performa, LC and II Series

Plus Super Mat:

- Protects CD-ROM & Hard Disks from vibration induced crashes and data loss
- Protects your desk from scuffs & scratches
- Fits neatly under most office equipment

Only \$19.95

60-Day Money-back Guarantee Add \$4.75 Shipping/Handling, Cal. res. add 8.25% tax



CIRCLE 581 ON READER SERVICE CARD

DUPLICATION FROM \$.49

From \$.48 (5.25") and \$.80 (3.50")

- All Diskette Formats Custom Labels Diskette Maliers / Accessories

FORMA	TTED DISK	ETTES
QTY	SONY	OEM
250	VERBATIM	GENERIC
3.50" DD	\$.47	\$.45
3.50" HD	\$.57	\$.53

- 10% Discount on First Order
 D08, Macintosh, or Custom Formats
 Colored Media add 8.05
 Private labeling / Volume Discounts

800-255-3142

CIRCLE 496 ON READER SERVICE CARD

Call or send check or M/O to "INOVA Tec"

PROTECT YOUR MAC

ALL FABRIC

CO-DU-CO Computer Dust Covers 1802 W. Wisconsin Ave., Dept. MW, Milwaukee, WI 53208

735-1584 414-476-1584 - 476-9329 FAX

August 1994

EDUCATIONAL & RECREATIONAL



King



Family Roots™

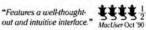
Genealogy. Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indexes and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information. Satisfaction guaranteed. MC/Visa/AE. Quinsent Box 216 Lexington MA 02173 617/641-2930 800/637-ROOT

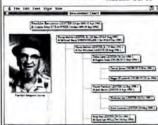
Family Heritage File™

Genealogy. New Version 3.3! Most powerful and easy genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogy professionals. • Stand alone • Graphic Pedigree, Descendants, Family Group, Individual, Marriage, Surname · Unlimited History • Sorted Lists • Export to WP/data base/ modem • GEDCOM compatible · Jewish/LDS features. \$149 + 5 s/h. Ask about Family Heritage Bundle. Visa/MC. Demo \$7. Free Lit Pak. Star•Com Microsystems

Windsor Park East 25 West 1480 N., Orem, UT 84057 801/225-1480

REUNION®





Reunion quickly records and organizes your family information and images, creates large graphic tree charts, family group records, indexes, calendars, family histories, mailing lists, questionnaires, links and displays color pictures, shows how you're related to others, provides custom fields to record information unique to your research, calculates the day of the week you were born and your life expectancy, imports and exports data, and much more. The highest rated by MacUser.

To order, call MacConnection 1-800-334-4444.

For a free brochure and sample printouts, contact:

Now available for Mac and Windows.

Leister Productions

P.O. Box 289, Mechanicsburg, PA 17055 Phone 717-697-1378 Fax 717-697-4373 CompuServe 71201,1105 America Online LeisterPro

BIBLE MASTER ..

Get them all together ...

New International James Version Version

American Standard Bible

...the best selling translations!

...add on module

NAS Hebrew/Greek Dictionaries

...Just the fastest, finest, easiest to use, most powerful Bible software around...

American Bible Sales

870 S. Anaheim Blvd. Anaheim, CA 92805

1-800-535-5131

DISCOUNT SOFTWARE PRICES

CIRCLE 537 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 Coda, Digidesign, E-MU, Mark of the Unicorn. Opcode, Panasonic, Ramsa, Roland, Steinberg-Jones and more. Expert advice before you buy, and full tech support after you purchase!

Animation

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

Software Discounts Up to 80%!

'Full Packages' (Students-Teachers-Schools) 'Latest Ver.'

PageMaker 5.0 \$299 Photoshop 2.5.1 \$269 AutoCAD Rel.12 \$199 Illustrator 5.5 Microsoft Word 5.1 \$129 FrameMaker 4.0 \$24 WordPerfect 3.0 129 Premiere 3.0 249 Coda Finale 3.01 250 Microsoft Excel 4.0 149 Claris Works 149 Freehand 4.0 249 Fractal Painter 2.0 199 FileMaker Pro 149 Morph 2.0 139 Statistica/Mac 695 Swivel 3D Pro 349 Authorware 2.0.1 995 Strata Studio Pro 1.0 495 SoftWindows 1.0 249 MiniCAD+4 Much much more.....Call for other titles....P.O. from schools are welcome!

Orders (800) 377-9943
Software Plus Academic Inc.
50 E. Palisade Ave. #200, Englewood, 3/) 07631 Info/Cat. (201) 569-6262
CIRCLE 539 ON READER SERVICE CARD

Name Address of HS Graduation _____ Age ____ CIRCLE 565 ON READER SERVICE CARD

Desktop Publishing Photo Retouching

Computer Illustration

1-800-225-9023

INTERNATIONAL FINE ARTS COLLEGE 1737 N. Bayshore Dr., Miami, Florida 33132 or Lav Your inquiry be (305) 374-3933 Classes start Ian. & Sept.

Graphic Astrology

Professional quality software for all your astrological needs. Charting programs, **** Interpreters, atlases, fonts! State-of-the-art features, high-resolution output, superior accuracy.

FOR ASTROLOGERS AND STUDENTS OF ASTROLOGY

Call or write for FREE catalog!

Time Cycles Research 27 Dimmock Rd Waterford CT 06385 (203) 444-6641 • Fax (203) 442-0625



EDUCATIONAL & RECREATIONAL

MULTIMEDIA & CD-ROM

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 78728 800/423-1228 512/251-7541



Save time and energy with MacGrade, the powerful grade manager that's fast, fun and exceptionally easy to use. Great reports and graphs. New! Version 2.2 has separate elementary and secondary/collene editions.

Call (800) 795-0641

CalEd Software P.O. Box 22913, Carmel, CA 93922 60 Day Unconditional Money Back Guarantee.

CIRCLE 406 ON READER SERVICE CARD

Bachelor 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 %'s, cost, size, religious affiliation, etc. Browse, search, select, list, sort and print. Macs w/hard drives needed. \$59.95 (+ \$3.00 postage). Insearch, PO Box 14337 Albuquerque, NM 87191 1-800-883-0123





Music Education Software that Listens to You!

"Claire could forever change the way musicianship is taught."

MW

\$129" Order Direct 1-800-557-2633 Ext531

950 Fabian Way Suite 100 Palo Alto, CA 94303

CIRCLE 501 ON READER SERVICE CARD

STUDENT-TEACHER-SCHOOL DISCOUNTS

LATEST VERSIONS & FULL PACKAGES

*

Quark Xpress v3.3 \$299 Pagemaker v5.0 \$249

> \$175 \$249

\$175

S145

\$595

\$299

\$169 \$239

\$179

\$195

\$85

\$59

569

\$699

\$169



4TH DIMENSION 3.1
ASTOUND 1.0
AUTOCAD R12 W/AME
CANVAS 3.5
CLARIS WORKS 2.1
CODA FINALE 3.01
DIRECTOR 4.0
ENCORE 3.0
FILEMAKER PRO 2.1
FRAMEMAKER 4.0
FRACTAL PAINTER 2.0
FREEHAND 4.0
KAI'S POWER TOOLS 2
LOTUS ORGANIZER 1.1
MAC TOOLS 3.0
MACROMODEL 1.5
MATHCAD 3.1

MINICAD + 5 \$125 \$159 \$269 MORPH 2.0 MS EXCEL 4.0 MS OFFICE MS OFFICE MS WORD 5.1 M.Y.O.B. W/ PAYROLL NOW UTILITIES 4.0.1 PERSUASION 3.0 QUICKEYS 3.0 \$125 \$80 \$79 \$169 \$135 \$79 RADIUS ICD 20" MONITOR \$2099 RAY DRM DESIGNER 3.0 \$185 \$249 SOFT WINDOWS 1.0 STRATAVISION 3D 3.0 STRATA STUDIO PRO \$299 \$595 SPANISH TRANSLAT. PRO \$499 WORD PERFECT 3.0 \$125

MANY OTHER TITLES AVAILABLE!!

PHONE (800)289-3275

VISA - MASTERCARD - AMEX - SCHOOL PO.'S

Call For Z FREE Catalog!

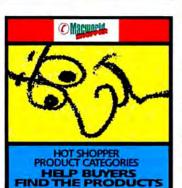
Products also available by Adobe and Symantec.

THE SOFTWARE SOURCE CO. INC. 2517 Hwy 35, Bldg N, Suite 201, Manasquan NJ 08736 Phone (908) 528-0030 Fax (908) 526-9378

CIRCLE 570 ON READER SERVICE CARD



Resources Rancho Cucamonga, CA 91701
CIRCLE 407 ON READER SERVICE CARD



THEY NEED FAST.





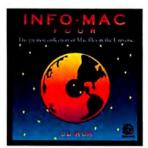


Pacific HiTech is serving you the Internet on a silver platter

Pacific HiTech has culled the finest nuggets from the Internet and placed them on highvolume, all-in-one CD-ROMs. Each one is an instantly accessible resource of tools, programs and information. There is something for everyone, from the programmer to the occasional weekend mouse jockey. These discs are a great value for people who value their time.

\$49.95 each

\$5.00 S/H (U.S.) \$9.00 S/H (Int'l)



- · Games · Periodicals · Fonts · Demos
- Graphics Virus Checkers
 - Communications
- · Applications · Development
 - · Disk Utilities

Pacific HiTech Inc. 4530 Fortuna Way

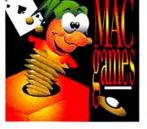


- Classical Books
- Organizational Stacks
- · HyperCard® Tools



- · Educational Stacks





- Arcade
- Adventure
 - · Bolo
 - Cards
- · Word games



- Source Code
 - · Compilers
 - · Interpretors
 - Tools
 - · Information

-800-765-8369

Int'l 801-278-2042

Fax 801-278-2666 Internet: orders@pht.com





AppleLink: pht

CIRCLE 414 ON READER SERVICE CARD

Salt Lake City, Utah 84124



MULTIMEDIA & CD-ROM

GRAPHICS

CD-ROM COLLECTION SPECIALS!

ANY 3 Titles from Any Bundle \$99.95 Take ALL 3 Bundles for \$199.95 ANY 5 Titles from Any Bundle \$129.95

Bundle A, All 3 Titles for \$99.95 Bundle B, All 5 Titles for \$99.95 Bundle C, All 6 Titles for \$99.95

The New 1994 Version 6 Grolier Multimedia Encyclopedia \$95.95 World Atlas \$49.95 U.S. Atlas \$49.95

The View From Earth \$29.95 Space Shuttle \$29.95 Desert Storm \$33.95 Capitol Hill \$29.95 The Macintosh Product Registry \$29.95

The Animals \$45.95 Ocean's Below \$29.95 Word Tales \$39.95 The Orchestra \$65.95 **Great Business Jokes \$29.95** Funny \$29.95

Entertainment

Myst \$59.95 The 7th Guest \$53.95 Just Grandma and Me \$39.95 Fatty Bear Fun Pack \$49.95 Dinosource \$59.95

The Residents Freak Show \$49.95 Games Collection \$47.95 Small Blue Planet \$59.95 Xplora 1 Peter Gabriel's Secret World \$59.95

Reference

Mayo Clinic Health Book \$49.95 Phonedisc USA Business & Residential \$89.95 Street Atlas USA \$99.95 The New Family Bible \$39.95

For Apple Computers, Monitors, External CD-ROM Drives, Speakers, Headphones, Caddys and ALL Macintosh Accessories call 1-800-858-4622

We accept ALL major Credit Cards

Call for ADULT Catalog





CD-LINK 1-800-858-0311 Phone (818) 785-2800 Fax (818) 785-3100 15500 Erwin St. #2002, Van Nuys, CA 91411

CIRCLE 430 ON READER SERVICE CARD



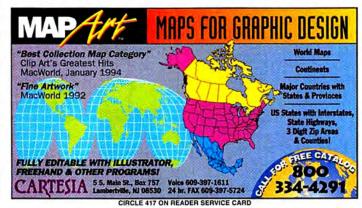












GRAPHICS



Sometimes Its Best To Sweat The Details And With A Graphic Translator Like CADMOVER ... Its All Details!!

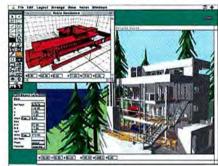
We couldn't call a release this big a 3.5. Kandu went into hyperdrive and didn't stop until CADMOVER 4.0 was ready to ship. We missed both our deadline and our release number. but took the time to create something really worthwhile for our customers.

The new CADMOVER 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 NewIntegrated Formats, ClarisCad, Wavefront (.OBJ) Presenter Professional, Envisage 3D, and MiniCad+ 4.0 Text.



Just off the press! Our new font catalogue (large format: 11"x 11") with lots of new releases. Free with any order. Or, get your copy for just \$6.95 (includes free updates) - add \$2.50 for SSH. Outside U.S. - Call for shipping chirges. PRECISION TYPE: 47 Mall Drive.CommackNeyYork.11725.5703.Fax:516.543.5721.Phone:516.864.0167or 800.248.3668 CIRCLE 485 ON READER SERVICE CARD



DesignWorkshop[™]

A Design Breakthrough ...intuitive 3D modeling PowerPC Native or 68-K

- easy, fast, intuitive 3D CAD
- · 3D direct manipulation
- · sketch in live 3D perspective
- · object-based shadows · fit, flip, snap to objects
- paste into openings
- · sun studies, walkthroughs • import/export DXF, PICT, etc.

Call Artifice: 503-345-7421 or fax: 503-346-3626

In Canada: 204-453-8111

CIRCLE 408 ON READER SERVICE CARD

CIRCLE 477 ON READER SERVICE CARD



CIRCLE 546 ON READER SERVICE CARD



In your complimentary issue, you'll discover powerful tips, tutorials, demos, reviews and exciting profiles of Macintosh experts. Information you can put to use today! Call or write for your FREE issue now!

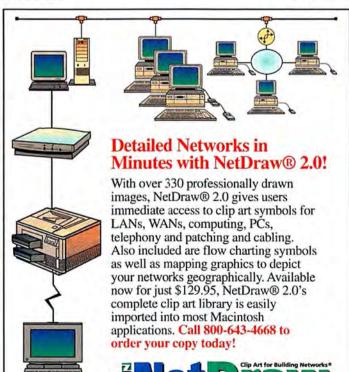


1-800-954-4326



8196 S.W. Hall Blvd. Ste-216, Beaverton OR 97005

CIRCLE 559 ON READER SERVICE CARD



CIRCLE 461 ON READER SERVICE CARD

Software Corporation

703-532-0213







PROGRAMMING & UTILITIES

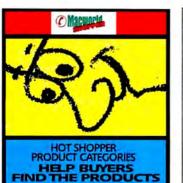
SPECIALIZED MARKETS

FORTRAN on the Mac

- ANSI standard FORTRAN 77
- VAX & Cray extensions
- · Advanced debugging features
- · Extensive code optimizations
- · User-friendly Mac interface
- PowerMac & 68K available
- Background execution
- 2D & 3D graphics support
- · C & Pascal compatibility
- · Education discounts

800-252-6479

Language Systems Corp. * 100 Carpenter Dr. * Sterling, VA 20164 (703) 478-0181 * Fax: (703) 689-9593 AppleLink: LANGSYS



THEY NEED FAST.

An ELECTRONIC MEDICAL

RECORD SYSTEM and DATA-BASE with full printout support.

Care4th® PRO

MACTRAN PLUS Ver.4.5

Sys 7 Comp INTEGRATED Made-for-Mac Devel System, Incl: Editor, Optimizing Compiler, Source level Debugger, Linker, Library Mngr, Profiler and Build Facility. Supports 68020/030/040 & 68881/2 native code. Significant Vax Fortran & ANSI 8x exts. High and Low Level tool box interface. Unltd Code seg size. "I use it at home on my MAC II, on a Quadra in my Lab and on a Powerbook while traveling" Ole Vilman, Consultant Engineer. DCM Data Products 1200 Quail St, #280 Newport Beach, CA 92660 714-724-0802/1021 714-724-0803 FAX

Medical Office Mgmt

800/218-TESS - Sales

TessSystem 3TM is a complete system for insurance processing, patient billing, accts receivable, patient transactions, report generation & much more. Single/multi doctor, single/multiuser. Flexible & very easy to learn. Optional elec-tronic claims. From \$2,995. New practice discounts available. Call Today! Tess Data Systems, Inc. 14340 Torrey Chase Blvd, Ste 340 Houston, TX 77014-1021

713/440-9995, 713/440-6526 Fax

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



\$4999 (\$8999) James Heisig's Remembering the Kana Learn Japanese hiragana and katakana in 6 hours. Available Soon for DOS

- . 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.
- · Lessons automatically timed. On-screen help.
- Background information on the history and grammatical usage of the kana.
 Does NOT require Kanji lalk or the Japanese Language Kit.

Imagineer America Inc., 15317 NE 90th St., Redmond, WA 98052 Tel: 206 867 5790 Fax: 206 867 5792

ımagıneer

CIRCLE 421 ON READER SERVICE CARD



CIRCLE 426 ON READER SERVICE CARD

Native Application for Power Macintosh

Real-World Math for Macintosh

Notebook Interface

- Interactive analysis and graphics in a WYSIWYG notebook interface
- Insightful 2D and 3D graphics
- · Annotation for technical reports
- journals, and presentations
 Publication-quality output

Numerical Analysis Power

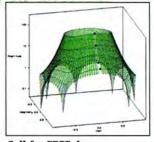
- · More than 600 math, scientific, and engineering functions
- · Efficient algorithms with optimal convergence
- · User-defined error tolerances

Problem Solvers

- · Intuitive GUIs for solving sophisticated problems
- · Automatic code generation

HiQ-Script

· A language built for scientists, engineers, and mathematicians



Call for FREE demo, (800) 433-3488 (U.S. and Canada)



6504 Bridge Point Parkway Austin, TX 78730-5039 Tel: (512) 794-0100 Fax: (512) 794-8411

D Copyright 1994 National Instruments Corporation. All rights reserved. Product and company names listed are trademarks or trade names of their respective companies.

CIRCLE 500 ON READER SERVICE CARD

SERVICES & SUPPLIES



IMAGERS®

Digital Output & Production

- Slides & Overheads
- Kodak Port Folio Services
- Dve-Sub Overheads/Prints
- Large Color Posters
- Canon Fiery Lasers
- Slide Duplication
- 4x5 Neg/Pos/B&W

Economy Slides/\$3.00 (800) 232-5411 Economy Slides/\$3.00 (800) 232-5411

Scans s.90

CIRCLE 456 ON READER SERVICE CARD

OVERNIGHT

"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



The Data Recovery Experts "

- " Class 80 Clean Room
- 1-3: Day/ Service-Nio, Extra Charge
- Better than 94% Success Rate
- Recommended by Major Manufacturers:

Absolute Data Recovery!

SINCE 1989

2440 Waynoka Rd. • Colorado Springs, CO 80915 • 719.380.1616 • FAX 719.380.7022

CIRCLE 458 ON READER SERVICE CARD

\$19.00!!!

For all repairs plus parts and shipping. Maximum price guaranteed. Super fast turn-around. New and used hardware for sale. School orders welcome. Open 12 noon-5, 6:30-10pm eastern M-Sat. We buy dead Apples, Macs, PCs. Arminius Pubs. & Prods. Inc. 8519 Orchard Ave. Merchantville, NJ 08109 609/662-3420



CIRCLE 427 ON READER SERVICE CAR

Serving the service industry since 1983—with great prices on parts and repairs.

Macintosh Computer Repair

Component level repair in less than 48 hours.

MicroDoc

- · We stock hard to find & custom parts. · Same day parts shipping & most
- Telephone tech support on repair kits.
- · Complete price list available upon request.
- · School and corporate P.O. accepted.

· Dealers/Servicers only.

CHECK OUT OUR PRICES

REPAIR PARTS Exact replacement CRT:3 @\$50

Exact replacement mouse cables Complete analog repair kit with docs Hard drive power supply from \$49 Circuit board ICs, fuses & filters

LOGIC BOARD REPAIRS

LaserWriterII NTX - \$199 MacII, SE, Classic, & Plus - \$99 MacIIX, CX, SI, & ClassicII - \$119 MacIICI, FX, & Quadra 700 - \$179 Powerbooks from \$119

Floppy drive repairs 800/1.4 - \$69/\$99

1040 Tyinn #7/Eugene, OR 97402/(503) 344-5335/FAX (503) 344-5020

CIRCLE 482 ON READER SERVICE CARD

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.



11440 Okeechobee Rd. Suite 201 Royal Palm Beach, FL. 33411 800-765-9292 407-795-7266

DATA RECOVERY

- Expertise in Macintosh & virtually every operating system & storage device including tape & removable media
- 24-Hour Worldwide Support with on-site, weekend, and priority service
- Professional Service Authorized by major manufacturers



MN: 1-800-872-2599 CA: 1-800-752-7557

London: +44 (0)81 974 5522 • Germany: 0130-815-198 • France: 05 90 72 42 - Ask about our referral programs -

CIRCLE 459 ON READER SERVICE CARD

DIGITAL IMAGING

Slides

4x5 chromes/negs \$16 Dye sub print/overhead

Quantity Duplication on Slides and Overheads

Hi Res Scanning

Show & Tell

39 W. 38th St., NY, NY 10018 212 840 2912 • 212 840 7953 (fax)

Macworld Shopper section offers a great

FOUR COLOR

format to bring your ad to life.



Macworld Shopper offers a great way to reach 550,000 active shoppers.







MAC REPAIR

Mac Shop Northwest

- Apple™ Certified Technicians
- One-Day Service Turnaround*
- Hard Disk 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
Tel: 1-503-642-3456
'on many repairs. Visa/MC/AX. Fast overnight.





THE ULTIMATE BBS

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

1-809-474-119

Callers must be 21 or older! Long distance rates apply.





The ComputerownersSM Policy insures you against theft, fire, accidental damage, lightning even power surge! Replace or repair for \$49 a year. Available in the U.S. & Ontario.

1-800-800-1492

SAFEWARE, The Insurance Agency Inc. 2929 N. High St., PO Box 02211 Columbus, OH 43202

CIRCLE 522 ON READER SERVICE CARD

CIRCLE 515 ON READER SERVICE CARD



THEY NEED FAST.

OVER

LOOKING FOR

INTHE

SHOPPER SECTION.

E BUYERS FIND







plus

 HIGH RESOLUTION DRUM SCANS, TO FILM OR DISK

ON HELL 3010 DIGITAL SCANNER

COMPLETE HIGH-END SYSTEM & MAC CAPABILITIES

RETOUCHING, CLONING **OUTLINING, IMAGE & COLOR** MANIPULATION, PAGE ASSEMBLY

MATCHPRINT, CROMAUN OR DIGITAL RAINBOW

STOCHASTIC SCREENING LINOTYPE-HELL DIAMOND

SCREENING

Put our extensive electronic prepress experience to work for you



SPECTRUM WEST, INC.

15500 S.W. JAY ST. BEAVERTON, OR 97006 PHONE: 503-626-2430 FAX: 503-626-2429 MODEM: 503-671-0774 1-800-444-0045

Notebook Thefts Skyrocket! Why Take the Risk?



NOW "Insurance to Go"sM

The Risks The Insurance Premiums Start at

Theft - Fire Power Surge - Lightning \$60 a Year Earthquake - Accident

1-800-722-0385

The Computer Insurance Agency, Inc. 6150 Old Millersport Rd. NE . Pleasantville, OH 43148

CIRCLE 523 ON READER SERVICE CARD

We can scan your 35MM slides & negs onto Photo CD 24 Hr Turnaround



as low as

an image

800-974-8323

CIRCLE 502 ON READER SERVICE CARD

"If it hadn't been for DriveSavers, our information would have been lost forever."



As the only all-Mac data recovery company, we've saved more mega-bytes of Mac data than anyone else in the world. We're certified by every Mac drive manufacturer.

Our proprietary techniques are so advanced we can rescue data others might simply abandon.

1-800-440-1904

Restoring data-and peace of mind-since 1989

 NOVATO, CA 94949 • FAX: 415-883-0780 • PH: 415-883-4232 CIRCLE 510 ON READER SERVICE CARD



Guaranteed lowest prices every day

THE BEST DEAL IN CLIP ART CD ART

"I bave purchased over 15 different clip art collections, and yours is truly the best!"

-Scott Goldstein

- 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



Also available on 3.5" diskettes. Ask for details!



ANIMAL TRACKS



ANIMALS



AWARDS



BACKGROUNDS/BORDERS



DINOSAUF



FANTASY



FOOD



HOLIDAYS



INDUSTRIAL ARTS



MAPS



MATH



MUSIC



PLANT



SCHOOL



SCIENCE



SEA LIFE



SPACE



SPORTS



SYMBOLS



TECHNOLOGY



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! Call today, or clip and mail this order form.



Ma O. POM

Software Demos • Educational Games
Entertainment Games • Fonts

QuickTime Movies • Clip Art • Much more!



Find out what makes Quality Computers the leader in Educational Technology across America!

Educator's Shopping Guide! FREE CD-ROM W/EVERY ORDER!







CD-ROMS	-
BRODERBUND (S	
Arthur's Teacher Trouble	34.95
Carmen World Deluxe	49.95
Just Grandma & Me	34.95
Myst	47.95
New Kid on the Block	34.95
Tortoise and the Hare	34.95

Aesop's Fables	24.95
Cinderella	24.95
Mud Puddle	24.95
Scary Poems for Rotten Kids	24.95
Tale of Benjamin Bunny	24.95
Tale of Peter Rabbit	24.95
Thomas' Snowsuit	24.95



ORANGE CHERRY NEW MEDIA

U.S. Atlas v.3.0..

20,000 Leagues Under the Sea	39.95
Adventures of Pinocchio	39.95
Beauty and the Beast	39.95
Talking Classic Tales	39.95
Talking Jungle Safari	39.95
Time Traveler	59.95
Wind in the Willows	39.95
SOFTWARE TOOLWORKS	
Capitol Hill	29.95
Oceans Below	29.95
San Diego Zoo: The Animals!	39.95
Space Shuttle	29.95

World Atlas 3 Multimedia	39.95
TIMEWORKS Publish It! Easy 3.0	49 95
WAYZATA	10.00
CD-Fun House	24.95
World Factbook	24.95

SOFTWARE	6
BRODERBUND	
Carmen America's Past	.29.9
Carmen Space	.39.9
Carmen Time	29.9
Carmen World	19.9
Kid Pix 2	TREEFICUSE34.9
Print Shop Deluxe	47.9
Spelunx/Caves of Mr. Seu	do28.9

The Backyard	29.95
The Playroom	29.95
The Treehouse	
CLARIS	
ClarisWorks Competitive Upgrade	89.95
FileMaker Pro Upgrade	
MacWrite Pro Upgrade	
DAVIDSON	
Kid Works 2	34.95
Math Blaster Mystery	
The Cruncher	
Zoo Keeper	
EDMARK	
Bailey's Book House	28.95
KidDesk	
Millie's Math House	28.95
Thinkin' Things	



INTUIT Quicken

Nigel's World	LAWKENCE PRODUCTIONS	
	Discovering America	34.95
The Least Talks	Nigel's World	27.95
The Lost Tribe29.9	The Lost Tribe	29.95

LEARNING COMPANY	
Bilingual Writing Center	169.9
Math Rabbit 1	34.95
Math Rabbit 2	34.9
Reader Rabbit 1	34.9
Reader Rabbit 2	34.95
Reader Rabbit's Ready for Letters	34.95
Super Solvers Midnight Rescue	34 95
Super Solvers Outnumbered	34 9
Super Solvers Spellbound	34.9
The Writing Center	49 9
Treasure Math Storm	34.9
MAXIS	

Treasure Math Storm	.34.95
MAXIS	
SimCity 2000	39.95
SimEarth	.29.95
SimLife	.29.95
MECC	
Amazon Trail	.34.95
DinoPark Tycoon	.34.95
My Own Stories	.29.95
Odell Down Under	.34.95
Oregon Trail	.28.95
Super Munchers/Number Munchers Bundle.	.29.95
USA Geograph	.28.95
MICROSOFT	

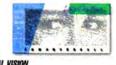
	Fine Artist Academic	39.95
	Microsoft Word Acader	nic84.95
**	Microsoft Works Acade	mic99.95
QUALITY	COMPUTERS	
SmartSta	n49.95	mining -
SmartSta	rt Pro Version79.95	100
	10.00	



SYMANTEC	
Norton Utilities 2.0 Academic	59.95
SAM 3.5 Academic	39.95
TIMEWORKS	
Publish It! Easy 3.0	49.95
WEEKLY READER	
Stickybear's Early Learning Activities	34.95
Stickybear Math Town	34.95
Stickyhear's Reading Room	34 95

HARDWARE

CAERE		
mniScan		299.9
	THE PERSON NAMED IN COLUMN	-
	Mary Shellings	



DIGITAL VISION	
ComputerEyes (B&W)	199.9
ComputerEyes (Color)	299.9
ComputerEyes RT	399.9
HEWLETT PACKARD	
ScanJet Ilcx	949.9
ScanJet IIp	499.9
LAPIS TECHNOLOGIES	

THE IO LEGISLOCOMED		
LTV LV	279.95	
LTV Portable	279.95	





QUALITY COMPUTERS

Q Drive 60 MB	199.95
Q Drive 170 MB	349.95
Q Drive 340 MB (Conner Mechanism)	399.95
SUPRA	
CupmEAVModem 1111C	100.00



to ClarisWorks, the highly rated integrated Macintosh ClarisWorks features: Word Processing, Dictionary & Thesaurus, Multiple Column Layout, Text/Graphics Rotation, WYSIWYG Display, Import & Export, Spreadsheet, Database, Mail Merge. Communications and

SPECIAL

WHERE IN SPACE IS CARMEN



OMNISCAN

SUPRA FAX MODEM





PRINT SHOP DELUXE

SAN DIEGO THE ANIMALS





PUBLISH IT! EASY 3.0

SUPER MUNCHERS/ NUMBER MUNCHERS BUNDLE





WHO WE ARE. Quality Computers has been a leader in the educational technology market for ten years. When we started, everyone used Apple II's. Today, schools are using more Macs and PCs. But no matter what kind of computers schools use, we will be there to provide their needs. Call for your free catalog and issue of our educational newsletter.

IF YOU DON'T SEE A PRODUCT THAT YOU NEED, CALL FOR OUR COMPLETE CATALOG

ROGER WAGNER

WE WILL MEET OR BEAT ANY NATIONALLY ADVERTISED PRICE!





The cutting edge of Mac technology!

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 ..





MENTION THIS MACWORLD AD AND RECEIVE ANOTHER GREAT DEAL ON OUR SPEECH BONUS PACK!



- 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!
- -a vile-tongued talking psychiatrist with an attitude. Match wits and insults as Azile 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 Star Wars, Alice In Wonderland, The Gettysburg Address, and more Let SmartVoice read this material to you or your children. Or just plain read it, print it, fax it, e-mail it, even 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

















Circle 263 on reader service card Quality Computers The

EXPRESS SHIPPI Free express shipping on products marked with +

OVER 750 TITLES IN ST

Wa'll BEAT any advertised price on CD-ROM F



50135	7th Guest
GB1	Action, Aliens, Astronauts - 3CDs
0.00	Lunicus, Jump Raven, Space Shuttle 79.95
1467	Better Dead
50027	Chaos Continuum 29.95
50390	Critical Path49.95
50149	Darkseed
50450	Flying Nightmares 44.95



	Elimited limb diffe.
1476	Hell Cab
2084	Iron Helix59.95
2068	Journeyman Project49.95
50066	Jump Raven44.95
50080	Manhole Masterpiece34.95
	Myst54.95



Midnight Stranger+ #50316, \$59.95

This is a landmark product that should be in the Smithsonian Institution," Glenn Collver, SFSU Adults Only. A strange night out in a gritty urban environment. The fist CD to employ Virtual Intimacy. Free headphones!

50438	Rebei Assault49.95
50439	Spectre VR49.95
50375	Tetris Gold
1960	Who Killed Sam Rupert? .19.95
50346	Wrath of the Gods 46.95



Family Doctor47.95

50291	Movie Select\$37.95
50403	Maus
1470	How Computers Work53.95
50104	American Visions69.95
50311	Art Gallery 59.95
50420	Cooking To Seduce 27.95
50319	Freak Show 48.95
50079	Great Golf





2095	A Hard Day's Night 27.95
50343	MacCocktail39.95
50291	Movie Select37.95
50313	Musical Instruments59.95
1909	You Want To Be/Rock Star .37.95
50321	Society Of Mind34.95
50296	Virtual Tarot
50125	Wines of the World49.95



50110

Multimedia **Encyclopedias**

.wonderful ...excellent ...lun! Sweetwater Union H.S. Designed by biologist Rob Ransom Ph.D., a MacUser Eddy award-winner for Best Database Resource. Features include a unique easy-to-use interface, export text, photography, video expert narration and search by keyword or key phrase.

1280	Encyclopedia of Life+	.64.95
1896	Berlitz Think/Talk Span.	123.95
50310	Encarta	.99.95
	Great Literature	
50037	History of the Blues	.29.95
1333U	Grolier Encyclopedia	.99.00
50399	JFK - Historymaker	.37.95
1460	Mayo Clinic Health Bk .	.49.95

Encyclopedia of Dino ← .49.95

	SVIna
2081	Butterflie

ZooGuides Series

... a series of beautiful interactive zoo discs." MacUser Magazine Each volume is designed and written by Rob Ransom, PH.D. Each volume includes full motion video, expert narration, animation, photography, distribution maps, and a guide to families and species.

2081	Butterflies of the World .39.95	
1275	Mammals of Africa39.95	
50300	Rainforest	
1210	Whales & Dolphins 39.95	
50246	Phonedisc Reverse149.95	
50345	Random House Dict59.95	
F0400	D-J-L:4 LAL A-L C7 OF	

50246	Phonedisc Reverse149.95
50345	Random House Dict59.95
50122	Redshift MM Astronomy 57.95
2090	Small Blue Planet59.95
50317	Street Atlas USA97.95
50419	Time Almanac67.95
50414	Total History!
	A View From Earth 29.95



Monarch Notes49.95

Part #	CD-ROM Drive	Alone	Bundle
1824	CD Tech	.\$479.00	699.00
945	Nec 3Xe	. 467.00	799.00
944	Nec 3Xp	399.00	639.00
978	Pioneer	1,299.00	1,499.00
5028	Plextor	. 429.00	649.00
Add an	"A" in front of pa	rt # for the b	undle.

3 Free CDs with drive or bundle!

Free Lunicus, Mister X and the EDUCORP CD Sampler with every drive or drive bundle purchase from EDUCORP.



Educational Bundle

Bundle Includes drive, 12 educational CD-ROM titles speakers, stereo headphones, cable, driver software and Speakers, Saled values and Carlo and Speakers, Saled values and Speakers and Speake Audubon's Bird of America
 Audubon's Mammals More bundles available, call.

1924	ABC Songbook+\$14.95
2078	Animal Alphabet 29.95
1667	Benjamin Bunny 19.95
50348	CD-ROM Coloring Bk24.95
50398	Forever Growing Garden 37.95
50405	Gus Goes to Cybertown .37.95
1850	Just Grandma & Me39.95
50436	Kid's Studio
50302	Peter Pan Adventure39.95



50109 The Tortoise & The Hare . . 39.95 Willy Wabbit Magic Bks .32.95 50306 1962 Word Tales27.95

Desktop Publishing





1690 Aviation Photo Disc+ .23.95 50048 Best of People/Bus* ← .79.95 Creative Bkgnds/Tex* ← .49.95 1298 50073 Design Toolkit Pro ← ...79.95 50329 Clip Art Sampler ←9.95



Swimsuit v.1+ #D1595 200 royalty-free (MSRP \$79.95)

50150 Essential Bckgds/Tex* ← .49.95 1680 Graphtec G. Designs + . . 49.95 1686 Kids Stock Photos

← . . .64.95 1696 50204 Pro. Backgrounds* + . .64.95

1444 ProPhoto.Collection* ← .54.95



*These titles are in Kodak Photo CD Format.

The Kodak Photo CD Logo is a trademark used under license.

EDIA PIONEER™ Prices subject to change without notice. Dealer inquiries welcome.

W28 7434 Trade Street ■ San Diego, CA 92121-2410 ■ Info: 619-536-9999 ■ FAX: 619-536-2345

BY GUY KAWASAKI

Guy's Guide to Creativity

Lessons from the genius awards

F ALL THE QUESTIONS THAT people ask me, the one I dread most is, "You were on the Macintosh team; where did that incredible creativity come from?" I was on the Macintosh team, and it was an incredibly creative group of people, but I wasn't one of the creative ones. I just worked hard. I have searched for years for an explanation of

the creative process. At first I thought the answer was to copy Xerox PARC. Then I thought the answer was to listen to Steve Jobs. Then I thought it was to do the opposite of what John Sculley tells you. Now I've got it figured out: it's to read Uncommon Genius-How Great Ideas Are Born, by Denise Shekerjian (\$11, 1990, Penguin Books, 201/387-0600, 800/253-6476).

The MacArthur Awards

Uncommon Genius examines the work methods of 40 winners of the John D. and Catherine T. MacArthur Foundation fellowship (the so-called genius award). The foundation was set up by John D. Mac-Arthur. He was the Bill Gates of his day; he owned Bankers Life and Casualty-at the time the second-largest life and accident insurance company in the worldand enormous landholdings in Florida.

At his bequest, most of his \$2.5 billion estate went to create a foundation that was second in assets only to the Ford Foundation. One aspect of the Mac-Arthur Foundation's work is to encourage risk-taking and forward thinking, so each year the foundation gives about \$9 million in awards.

A secret committee of about 100 experts, from a wide range of fields, nominates people. One cannot apply for the award. Armed with nominations, the foundation's staff further examines the work of potential winners.

If you are selected, the foundation calls you out of the blue and tells you that you've won. Winning means you get \$30,000 to \$70,000 a year for five years. The purpose of the money is to catalyze quantum leaps in creativity by providing

financial freedom. There are no strings attached; you can do whatever you want with the money.

Lessons in Creativity

Most books about creativity are cuties with exercises, brainteasers, and cartoons (like The Macintosh Way). They're supposed to tickle you into creativity. Then there's Shekerjian's book. It is a complete, radical, and welcome departure from any book I've ever read about creativity.

Uncommon Genius has 14 chapters, each explaining one aspect of creativity by examining how MacArthur award winners do their thing. Award winners are not limited to the arts or a narrow concept

of creative fields. For example, Shekerjian writes about a woodworker, an environmentalist, a translator, and a neurophysiologist (you're probably as amazed as I am that there's no HyperCard programmer on this list).

The main point of the book is that creativity is not a brilliant flash from heaven after the clouds part. Shekerjian found that the MacArthur award winners find something they're good at and work at it for years, take risks because risks are part of change, and endure years of uncertainty and frustration. Truth be known, this is an accurate description of how Macintosh was created.

Two pearls of wisdom in Uncommon Genius will strike at the heart of any Macintosh owner.

Pearl one: "There are no secrets, no inside easy steps that everybody hopes for. We all want to find the secrets, but they just don't exist," says MacArthur award winner Shirley Brice Heath, anthropological linguist.

Have you ever had a friend or relative who buys his or her first Macintosh, takes it home, sets it up, and expects to be the world's greatest graphic artist-or writer or businessperson-in an hour? You have? Then you know what Shirley's talking about.

Pearl two: "I don't get too excited by

my victories or too disappointed by my defeats, and in that way I come closer to peace of mind and that deep inner place that creativity comes from," says award winner Michael Lerner, social scientist.

Does Apple's whipsaw management style drive you crazy? One day the company is arrogantly crowing that it's introduced a new computer. The next day it lays off 2000 employees because earnings per share are down for the quarter.

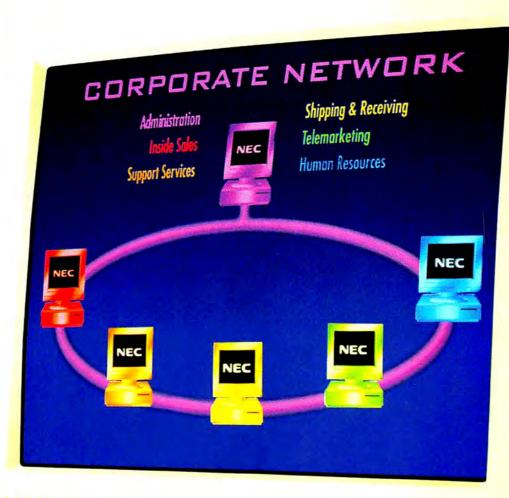
Oy vey. If we could only get Apple execs to listen to Michael. Apple is completely dependent on cre-

ative products, so it needs to cultivate a "deep inner place" in order to survive.

The Close

Buy this book. It'll help foster greater creativity in everything you do with your Mac. And more important, I won't have to try to explain creativity anymore. m

GUY KAWASAKI's views are his own and only sporadically represent those of Macworld. His latest book is Hindsights (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.



ARE, MultiSync 31

Introducing the MultiSync® Value Series Monitors. The affordable solution for those who make your business run

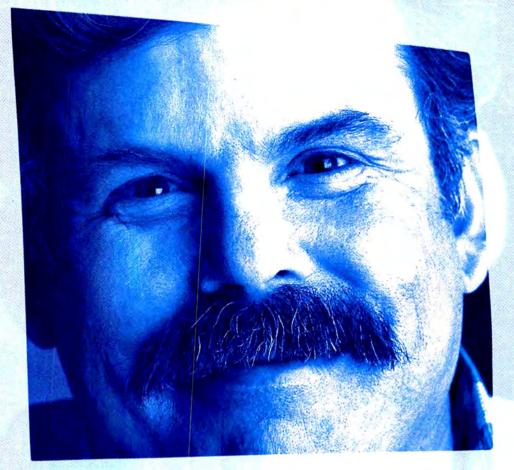
They're the people you count on to get the job done. From secretaries to shipping, they need all the help you can give them. Luckily, the 15" (13.8" diagonal viewable area) MultiSync® 3V and the new 14" (13" diagonal viewable area) MultiSync 2V work with the latest Macs and give you the great colors 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-INFO. 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.







Fifteen hours today.
Sixty-five overnight packages. Tonight.







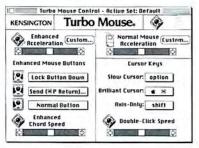
Comfort.

MacUser gave it the coveted Five Mice. The readers of Macworld voted it "Best Input Device" five times. It has won more awards than any Macintosh input device in history.

What makes Turbo Mouse the number one choice in input devices?

Move the ball. Click the buttons. Feel the difference.

Turbo Mouse is more comfortable than an ordinary mouse. Its superior trackball design



means less hand and arm movement: you move only the ball, not the entire device.

And it's more comfortable than an ordinary trackball. A unique combination of hardware and software make the difference.

Turbo Mouse has a large comfortable ball that rests on high-quality stainless steel bearings. The movement is ultrasmooth. Precise.

The buttons are also more comfortable. They are oversized, well-positioned and easy to click. Your fingers don't have to stretch as much. There is less fatigue after a day's work.

Program the buttons. Jump to HotSpots. Save unnecessary movements.

The other part of the comfort story is our unique, programmable software. It allows you to automate the functions you use most often.









Program another button to avoid holding down the button when dragging objects. Or program a button to slow the cursor down, lock on an axis or send keyboard macros. And our new Brilliant Cursor⁵ technology even allows you to jump to predefined

HotSpots onscreen, like the icons in a toolbar or palette.

And Turbo Mouse automatically remembers which applica-

tion you're in. So you can program different command combinations for each application.

Turbo Mouse

It all adds up to less repetitive motion. Less wasted energy. Less stress.

Kensington Satisfaction Guarantee

Turbo Mouse 4.0 comes with on screen help, two ADB ports for chaining and is fully System 7 compatible. Our unique Satisfaction Guarantee includes a 5-year warranty, toll-free technical support, and a no risk 60-day trial. For information, call 800-535-4242. Outside the US, 415-572-2700. For information by fax, call and enter 82 and request document #323.

Turbo Mouse® 4.0



